Configuration of the AVIATOR 700 system

This chapter has the following sections:

- *SBU Configuration tasks*
- *Built-in web interface for the SBU*
- *The Dashboard*
- *The phone book*
- *To set up the interfaces of the SBU*
- *LAN/WLAN network users*
- *Administration of the SBU*
- *Site map of the SBU web interface*
- *Configuration of 3rd party phone systems*
- *AVIATOR 700 system ready for use*

Note

Line of sight during operation

You can configure the system while the aircraft is in the hangar. Note that you cannot typically check the satellite communication while the aircraft is still in the hangar. There must be a line of sight between the Satcom antenna and the satellite in order to use the satellite service.

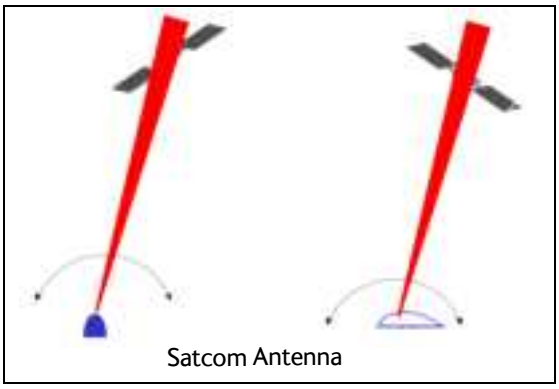


Figure 6-1: Line of sight when communicating with the satellite

6.1 Configure the basic system

To configure the AVIATOR 700 system you use the *Aero-SDU Configuration Program for the SDU* and the *Built-in web interface for the SBU*.

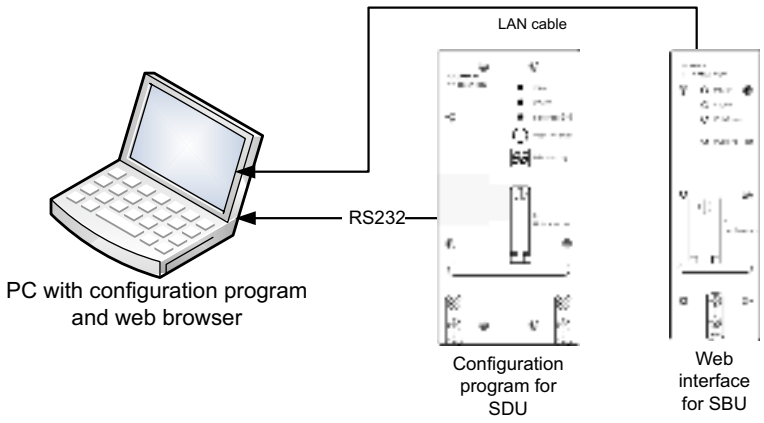


Figure 6-2: Configuration tools for SDU and SBU

For quick start instructions see:

- *Basic configuration of the SDU* on page 6-10
- *Basic configuration of the SBU* on page 6-13

6.2 Aero-SDU Configuration Program for the SDU

Configuration parameters for the SDU are stored in the SDU Configuration Module (CM), which is managed from the Aero-SDU Configuration Program for the MS Windows® operating systems.

The Aero-SDU Configuration Program makes it possible to:

- Read, write and edit a complete set of operating parameters for the SDU system
- Show which units are available
- Set up the SDU and cabling with all configurable parameters
- Access the SBU configuration tool (web interface)
- Save/load an SDU configuration to/from a file
- Print reports to a printer
- Update the SDU and HPA software
- Access a terminal emulator for troubleshooting purposes
- Acquire satellite elevation and azimuth for any geographical location
- Get online help on specific topics through the Help menu, by pressing F1, or by using the "What's This?" button

6.2.1 Install the Aero-SDU Configuration Program

Installation requirements

- Installation CD (included in the delivery of the AVIATOR 700 system). You can also download the Aero-SDU Configuration Program at https://sync.cobham.com/satcom/support/downloads.
- A PC running Windows Vista, Windows 7, Windows 8 or Windows 10.
- 1024×768 or higher display resolution. The program is best viewed using small fonts.
- Data Cable (Part number TT 37-112940-A or equivalent) to connect a PC to the SDU.
- An available serial COM port (DB9) for the Data Cable.
- Ethernet cable (straight)

Installation procedure

Insert the CD-ROM with the Aero-SDU Configuration Program into the CD ROM drive and wait until the PC automatically starts the installation program (if the installation program does not start automatically, open the file-explorer and double-click the file named setup.exe).

Go through the InstallShield Wizard. When installation is done, a shortcut is placed on your desktop.

6.2.2 To use the Aero-SDU Configuration Program

The Aero-SDU Configuration Program is used to configure both AVIATOR 700 and Aero-HSD+systems.

Important **No mismatch for Level D and Level E allowed**: If a level-D certified system detects an inconsistent hardware unit (level E) or software image (level E), it enters failure mode and the system will not be operational. Inconsistency messages are displayed to clearly inform the service personnel about the reason for this failure mode.

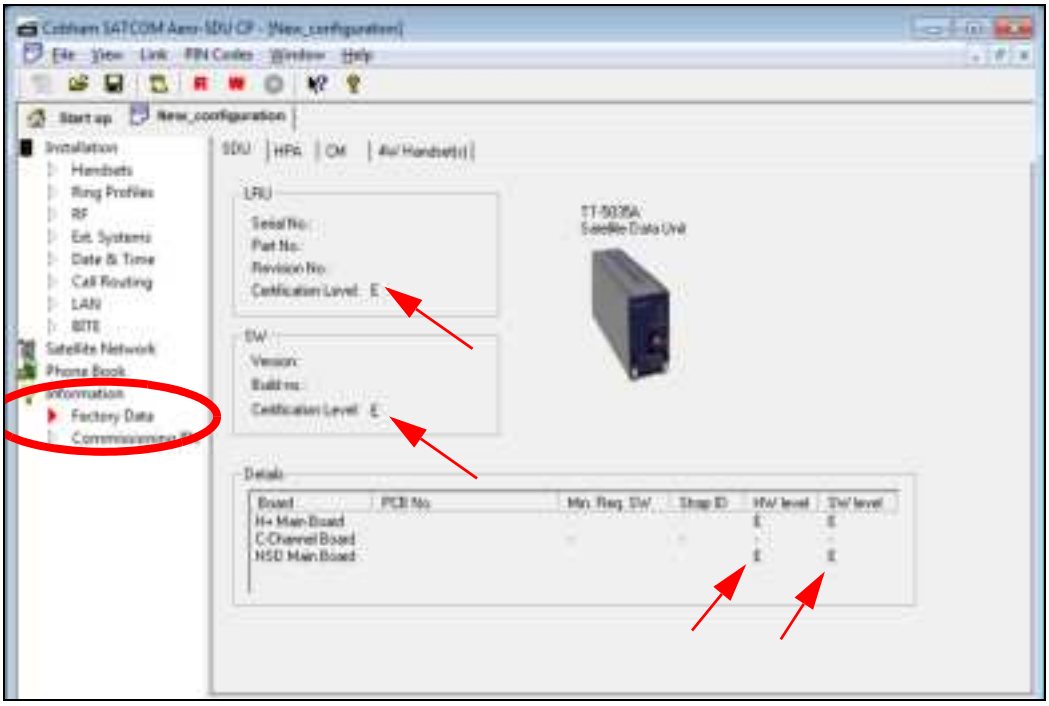


Figure 6-3: Aero-SDU Configuration Program: View Level D and Level E certification level

Start the Aero-SDU Configuration Program

To start up the Aero-SDU Configuration Program, double-click the program icon on your desktop.

The following picture shows the start up window of the configuration program.

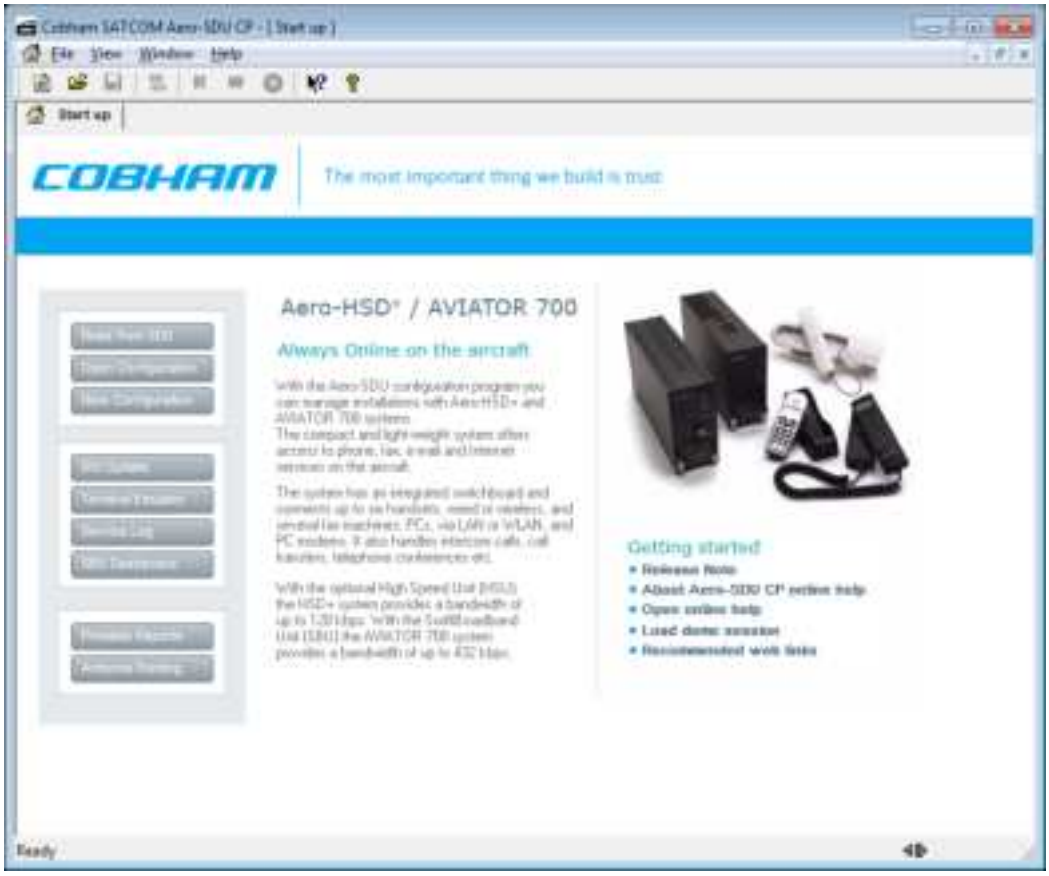


Figure 6-4: Aero-SDU Configuration Program: Start-up window

You can perform several tasks from the start up window. This chapter concentrates on the configuration task.

Navigation

The most important menu commands to start managing a configuration are:

Menu keys	Icon or button	Description
File, New		Create a new configuration from scratch (Only the most critical parameters are initialized, the rest is up to you). Confirm the system to configure: AVIATOR 700 Up to four different configurations can be open at the same time. The configuration can be created off-line (i.e. without an SDU connected to the PC). The settings can then be written to the SDU at a later stage. **Note**: Offline configuration can only be done for the SDU. To configure the SBU you must be online.
File, Open		Opens a previously saved configuration from the disk.
File, Read Configuration from SDU		Read configuration from the connected SDU and copy the data into a new configuration. Note. This function is most suited for tasks that involve minor modifications to already installed systems.

Table 6-1: Configuration related menu commands

Having opened a new configuration, you are prompted to confirm the system you are about to configure. Select AVIATOR 700 and click OK to continue.

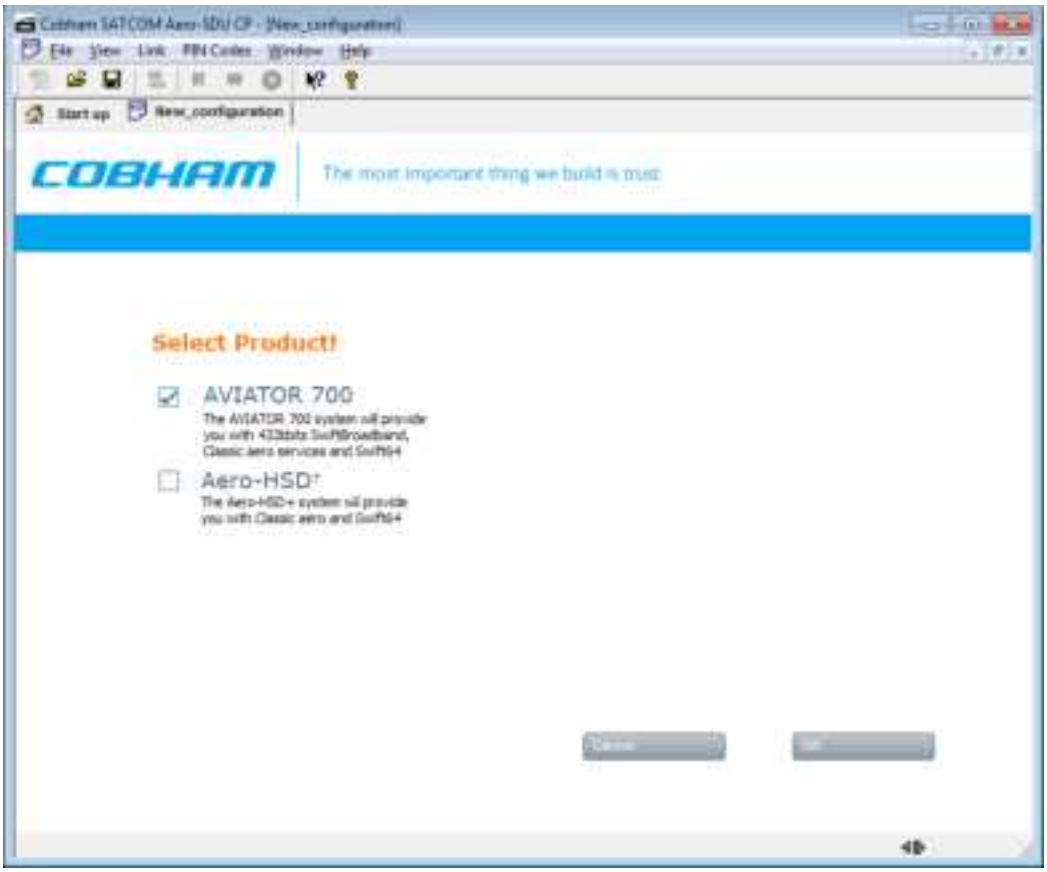


Figure 6-5: Configuration program: System selection, Aero-SDU Configuration Program

When one of the products is selected, the configuration view opens.

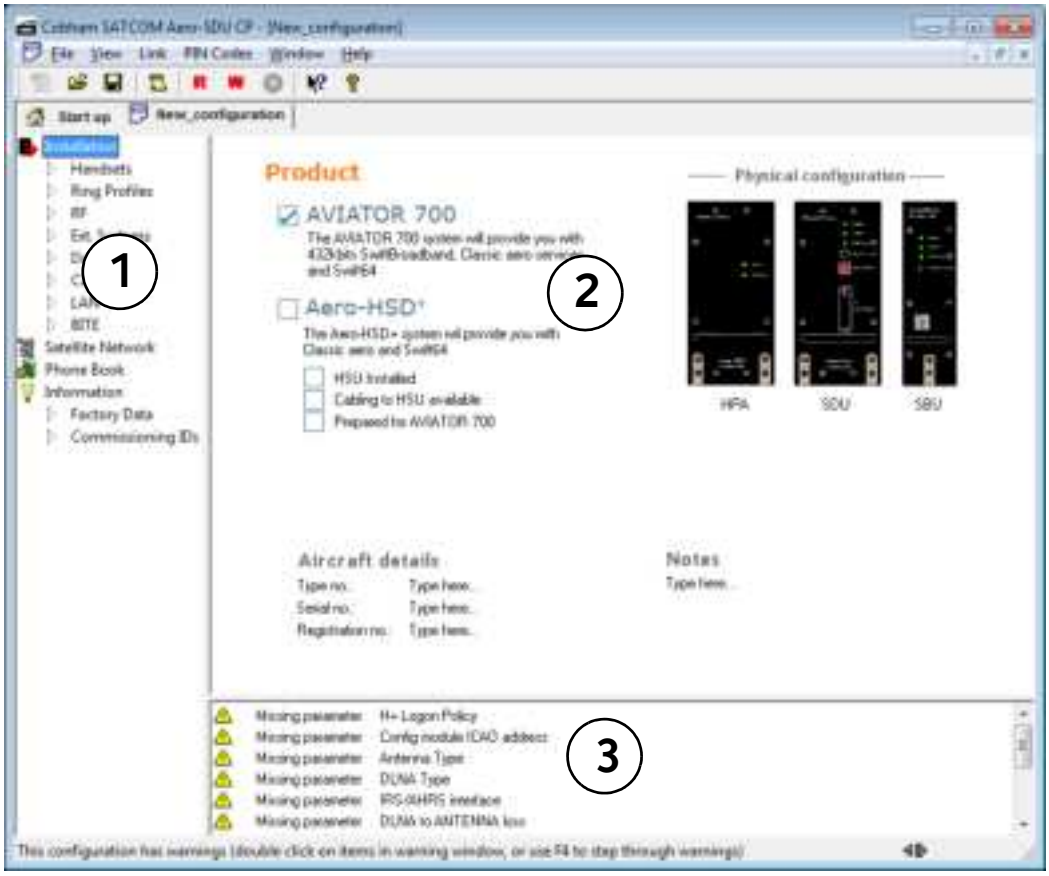


Figure 6-6: Aero-SDU Configuration Program, configuration view

The configuration view is divided into three panes:

1. Navigation pane to access specific sections of the configuration
2. Settings pane to set individual configuration settings
3. Warnings pane listing the tasks to set up a valid configuration, and displaying errors and notes.

Note For instructions how to make a software update see *Software update* on page 8-8.

Menus in the Navigation pane

The Aero-SDU Configuration Program comprises the following items:

- **Installation** - aircraft details and installed units.
  - **Handsets** - setting of handset type, volume, ring tones etc. Fax connected to 2-wire.
  - **Ring Profiles** - setup of ring profiles that each determine the behavior of all handsets and annunciators.
  - **RF** - setup of antenna and DLNA types, antenna heading, SBU unit installed and RF cable losses.

- **Ext. Systems** - setup of external systems such as IRS/AHRS, ACARS/AFIS/CMU, MCDU etc.
- **Date & Time** - setup of date and time in the SDU and synchronization.
- **Call Routing** - setup of how the SDU should behave to incoming and outgoing calls.
- **LAN** - IP parameters for LAN connection. Under normal conditions, these parameters should not be changed.
- **BITE** - List of BITE codes with the option to disable display of selected codes.

- **Satellite Network** - setup of the conditions for logon to the satellite network, including automatic/manual logon, setup of GES for the H+ service and LES for the Swift64 service and initial satellite data.

- **Phone Book** - a list of up to 99 phone numbers. From this window you can add, edit and delete information in the phone book and assign quick-dial numbers.

- **Information**
  - **Factory data** - showing the version of the software installed in the SDU, including the certification level D or E, the PCB numbers of the individual boards in the system, the serial numbers of the LRUs in the system, the LRU revision numbers of the: SDU, CM, HPA, 4W Handset(s) units.

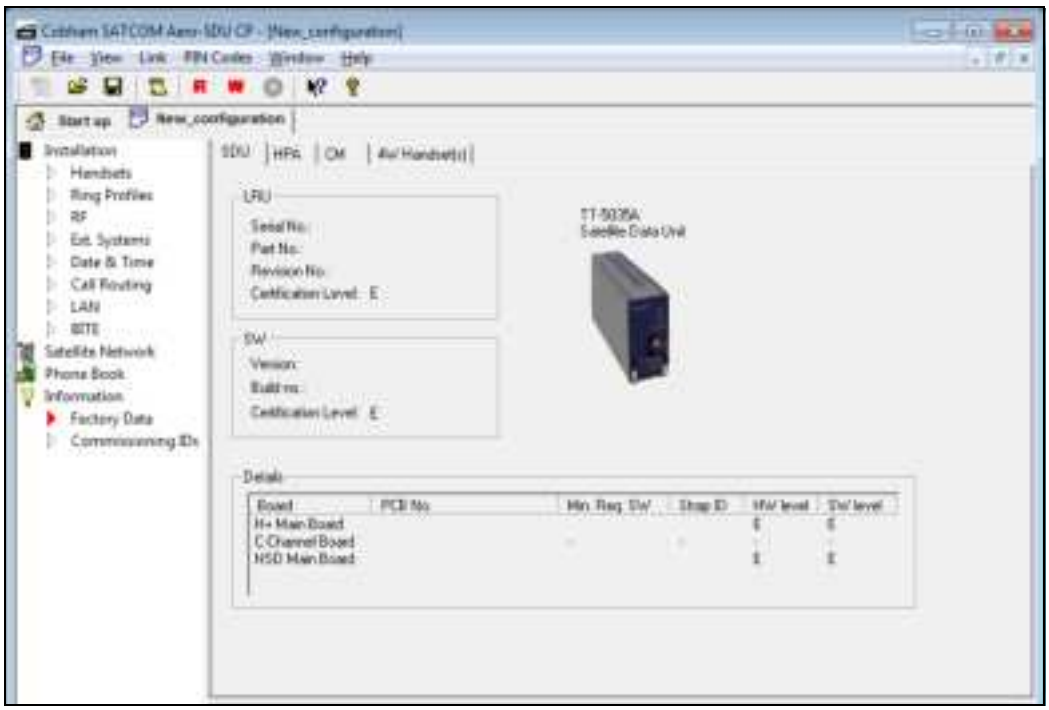


Figure 6-7: SDU configuration, Information> Factory Data: View the certification level

- **Commissioning IDs** - setup of ICAO address and inspection of ISN numbers.

Settings pane

This pane contains the details related to the items you can select in the Navigation pane.

Warnings pane and SDU configuration guide

This pane contains a list that can hold a mix of: A list of the parameters that need to be entered, errors and notes. The list serves two main purposes:

1. **Configuration guide**: To show what you need to change/set up before the configuration can be written to the SDU. If something important remains in this list when the write to SDU function is applied an error dialog appears.
   When you have configured the system correctly, this warnings pane will be empty.
2. **Warnings and notes**: To indicate where your configuration differs from what Cobham recommends (ex. antenna gain exceeds expected limits).

Note: Double click on the items in the list one by one to work through the necessary configuration settings. A click on an item brings you directly to the hot spots in the configuration that need your attention.

6.2.3 Basic configuration of the SDU

For detailed information on how to use the Aero-SDU Configuration Program, please refer to the built-in help system of the program. Press F1 or use the Help menu.

As a minimum setup, you need to set up the following parameters:

Commissioning ID

- **ICAO address**.
  In the navigation pane of the Aero-SDU Configuration Program, select **Commissioning IDs** under **Information**. Then click the **Copy** button to copy the strapped ICAO address to the Config Module, or type in the ICAO address in the **Config Module** field.

RF settings SDU

- **Antenna type and heading offset**.
  Select **RF** under **Installation** and select the antenna type.
- **DLNA type**.
  In the **RF** pane select the DLNA type.
- **Cable loss for SDU**.
  In the **RF** pane, enter the cable losses in the **Cable Loss** fields. These cable loss values are without losses from the RX splitter and TX combiner.

The necessary RF settings for the SBU are described in *Basic configuration of the SBU* on page 6-13.

External systems

- **Navigation parameters**, **IRS/AHRS**.
  Select **Ext. Systems** under **Installation**.
  Then select IRS or AHRS, select which interfaces are connected and whether they run at low or high speed.

Satellite network

- **Preferred GES**
  Select **Satellite Network** and set up the list of preferred GES.
- **Preferred LES and Logon Policy**
  Set up the list of preferred LESs.
  Set **H+ Logon Policy** to **Automatic** or **Manual**.

Enable handsets

- **Handset parameters**, **Broadcast Ring Tone**.
  Select **Handsets** under **installation**. Then select a ring tone from the **Broadcast Ring Tone** scroll list.

External equipment

Depending on the connected equipment, it may be necessary to enter information on some of the following items:

- **Handsets**.
  Select **Handsets** under **Installation**.
  Then enter which handset is installed on which interface and set the parameters for each handset.
  - For handset interface #1 and #2 you may select T&T Handset, MagnaStar, WH10, Cockpit Audio, Iridium-1, Iridium-2 or FONE.
  - For handset interface #3 you may select T&T Handset, MagnaStar, WH10, Iridium-1, Iridium-2 or FONE.
  - For handset interface #4 only T&T handset is available.
  - For handset interface #5 and #6 you may select Handset, Fax or ICG Handset (for Sigma^7 handset).
- **Fax**.
  In the **Handsets** pane, select the Fax handset-type under Two-Wire POTS #5 or #6. This means the interface will not ring on a broadcast call.
- **Ring Profiles**.
  Select **Ring Profiles** under **Installation**. Set up one or more profiles that determine which interfaces should ring when a broadcast call is received, and which should not. There are five possible profiles. One of them, “TakeOfLandng”, is preset and cannot be changed. If the “Chime/Lamps Inhibit” input is activated, the “TakeOfLandng” profile is automatically used. This input should be activated during take-off and landing.
- **ACARS/AFIS/CMU/MCDU/WOW**.
  Select **Ext. Systems** under **Installation**.
  Then enter which systems are connected and enter the requested parameters for each system.

Write the configuration to the SDU

To transfer the content of the active configuration view into the connected SDU click the button  in the top toolbar.

6.2.4 Transfer configuration data to the SDU

You transfer configuration data to the SDU using the Aero-SDU Configuration Program. Before transferring the settings, connect the TT37-112940-A data cable between the serial port of the PC and the front connector of the SDU. Use the menu commands listed below to select the direction of the transmission.

Menu key combination	Icon	Description
Link - Read configuration from SDU (Or use keyboard shortcut Ctrl-R)		Transfer the configuration from the SDU connected into the configuration view that is active right now.
Link - Write configuration to SDU (Or use keyboard shortcut Ctrl-W)		Transfer the content of the active configuration view into the connected SDU. 1. Before writing the configuration, the configuration program validates the data. If this validation fails due to errors in the configuration, a dialog will inform you about it, and the write operation is cancelled. See also messages in the warning pane for more information. 2. Before the write operation is started you will have the choice to turn off reset-after-write. Please note that settings are only applied to the system after a reset. Under normal circumstances you do not need to change this.

Table 6-2: Menu commands for configuration data transfer

Select a COM port: The first time you try to communicate with the SDU, a popup dialog will ask you to select a COM-port from a list of installed COM-ports. This dialog will also appear if the SDU was not found on the selected COM-port.

6.3 SBU Configuration tasks

Having installed the AVIATOR 700 System you must also configure the SwiftBroadband Unit properly for use with the current antenna setup, including cable losses for the installation, and select the correct navigational input. Furthermore the interfaces have to be set up and configured to the specific aircraft installation and application requirements. IP connections, network user groups and profiles for IP data usage including LAN/WLAN network management must be configured so the required applications run smoothly on the system. For this purpose you use the built-in web interface of the SBU.

Note Before you start configuring the SBU make sure that the Configuration Module for the SBU is mounted in the SwiftBroadband Unit.

There are two ways to access the SBU web interface:

1. Use a web browser and enter the IP address of the SBU. The standard IP address is **192.168.0.1**.
2. Using the Aero-SDU Configuration Program, click on the button **SBU Dashboard** in the left side of the startup window.

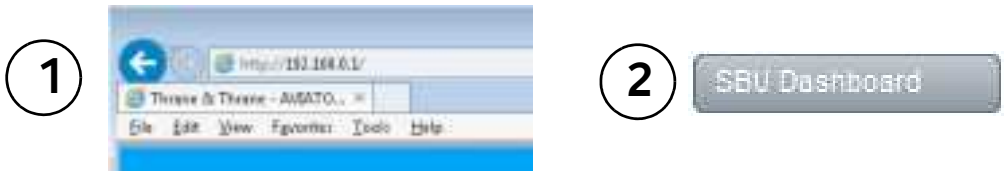


Figure 6-8: 2 ways to access the SBU web interface

6.3.1 Basic configuration of the SBU

As a minimum, you need to set up the following parameters in the built-in web interface of the SBU:

1. On the **DASHBOARD** verify that you have the latest SBU software version (see cobham.com/satcom, Service and support). Verify also that the certification level is correct (Level-D or Level-E). For more information on the individual fields see *The Dashboard* on page 6-23.

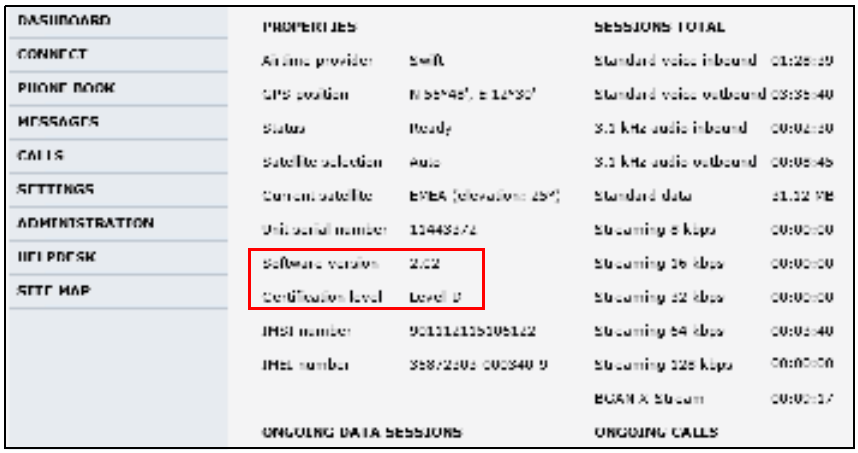


Figure 6-9: Basic configuration of the SBU, step 1/6

2. In **SETTINGS > System type**, select AVIATOR 700 and click **Apply**.

> **CAUTION!** Selecting a wrong system type may cause damage to the satcom antenna or GPS antenna. If the system type purchased can not be selected, please contact the supplier of your AVIATOR 700 system.
> **Do not try to use a different system type!**

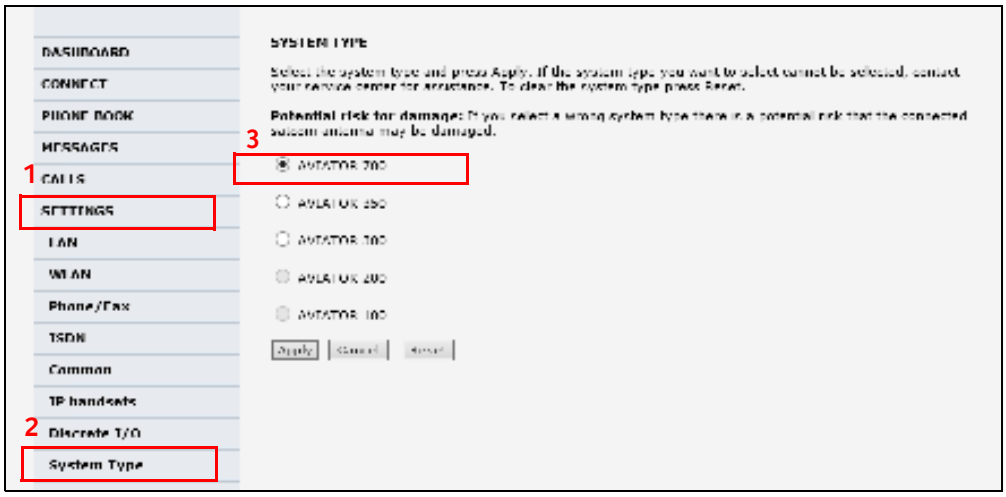


Figure 6-10: Basic configuration of the SBU, step 2/6

3. In **SETTINGS > External systems** enter the values for Navigational input and GPS voltage. For detailed instructions see *Set up the navigational input of the SBU* on page 6-51.

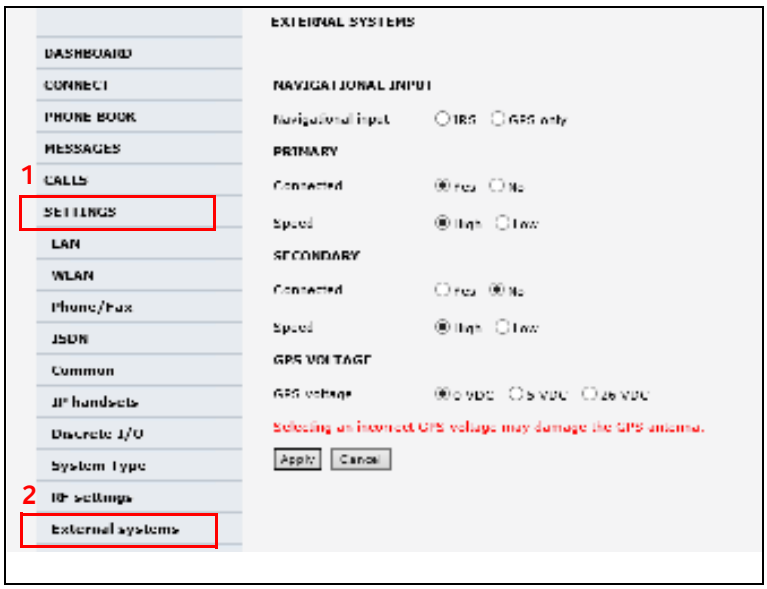


Figure 6-11: Basic configuration of the SBU, step 3/6

4. In **SETTINGS > RF settings**, enter the cable losses applicable to the SBU. For detailed instructions see *Configure RF settings of the SBU* on page 6-50.

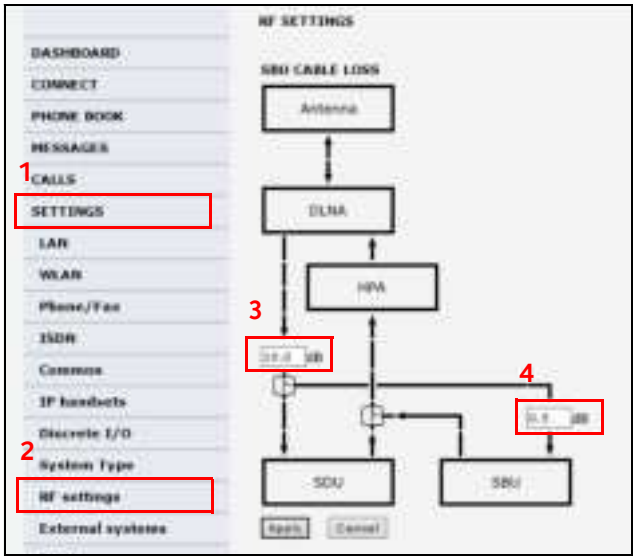


Figure 6-12: Basic configuration of the SBU, step 4/6

5. In **SETTINGS > LAN > Network user groups**, click **Edit**.

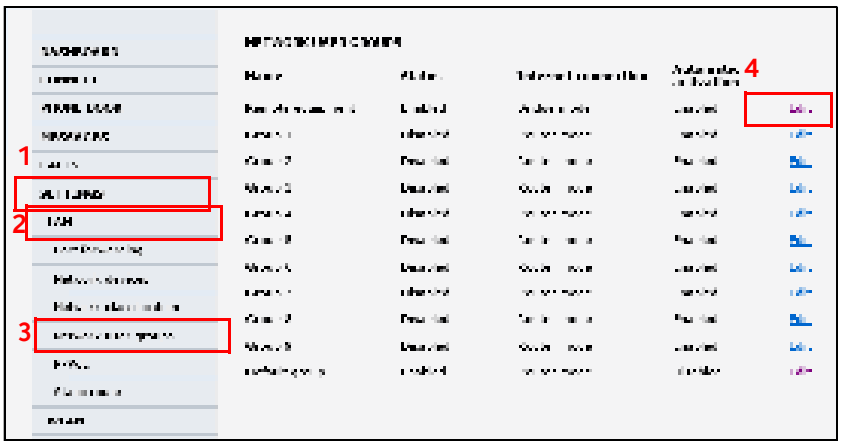


Figure 6-13: Basic configuration of the SBU, step 5/6

6. Enter the APN from your service provider. For detailed instructions see *Set up the network user groups* on page 6-56.

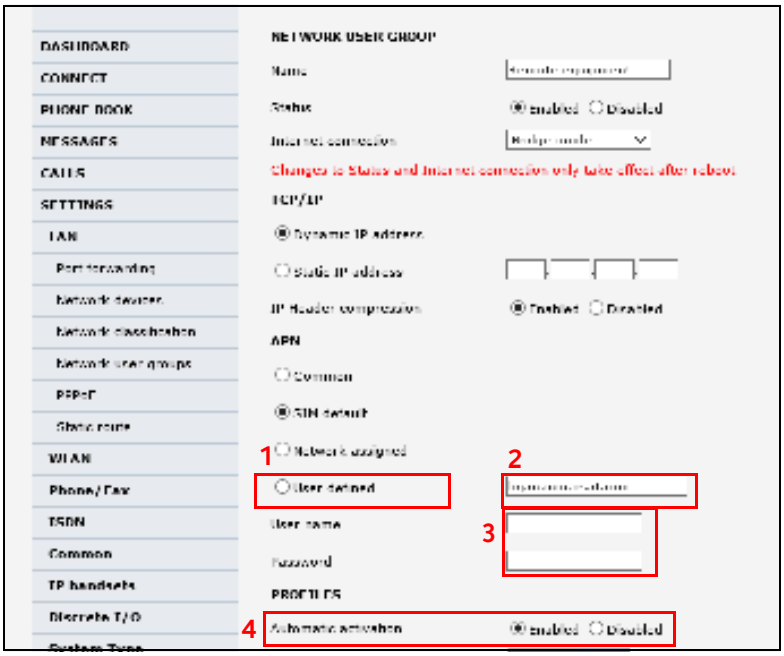


Figure 6-14: Basic configuration of the SBU, step 6/6

6.4 Built-in web interface for the SBU

Use the built-in web interface of the SBU to access the SBU configuration settings in the CM of the SBU. A subset of the configuration settings are stored in a write-protected area of the CM. This subset contains the physical settings for the antenna, cabling and other external input.

Important To set up or change the settings of the write-protected area you must connect a PC to the connector marked **Maintenance** on the SBU front plate. You can view all SBU settings from any LAN or WLAN interface.

The CM also contains the SIM card for accessing the SwiftBroadband service. The settings that can only be changed when connected to the SBU maintenance connector are:

- **Discrete I/O** settings
- **System type**
- Cable loss data in **Settings**, **RF settings**,
- Input from navigational systems in **Settings**, **External systems**
- Enabling options (Router, WLAN) in **Settings**, **Flex**.

Note For information on daily use of the AVIATOR 700 system refer to the AVIATOR 700 User Manual.

No installation of software is necessary because the web interface is built into the SBU.

Browsers supported

The web interface is built into the terminal and is used for operating, setting up and configuring the system.

You can access the web interface from a computer with a standard Internet browser.

6.4.1 Topics in the SBU web interface

The following drawing shows the topics available in the web interface. The topics in grey are mainly used during daily use of the system, they are described in detail in the AVIATOR 700 User Manual.

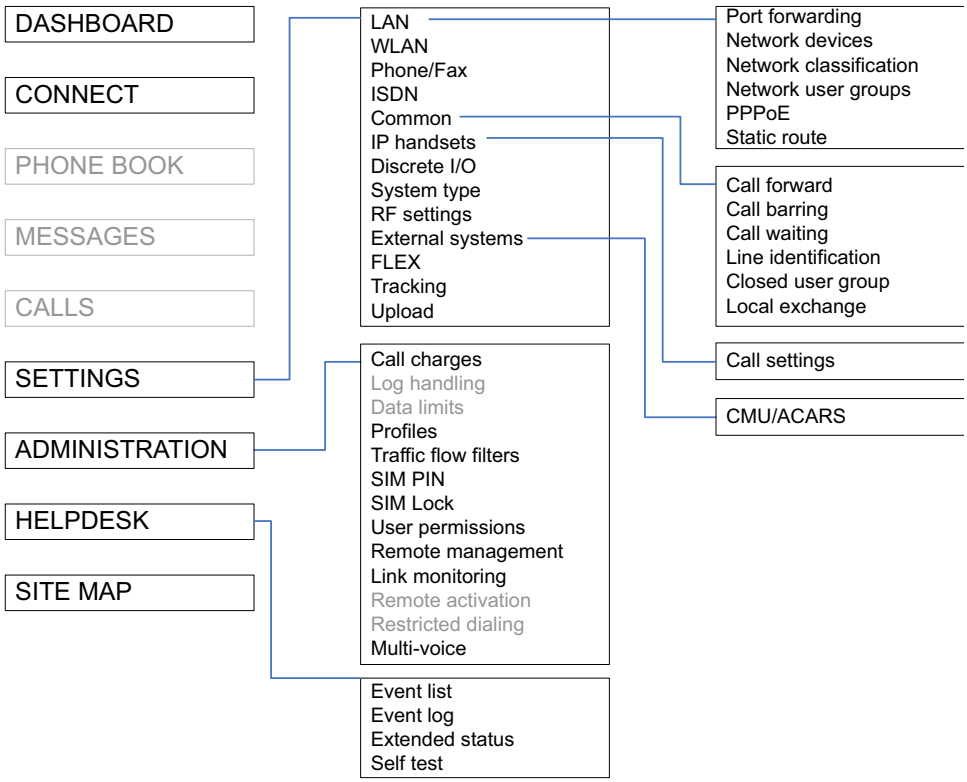


Figure 6-15: Topics in the SBU web interface

6.4.2 Check the connection to the web interface

To check whether you can connect to the web interface of the SBU do as follows:

1. Power up the AVIATOR 700 system. Wait until the LEDs on the front plate show that the system is ready to be configured.
   - Power LED: Green, then wait for approximately one minute.
2. Connect a PC to the Maintenance interface (standard Ethernet) on the front plate of the SBU.
   If you want to change the setup of the user interfaces and change network usage you can use any of the terminal LAN interfaces (up to 6) installed in the aircraft cabin or the Wireless connection, if available. If you want to change the physical settings for the antenna, cabling and other external input you must use the SBU maintenance connector at the front of the SBU.

Important For systems without the built-in router option enabled, i.e. the basic version or the version with Wireless option only: To use the SBU Maintenance connector disconnect or switch off any PC connected to another LAN interface of the SBU.

Access the web interface

To access the web interface, do as follows:

1. Open your browser and enter the IP address of the SBU. The standard IP address is **192.168.0.1**.

   Note If the local IP address of the SBU has been changed and you do not have the new address, you can temporarily set the IP address to the default value by pushing the **Reset** button on the front plate of the SBU. For detailed instructions see the table *How to reset the IP address or the terminal software to default settings* on page 8-23.

   For further information on the Reset button, see *IP Reset (Default) button on the SBU* on page 8-22.

   For further information on IP addresses of the SBU see *Set up the LAN IP addressing* on page 6-29.

2. The web interface opens directly with the **DASHBOARD** page.
   The web interface consists of the following sections:

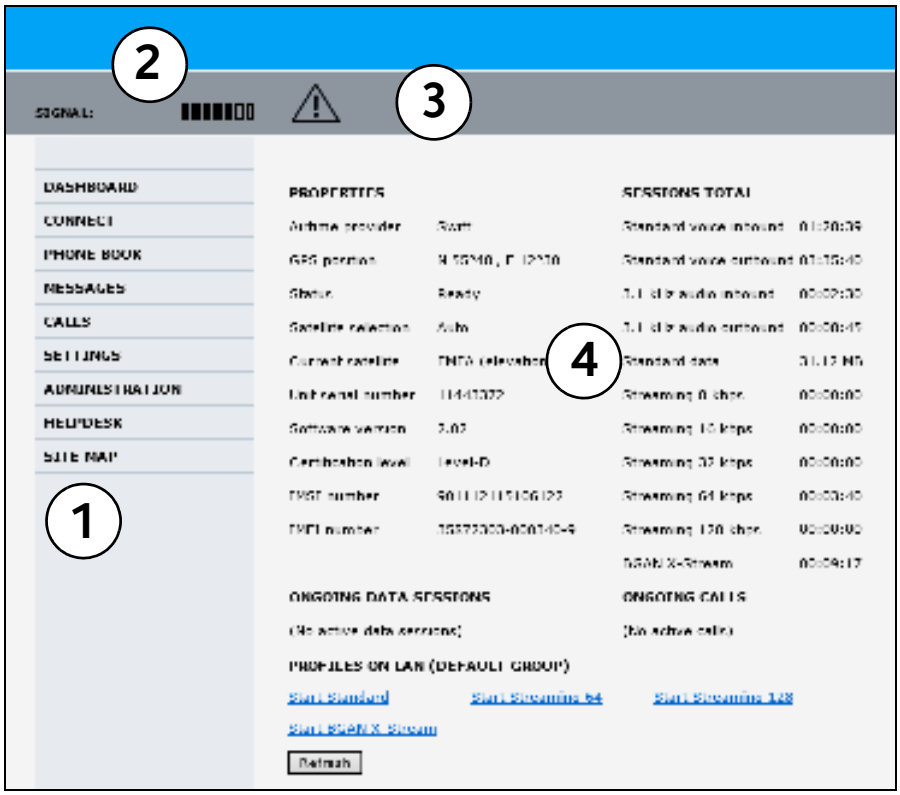


Figure 6-16: Sections of the web interface

1. The **navigation pane** holds the main menu. Clicking an item in the menu opens a submenu in the navigation pane or a new page in the contents section.
2. The **signal status field** shows the signal strength. The signal strength can vary during operation, depending on the current position relative to the Inmarsat satellite and the call or data session activity.

3. The **icon bar** shows icons for new SMS messages and for active events, when relevant. For explanations of the icons, see the next section, *Icons in the icon bar*.
4. The **contents section** shows the page selected in the navigation pane. This section is used for viewing or changing settings, or for performing actions.

When the Dashboard is displayed you have verified that the connection to the SBU can be established. The web interface is ready for use. You can continue to configure the system.

If you cannot establish a connection to the SBU there might be problems with the Proxy server settings of your PC. See *Proxy server settings in your browser* on page 6-21 for further information.

Icons in the icon bar

The following icons may appear in the icon bar in the web interface:

Icon	Explanation
	A new SMS message, or information of Voice mail, has arrived. Click the icon to see new messages or information of Voice mail. For further information, see the AVIATOR 700 User Manual.
	An event is active. Click the icon to see a list of active events. For explanations of the event messages, see the AVIATOR 700 User Manual. Note that this icon will remain in the icon bar as long as the event is still active.

Table 6-3: Web interface: Icons

Navigate the web interface

- **To expand a menu**, click the menu in the navigation pane.
- **To access status and settings**, click the relevant subject in the navigation pane or click the relevant icon in the icon bar. The status or settings are displayed in the contents section.
- **To get an overview over the submenus available use the site map**, click **SITE MAP** in the navigation pane. Click on items in the site map to go directly to the relevant location.

Note You can limit access to some parts of the web interface for certain users. Then the parts are grayed out. For information on how to set up user permissions, see *Set up user permissions* on page 6-84.

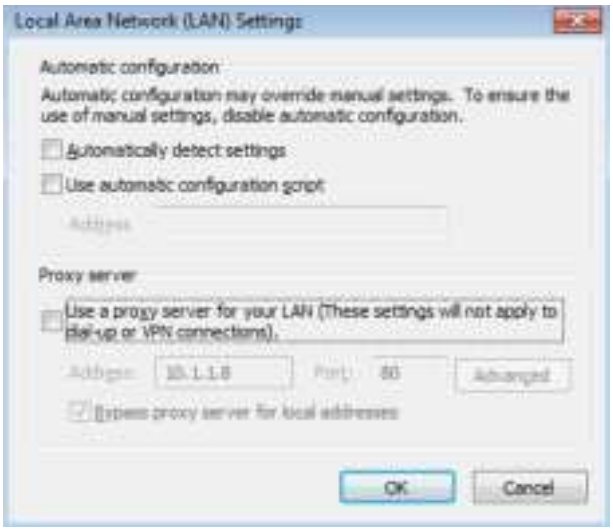
Proxy server settings in your browser

If you are connecting your computer using a LAN or WLAN interface, the **Proxy server** settings in your browser must be disabled before accessing the web interface. Most browsers support disabling of the Proxy server settings for one specific IP address, so you can disable Proxy server settings for the web interface only, if you wish. Consult your browser help for information.

To disable the use of a Proxy server completely, do as follows:

Note The following description is for **Microsoft Internet Explorer**. If you are using a different browser, the procedure may be different.

1. In Microsoft Internet Explorer, select **Tools > Internet Options > Connections > LAN Settings**.



2. Clear the box labeled **Use a proxy server for your LAN**.
3. Click **OK**.

When the proxy server settings are disabled, close and restart your browser. You may need to change this setting back on return to your Internet connection.

IP address and DNS server address setup

To check whether automatic IP address and DNS server address is obtained automatically for your computer, do as follows (example for Windows 7):

1. Go to **Control Panel > Network and Internet > Network and Sharing Center**.
2. Click on the **LAN connection** you want to use.
3. Select **Properties**, highlight **Internet Protocol Version 4 (TCP/IPv4)**.
4. Click **Properties**.

5. Make sure that the following is selected:
   - Obtain an IP address automatically
   - Obtain DNS server address automatically

Allocating IP addresses and DNS server lookups are handled by the SBU.

6.5 The Dashboard

6.5.1 Overview

The Dashboard is the first screen that is displayed when the user or administrator enters the IP address of the web interface. The Dashboard is used for control and inspection of ongoing communication and for viewing properties and status of the SBU and antenna.

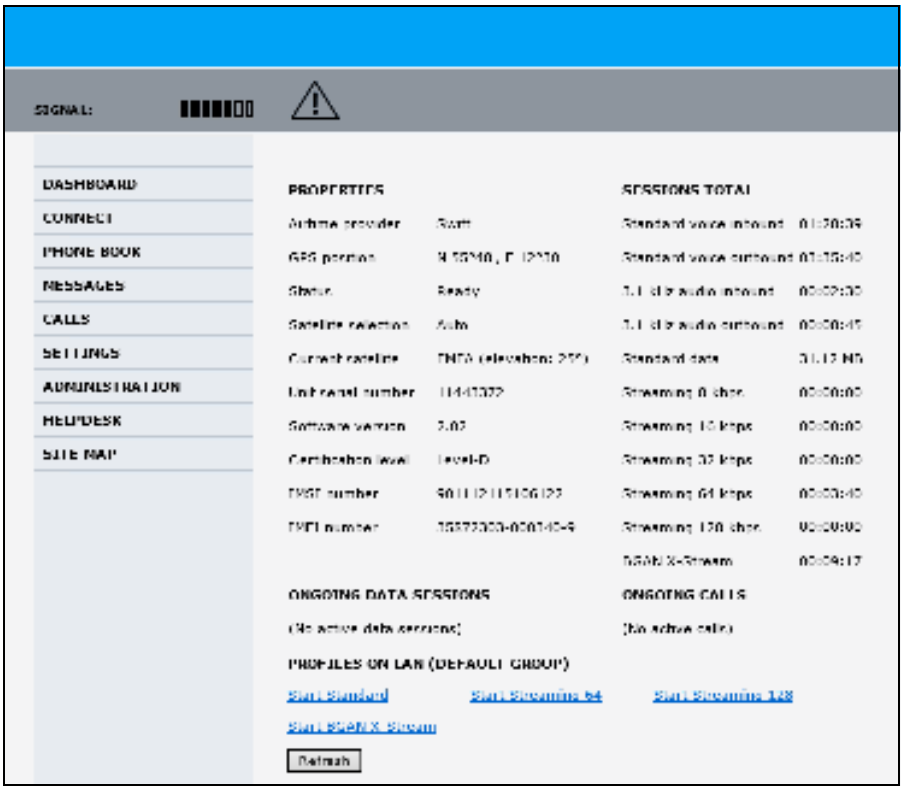


Figure 6-17: Web interface: Dashboard

6.5.2 Properties

The **PROPERTIES** section of the **DASHBOARD** shows the following information:

- **Airtime provider**. The name of your Airtime Provider.
- **GPS position**. The GPS position of your AVIATOR 700 system.

> **Note** In some cases, the BGAN network does not allow the position to be displayed to the user. If this is the case, the display may just show **GPS acquired**. This means that the GPS position is received, but the user is not allowed to see it.
>
> This also applies if the AVIATOR 700 is not yet registered on the BGAN network, but the GPS position is received.

- **Status**. The status of the SBU and antenna.
  Examples of status information are: Scanning, Ready and Data active.
- **Satellite selection**. The satellite selected for logon.This is handled by the SDU.

- **Current satellite.** The currently used satellite and elevation angle.
- **Unit serial number**. The serial number of the SBU.
- **Software version**. The version of the software embedded in the SBU.
- **Certification level**. This field shows whether the system is Level-D or Level-E certified.

  Important If **Inconsistent** is displayed, it means there is a mismatch with Level-D and Level-E certified units or software. This is not allowed.

- **IMSI number**. The IMSI number (International Mobile Subscriber Identity) of the SBU. This is a unique number that identifies the SIM card of your SBU.
- **IMEI number**. The IMEI number (International Mobile Equipment Identity) of the SBU. This is a unique number that identifies your SBU.

6.5.3 View information on calls and data sessions

The following sections in the **Dashboard** show information on calls and data sessions.

- **ONGOING DATA SESSIONS** is a list of data profiles that are currently active, including the external IP address that is assigned to each profile.
- **ONGOING CALLS** is a list of calls that are currently active. The list shows the call type and the time connected for each call.
- **SESSIONS TOTAL** lists the totals for each session type. The list shows the session type with accumulated time for voice and Streaming data, and MB transferred for Standard data.

The counters show totals for sessions since the counters were last cleared. For information on how to clear the counters, see *Log handling* on page 6-75.

6.5.4 Profiles on the dashboard

There is also a section on the dashboard showing the network user group and the profile(s) available for the current user. Here you can start the connections allowed for the current network user group. For more information on network user groups and profiles see *LAN/WLAN network users* on page 6-54.

Start or stop a standard data connection

On the Dashboard you can see under PROFILES ON LAN whether a standard connection is active or not.

To start or stop a Standard connection for your Network user group do as follows:

1. Open your Internet browser and enter the IP address of the AVIATOR 700 SBU (default: http://192.168.0.1) to access the Dashboard of the web interface.
2. Locate **PROFILES ON LAN** at the bottom of the page.
3. Click **Start <name of profile>**, in this case: **Start Standard**, or **Stop <name of profile>** to stop the connection.

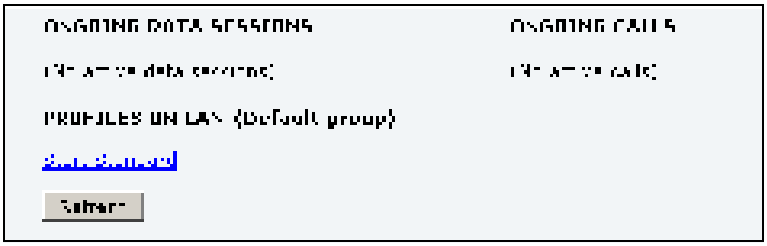


Figure 6-18: Web interface: Start a data connection

4. Click **Refresh** to update the current state of the connection(s). Note that there might be some latency when updating the connection status, you might have to wait and click **Refresh** again to update the Dashboard to the current state.

Note The PDP context for a data session is not activated before any unit in the LAN tries to communicate, e.g. sends a DHCP request. You can also remotely start a data connection, see *Remote activation of a connection using SMS* on page 6-87.

6.6 The phone book

6.6.1 General usage

The phone book is stored in the Configuration module. In the phone book you can:

- Add new names and phone numbers.
- Modify or delete existing names and phone numbers.
- Look up phone numbers.
- Look up short-dial numbers for easy dialing from a handset.

For information how to access the phone book and how to add, edit and delete phone book entries see the AVIATOR 700 User Manual.

6.6.2 View and edit the mobile and additional numbers[1]

The mobile numbers are the phone numbers to use when making a call to the terminal.

Note These numbers are not listed at delivery. Enter the numbers received from the Service and Airtime Provider.

To view the mobile numbers

To view the mobile numbers of the SBU, select **PHONE BOOK > Mobile numbers** from the left navigation pane.

Figure 6-19: Web interface: Phone book, mobile numbers (example, no Multi-voice)

1. Available for systems with Multi-voice and subscriptions with additional numbers.

To enter or edit the mobile numbers

To enter or edit the mobile numbers, click **Edit** at the bottom of the page, type in the numbers received from your Airtime Provider and click **OK**. If Multi-voice is part of your system, the additional numbers from your airtime provider can be entered in the web interface.

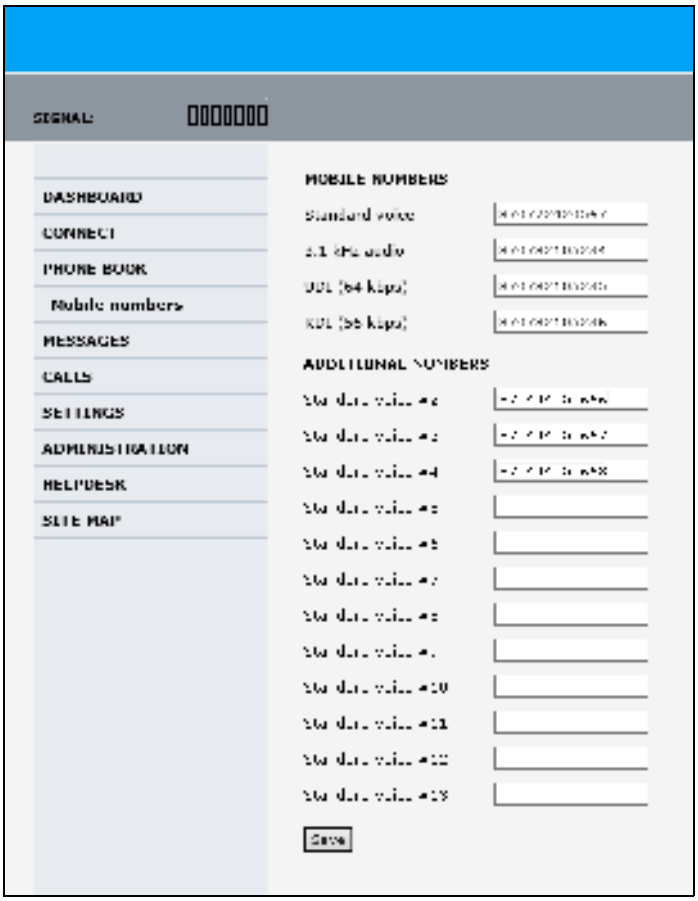


Figure 6-20: Web interface: Phone book, mobile numbers (example, with Multi-voice)

6.7 To set up the interfaces of the SBU

The following subsections are available:

- *The SETTINGS page*
- *Configure the LAN interface of the SBU*
- *WLAN interface of the SBU (option)*
- *Configure the Phone/Fax interface (2-Wire) of the SBU*
- *Configure the ISDN interface of the SBU*
- *Set the common interface settings of the SBU*
- *Set up call services*
- *Manage AVIATOR Wireless Handsets*
- *Configure the discrete I/O interfaces of the SBU*
- *Set the system type*
- *Configure RF settings of the SBU*
- *Set up the navigational input of the SBU*
- *Enable system options with FLEX keys*
- *Tracking*

6.7.1 The SETTINGS page

From the **SETTINGS** page you have access to the submenus for system settings and configuration.

- **LAN** to configure the settings of the local area network.
- **WLAN** to configure the wireless network adapter.
- **Phone/Fax** to configure the phone and fax interfaces.
- **ISDN** to configure the ISDN interface.
- **Common** to configure settings that are common for all interfaces.
- **IP handsets** to configure connected AVIATOR Wireless Handsets.
- **Discrete I/O** to configure the discrete inputs/outputs of the installation.
- **System type** to select the AVIATOR 700 system
- **RF settings** to configure the cable losses between the satcom antenna and the SBU.
- **External systems** to configure the external navigational system.
- **FLEX** for system options.
- **Tracking** to send position information to a server
- **Upload** to upload new application software to the SBU.

A text message on the screen informs you if you need to reboot the system to activate a new setting or configuration.

To access this page, select **SETTINGS** from the left navigation pane.

Select a submenu to continue the system configuration.

6.7.2 Configure the LAN interface of the SBU

Overview

The SBU has 6 LAN connectors plus 1 LAN maintenance connector on the SBU front plate.

The major part of the LAN parameters are set up in the network management pages, which require an administrator password. For information on these settings, refer to *LAN/WLAN network users* on page 6-54.

CAUTION! All connections to the LAN interface may be affected when you change the settings below. This also includes your own current connection.

This page is by default not protected by an admin password. You can limit access to this page for certain user groups, for further details see *Set up user permissions* on page 6-84.

Set up the LAN IP addressing

In the web interface you can set up the IP addressing between the SBU and devices connected to the SBU. The SBU has a built-in DHCP server which can be used to dynamically assign IP addresses to devices connected to the SBU.

You can also set up the local IP address used by the connected devices to access the SBU. The Local IP address is the IP address of the SBU. It is used for accessing the web interface. The IP address towards the BGAN network is assigned by Inmarsat and visible on the Dashboard when the connection is active.

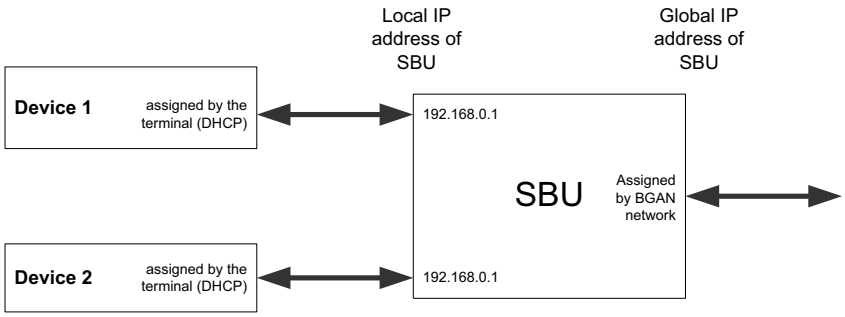


Figure 6-21: SBU IP addresses: Local and global IP addresses, default

Note **No router option**: If the SBU does not have the router option and works in single-user mode, only one device can be connected to it. This device cannot have a static IP address, it must use the DHCP server of the SBU.

To change the local IP address of the SBU do as follows:

1. From the left navigation pane, select **SETTINGS > LAN**.

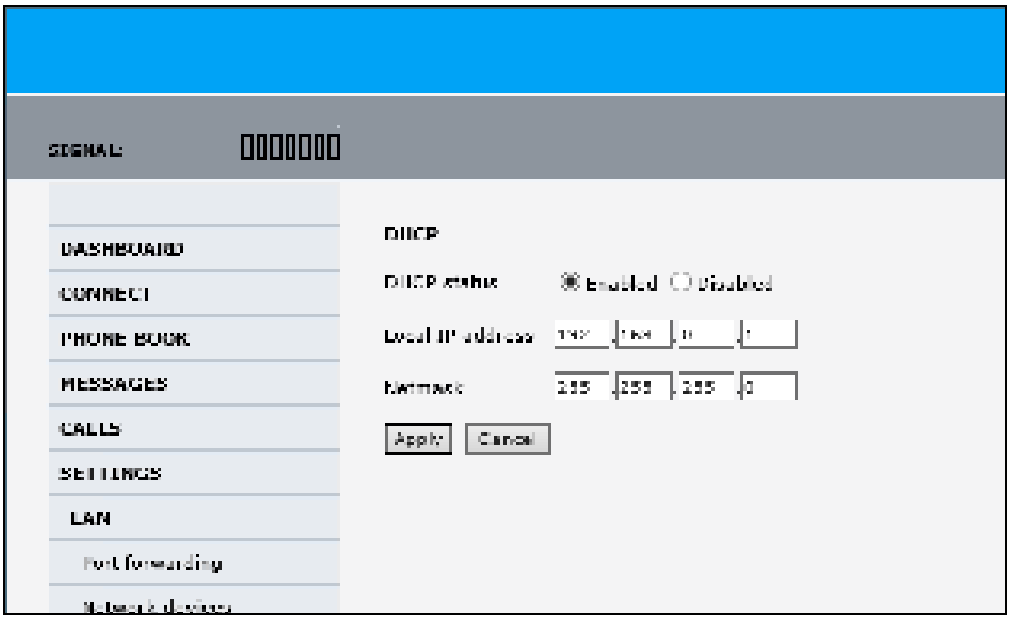


Figure 6-22: Web interface: Settings, LAN

2. At **DHCP status**, select **Enabled** (recommended), or **Disabled**.
   - **Enabled**: The SBU assigns dynamic IP addresses to devices connected to the SBU.
   - **Disabled**: You need to set up a static IP address in the connected device.
3. To change the **Local IP address** and the **Netmask**, type in the new address and netmask. By default, the address is 192.168.0.1 and the netmask is 255.255.255.0.
4. Click **Apply**.

Port forwarding

Port forwarding enables you to set up a server connected to the SBU while the terminal is in Router mode. Without port forwarding it would not be possible to contact the server from the Internet. If you want to use port forwarding, the global IP address of the SBU should be a static IP address. Check with your service provider for availability of a static global IP address. Note that if not agreed otherwise, the global IP address of the SBU will be dynamically assigned as the SBU signs on to the BGAN network.

For information on how to set the terminal in Router mode, see *Set up the network user groups* on page 6-56.

CAUTION! This page is by default not protected by an admin password. You can limit access to this page for certain user groups, for further details see *Set up user permissions* on page 6-84.

The following example shows how to allow internet access to a mail server (smtp) connected to the terminal.

The mail server in this example has the IP address 192.168.0.100.

1. Select **SETTINGS > LAN > Port forwarding** in the left navigation pane.

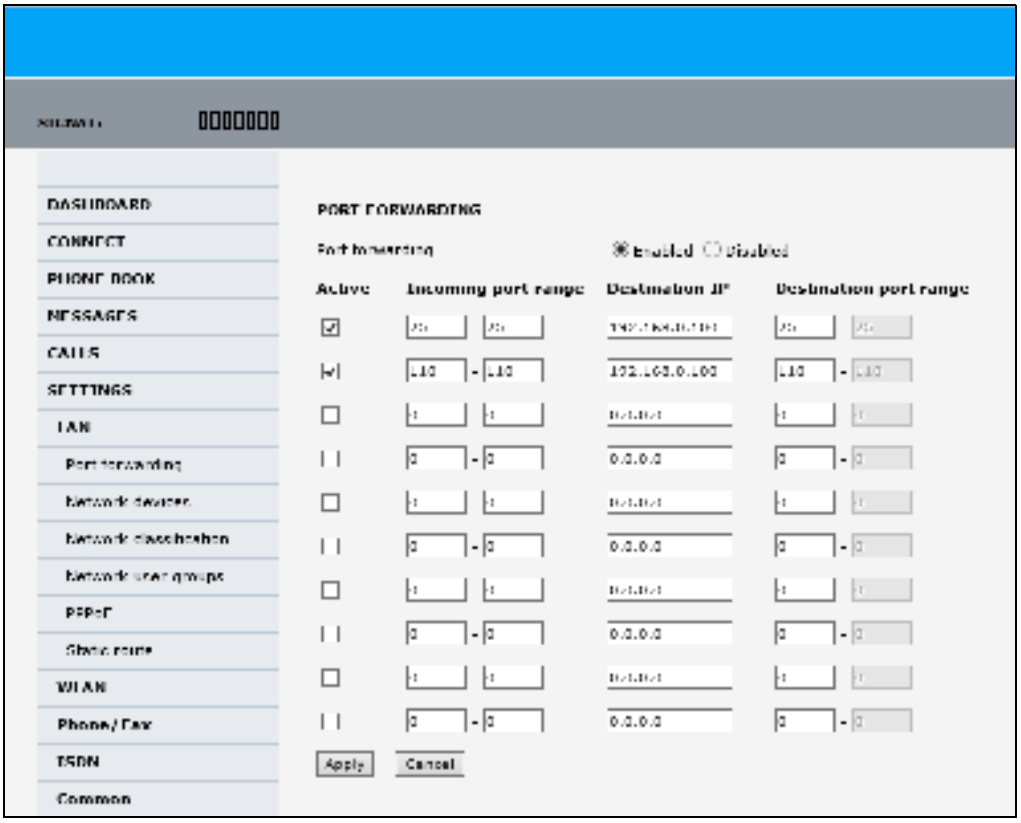


Figure 6-23: Web interface: Settings, LAN, Port forwarding

2. Select **Enabled** to generally enable port forwarding.
3. Type in the **Incoming port range**.
4. Type in the **Destination IP** address, which in this example is the IP address of the mail server: 192.168.0.100.
5. Type in the **Destination port range**.
6. Repeat step 3 to step 5 to set up port forwarding to additional servers.
7. In the **Active** column, select which ports should have port forwarding activated.
8. Click **Apply**.

You can now access the mail server from the Internet, using the external IP address of the SBU. For more information on setting an external IP address see step 6 in *Edit a network user group* on page 6-56.

6.7.3 WLAN interface of the SBU (option)

Note that the settings from the LAN window, except Enabled/Disabled, also apply for the WLAN interface. See *Configure the LAN interface of the SBU* on page 6-29.

Enable and configure the WLAN interface

To enable the WLAN interface, do as follows:

1. Make sure that the discrete input, i.e. **TP5 WLAN Enable** input, is wired correctly for WLAN enable. Read more about this in *Pins for non-configurable discrete inputs on the SBU* on page 5-67 and *WLAN pins* on page 5-42.
2. In the web interface on the page **SETTINGS > WLAN** select the status **Enabled**.

For systems without the built-in Wireless option (WLAN) the submenu will still be available in the web interface and the screen will show that the WLAN option is not enabled. To enable the WLAN option enter the FLEX key for this option in the submenu **Settings > FLEX**. The WLAN interface functions properly if both of the above conditions are fulfilled. To configure the WLAN interface, do as follows:

1. Select **SETTINGS** > **WLAN**.

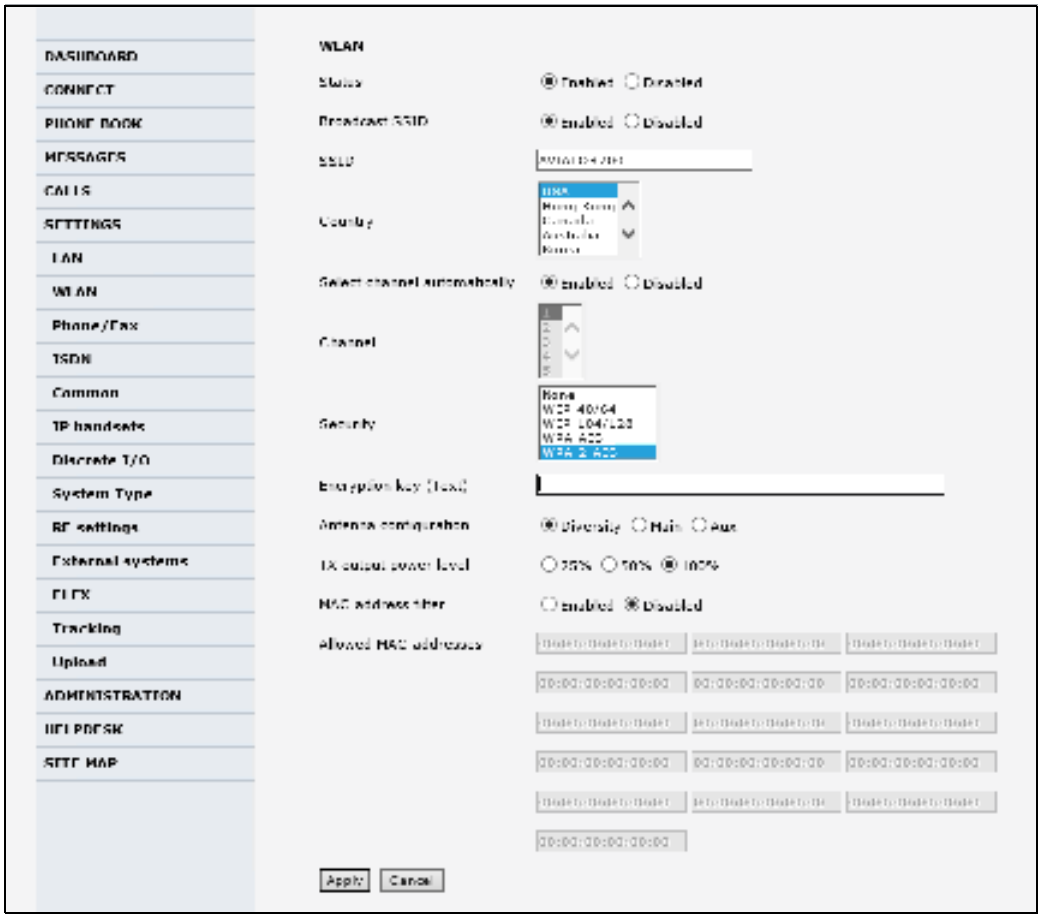


Figure 6-24: Web interface: Settings, WLAN

2. You can enable or disable the WLAN (default setting: **Enabled**).
3. For **Broadcast SSID**, select **Enabled** (default) or **Disabled**.

Enabled: your WLAN access point is shown to other users.
Disabled: your WLAN access point is hidden.

4. Type in the **SSID** of your choice or accept the default SSID, which is the name of the installed system: AVIATOR 700.
   The SSID (Service Set IDentifier) is the name of the wireless local area network. It is text with maximum 32 characters.
   All wireless devices on a WLAN must use the same wireless local area network in order to communicate with each other.
5. Select the **Country** for your present location. The default setting is USA. For a list of countries that can use WLAN with the setting USA see *Countries where the "US" country code applies* on page E-2.
6. If you want to let the system automatically find a channel set **Select channel automatically** to **Enabled**. Then the **Channel** list will be grayed out.
   If you have set **Select channel automatically** to **Disabled** you can set the **Channel** used for communication on the WLAN interface.
7. Select the **Security** standard. Select one of the following encryption standards:
   - None (default)
   - WEP-40/64, enter the encryption key in hexadecimal format.
   - WEP-104/128, enter the encryption key in hexadecimal format.
   - WPA-TKIP, enter the encryption key in text format.
   - WPA2-AES, enter the encryption key in text format.
8. Type in the **Encryption key** for the selected Security standard. This is not applicable if you have selected **Security mode None**.
9. In **Antenna configuration** you set whether you have two or one WLAN antennas, and how a single WLAN antenna is connected to the SBU:
   - **Diversity**: 2 WLAN antennas are connected
   - **Main**: A single WLAN antenna is connected to SBU TP A4
   - **Aux**: A single WLAN antenna is connected to SBU TP A2
10. **TX output power level:** You can control the maximum transmitted output power from the SBU rear receptacle TP A2 or TP A4:
    - 100% – 20 dBm, 100 mW
    - 50% – 17 dBm, 50 mW
    - 25% – 14 dBm, 25 mW
11. Select **Enabled** or **Disabled** next to MAC address filters.
    Enabled: You can set up a list of MAC addresses that are allowed access to your WLAN. Any device whose MAC address is not on the list will be denied access.
    Disabled: There will be no restrictions on MAC addresses.
12. If you have enabled MAC address filters, type in the **Allowed MAC addresses**.
    The list may contain up to 16 MAC addresses.
13. Click **Apply**.

To disable the WLAN interface

To disable the built-in WLAN interface, do as follows:

- Disable the WLAN interface using the **TP5 WLAN Enable** discrete input. Read more about this in *Pins for non-configurable discrete inputs on the SBU* on page 5-67 and *WLAN pins* on page 5-42.

or

- In the web interface go to **Settings > WLAN** and select **Disable**.

If the WLAN option is not enabled the page **Settings > WLAN** will still be available and the screen will show information that the WLAN option is not enabled.

6.7.4 Configure the Phone/Fax interface (2-Wire) of the SBU

Note By default all handsets connected to the system will ring on incoming calls. If you have connected a fax, set the incoming call type on that 2-wire interface to 3.1 kHz Audio to avoid that the fax rings and answers an incoming Standard call.

To configure this interface do as follows:

1. Select **SETTINGS** > **Phone/Fax** from the left navigation pane.

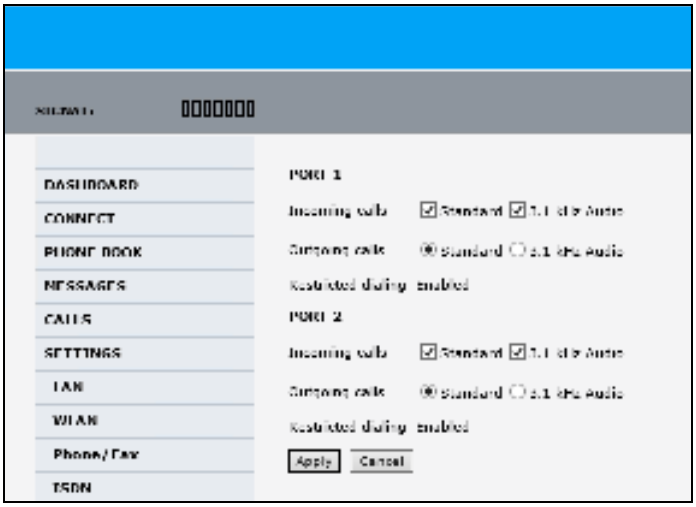


Figure 6-25: Web interface: Settings, Phone/Fax

2. For each Phone/Fax port, set the call type for incoming and outgoing calls.

   Note To identify Port 1 and Port 2 see the drawings of your specific installation. Mark the connectors in the air cabin accordingly.

   The call types are described in more detail in the AVIATOR 700 User Manual in the chapter Using a phone of fax machine.

   - For **Incoming calls**, you can check Standard or 3.1 kHz Audio or both.
     If you check both, any device connected to the Phone/Fax interface will react (ring) on incoming calls. [1]
     If you select only Standard, the Phone/Fax interface will only react on calls made to the Standard phone number, and not on calls to the 3.1 kHz Audio number.

- For **Outgoing calls**, you can select either Standard or 3.1 kHz Audio. The selected type will be used by default, if possible, for any outgoing call. Note, however, that fax machines and modems must use 3.1 kHz Audio.

Note You can override the default setting for outgoing calls by dialing 1* (force the call to Standard) or 2* (force the call to 3.1 kHz Audio) before the number. For further information, see the AVIATOR 700 User Manual.

3. Click **Apply**.

6.7.5 Configure the ISDN interface of the SBU

To configure the ISDN interface, do as follows:

1. Select **SETTINGS** > **ISDN**.

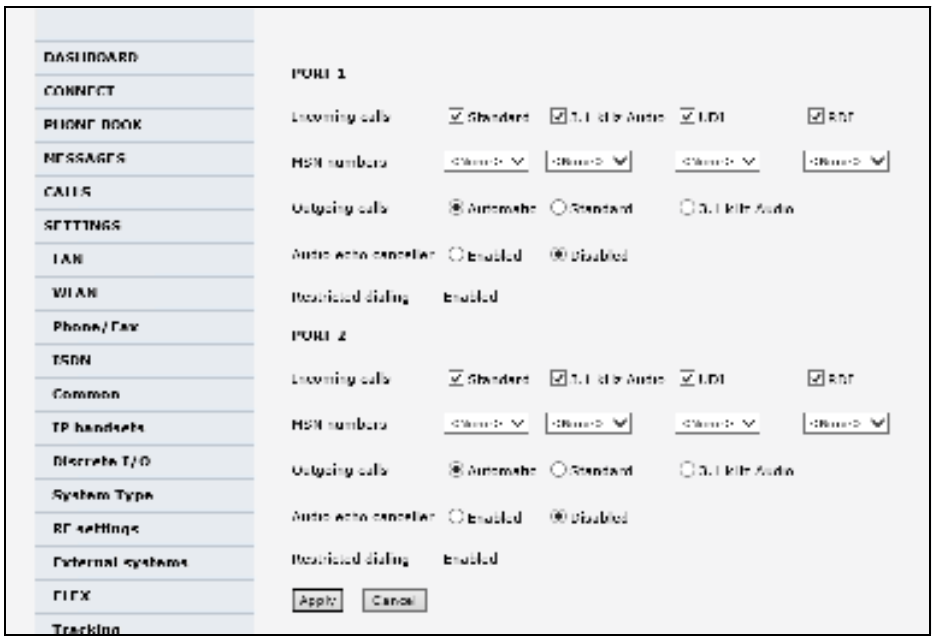


Figure 6-26: Web interface: Settings, ISDN

2. Set the call type(s) for incoming calls.
You can select Standard, 3.1 kHz Audio, UDI and/or RDI.[1]

Note Connected devices will only receive incoming calls with the call types that are selected here. For example, if only Standard is selected, and a G4 fax call (using call type UDI) arrives, a fax connected to the ISDN port will not receive the incoming call.

3. Set the MSN (Multiple Subscriber Numbering) numbers that are to be assigned to each call type. In most pieces of ISDN equipment you can program multiple subscriber

1.If Multi-voice is enabled and you have entered additional numbers in the phone book, you can assign an additional number to this interface. For more information see *Multi-voice (option)* on page 6-88.

numbers. The number programmed into the equipment should be the dial-in number that you wish that piece of equipment to answer.

Important If you set an MSN number to anything other than <None>, connected devices must be programmed with these MSN numbers.

Note that this setting only applies to the call type selected above the MSN number, and only if the connected device supports the call type used.

You have the following options with the MSN numbers:

- **<None>**. No MSN numbers are used. An incoming call is accepted in all devices connected to this port.
- **1***, **2***, **3* or 4***: If, for example, you select 1* at Standard call type, an incoming Standard call is accepted by all devices that are programmed with the number 1* and connected to the ISDN interface.
- **0401**, **0402**: These are local numbers for separate devices connected to the ISDN interface.
  An incoming call is accepted by devices that are programmed with the selected number and connected to the ISDN interface.

You can combine the MSN settings.

Example: You have two devices connected to the ISDN interface. One is programmed with the numbers 1* and 0401, the other is programmed with 1* and 0402.
In the web interface, you select the MSN number 1* under **Standard**.
If an incoming Standard call arrives, both devices will accept the call.
If you make a local call to one of the local numbers 0401 or 0402, only the called device will accept the call.

4. Set the call type for outgoing calls.
   - If you select **Automatic**, the call type will be determined by the calling device.
   - If you select **Standard**, all outgoing calls, except UDI/RDI, will use the call type Standard. If you make a 3.1 kHz Audio call it will be converted to a Standard call. Outgoing UDI or RDI sessions will be not be influenced by this setting.
   - If you select **3.1 kHz Audio**, all outgoing calls, except UDI/RDI, will use the call type 3.1 kHz Audio. If you make a Standard call it will be converted to a 3.1 kHz Audio call. Outgoing UDI or RDI sessions will be not be influenced by this setting.

   Note You can override the call type setting for outgoing calls by dialing one of the following prefixes before the number:
   - 1* (force the call to Standard)
   - 2* (force the call to 3.1 kHz Audio)

5. If you hear an echo in your handset and the handset does not have its own echo canceller, enable the **Audio echo canceller**.
6. Click **Apply**.

6.7.6 Set the common interface settings of the SBU

The settings under COMMON are common for all interfaces. Note, however, that in order to use the common Access Point Name for an interface, you must select **Common** for the APN setting when setting up the network user group.

Definition of Access Point Name (APN)

The APN is used by the network user to establish a connection to the required external network. This means that the SBU must know the APN in order to be able to connect to the external network. APNs are provided by the airtime provider.

The common APN

The common APN setting is defined here and can be selected for each network user group. If you are using the same APN for many network user groups, it is easier to define it once, and then simply select it for the relevant network user groups. Also, if you change the common APN at a later stage, it is automatically updated for all network user groups where the Common setting is selected.

To set up the common interface settings

To set up the Common interface settings do as follows:

1. Select **SETTINGS** > **Common**.

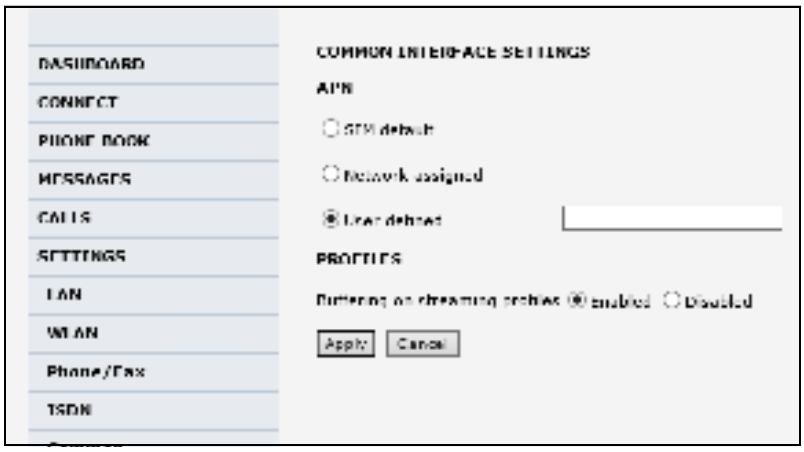


Figure 6-27: Web interface: Settings, Common

2. Select the **APN**. You have the following options:
   - **SIM default**. The APN is taken from the SIM card. This option is not possible with AVIATOR 700, because the APN is not in the SIM card at delivery.
   - **Network assigned**. The APN is assigned from the network.
   - **User defined**. Type in the APN. This is the recommended option.

   Note Contact your service provider for an APN or check the documentation received from the service provider for an APN.

3. At **Buffering on Streaming profiles**, select **Enabled** or **Disabled**.

- If you select **Enabled**, your Streaming connection will be buffered. This means that the transmission is slightly delayed in order to ensure a precise and continuous data stream.
- If you select **Disabled**, the Streaming connection will not be buffered. This means the data is delivered immediately, but may vary slightly in transmission speed.

4. Click **Apply**.

How to use the common APN

When you configure the APN for your individual network user group, select **Common** to use the setting from this page.

Where Common is selected in the individual network user groups, the setting will automatically be updated when the Common APN is changed.

6.7.7 Set up call services

The setup of call services is also common for all interfaces.

Note The SBU must be registered on the BGAN network before you can set up the call services in the web interface.

In the web interface you can set up the following supplementary services:

- *Call forwarding*
- *Call barring*
- *Call waiting*
- *Line identification*
- *Closed user group*
- *Local exchange*

Note that, depending on the network, some of these call service settings may prevent others from being activated.

The settings apply for all connected devices using a circuit-switched service.

Call forwarding

You can set up the SBU to automatically forward incoming calls to another phone number. To forward incoming calls do as follows:

1. Select **SETTINGS > Common > Call forward** from the left navigation pane.

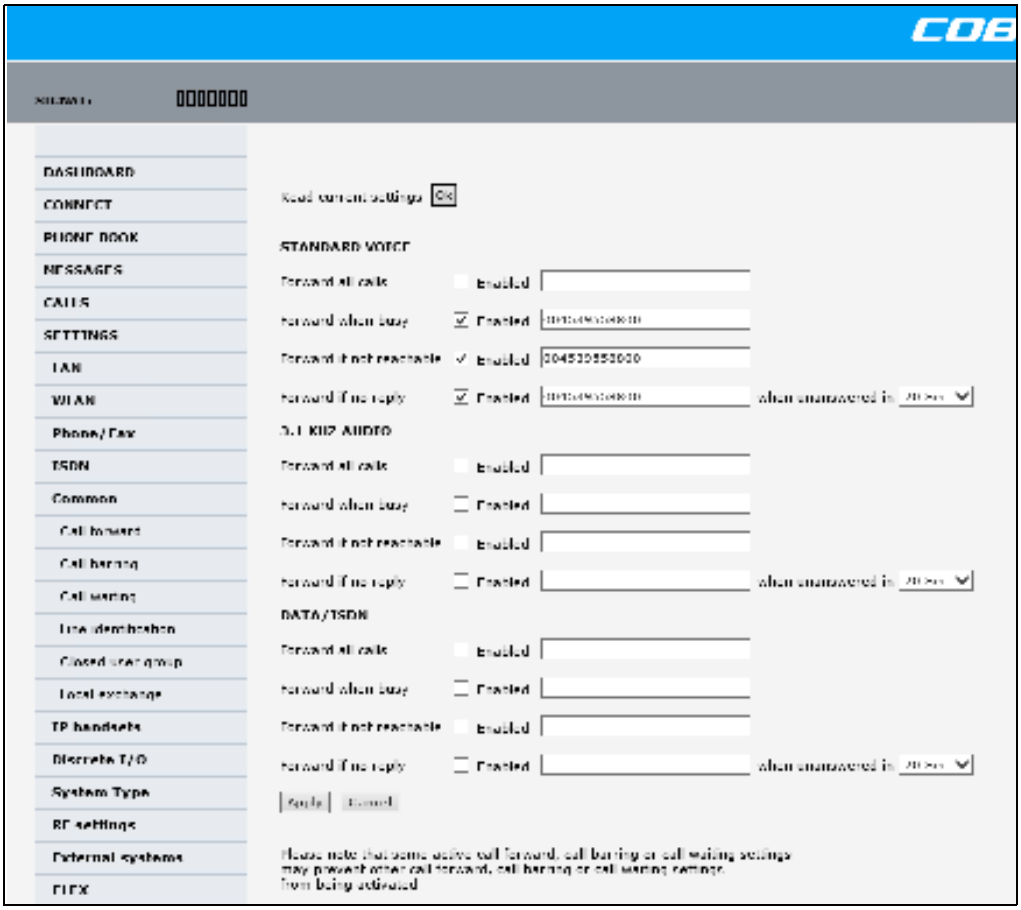


Figure 6-28: Web interface: Settings, Common, Call forward

2. Click **OK** next to **Read current settings** to display the phone numbers for call forwarding for the subscription. These numbers are operator controlled and come with your airtime subscription (default). A message saying **Operation in progress**, **please wait.** is displayed.

   Note Allow sufficient time for the system to read the current settings over the satellite connection.

3. For each call type, select **Enabled** next to the situation(s) in which you want to forward incoming calls.[1]
4. Next to the enabled items, you can type in a phone number to forward the call to.
5. If you have selected **Forward if no reply**, select from the drop-down list the period of time the system should wait before forwarding the call.
6. Click **Apply**.

1. When Multi-voice is enabled, the “Forward when busy” setting is not available for Standard voice.

Call barring

Do as follows to bar incoming and/or outgoing calls to and from the SBU:

1. Select **SETTINGS > Common > Call barring** from the left navigation pane.

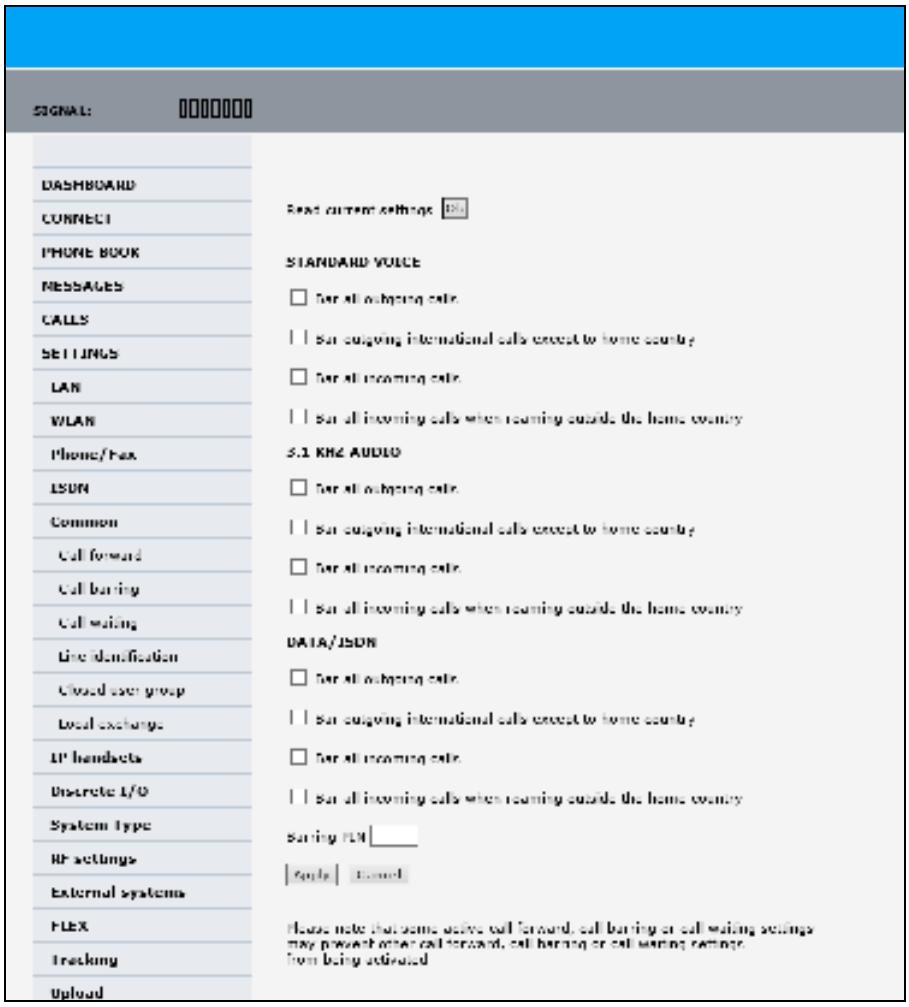


Figure 6-29: Web interface: Settings, Common, Call barring

2. Click **OK** next to **Read current settings**. A message saying **Operation in progress, please wait.** is displayed.

   Note Allow sufficient time for the system to read the current settings over the satellite connection.

3. For each call type, select which calls should be barred.
4. In the **Barring PIN** field, type in a PIN for your call barring setup.

   Note This is **not** the SIM PIN entered at startup, but a network PIN. Contact your airtime provider for a Barring PIN.

5. Click **Apply**.

Call waiting

You can set up whether or not you want to receive notification of waiting calls while you are making a call or transmitting data.

To receive a notification of waiting calls do as follows:

1. Select **SETTINGS > Common > Call waiting** from the left navigation pane.

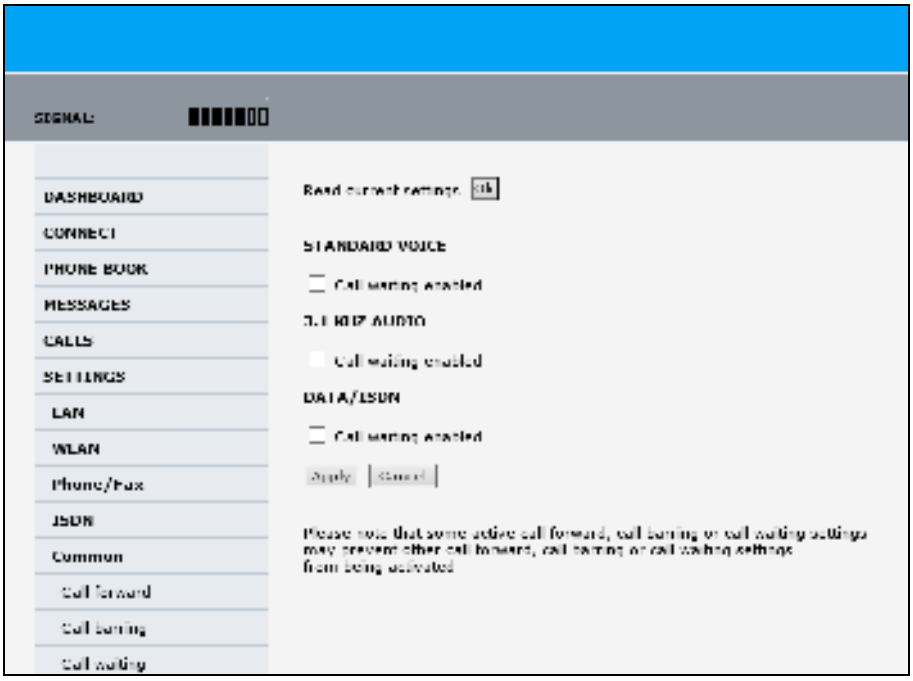


Figure 6-30: Web interface: Settings, Common, Call waiting

2. Click **OK** next to **Read current settings**. A message saying **Operation in progress, please wait.** is displayed.

   Note Allow sufficient time for the system to read the current settings over the satellite connection.

3. For each call type, select **Call waiting enabled** if you want to get notification of waiting calls while you are making a call or transmitting data.
4. Click **Apply**.

Line identification

You can set up the terminal to show your number when you are making a call or transmitting data. The number shown is the standard voice number of the airtime subscription.

To show the number when making a call or transmitting data do as follows:

1. Select **SETTINGS > Common > Line identification** from the left navigation pane.

Figure 6-31: Web interface: Settings, Common, Line identification

2. Select **Show my number** and click **Apply**.

Closed user group

Your subscription may include one or more closed user groups. A closed user group is a group of users permitted to make calls to each other but not to users outside the group. To define the settings for these user groups, do as follows:

1. Select **SETTINGS > Common > Closed user group** from the left navigation pane.

Figure 6-32: Web interface: Settings, Common, Closed user group

2. Type in your user group number(s) under **Group no**.
   Your airtime subscription lists your user group number(s).
3. Select which group(s) should be active.
   If you select **Active** for **Subscribed**, the group(s) included in your subscription will be active.
4. To allow outgoing access for the activated user group(s), select **Outgoing Access** under **SETTINGS FOR ACTIVE CLOSED USER GROUP**. Note that if you selected **Subscribed** above, this setting will not be used.
5. Select **Preferential** if you want the activated user group to be selected when a member of a user group does not specify the group number during call set up. Note that if you selected **Subscribed** above, this setting will not be used.
6. Click **Apply**.

Local exchange

If you want to call a specific phone connected to the terminal, use the local exchange function. With this function enabled, when you dial the mobile number of the terminal, a recorded message instructs you to dial the number for the local phone you want to call. Your call is then transferred to the requested phone and only the requested phone rings. If the local exchange is not used, incoming calls will per default cause all connected phones to ring.

Note The Local exchange function is not available if you have enabled the Multi-voice option.

For a detailed description how to set up the local exchange function of the SBU from a remote location see the AVIATOR 700 user manual.

6.7.8 Manage AVIATOR Wireless Handsets

Overview

The SBU uses WLAN to connect AVIATOR Wireless Handsets or other IP equipment. The AVIATOR 700 supports connection of up to 16 AVIATOR Wireless Handsets.

Each handset must have a local number in the range 0501 to 0516 as well as a unique password.

Note The handset with the local number 0501 is the master handset. This means you can start/stop data sessions from the SBU with this handset, if the function is allowed in the User permissions page. See *Set up user permissions* on page 6-84 for further information on user permissions.

Connect a new AVIATOR Wireless Handset

Note By default, a handset connected to the WLAN interface on the terminal is automatically registered in the terminal and assigned the first available local number.

Do as follows:

1. Connect the handset to the WLAN interface of the SBU. For a step-by-step procedure see the *AVIATOR Wireless Handset and Cradle User Manual*, section *Connecting the AVIATOR Wireless Handset to a wireless access point*.
2. When the handset display shows  in the upper right corner, the handset is ready to make a call. If you want to configure the handset or change the password, see the next section.

When the SBU and the AVIATOR Wireless Handset have recognized each other, a **Configure** link appears next to the handset in the **IP handsets** page of the web interface. This link provides direct access to the built-in web interface of the AVIATOR Wireless Handset. For further information, refer to the *AVIATOR Wireless Handset and Cradle User Manual*.

Set up the AVIATOR Wireless Handset

To set up an AVIATOR Wireless Handset, do as follows:

1. Select **SETTINGS > IP handsets**.

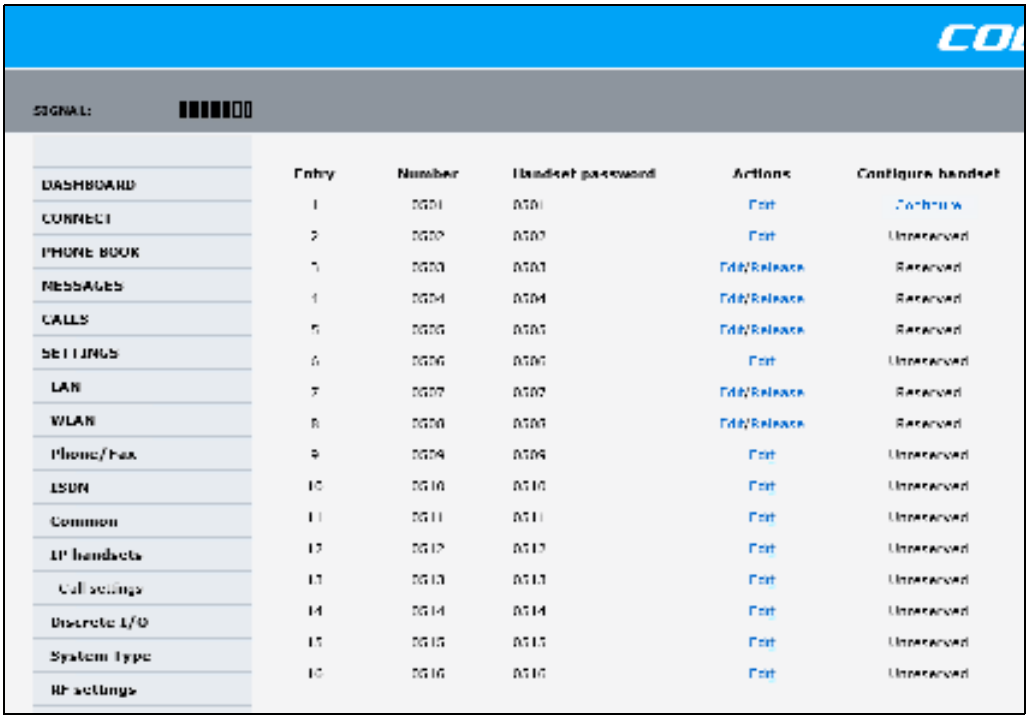


Figure 6-33: Web interface: Settings, IP handsets

2. Select **Edit** next to a handset to change the password of the handset.
   Remember that you must enter the same password and local number (user name) in the handset. Use the display menu system to enter the local number and the password you just entered in the web interface. Do as follows:
   1. Enter the menu system and select **SIP** to get the list of profiles.
   2. Select the **BGAN** profile and select **Options**.
   3. Select **Edit/View** and change the user name and password.

   Note that the user name is also the local number for the handset.
3. If you want to remove a handset from the list, click **Release** under **Actions** (the Release link only appears when the handset is disconnected).
   When a handset is removed from the list, you can no longer access the SBU with this handset.
4. Select **Configure** next to a handset to access the built-in web interface of the AVIATOR Wireless Handset.

   Note You can only access the web interface of the handset if **Web server** is enabled under **Settings > Web server** in the handset menu (default enabled).

   The web interface of the handset opens. It is very similar to the web interface of the SBU, but has a handset icon in the top left corner.

With the web interface of the IP handset you can access the internal settings of the handset. For further information, refer to the *AVIATOR Wireless Handset and Cradle User Manual*.

Set the call types for AVIATOR Wireless Handsets

On this page you set the call type and you can see whether **Restricted dialing** is enabled for each handset. For information how to set up restricted dialing see the AVIATOR 700 user manual.

To set the call types for AVIATOR Wireless Handsets, do as follows:

1. Select **SETTINGS > IP handsets > Call settings**.

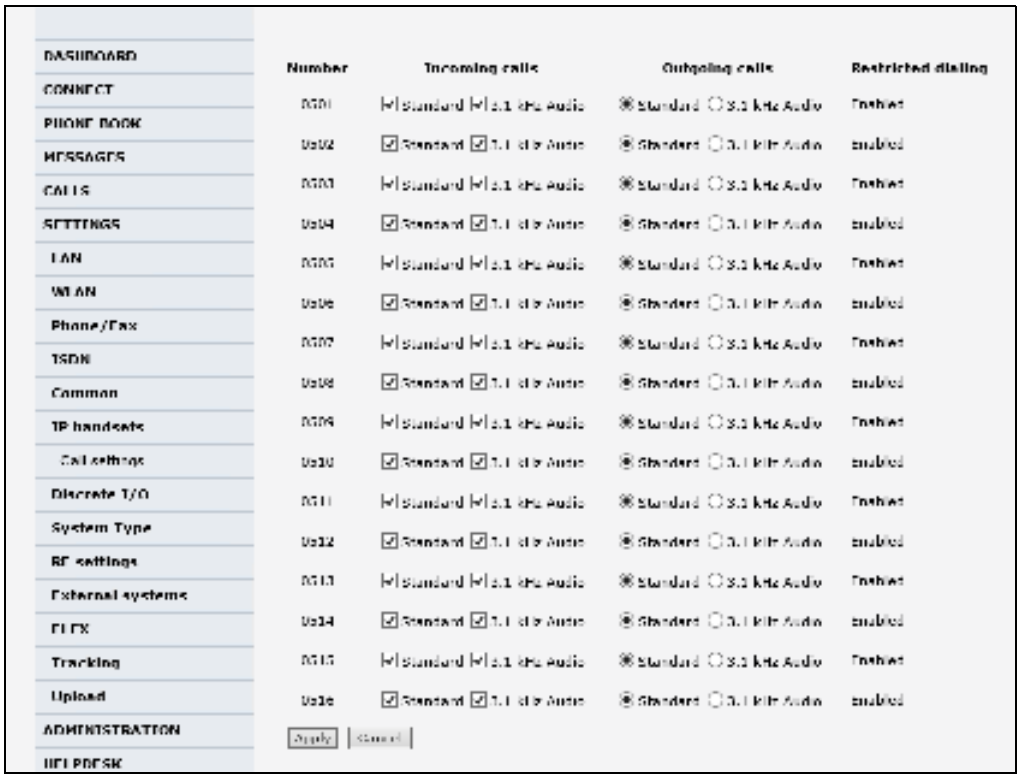


Figure 6-34: Web interface: Settings, IP handsets, Call settings

2. For each handset, select the call types you want to enable for incoming and outgoing calls.
   The call types are described in more detail in the User Manual.
   - For **Incoming calls**, you can check Standard or 3.1 kHz Audio or both. If you check both, the handset will react (ring) on any incoming call. Example: If you select Standard, the handset will only react on calls made to the Standard phone number.[1]
   - For **Outgoing calls**, you can select either Standard or 3.1 kHz Audio. The selected type will be used by default, if possible, for any outgoing call.
3. Click **Apply**.

1.If Multi-voice is enabled and you have entered additional numbers in the phone book, you can assign an additional number to each IP handset. For more information see *Multi-voice (option)* on page 6-88.

6.7.9 Configure the discrete I/O interfaces of the SBU

Overview

The SBU has 4 annunciators, 1 chime/lamp inhibit and 5 non-configurable discrete inputs. The non-configurable discrete inputs are SBU nOn (remote on/off), SBU Enable, WLAN Enable and two for Automatic Test Equipment (ATE). The ATE inputs are only for factory use, do not connect them.

Each I/O pin that can be configured is displayed in the web interface. For more information on the pins TP (Top Plug) and BP (Bottom Plug) see *Pin-out for SBU rear receptacle (top plug)* on page 4-17 and *Pin-out for SBU rear receptacle (bottom plug)* on page 4-18.

The functions of the I/O pins are as follows:

- **Pin TP13**: **Input. Chime/Lamps Inhibit Input**.
  This discrete input is used to inhibit Satcom activation of the chime and call lights during take-off and landing.
- **Pin TP27**: **Output. Annunciator #3 "Service Available".**
  Default behavior: Active low when the SwiftBroadband Service is logged on
- **Pin TP28**: **Output. Annunciator #1 "Incoming call".**
  Default behavior: Active low when a handset is ringing.
- **Pin TP29**: **Output. Annunciator #2 "SBU Failed".**
  Default behavior: Active low whenever a BITE with severity essential or fatal is active on the SBU.
- **Pin BP1**: **Output. Annunciator #4 "Message received"**
  This discrete output can be used to indicate that there is an unread message in the SBU.
  Default behavior: Active low.

Set the discrete I/O interfaces

You can enable and set some of the discrete I/Os in the web interface. To set these, do as follows:

1. Select **SETTINGS > Discrete I/O**.

Figure 6-35: Web interface: Settings, Discrete I/O

2. For each pin you want to use, select **Enabled**.
3. For each pin, select if the pin should be **Active high** or **Active low**.
4. For Call output you can select which incoming calls will activate the external ringer (Discrete I/O TP28: Incoming call).
5. Click **Apply** to save the new settings.

6.7.10 Set the system type

During the initial configuration of the system you must assign the system type, that is the AVIATOR 700 system that you have bought. You can typically only select the system type purchased. The **Reset** functionality is mainly used for support purposes or when the system type is changed.

To select the system type, do as follows:

1. Select **SETTINGS > System Type**.

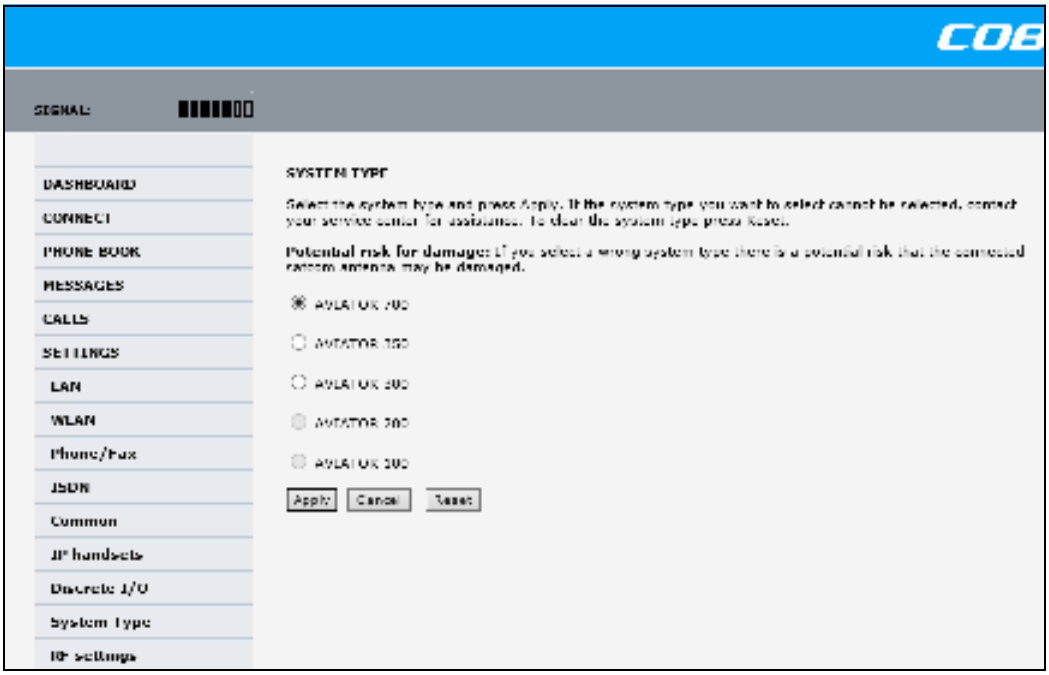


Figure 6-36: Web interface: Settings, System Type

2. Select the system type for the installation.

> **CAUTION!** Selecting a wrong system type may cause damage to the satcom antenna or GPS antenna. If the system type purchased can not be selected, please contact the supplier of your AVIATOR 700 system.
>
> **Do not try to use a different system type!**

3. Click **Apply** to save the new setting.

6.7.11 Configure RF settings of the SBU

Before you can configure the RF settings you must select the system type.

You must configure the AVIATOR 700 installation with the specific cable losses of the installation.

To configure the RF settings, do as follows:

1. Connect to the Maintenance connector on the front panel of the SBU and enter the web interface (default: http://192.168.0.1)
2. If prompted, confirm that the system is an AVIATOR 700 system.
3. From the left navigation pane select **SETTINGS > RF settings**.

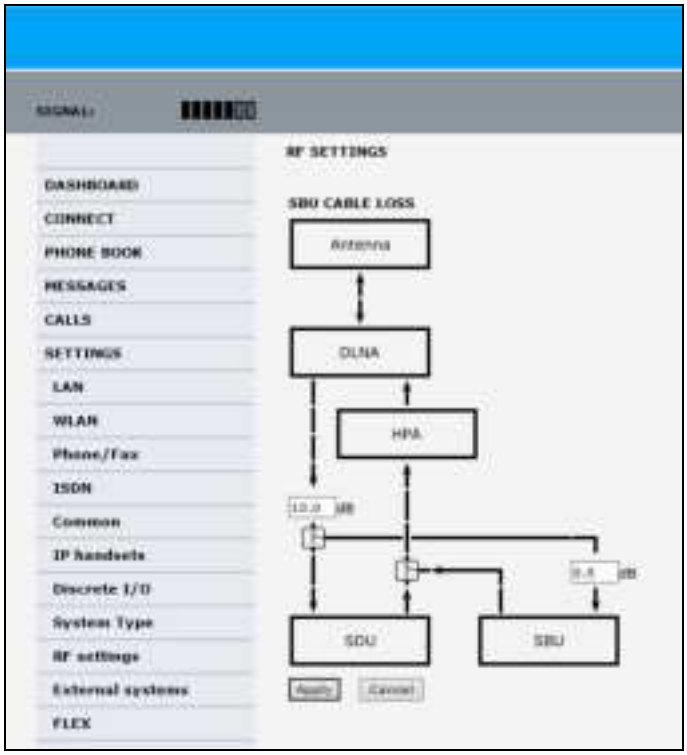


Figure 6-37: Web interface: RF settings

4. Below **CABLE LOSS** enter the cable loss for the cables between the
   - DLNA and the RX Power Splitter
   - RX Power Splitter and the SBU

   The sum of the two cable losses must be equal or less than 21.5 dB. These cable loss values are without losses from the RX splitter and TX combiner.
5. Click **Apply** to save the new settings.

6.7.12 Set up the navigational input of the SBU

Before you can configure the navigational input you must select the system type.

The AVIATOR 700 supports IRS or GPS only.

For further information on supported navigational systems see *About satcom antenna steering* on page 5-6.

ARINC 429 Speed can individually be set to high or low speed on the primary and secondary input, depending on your configuration. For redundancy reasons the system supports a secondary source, in case the primary source fails.

To set up the navigational input, do as follows:

Note Make sure that you configure the primary and secondary IRS to the correct speed in your configuration. This is essential to provide the necessary navigation data needed.

1. Connect to the Maintenance connector on the front panel of the SBU and enter the web interface (default address: http://192.168.0.1)
2. If prompted, confirm that the system is an AVIATOR 700 system.
3. From the left navigation pane select **SETTINGS > External systems**.

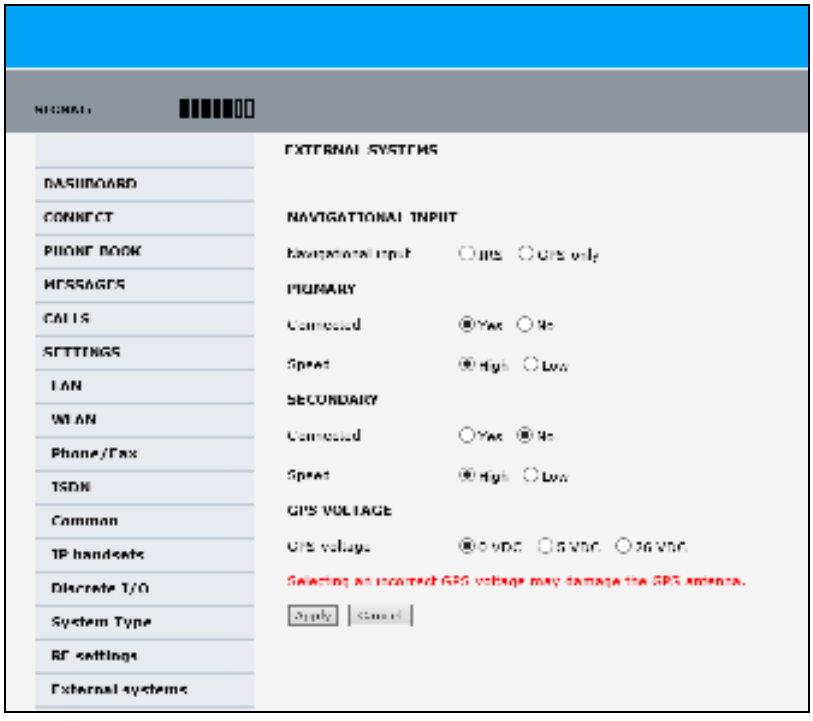


Figure 6-38: Web interface: Settings, External systems

4. For **NAVIGATIONAL INPUT** select one option.
5. Only for IRS: For **Primary** and **Secondary** select **Connected** and **Speed**.
6. Only for IRS: If you do not have second navigational input source available you must set **Connected** of **SECONDARY** input to **No**.

7. **GPS Voltage**: If GPS only is selected and power to the GPS antenna is provided by the SBU - apply the correct GPS voltage.
8. Click **Apply** to apply the new settings.

6.7.13 Enable system options with FLEX keys

On the FLEX page you can view the options for your system that are currently enabled or disabled. Enabling the purchased options is typically done at the factory. You can buy options at a later stage and open up for them by entering a FLEX key sequence for the specific built-in option.

To enable a built-in option, do as follows:

1. Connect to the Maintenance connector on the front panel of the SBU and enter the web interface (default: http://192.168.0.1).
2. From the left navigation pane select **SETTINGS > FLEX**.

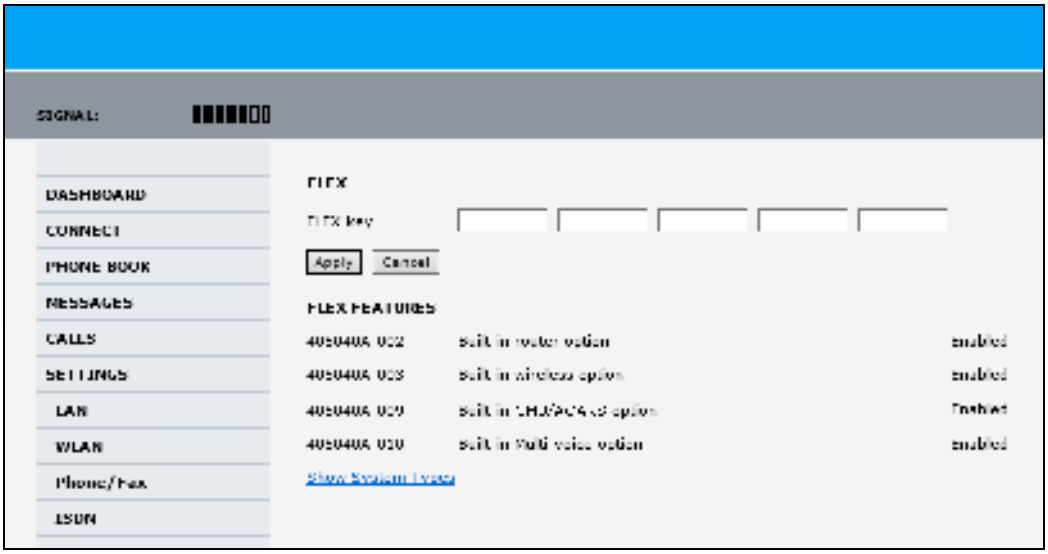


Figure 6-39: Web interface: Settings, FLEX (example)

3. Have the FLEX key ready and enter it into the insert fields.
4. Click **Apply** to enable the new option.
5. Click **Show System Types** to display the system types and their status (enabled or disabled).

6.7.14 Tracking

With tracking you can set the SBU to send reports with current position information at specified time intervals or distances to a server address. To set up tracking, do as follows:

1. Select **SETTINGS**, **Tracking**.

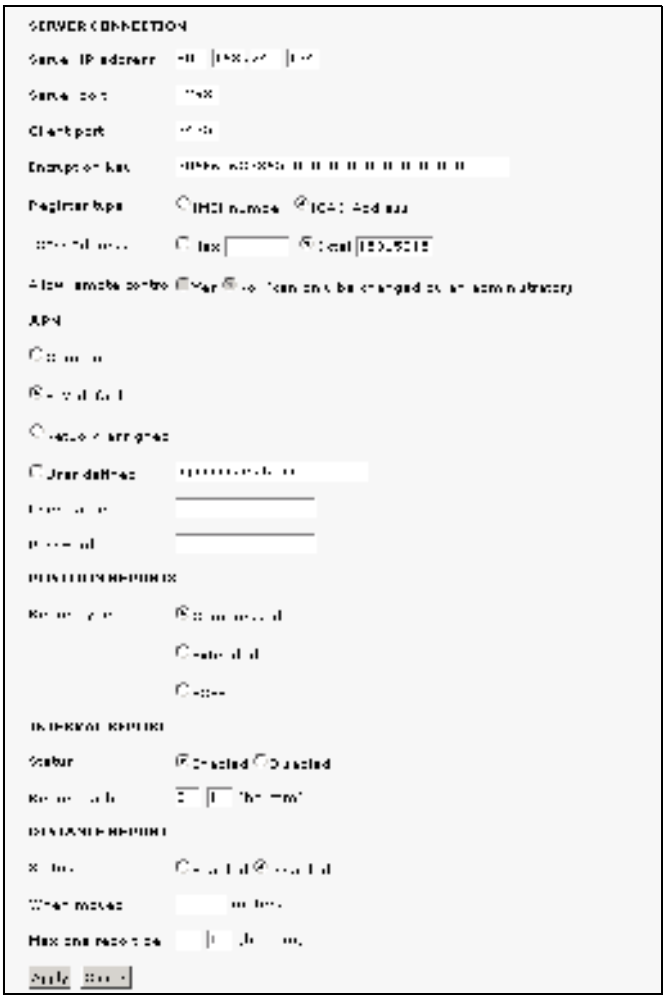


Figure 6-40: Web interface, Settings, Tracking

2. The information in the sections **SERVER CONNECTION** and **APN** must be provided by your airtime provider.
3. In **POSITION REPORTS** you can select among the following:
   - **Compressed**: Aircraft's position with latitude and longitude.
   - **Extended**: Aircraft's position latitude, longitude, heading, speed and UTC time.
   - **ECEF**: Aircraft's position in x,y,z coordinates and a velocity vector.
4. In **INTERVAL REPORT** and **DISTANCE REPORT** you can enable the respective report and set a report interval or distance.
5. Click **Apply** to save the settings.

6.8 LAN/WLAN network users

6.8.1 Introduction

With the built-in router functionality the system offers a flexible use of the data channel of the BGAN service. You can configure the use of the data channel by defining network user groups and profiles. The following picture gives an overview of the parameters involved.

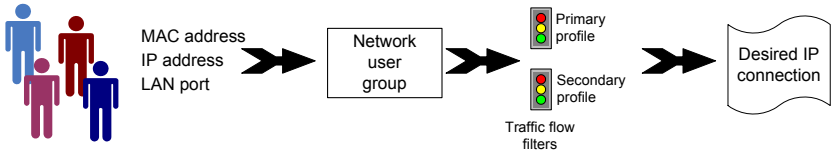


Figure 6-41: Overview over network user groups and traffic flow filters

The network user group you belong to is determined by one or more of the following:

- the IP address of the device you are using
- the MAC address of the device you are using
- the LAN port you connect to

A connected IP device will automatically be assigned to the default network user group, if it is not specified otherwise.

For specific purposes like video streaming, a server on the network, a fixed IP address on the connected device or changing the startup mode of a connection, you must set up network groups with specific primary and/or secondary profiles. How to do this is described in the following sections.

Network user groups

The network management system divides the users of the SBU into network user groups. Each network user group has a profile which determines how the users connect to the Inmarsat BGAN network. The network user groups can allow or restrict certain services for different users.

For example, you may want to define:

- one network user group allowing both Standard and Streaming connections,
- one network user group for Internet, e-mail and VPN, allowing Standard connections,
- one network user group for remote management of systems. This would be a direct Standard connection (Bridge mode).

You can have up to 11 network user groups and global IP addresses.

Necessary steps when managing network users

The steps necessary for managing network users include:

1. **Defining a network user group.** See *Set up the network user groups* on page 6-56.
   The network user groups determine settings such as:
   - QoS (Standard/Streaming),

- IP addressing (Static or Dynamic, this is decided by the SIM card setup and the service provider)
- Internet access mode (Router Mode, Bridge Mode or No Internet Access)

2. **Identifying a network device.** See *Manage network devices* on page 6-59. The network devices are identified by their IP address, MAC address and (optionally) device name.
3. **Associating the network user group and the network device.** See *The network classification table* on page 6-60. The network classification table determines which devices should belong to which network user group. When a network device is connected, the SBU runs through the network classification table to check if the new connection matches any of the entries in the table. When a match is found, the SBU establishes a packet data connection (PDP context) with the settings determined for the belonging network user group, and the device is ready for use with the SBU.

Access to the network management settings

Access to the network management settings requires an administrator password. The default user name is **admin** and the default password is **1234**.

The administrator can create and manage network user groups and set up a network classification table defining priorities for devices, network user groups and LAN ports.

Important All user connections to the LAN interface may be affected when you change the settings below, including your own current connection.

6.8.2 Set up the network user groups

Overview

A network user group, in this context, is a group of network users sharing the same Quality of Service profile and network parameters.

There are 11 configurable network user groups. For the Default network user group, certain settings are locked, to make sure there is always one functional network user group available. For example, the Default network user group does not allow you to select a Bridge mode connection.

Note You cannot delete network user groups. If you do not want to use them, click **Edit** and select **Disabled** at **Status** in the **NETWORK USER GROUP** field.

Edit a network user group

The default setting of this network user group is a standard IP data connection with automatic IP address allocation and automatic activation of the connection.

Note For further explanation of the terms used below, see *Definitions for network terms* on page 6-62.

To edit a network user group, do as follows:

1. Select **SETTINGS > LAN > Network user groups**.
   If prompted, enter the administrator user name and password. The default user name is **admin** and the default password is **1234**.
   The following screen shows the 11 user groups available and their current status, Internet connection type, and whether automatic activation is enabled or disabled.

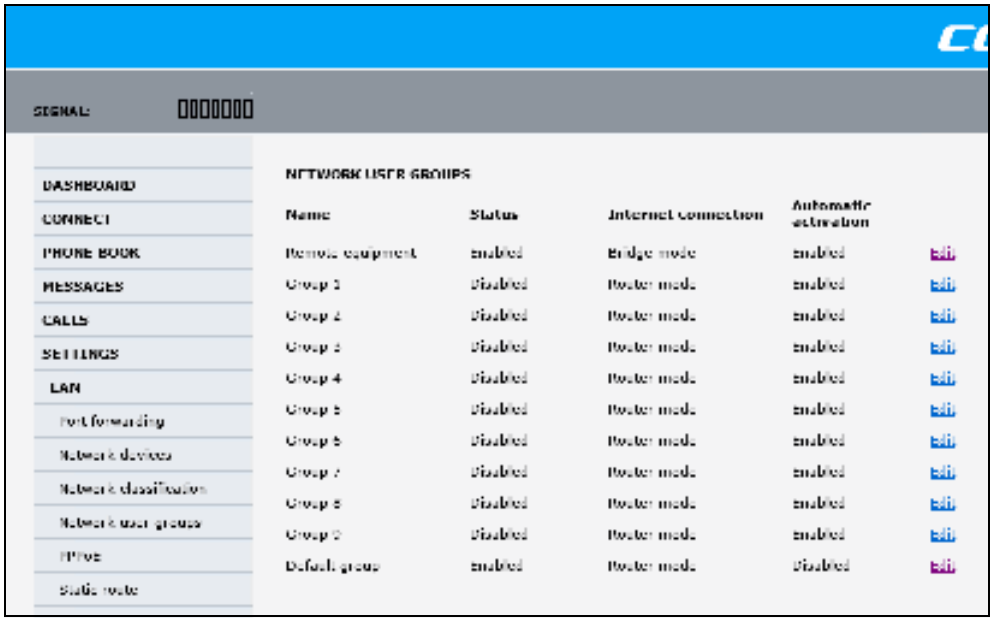


Figure 6-42: Web interface: Settings, LAN, Network user groups

2. Click **Edit** next to the network user group you want to set up.

Note

Changes to the status and internet connection only take effect after reboot of the SBU. This is also valid if a user wants to change the network user group, then the SBU must be restarted before the user has access to the new network user group.

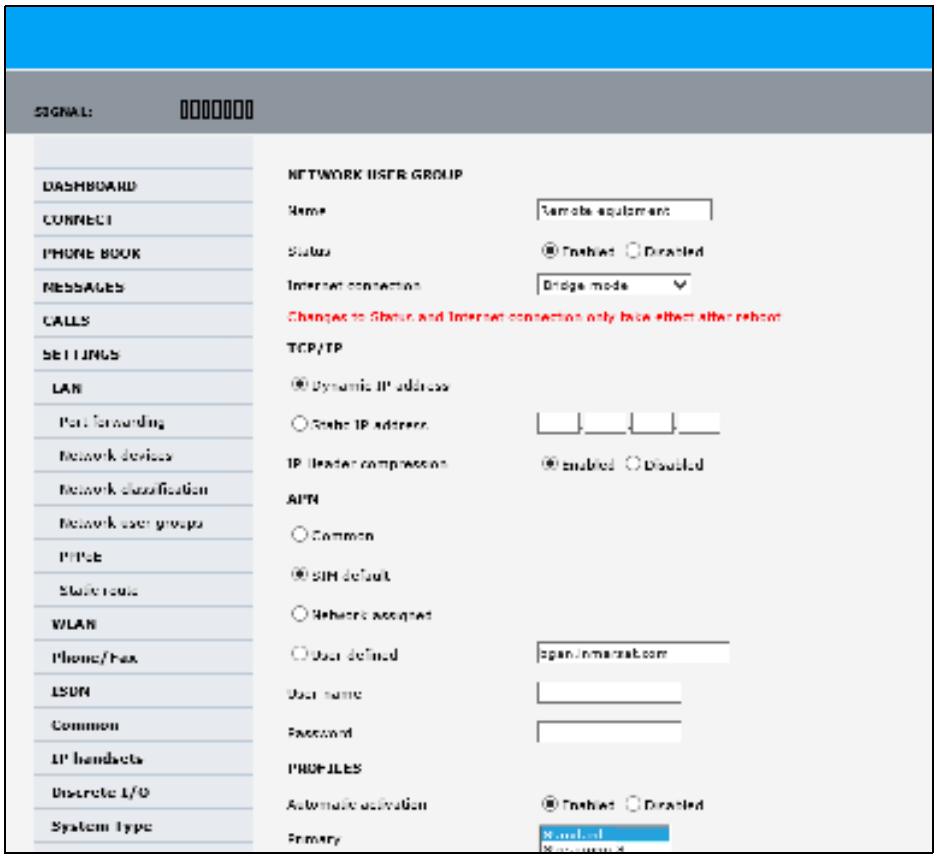


Figure 6-43: Web interface: Settings, LAN, Network user groups, Edit

3. Type in a name for the group.
4. Select **Enabled** or **Disabled**.
5. Select the type of **Internet connection**.
   - **Router mode** means the connection will be shared with other users, and the NAT module of the SBU will make the necessary address translations. Read more about NAT in *NAT (Network Address Translation)* on page 6-63. Use this mode if one or more computers are connected using the LAN interface, and the SBU should acts a router.
   - **Bridge mode** is an exclusive connection, it is not shared with other users and NAT is disabled. Use the Bridge mode together with a network classification entry that selects a single computer (see *The network classification table* on page 6-60). The SBU acts a a bridge for this network user group.
     This mode is not available in the Default network user group.
   - **No internet access** means no connection to the Internet is allowed. Use this setting e.g. for IP handsets, where an Internet connection is not required. The external voice connection is still available; this setting only affects communication over the Internet.

6. Select **Dynamic IP address**.
   This is the IP address used externally on the satellite network.
   If you want to use a **static IP address**, and your subscription allows it, you must still leave this setting at **Dynamic**. Then select **SIM default** in step 8 and type in the APN user name and password from your provider in step 9.
   Your SBU will then use the static IP address set up for your SIM card.

   Note Typing in a static IP address is currently not supported by the SwiftBroadband network.

7. Set **IP Header compression** to **Enabled** or **Disabled**.
   For information on IP Header compression, see *Header compression* on page 6-62.

8. Select the source of the **APN** (Access Point Name).
   You have the following options:
   - **Common**. The APN is taken from the Common APN defined under SETTINGS > Common. Refer to *Set the common interface settings of the SBU* on page 6-37.
   - **SIM default**. The APN is taken from the SIM card. If you want to use a static IP address on the external network, select this option either here or in the Common setting.
   - **Network assigned**. The APN is assigned from the network.
   - **User defined**. **This is the preferred option.** Type in the APN. APNs are provided from the Airtime Provider. Use this option if there is no automatic provisioning for a static IP address from the service provider.

9. If your APN uses a password, type in the user name and password provided from the Airtime Provider.

   Note If you are going to use the static IP address from your SIM card, the user name and password are mandatory! See the documentation for the airtime subscription from the service provider. See step 6 above.

10. At **Automatic activation** select whether the profile selected in the next step should be activated automatically or manually.

    Note If the selected primary profile is a Streaming profile, this setting has no effect. Streaming profiles must always be activated manually from the Dashboard.

    - **Disabled** means you can activate/deactivate the profile from the Dashboard.
    - **Enabled** means the profile is activated automatically.

11. Select the **Primary profile**.
    Select a profile from the **Primary** scroll list. This profile is used by this network user group as a first choice, when possible.
    There are several predefined profiles: Standard, Streaming 8, Streaming 16, Streaming 32, Streaming 64 and Streaming 128. Additionally, you can define your own custom profiles or any newer ones, Inmarsat defines.

    Important If you have selected and started a Streaming connection as your primary profile, the LAN interface will be running a Streaming connection until you stop it or disconnect the interface.

For further information on profiles and traffic flow filters, see *To use profiles* on page 6-75 and *To use traffic flow filters* on page 6-79.

12. Select the **Secondary profile**.
    To select more than one secondary profile, press and hold **Ctrl** or **Shift** while selecting.

    Note If you have selected both a primary and one or more secondary profiles you must define a traffic flow filter before you can establish a valid connection.

    The Context Identifiers (CIDs) for the selected primary and secondary profiles are listed under **Profile CIDs**.

13. Click **Apply**.

Note that changes to the status and the Internet connection type of a network user group first take effect after rebooting the AVIATOR 700 SBU.

6.8.3 Manage network devices

Overview

A network device, in this context, is an Ethernet hardware device, identified by its unique MAC address.

When a network device with dynamic IP address is connected to the SBU, it is automatically listed in the Network devices list.

View the list of network devices

To view the list of network devices, select **SETTINGS > LAN > Network devices**. All network devices that have been connected to the SBU are listed here.

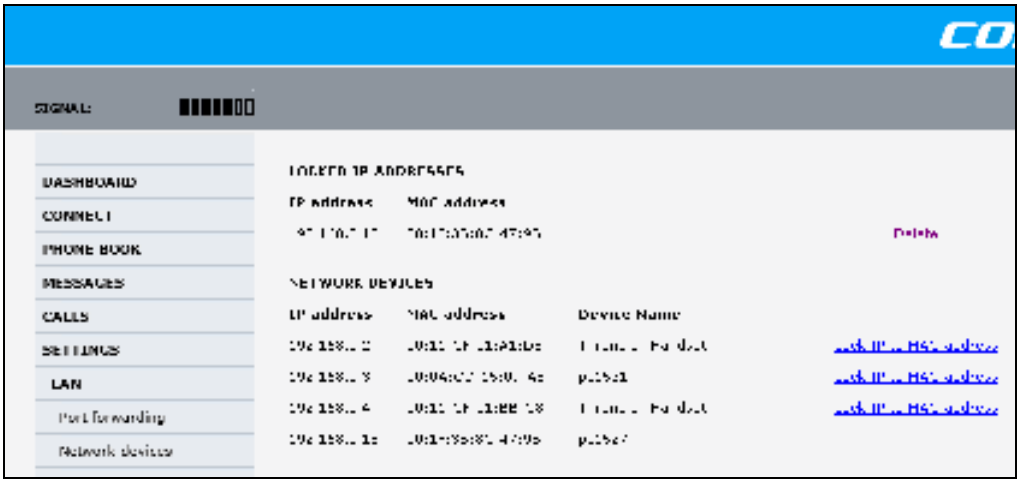


Figure 6-44: Web interface: Settings, LAN, Network devices

Lock an IP address to a MAC address

When the device is locked to an IP address, the SBU will always assign this IP address to the device with this MAC address (if DHCP is enabled and the Internet connection is in Router mode, and not a Bridge mode connection).

To lock an IP address to a MAC address, do as follows:

1. If prompted, log in as an administrator. The default user name and password are **admin** and **1234**.
2. To lock a device to its current IP address, click the link next to the device. The device is then locked to the current IP address and added to the list of locked IP addresses at the top of the page.
3. To unlock a device from the IP address, click **Delete** next to the device in the **LOCKED IP ADDRESSES** list.

6.8.4 The network classification table

Overview

The network classification table is used to define which network devices, IP addresses and/or LAN ports are associated with which network user groups.

Each entry in the table shows MAC address, IP address, LAN port and network user group.

When a network device is connected, the SBU runs through the network classification table to check if the new connection matches MAC address, IP address and LAN port in any of the entries in the table. When a match is found, the SBU establishes a PDP context with the settings of the network user group assigned in the matching entry. The device is now ready for use with the SBU.

Add or edit an entry in the network classification table

The network classification table shows which devices are associated with which LAN ports and network user groups. An Asterisk (*) is a “wild card”, meaning that any value is accepted.

You can add, edit and delete entries in the network classification table.

To add a new entry to the table or to edit an existing entry, do as follows:

1. If prompted, log in as an administrator. The default user name and password are **admin** and **1234**.

2. Select **SETTINGS > LAN > Network classification**.

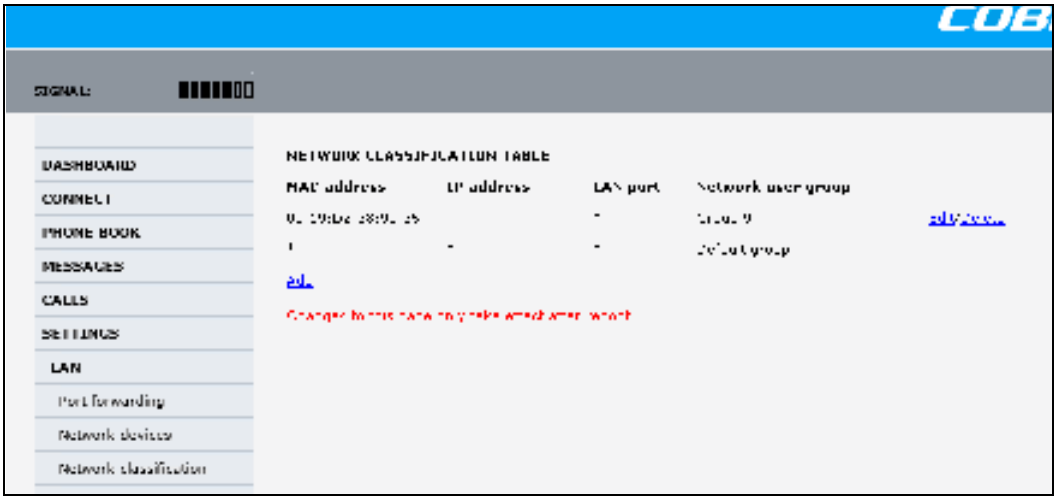


Figure 6-45: Web interface: Settings, LAN, Network classification table

3. Click **Edit** next to the entry you want to edit, or click **Add** at the bottom of the list.

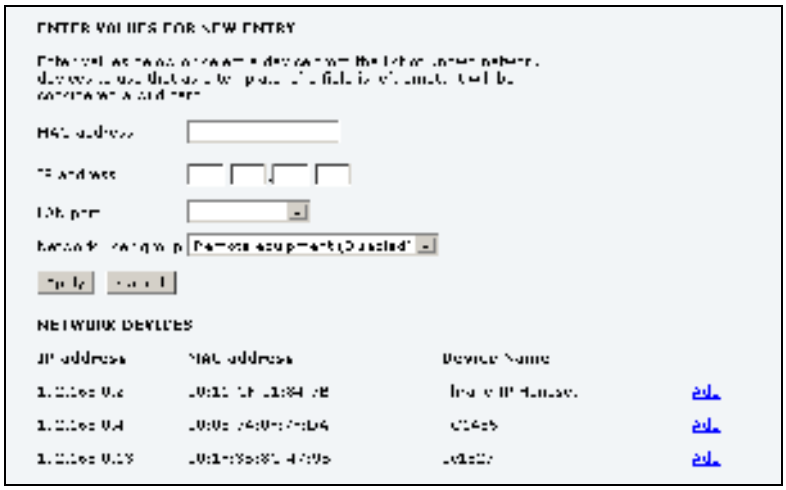


Figure 6-46: Web interface: Settings, LAN, Network classification table, Edit or Add

4. Click **Add** next to a network device you want to use, or type in the MAC address manually at the top of the page.

> **Note** If you leave a field empty, it is the same as a "wild card" and it will be shown as an Asterisk in the Network classification table. Unless you are using a Static IP address, the IP address field should always be left empty.

5. Select the **LAN port** and **Network user group** you want to associate with the device. Network user groups are created and defined in the Network user group page. See *Set up the network user groups* on page 6-56.

6. Click **Apply**.

Change the priority in the network classification table

Connections are evaluated in the order they are listed. The first entry (and **only** the first entry) that matches the properties of the connected device is applied, meaning that the connection will be using the settings of the network user group assigned to that entry.

To change the priority of an entry, click the up or down arrow next to the entry.

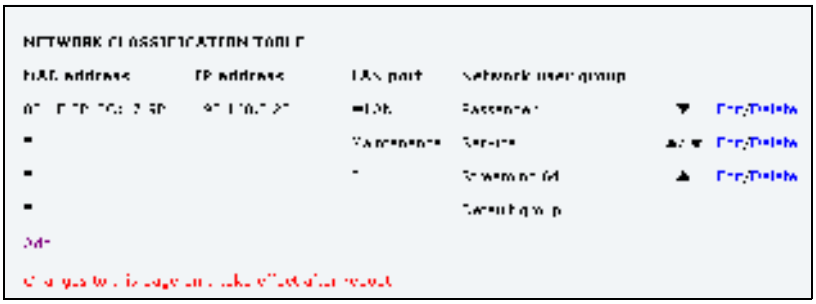


Figure 6-47: Web interface: Settings, LAN, Network classification table, change priority

The Default network user group is always last, so it is only used if none of the other entries match the properties of the connected device.

Remove an entry in the network classification table

In the **network classification table**, click **Delete** next to the entry you want to delete.

6.8.5 Definitions for network terms

Header compression

The header of a data packet contains control information belonging to that specific packet. The information in the header can take up a considerable amount of bandwidth. In order to use the bandwidth more efficiently, you can enable Header Compression, meaning the header information is compressed, leaving some of the information out. With disabled header compression the full header ist transmitted with each data packet. This takes up bandwidth and means a more reliable data transmission with less data loss.

You can select whether or not to use Header Compression for your data transmission.

- **Header Compression enabled**: More efficient use of the bandwidth available, recommended typically for Internet, e-mail, ftp applications etc.
- **Header Compression disabled**: More reliable data transmission. Recommended for time-critical applications like VoIP and streaming applications, as well as other applications where packet loss is to be minimized.

If there are problems with packet loss you might want to disable header compression and see whether the header compression is the reason for the packet loss.

6.8.6 NAT (Network Address Translation)

NAT enables a local-area network to use one set of private IP addresses for internal traffic and an assigned or static IP address for external traffic. The built-in NAT module in the SBU makes all necessary address translations between the local-area traffic and the external traffic.

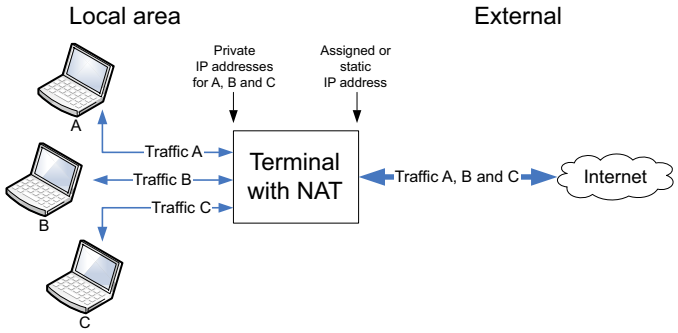


Figure 6-48: NAT (Network Address Translation)

If more than one user is connected, you must select a network user group with **Router mode** to use the NAT functionality of the SBU.

6.8.7 Start and stop any data session

The administrator can start and stop data sessions for all network user groups connected to the SBU.

To start or stop a data session, do as follows:

1. Select **CONNECT**.
   If prompted, enter the administrator user name and password. The default user name is **admin** and the default password is **1234**.
   Under ONGOING DATA SESSIONS at the top you can see which data sessions are currently active.

Figure 6-49: Web interface: Connect, to start and stop data sessions (example)

In the example above you can manually start the **Streaming 128** connection of GROUP 0 and stop the **Standard** connection of the DEFAULT GROUP.

2. Click on the session you want to start or stop.
3. Click **Refresh** to update the current state of the connection(s). Note that there might be some latency when updating the connection status, you might have to wait and click **Refresh** again to update the Dashboard to the current state.

Note The PDP context for the data session is not activated before any unit in the LAN tries to communicate, e.g. sends a DHCP request.

6.8.8 Establish a PPPoE connection

Overview

You can establish a Point-to-Point-over-Ethernet (PPPoE) connection to the BGAN network using the AVIATOR 700 system. Use this connection type if you want to control start and stop of the connection independently from the built-in web interface of the SBU.

Possible applications for this type of connection are as follows:

- Connecting a router
- Connecting broadcast equipment, optionally through a PC
- Establishing a Pico cell for the use of cell phones

Note Without the built-in Router option the AVIATOR 700 system is limited to one PPPoE connection.

The following drawing shows how the PPPoE connection and the built-in web interface handle connections to the SwiftBroadband network.

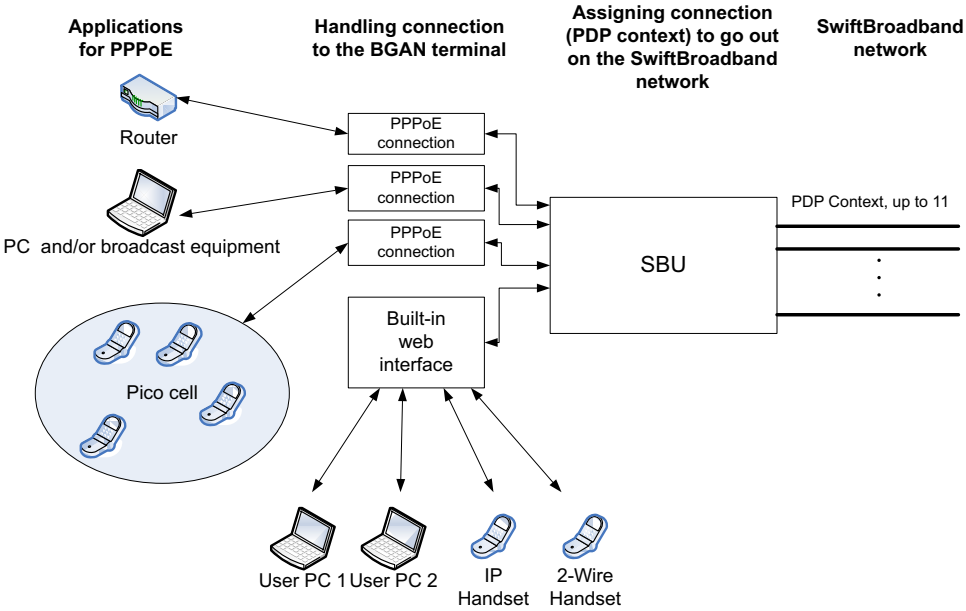


Figure 6-50: Example for PPPoE connections

Enable PPPoE network connections in the AVIATOR 700 system

During the configuration of the system you can configure whether the system should allow and handle PPPoE network connections.

To enable or disable the system to support PPPoE network connections do as follows:

1. Select **SETTINGS > LAN > PPPoE**

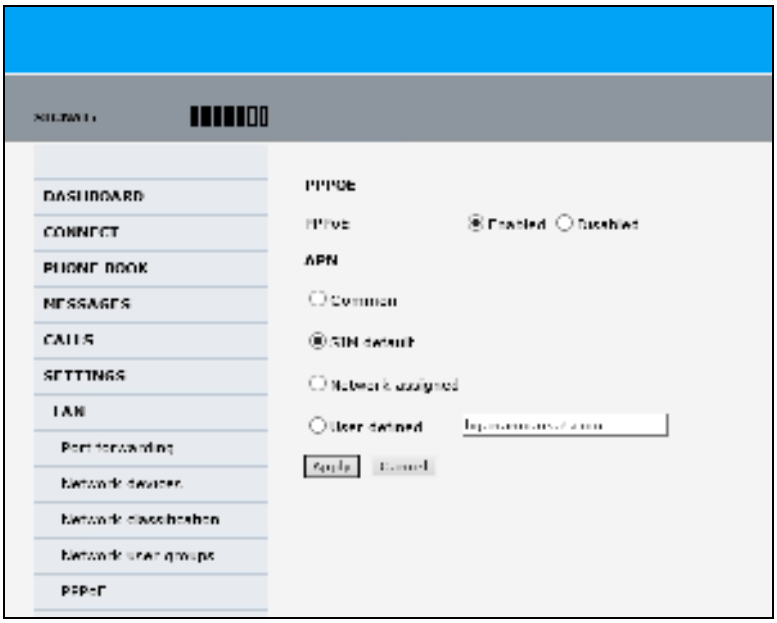


Figure 6-51: Web interface, Settings, LAN, PPPoE

2. Select **Enabled** or **Disabled (**default).
3. Check with your airtime provider what your **APN** is and select accordingly.
4. Click **Apply** to send the settings to the terminal.

How to configure the connected PC, router or other equipment

You must configure the equipment correctly to establish a network connection using PPPoE. How to set up a new network connection depends on the type of equipment, refer to the user documentation of the equipment.

You need the following parameters:

- **User name** and **password**
  The user name and password can be left blank. Then the registration on the APN is most commonly done in a way that the data connection will be established with a dynamic IP address from the airtime provider.
  To request a static IP (if subscribed to) from the APN you must type in the user name and password from your airtime subscription.
  Note for **MAC OS**: User name and password are required. Use user name void and password void. This works for some ISPs. Contact your airtime provider for further information.
- For setups that have a check box for **Enable LCP extensions**, deselect this.

- **Service name**: For certain services, i.e. a streaming class, you must type in a specified text string when asked for a service name. The following table shows the service names and descriptions that are supported by the terminal.

Service name	Description
Blank	default, primary standard IP data connection
XBB[a]:BACKGROUND	default, primary standard IP data connection
XBB:STREAM8K	primary streaming IP data connection 8 kbps
XBB:STREAM16K	primary streaming IP data connection 16 kbps
XBB:STREAM32K	primary streaming IP data connection 32 kbps
XBB:STREAM64K	primary streaming IP data connection 64 kbps
XBB:STREAM128K	primary streaming IP data connection 128 kbps
XBB:X-STREAM	primary streaming IP data connection up to 512 kbps.

Table 6-4: PPPoE connection, service names and descriptions

a. For SwiftBroadband the part of the service name “XBB” can be replaced by “SBB”.

PPPoE setup with a non-default APN

You can set up a network connection using PPPoE for another APN than the default APN. Check the documentation from the Service provider for the new APN name. Enter the following commands in the field **Service name** when setting up the network connection:

Service name for custom APN	Description
XBB[a]:AT+CGDCONT=1,ip,”<APN name>”; +CGEQREQ=1,3	Standard IP data connection
XBB:AT+CGDCONT=1,ip,”<APN name>”; +CGEQREQ=1,1,8,8,8,8,2,0,“0E0”,”0E0”,3,0,0	Streaming IP data connection 8 kbps
XBB:AT+CGDCONT=1,ip,”<APN name>”; +CGEQREQ=1,1,16,16,16,16,2,0,“0E0”,”0E0”,3,0,0	Streaming IP data connection 16 kbps
XBB:AT+CGDCONT=1,ip,”<APN name>”; +CGEQREQ=1,1,32,32,32,32,2,0,“0E0”,”0E0”,3,0,0	Streaming IP data connection 32 kbps
XBB:AT+CGDCONT=1,ip,”<APN name>”; +CGEQREQ=1,1,64,64,64,64,2,0,“0E0”,”0E0”,3,0,0	Streaming IP data connection 64 kbps
XBB:AT+CGDCONT=1,ip,”<APN name>”; +CGEQREQ=1,1,128,128,128,128,2,0,“0E0”,”0E0”,3,0,0	streaming IP data connection 128 kbps
XBB:AT+CGDCONT=1,ip,”<APN name>”; +CGEQREQ=1,1,512,512,512,512,2,0,“0E0”,”0E0”,3,0,0	streaming IP data connection X-Stream

Table 6-5: PPPoE connection, service names and descriptions for custom APN

a. For SwiftBroadband the part of the service name “XBB” can be replaced by “SBB”.

Example: To set up a standard background data connection using the APN "bgan.inmarsat.com" enter:
XBB:AT+CGDCONT=1,ip,"bgan.inmarsat.com";+CGEQREQ=1,3

For more information about the command syntax see the standard 3GPP TS 27.007.

6.8.9 To set up static routing

When you have an external gateway connected to your SBU, the SBU is not automatically able to "see" the network on the other side of the gateway. However, you can set up your SBU to communicate with a device on the other side of a gateway, by using Static routing.

To set up a new device for static routing, do as follows:

1. Select **SETTINGS > LAN > Static route**.

Figure 6-52: Web interface, Settings, LAN, Static route

2. Click **Add**.

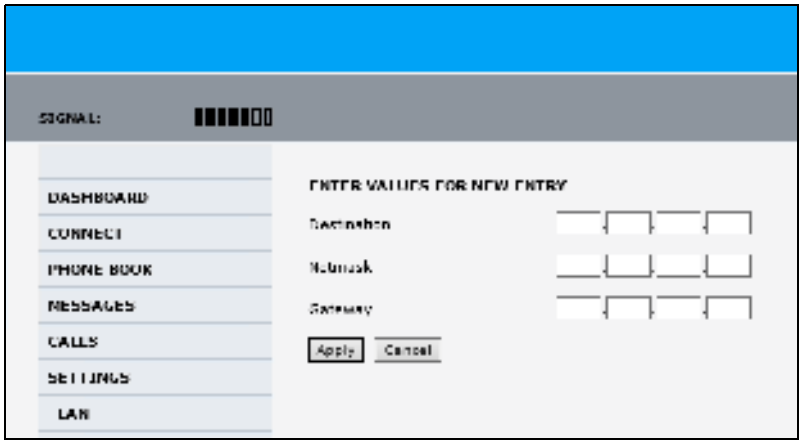


Figure 6-53: Web interface, Settings, LAN, Static route, add

3. Enter the values for your device.
   - Destination: The IP address you want to route to.
   - Netmask: The netmask you want to route to.
   - Gateway: The gateway, e.g. the address of a wireless access point or router to which the destination device is connected.

4. Click **Apply**.
   The values for the new entry are now in the list. This means that the SBU can communicate with the destination IP address on the other side of the gateway.

6.8.10 SNMP interface

You can connect equipment to perform SNMP queries on the SBU in order to retrieve configuration and present settings.

Contact AVIATOR.support@cobham.com to obtain the MIB files.

6.9 Administration of the SBU

In this section of the web interface you can configure a number of administrative settings:

- *Access the administration settings*
- *Save and load a configuration*
- *Call charges*
- *Log handling*
- *Data limits*
- *To use profiles*
- *To use traffic flow filters*
- *SIM card access protection: SIM PIN and SIM Lock*
- *Set up user permissions*
- *Remote management*
- *Remote activation of a connection using SMS*
- *Link monitoring (SwiftBroadband only)*
- *Restricted dialing*
- *Multi-voice (option)*

6.9.1 Protect the SBU against unintended configuration changes

You can protect the SBU against unintended changes of the setup:

1. Change the administrator password from user name: admin and password: 1234 to a user name and password of your choice. For further details see *Change the administrator password* on page 6-70.
2. You can deny non-administrator users access to certain functions and make the respective pages in the web interface read-only. For further details see *Set up user permissions* on page 6-84.

6.9.2 Access the administration settings

Log on as administrator

The Administration settings require an Administration user name and password. You must also login as an administrator in the sections for **SETTINGS**, **LAN**, **Network Devices**, **Network classification**, **Network user groups** and **PPPoE**.

To log on as administrator, do as follows:

1. Select **ADMINISTRATION** from the left navigation pane.
2. Enter the Administration user name and password.
   The default user name is **admin** and the default password is **1234**.

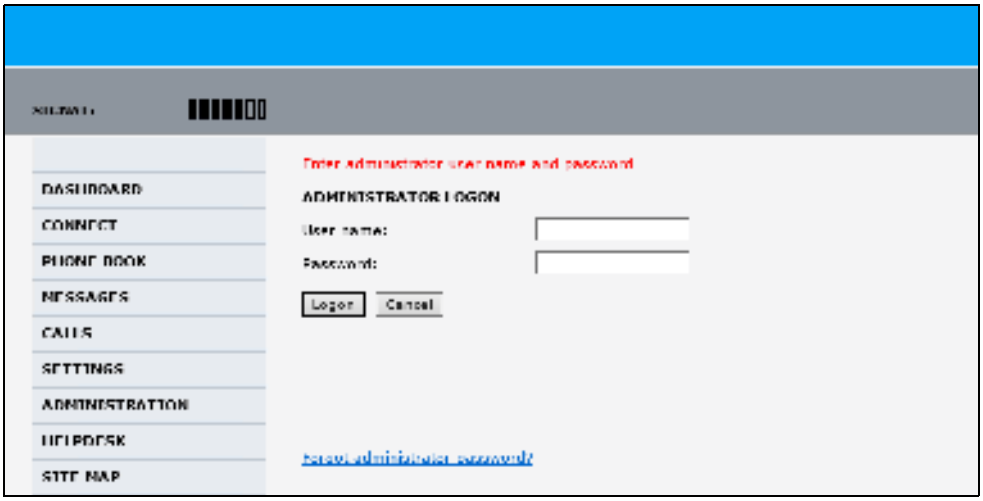


Figure 6-54: Web interface: Administration

If you have forgotten the administrator password, you can reset the password by clicking the link at the bottom of the page.[1] For further information, see the next section *Reset the administrator password*.

3. Click **Logon**.
   The Administration page is now updated to let you change the user name and password, Save/load a configuration or log off Administration.

1. The link is only shown when the PC is connected to the Maintenance connector on the SBU front plate.

Change the administrator password

To change the administrator password, do as follows:

1. After entering the administrator user name and password in the **ADMINISTRATION** page, locate the section **Change administrator logon**.

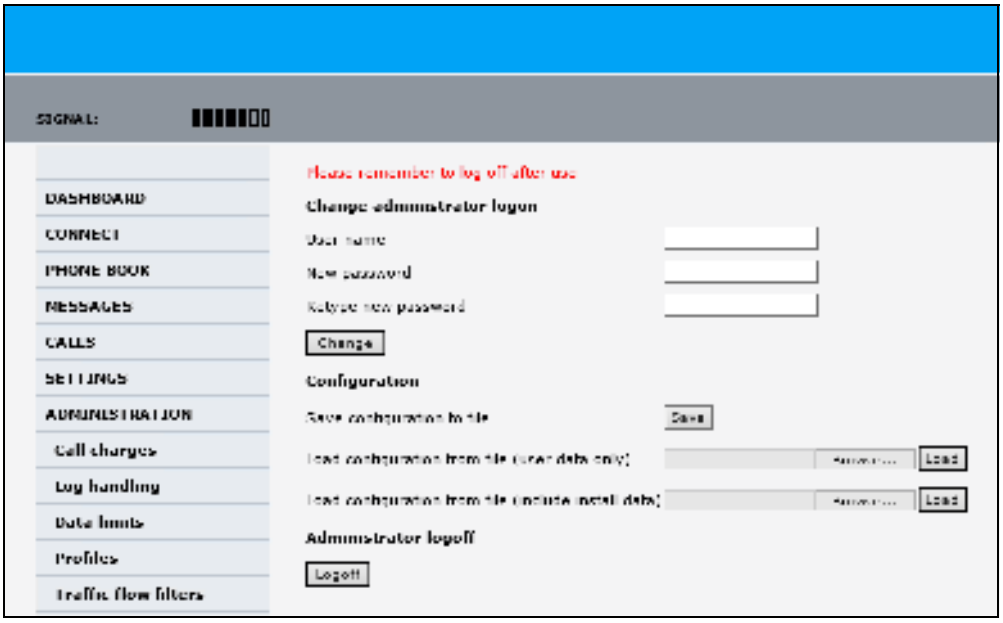


Figure 6-55: Web interface: Administration, change administrator logon

2. Type in the existing user name.
3. Type in the new password and retype it on the next line.
4. Click **Change**. At the next logon the new password is required.

Reset the administrator password

Important To reset the administrator password you must connect the PC to the Maintenance connector on the SBU front plate. If not, the link **Forgot administrator password?** on the ADMINISTRATOR LOGON page will not be visible.

If you have forgotten and need to reset the administrator password, do as follows:

1. Contact your supplier for a reset code.
   Report the serial number and IMEI number of the terminal.
   You find the serial number and IMEI number in the **Dashboard**.

2. Click the link **Forgot administrator password?** at the bottom of the **ADMINISTRATOR LOGON** page (see the previous section).

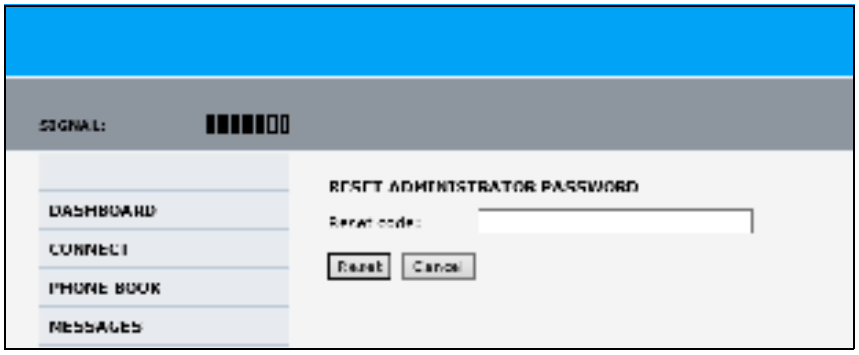


Figure 6-56: Web interface: Administration, Reset administrator password

3. Type in the reset code obtained from your supplier and click **Reset**.
4. Type in the user name **Admin** and the default password **1234**.
5. Click **Logon**.
   For information on how to change the password, see the next section *Change the administrator password*.

Log off administration

If you have not entered anything for 30 minutes under ADMINISTRATION, you are logged off automatically. To log off manually, click **Logoff** under administrator logoff in the **ADMINISTRATION** page.

6.9.3 Save and load a configuration

If you need to reuse a configuration in another SBU, you can save the current configuration to a file, which can then be loaded into the other SBU. You can also use this feature for backup purposes.

Note Configuration files can only be exchanged between SBUs with the same software version!

Save a configuration to a file

The settings from the following pages of the web interface are saved in the configuration file:

- SETTINGS
- ADMINISTRATION
- PHONE BOOK

To save your current configuration to a file, do as follows:

1. In the **ADMINISTRATION** page, under **Configuration**, click **Save**.

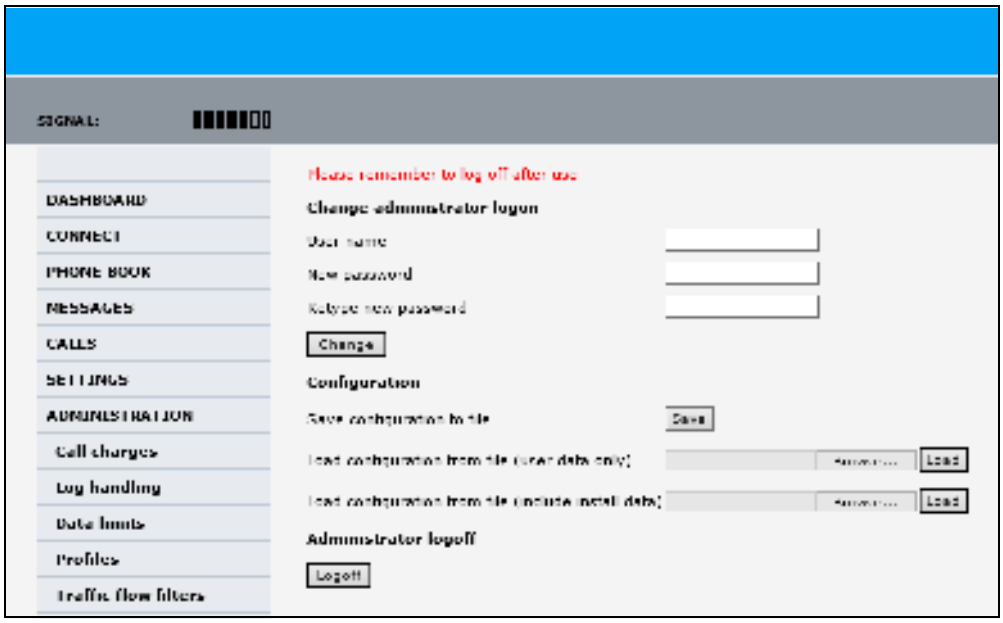


Figure 6-57: Web interface: Administration, saving a configuration file

2. Accept the default destination file name or type in the destination file name and location.
3. Click **OK**. The configuration is now saved to a file. This file is used to load the configuration into another SBU.

Load a configuration from a file

In this example the PC is connected to the SBU front maintenance connector. To load a configuration from a file, do as follows:

1. In the **ADMINISTRATION** page, under **Configuration**, select the upload type:
   - **Load configuration from file (include install data)**, available when connected to the SBU front maintenance connector.
     The install data are the pages **Discrete I/O**, **RF settings** and **External systems**.

     Note This feature can only be used with systems of the same system type, for example one AVIATOR 700 SBU to another AVIATOR 700 SBU. To use this upload type the PC must be connected to the SBU front maintenance connector.

   - **Load configuration from file (user data only)**. This upload type is available on any other LAN/WLAN interface of the SBU.

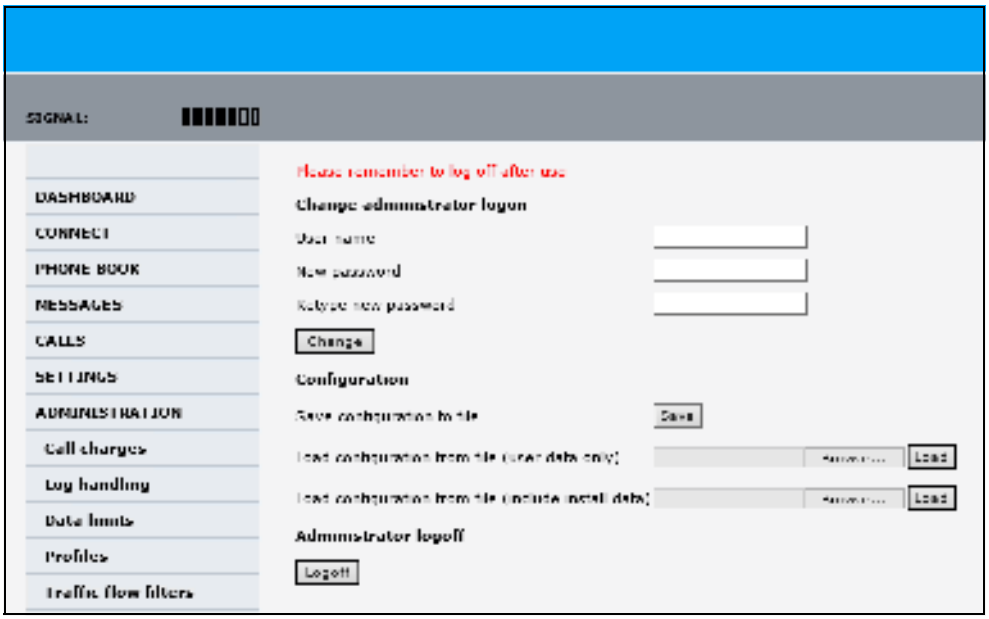


Figure 6-58: Web interface: Administration, loading a configuration file

2. Click **Browse...** to browse to the file you want to import. Then click **Open**.
3. Click **Load**.
   The new configuration is now loaded into your SBU.

   Note Configuration files can only be exchanged between SBUs with the same software version!

4. Restart the SBU to activate the new configuration.

6.9.4 Call charges

In this section you can enter the call charges so you at all times can see the current charges for the services used. Consult the documentation from your service provider for the subscribed services, then enter these tariffs in the web interface. The system automatically calculates the charges for your calls and data sessions. The entered tariffs are used for estimating the charges for calls and data sessions. The estimated charge is listed for each call or data session in the call log. For further information, see the AVIATOR 700 user manual.

Note Thrane & Thrane does not take responsibility for the correctness of the estimated charges. This calculation is only a rough estimate of the charge, based on the tariff entered by the user. Also, the Airtime Provider may have different methods of calculating the charge.

To enter the call tariffs, do as follows:

1. From the left navigation pane, select **ADMINISTRATION** > **Call Charges**.

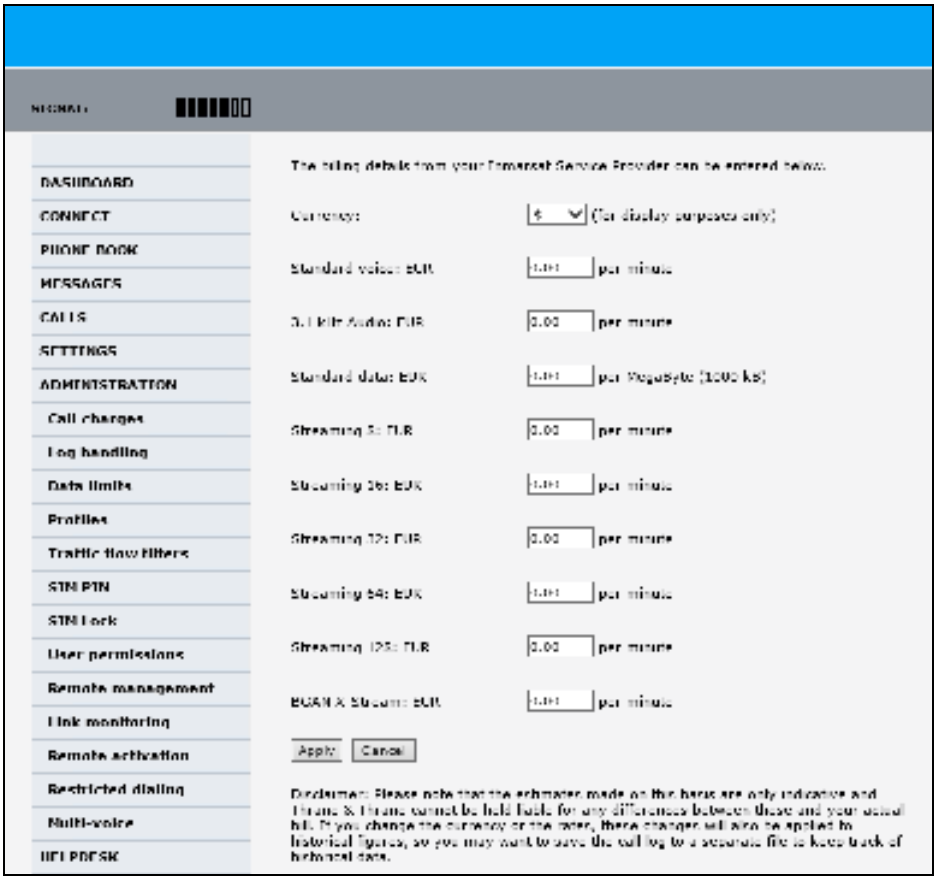


Figure 6-59: Web interface: Administration, Call Charges

2. Select the currency from the **Currency** drop-down list.
3. Enter the tariff for each of the services.
4. Click **Apply**.

6.9.5 Log handling

To clear the logs of the SBU and/or reset the counters for the time connected, do as follows:

1. From the left navigation pane in the **ADMINISTRATION** page, select **Log Handling**.

Figure 6-60: Web interface: Administration, Log Handling

2. To clear the Call log, click **OK** next to **Clear call log?**.
3. To clear the total counters, click **OK** next to **Clear total counters?**. This will reset the **Time connected** counters on the Calls page.

6.9.6 Data limits

You can set a limit for the use of data services that can be downloaded over the AVIATOR 700 system. You either specify a maximum number of MB for the standard data connection, and/or a time interval from start to end for a streaming connection.

For a detailed description how to access the SBU from a remote location see the AVIATOR 700 user manual.

6.9.7 To use profiles

The profiles are used in the network user groups. You select one or several profiles when setting up a network user group. You need an administrator password to define profiles and traffic flow filters.

Together with traffic flow filters the profiles are used as a tool to manage the traffic flow.

Note If you have selected more than one profile (one primary and one or more secondary profiles) for an interface, you must define traffic flow filter(s) before you can establish a valid connection.

What is a profile?

A profile is a collection of Quality of Service (QoS) settings and other settings defining the mode in which data is transmitted on an interface. For example, a profile is used to define whether the connection is a Streaming connection or a Standard connection.

You can select between a number of predefined profiles or define your own profiles for your data transmission. For further information on profiles, refer to the 3GPP standard TS 23.107 “Quality of Service (QoS) concept and architecture”.

Note If no traffic flow filters are defined, the Primary profile for a network user group is used for all traffic from that network user group. Then the secondary profile will not become active.

To learn more about traffic flow filters see *What are traffic flow filters?* in the next section.

Select the profiles for a network user group

When you set up a network user group, you typically select one of the predefined profiles to use as a Primary profile for that network user group. You select optionally one or more Secondary profiles.

For further information on how to select the profiles, see *LAN/WLAN network users* on page 6-54.

Figure 6-61: Web interface, Administration, Profiles, Example: Standard

You typically do not need to define new profiles, the predefined profiles cover the most common applications. You can customize a user profile and set up several user-defined profiles.

Define new profiles

When you define your profiles you can select **Subscribed** for many of the settings. If you select Subscribed, the value given in your Airtime subscription is automatically used.

Note For AVIATOR 700, the maximum Streaming bit rate is the X-Stream service (up to approximately 450 kbps).

To define a new profile, do as follows:

1. From the left navigation pane, select **ADMINISTRATION** > **Profiles**.

Figure 6-62: Web interface. Administration, Profiles, select profile

2. Click **Edit** for the profile you want to define.
3. Fill in the top field with the name for your profile.
4. In the **Traffic class** row of your new profile, select a class from the drop-down list.

Important For best performance, choose the right traffic class for your application. In general, Standard IP (Background) is best suited for TCP/IP applications, e.g. web browsing, e-mail, file transfer, VPN. Streaming IP is best suited for UDP traffic, e.g. live video or audio.

You may select one of the following:

- **Conversational** is real-time two-way conversation. It is primarily used for voice over IP and video conferences.
- **Streaming** is real-time one-way communication. It is primarily used for video and audio.
- **Interactive** is two-way communication (not real-time). It is used for communication that is not very delay-sensitive, such as web browsing, data base retrieval and server access. Examples of machines interaction with remote equipment are: polling for measurement records and automatic data base enquiries (tele-machines).

- **Background** is used for data which is not delay-sensitive, such as E-mail, SMS, download of databases and reception of measurement records.

5. Type in the bit rates in kbps in the following rows:
   - **Maximum bit rate Ul (kbps)** is the maximum upload bit rate allowed for this profile.
   - **Maximum bit rate Dl (kbps)** is the maximum download bit rate allowed for this profile.
   - **Guaranteed bit rate Ul (kbps)** is the guaranteed upload bit rate needed for this profile.
   - **Guaranteed bit rate Dl (kbps)** is the guaranteed download bit rate needed for this profile.

   Note | When you click Apply, the bit rate values you typed in may be rounded off because only certain values are allowed.

6. In the **Delivery order** row, select from the scroll list whether or not data should be delivered in the same order it was sent.
   - **Yes** means the data packets are delivered in the same order they were sent.
7. In the **Maximum SDU size (byte)** row, type in the maximum allowed packet size in Bytes (rounded off to nearest 10). The maximum packet size possible is 1520.
8. In the **Delivery of erroneous SDUs** row, select one of the following from the list:
   - **Yes** means packets are allowed to contain errors. This setting is suitable for delay-sensitive transmission, because the need for retransmission is limited. The SDU Error settings in step 9 and step 10 will apply.
   - **No** means packets are not allowed to contain errors, and the SDU Error setting in step 9 will **not** be applied. This setting is suitable where error-free transmission is important and delays are accepted.
   - **No detect** means that errors will not be detected, and the SDU Error setting in step 9 will **not** be applied.
9. If you selected **Yes** in step 8, select from the **SDU error ratio** drop-down list the fraction of a packet allowed to be lost or erroneous.
10. Select from the **Residual bit error ratio** drop-down list the undetected bit error ratio of a packet. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered packets.
11. In the **Transfer delay (ms)** row, type in the delay in ms. This is the delay from the time data is received in the SBU until it arrives at the receiving end.
    - If the Transfer delay is 500 ms, error correction is disabled.
    - If the Transfer delay is 4000 ms, error correction is applied.
12. In the **Traffic handling priority** row, select from the drop-down list which priority this connection should have.
13. Click **Apply**.
    The new profile is now added, and can be selected from the lists of primary and secondary profiles when you set up your interfaces.

6.9.8 To use traffic flow filters

Purpose of the traffic flow filters

The purpose of the traffic flow filters is to assign different priorities to different types of traffic, in order to optimize performance.

Example: When you are browsing the Internet, a Standard IP connection is normally sufficient. However, to have a video conference you may need a Streaming IP connection in order to obtain a direct connection without interruptions. Your traffic flow filters can define these priorities, so that your connection automatically switches to Streaming e.g. when you have a video conference. Note that you have to activate a streaming connection in the web interface.

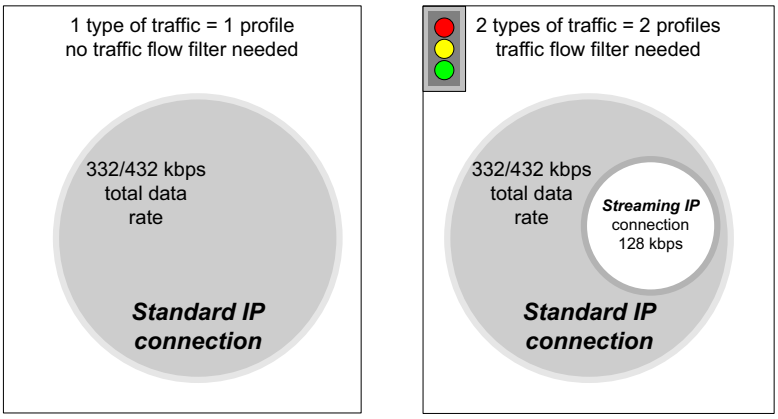


Figure 6-63: Traffic flow filters to filter traffic types

What are traffic flow filters?

When more than one type of traffic is needed, you must use both a primary and one or more secondary profiles. A traffic flow filter provides preferred treatment of a data packet. The traffic flow filter classifies data packets for the BGAN core network and the SBU received from the external network into the proper profile.

You can define up to eight traffic flow filters. Each packet filter has an evaluation precedence index that is unique within all traffic flow filters associated with the profiles that share the same PDP (Packet Data Protocol) address. The evaluation precedence index determines the order in which the filters are applied; 0 is applied first, then 1 and so forth. Information of source, destination, type of service etc. is combined in each packet filter in the list.

Define traffic flow filters

To define the traffic flow filters, do as follows:

1. From the left navigation pane, select **ADMINISTRATION** > **Traffic flow filters**. The example below shows one traffic flow filter.

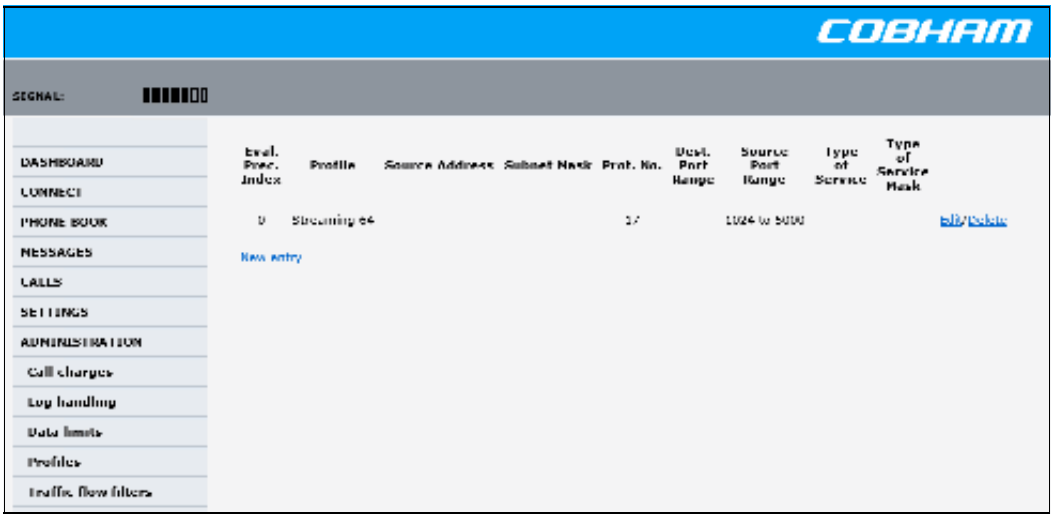


Figure 6-64: Web interface: Administration, Traffic flow filters

2. Click the link **New entry**.

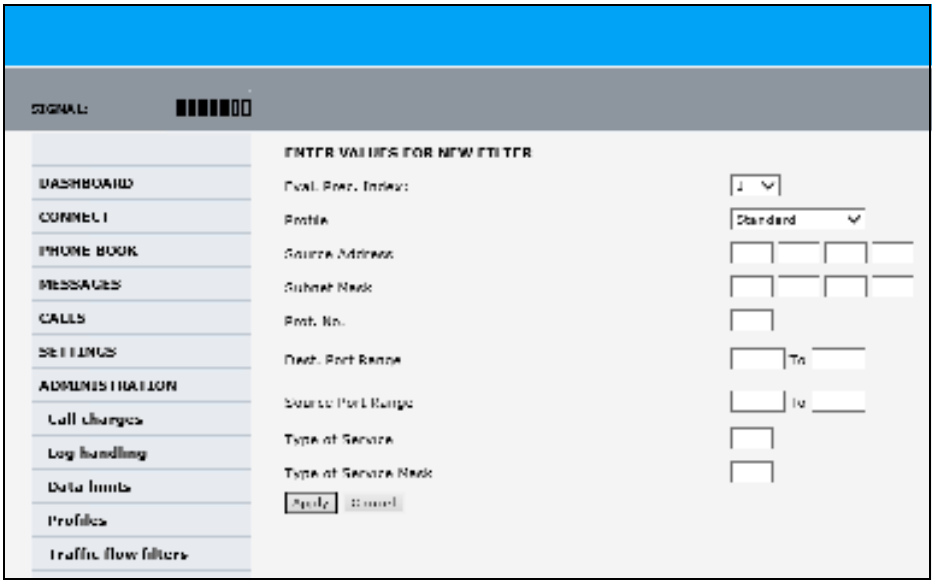


Figure 6-65: Web interface: Administration, Traffic flow filters, New entry

3. Select a number in the **Eval.Prec. Index** drop-down list.
   The evaluation precedence index defines the order in which the traffic flow filters are applied to packets. 0 is first, then 1, 2 etc.
4. Select the **Profile** from the drop-down list.
   The available profiles are the profiles listed under ADMINISTRATION > Profiles. The selected profile is applied to all traffic that matches the conditions entered in step 5.

5. Fill in one or more of the following fields to define the filter.
   The allowed ranges appear in hover text when you pass the mouse over the fields.
   - **Source address + Subnet mask.**
     This is an IPv4 IP address and subnet mask. Only packets received from the specified source are accepted by the filter.
   - **Protocol number**.
     This is uniquely assigned for the protocol being used. For TCP (typically Internet, e-mail, FTP) set this to 6, for UDP (typically streaming) to 17. The protocol number determines which protocol is used by the traffic flow filter.
   - **Destination port range** (From and To). This parameter requires knowledge of ports being used by the selected applications. Note that Source and Destination are relative to the BGAN core network. This means that Destination is your SBU.
   - **Source port range** (From and To). This parameter requires knowledge of ports being used by the selected applications. Note that you must fill in both From and To, even if there is only one port.
   - **Type of Service** + **Type of Service mask**.
     Set this value to a number between 0 and 255.
     Type of Service (TOS) is an 8-bit field in a packet header, with associated mask, that is used to define Quality of Service.

   For further information on the principles and parameters of the traffic flow filters, refer to the 3GPP standards TS27.007 V4.2.0 and TS 23.060 V4.7.0.
6. Click **Apply** at the bottom of the page.

Example of a list of traffic flow filters

Below is an example of a list with two traffic flow filters.

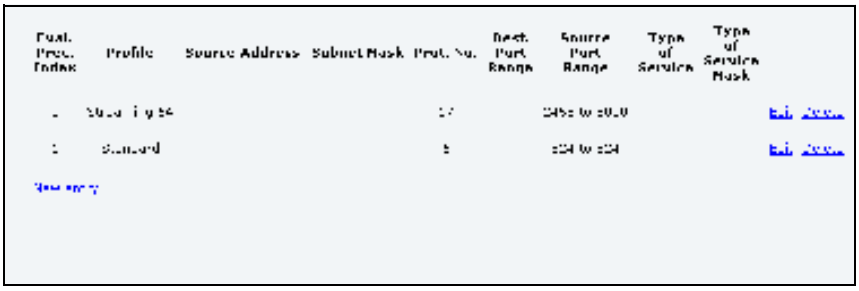


Figure 6-66: Web interface: Example of two traffic flow filters

In this example, data packets are filtered in the following order:

1. The filter with evaluation precedence index 0 checks for UDP packets (protocol number 17), in the port range 2455-5000. When these packets are identified, they are assigned a 64 kbps Streaming channel (the Streaming 64 profile).
2. The filter with evaluation precedence index 1 checks remaining packets for TCP packets (protocol number 6), on port 524. These packets are routed to the standard IP connection (the Standard profile).
3. Remaining traffic is routed to the standard IP connection.

6.9.9 SIM card access protection: SIM PIN and SIM Lock

Note There is typically no SIM PIN needed for the AVIATOR 700 system. The following functions might apply for special airtime subscriptions that have a SIM PIN.

SIM PIN

To avoid unauthorized use of the system you can enable the SIM PIN. Then the user has to enter the SIM PIN before being able to use the system. The SIM PIN is disabled per default. You enable the SIM PIN in the web interface. You can also specify a new SIM PIN in the web interface. To do this you have to enter the original SIM PIN and then specify a new one.

To manage the SIM PIN of the terminal do as follows:

1. From the left navigation pane, select **ADMINSTRATION > SIM PIN**.
2. If you want to protect the system with a system SIM PIN select **Enabled**.
3. You can enter a new PIN or change the existing PIN.
4. Click **Apply** to save the changes.

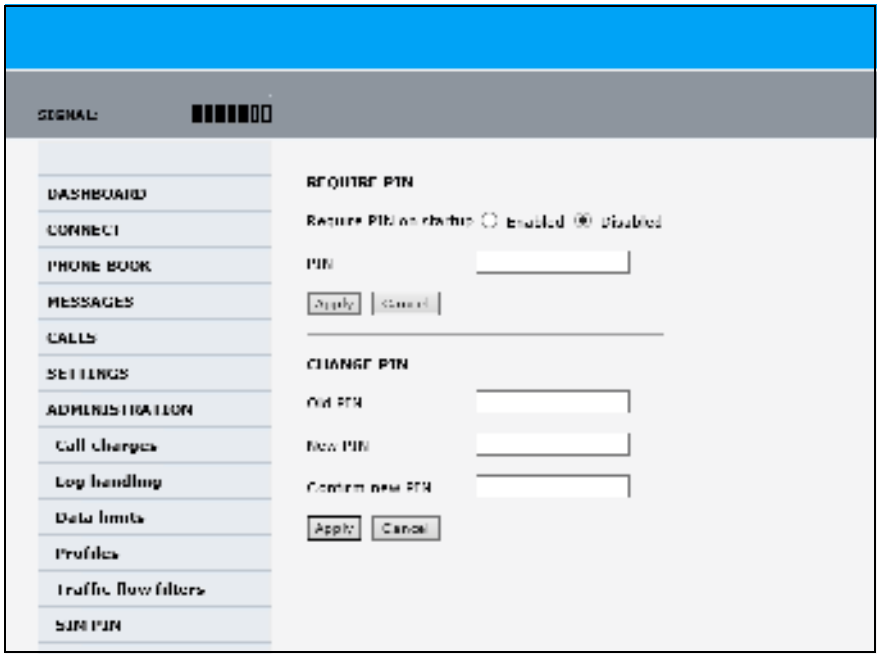


Figure 6-67: Web interface, Administration, SIM PIN

SIM Lock

The supplier may lock the SIM card of the terminal to a specific service provider. For further information contact your supplier. To unlock the SIM lock of the SIM card from your airtime provider do as follows:

1. From the left navigation pane, select **ADMINSTRATION > SIM LOCK**.
2. Enter the SIM Lock Code and click **Apply**.

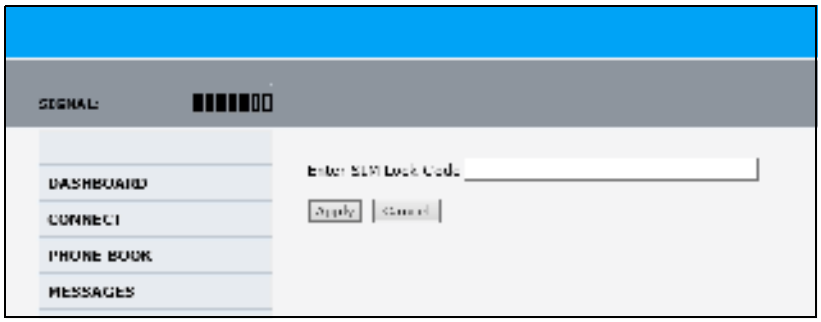


Figure 6-68: Web interface, Administration, SIM LOCK

6.9.10 Set up user permissions

You can manage user access to certain functions of the AVIATOR 700 system. You can allow or deny users that are not administrators access to certain functions and make these pages read-only. This is useful if you want to protect the system against unintended changes or tampering of the system.

Important Protect the SBU against unintended change of setup. We recommend to study the following screen thoroughly and decide which areas of the AVIATOR 700 system you want to give non-administrator users access to.

To set up the user permissions, do as follows:

1. From the left navigation pane, select **ADMINISTRATION > User permissions**.

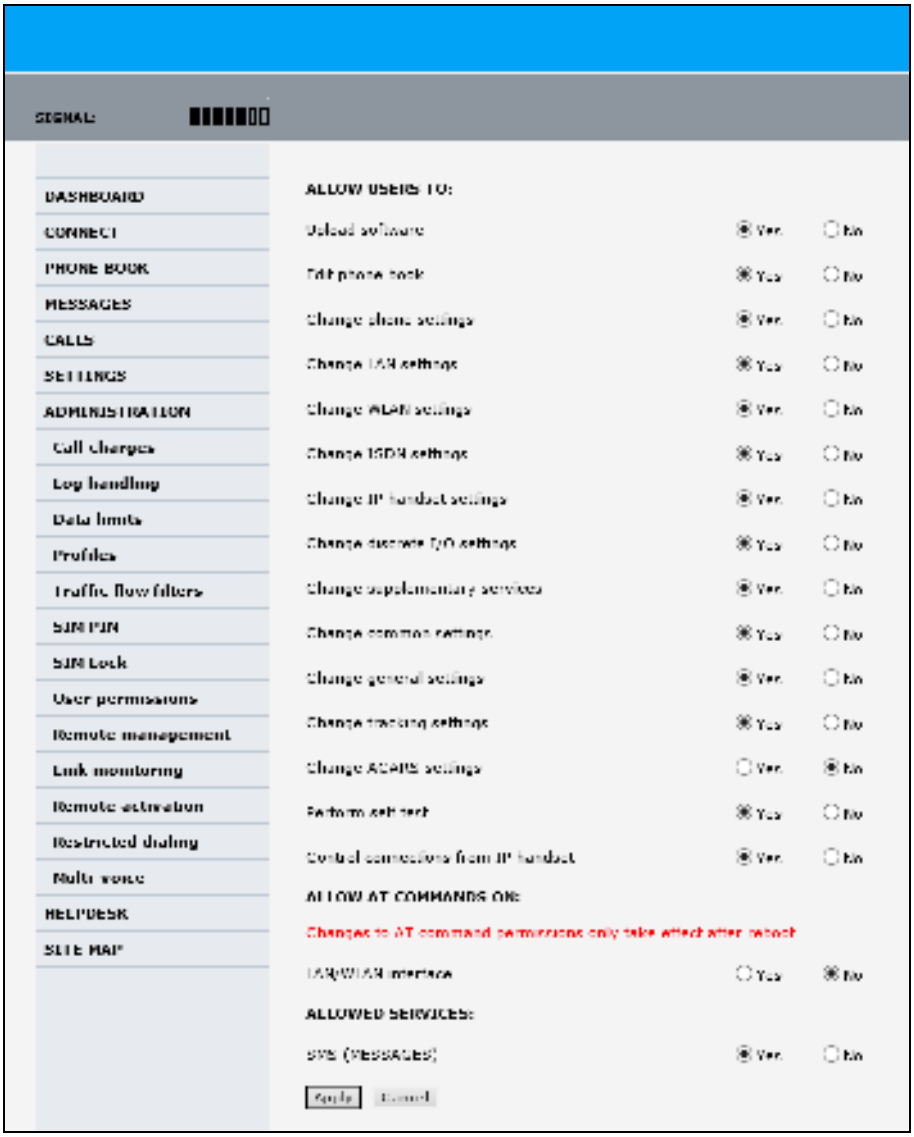


Figure 6-69: Web interface: Administration, User permissions

2. For each item under **ALLOW USERS TO:**, select
   - **Yes** to allow access

- **No** to block access to the settings. Then the pages are read-only for non-administrators. The settings on the page cannot be changed.

3. Under **ALLOW AT COMMANDS ON**: select
   - **Yes** to allow the use of AT commands on the LAN/WLAN interface
   - **No** to block the use of AT commands on the LAN/WLAN interface

   AT commands are typically used during maintenance and service.

   Note | This setting does not take effect until the SBU is restarted.

4. Under **ALLOWED SERVICES** select:
   - **Yes** to allow that the user can send and receive text messages
   - **No** to block sending and receiving text messages. Note that the menu item **MESSAGES** is not displayed any longer.

5. Click **Apply**.
   The settings to which access is denied are now greyed out for the non-administrator user.

6.9.11 Remote management

You can set up the SBU for control from a remote location.

Note If you want to remotely control the SBU, it must have activated a connection. This can be done in several ways:

- Automatic activation of a Standard data connection, see step 10 on page 6-58 in *Edit a network user group*.
- Manual start of a data connection (Standard data or Streaming, see *Start or stop a standard data connection* on page 6-25)
- Remote start of a data connection with an SMS, see *Remote activation of a connection using SMS* on page 6-87.

To set up the SBU for remote management, do as follows:

1. From the left navigation pane, select **ADMINISTRATION > Remote management**.

Figure 6-70: Web interface: Administration, Remote management

2. Select whether remote access using a web server should be **Enabled** or **Disabled** and enter the **Incoming port** number.
3. Select whether **AT commands** should be **Enabled** or **Disabled** and enter the **Incoming port** number.
4. Under **TRUSTED IP ADDRESSES**, type in the IP addresses of the devices you want to give access to the SBU.
5. Click **Apply** to save the new settings.

You can now access the SBU from one of the trusted IP addresses, using the incoming port defined in the **Incoming port** field. For a detailed description how to access the SBU from a remote location see the AVIATOR 700 user manual.

6.9.12 Remote activation of a connection using SMS

If you want to remotely control the SBU, it must have activated a connection. You can do this by sending an SMS to the SBU. The SBU must be powered up and logged on to the satellite services to receive the SMS and then start the connection. For a detailed description how to activate a connection using SMS see the AVIATOR 700 user manual.

Note The SBU must be logged on to the satellite services to receive and accept an activation SMS. If the SMS is considered too old or sent before the SBU has been switched on and has logged on, the SMS will be ignored.

6.9.13 Link monitoring (SwiftBroadband only)

You can monitor the external SwiftBroadband IP connection of the AVIATOR system using the link monitoring feature. With this feature activated, the terminal will send out ping commands (ICMP Echo Requests) to a server of your choice.

To set up link monitoring, do as follows:

Note Link monitoring is only performed on data connections with the Default network user group (see *Set up the network user groups* on page 6-56). This data connection must be activated before link monitoring can start.

1. From the left navigation pane, select **ADMINISTRATION** > **Link monitoring**.

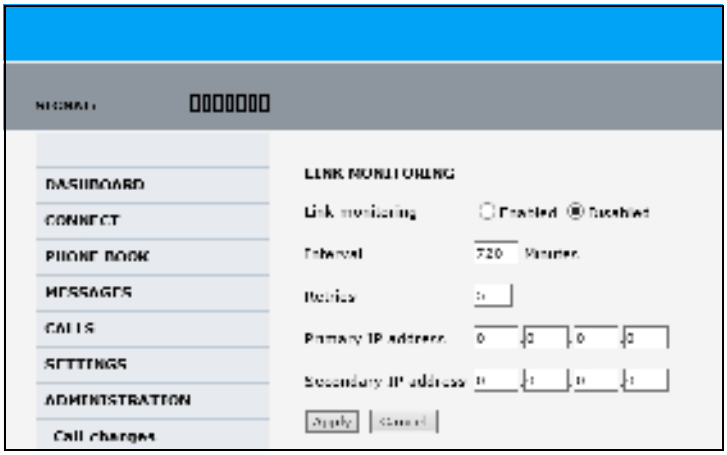


Figure 6-71: Web interface: Administration, Link monitoring

2. Select **Enabled** if you want to enable Link monitoring.
3. Select the **Interval** between each ping.
4. Select the number of **Retries** before the terminal reboots.
5. Type in the **Primary** and optionally the **Secondary IP address**.
   This is the IP address of the server(s) to which the terminal will send ping commands.

   Note Use a server that is reliable and that supports and responds to ICMP Echo Requests.

6. Click **Apply**.

When a data session is started with the Default network user group, the terminal will start sending ping commands to the Primary IP address the number of times specified at

Retries. If no response is received, it will send the same number of ping commands to the Secondary IP address, if available. If no response is received here either, the terminal will reboot.

6.9.14 Restricted dialing

In order to manage the use of the AVIATOR 700 system efficiently you can set up the SBU to limit all calls to allowed numbers or numbers in the phone book. This feature can be enabled for each connected handset separately. For a detailed description how to restrict dialing see the AVIATOR 700 user manual.

6.9.15 Multi-voice (option)

You can subscribe to Multi-voice with or without additional numbers. Multi-voice is disabled per default.

Note You must have Multi-voice in your airtime subscription, AVIATOR Wireless Handset software version minimum 1.03 and SBU software version minimum AVIATOR 700 (Level E): 1.07, AVIATOR 700D (Level D): 2.01, in order to support the Multi-voice function.

To enable Multi-voice, do as follows:

1. Enter the web interface of your terminal.
2. Select **Administration** > **Multi-voice**.
3. Select **Multi-voice**.
   If you want to use an external PBX, select **Using external Multi-voice PBX** and select the interface used to connect the PBX to the terminal

You are now ready to use Multi-voice. For more detailed information about configuring Multi-voice see *Configure Multi-voice* on page 6-92.

Rules for concurrent calls (without cockpit reserve)

- First call initiated: You can use any connected handset and any call type for incoming as well as outgoing calls.
- Second and subsequent calls: You can only use handsets connected to the WLAN interface for calls initiated/received while another call is active. The call type for the second and subsequent calls is always Standard Voice.

Note If you have additional numbers in your airtime subscription, you must set up how the system should use them. See the sections *Handset contexts* on page 6-89.

Additional numbers for Multi-voice

Note You must have Multi-voice with additional numbers in your airtime subscription to be able to use this feature.

In addition to the phone numbers for incoming Standard Voice, and 3.1 kHz Audio and UDI/RDI, your subscription may include extra phone numbers that can be assigned to

specific handsets. If you want to use the additional phone numbers in your subscription, you must set up the following in the web interface:

- Enable the use of additional numbers in the web interface under **ADMINISTRATION** > **Multi-voice**. See *Configure Multi-voice* on page 6-92.
- Add the additional numbers from your airtime subscription under **PHONE BOOK** > **MOBILE NUMBERS** > **ADDITIONAL NUMBERS**.
- Assign the numbers to handsets. Depending on the handset interface you want to use, see the pages **SETTINGS** > **Phone/Fax**, **SETTINGS** > **ISDN** or **SETTINGS** > **IP handsets** in the web interface.

Check with your service provider for individual billing of an additional number.

Handset contexts

Calls to the SBU are treated differently depending on the handset context. If additional numbers are used, there are 3 possible handset contexts, which are explained in this section:

- *Call type groups*
- *Directly assigned handsets*
- *Unassigned handsets*

Call type groups

The handsets are called using one of the mobile numbers for either Standard Voice or 3.1 kHz audio. All handsets in a group will ring when the belonging number is called.

For information on how to associate a handset with a group, see

- *Set the call types for AVIATOR Wireless Handsets* on page 6-46
- *Configure the Phone/Fax interface (2-Wire) of the SBU* on page 6-34
- *Configure the ISDN interface of the SBU* on page 6-35

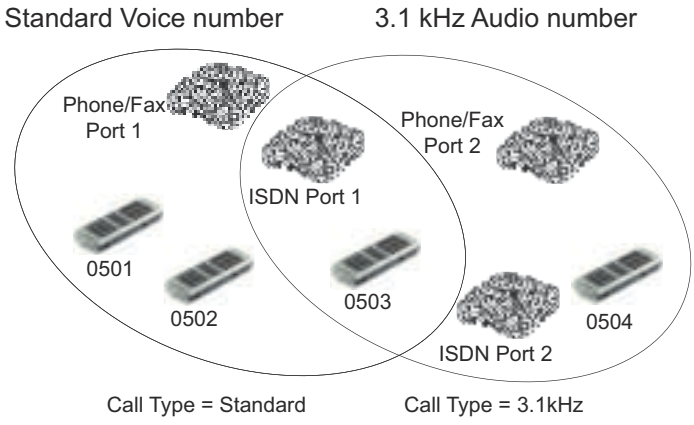


Figure 6-72: Multi-voice, call type groups (example)

Directly assigned handsets

The mobile numbers are assigned to individual handsets. Only the assigned handset will ring when the associated number is called.

Note To use this feature you must have additional numbers in your airtime subscription and enable the use of additional numbers in the web interface. Then you can assign the numbers to individual handsets. For details on additional numbers, see *Additional numbers for Multi-voice* on page 6-88.

For information on how to assign a number to a handset, see the pages **SETTINGS** > **Phone/Fax**, **SETTINGS** > **ISDN** or **SETTINGS** > **IP handsets** in the web interface.

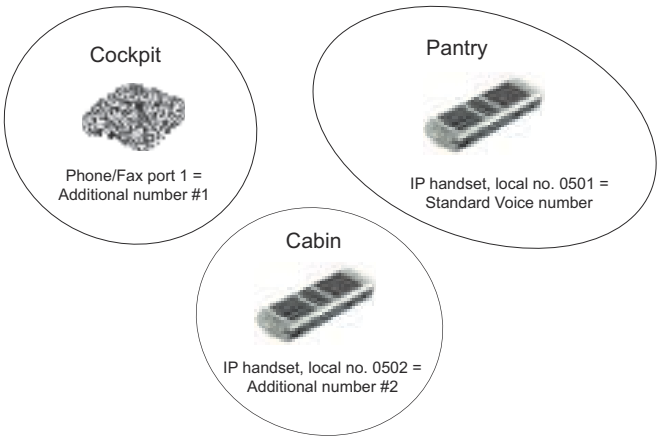


Figure 6-73: Multi-voice, example of directly assigned handsets (example)

Note that you can also assign the call type numbers directly (in the example above, the Standard Voice number is assigned to IP handset number 0501). If you do so, be aware that only the assigned handset can receive a call to this number. The handset connected to the Phone port 1 and the IP handset no. 0502 are each assigned an additional number.

Unassigned handsets

These are IP handsets that are not assigned a number, and that do not belong to a call type group. Use this handset context if you want to create a group of IP handsets that can be called together. All unassigned IP handsets will ring when you call a mobile number which has not been assigned to a handset.

To make an IP handset unassigned, clear all call types and the Assigned number field when setting up the handsets in the web interface. See *Set the call types for AVIATOR Wireless Handsets* on page 6-46.

All handsets ring when calling a mobile number which is in the subscription but not assigned to any handset.

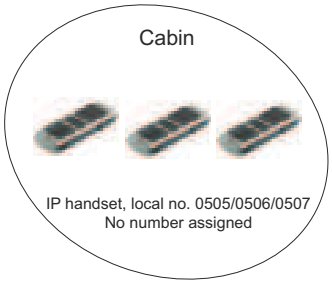


Figure 6-74: Multi-voice, example of unassigned handsets

Cockpit reserve

With Cockpit reserve enabled, is it possible to reserve at least one call line to the handsets in the cockpit. The free call line is reserved for all handsets not assigned an additional Multi-voice number.

In the following example of a Multi-voice configuration with cockpit reserve, all handsets in the cabin have been assigned an additional number while the handsets in the cockpit belong to the standard call type group.

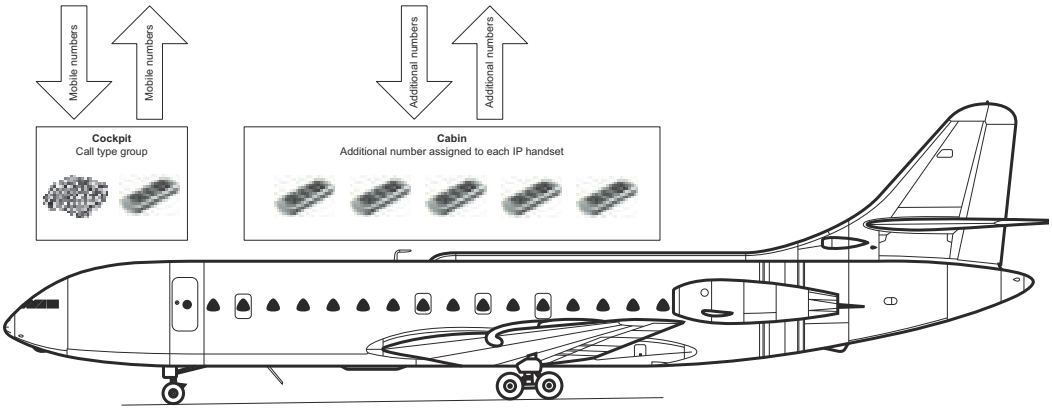


Figure 6-75: Multi-voice, example for a configuration with Cockpit reserve.

Configure Multi-voice

To enable and configure Multi-voice, do as follows:

1. From the left navigation pane, select **Administration** > **Multi-voice**.

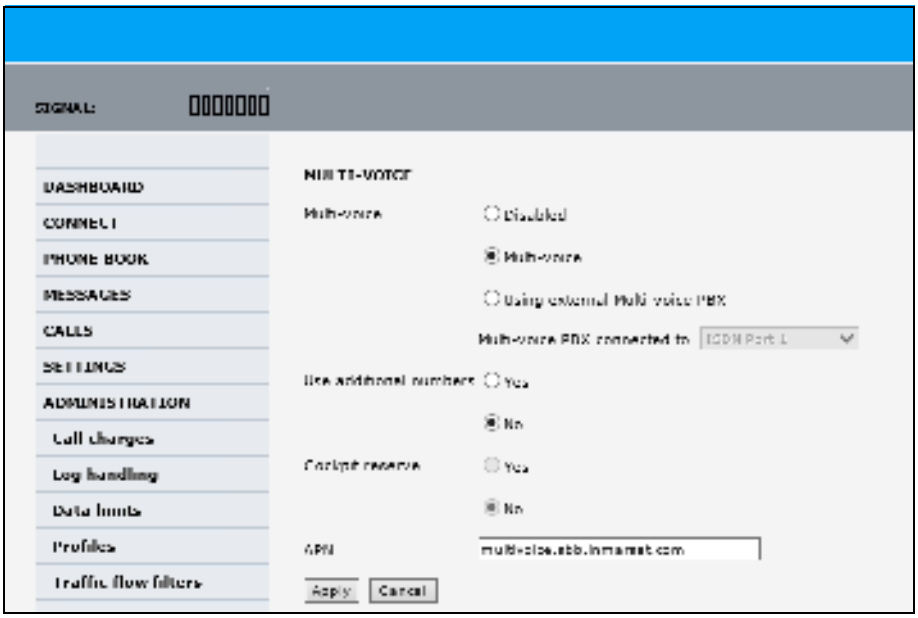


Figure 6-76: Web interface: Administration, Multi-voice

2. To use the AVIATOR 700 terminal for Multi-voice, select **Multi-voice**.
   You can also use an external Multi-voice PBX. If so, select **Using external Multi-voice PBX** and select the interface used to connect the PBX to the terminal. Refer to the manufacturer documentation for your Multi-voice PBX.
3. If you want to assign additional numbers, select **Use additional numbers**. You must have additional numbers in your subscription and enter the additional numbers under **PHONE BOOK** > **Mobile numbers**. (See also *Set up additional numbers* on page 6-93.)
   Then you can use the setup page for the handset interface, e.g. **SETTINGS** > **IP handsets** > **Call settings**, to assign the additional numbers to the handsets you want to be able to call directly. (See also *Assign additional numbers* on page 6-93).
4. You can configure a reserved line for the handsets in the cockpit by selecting **Use additional numbers** and **Cockpit reserve Yes**.
   - There will at all times be a free line for the handsets in the cockpit so a call can be made and received regardless the use of other handsets. Set up a call type group to assign handsets to the cockpit-reserved group, see *Set the call types for AVIATOR Wireless Handsets* on page 6-46, *Configure the Phone/Fax interface (2-Wire) of the SBU* on page 6-34 and *Configure the ISDN interface of the SBU* on page 6-35.
   - Use the additional numbers for other handsets, e.g. in the cabin.

   Note The handsets using additional numbers must be AVIATOR Wireless Handsets or other SIP phones, a normal 2-wire handset cannot be used.
5. Type in the VoIP **APN** used for Multi-voice. You find the Multi-voice APN name in your subscription documentation.
6. Click **Apply**.

Set up additional numbers

Enter the additional numbers under **PHONE BOOK** > **Mobile numbers**.

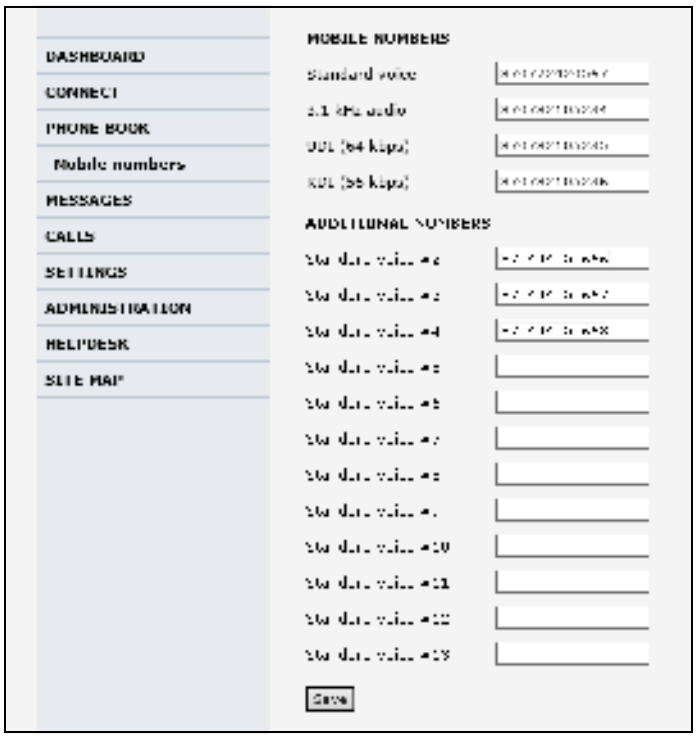


Figure 6-77: Web interface: Phone book, mobile numbers (example, Multi-voice)

Assign additional numbers

Assign additional numbers under **SETTINGS** > **IP handsets** > **Call settings**.

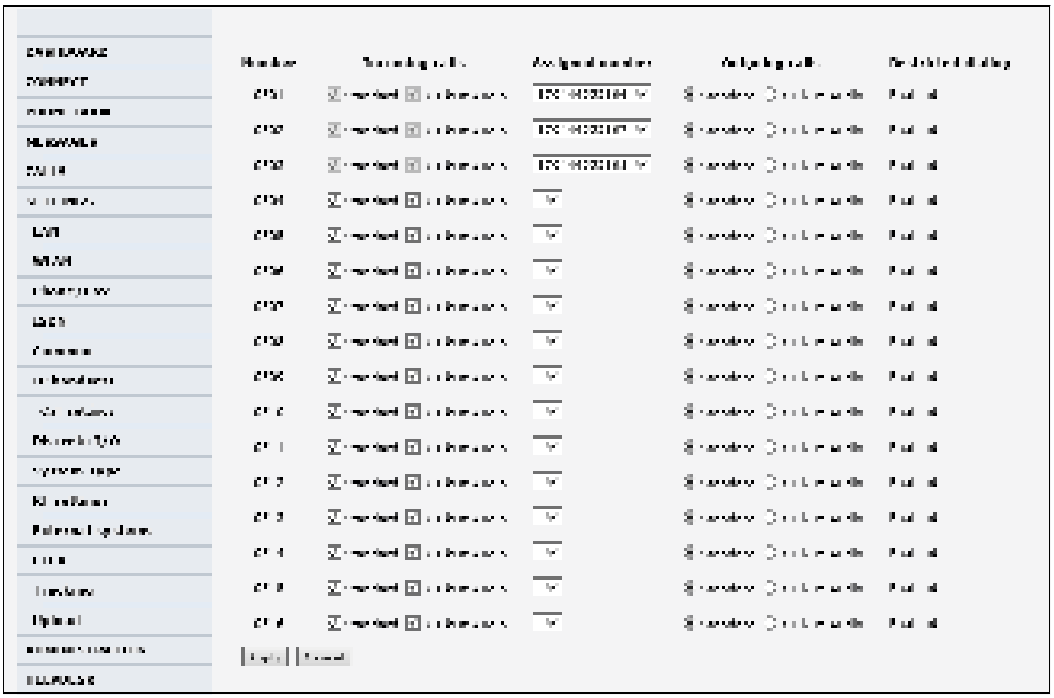


Figure 6-78: Web interface: Settings, IP handsets, Call settings (example, Multi-voice)

6.10 Site map of the SBU web interface

The web interface offers a site map page. Use this page to get an overview over the menus, submenus and topics. The following drawing shows the site map.

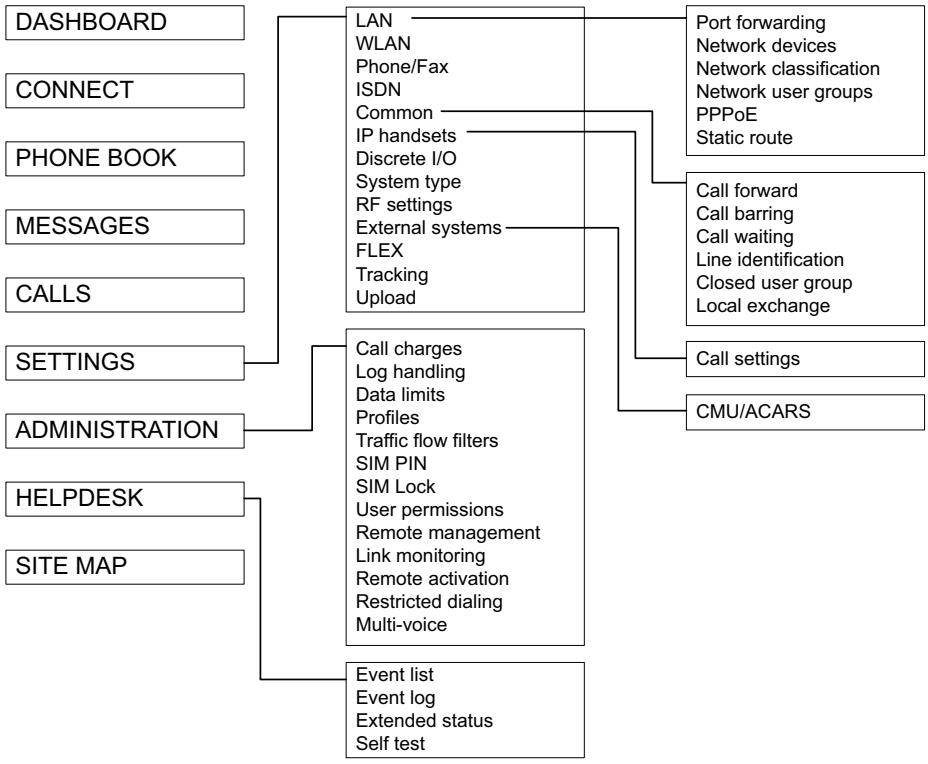


Figure 6-79: Web interface: Site map

To access the site map, select **SITE MAP** from the left navigation pane. You can click on each menu in the site map to go directly to the page or display the respective submenu.

6.11 Configuration of 3rd party phone systems

6.11.1 Sigma^7 setup

Note When you set up Handset #5 and #6 in the Configuration Program, you must select **ICG Handset** for Sigma^7. See *External equipment* on page 6-11.

There are a few adjustments that are typically made at the time of installation testing. Normally it is necessary to set the ear volume of the handset initially, in order to obtain sufficient volume in the ear piece.

Note The information in this section is only meant as a guideline. For complete information on the function of the Sigma^7 handset, refer to the Sigma^7 manual.

To set up the ear volume

To set up the ear volume of the handset, do as follows:

1. Take the handset out of the cradle and enter the menu system of the handset.
2. Use the volume control keys to scroll to the EARVOL setting.
3. Press the **Flash** key to select EARVOL.
4. Change the volume setting to **4** using the volume control keys.
5. Press **#** to store the setting. To adjust other settings, press **Flash** to return to the menu.
6. Place the handset back into the cradle.

For further information on the Sigma^7 handset, refer to the manual for the Sigma^7 handset.

6.11.2 ICG DECT Cordless Handset setup

It is sometimes necessary to adjust the volume of the ICG DECT Cordless Handset, in order to have sufficient volume in the ear piece. Also, you may want to change the setting of the handset from pulse to tone, if this is not already set.

Note The information in this section is only meant as a guideline. For complete information on the function of the ICG DECT Cordless Handset phone, refer to the manual for your ICG DECT Cordless Handset phone.

To set the volume

To change the volume setting, enter the handset menus and do as follows:

1. Scroll to **Audio Sett** and press **OK**.
2. Select **H/Set Vol** and press **OK**. The current volume is heard in the ear piece and the level is displayed.
3. Scroll to the desired volume and press **OK**.

To switch to Tone dialing

To change the dialing mode, do as follows:

1. Open the handset menu.
2. Scroll to **Temp Tone** and press **OK**. Tone dialing is now active.

6.11.3 Iridium Communication System, ICS-200

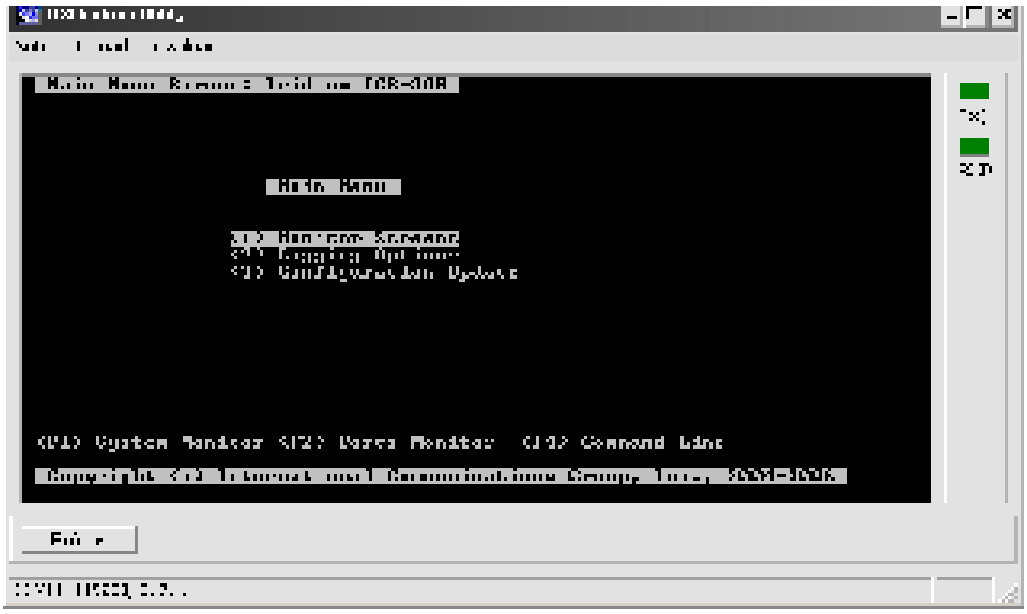
Overview

This section explains basic configuration of the ICS-200 system. Screen shots and instructions are given for **ICS-200 firmware revision F**, minor changes or variations may exist for newer firmware revisions.

For further information on the ICG configuration utility and the ICS-200 system in general, please refer to the ICS-200 Installation Manual available on ICG's homepage http://www.intcomgrp.com.

Important When simultaneously operating the AVIATOR 700 over the Inmarsat network and the ICS-200 there is a potential risk of interference.

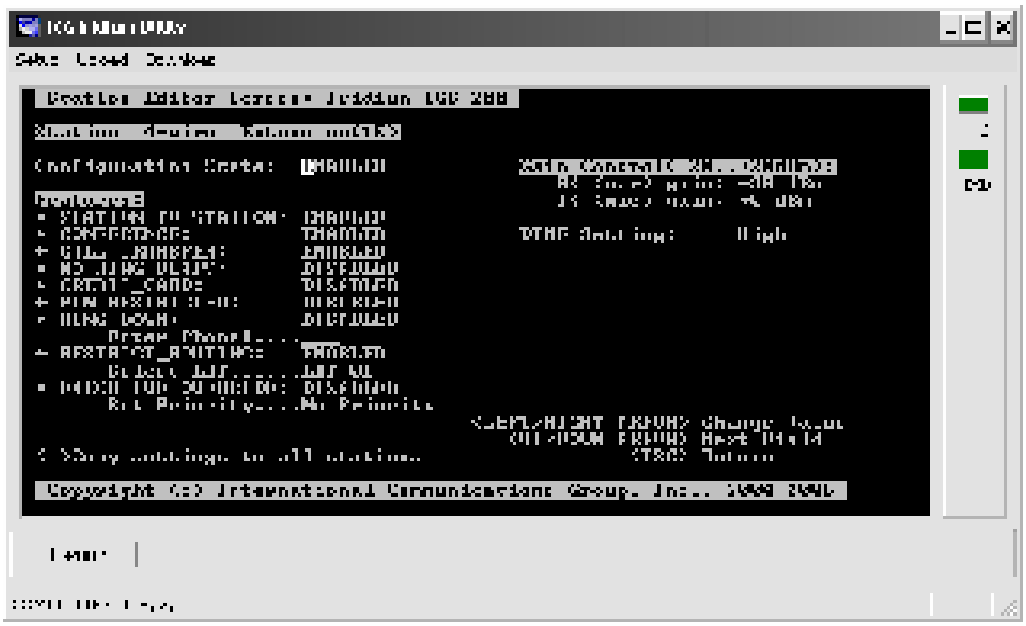
ICS-200 is configured from the ICG configuration utility. The main menu of this application is shown below.



Configure audio levels and outgoing routing for the 4-wire ports

1. From the **Main Menu**, select **Configuration Update**.
2. Select **Configure Ports**.
3. In the **Ports Editor** menu, select the first 4-wire port, **Station 4 wire (15)**.
4. Change **RESTRICTED_ROUTING** to **ENABLED**, and select **LBT** as **LBT-01**.

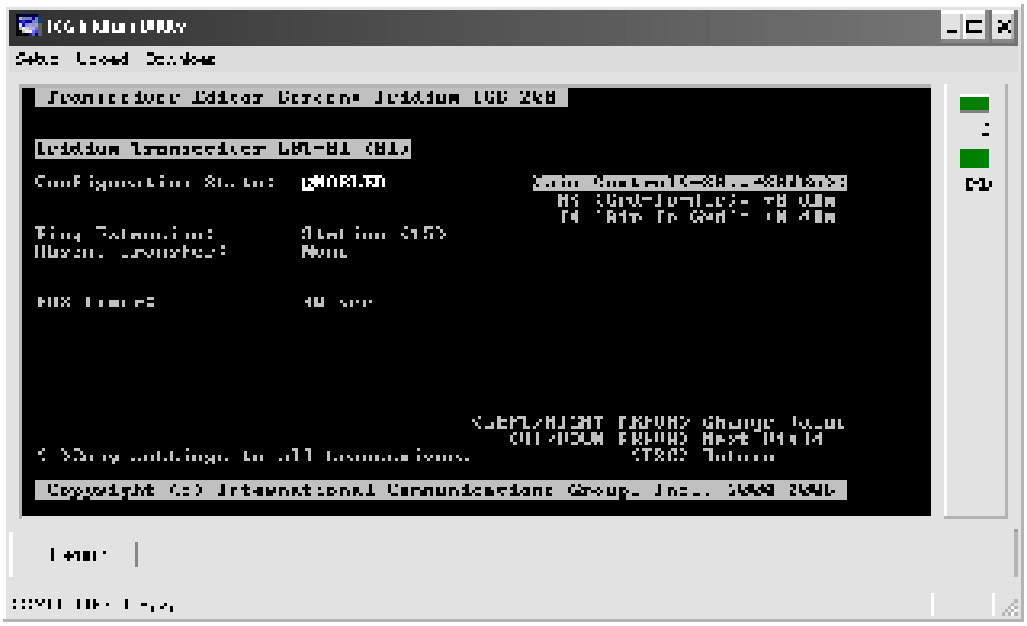
5. Change **Rx (ear) gain** to **-20 dBm**.
6. Verify that **TX (mic) gain** is set to **+0 dBm** and that **DTMF** setting is **High**.
   Configuration of extension 15 will then be as shown below.



7. Press **<Esc>** to return to the **Ports Editor** menu.
8. Repeat the same configuration for extension 16, but set the LBT to **LBT-02**.

Configure incoming routing for the transceivers

1. From the **Ports Editor** menu, select **Transceiver LBT-01 (01)**.
2. Configure **ring extension** to be **Station (15)**.
   Configuration of LBT-01 will then be as below

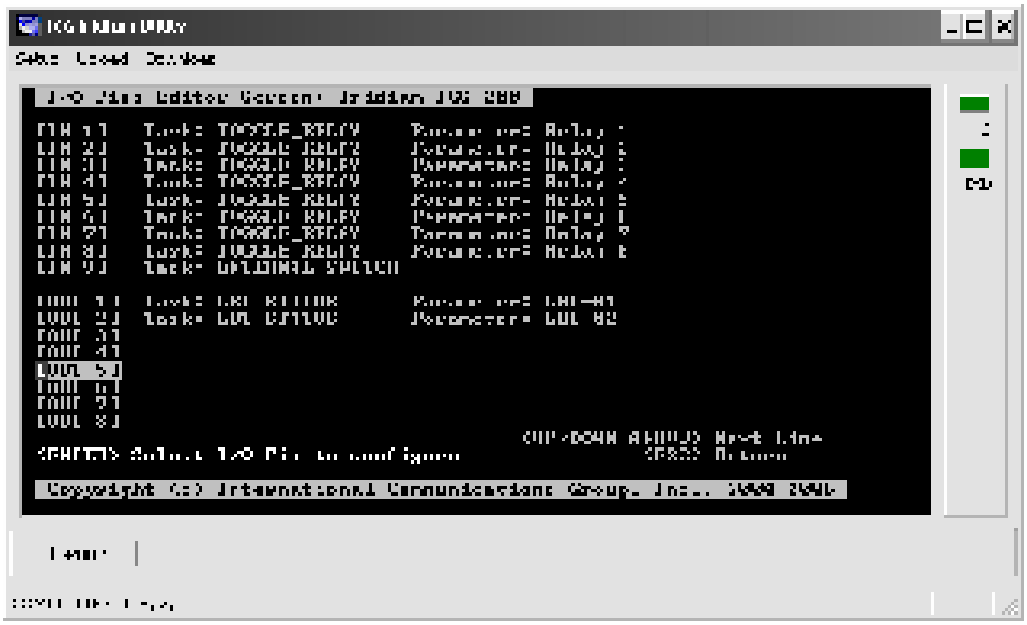


3. Press **<Esc>** to return to **Ports Editor** menu.

4. Repeat the same configuration for LBT-02, but set the ring extension to **Station (16)**.

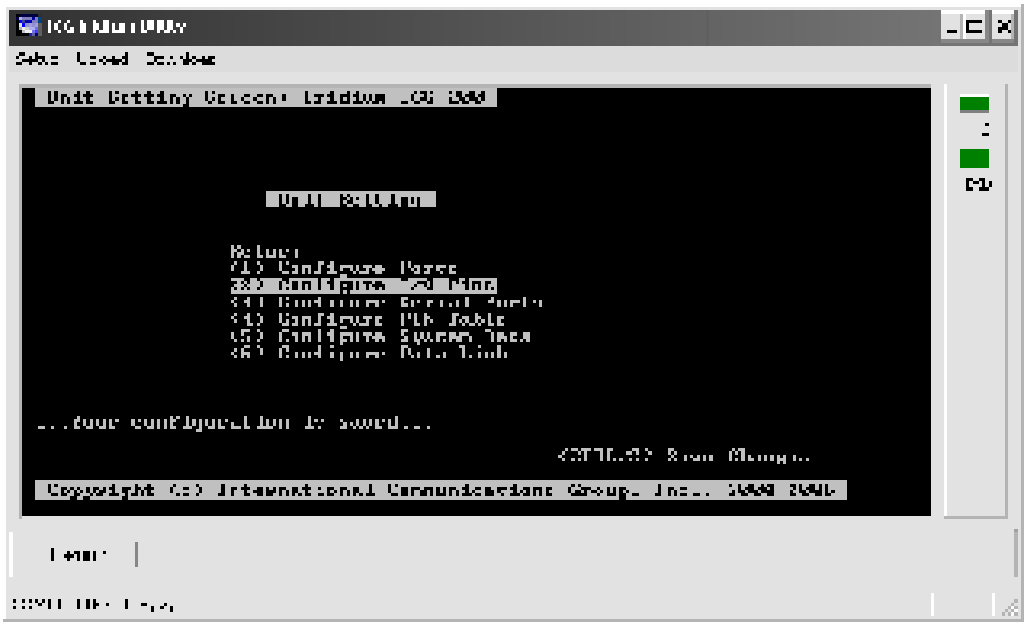
Configure I/O pins

1. Press **<Esc>** until you are back in the **Unit Setting** menu.
2. Choose **Configure I/O pins**.
3. In the **I/O Pins Editor** menu, select **OUT 1** and then select **Task** as **LBT_AVAIL** and parameter as **LBT-01**.
4. In the **I/O Pins Editor** menu, select **OUT 2** and then select **Task** as **LBT_AVAIL** and parameter as **LBT-02**.
   The **I/O Pins Editor** menu should then look as below.

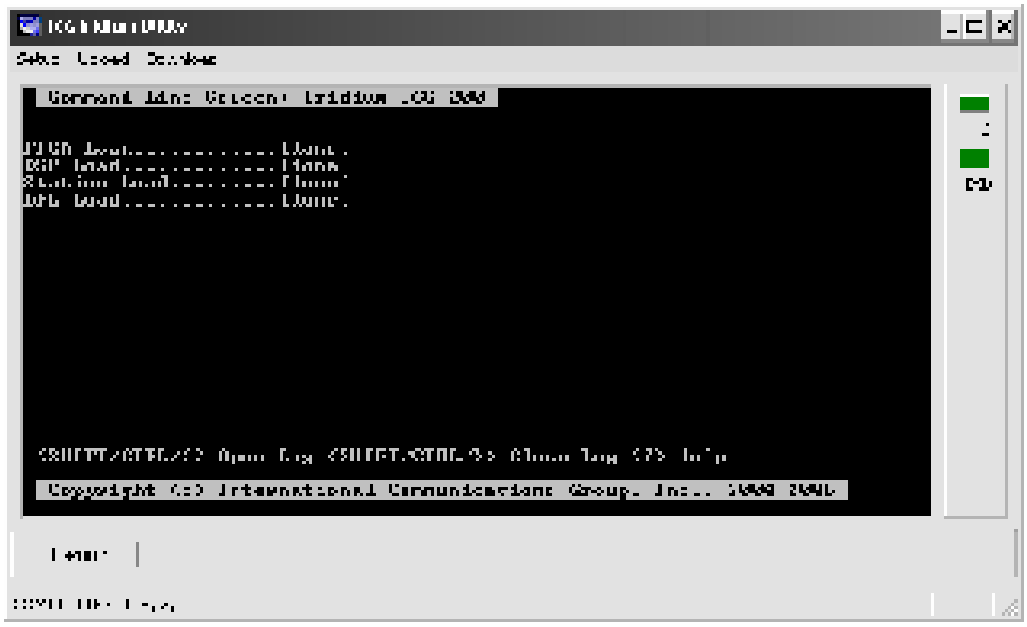


Save settings and reboot

1. Press **<Esc>** to get back to the **Unit Setting** menu, and then use **CTRL-S** to save the settings.
   ICS-200 then responds **Configuration is saved** as below.



2. Press **F4** to get a command prompt, then type **reset** and press **<Enter>** to reset the unit for the new settings to take effect.
   The response should be as shown below.



6.12 AVIATOR 700 system ready for use

Having installed the AVIATOR 700 system, activated the SIM card, entered the ICAO number and configured the system you can verify whether the system is fully operational. Check that all LEDs on the SDU and SBU front panel are green.

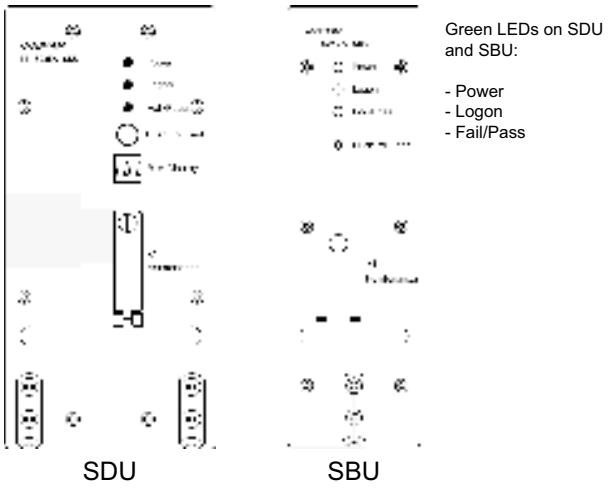


Figure 6-80: AVIATOR 700 system ready for use

Note **Line of sight during operation!**

Make sure that there is a line of sight between the Satcom antenna and the satellite in order to logon to and use the satellite service.

Check procedures

7.1 Basic check flow

Important None of the check procedures described in this chapter can serve as a replacement for any of the required approvals and certifications.

7.1.1 Check procedures

In order to ensure the correct function of the system, the below check flow should be followed.

1. **Pre-Installation Check**.
   Perform this check after wiring, but before inserting the LRUs.
   This is a check of the most important connections, the circuit breakers, cable losses etc.
   Refer to *Pre-Installation Check* on page 7-2.
2. **Configuration**.
   After performing the Pre-Installation Check, configure the system using the Aero-SDU Configuration Program and the SBU web interface.
   Refer to *Configuration of the AVIATOR 700 system* on page 6-1.
3. **Functional Test**, **on Ground**.
   When the system is configured and activated, a functional test should be performed. The functional test should check all user interfaces, such as voice, fax, high speed data, annunciators, satcom on/off switch etc.
   Refer to *Functional Test, on Ground* on page 7-4.
4. **Interference Test**.
   After the functional test, an interference test should be performed. This test is to verify that transmission from the AVIATOR 700 system has no effect on the avionics of the aircraft, particularly navigation equipment.
   Refer to *Interference Test* on page 7-6.

   Note If additional avionics are installed in the aircraft at a later stage, the interference test should be performed again to ensure correct operation.
5. **Functional Test**, **Airborne**.
   After the interference test, a functional test should be performed while the aircraft is airborne. This test is basically the same as the functional test on ground. Refer to *Functional Test, Airborne* on page 7-7.

7.2 Pre-Installation Check

It is recommended to check the installation before inserting LRUs. The following list provides some of the most important issues, but other additional checks may be relevant for the specific installation.

Item	Description of Check	Reference Section	√	Value/ Comment
Mounting trays	Ensure service/maintenance accessibility.	5.2		
Coding of tray connectors	Check orientation of coding pins in SDU tray connector	4.1.3		
	Check orientation of coding pins in HPA tray connector	4.2		
	Check orientation of coding pins in SBU tray connector	4.3.3		
Quadrax insert orientation	Check that the Quadrax connector is oriented correctly in the SDU tray connector.	4.1.3		
	Check that the Quadrax connectors are oriented correctly in the SBU tray connector.	4.3.3		
Grounding stud	Check that the grounding stud on the DLNA is connected correctly to aircraft chassis.			
Circuit breaker rating	Check the SDU circuit breaker: 4 A	5.3.3		
	Check the HPA circuit breaker: 20 A	5.3.3		
	Check the SBU circuit breaker: 7.5 A	5.3.3		
Polarity of 28 V DC Power	Check 28 V DC polarity on SDU tray connector (TP1: +28 V DC Power and TP2: GND, Power Return)	4.1.3 5.3.3		
	Check 28 V DC polarity on HPA tray connector (BPA1: +28 V DC Power and BPA2: GND, Power Return)	4.2 5.3.3		

Table 7-1: Check Sheet: Installation Check Before Inserting LRUs.

Item	Description of Check	Reference Section	√	Value/ Comment
	Check 28 V DC polarity on SBU tray connector (TP1: +28 V DC Power and TP2: GND, Power Return)	4.3.3 5.3.3		
Handset power	Check power to the handsets on DB15 connector to be inserted in cradle	5.3.11 4.4.2		
SDU nON	Check that TP5 (nOn) on the SDU tray connector is connected to a switch or directly to Chassis GND (TP3).	5.3.3 4.1.3		
SBU nON	Check that TP3 (nOn) on the SBU tray connector is connected to a switch or directly to Chassis GND (BP3).	5.3.3 4.3.3		
Handset connections to Cradles	Check that 2-wire handsets are not connected to 4-wire cradles.	5.3.11		
RF cable losses	Measure and note the cable loss from SDU to DLNA	5.3.4 6.2.3		
	Measure and note the cable loss from SDU to HPA			
	Measure and note the cable loss from HPA to DLNA			
	Measure and note the cable loss from DLNA to Antenna			
	Measure and note the cable loss from SBU to Rx Power Splitter			
	Measure and note the cable loss from SBU to Tx Coupler			
Software version	Check the software version of the SDU.			
	Check the software version of the SBU.			

Table 7-1: Check Sheet: Installation Check Before Inserting LRUs. (Continued)

After a successful check of the installation, use the Aero-SDU Configuration Program and the built-in web interface of the SBU to configure the system. For further information, refer to *Configuration of the AVIATOR 700 system* on page 6-1.

Note The cable loss values registered in the above table must be entered into the Aero-SDU Configuration Program during configuration.

7.3 Functional Test, on Ground

7.3.1 Before you start

The system must be activated before performing this test. For further details see *Activation of airtime services* on page 5-85.

7.3.2 Check list for functional test on ground

The following list provides some of the most important checks to perform after power-up, but other additional checks may be relevant for the specific installation.

If you already know that certain interfaces or services are not going to be used, it is not necessary to perform tests on these specific interfaces or services.

Item	Description of Check	Reference	√	Value/ Comment
SDU LEDs	Check that the SDU Power LED is green			
	Check that the SDU Fail/Pass LED is green			
	Check that the SDU Logon LED is green			
SBU LEDs	Check that the SBU Logon LED is green			
Voice handsets #1 to #6	Make an aircraft to ground call	AVIATOR 700 User Manual		
	Make a ground to aircraft call	AVIATOR 700 User Manual		
SBU - Fax	Send a fax over SwiftBroadband from ground to aircraft.	AVIATOR 700 User Manual		
	Send a fax over SwiftBroadband from aircraft to ground.	AVIATOR 700 User Manual		
SBU - ISDN	Connect to the internet from a laptop, using the ISDN connection.	AVIATOR 700 User Manual		
SBU - Ethernet	Connect to the internet from a laptop, using the Ethernet connection.	AVIATOR 700 User Manual		

Table 7-2: Check Sheet: Functional Test, on Ground

Item	Description of Check	Reference	√	Value/ Comment
SBU- WLAN	Connect to the internet from a laptop, using the WLAN connection.	AVIATOR 700 User Manual		
ACARS / AFIS / CMU	Send test message and verify reply or request for weather data and verify the data is downloaded. Both is done from the CDU / MCDU.	CDU / MCDU Manual		

Table 7-2: Check Sheet: Functional Test, on Ground (Continued)

7.4 Interference Test

7.4.1 Introduction

It is recommended to perform an interference test to ensure that transmission from the AVIATOR 700 system does not influence any of the primary avionics on the aircraft.

Important This test is **not** a replacement for any EMC tests in connection with e.g. an STC, TC or Field Approval. It is only an additional practical test of the application.

7.4.2 Test

During the test, the aircraft must be on ground. A skilled person should be observing the instruments.

1. Log on to the satellite in the lowest possible elevation.
2. Place the aircraft in such a position that the satcom antenna transmits in the direction of the other antennas on the aircraft.

   Example: If the satcom antenna is tail-mounted, place the aircraft with the nose pointing in the direction of the satellite. The antenna will then transmit in the direction of the other antennas placed in front of it.
3. While transmission is ongoing, observe all primary navigation instruments, autopilot, VOR/ILS, ADF and DME etc. and make sure none of the instruments are influenced by the AVIATOR 700 transmission.
4. Check GPS signal-to-noise ratio.
5. Monitor all VHF communication and make sure squelch is not opened unintentionally.
6. To check that the SBU can send continuously at a high data rate over SwiftBroadband make a 3.1 kHz audio call from the SBU.
7. If TCAS/ACAS is installed, verify that it is not flagged “FAILED” during satcom transmission.

Note If any additional avionics are installed at a later stage, the interference test should be performed again.

7.5 Functional Test, Airborne

The following list provides some of the most important checks to perform while the aircraft is airborne, after all on-ground tests are passed. Other additional checks may be relevant for the specific installation. If you already know that certain interfaces or services are not going to be used, it is not necessary to perform tests on these specific interfaces or services.

If any of the checks should fail, guidance is provided in the section *Initial troubleshooting* on page 8-27.

Item	Description of Check	Reference	√	Value/ Comment
SDU - Voice	Make an air to ground call and keep it up during a 360° turn. Monitor the C/No for any drops during the turn.	AVIATOR 700 User Manual		
	Make a ground to air call	AVIATOR 700 User Manual		
SBU - Voice	Make an air to ground call and keep it up during a 360° turn. Monitor the C/No for any drops during the turn.	AVIATOR 700 User Manual		
	Make a ground to air call	AVIATOR 700 User Manual		
SDU - Fax	Send an H^+ fax from air to ground	AVIATOR 700 User Manual		
	Send an H^+ fax from ground to air	AVIATOR 700 User Manual		
	Send an HSD fax from air to ground	AVIATOR 700 User Manual		
	Send an HSD fax from ground to air	AVIATOR 700 User Manual		
SBU - Fax	Send a fax over SwiftBroadband from ground to aircraft.	AVIATOR 700 User Manual		
	Send a fax over SwiftBroadband from aircraft to ground.	AVIATOR 700 User Manual		
SBU - ISDN	Connect to the internet from a laptop, using the ISDN connection.	AVIATOR 700 User Manual		
SBU - Ethernet	Connect to the internet from a laptop, using the Ethernet connection.	AVIATOR 700 User Manual		

Table 7-3: Check Sheet: Functional Test, Airborne

Item	Description of Check	Reference	√	Value/ Comment
SBU- WLAN	Connect to the internet from a laptop, using the WLAN connection.	AVIATOR 700 User Manual		
ACARS / AFIS / CMU	Send test message and verify reply or request for weather data and verify the data is downloaded. Both is done from the CDU / MCDU.	CDU / MCDU Manual		

Table 7-3: Check Sheet: Functional Test, Airborne (Continued)

Maintenance and troubleshooting

8.1 Continued Airworthiness

8.1.1 General

Maintenance

Maintenance requirements and instructions for continued airworthiness of the Cobham units in the AVIATOR 700 System are restricted to the fact that the TT-5035A Satellite Data Unit requires replacement of an internal battery at a periodic scheduled service task of 7 years (Overhaul). The Overhaul period is defined as the recommended period from production date or last maintenance to next maintenance.

Note When replacing the **TT-5035A Satellite Data Unit (SDU)**, it is important to leave the TT-5035A-001 Configuration Module (CM) behind, attached to the airframe with a wire.

Note When replacing the **TT-5040A SwiftBroadband Unit (SBU)**, it is important to leave the TT-5040A-001 Configuration Module behind, attached to the airframe with a wire.

Contact for support

You can use the Cobham SYNC Partner Portal or contact Cobham by telephone or send an e-mail to Cobham technical support.

- **Cobham SYNC:** https://sync.cobham.com
- **Mail address for Technical support:** AVIATOR.support@cobham.com.
- **Telephone numbers for Technical support:**
  - APAC: +65 6643 4700
  - Greater China: +86 213 393 3006
  - EMEA: +45 3955 8989
  - Americas: +1 925 798 2399

8.1.2 Instructions

Documentation

Maintenance information for the AVIATOR 700 System is contained in this manual. Place the wiring diagram information in this manual in the aircraft operator's appropriate aircraft wiring diagram manuals.

Inoperative units

If a system component is inoperative, remove or replace the unit.

Important If a level-D certified system detects an inconsistent hardware unit (level E) or software image (level E), it enters failure mode and the system will not be operational. Inconsistency messages are displayed to clearly inform the service personnel about the reason for this failure mode.

If an inoperative SDU is removed, take out the TT-5035A-001 Configuration Module (CM) and fasten the CM and wiring. Secure all cables, collect applicable switches and circuit breakers, and label them inoperative. Revise the equipment list and weight and balance as applicable prior to flight and make a log book entry that the unit was removed.

Likewise, if an inoperative SBU is removed, take out the TT-5040A-001 CM and fasten the CM and wiring to the air frame. Secure all cables, collect applicable switches and circuit breakers, and label them inoperative. Revise the equipment list and weight and balance as applicable prior to flight and make a log book entry that the unit was removed.

For information on how to return a unit for repair, see *Return units for repair* on page 8-31. Once repaired, reinstall the unit in the aircraft in accordance with the instructions in this Installation and Maintenance Manual.

Scheduled Maintenance Program

The high-speed data system components are considered on-condition units and no additional maintenance is required other than a check for security and operation at normal inspection intervals.

Scheduled Maintenance Program tasks to be added to the aircraft operator's appropriate aircraft maintenance program are as follows:

Recommended Periodic Scheduled Servicing Tasks:

TT-5035A Satellite Data Unit (SDU)	7 years
TT-5040A SwiftBroadband Unit (SBU)	None required
TT-5035A-001 Configuration Module (CM)	None required
TT-5040A-001 Configuration module for SBU	None required
TT-5014A High Power Amplifier (HPA)	None required
TT-5620A 4-Wire Handset	None required
TT-5622A 4-Wire Cradle	None required
TT-5621B 2-Wire Handset	None required
TT-5622B 2-Wire Cradle	None required
TT-5013A Type-F DLNA (Original Manufacturer P/N: COMDEV 173628-101)	None required
TT-5624B AVIATOR Wireless Handset TT-5626B Cradle for AVIATOR Wireless Handset	See *AVIATOR Wireless Handset and Cradle Installation & Maintenance Manual* (*98-129600*).

Recommended Periodic Inspections:

TT-5035A Satellite Data Unit (SDU)	None required
TT-5040A SwiftBroadband Unit (SBU)	None required
TT-5035A-001 Configuration Module (CM)	None required
TT-5040A-001 Configuration module for SBU	None required
TT-5014A High Power Amplifier (HPA)	None required
TT-5620A 4-Wire Handset	None required
TT-5622A 4-Wire Cradle	None required
TT-5621B 2-Wire Handset	None required
TT-5622B 2-Wire Cradle	None required
TT-5013A Type-F DLNA (Original Manufacturer P/N: COMDEV 173628-101)	None required
TT-5624B AVIATOR Wireless Handset TT-5626B Cradle for AVIATOR Wireless Handset	See *AVIATOR Wireless Handset and Cradle Installation & Maintenance Manual* (*98-129600*).

Recommended Periodic Scheduled Preventative Maintenance Tests:
(Tests to determine system condition and/or latent failures)

TT-5035A Satellite Data Unit (SDU)	None required
TT-5040A SwiftBroadband Unit (SBU)	None required
TT-5035A-001 Configuration Module (CM)	None required
TT-5040A-001 Configuration module for SBU	None required
TT-5014A High Power Amplifier (HPA)	None required
TT-5620A 4-Wire Handset	None required
TT-5622A 4-Wire Cradle	None required
TT-5621B 2-Wire Handset	None required
TT-5622B 2-Wire Cradle	None required
TT-5013A Type-F DLNA (Original Manufacturer P/N: COMDEV 173628-101)	None required
TT-5624B AVIATOR Wireless Handset TT-5626B Cradle for AVIATOR Wireless Handset	See *AVIATOR Wireless Handset and Cradle Installation & Maintenance Manual* (*98-129600*).

8.2 Get support: Service log and HELPDESK

If this manual does not provide the remedies to solve your problem, you may want to contact your Airtime Provider or your local distributor.

8.2.1 Airtime support

If you need assistance from your Airtime Provider, call the help desk, click **HELP DESK** or check your Airtime subscription for a contact number.

8.2.2 System support

If you need assistance with problems caused by the SDU, SBU, and HPA or the antenna, please call a distributor in your area. A list of certified partners and distributors is available on Cobham web site: www.cobham.com/satcom. Select **Where to buy**, then **AVIATOR**, **EXPLORER**, **SAILOR and Sea Tel branded products resellers**.

There are two tools available to help you troubleshooting the system.

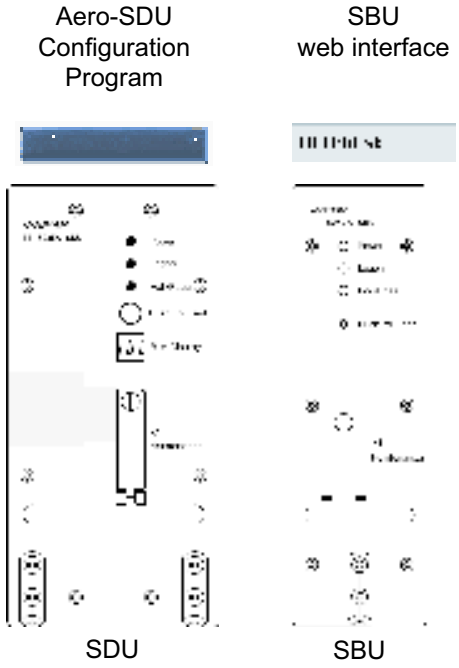


Figure 8-1: Support tools: Service log and Helpdesk

8.2.3 Service Log for the SDU

Generating a service log

When contacting your distributor for support, please include a service log. The service log contains information relevant for the service personnel during troubleshooting. When contacting your distributor for support, please enclose the service log for the SDU and the diagnostic report for the SBU.

To generate a service log, do as follows:

1. In the Aero-SDU Configuration Program click the button **Service Log** on the start page.
2. Choose a location for the file and click **OK** to save it.
3. It may take several minutes to complete the service log, wait until the operation is completed.

The service log contains also BITE error codes from the SDU, including 2 general BITE codes from the SBU. These SBU BITE codes inform you that there are errors in the SBU. Use the SBU diagnostic report for further information on the SBU BITE errors.

8.2.4 Help desk and diagnostic report from the SBU

Help desk

If you need help **with airtime-related issues** for the SwiftBroadband subscription you may call the Help desk. Enter the phone number for your Airtime Provider on this page. To access the Help desk, select **HELP DESK** from the left navigation pane in the SBU web interface.

Figure 8-2: Web interface: Help desk

If you have entered the Help desk number, it is displayed as a link. To change the number, click the link, change the number and click **Apply**. If you need help **with SBU- or antenna-related issues** call your local distributor.

Generating a diagnostic report from the SBU

When contacting your distributor for support, please include an SBU diagnostic report. The diagnostic report contains information relevant for the service personnel during troubleshooting. When contacting your distributor for support, please enclose the service log for the SDU and the diagnostic report for the SBU.

To generate a diagnostic report with valuable information for the service team, do as follows:

1. Reboot the system.
2. Establish the problem or situation in which the error occurred, or
3. Make a CS call (if possible), i.e. making a call with a handset connected to the SBU.
4. Make a PS call (if possible), i.e. establish a data connection.
5. Click **Generate report** from the **HELP DESK** page.
   In some browsers the file may open directly in your browser. If it does, choose **File > Save As** to save the file.
6. Choose a location for the file and save it on your computer.

8.3 Software update

Important When making a software update of the AVIATOR 700 system, consult you STC house/Cobham support for applicable SW versions.

The software upgrade procedure can be divided into 3 steps: SDU software upload, AVIATOR 700 startup and SBU software upload. In step 2 the HPA is updated and the system runs a POST (power on self test).

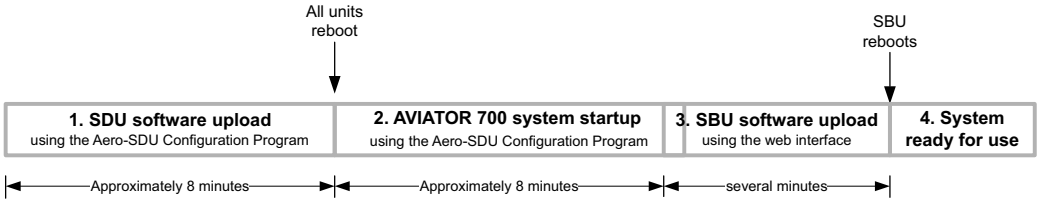


Figure 8-3: Software upgrade procedure for SDU and SBU

Important

Level-D and Level E consistency!

A level-D certified system detecting an inconsistent hardware unit or software image enters failure mode, and the system will not be operational. Inconsistency messages clearly inform the service personnel about the reason for this failure mode.

Pay great attention to selecting the correct software file: Level D or Level E for both SDU and SBU. **A mismatch of Level D and Level E software is not allowed and will result in a non-functioning system.** A mismatch will be displayed in the built-in web interface and as a BITE error.

Minimum Software Version required for AVIATOR 700 SBU (Level E):

- Version 1.06, File: Swift_broadband-E_106.dl

Minimum Software Version required for AVIATOR 700D SBU (Level D):

- Version 2.01, File: Swift_broadband-D_201.dl

A POST error (UU24) is displayed if there is a mismatch between the software versions or if the RS422 connection between the SDU and SBU is not working properly.

Hardware and software requirements

The following items are required before the software can be updated:

- One IBM compatible PC with a 9-pin serial COM port (if not available, a USB to serial port converter can be used) and a standard Ethernet port available.
- Minimum PC requirements: Processor speed: 1 GHz, 512 MB RAM.
  Operating system for SDU configuration: Windows 7, 8 or 10.
  Browsers for SBU configuration: Minimum Internet Explorer 7, Mozilla Firefox 2.0 or Apple Safari 2.0.

- One serial maintenance cable 9-pin to 15-pin Sub-D, Cobham part no. 37-112940. Refer to Figure 5-35 on page 5-77.
- One straight LAN cable.
- The Cobham Aero-SDU Configuration Program (Cobham part no. 84-119958-114 or greater) installed on the PC. This program can be downloaded from https://sync.cobham.com/satcom/support/downloads.
  Select **Product software > Aeronautical** to narrow the search.
- An unzip program installed on the PC (e.g. WinZip)
- The zipped files containing the new software: 1 file for the SDU and 1 file for the SBU.
  - **For Level E**, the new software can be downloaded from https://sync.cobham.com/satcom/support/downloads.
    Select **Product software > Aeronautical** to narrow the search.
  - **For Level D**, contact Cobham Aero tech support at AVIATOR.support@cobham.com for access to the ftp site where you can download the Level D software.

8.3.1 SDU

Preparing the software update

Note | Software update should only be done by qualified service personnel.

1. On the PC, unzip the zip file containing the new software for the SDU. Remember or write down which folder you extracted the file to.
2. Connect the SDU front port to the PC COM port, using the interconnect cable.
3. Power on the AVIATOR 700 system.
4. Close all other applications on the PC.
5. Start the Aero-SDU Configuration Program.
6. Normally you will enter the program in the **Start Up** tab window. If not, then select **Window**, **Start up** from the top menu bar.
7. From the top menu bar select **View**, **Options**. Select the COM port that you connected to the SDU in step 2.
8. Click the button **SW Update**. A new tab window, **Software Update**, opens.
9. Click on the '...' button next to the **File Selection** box in order to find the software file to upload. Find the file extracted in step 1 and open it.

Updating the software

1. Click the **Start** button in the field **SW Update**.
2. The software upload to the SDU is now in progress. You can follow the status in the progress bar. The upload will take about 8 minutes.
3. Should you experience a time-out failure during the upload, just wait 2 minutes and click **Start** again. The upload will then start over again.
4. When the upload has finished, wait 8 minutes while the SDU initializes and runs a self test. The Aero-SDU Configuration Program will guide you.
5. Do not start the upload of new software to the SBU before the SDU software update has finished successfully.

If software upload fails - how to recover

In rare cases the software upload may fail, leaving the software in the SDU corrupted. This will happen if the power to the SDU is interrupted during the first stage of the upload. If all 3 LEDs on the front stay orange after power up, the software is corrupted. To recover from this, reload the software with the Aero-SDU Configuration Program as follows:

1. Turn **off** the SDU.
2. Open the Aero-SDU Configuration Program and click the **Software update** button.
3. Click the **Start** button and turn on the SDU immediately after.
4. Continue as shown in *Updating the software* on page 8-10.

8.3.2 SBU

Preparing the software update

Note Software update should only be done by qualified service personnel.

1. On the PC, unzip the zip file containing the new software for the SBU. Remember or write down which folder you extracted the file to.
2. Connect the SBU to the PC LAN port, using the SBU maintenance connector and a straight LAN cable.
3. Power on the AVIATOR 700 system.
4. Open your browser and enter the IP address of the SBU. The standard IP address is **192.168.0.1**.

   Note If the local IP address of the SBU has been changed and you do not have the new address, you can temporarily set the IP address to the default value by pushing the **Reset** button next on the front plate of the SBU. For detailed instructions see *How to reset the IP address or the terminal software to default settings* on page 8-23.

   For further information on the Reset button, see *IP Reset (Default) button on the SBU* on page 8-22.

   For further information on IP addresses of the SBU see *Set up the LAN IP addressing* on page 6-29.
5. Wait until step 2 in the SDU upgrade procedure has finished.
6. In the start-up page of the Aero-SDU Configuration Program click the **SBU Dashboard** button to access the SBU web interface.

Updating the software

1. In the web interface of the SBU, select **SETTINGS** from the left navigation pane.
2. Click **Upload** from the left navigation pane.

Figure 8-4: Web interface: Settings, Upload

3. The **Current software version** field shows the current software version.
4. To automatically find new software available click **Check for updates**.

   Note | This works from software 1.06 (Level D) and 2.01 (Level E).

   or click **Browse**...
5. Browse to the new software version and accept it.
6. Click the **Upload** button.
   Note that the upload procedure takes a couple of minutes. Follow the instructions given in the Aero-SDU Configuration Program. When done, the SBU automatically restarts with the new software version.

If software upload fails - how to recover

To recover from a failed software upload, turn off the SBU and turn it on again. Then repeat the upload procedure as described in *Updating the software* on page 8-12.

If software upload still fails, use the IP Reset button as described in *IP Reset (Default) button on the SBU* on page 8-22 to initiate a software upload from an external server.

8.3.3 Verify the software update

Test procedure

1. Verify in the Aero-SDU Configuration Program (Button **Software update**, link: **Show more info**) that a green bar appears for the SDU in the SW status field, and that the version number in the same line is the new version number. The SBU software version can be viewed in the **DASHBOARD** window of the web interface.
2. After completing the software update procedure, the SDU and the SBU will perform a POST (Power On Self Test).
3. When the POST has finished, the green Fail/Pass LED on the front of the SDU and/or the SBU must become steadily green. Verify that the Fail/Pass LED is not red nor flashing orange once every 2 seconds. Wait until the Fail/Pass LED is green.
4. Verify that the software update has been completed successfully. You find the software version number in the **DASHBOARD** window of the web interface.

Software identification procedure

On the PartNumber / SerialNumber identification label make a cross mark in the **Software Ver.** field number according to the new software version. This applies to the SDU 405035A or 405035A-THD and the SBU 405040A or 405040A-THD in the AVIATOR 700 configuration.

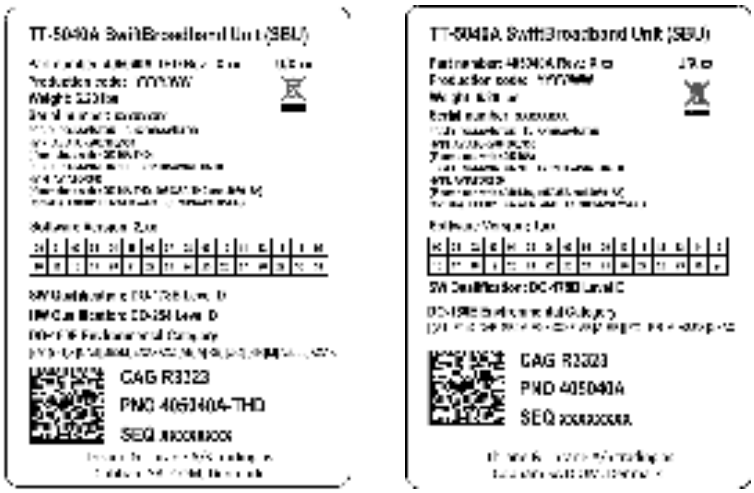


Figure 8-5: Software identification on the SBU label, Level D and Level E

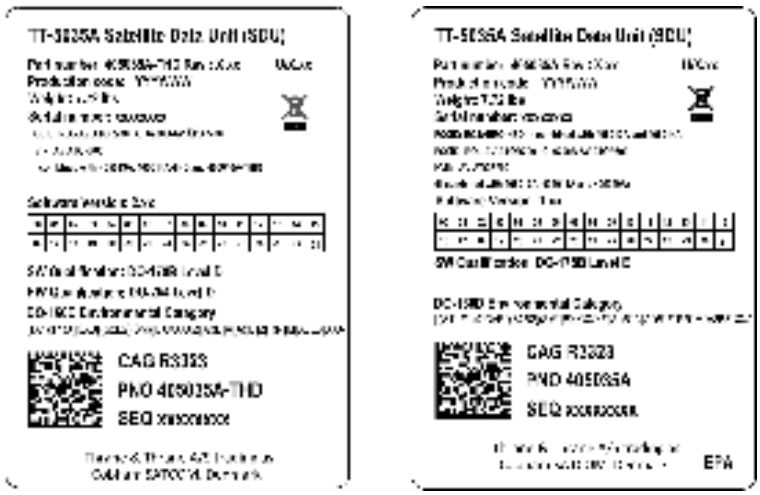


Figure 8-6: Software identification on the SDU label, Level D and Level E

8.4 To exchange LRUs

This document describes the procedures for removal and re-installation of an AVIATOR 700 LRU:

- SDU (405035A-THD)
- HPA (405014A-THD)
- SBU (405040A-THD).

8.4.1 Time consumption

The time consumption for removal and re-installation of an LRU is estimated to 15 minutes.

8.4.2 Tools

No tools required.

8.4.3 Removal and re-installation of the SDU or the SBU

1. Ensure that power is removed from the satcom system before removing any LRU!
2. Pull and turn to loosen the knurled knob(s) that retain(s) the LRU in the tray.

Figure 8-7: Exchanging an LRU (example)

3. Pull the LRU straight out from the tray by the handle. Be careful not to drop the unit.

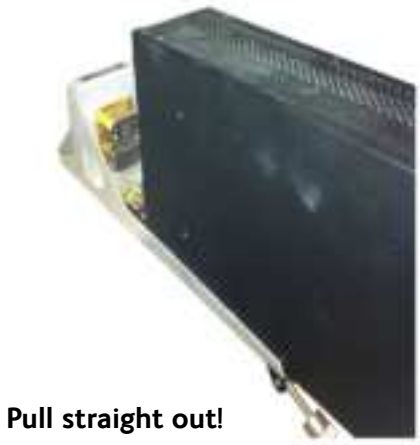


Figure 8-8: Pull out the LRU

4. If the LRU has a Configuration Module (CM), unscrew it and pull it out from the rear of the LRU.

Important Make sure that the Configuration Module is attached to the airframe.

Figure 8-9: Attach CM to the airframe

Re-installation

Follow the procedure above in reverse order. Make sure that the LRU is completely seated against the mating A404 connector.

8.4.4 Removal and re-installation of the HPA

Use the same procedure as for the SDU and SBU. The only difference is that the HPA does not have a Configuration Module.

Important **Coax connectors TPA1 and TPA2:** In case the cables for these are bent too much there is a risk that the connectors are not aligned correctly with the mating HPA connector. Make sure that there is no strain on the cables connected to TPA1 and TPA2 on the tray side.

8.5 Troubleshooting

8.5.1 Status signalling

Built-In Test Equipment

The SDU and the SBU both provide a Built-In Test Equipment (BITE) function in order to make fault diagnostics easy during service and installation.

The BITE test is performed during:

- Power On Self Test (POST), which is automatically performed each time the system is powered on.
- Person Activated Self Test (PAST), which is initiated by pushing the Push To Test button on the SDU front panel.

Also, during operation a Continuous Monitoring BITE function is performed.

Each LRU in the AVIATOR 700 system has its own BITE function but they are all controlled and monitored by the SDU in the system.

Results from the BITE tests for the complete AVIATOR 700 system are shown as four digit error codes. The two most significant digits represent the main group and are displayed on the SDU front panel. The two least significant digits give further details. All four digits are displayed in the 4-wire handset display together with more detailed information. The SBU may report BITE error codes to the SDU. These SBU BITE codes inform you that there are errors in the SBU. Use the SBU diagnostic report for further information on the SBU BITE errors. To get further information about the BITE error codes relating to the SBU access the web interface of the SBU.

Details on error messages after a POST or PAST for the SBU can be found in the event list of the SBU, see *View the Event list, Event log and extended status of the SBU* on page 8-24.

Means of signalling

The AVIATOR 700 system provides various methods for signalling the status of the system.

- **LEDs** on the front panel of the SDU, SBU and the HPA are used to signal:
  - Power on/off
  - Logon
  - Fail/Pass
- The **handset display** in the Thrane & Thrane 4-Wire Handset is used to display messages concerning:
  - information from the services

  - status information from the system to the user
  - equipment errors.
- The **MCDU display** shows the same messages as the 4-Wire Handset display.
- The **BITE display** on the SDU is used to display BITE error codes. Refer to *System messages* on page D-1.

Push to Test button on SDU and SBU

The SDU and SBU both have a hardware reset/test button placed on the front panel for BITE purposes. Use the button on the SDU to reset both SDU and SBU and to activate a self test (PAST).

Note **Do not use the Push to Test button on the SBU**. The SBU is reset automatically when the SDU is reset.

Messages in the Thrane & Thrane 4-Wire Handsets

Two types of messages are displayed in the Thrane & Thrane 4-Wire Handsets.

- Cause codes are information from the services or status information from the system to the user.
- BITE codes are information about errors in the equipment.

BITE codes are also shown in the BITE display of the SDU and in the display of the 4-Wire Handset.

For further information and lists of the possible error codes, see the appendix *System messages* on page D-1.

Messages in the MCDU display

The MCDU display shows the same messages as the 4-Wire Handset display.

BITE display on SDU

The two-digit 7-segment BITE display (green) is used for displaying BITE codes. Only the two most significant digits of the four-digit BITE codes are shown in the SDU display.

For further information and a list of the BITE codes, refer to *BITE Error codes* on page D-15.

8.5.2 Status signalling with LEDs

LEDs on the SDU

During the power-up procedure all LEDs on the front plate are orange. If all 3 LEDs on the front stay orange after power up, the software is corrupted.

Power LED

The function of the Power LED on the SDU is:

LED Color	Description
Green	Power OK
Orange	Uploading software
Off	No power

Table 8-1: Function of SDU Power LED

Logon LED (H^+)

The Logon LED on the SDU shows the H^+ logon status. The HSD logon status is only signalled in the 4-Wire Handset.

The possible colors are listed below, with a short description of what they indicate:

LED Color	Description
Red	Acquiring satellite network
Orange	Network synchronization
Green	Network Logon
Off	No acquired satellite/logged off

Table 8-2: Function of SDU Logon LED

Fail/Pass LED, SDU

The function of the Fail/Pass LED on the SDU is:

Behavior	Description
Steady red	A fault which may degrade the system operation is present in the system.
Alternating: Short green / long pause	Power On Self Test (POST) or Person Activated Self Test (PAST) in progress.
Alternating: Long green/ short orange 0.5 Hz	No current failure, but a BITE failure / warning is logged in the error log
Steady green	No faults

Table 8-3: Function of SDU Fail/Pass LED

LEDs on HPA

Power LED

The function of the Power LED on the HPA is:

Behavior	Description
Green	Power OK
Off	No power

Table 8-4: Function of HPA Power LED

Fail/Pass LED

The function of the Fail/Pass LED on the HPA is:

Behavior	Description
Red	Fail
Off	No Faults

Table 8-5: Function of HPA Fail/Pass LED

LEDs on SBU

During the power-up procedure all LEDs on the front plate are orange. If all 3 LEDs on the front stay orange after power up, check that the wiring between the SDU BP 56 and SBU TP 8 is wired and that the system is configured as an AVIATOR 700 (see *Set the system type* on page 6-49). If the wiring is good and the system is configured as an AVIATOR 700, the SBU software is corrupted. Contact your local distributor for instructions how to proceed.

Power LED on SBU	
Behavior	Description
Green	Power OK
Orange	During upstart procedure
Off	No power

Table 8-6: Function of the SBU Power LED

Logon LED on SBU	
Behavior	Description
Red	Acquiring satellite network
Orange	Network synchronization
Green	Network logon
Off	No acquired satellite/logged off

Table 8-7: Function of the SBU Logon LED

Fail/Pass LED on SBU	
Behavior	Description
Steady red	A fault which may degrade the system operation is present in the SBU
Flashing: short green/ long pause	Power On Self Test (POST) or Person Activated Self Test (PAST) in progress
Flashing: long green/ short orange	No current failure, but a BITE failure / warning is logged in the error log
Steady green	No faults

Table 8-8: Function of the SBU Fail/Pass LED

LEDs on maintenance connector

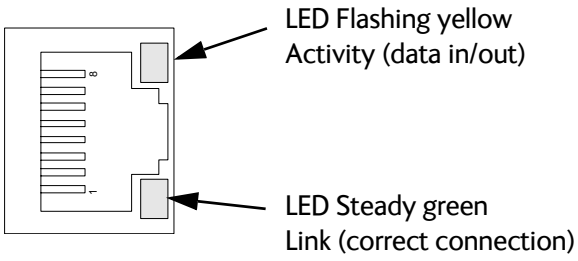


Figure 8-10: Function of the LEDs on the front maintenance connector

8.5.3 IP Reset (Default) button on the SBU

The SBU has an IP Reset (Default) button next to the front LAN maintenance connector below the metal cover. The button has two functions: To reset the terminal's IP address and netmask to the default value, 192.168.0.1 and to reset the terminal to factory default settings.

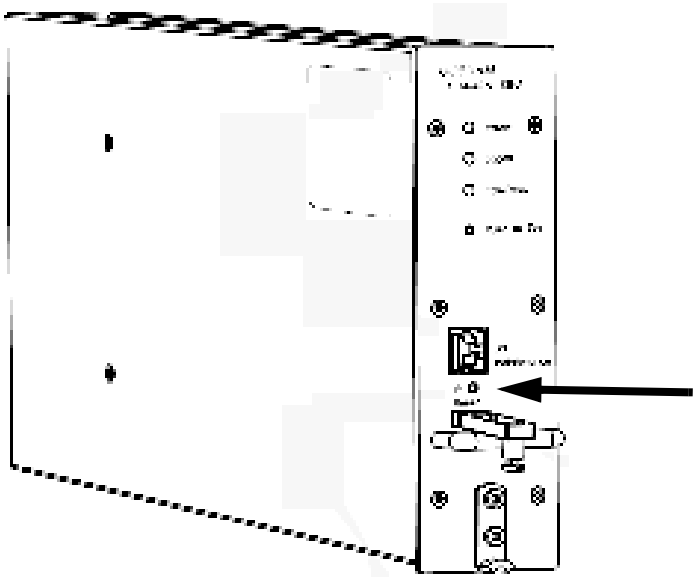


Figure 8-11: IP Reset (Default) button on SBU front

The table on the next page describes how you can use the IP reset button.

Action	Function
With the SBU running, push the IP Reset button normally.	**Temporary reset to default values**: The SBU's IP address and IP netmask are temporarily set to the default value (default IP address: 192.168.0.1, default netmask: 255.255.255.0). With this function, even if the IP address has been changed and you do not remember the new IP address, you can still access the web interface and see your current configuration. The default value is not saved in the configuration, but is only valid until next reboot.
With the terminal running, push and hold the IP Reset button for 30 seconds, until the Power indicator on the SBU front plate flashes orange.	**Reset to factory settings**: The SBU restores factory settings and reboots the system. All settings are reset to factory default, incl. the IP address of the SBU and the administrator password. **Exception**: The settings that are specific for the installation are **not** reset. These are the settings on the pages: • SETTINGS > System Type • SETTINGS > RF Settings • SETTINGS > External Systems • SETTINGS > Flex • ADMINISTRATOR > User permission > SMS
While the terminal is booting, push and hold the IP Reset button.	**For service use only!** This firmware upload procedure is only to be used if the other procedures fail due to missing or corrupted firmware. This setup uploads software to the SBU from a TFTP server via the LAN connection. The procedure is as follows: 1. Activate or install a TFTP server on a PC. 2. Locate the correct software image (xxx.dl) for the SBU and place it in the TFTP server directory. 3. Rename the image to **ttexp.dl**. 4. Reconfigure the PC LAN interface to use the static address **192.168.0.2/255.255.255.0**. 5. Power off the SBU. 6. Connect the PC LAN Interface to the SBU, 7. Push and hold down the Reset button. 8. Keep the Reset button pushed while powering on the SBU, and through the next step. 9. Monitor the TFTP server window. When the upload starts you can release the Reset button. 10. When the TFTP upload finishes the SBU boots up using the new image.

Table 8-9: How to reset the IP address or the terminal software to default settings

8.5.4 Service log of the SDU

You use the Aero-SDU Configuration Program to generate a service log. The service log contains all data necessary for troubleshooting the SDU, HPA and the satcom antenna. Errors from the POST and PAST tests are recorded in the service log.

For instructions how to generate a service log see *Generating a service log* on page 8-5.

8.5.5 View the Event list, Event log and extended status of the SBU

Overview

When an event is registered, the web interface shows an event icon ⚠ in the icon bar as long as the event is active. The **Event list** only shows events that are currently active, whereas the **Event log** shows the history of events that have occurred.

Event list

To view the event list, click the event icon from the icon bar at the top of the web interface, or select **HELPDESK > Event list** from the left navigation pane.

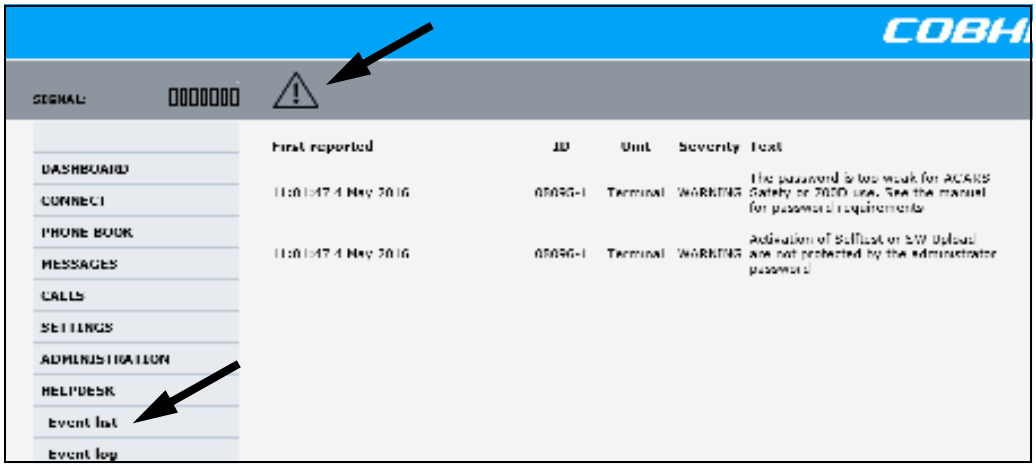


Figure 8-12: Web interface: Help desk, Event list

The Event list page shows a detailed list of active events including the time of the first occurrence, ID and severity of the event message, and a short text describing the error. For a list of events with description, ID, explanation and remedy see *List of SBU events* on page D-28.

Event log

The **Event log** shows the same information as the Event list, but also includes events that occurred in the past and are no longer active. Additionally, it lists events of informational character, describing normal phases of operation for the SBU. The event log holds information of events registered in the SBU or antenna. The same events are also indicated in the Antenna and Terminal LEDs on the SBU LED panel. The log includes the time of the occurrence, a short description, location of the error etc. This information can help troubleshooting errors in the system. You can see the event log in the web interface.

To view the Event log, select **HELPDESK > Event log** from the left navigation pane.

Extended status

Click **Extended status** in the **HELP DESK** page to display further status information on logon status, ongoing data sessions and ongoing calls.

Figure 8-13: Web interface: Help desk, Extended status

The Extended Status page shows the following information:

- The status of the connection to the air interface (IAI-2). This field should normally show “Registered”, unless the system is still in the startup process.
- Ongoing data sessions (IP address) and connection status, e.g. Active or Suspended.
- Ongoing calls and their connection status.

To update the information on the **Extended status page**, click **Refresh**.

8.5.6 Self test of the SBU

The Self test performs system test on the AVIATOR 700 system, similar to the tests that are performed during the Power On Self Test (POST).

Important The SBU will reboot when performing the self test. All ongoing calls or data sessions will be terminated.

To activate a Self test, do as follows:

1. Select **HELPDESK > Self test**.

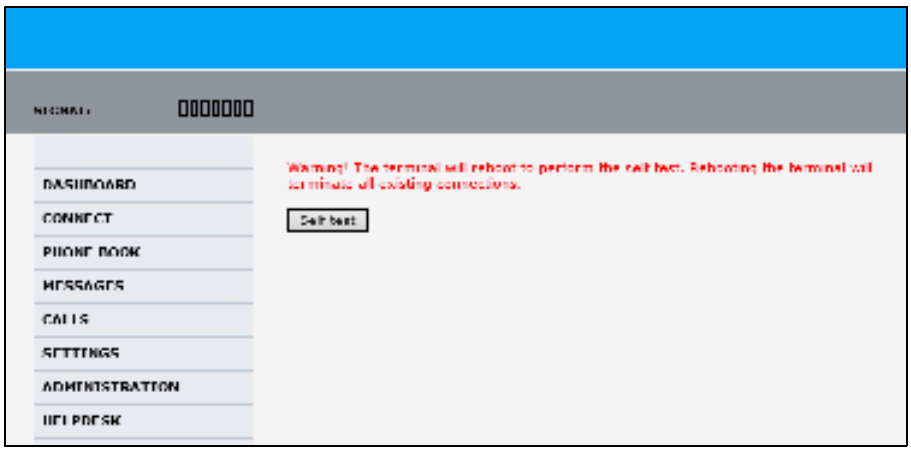


Figure 8-14: Web interface: Help desk, Self test

2. Click **Self test**.
3. Click **OK** in the Warning dialog.
   The SBU now performs a self test and resets the SBU.

8.5.7 Initial troubleshooting

Overview

This section describes an initial check of the primary functions of the AVIATOR 700 system, and provides some guidelines for troubleshooting, if one of the checks should fail.

Means available for troubleshooting

The following means are available for troubleshooting:

- **LEDs and BITE display**. Generally, if a fault occurs without any obvious reason, it is always recommended to observe the LEDs and the BITE display. For information on the LEDs and the BITE display, refer to *Status signalling* on page 8-17. For a list of all the BITE codes and Cause codes, refer to the appendix *System messages* on page D-1.
- **Web interface**. For troubleshooting errors in the SBU, you may connect to the front LAN interface on the SBU and use the web interface to inspect any alarm messages. For information on the web interface refer to *Built-in web interface for the SBU* on page 6-17.
- **Low level commands**. It may sometimes be necessary to use terminal commands for debugging, using the front Maintenance port of the SDU. For information on how to use the front port for debugging, see *Terminal commands* on page F-1.
- **Diagnostic report**. You can generate a diagnostic report that can be used for troubleshooting errors in the SBU of the AVIATOR 700 system. To generate the diagnostic report, access the web interface and select **HELPDESK**. then click **Generate report**. Save the report on your PC.
- To generate the service log, click the **Service log** button to the left in the Aero-SDU Configuration Program. For information see *Aero-SDU Configuration Program for the SDU* on page 6-2.
- Enclose the diagnostic report and the service log when requesting support.

Problem	What to do
No connection to the SBU maintenance connector	Depending on the options in your system you might experience limitations when using an Ethernet interface of the AVIATOR 700. For systems without the built-in router option enabled, i.e. the basic version or the version with Wireless option, note the following limitation: • To use the SBU Maintenance connector disconnect or switch off any PC connected to another LAN interface of the SBU.
No GPS signal: Interference from satcom antenna on GPS antenna	If the existing GPS antenna on board the aircraft does not provide sufficient filtering of the satcom antenna signal to provide a usable GPS signal, you must replace the existing GPS antenna with a GPS antenna that has a satcom filter.
Registration for voice or data not possible	In case the system cannot register properly for voice or data service, check with your Service provider that the SIM card in the Configuration module of the SBU is not blocked.

Table 8-10: Initial troubleshooting

Check of LEDs

The below flow chart shows the initial check of the LEDs on the SDU, HPA and SBU.

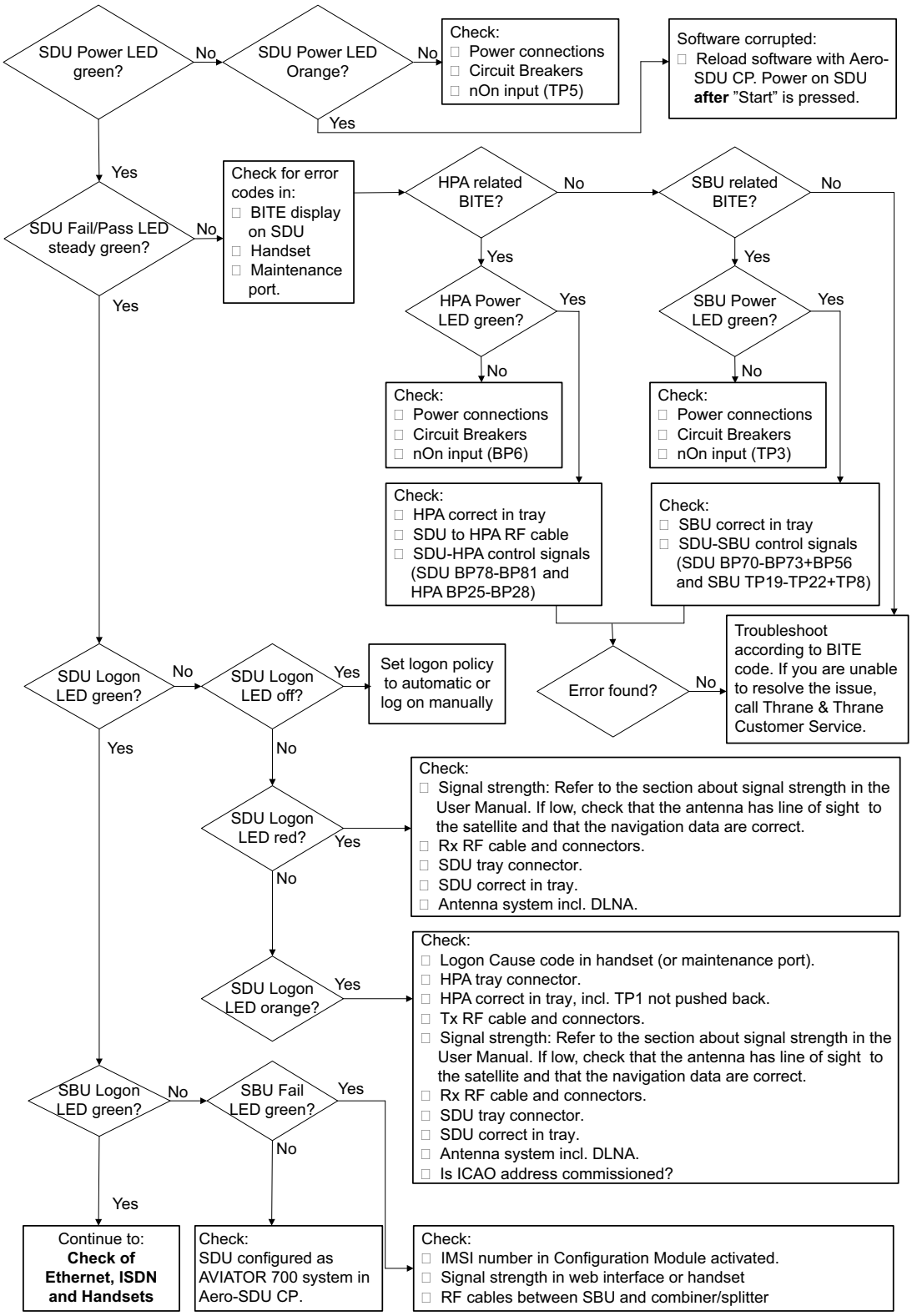


Figure 8-15: Initial check of LEDs (1/2)

Check of Ethernet, ISDN and handsets

After checking the LEDs, the user functions should be checked.
The below flow chart shows the initial check of Ethernet, ISDN and handsets.

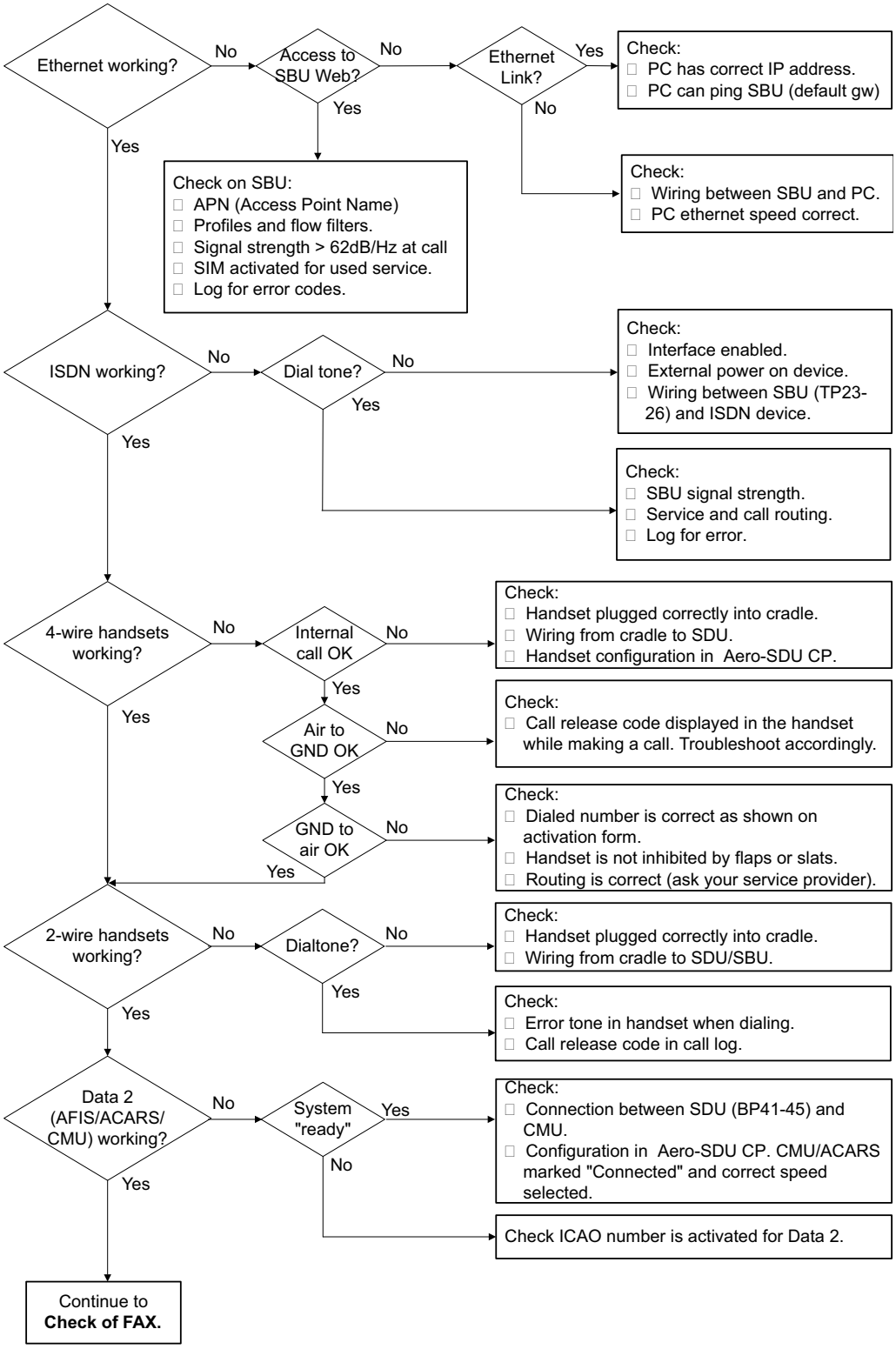


Figure 8-16: Initial check of Ethernet, fax, 4-Wire Handsets and ISDN

Check of fax

The below flow chart shows the initial check of the fax interfaces.

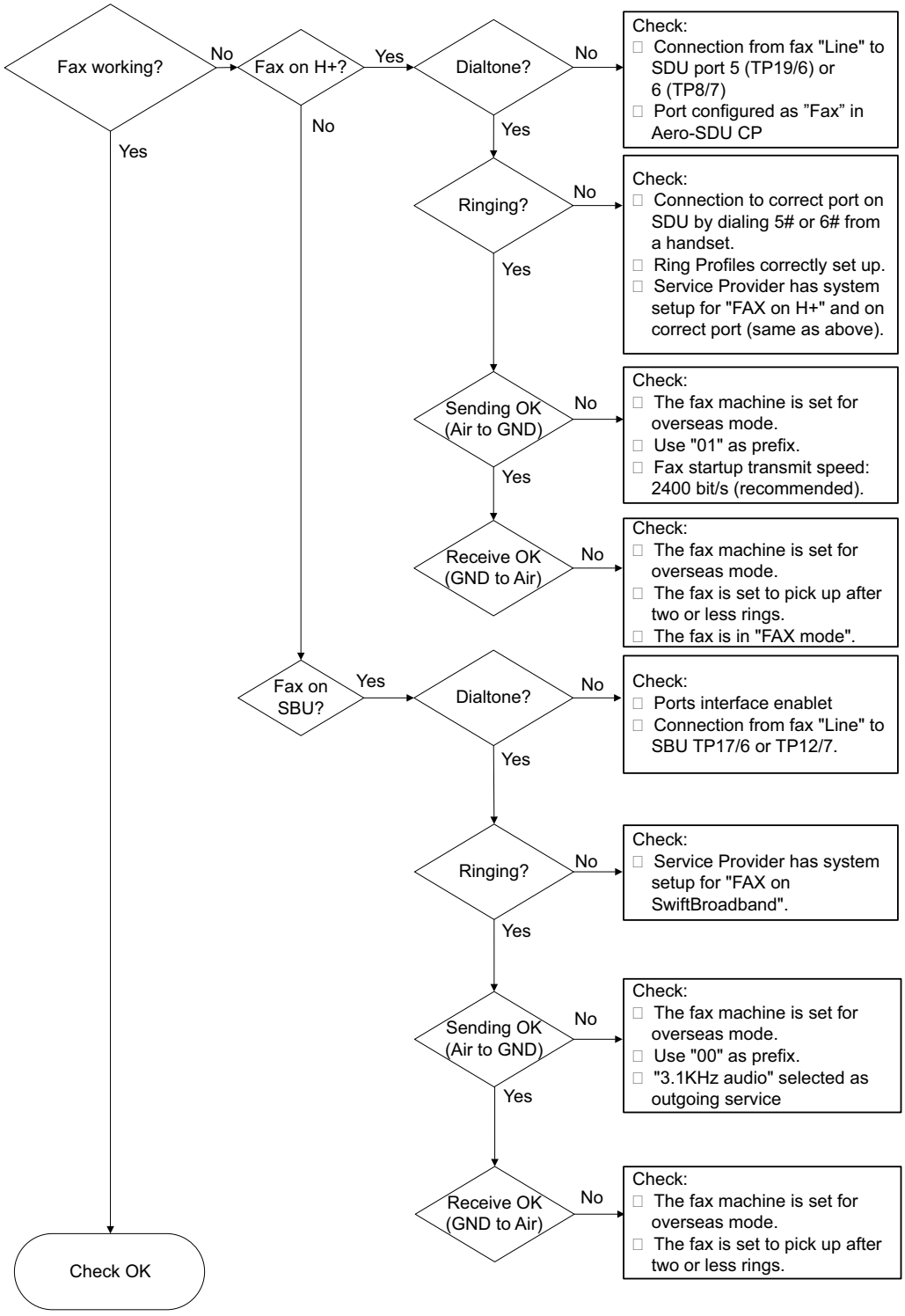


Figure 8-17: Initial check of Fax

8.6 Return units for repair

Should your Cobham SATCOM product fail, please contact your dealer or installer, or the nearest Cobham SATCOM partner. You will find the partner details on www.cobham.com/satcom, **Technical Service Partner List**. You can also access the **Cobham SYNC Partner Portal** at https://sync.cobham.com/satcom, which may help you solve the problem. Your dealer, installer or Cobham SATCOM partner will assist you whether the need is user training, technical support, arranging on-site repair or sending the product for repair. Your dealer, installer or Cobham SATCOM partner will also take care of any warranty issue.

Repackaging requirements

Should you need to send the product for repair, please read the below information before packing the product.

The shipping carton has been carefully designed to protect the AVIATOR 700 and its accessories during shipment. This carton and its associated packing material should be used when repacking for shipment. Attach a tag indicating the type of service required, return address, part number and full serial number. Mark the carton FRAGILE to ensure careful handling.

Note Correct shipment is the customer's own responsibility.

If the original shipping carton is not available, the following general instructions should be used for repacking with commercially available material.

1. Wrap the defective unit in heavy paper or plastic. Attach a tag indicating the type of service required, return address, part number and full serial number.
2. Use a strong shipping container, e.g. a double walled carton.
3. Protect the front- and rear panel with cardboard and insert a layer of shock-absorbing material between all surfaces of the equipment and the sides of the container.
4. Seal the shipping container securely.
5. Mark the shipping container FRAGILE to ensure careful handling.

Failure to do so may invalidate the warranty.

8.7 Disposal of electrical and electronic equipment

Old electrical and electronic equipment marked with this symbol can contain substances hazardous to human beings and the environment. Never dispose these items together with unsorted municipal waste (household waste). In order to protect the environment and ensure the correct recycling of old equipment as well as the re-utilization of individual components, use either public collection or private collection by the local distributor of old electrical and electronic equipment marked with this symbol.

Contact the local distributor for information about what type of return system to use.

Appendices

Equipment specifications

A.1 Introduction

Important note!

The information, drawings, and wiring diagrams contained in this manual are intended as a reference for engineering planning only. It is the installer's responsibility to compose installation drawings specific to the aircraft.

In this appendix you find equipment specifications for the following units:

- *TT-5035A Satellite Data Unit (SDU)*
- *TT-5014A High Power Amplifier (HPA)*
- *TT-5040A SwiftBroadband Unit (SBU)*
- *TT-5040A-004 WLAN antenna*
- *TT-5038A-002 Tx Coupler*
- *TT-5038A-003 Rx Power Splitter*
- *TT-5620A 4-Wire Handset*
- *TT-5622A 4-Wire Cradle*
- *TT-5621B 2-Wire Handset*
- *TT-5622B 2-Wire Cradle*

Note Cables and connectors and DLNA are not included.

For specifications of the antenna please see the documentation provided with the antenna.

Note For equipment drawings of the AVIATOR Wireless Handset and Cradle see *AVIATOR Wireless Handset and Cradle Installation & Maintenance Manual* (*98-129600*).

A.2 AVIATOR 700 system components

A.2.1 TT-5035A Satellite Data Unit (SDU)

Specification with TT-5035A-001 Configuration Module (CM) mounted.

Characteristics	Specification
Dimensions (L x W x H)	ARINC 404A 3/8 ATR short, 3 MCU 320.5 mm x 193.5 mm x 90.4 mm (12.62” x 7.62” x 3.56”)
Weight	3.5 kg ±0.1 kg (7.72 lbs ±0.22 lbs) incl. Configuration Module
Mounting	Mount in an ARINC 404A 3/8 ATR short tray in a temperature controlled location. Forced cooling is not recommended.
Supply Voltage	Nominal: +28.0 V DC Voltage range continuous operation: +20.5 V DC to 32.2 V DC short time operation: +18.0 V DC to 32.2 V DC
Power Hold-up	5 ms. fully operational, 200 ms. Power Save Mode.
Power Consumption	Absolute max power consumption[a]: 46.5 W (Heat dissipation: 27 W). Typical operating power consumption (3 channels transmitting, one 4-wire handset): 30 W (Heat dissipation: 25 W). Typical stand-by power consumption (no transmitting, one 4-wire handset): 25 W (Heat dissipation: 22 W). Inrush current: 0-2 ms: Iin < 28 A 2 ms: Iin < 26 A 5 ms: Iin < 17 A 10 ms: Iin < 5.5 A 50 ms: Iin < 4.4 A 50 ms ->: Normal operation

Table A-1: General specifications for SDU

Characteristics	Specification
Connectors	Rear: ARINC 404A Front: SUB-D 15 Female.
Operating Temperature	-25 °C to +55 °C
Ground Survival Temperature	-55 °C to +85 °C
Shelf life	7 years at 35˚C in original packing
Altitude	55000 ft
Environmental Categories	Refer to Environmental Qualification form in *Satellite Data Unit* on page B-2 in Appendix B.

Table A-1: General specifications for SDU

a. Includes 4 x 4-wire handsets, 2 x 2-wire handsets and 4 ISDN phones.

A.2.2 TT-5014A High Power Amplifier (HPA)

Characteristics	Specification
Dimensions	ARINC 404A 3/8 ATR short, 3 MCU
(L x W x H)	320.5 mm x 193.5 mm x 93.0 mm (12.62" x 7.79" x 3.66")
Weight	5.1 kg ±0.2 kg (11.24 lbs ±0.44 lbs)
Mounting	Can be installed in a non-temperature controlled location. The HPA is designed with built-in forced cooling. Do not block the cooling air holes. Minimum clearance top and bottom: 1" (25 mm) Mount in ARINC 404A 3/8 ATR short tray with oval cut-out as shown in Figure 3-16 on page 3-17.
Supply Voltage	Nominal: +28.0 V DC Voltage range, continuous operation: +20.5 V DC to 32.2 V DC short time operation: +18.0 V DC to 32.2 V DC
Power Hold-up	5 ms. fully operational, 200 ms. Power Save Mode.
Power Consumption	Absolute max power consumption: 235 W (Heat dissipation: 185 W). Typical operating power consumption (4 channels transmitting): 130 W (Heat dissipation: 110 W). Typical standby power consumption (no transmitting): 40 W (Heat dissipation: 40 W). Inrush current: 0-10ms: Iin < 55A 10ms: Iin < 6A 10-30ms: Iin < 20A 30ms: Iin < 15A 40ms: Iin < 10A 60ms: Iin < 4A 60ms ->: Normal operation
Composite Output Power	37.4 W (Burst Mode) 30.0 W (Continuous Mode)
Connectors	Rear: ARINC 404A

Table A-2: General specifications for HPA

Characteristics	Specification
Operating Temperature	-55 °C to +70 °C
Ground Survival Temperature	-55 °C to +85 °C
Altitude	55000 ft
Environmental Categories	Refer to Environmental Qualification form in *High Power Amplifier* on page B-5 in Appendix B.

Table A-2: General specifications for HPA

A.2.3 TT-5040A SwiftBroadband Unit (SBU)

Characteristics	Specification
Dimensions (L x W x H)	ARINC 404A 1/4 ATR short 320.5 mm x 193.5 mm x 57.15 mm (12.62" x 7.62" x 2.25")
Weight	2.8 kg ±0.1 kg (6.2 lbs ±0.22 lbs) including TT-5040-001 CM
Mounting	Mount in an ARINC 404A 1/4 ATR short tray in a temperature controlled location. Forced cooling is not required and not recommended.
Supply Voltage Power Hold-up	Nominal: +28.0 V DC Voltage range, continuous operation: +20.5 V DC to 32.2 V DC short time operation: +18.0 V DC to 32.2 V DC 200 ms. Fully operational: 5 ms.
Typical Power Consumption (idle) (SBU & CM)	17 W
Total Maximum Power Consumption (SBU & CM)	25 W
Maximum Heat Dissipation (SBU & CM)	<25 W
Connectors	Rear: ARINC 404A Front: RJ45 Female.
Operating Temperature Ground Survival Temperature Shelf life	-25 ˚C to +55 ˚C -55 ˚C to +85 ˚C 7 years at 35˚C in original packing
Altitude	Non pressurized (Cat. F1): 55,000 ft Pressurized (Cat. A1): 15,000 ft Decompression (Cat. A1): 55,000 ft Overpressure (Cat. A1): -15,000 ft
Relative humidity	95% non-condensing at +50˚C
Environmental Categories	Refer to Environmental Qualification form in *SwiftBroadband unit (SBU)* on page B-7 in Appendix B.

Table A-3: Equipment specifications for TT-5040A SBU

A.2.4 TT-5040A-004 WLAN antenna

Characteristics	Specification
Dimensions (L x W x H)	12 mm x 119 mm x 13 mm (0.48" x 4.7" x 0.5")
Weight	28.3 g (1 ounce)
Mounting	For mounting instructions for WLAN antennas see Figure 5-3 on page 5-8 in the section *WLAN antennas*.
Connector	Male TNC
Operating Temperature Ground Survival Temperature	-40 °C to +71 °C -55 °C to +85 °C
Altitude	Pressurized (Cat. A1): 15,000 ft Decompression (Cat. A1): 45,000 ft Overpressure (Cat. A1): -15,000 ft
Relative humidity	95% non-condensing at +50˚C
Cable type	Plenum, RG-316U coaxial
Cable length (including connector)	7.5" ± 0.25" (190.5 ±6.4 mm)

Table A-4: Equipment specifications for WLAN antenna

A.2.5 TT-5038A-002 Tx Coupler

Characteristics	Specification
Dimensions (L x W x H)	106.6 mm x 57.1 mm x 22.4 mm (4.20" x 2.25" x 0.88") including connectors.
Weight	230 g ±10 g (0.50 lbs ±0.02 lbs)
Mounting	Can be mounted in an unpressurized but temperature controlled location.
Connectors	3 x N-connector, Female.
Operating Temperature	-25 °C to +55 °C
Ground Survival Temperature	-55 °C to +85 °C
Altitude	55000 ft
Environmental Categories	Refer to Environmental Qualification form in *Tx Coupler and Rx Power Splitter* on page B-9 in Appendix B.

Table A-5: General specifications for Tx Coupler

A.2.6 TT-5038A-003 Rx Power Splitter

Characteristics	Specification
Dimensions (L x W x H)	86.8 mm x 50.8 mm x 19.1 mm (3.42" x 2.00" x 0.75") including connectors.
Weight	146 g ±10 g (0.32 lbs ±0.02 lbs)
Mounting	If the Rx Power Splitter is to be mounted on a flat surface, mount it on a 3 mm mounting plate to provide enough space for mounting of the connectors. Can be mounted in an unpressurized but temperature controlled location.
Connectors	3 x N-connector, Female. Built-in DC-block on the HSU (SBU) port.
Operating Temperature Ground Survival Temperature	-25 °C to +55 °C -55 °C to +85 °C
Altitude	55000 ft
Environmental Categories	Refer to Environmental Qualification form in *Tx Coupler and Rx Power Splitter* on page B-9 in Appendix B.

Table A-6: General specifications for Rx Power Splitter

A.3 AVIATOR 700 handsets and cradles

Note For specifications of the AVIATOR Wireless Handset see *AVIATOR Wireless Handset and Cradle Installation & Maintenance Manual* (part number: *98-129600*)

A.3.1 TT-5620A 4-Wire Handset

Characteristics	Specification
Dimensions (L x W x H)	200.0 mm x 52.0 mm x 31.5 mm (7.87" x 2.05" x 1.24")
Weight	0.31 kg ±50 g (0.68 lbs ±0.11 lbs) incl. cable.
Mounting	Mount in a pressurized and temperature controlled location.
Supply Voltage	+28 V DC, provided by SDU via Handset Cradle.
Power Consumption	Max. 3.5 W for handset and cradle (included in SDU power consumption).
Operating Temperature	-25 °C to +55 °C
Ground Survival Temperature	-40 °C to +80 °C
Altitude	55000 ft
Environmental Categories	Refer to Environmental Qualification form in *4-Wire Handset and 4-Wire Cradle* on page B-11 in Appendix B.

Table A-7: General specifications for 4-Wire Handset

A.3.2 TT-5622A 4-Wire Cradle

Characteristics	Specification
Dimensions (L x W x H)	160.5 mm x 61.0 mm x 28.4 mm (6.30" x 2.40" x 1.12")
Weight	0.27 kg ±50 g (0.60 lbs ±0.11 lbs) incl. connector cable.
Mounting	Mount in a pressurized and temperature controlled location.
Supply Voltage	+28 V DC, provided by SDU.
Power Consumption	See *TT-5620A 4-Wire Handset* on page A-10.
Operating Temperature	-25 °C to +55 °C
Ground Survival Temperature	-40 °C to +80 °C
Altitude	55000 ft
Environmental Categories	Refer to Environmental Qualification form in *4-Wire Handset and 4-Wire Cradle* on page B-11 in Appendix B.

Table A-8: General specifications for 4-Wire Cradle

A.3.3 TT-5621B 2-Wire Handset

Characteristics	Specification
Dimensions (L x W x H)	200.0 mm x 52.0 mm x 31.5 mm (7.87" x 2.05" x 1.24")
Weight	0.22 kg ±50 g (0.49 lbs ±0.11 lbs) incl. cable.
Mounting	Mount in a pressurized and temperature controlled location.
Power consumption	Max. 750 mW for handset and cradle (included in SBU power consumption).
Operating Temperature Ground Survival Temperature	-25 °C to +55 °C -40 °C to +80 °C
Altitude	55,000 ft
Environmental Categories	Refer to Environmental Qualification form in *2-Wire Handset and 2-Wire Cradle* on page B-13 in Appendix B.

Table A-9: Equipment specifications for 2-Wire Handset

A.3.4 TT-5622B 2-Wire Cradle

Characteristics	Specification
Dimensions (L x W x H)	160.5 mm x 61.0 mm x 28.4 mm (6.30" x 2.40" x 1.12")
Weight	0.20 kg ±50 g (0.43 lbs ±0.11 lbs) incl. connector cable.
Mounting	Mount in a pressurized and temperature controlled location.
Power consumption	See *TT-5621B 2-Wire Handset* above.
Operating Temperature Ground Survival Temperature	-25 °C to +55 °C -40 °C to +80 °C
Altitude	55,000 ft
Environmental Categories	Refer to Environmental Qualification form in *2-Wire Handset and 2-Wire Cradle* on page B-13 in Appendix B.

Table A-10: Equipment specifications for 2-Wire Cradle

DO-160 specifications

B.1 General

B.1.1 Certifying agency

Approval of the installation of the AVIATOR 700 system is not authorized by this installation manual. Acceptance for the installation and use of the AVIATOR 700 system and its associated components must be obtained through the appropriate offices of the FAA or other certifying agency. It is recommended that all proposed installations be coordinated with the local jurisdiction of the FAA or other certifying agency prior to performing the installation.

B.1.2 Environmental Qualification Forms

The Environmental Qualification Forms list the environmental categories under which all Cobham components of the AVIATOR 700 system are approved.

Please refer to RTCA DO-160D/E for further details on the following Environmental Qualification Forms.

B.2 AVIATOR 700 system components

B.2.1 Satellite Data Unit

Part Number: 405035A (AVIATOR 700) or 405035A-THD (AVIATOR 700D)

DO-160D string: [(A1)(F1)X]CAB[(S2B2)(SM)]EXXXXXZ[A()B]A[A()B]Z[RR]M[A3E3]XXA

RTCA/DO-160D Change Numbers			
Change Number	Date of Issue	Title	Section
Change No. 1	Dec. 14, 2000	Vibration	8.0
		Radio Frequency Susceptibility	20.0
Change No. 2	June 12, 2001	Power Input	16.0
		Audio Frequency Conducted Susceptibility - Power Inputs	18.0

Table B-1: RTCA/DO-160D Change Numbers, SDU

Conditions	DO-160D	Cat.	Comments
Temperature and Altitude	4.0	A1 and F1	Installation in controlled temperature locations and inside or outside pressurized locations.
Low Temperature	4.5.1		Min. operating low temperature: -25˚C
High Temperature	4.5.2 & 4.5.3		Max. operating high temperature: +55˚C
In-Flight Loss of Cooling	4.5.4	X	Forced cooling is not recommended.
Altitude	4.6.1		Max. altitude: 55000 ft
Decompression	4.6.2		Decompression at 55000 ft
Overpressure	4.6.3		Overpressure at -15000ft
Temperature Variation	5.0	C	Installation within controlled temperature locations: 2˚/min.
Humidity	6.0	A	Standard Humidity: 95% relative humidity at 38˚C to 50˚C for 48 hours. Installation within environmentally controlled zones.
Operational Shocks and Crash Safety	7.0	B	Equipment tested to: Standard operational shocks and crash safety.

Table B-2: Environmental Qualification Form for SDU

Conditions	DO-160D	Cat.	Comments
Vibration	8.0	S2B2	Standard random vibration: Aircraft type: Fixed wing. Turbojet or turbofan engines.
		SM	Standard sinusoidal vibration: Aircraft type: Fixed wing. Reciprocating or turbo propeller engines. Aircraft zone: Instrument panel, console or equipment rack.
Explosion Proofness	9.0	E	
Waterproofness	10.0	X	No test required
Fluids Susceptibility	11.0	X	No test required
Sand and Dust	12.0	X	No test required
Fungus Resistance	13.0	X	No test required
Salt Spray	14.0	X	No test required
Magnetic Effect	15.0	Z	Magnetic deflection distance: < 0.3 m
Power Input	16.0	A()B	Power supply: +28 V DC. Reconnection of voice and data calls is not required, if a power interrupt less than 200 ms occurs during transfer of power sources.
Voltage Spike	17.0	A	
Audio Frequency Conducted Susceptibility - Power Inputs	18.0	A()B	
Induced Signal Susceptibility	19.0	Z	Equipment intended for operation in systems where interference-free operation is required.
Radio Frequency Susceptibility	20.0	RR	High Intensity Radiated Field (HIRF) associated with normal environment.
Emission of Radio Frequency Energy	21.0	M	

Table B-2: Environmental Qualification Form for SDU (Continued)

Conditions	DO-160D	Cat.	Comments
Lightning Induced Transient Susceptibility	22.0	A3E3	Equipment and wiring in moderately exposed environment in an all metal airframe. The Configuration Module is an integrated part of the SDU, and so the pin injection tests are not required for the Configuration Module interface.
Lightning Direct Effects	23.0	X	No test required
Icing	24.0	X	No test required
Electrostatic Discharge (ESD)	25.0	A	Operation, installation and repair in an aerospace environment.

Table B-2: Environmental Qualification Form for SDU (Continued)

B.2.2 Configuration Module for SDU

Part Number: 405035A-001

DO-160D string: Please refer to the section *Satellite Data Unit* on page B-2, as the Configuration Module is an integral part of the SDU during normal operation and tests.

B.2.3 High Power Amplifier

Part Number: 405014A (AVIATOR 700) or 405014A-THD (AVIATOR 700D)

DO-160D string: [(A2)(F2)Z]BBB[SCL]EXXXXXZ[A()B]A[A()B]Z[RR]M[A3E3]XXA

RTCA/DO-160D Change Numbers			
Change Number	Date of Issue	Title	Section
Change No. 1	Dec. 14, 2000	Vibration	8.0
		Radio Frequency Susceptibility	20.0
Change No. 2	June 12, 2001	Power Input	16.0
		Audio Frequency Conducted Susceptibility - Power Inputs	18.0

Table B-3: RTCA/DO-160D Change Numbers, HPA

Conditions	DO-160D	Cat.	Comments
Temperature and Altitude	4.0	A2 and F2	Installation in non-controlled temperature locations and inside or outside pressurized locations.
Low Temperature	4.5.1		Min. operating low temperature: -55˚C
High Temperature	4.5.2 & 4.5.3		Max. operating high temperature: +70˚C
In-Flight Loss of Cooling	4.5.4	Z	Continuous operation at 40˚C, tested with internal fan turned off. Use the recommended tray and leave at least 1 inch (25 mm) of free space above and below the HPA, to allow free airflow. The HPA is overheat protected. External forced cooling is not recommended.
Altitude	4.6.1		Max. altitude: 55000 ft
Decompression	4.6.2		Decompression at 55000 ft
Overpressure	4.6.3		Overpressure at -15000 ft
Temperature Variation	5.0	B	Installation within non-temperature-controlled location: 5˚C/min.
Humidity	6.0	B	Severe humidity: 95% relative humidity at 38˚C to 65˚C for 240 hours. Installation within non-environmentally controlled zones.
Operational Shocks and Crash Safety	7.0	B	Equipment tested to: Standard operational shocks and crash safety.

Table B-4: Environmental Qualification Form for HPA

Conditions	DO-160D	Cat.	Comments
Vibration	8.0	SCL	Standard sinusoidal and random vibration: Aircraft type: Fixed wing. Turbojet, turbofan, reciprocating or turbo propeller engines. Aircraft zone: Fuselage
Explosion Proofness	9.0	E	
Waterproofness	10.0	X	No test required
Fluids Susceptibility	11.0	X	No test required
Sand and Dust	12.0	X	No test required
Fungus Resistance	13.0	X	No test required
Salt Spray	14.0	X	No test required
Magnetic Effect	15.0	Z	Magnetic deflection distance: < 0.3 m
Power Input	16.0	A()B	Power supply: +28 V DC. Reconnection of voice and data calls is not required, if a power interrupt less than 200 ms occurs during transfer of power sources.
Voltage Spike	17.0	A	
Audio Frequency Conducted Susceptibility - Power Inputs	18.0	A()B	
Induced Signal Susceptibility	19.0	Z	Equipment intended for operation in systems where interference-free operation is required.
Radio Frequency Susceptibility	20.0	RR	High Intensity Radiated Field (HIRF) associated with normal environment.
Emission of Radio Frequency Energy	21.0	M	
Lightning Induced Transient Susceptibility	22.0	A3E3	Equipment and wiring in moderately exposed environment in an all metal airframe.
Lightning Direct Effects	23.0	X	No test required
Icing	24.0	X	No test required
Electrostatic Discharge (ESD)	25.0	A	Operation, installation and repair in an aerospace environment.

Table B-4: Environmental Qualification Form for HPA (Continued)

B.2.4 SwiftBroadband unit (SBU)

Part Number: 405040A (AVIATOR 700) or 405040A-THD (AVIATOR 700D)

DO-160E string: [(A1)(F1)X]CAB[SB2M]ExxxxxZ[AB]A[RB][ZC][RR]M[A3J33]XXAX

Conditions	DO-160E	Cat.	Comments
Temperature and Altitude	4.0	A1, F1	Installation in temperature controlled areas and inside or outside pressurized locations.
Low Temperature	4.5.1 & 4.5.2		Short time operating low is -40˚C. Unit is active, but inoperable until the unit temperature is > -30˚C. Min. operational temperature is -25˚C.
High Temperature	4.5.3 & 4.5.4		Short time operating high (30 min.): +70˚C Max. operating high temperature is +55˚C
In-Flight Loss of Cooling	4.5.5	X	Forced cooling is not required and not recommended.
Altitude	4.6.1		Max. altitude: 55000 ft
Decompression	4.6.2		Decompression test at 55000 ft
Overpressure	4.6.3		Overpressure at -15000 ft
Temperature Variation	5.0	C	Installation within temperature controlled areas: 2˚C/min.
Humidity	6.0	A	Standard Humidity: 95% relative humidity at 38˚C to 50˚C for 48 hours. Installation within environmentally controlled zones
Operational Shocks and Crash Safety	7.0	B	Equipment tested to: Standard operational shock and crash safety.
Vibration	8.0	S, B2, M	Equipment tested without shock mounts to Category S, Curve B2 and Curve M.
Explosion Proofness	9.0	E	Not hermetically sealed equipment
Waterproofness	10.0	X	No test required
Fluids Susceptibility	11.0	X	No test required
Sand and Dust	12.0	X	No test required
Fungus Resistance	13.0	X	No test required

Table B-5: Environmental Qualification Form for SBU

Conditions	DO-160E	Cat.	Comments
Salt Spray	14.0	X	No test required
Magnetic Effect	15.0	Z	Magnetic deflection distance: < 0.3 m
Power Input	16.0	AB	Power supply: +28 V DC. Reconnection of voice and data calls is not required, if a power interrupt less than 200 ms occurs during transfer of power sources.
Voltage Spike	17.0	A	Power supply: +28 V DC.
Audio Susceptibility	18.0	RB	Power supply: +28 V DC.
Induced Susceptibility	19.0	ZC	Equipment intended for operation in systems where interference-free operation is required.
Radio Frequency Susceptibility	20.0	RR	High Intensity Radiated Field (HIRF) associated with normal environment.
Emission of Radio Frequency Energy	21.0	M	Installation in areas with significant electromagnetic apertures.
Lightning Induced Transient Susceptibility	22.0	A3J33	Equipment and wiring in moderately exposed environment in an all metal airframe. The Configuration Module is an integrated part of the SBU, and so the pin injection tests are not required for the Configuration Module interface.
Lightning Direct Effects	23.0	X	No test required
Icing	24.0	X	No test required
Electrostatic Discharge ESD	25.0	A	Operation, installation and repair in an aerospace environment.
Fire, Flammability	26.0	X	Equipment is tested according to FAR 25 Airworthiness Standards: Transport Category Airplanes, Paragraph 25.853(a) and Appendix F - Part I (a)(1)(ii) and Paragraph 25.869(a)(4) and Appendix F - Part I (a)(3).

Table B-5: Environmental Qualification Form for SBU (Continued)

B.2.5 Configuration Module (CM) for SBU

Part Number: 405040A-001

DO-160E string: Please refer to the section *SwiftBroadband unit (SBU)* on page B-7, as the Configuration Module is an integral part of the SBU during normal operation and tests. However, the section 25 Category A test is performed on the Configuration Module as an individual LRU.

B.2.6 Tx Coupler and Rx Power Splitter

Part Numbers: 405038A-002 and 405038A-003

DO-160D string: [(A1)(F1)X]CBB[SCL]EXXXXXZXXXZ[RR]M[A3E3]XXA

RTCA/DO-160D Change Numbers			
Change Number	Date of Issue	Title	Section
Change No. 1	Dec. 14, 2000	Vibration Radio Frequency Susceptibility	8.0 20.0
Change No. 2	June 12, 2001	Power Input Audio Frequency Conducted Susceptibility - Power Inputs	16.0 18.0

Table B-6: RTCA/DO-160D Change Numbers, Tx Coupler and Rx Power Splitter

Conditions	DO-160D	Cat.	Comments
Temperature and Altitude	4.0	A1 and F1	Installation in controlled temperature locations and inside or outside pressurized locations.
Low Temperature	4.5.1		Min. operating low temperature: -25˚C
High Temperature	4.5.2 & 4.5.3		Max. operating high temperature: +55˚C
In-Flight Loss of Cooling	4.5.4	X	Forced cooling is not recommended.
Altitude	4.6.1		Max. altitude: 55000 ft
Decompression	4.6.2		Decompression at 55000 ft
Overpressure	4.6.3		Overpressure at -15000 ft
Temperature Variation	5.0	C	Installation within controlled temperature locations: 2˚/min.
Humidity	6.0	B	Severe humidity: 95% relative humidity at 38˚C to 65˚C for 240 hours. Installation within non-environmentally controlled zones.

Table B-7: Environmental Qualification Form for Tx Coupler and Rx Power Splitter

Conditions	DO-160D	Cat.	Comments
Operational Shocks and Crash Safety	7.0	B	Equipment tested to: Standard operational shocks and crash safety.
Vibration	8.0	SCL	Standard sinusoidal and random vibration: Aircraft type: Fixed wing. Turbojet, turbofan, reciprocating or turbo propeller engines. Aircraft zone: Fuselage
Explosion Proofness	9.0	E	
Waterproofness	10.0	X	No test required
Fluids Susceptibility	11.0	X	No test required
Sand and Dust	12.0	X	No test required
Fungus Resistance	13.0	X	No test required
Salt Spray	14.0	X	No test required
Magnetic Effect	15.0	Z	Magnetic deflection distance: < 0.3 m
Power Input	16.0	X	No test required
Voltage Spike	17.0	X	No test required
Audio Frequency Conducted Susceptibility - Power Inputs	18.0	X	No test required
Induced Signal Susceptibility	19.0	Z	Equipment intended for operation in systems where interference-free operation is required
Radio Frequency Susceptibility	20.0	RR	High Intensity Radiated Field (HIRF) associated with normal environment.
Emission of Radio Frequency Energy	21.0	M	
Lightning Induced Transient Susceptibility	22.0	A3E3	Equipment and wiring in moderately exposed environment in an all metal airframe.
Lightning Direct Effects	23.0	X	No test required
Icing	24.0	X	No test required
Electrostatic Discharge (ESD)	25.0	A	Operation, installation and repair in an aerospace environment.

Table B-7: Environmental Qualification Form for Tx Coupler and Rx Power Splitter (Continued)

B.3 AVIATOR 700 handsets and cradles

Note | For DO-160 specifications of the AVIATOR Wireless Handset see *AVIATOR Wireless Handset and Cradle Installation & Maintenance Manual* (part number: *98-129600*)

B.3.1 4-Wire Handset and 4-Wire Cradle

Part Number: 405620A-THW / 405620A-THR / 405622A-THW / 405622A-THR

DO-160C String: A1-BA[MNB]XXXXXXAXXXB[UR]ZXXE3XX

RTCA/DO-160C Change Numbers			
Change Number	Date of Issue	Title	Section
Change No. 2	June 19, 1992	Lightning Induced Transient Susceptibility	22.0
Change No. 3	May 13, 1993	Radio Frequency Susceptibility	20.0

Table B-8: RTCA/DO-160C Change Numbers, 4-Wire Handset and Cradle

Conditions	DO-160C	Cat.	Comments
Temperature and Altitude	4.0	A1	Installation in controlled temperature and pressurized location.
Low Temperature	4.5.1		Min. operating low temperature: -25˚C
High Temperature	4.5.2 & 4.5.3		Max. operating high temperature: +55˚C
In-Flight Loss of Cooling	4.5.4	-	No forced cooling required.
Altitude	4.6.1		Max. altitude: 55000 ft
Decompression	4.6.2		Decompression at 55000 ft
Overpressure	4.6.3		Overpressure at -15000 ft
Temperature Variation	5.0	B	Installation within partially or non-controlled temperature locations: 5˚C/min.
Humidity	6.0	A	Standard Humidity: 95% relative humidity at 38˚C to 50˚C for 48 hours. Installation within environmentally controlled zones
Operational Shocks and Crash Safety	7.0	Yes	Equipment tested to: Standard operational shocks and crash safety.
Operational Shock	7.2	Yes	
Crash Safety	7.3	Yes	

Table B-9: Environmental Qualification Form for 4-Wire Handset and Cradle

Conditions	DO-160C	Cat.	Comments
Vibration	8.0	MB	Standard sinusoidal and random vibration: Aircraft type: Fixed wing. Turbojet, turbofan, reciprocating or turbo propeller engines.
		N	Aircraft type: Helicopter. Turbojet or reciprocating engines. Aircraft zone: Instrument panel, console or equipment rack.
Explosion Proofness	9.0	X	No test required
Waterproofness	10.0	X	No test required
Fluids Susceptibility	11.0	X	No test required
Sand and Dust	12.0	X	No test required
Fungus Resistance	13.0	X	No test required
Salt Spray	14.0	X	No test required
Magnetic Effect	15.0	A	Magnetic deflection distance: 0.3 m to 1 m
Power Input	16.0	X	No test required. DC power is provided by the SDU.
Voltage Spike	17.0	X	No test required
Audio Frequency Conducted Susceptibility - Power Inputs	18.0	X	No test required
Induced Signal Susceptibility	19.0	B	Installation where interference is controlled to a tolerable level.
Radio Frequency Susceptibility	20.0	UR	
Emission of Radio Frequency Energy	21.0	Z	Equipment intended for operation in systems where interference-free operation is required.
Lightning Induced Transient Susceptibility	22.0	XXE3	Cable Bundle Test: Equipment and wiring in moderately exposed environment in an all metal airframe.
Lightning Direct Effects	23.0	X	No test required
Icing	24.0	X	No test required

Table B-9: Environmental Qualification Form for 4-Wire Handset and Cradle (Continued)

B.3.2 2-Wire Handset and 2-Wire Cradle

Part Number: 405621B-THW / 405621B-THR / 405622B-THW / 405622B-THR

DO-160C String: [A1X]CAB[(SMB2)(SM)(UFF1)]XXXXXXAXXXB[RR]M[A2E3]XXA

Conditions	DO-160D	Cat.	Comments
Temperature and Altitude	4.0	A1	Installation in controlled temperature and pressurized location.
Low Temperature	4.5.1		Min. operating low temperature: -25˚C
High Temperature	4.5.2 & 4.5.3		Max. operating high temperature: +55˚C
In-Flight Loss of Cooling	4.5.4	X	No forced cooling required.
Altitude	4.6.1		Max. altitude: 55000 ft
Decompression	4.6.2		Decompression at 55000 ft
Overpressure	4.6.3		Overpressure test at -15000 ft
Temperature Variation	5.0	C	Installation within controlled temperature locations: 2˚/min.
Humidity	6.0	A	Standard Humidity: 95% relative humidity at 38˚C to 50˚C for 48 hours. Installation within environmentally controlled zones.
Operational Shocks and Crash Safety	7.0	B	Equipment tested to: Standard operational shocks and crash safety.
Vibration	8.0	S2B2	Standard random vibration: Aircraft type: Fixed wing. Turbojet or turbofan engines.
		SM	Standard sinusoidal vibration: Aircraft type: Fixed wing. Reciprocating or turbo propeller engines.
		UFF1	Robust Sine-on-Random vibration: Aircraft type: Helicopter. Turbojet or reciprocating engines. Aircraft zone: Instrument panel, console or equipment rack.
Explosion Proofness	9.0	X	No test required
Waterproofness	10.0	X	No test required
Fluids Susceptibility	11.0	X	No test required

Table B-10: Environmental Qualification Form for 2-Wire Handset and Cradle

Conditions	DO-160D	Cat.	Comments
Sand and Dust	12.0	X	No test required
Fungus Resistance	13.0	X	No test required
Salt Spray	14.0	X	No test required
Magnetic Effect	15.0	A	Magnetic deflection distance: 0.3 m to 1 m
Power Input	16.0	X	No test required
Voltage Spike	17.0	X	No test required
Audio Frequency Conducted Susceptibility	18.0	X	No test required
Induced Signal Susceptibility	19.0	B	Installation where interference is controlled to a tolerable level.
Radio Frequency Susceptibility	20.0	RR	High Intensity Radiated Field (HIRF) associated with normal environment.
Emission of Radio Frequency Energy	21.0	M	
Lightning induced Transient Susceptibility	22.0	A2E3	Cable bundle test: Equipment and wiring in moderately exposed environment in an all metal airframe.
Lightning Direct Effects	23.0	X	No test required
Icing	24.0	X	No test required
Electrostatic Discharge (ESD)	25.0	A	Operation, installation and repair in an aerospace environment.

Table B-10: Environmental Qualification Form for 2-Wire Handset and Cradle (Continued)

Upgrade from Aero-HSD+ to AVIATOR 700

C.1 Avionics hardware needed

Depending on your current HSD+ Level E installation you need the following items to upgrade your system to AVIATOR 700 (Level E) or AVIATOR 700D (Level D):

	AVIATOR 700 (Level E)		AVIATOR 700D (Level D)	
Items needed for existing Aero-HSD+ system	Aero-HSD+ 4 channels	Aero-HSD+ 5 channels	Aero-HSD+ 4 channels	Aero-HSD+ 5 channels
405040A SwiftBroadband Unit (SBU) [without CM]	yes	yes		
405040A-THD SwiftBroadband Unit (SBU) [without CM]			yes	yes
Connector kit for TT-5040A	yes	yes	yes	yes
New tray for TT-5040A SBU	yes	yes	yes	yes
405040A-001 Configuration Module (CM) for SBU	yes	yes	yes	yes
405040A-005 SDU to SBU Software Interface	yes	yes	yes	yes
405038A-002 TX-Coupler	yes		yes	
405038A-003 RX Power Splitter	yes		yes	
405035A-THD Satellite Data Unit (SDU) Level-D			yes	yes
405014A-THD High Power Amp (HPA) Level-D			yes	yes

Table C-1: Items needed for upgrading to AVIATOR 700 Level E or AVIATOR 700D (Level D)

	Satcom antenna system	
Item	HGA-7000	Other
405013A DLNA Type F	**yes**	**yes**
405007A-801 Cobham BSU-7100	yes	no

Table C-2: Items needed for upgrading for different antenna types

Important

Level-D and Level E consistency!

When upgrading to a Level-D or Level-E certified system you must pay great attention to secure consistency of the hardware units SDU, HPA and SBU — all units and software must be either Level D or Level E.

A mismatch of Level D and Level E units or software is not allowed and will result in a non-functioning system.

C.2 Mounting and wiring considerations

C.2.1 Overview

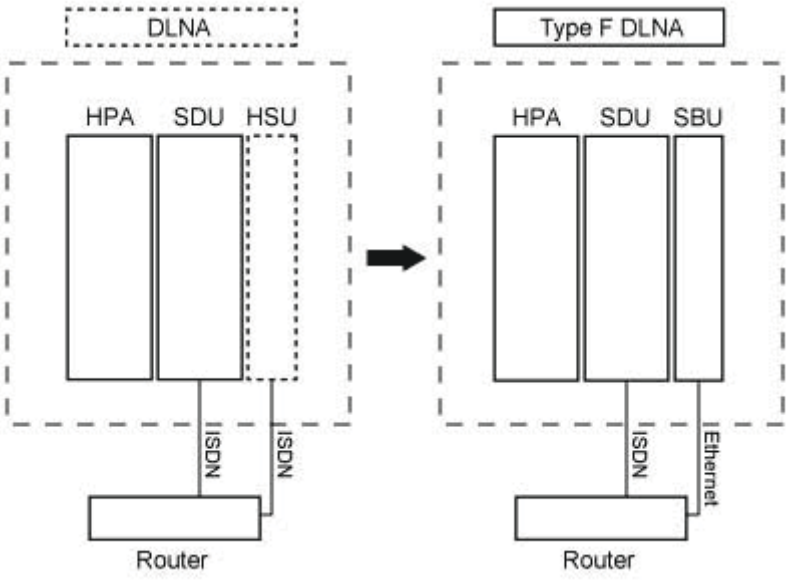


Figure C-1: Upgrade overview, exchange HSU with SBU

Items to mount and rewire	Description	More information
1. Tray for the SBU	The tray from an existing HSU can not be re-used. The SBU requires a tray that is more rigid.	3.12: *SBU trays* on page 3-14
2. Connectors HSU versus SBU	The connector of an HSU only uses the top plug. The SBU also uses the bottom plug, and most of the pins in the top plug have moved or have new functions.	4.3.3: *SBU rear receptacle* on page 4-14
3. Aircraft power	If the SBU is replacing an existing HSU, the power wiring and circuit breaker may be re-used, if it fulfills the slightly stricter requirements.	5.3.3 *Wiring power supply*: *Wiring the SwiftBroadbandUnit* on page 5-14

Table C-3: Upgrade to AVIATOR 700, mounting and wiring considerations

Items to mount and rewire	Description	More information
4. Satcom antenna	For an existing AMT-50/HGA-6000 antenna, change only the diplexer to a Type F. For an existing HGA-7000 antenna in combination with a T&T 5012A Diplexer, the following changes must be made: • Change the diplexer to Type F, which is physically slightly different. • The Type F diplexer must be powered directly from the aircraft power. • The antenna, which was originally powered through the T&T 5012A diplexer, must now be powered through a Chelton BSU-7100. • Bring power wiring to the BSU. • A429 wires must connect the BSU to the HPA 5014A.	
5. WLAN	Optionally, mount the two WAN antennas and connect them to the SBU.	5.2.7 *WLAN antennas* on page 5-8 and 5.3.9 *Wiring WLAN antenna interface* on page 5-42
6. User interfaces	If the user interfaces (ISDN, RS-232) of an existing HSU is wired directly to the cabin, it is recommended to wire some of the Ethernet interfaces (i.e. Ethernet 1) from the SBU to the cabin. If the user interfaces (ISDN, RS-232) of an existing HSU is wired to a Cabin Router, which in turn provides the user connectivity, one of the Ethernet interfaces of the SBU needs to be wired to the Cabin Router. If the system is a 4 channel, a new Ethernet cable may be needed from the SBU to the router. There should be two in total, one for Ethernet WAN and one for ISDN fallback (Swift64 on I3). Also, route one or both of the 2-wire POTS interfaces of the SBU to the cabin.	5.3.8 *Wiring Ethernet at the SBU* on page 5-39

Table C-3: Upgrade to AVIATOR 700, mounting and wiring considerations (Continued)

C.2.2 Wiring navigational input IRS/AHRS

Even though the SDU has navigation data to feed to the SBU, the SBU also needs to receiver position, track and speed information.

If IRS is used, the ARINC 429 signal must be wired to both the SDU and SBU.

If AHRS/GPS is used (with HGA-7000), only GPS L-band RF coax needs to be wired to both the SDU and SBU. The cable to the SDU can be split with e.g. a 405038A-003 Power Splitter (see *TT-5038A-003 Rx Power Splitter* on page 3-8).

Installation	Existing SDU		Additional SBU	
Navigational input	ARINC 429 input	GPS RF pin TP A4	ARINC 429 input	GPS RF pin BP A4
IRS	√	—	√	—
AHRS/GPS	√	√	—	√

Table C-4: Upgrade, wiring navigational input

For more information see 5.3.5, *Wiring ARINC 429 interfaces* on page 5-31.

C.3 Upgrading the SDU

The following steps are required to update the SDU to function properly in an AVIATOR 700 system:

1. *SDU software update to version 1.14 or higher*
2. *Read the configuration from the SDU*
3. *Select the correct product: AVIATOR 700*
4. *Update the cable loss*
5. *Update the GES list with I-4 satellites*
6. *Update the known GES list*
7. *Write the configuration to the SDU*

Note Make sure you have the Aero-SDU Configuration Program v. 1.14 or higher.

C.3.1 SDU software update to version 1.14 or higher

1. Click the button **SW Update** to start the software update procedure.

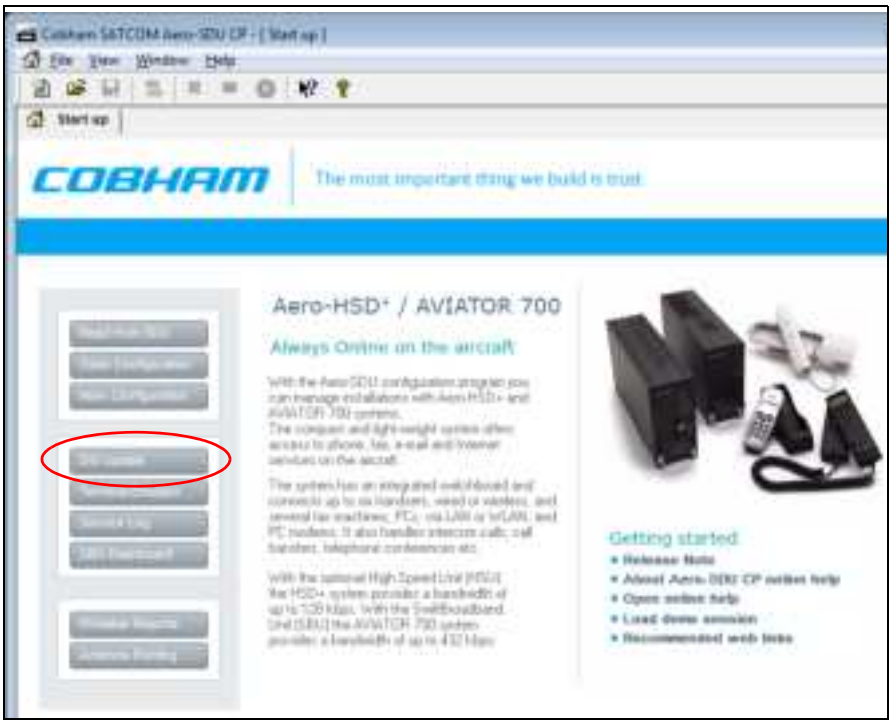


Figure C-2: Upgrading HSD+ to AVIATOR 700, SDU, step 1/7

2. Download the software from https://sync.cobham.com/satcom/support/downloads. Select the .SWU file and click the button **Start**.

Important Pay great attention to selecting the correct software file: Level D or Level E for both SDU and SBU. **A mismatch of Level D and Level E software is not allowed and will result in a non-functioning system.**

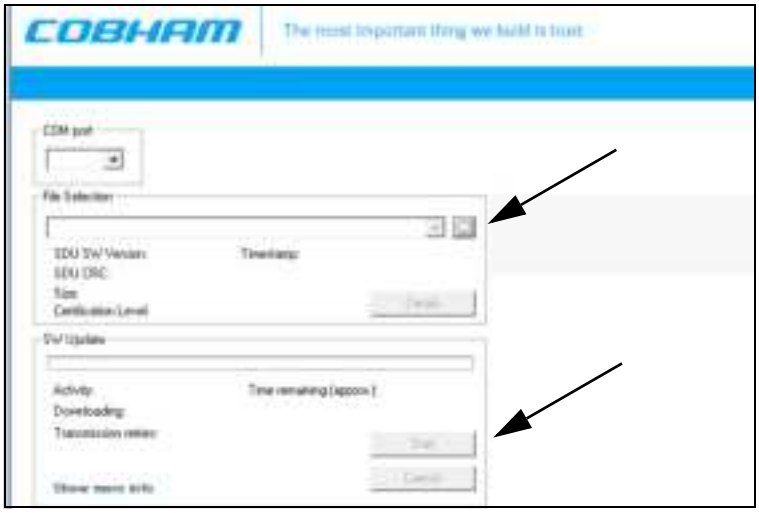


Figure C-3: Upgrading HSD+ to AVIATOR 700, SDU, step 1/7, continued

C.3.2 Read the configuration from the SDU

Click the button **Read from SDU** to read the current setting.

Figure C-4: Upgrading HSD+ to AVIATOR 700, SDU, step 2/7

C.3.3 Select the correct product: AVIATOR 700

Select the product AVIATOR 700 and click **OK**.

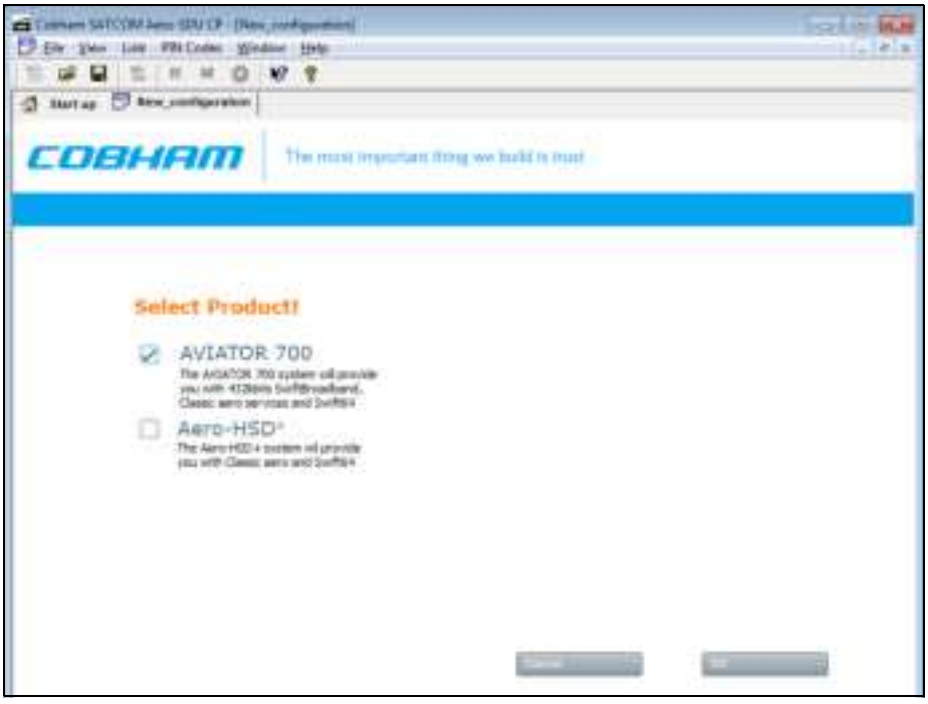


Figure C-5: Upgrading HSD+ to AVIATOR 700, SDU, step 3/7,

C.3.4 Update the cable loss

Enter the values for the cable losses for the SDU on the page **RF**.

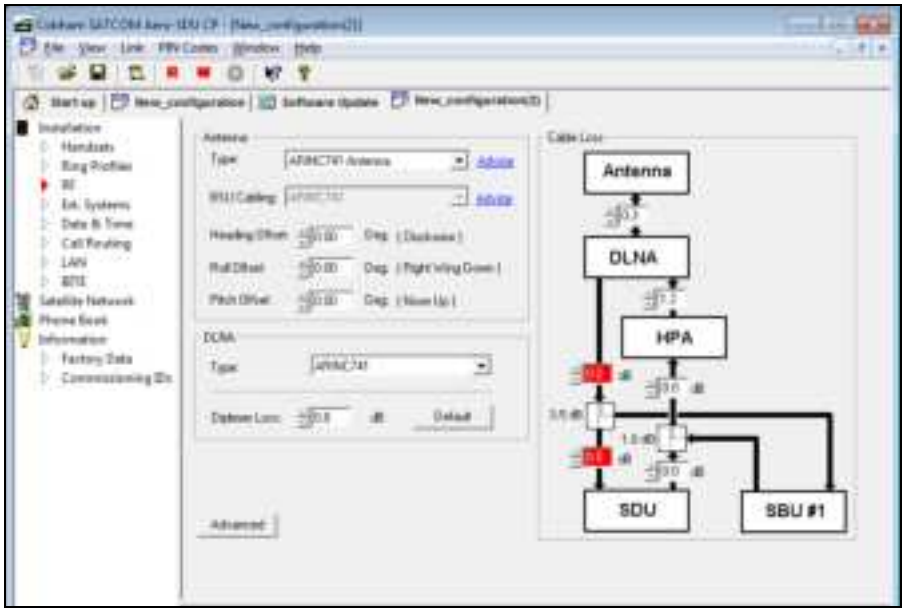


Figure C-6: Upgrading HSD+ to AVIATOR 700, SDU, step 4/7

C.3.5 Update the GES list with I-4 satellites

Add I-4 GESs on the page **Satellite Network**.

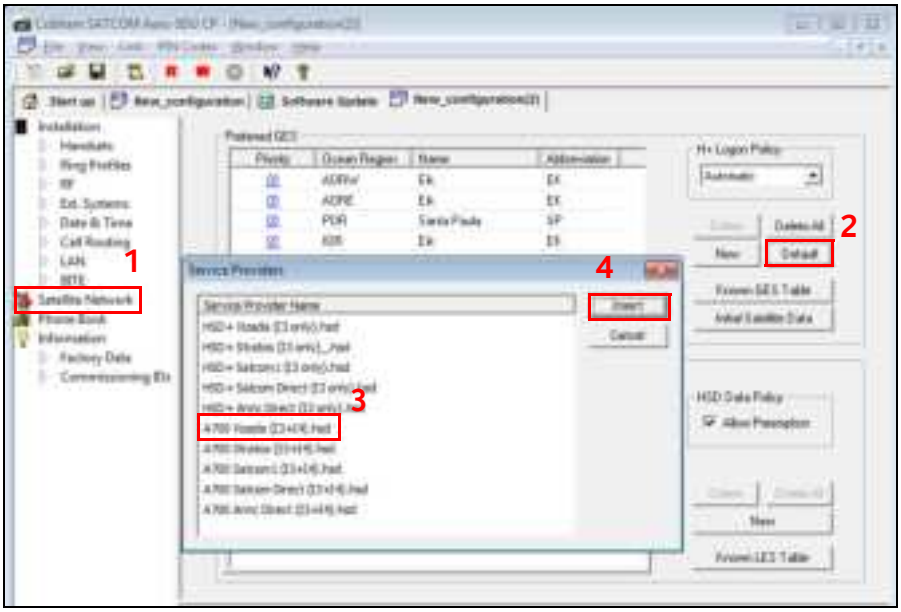


Figure C-7: Upgrading HSD+ to AVIATOR 700, SDU, step 5/7

C.3.6 Update the known GES list

1. Update the **Known GES Table** on the page **Satellite Network**.

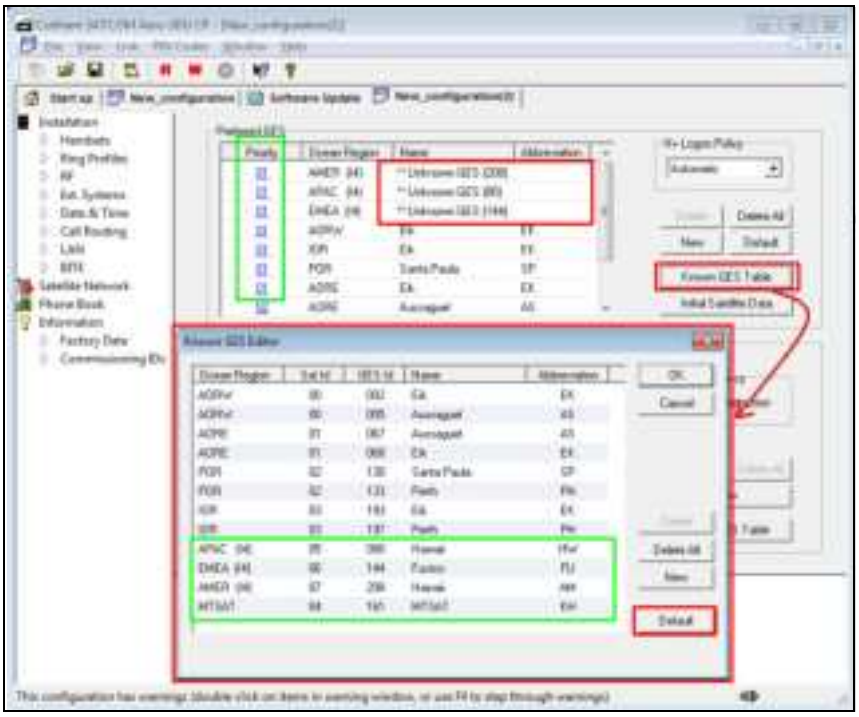


Figure C-8: Upgrading HSD+ to AVIATOR 700, SDU, step 6/7

C.3.7 Write the configuration to the SDU

Click the red button **W** to write the new configuration into the SDU.

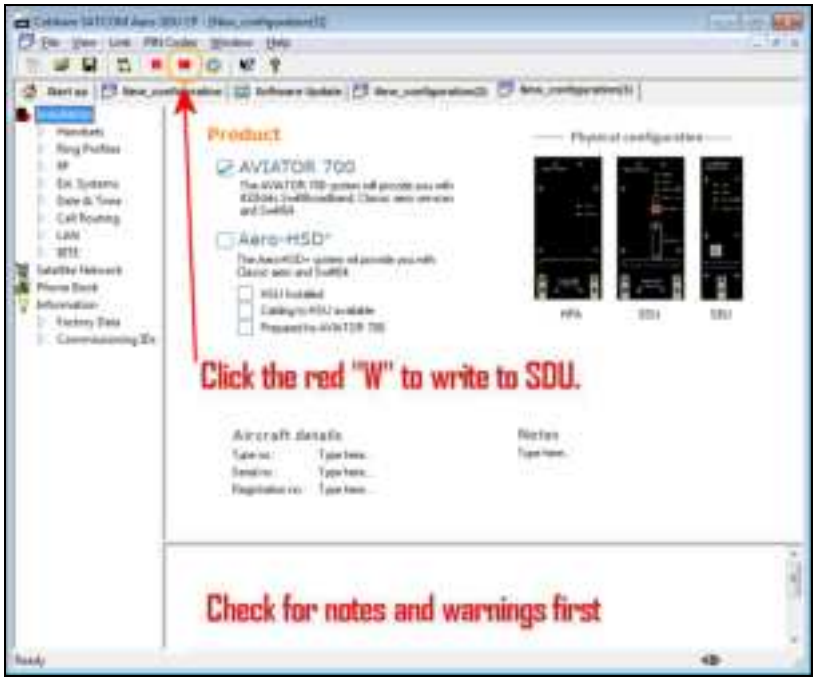


Figure C-9: Upgrading HSD+ to AVIATOR 700, step 7/7

System messages

D.1 Types of messages

The AVIATOR 700 system announces messages in the 4-Wire Handset and the MCDU display or in the built-in web interface of the SBU. In this appendix you find:

- **H+ Cause Codes**
- **MPDS Cause Codes**
- **ISDN Cause Codes**
- **List of BITE codes**
- **List of SBU events**

Cause codes contain information from the satcom services or status information from the system to the user.

BITE codes contain information from the AVIATOR 700 system. This information is a result of a POST or PAST sequence or Continuous Monitoring performed by the Built-In Test Equipment.

D.2 Cause Codes

D.2.1 H+ Cause Codes

Logon Reject Cause Codes

Display Text	ID	Description	Guidance
ClassReject	0x88	Class rejected	The GES does not support this class.
GlobChanLoss	0x82	Global channel loss	Verify that there are no obstacles between the satellite and the AES antenna.
EMCON Active	0x8B	Emission Control is active	
GlobCunavlb	0x09	Global C channel not available at GES	
ManualLogRej	0x89	Manual login rejected	Manual logon is not allowed when logon policy is automatic.
NetworkFail	0x03	Network Failure	
NoGesSignal	0x81	No GES signal	
NoInitData	0x86	No valid system table available	
NoSatSignal	0x80	No satellite signal	Verify that there are no obstacles between the satellite and the AES antenna.
NotAuthorizd	0x0F	AES not authorized	Verify that the ICAO address used is correct. Verify that the ICAO address is registered, by contacting the service provider.
OtherReason	0x0E	Other Reason	
OutsideCover	0x84	Outside spot beam coverage	The AES is not under a spot beam of the specified GES.
P/R/Tunavlb	0x07	Packet data channel unavailable	
PkdtaUnavlb	0x08	Packet data service unavailable	
SatHandover	0x8C	Satellite handover	
SDUfailure	0x8A	SDU failure	Check the current BITE errors.
SpotChanLoss	0x83	Spot channel loss	
TableFull	0x00	Table Full	

Table D-1: List of H+ Logon Reject Cause Codes

Display Text	ID	Description	Guidance
UserLogoff	0x87	User logoff	
VCC&dUnavlb	0x0A	Voice not available at GES	
VoiceUnavlb	0x01	Voice Unavailable	
WrongGES	0x85	GES not existing	Check GES ID validity.
WrongGESid	0x06	Wrong GES identifier	Check GES ID validity.
WrongParam	0x02	Wrong Parameter	
WrongSatID	0x05	Wrong Satellite identifier	Check satellite ID validity.

Table D-1: List of H+ Logon Reject Cause Codes (Continued)

Call Reject Cause Codes

The SLCV codes refer to: S = coding Standard, L = cause Location, C = cause Class, V = cause Value.

Display text	Code				Description	Guidance
	S	L	C	V		
0 0 1 0	0	0	1	0	Normal clearing by called/calling party	
1 1 7 15	1	1	7	15	Undefined cause	
1 2 7 15	1	2	7	15	Undefined cause	
1 3 7 15	1	3	7	15	Undefined cause	
1 4 7 15	1	4	7	15	Undefined cause	
AddrComplete	1	3	0	1	Address complete signal sent to terrestrial network	
AddrComplete	1	6	0	1	Address complete signal received from terrestrial network	
AESabsent	1	3	7	3	Calling/called AES not logged-on to system	
AnalogFail	1	4	2	3	Analog data equipment not supported at GES	
AnalogRate	1	4	6	2	Analog data rate not supported by GES	
CallBarred	1	4	4	3	Called AES barred for incoming calls	

Table D-2: List of H+ Call Reject Cause Codes

Display text	Code				Description	Guidance
	S	L	C	V		
CallPreempt	1	1	1	1	Preemption by higher priority call at AES	The call is preempted, e.g. because you attempted to make an HSD call and HSD is barred in the FLEX configuration.
CardInvalid	1	3	6	1	Credit card type not supported by GES	
CardRejected	1	3	3	1	Credit card number rejected by GES	
DigitalFail	1	4	2	4	Digital data equipment not supported at GES	
DigitalRate	1	4	6	3	Digital data rate not supported by GES	
Handover	1	3	7	4	Spot beam handover	
InvalidAddr	1	2	3	2	Call Ann. / C-ch. Assign. not recd. from GES	
InvalidAddr	1	3	3	2	Incomplete called (AES) number	
InvalidAddr	1	4	3	2	Invalid called number format received from AES	
InvalidNumbr	0	4	1	12	Incomplete called number format from AES	
Network busy	1	2	5	1	C-channel continuity test failure at AES/ Connect acknowledge not received by AES	
Network busy	1	3	5	1	C-Channel continuity test failure at GES/AES not responding/ Incomplete call information received from AES/ Interruption in received AES carrier/ Connect acknowledge not received by GES	
NoAnswer	0	1	1	2	Expiry of answer time supervision at AES	
NoAnswer	0	4	1	2	Expiry of answer time supervision at the MSSC	

Table D-2: List of H^+ Call Reject Cause Codes (Continued)

Display text	Code				Description	Guidance
	S	L	C	V		
NoChanAvail	1	3	2	1	C-channel frequency/power unavailable at GES	
NoUnitAvail	1	2	2	2	C-channel unit unavailable at AES	
NoUnitAvail	1	3	2	2	C-channel unit unavailable at GES	
SatDestFail	1	1	4	1	Called AES terminal not in service	
ServiceType	1	3	6	5	Service type not supported by GES	
SwitchBusy	0	2	2	10	GES equipment congestion	
SwitchBusy	0	4	2	10	GES equipment congestion/ No route to destination from GES/ Circuit to terrestrial network unavailable	
UnassignedNo	1	4	7	2	AES not authorized for service	
Unauthorised	1	3	4	2	Calling AES not authorized for service	
UserBusy	1	1	7	1	Called AES terminal busy	
UserBusy	1	3	7	1	Call reference number unavailable at GES	
VoiceTypeErr	1	2	6	4	Required voice channel characteristics not supported by AES	
VoiceTypeErr	1	3	6	4	Required voice channel characteristics not supported by GES	
WrongNumber	0	4	0	1	Unallocated called number received from AES	

Table D-2: List of H+ Call Reject Cause Codes (Continued)

D.2.2 MPDS Cause Codes[1]

Layer 2 Reason Codes

L2 Reason Number	Interpretation
690 (2B2)	Registration time-out
691 (2B3)	Service connection establishment time-out
692 (2B4)	Bearer time-out
693 (2B5)	Preempted by master unit
700	Reason Unspecified
701	L3 Release
702	L3 Deregister
703	L3 Reject
716	SAN Idle Timer Expiry
717	MAN Idle Timer Expiry
718	SAN Connect Timer
719	SAN Modify Timer
720	SAN Handover Timer
721	SAN Connection Timer
722	MAN Connection Timer
732	Insufficient operating system resources at MAN
733	Insufficient memory at MAN
748	Invalid L3 Call Ref in Establish SDU
749	Invalid L3 Call Ref in Modify SDU
764	Unsupported IPDS MAC version
765	Invalid Bearer Connection type in Establish SDU
766	Invalid Bearer Control type in Establish SDU
767	Invalid Bearer Connection ID in Establish SDU
768	Invalid Bearer Connection type in Modify SDU
769	Invalid Bearer Control type in Modify SDU

Table D-3: List of MPDS Layer 2 Reason Codes

1. MPDS is to be discontinued as part of Inmarsat's migration of the I3 satellites to I4. For details, see https://www.inmarsat.com/support/i-3-to-i-4-services-migration/.

L2 Reason Number	Interpretation
770	Invalid Bearer Connection ID in Modify SDU
771	Invalid Handover SDU
772	Invalid SDU type
773	SDU Incorrectly Formatted
780	Connection sub-layer protocol failure (MAN specific signalling)
781	Connection sub-layer protocol failure (HDLC signalling)
796	Control sub-layer protocol failure
812	Channel Unit failure
813	Hardware failure
814	MAN not responding to frequency corrections
815	MAN not responding to power corrections
816	MAN not responding to timing corrections
828	Internal SAN failure
829	SAN Shutting Down
844	Bearer Control - No satellite link
845	Bearer Control - No suitable contention slot
846	Bearer Control - Status Acknowledgement failure
847	Bearer Control - Incorrect SAN ID
860	No such MAN
861	Invalid L3 Call Reference

Table D-3: List of MPDS Layer 2 Reason Codes (Continued)

D.2.3 ISDN Cause Codes

The SLCV codes refer to: S = Coding Standard, L = cause Location, C = cause Class, V = cause Value.

Code (Hex)				Interpretation
S	L	C	V	
1	0	0	1	MES is clearing the call as instructed by the relevant MES terminal equipment (i.e., normal clearing due to MES terminal "on-hook" etc.).
1	0	1	1	MES is rejecting the call because the specified MES terminal number is currently busy, and MES has not been authorized to divert calls which are addressed to that number.
1	0	1	2	MES is clearing the fixed-originated call because subsequent to the acceptance of the call and the signalling of the identity of the mobile terminal to which the call will actually be routed, that terminal has become busy and cannot be called.
1	0	2	1	MES is clearing the call because appropriate "off-hook" signalling has not been received from the addressed MES terminal (including any authorized diversions) within the allowed time limit.
1	0	8	1	MES is rejecting the call because the specified MES terminal number has not been installed, and MES has not been authorized to divert calls which are addressed to that number.
1	0	9	1	MES is rejecting the call because the specified MES terminal number is currently out-of-service, and MES has not been authorized to divert calls which are addressed to that number.
1	0	9	2	MES is clearing the fixed-originated call because subsequent to the acceptance of the call and the signalling of the identity of the mobile terminal to which the call will actually be routed, that terminal has become out-of-service and cannot be called.
1	1	4	3	MES is prematurely clearing the fixed-originated call which is in the process of being established because the MES user has initiated a call from a terminal which is authorized to automatically preempt an existing fixed-originated call.
1	1	4	4	MES is prematurely clearing the MES-originated call which is in the process of being established because the MES user has initiated a higher priority call.
1	1	4	5	MES is prematurely clearing the mobile-originated call which is in the process of being established because the MES user has initiated a call from a terminal which is authorized to automatically preempt an existing mobile-originated call.

Table D-4: List of ISDN Cause Codes (SLCV)

Code (Hex)				Interpretation
S	L	C	V	
1	1	4	6	MES is prematurely clearing the mobile-originated call which is in the process of being established because the MES user has abandoned the call (by placing the originating terminal "on-hook").
1	1	D	1	LES is rejecting the call because the "Service Nature" and/or "Service Type" and/or "Channel parameter" information received from the MES is invalid (e.g., not currently defined in the SDM, mutually contradictory, or not applicable to a MES originated call).
1	1	D	2	LES is clearing the call because the "service address" information received from the MES is invalid (i.e., less than 2 digits).
1	1	D	3	LES is clearing the call because the "service address" information received from the MES is a 2-digit address which is either undefined or which is currently unavailable at this LES.
1	1	D	5	LES is clearing the call because the "service address" information received from the MES contains a country code which is regarded (by this LES) as invalid.
1	1	D	6	LES is clearing the call because the "PID" information received from the MES in the "scrambling vector" message (type 8D H) is not consistent with the PID information in the Fixed/MES Originated (PID) and PID/MES Registration Tables at the LES as it relates to this call.
1	2	0	2	(Spot Beam Handover): MES is ready to make the transition from the current beam to the next beam.
1	2	8	1	MES is rejecting the call because the MES is not equipped to provide the specified service.
1	2	9	1	MES is rejecting the call because although it is equipped to provide the specified service, it is not currently able to do so.
1	2	B	1	MES is rejecting or clearing the call for a reason which is not covered by any of the currently defined "Cause" events.
1	2	C	3	MES is clearing the call because a "LES Connect" message (type 8C H) has not been received by the MES within the allowed time limit.
1	2	C	4	MES is clearing the call because the "authentication query" ISU message (type B4 H) and/or the "authentication query" SSU message (type B5 H) have not been received by the MES within the allowed time limit.
1	2	C	5	MES is clearing the call because an expected supplementary services SU(s) has (have) not been received by the MES within the allowed time limit.

Table D-4: List of ISDN Cause Codes (SLCV) (Continued)

Code (Hex)				Interpretation
S	L	C	V	
1	2	C	6	MES is clearing the call because the "supplementary services interrogation" ISU (type B2 H), and/or "subscriber digits" SSU (type AD H) messages have not been received by the MES within the allowed time limit.
1	2	C	7	MES is clearing the call because a "SCPC channel release" SU (type 8A H) has not been received by the MES, in response to the transmission of a "notification acknowledge" message (type BA H) during the supplementary services call diversion information retrieval process, within the allowed time limit.
1	2	C	8	(Spot Beam Handover): MES is clearing the call session in the next beam because the MES did not detect the LESH carrier on the new frequency.
1	2	D	1	LES is rejecting the call because the "spot-beam ID" information received from the MES is invalid (i.e., ID is not allocated on satellite in use).
1	2	D	2	LES is clearing the call because the "Scrambling Vector" information received from the MES is invalid (i.e., 0000H, 6959H or 7FFFH).
1	3	6	2	MES is clearing the call because a long-term interruption in reception has occurred (the definition of a "long-term interruption" depends upon the service type, see Section B).
1	3	6	3	A Secondary Functional Centre of a Multi-channel MES is clearing the call because the Primary Functional centre has commanded the Above-decks equipment to re-point to a different Ocean Region. **Note**: The above text is specific to a Fleet system. However, for the AVIATOR 700 system this SLCV code is relevant when the H^+ sub-system is repointing the antenna from one ocean region to another. That will cause the Swift64 sub-system to be pre-empted with the SLCV 1363.
1	3	9	1	MES is clearing the call because the call has lasted more than 700 km in linear travelled distance.
1	3	9	2	MES is clearing the call because it has moved out of spot beam coverage.
1	3	9	3	MES in "cooperative mode" is clearing the call because of a pre-emption request from the master entity.
1	4	5	1	LES is rejecting the call because an appropriate terrestrial circuit is not currently available at this specific LES.
1	4	5	2	LES is rejecting the call because an appropriate channel unit and associated terrestrial circuit are not currently available at this LES. [This "cause" is only utilized when there is a permanent "one-to-one" connection between appropriate channel units and their terrestrial circuits].

Table D-4: List of ISDN Cause Codes (SLCV) (Continued)

Code (Hex)				Interpretation
S	L	C	V	
1	5	0	2	(Spot Beam Handover): LES is ready to make the transition from the current beam to the next beam and is clearing the call session in the current beam (normal clear).
1	5	5	1	LES is rejecting the call because an appropriate satellite channel is not currently available at this specific LES.
1	5	8	1	LES is rejecting the call because the requested service is not provided by this specific LES.
1	5	9	1	LES is rejecting the call because the requested service is temporarily not available at this specific LES.
1	5	A	1	LES is rejecting the call because the specified MES is not authorized for any service at this specific LES.
1	5	A	2	LES is rejecting the call because the specified MES is not authorized to use specific requested service via this specific LES.
1	5	A	3	LES is clearing the call because the “credit card data” information received from the MES has been rejected by the credit card authorization process.
1	5	A	4	LES is clearing the call because the data received from the MES in the “authentication reply” message (type B6 H) has been declared “invalid” by the LES authentication process.
1	5	A	5	LES is rejecting the call because the specified PID is not authorized for any service at this specific LES.
1	5	A	6	LES is rejecting the call because the specified PID is not authorized to use specific requested service via this specific LES.
1	5	A	7	LES is clearing the call because the service address received from the MES is not authorized for the requested priority.
1	5	B	1	LES is rejecting or clearing the call for a reason which is not covered by any of the currently defined “Cause” events.
1	5	C	1	LES is rejecting the call because an appropriate “Channel Assignment” message has not been received by the LES within the allowed time limit.
1	5	C	2	LES is clearing the call because the “service address” information has not been received by the LES within the allowed time limit.
1	5	C	3	LES is clearing the call because a “Scrambling Vector” message (type 8D H) has not been received by the LES within the allowed time limit.
1	5	C	4	LES is clearing the call because neither the “service address” information nor a “Scrambling Vector” message (type 8D H) has been received by the LES within the allowed time limit.

Table D-4: List of ISDN Cause Codes (SLCV) (Continued)

Code (Hex)				Interpretation
S	L	C	V	
1	5	C	7	LES is clearing the call because a “MES Connect” message (type 99 H) has not been received by the LES within the allowed time limit.
1	5	C	9	LES is clearing the call because a “authentication reply” message (type B6 H) has not been received by the LES within the allowed time limit.
1	5	C	A	LES is clearing the call because a “notification acknowledge” message (type BA H) has not been received by the LES within the allowed time limit.
1	5	C	B	LES is clearing the call because the request sequence number contained in the received “notification acknowledge” message (type BA) is not valid (i.e. either not ‘0’ or not the next value in the sequence).
1	5	C	C	(Spot Beam Handover): LES is terminating the procedure because it did not receive a response to the Handover Request from the NCS.
1	5	C	D	(Spot Beam Handover): LES is clearing the call session in the next beam because the MES did not indicate that it was ready to make the transition (possibly because the MES did not receive the Channel Assignment).
1	5	D	1	LES is rejecting the call because the “Channel Assignment” message received from the NCS contains inappropriate or conflicting information.
1	5	D	2	LES is clearing this MES ID and channel number in the busy lists at LES and NCS because a new call to/from this MES is being set-up (and thus any previous call to/from this MES must have cleared).
1	5	E	1	LES is attempting to clear an MES which has sent an SCPC channel release message but is found still to be transmitting 5.12 s later.
1	6	5	1	LES is rejecting the call because an appropriate channel unit is not currently available at this specific LES.
1	6	6	1	LES is clearing the call because of an interruption in reception of the MES carrier exceeding the allowed time limit.
1	6	C	2	LES is clearing the call because an appropriate SCPC MES carrier has not been received by the LES (at the commencement of the call) within the allowed time limit.
1	6	C	3	(Spot Beam Handover): LES is clearing the call session in the next beam because the LES did not detect the MESH carrier on the new frequency.
1	7	9	1	LES is clearing the call because of a malfunction in the authentication checking database or in the communications links thereto.
1	8	1	1	NCS is rejecting the call because the specified MES ID is in the “MES busy” list at the NCS.
1	8	1	2	NCS is rejecting the call because the specified MES is busy with an IPDS call at the NCS.

Table D-4: List of ISDN Cause Codes (SLCV) (Continued)

Code (Hex)				Interpretation
S	L	C	V	
1	8	1	3	NCS is rejecting the call because the specified MES is busy with an IPDS call at the NCS, and the call waiting notification was declined or timed out by the MES.
1	8	1	4	NCS is rejecting the call because the specified MES is busy with an IPDS call at the NCS, and call waiting notification is unavailable.
1	8	5	1	NCS is rejecting the call because an appropriate SCPC channel is not currently available.
1	8	5	2	NCS is rejecting the call because no SCPC channel exists at the NCS which matches the contents of the Channel Parameters, Service Nature, Service Type, MES Category, Spot Beam ID and Priority fields contained in the Request for Channel Assignment.
1	8	5	3	NCS is rejecting the call because no SCPC channel is currently available for the specified lease marked MES.
1	8	5	4	NCS is rejecting the call because the MES is outside the spot beam coverage area.
1	8	5	5	NCS is rejecting the call because an appropriate SCPC channel is not currently available and channel pre-emption failed.
1	8	5	6	NCS is rejecting the call because the requested spot beam indicates failed spot beam selection (“FF”) and an appropriate global SCPC channel is not currently available.
1	8	5	7	(Spot Beam Handover) NCS is rejecting the Handover Request because an appropriate SCPC channel is not available in the next beam.
1	8	A	1	NCS is rejecting the call because the specified MES ID was not found in the “Forward and Return MES ID” cross-reference table.
1	8	A	2	NCS is rejecting the call because the specified MES is not authorized for any service (except for Distress calls) at the NCS.
1	8	A	3	NCS is rejecting the call because the specified LES is not authorized for the requested service at the NCS.
1	8	B	1	NCS is rejecting or clearing the call for a reason which is not covered by any of the currently defined “Cause” events.
1	8	B	2	NCS is rejecting the call because the requested service variant is invalid.
1	8	C	1	NCS is rejecting the call because no message was received from the specified MES (in reaction to a Call Announcement message) within the allowed time limit.
1	8	C	3	NCS is rejecting the call because the specified MES was busy and the MES pre-emption failed (i.e. no response within the allowed time limit).

Table D-4: List of ISDN Cause Codes (SLCV) (Continued)

Code (Hex)				Interpretation
S	L	C	V	
1	8	D	1	NCS is rejecting the call because the Request for Call Announcement or Request for Channel Assignment contains invalid or inappropriate information.
1	8	E	1	NCS is rejecting the call because the specified MES ID is in the "MES busy" list at the NCS, and is listed as being busy with a call through the same LES as that now requesting a "call announcement" addressed to that MES.
1	8	E	2	NCS is rejecting the call because the specified MES is busy with an IPDS call through the same LES which is requesting the call announcement.
1	8	E	4	NCS is rejecting the call because the specified MES is busy with an IPDS call through the same LES which is requesting the call announcement, and the call waiting notification was declined or timed out by the MES.
1	8	E	5	NCS is rejecting the call because the specified MES is busy with an IPDS call through the same LES which is requesting the call announcement, and call waiting notification is unavailable.
1	F	0	1	LES is clearing the call because of the receipt of "on-hook" signalling from the relevant terrestrial circuit (i.e., normal clearing).
1	F	1	1	LES is clearing the call because the terrestrial called party is engaged (busy).
1	F	2	1	LES is clearing the call because appropriate "off-hook" signalling from the terrestrial called party has not been received by the LES within the allowed time limit.
1	F	6	1	LES is clearing the call because of the detection of a failure in the relevant terrestrial circuit.
1	F	6	2	The LES is clearing the call because the terrestrial calling party or the terrestrial network has cleared the call before the "MES connect" message has been received by the LES.

Table D-4: List of ISDN Cause Codes (SLCV) (Continued)

D.3 BITE Error codes

D.3.1 Definition of severity levels

Severity	Definition
Fatal	Total loss of service – Ongoing calls are terminated and no further calls are allowed.
Essential	Partial loss of service, action taken to isolate the fault – some services / calls may work.
Non-E	Non-Essential, no action taken, not displayed in handset – only stored in BITE log.

Table D-5: Definition of severity levels for BITE codes

The 4-Wire Handset, the MCDU display and the SDU BITE display show Fatal and Essential faults when possible.

Access to the full BITE log is only possible through the SDU Maintenance front connector. The BITE log is included in the service log.

There are two BITE codes coming from the SBU. To see more details on errors and warnings coming from the SBU you must use the built-in web interface of the SBU. It provides access to the event list using the SBU Maintenance front connector.

D.3.2 List of BITE codes

Code	LRU	Severity	Description	Remedy
A501	HGA	Fatal	Fatal Antenna Failure (Cobham HGA-7000)	Replace antenna
A502	HGA	Essential	Essential Antenna Failure (Cobham HGA-7000)	Replace antenna
A503	HGA	Non-E.	Antenna Warning (Cobham HGA-7000)	Check antenna error detail in slog. Replace antenna
AA01	HGA	Essential	High Gain Antenna (Label 350 Bit 11)	Check antenna power and communications lines, replace antenna
AAS1	S/HGA	Essential	STBO High Gain Antenna (Label 350 Bit 11)	Check antenna power and communications lines, replace STBD antenna
AC01	ACU	Essential	Communication ACU/BSU-HPA. No input from ACU/BSU	Check A429 lines between ACU/BSU and HPA (BP13 & BP14). Replace ACU/BSU
AC02	ACU	Essential	Communication ACU/BSU-HPA. invalid input from ACU/BSU	Check A429 lines between ACU/BSU and HPA, (BP13 & 14). Replace ACU/BSU
AC03	ACU	Essential	Any Internal Parameter (Label 350 Bit 18)	Replace ACU/BSU
AC04	ACU	Non-E.	Cross-talk Input	Check A429 lines between Port & STBO BSU
AC05	ACU	Non-E.	Control Bus Input (Label 350 Bit 13) BSU/ASU has no input from HPA	Check Arinc 429 line from HPA to ACU/BSU. HPA pins BP8 & BP9 and BP10 & BP11 in case of dual BSU installation
AC06	ACU	Non-E.	Internal RAM	Replace ACU/BSU
AC07	ACU	Non-E.	Internal ROM	Replace ACU/BSU
AC08	ACU	Non-E.	Internal Power Supply	Replace ACU/BSU
AC09	ACU	Non-E.	Temperature	Replace ACU/BSU
AC10	ACU	Non-E.	Parity Errors on ARINC429 Link	Check A429 lines between ACU/BSU and HPA, replace ACU/BSU
ACS1	S/ACU	Essential	Communication STBD ACU/BSU-HPA. No input from ACU/BSU (Dual PNL only)	Check A429 lines between STBD ACU/BSU and HPA (BP15 & BP16). Replace STBD ACU/BSU

Table D-6: List of BITE codes

Code	LRU	Severity	Description	Remedy
ACS2	S/ACU	Essential	Communication ACU/BSU-HPA. Invalid input from ACU/BSU	Check A429 lines between STBD ACU/BSU and HPA (BP15 & BP16). Replace STBD ACU/BSU
ACS3	S/ACU	Essential	Any Internal Parameter (Label 350 Bit 18)	Replace ACU/BSU
ACS4	S/ACU	Non-E.	Cross-talk Input	Check A429 lines between Port & STBO BSU
ACS5	S/ACU	Non-E.	Control Bus Input (Label 350 Bit 13) BSU/ASU has no input from HPA	Check Arinc 429 line from HPA to ACU/BSU. HPA pins BP10 & BP11
ACS6	S/ACU	Non-E.	Internal RAM	Replace STBD ACU/BSU
ACS7	S/ACU	Non-E.	Internal ROM	Replace STBD ACU/BSU
ACS8	S/ACU	Non-E.	Internal Power Supply	Replace STBD ACU/BSU
ACS9	S/ACU	Non-E.	Temperature	Replace STBD ACU/BSU
ACSA	S/ACU	Non-E.	Parity Errors on ARINC429 Link	Check A429 lines between STBD ACU/BSU and HPA, replace STBD ACU/BSU
AH01	HGA	Essential	BSU-HPA Port Dual Antenna Cross installation	Check antenna coax lines, replace antenna
AHS1	S/HGA	Essential	BSU-HPA STBD Dual Antenna Cross installation	Check antenna coax lines, replace antenna
AL01	LNA	Essential	LNA/Diplexer (Label 350 bit 20)	Check power and connections on DLNA, replace DLNA
ALS1	S/LNA	Essential	STBD LNA/Diplexer (Label 350 bit 20)	Check power and connections on DLNA, replace DLNA
AP01	HPR	Essential	High Power Relay	Check wiring from BSU to HPR, replace HPR
APS1	HPR	Essential	STBD High Power Relay	Check wiring from BSU to HPR, replace HPR
C502	Cable	Essential	SDU-DLNA RF RX Cable broken	Check if HSU/SBU and SDU coaxes are swapped or open on splitter, DLNA coax is removed or open
C503	Cable	Essential	SDU-DLNA RF RX Cable shorted	Check if DLNA and HSU/SBU coaxes are swapped or shorted on splitter, DLNA and SDU coaxes are swapped or shorted

Table D-6: List of BITE codes (Continued)

Code	LRU	Severity	Description	Remedy
C601	Cable	Fatal	SDU - HPA Cable Test	Check if TX coax between SDU and HPA is open or shorted, Cables are swapped on TX coupler
C705	Cable	Fatal	Communication Test with HGA-7000 Antenna	Check if GPS, Modem, control coax open or shorted between SDU and HGA-7000 antenna, Coax pigtails are swapped on HGA-7000 antenna
C801	Cable	Fatal	Communication Test with HPA	Check HPA power LED is green (if not, check HPA nON signal between SDU BP57 and HPA BP6 and power input) Check RS-422 control lines SDU BP78/79 to HPA BP27/28 and SDU BP80/81 to BP25/26. Replace HPA if persists
C802	Cable	Fatal	No GPS Signal to GPS Module	Check GPS coax between antenna and SDU, replace GPS antenna, replace SDU
C957	HPA	Fatal	HPA Communication with PSM Module	Replace HPA
CA30	CM	Fatal	Invalid ICAO Number. (Mismatch between CM and strapping)	Check that ICAO strapping matches ICAO programmed in configuration module and that it is correct
CE01	SDU	Fatal	The H+ board certification level is inconsistent	Replace SDU
CE02	SDU	Essential	The SDU unit certification level is inconsistent	Replace SDU
CE03	HPA	Fatal	The HPA unit certification level is inconsistent	Replace HPA
CE04	SDU	Essential	The HSD/HSU unit certification level is inconsistent	Replace SDU
CE05	SBU	Essential	The SBU unit certification level is inconsistent	Replace SBU
CE06	SDU, HPA	Fatal	The certification level between SDU and HPA is inconsistent	Check and fix BITE C801. Check part numbers for the SDU, SBU/HSU and HPA all end in -THD (A700D) or all do NOT end in -THD (HSD+ & A700 level-E/legacy)
CE07	SDU	Fatal	The H+ boot code cannot find the OTP cert. HW tag	Replace SDU

Table D-6: List of BITE codes (Continued)

Code	LRU	Severity	Description	Remedy
CE08	System	Essential	The certification level between H+, HSD or SBU is inconsistent	Check and fix BITE UU6S, Check part numbers for the SDU, SBU/HSU and HPA all end in -THD (A700D) or all do NOT end in -THD (HSD+ & A700 level-E/legacy)
CE09	SDU	Essential	The HSD boot code cannot find the OTP cert. HW tag	Replace SDU
E108	CM	Fatal	Configuration Module Fitted Test	Ensure that the proper Part number CM is fitted in the SDU, reseat the CM, Make sure SDU has latest SW, replace CM, replace SDU
H201	HPA	Fatal	HPA Software Integrity	Replace HPA
H202	HPA	Fatal	HPA Communication with Main Module EEPROM	Replace HPA
H203	HPA	Fatal	HPA Essential Data Integrity	If it happens after software upload, use terminal emulator in Aero-SDU CP, press ctrl+x and select HPA shell, enter the command "fixcrc" then reboot the system to reset the HPA data table. If BITE persists, replace HPA
H204	HPA	Non-E.	HPA Non-Essential Data Integrity	Replace HPA
H401	HPA	Fatal	HPA Communication with Main Module UART	Replace HPA
H502	HPA	Fatal	HPA Communication with RFHP Module	Replace HPA
H701	HPA	Fatal	HPA FPGA Version Conflict	Replace HPA
H803	HPA	Fatal	HPA Gain Adjustment Limit	Fix any BITE C801/C601, Replace HPA
H804	HPA	Fatal	HPA Frequency Calibration	Check TX coax SDU to coupler and coupler to HPA
H805	HPA	Fatal	HPA 1st and 2nd Transistor fail	Replace HPA
H901	HPA	Fatal	HPA Communication Failure	HPA not receiving SDU RS-422 signal. Check SDU BP78/79 to HPA BP27/28
HP01	HPA	Fatal	HPA Thermal Safe Operational Limits	Check temperature around HPA, Replace HPA
HP02	HPA	Fatal	RF power limit exceeded	Replace HPA

Table D-6: List of BITE codes (Continued)

Code	LRU	Severity	Description	Remedy
HP11	HPA	Fatal	ARINC 429 Interface Voltage (-12 VD)	Replace HPA
HP13	HPA	Fatal	HPA Internal Voltage (+5V1A)	Replace HPA
HP14	HPA	Fatal	ARINC 429 Interface Voltage (+12 VD)	Replace HPA
HP15	HPA	Fatal	HPA HGA-7000 Supply Voltage (+26 VA)	Replace HPA
HP17	HPA	Fatal	HPA RFHP Module Voltage (+26 VC)	Replace HPA
HPF1	HPA	Essential	HPA Forced Cooling (FAN1, FAN2 and FAN3)	Replace HPA
L101	DLNA	Essential	DLNA Current too high	Replace DLNA
L102	DLNA	Essential	DLNA Current too low	Replace DLNA
L201	DLNA	Essential	DLNA Gain Failure	Replace DLNA
U402	SDU	Fatal	HPLUS Files Existing Test	Replace SDU
U403	SDU	Essential	HPLUS Files CRC Test	Replace SDU
U405	SDU	Essential	HPLUS Software Versions Inconsistency Test	Replace SDU
U901	Cable	Non-E.	IRS/AHRS 1 Failure	Check that IRS is aligned and ready, Check A429 wires from IRS#1 to SDU (BP 26 & BP27), check correct configuration (Speed/Type), check all labels valid
U902	Cable	Non-E.	IRS/AHRS 2 Failure	Check that IRS is aligned and ready, Check A429 wires from IRS#2 to SDU (BP 28 & BP29), check correct configuration (Speed/Type), check all labels valid
U908	Cable	Fatal	IRS/AHRS/GPS Data Invalid	Check and correct any U901/U902/C802 BITEs.
U915	SDU	Fatal	SDU needs SW update to support HPA	Update software in SDU
UA01	SDU	Non-E.	BITE Display Interface Data Loop Test	Replace SDU

Table D-6: List of BITE codes (Continued)

Code	LRU	Severity	Description	Remedy
UC00	SDU	Essential	5.Lo Lock Detector Test	Replace SDU
UC0G	SDU	Essential	5.Lo Lock Failure	Replace SDU
UC0P	SDU	Essential	Interface to C-FDM DSP Channel 1 Test	Replace SDU
UC0Q	SDU	Essential	Interface to TIF DSP Channel 1 Test	Replace SDU
UC10	SDU	Essential	6.Lo Lock Detector Test	Replace SDU
UC1G	SDU	Essential	6.Lo Lock Failure	Replace SDU
UC1P	SDU	Essential	Interface to C-FDM DSP Channel 2 Test	Replace SDU
UC1Q	SDU	Essential	Interface to TIF DSP Channel 2 Test	Replace SDU
UC1R	SDU	Essential	SDU needs SW update (C-Channel)	Try updating/reloading software in SDU and HSU, replace SDU/HSU
UE01	SDU	Non-E.	HSD Rx Cable Test	Replace SDU
UF01	SDU	Fatal	1.Lo Lock Detector Test	Replace SDU
UF02	SDU	Fatal	2.Lo Lock Detector Test	Replace SDU
UF03	SDU	Fatal	3.Lo Lock Detector Test	Replace SDU
UF04	SDU	Fatal	4.Lo Lock Detector Test	Replace SDU
UF30	SDU	Fatal	RT Channel ALC Test	Replace SDU
UF51	SDU	Essential	1.Lo Lock Failure	Replace SDU
UF52	SDU	Essential	2.Lo Lock Failure	Replace SDU
UF53	SDU	Essential	3.Lo Lock Failure	Replace SDU
UF54	SDU	Essential	4.Lo Lock Failure	Replace SDU
UF71	SDU	Fatal	GPS Communication Test	Replace SDU
UH01	SDU	Essential	1.LO Low Lock Detector Test	Replace SDU/HSU depending on location in BITE list
UH02	SDU	Essential	2.LO Low Lock Detector Test	Replace SDU/HSU depending on location in BITE list

Table D-6: List of BITE codes (Continued)

Code	LRU	Severity	Description	Remedy
UH03	SDU	Essential	3.LO Low Lock Detector Test	Replace SDU/HSU depending on location in BITE list
UH04	SDU	Essential	1.LO High Lock Detector Test	Replace SDU/HSU depending on location in BITE list
UH05	SDU	Essential	2.LO High Lock Detector Test	Replace SDU/HSU depending on location in BITE list
UH06	SDU	Essential	3.LO High Lock Detector Test	Replace SDU/HSU depending on location in BITE list
UH11	SDU	Essential	1.LO Minimum Frequency Test	Replace SDU/HSU depending on location in BITE list
UH12	SDU	Essential	2.LO Minimum Frequency Test	Replace SDU/HSU depending on location in BITE list
UH13	SDU	Essential	3.LO Minimum Frequency Test	Replace SDU/HSU depending on location in BITE list
UH18	SDU	Essential	1.LO Lock Time Test	Replace SDU/HSU depending on location in BITE list
UH19	SDU	Essential	2.LO Lock Time Test	Replace SDU/HSU depending on location in BITE list
UH20	SDU	Essential	3.LO Lock Time Test	Replace SDU/HSU depending on location in BITE list
UH21	SDU	Essential	1.LO Maximum Frequency Test	Replace SDU/HSU depending on location in BITE list
UH22	SDU	Essential	2.LO Maximum Frequency Test	Replace SDU/HSU depending on location in BITE list
UH23	SDU	Essential	3.LO Maximum Frequency Test	Replace SDU/HSU depending on location in BITE list
UH24	SDU	Essential	1.LO DDS Divider Test	SDU is not able to see the satellite. Bad PRT signal and the master oscillator is not able to tune. Normally shown with UH25,UH32 and UH3B. Check for ACU fault. Check coaxes in the RX path, make sure DLNA on/off is wired correctly, replace DLNA, replace SDU

Table D-6: List of BITE codes (Continued)

Code	LRU	Severity	Description	Remedy
UH25	SDU	Essential	3.LO DDS Divider Test	SDU is not able to see the satellite. Bad PRT signal and the master oscillator is not able to tune. Normally shown with UH24,UH32 and UH3B. Check for ACU fault. Check coaxes in the RX path, make sure DLNA on/off is wired correctly, replace DLNA, replace SDU
UH30	SDU	Essential	ALC Carrier off Test	Replace SDU/HSU depending on location in BITE list
UH31	SDU	Essential	ALC Carrier on Test	Replace SDU/HSU depending on location in BITE list
UH32	SDU	Essential	RF BER Loop Back Test	SDU is not able to see the satellite. Bad PRT signal and the master oscillator is not able to tune. Normally shown with UH24, UH25 and UH3D. Check for ACU fault. Check coaxes in the RX path, make sure DLNA on/off is wired correctly, replace DLNA, replace SDU
UH33	SDU	Non-E.	Average Amplitude Test	Replace SDU/HSU depending on location in BITE list
UH35	SDU	Non-E.	Step Attenuator Test	Replace SDU/HSU depending on location in BITE list
UH3B	SDU	Essential	Rx TX frequency offset to big Test	SDU is not able to see the satellite. Bad PRT signal and the master oscillator is not able to tune. Normally shown with UH24, UH25 and UH32. Check for ACU fault. Check coaxes in the RX path, make sure DLNA on/off is wired correctly, replace DLNA, replace SDU
UH3D	SDU	Essential	Loop Back Switch Test	Replace SDU/HSU depending on location in BITE list
UH51	SDU	Essential	1.LO Lock Failure	Replace SDU/HSU depending on location in BITE list
UH52	SDU	Essential	2.LO Lock Failure	Replace SDU/HSU depending on location in BITE list
UH53	SDU	Essential	3.LO Lock Failure	Replace SDU/HSU depending on location in BITE list
UH61	SDU	Essential	ALC Level to Low Test	Replace SDU/HSU depending on location in BITE list

Table D-6: List of BITE codes (Continued)

Code	LRU	Severity	Description	Remedy
UH62	SDU	Essential	ALC Level to High Test	Replace SDU/HSU depending on location in BITE list
UH63	SDU	Essential	Master Oscillator to low	Replace SDU/HSU depending on location in BITE list
UH64	SDU	Essential	Master Oscillator to high	Replace SDU/HSU depending on location in BITE list
UH70	SDU	Essential	Communication problem with H+ system	Replace SDU
UH78	SDU	Essential	Position Unavailable	In HGR and/or IRS/AHRS not aligned
UH79	SDU	Essential	Velocity Unavailable	In HGR and/or IRS/AHRS not aligned
UH7D	SDU	Non-E.	Software Versions Consistency Test	Reload SDU software. Replace SDU is BITE persists.
UH7F	SDU	Non-E.	ATE pins connected. Not allowed	Ensure ATE pins are not shorted (should not be pinned)
UH7G	SDU	Non-E.	ATE pins connected. Not allowed	Ensure ATE pins are not shorted (should not be pinned)
UH82	SDU	Essential	Parameter Block Checksum Test HSD	Replace SDU/HSU depending on location in BITE list
UH83	SDU	Essential	CPU Application CRC Test	Replace SDU/HSU depending on location in BITE list
UH84	SDU	Essential	CPU RAM Test	Replace SDU/HSU depending on location in BITE list
UH85	SDU	Non-E.	Battery Check Test HSD	Replace SDU/HSU depending on location in BITE list
UH87	SDU	Essential	All Files Exist in Flash Test	Replace SDU/HSU depending on location in BITE list
UH88	SDU	Essential	Flash Files CRC Test	Replace SDU/HSU depending on location in BITE list
UH89	SDU	Essential	SDU needs SW update (HSD)	Try updating/reloading software in SDU, replace SDU
UH91	SDU	Non-E.	DSP Debug Port Test	Replace SDU/HSU depending on location in BITE list
UH95	SDU	Essential	Frame DSP Interface Test	Replace SDU/HSU depending on location in BITE list

Table D-6: List of BITE codes (Continued)

Code	LRU	Severity	Description	Remedy
UH96	SDU	Essential	Turbo FPGA Interface Failure	Replace SDU/HSU depending on location in BITE list
UH97	SDU	Essential	Frame DSP to VFC DSP interface	Replace SDU/HSU depending on location in BITE list
UH98	SDU	Essential	VFC DSP Interface Test	Replace SDU/HSU depending on location in BITE list
UHA1	SDU	Non-E.	Burst Duration Monitor Circuit Test	Replace SDU/HSU depending on location in BITE list
UHA4	SDU	Essential	TDM Burst Duration Test	Replace SDU/HSU depending on location in BITE list
UHA5	SDU	Essential	Carrier On Signals Test	Replace SDU/HSU depending on location in BITE list
UHA6	SDU	Essential	Turbo FPGA Load Test	Replace SDU/HSU depending on location in BITE list
UHA7	SDU	Essential	ISDN Transceiver Interface Test	Replace SDU/HSU depending on location in BITE list
UHA8	SDU	Essential	ISDN Supply Voltage Test	Replace SDU/HSU depending on location in BITE list
UHA9	SDU	Essential	ISDN Rx Voltage Test	Replace SDU/HSU depending on location in BITE list
UHAA	SDU	Essential	Turbo FPGA RAM Test	Replace SDU/HSU depending on location in BITE list
UHAB	SDU	Essential	Power Fail sensor false alarm	Replace SDU/HSU depending on location in BITE list
UHAC	SDU	Essential	ISDN 38 V shorted.	The current limit on the 38V power output has been exceeded and the output power has therefore been turned off. Remove the device(s) connected and restart the system, check for proper pin out and shorted ISDN wires
UHB0	SDU	Non-E.	Environment temperature to low	Replace SDU/HSU depending on location in BITE list
UHB1	SDU	Non-E.	Temperature Sensor Test	Replace SDU/HSU depending on location in BITE list
UHEE	SDU	Essential	EEPROM Essential Data Test	Replace SDU/HSU depending on location in BITE list

Table D-6: List of BITE codes (Continued)

Code	LRU	Severity	Description	Remedy
UHEU	SDU	Non-E.	EEPROM Test	Replace SDU/HSU depending on location in BITE list
UHP0	SDU	Essential	Communication Test with HSD-CPU	Replace SDU/HSU depending on location in BITE list
UHW2	SDU	Non-E.	Master Oscillator needs calibration	Replace SDU/HSU depending on location in BITE list
UU02	SDU	Essential	Parameter Block Checksum Test	With aircraft outside and nave system up, from terminal emulator enter the command "TX -x -1" and hit enter. The system will reboot and parameter block will be reset.
UU10	SDU	Essential	PRT DSP Interface Test	Replace the SDU
UU16	SDU	Essential	UART Loop Back, CPDF (COM12) Test	Replace the SDU
UU19	SDU	Essential	SDU needs SW update (H+)	Replace the SDU
UU1C	SDU	Non-E.	Temperature Sensor Test	Replace the SDU
UU1D	SDU	Fatal	Environment Temperature Failure, H-Plus	Replace the SDU
UU20	SDU	Non-E.	H+ EEPROM Non Essential Data Test	Replace the SDU
UU21	SDU	Fatal	H+ EEPROM Essential Data Test	Replace the SDU
UU23	SDU	Essential	H+/HSD SW Version Inconsistency Test	Make sure SDU & HSU has latest software, replace SDU, replace HSU
UU24	SBU	Essential	H+/SBU SW Version Inconsistency Test	Make sure SDU & SBU has latest software, replace SDU, replace SBU
UU60	SDU	Essential	PBX DSP Interface Test	Replace the SDU
UU6H	SDU	Essential	Communication Problem with HSD CPU, H+ Detected	Check "location" of BITE with Aero-SDU CP Terminal Emulator "list" or in handset. If location [HSD pcb] reload software in SDU and replace SDU if BITE persists after reboot. If location [HSU pcb] check Arinc 429 connection to HSU (SDU BP32/33 to HSU TP19/20 and SDU BP34/35 to HSU TP21/22), check HSU power and software version. Replace HSU if persist after reboot

Table D-6: List of BITE codes (Continued)

Code	LRU	Severity	Description	Remedy
UU6K	Cable	Essential	Calibration problem with HSU TX cable	HSU TX coax on TX coupler is disconnected or broken or the SDU and HPA connectors are swapped on the TX coupler
UU6L	SBU	Essential	Essential error in SBU	See SBU dashboard/event list for further troubleshooting of the SBU
UU6M	SBU	Non-E.	Non-essential error in SBU	See SBU dashboard/event list for further troubleshooting of the SBU
UU6S	SBU	Essential	Communication Problem with H+/SBU CPU, H+ Detected	Ensure SBU power LED is Green (if Amber, check SBU enable discrete (SDU BP56 to SBU TP8)), check SBU "SYSTEM TYPE" is configured as AVIATOR 700, check RS-422 lines between SDU BP73/72 to SBU TP20/19 and SDU BP71/70 to SBU TP22/21
UUB1	SDU	Non-E.	Battery Check Test	Replace the SDU
UUC0	CM	Fatal	System Configuration Test	Ensure SDU configuration is written to CM
UUC1	CM	Essential	CM CRC Error	Replace CM
UUC2	CM	Essential	Config Module Needs Upgrade	Replace CM
UUCU	CM	Fatal	Configuration Module Test	Replace CM

Table D-6: List of BITE codes (Continued)

D.4 List of SBU events

The following list explains the events (warnings and errors) that may show in the web interface of the SBU.

Event ID	ID range	Severity	Description	Explanation	Remedy
0100	00100 to 00199	ERROR	System data damaged	Important system data is damaged	Do not use the terminal. Contact your Cobham partner.
0210	00210 to 00219	ERROR	SIM module error	The SIM interface on the terminal cannot be used.	Contact your Cobham partner.
0240	00240 to 00249	ERROR	Temperature sensor error	The terminal is in danger of overheating.	Do not use the terminal. Contact your Cobham partner.
0260	00260 to 00269	ERROR	System error	The terminal cannot communicate on the satellite network.	Contact your Cobham partner.
0300	00300 to 00309	ERROR	GPS module error	The GPS module is out of function. The terminal cannot obtain a valid GPS position.	Contact your Cobham partner.
0310	0310	ERROR	WLAN module error	The WLAN access point failed initialization	Contact your Cobham partner if the problem persists.
0330	00330 to 00339	ERROR	ISDN failure	The ISDN interface on the terminal cannot be used.	Contact your Cobham partner.
0340	00340 to 00349	ERROR	2-wire failure	The Phone/Fax interface of the terminal cannot be used.	Contact your Cobham partner.
0350	00350 to 00359	ERROR	AD9864 calibration data error	Internal error in the receiving part of the terminal.	Contact your Cobham partner if the problem persists.
0380	0380	ERROR	SNMP agent initialization failed	The SNMP agent failed initialization	Contact your Cobham partner if the problem persists.
1010	01010 to 01019	WARNING	Temperature too low (critical)	Low ambient temperature is causing the performance of the terminal to be degraded or halted.	Move the terminal to a warmer location. For information on ambient temperature limits, see the installation manual.
1020	01020 to 01029	WARNING	Too low temperature warning	Low ambient temperature is causing the performance of the terminal to be degraded or halted. The terminal will assume radio silence if the problem is in the HLD.	Move the terminal to a warmer location. For information on ambient temperature limits, see the installation manual.

Table D-7: SBU events

Event ID	ID range	Severity	Description	Explanation	Remedy
1110	01110 to 01119	WARNING	Temperature too high (critical)	Terminal: Critically high temperature is causing the terminal to shut down. HLD: Critically high temperature is causing the HLD to stop transmission.	If possible, move the failing unit to a cooler location. For information on ambient temperature limits, see the installation manual. Contact your Cobham partner if the problem persists.
1120	01120 to 01129	WARNING	Too high temperature warning	High ambient temperature is causing the performance of the terminal to be degraded or halted. If the problem is in the terminal: All PoE ports are shut down, except port 1 and the bit rate for Standard data is reduced. If the problem is in the HLD: The bit rate is reduced.	Move the terminal to a cooler location. For information on ambient temperature limits, see the installation manual.
1400	01400 to 01409	WARNING	Satellite signal lost	The AVIATOR system no longer receives a signal from the satellite.	Make sure the antenna has a free line of sight to the satellite. Check the Rx cables W2 between the SBU and the HLD and W3 between the satcom antenna and the HLD.
1600	01600 to 01609	WARNING	SOS call only	The SIM card is not accepted by the network. Only emergency calls are allowed.	Enter the PIN and wait for network approval. If the problem persists, contact your Airtime Provider.
1700	01700 to 01709	WARNING	Registration for voice failed	The AVIATOR system has not yet been allowed to register for voice services (Circuit Switched). Your SIM card may be blocked by the service provider.	Contact your service provider if the problem persists.
1800	01800 to 01809	WARNING	Registration for data failed	The AVIATOR system has not yet been allowed to register for data services (Packet Switched). Your SIM card may be blocked by the service provider.	Contact your service provider if the problem persists.

Table D-7: SBU events (Continued)

Event ID	ID range	Severity	Description	Explanation	Remedy
2900	02900 to 02909	WARNING	Network failed authentication	The AVIATOR system does not accept the network as a valid BGAN network.	Restart the AVIATOR system. Contact your Cobham partner if the problem persists.
3500	3500	ERROR	2-wire calibration failure	2-wire calibration failed on the Phone/Fax interface, because of: Common mode balance error. The phone is off hook. Wires are shorted to each other or shorted to ground.	Check the wires to your phone or fax. Put the phone on hook. Check the wires.
3600	03600 to 03609	ERROR	2-wire operational failure	The Phone/Fax interface fails to operate, for one of the following reasons: Ground shorted. Power overload. Temperature overload.	Check the wires. Wait until the event is cleared; then try again. Wait until the event is cleared; then try again.
3900	3900	ERROR	Air link error	Problems related to TX and Rx DSPs. Example: PLL out of lock.	Contact your Cobham partner
801F	801F	WARNING	Power Hold-up - the input voltage has dropped	A power glitch was detected, the length of the glitch exceeds what the power supply can absorb. This event could have negative influence on ongoing connections.	Check external power connection.
8020	8020	ERROR	Power Hold-up - the terminal has lost power for more than 200 ms	The terminal has lost power for more than 200 ms.	Check the external power connection.
8040	8040	WARNING	Excessive writes to the flash memory	Wrong APN name or user name/ password for a connection which is set to auto-activate.	Check that the APN name, user name and password are set up correctly for your connections.
8041	8041	ERROR	Flex key is missing or corrupt	The license system has detected a corrupt or missing Flex Key.	Re-install your Flex key. Please find your Flex key on the Certificate of Conformity (CoC) of the TT-5040A-001 Configuration Module.

Table D-7: SBU events (Continued)

Event ID	ID range	Severity	Description	Explanation	Remedy
8042	8042	ERROR	Can not read from Configuration Module	This error occurs when the TT-5040A-001 Configuration Module has not been inserted into the back of the TT-5040A SBU.	Insert the TT-5040A-001 Configuration Module into the back of the TT-5040A SBU.
8043	8043	ERROR	Flash on Configuration Module corrupt	The AVIATOR system has detected corrupt data on the TT-5040A-001 Configuration Module.	Please contact your Cobham partner for further assistance.
8044	8044	ERROR	Flash on Configuration Module is getting worn out	The Configuration Module is aging and will have less that 10% of the expected lifetime left.	The Configuration Module still works but has to be replaceable in a timely manner
804A	804A	WARNING	Flash on Configuration Module is worn out	The Configuration Module is completely worn-out and will have to be replaced.	The Configuration Module might still be operational but can fail at any time since the expected lifetime has been exceeded.
804C	804C	WARNING	The chosen satellite is not visible at current GPS position	The terminal is set up to use a satellite that is not visible at the current GNSS position.	Enter the web interface and select **SETTINGS** > **Satellite selection**. Then select **Auto** to let the terminal automatically find the satellite with the best signal, or select a satellite visible from your current position.
804F	804F	WARNING	ARINC-429 Navigational input is missing or not yet ready	None of the navigational inputs receive valid data for one of the following reasons: Wiring is broken. The navigational source is not switched on or power-on sequence takes longer time than expected.	Check the wiring. Wait until power-on sequence has completed for the external navigational data source. Check if the external unit has been configured properly.
8053	8053	ERROR	SDU Communica-tion error	The communication between the SBU (TT5040A) and SDU (TT5035A is not working. This error applies to AVIATOR 700 systems only.	Check that the RS-422 connection between SBU and SDU is made correct. Check that the SDU has the correct SW and power up. Check that the SDU is configured to an AVIATOR 700 system.

Table D-7: SBU events (Continued)

Event ID	ID range	Severity	Description	Explanation	Remedy
8054	8054	WARNING	Transmission aborted due to extreme temperature	The system stops all transmission because the temperature is critically high or critically low.	None. The system must operate within the allowed temperature range to work properly. For information on ambient temperature limits, see the installation manual.
8056	08056	WARNING	USIM rejected	The type of USIM card inserted in the terminal is not correct for your terminal.	Make sure you have the correct type of USIM card.
8060	8060	WARNING	NAT session table full	There are too many open connections through NAT - typically too many users generating too much web traffic.	Do not establish new connections until the load has been reduced.
8075	08075	ERROR	DO-178B or DO-254 certification level is inconsistent	The system consists of mixed Level-E and Level-D units.	The system is not operational. Contact your Cobham partner.
8077	8077	WARNING	Multi-voice control connection config failure	Data write procedure failed when making a connection.	Reboot the SBU or make a reset to factory default settings. If this does not help contact your Cobham partner.
8079	8079	WARNING	Multi-voice control connection error	Not possible to establish connection to Multi-voice server.	Check that Multi-voice is included in your airtime subscription. Check that the Multi-voice APN entered in the web interface under ADMINISTRATION > Multi-voice matches the Multi-voice APN from your airtime subscription.
807C	807C	WARNING	Multi-voice register failed	Not possible to register on the Multi-voice server.	Check that Multi-voice is included in your airtime subscription.
808D	808D	WARNING	ACARS failed, cannot create PDP context	The SBU cannot open ACARS PDP context. A unique PDP context is used for the transfer of ACARS data and this PDP context cannot be opened.	Check with the service provider that the SBU is allowed to logon to the ACARS APN. Use the default ACARS APN name if not instructed otherwise.

Table D-7: SBU events (Continued)

Event ID	ID range	Severity	Description	Explanation	Remedy
808E	808E	WARNING	ACARS failed, cannot perform DNS lookup	The SBU cannot lookup the IP address for the AGGW. The SBU has created an ACARS PDP context and tries to find the IP address for the AGGW.	Use the default AGGW name if not instructed otherwise. Check with your service provider that the AGGW name is correct.
808F	808F	WARNING	ACARS failed, logon to AGGW rejected	The AAGW in the SBU cannot log in to the AGGW.	Check with your service provider that your SBU (IMSI and ICAO) has been registered in the AGGW. Try again later. This can be a temporary error in the AGGW.
8090	8090	WARNING	ACARS failed, lost contact with Ground Gateway (AGGW).	The connection between AAGW and AGGW has been lost. The AAGW in the SBU has had contact with the AGGW but it has been lost. The AAGW in the SBU and AGGW on the ground can no longer communicate.	This is typically a temporary problem. The signal can be lost or blocked. Try to make a normal voice call or data session. You cannot expect ACARS traffic to work if you can not make a normal voice or data call. Check if other alarms have been reported. Reboot the system.
8091	8091	WARNING	CMU link failure	The connection between CMU and SBU is not working. The CMU and SBU cannot communicate.	Check the cabling between CMU and SBU. Check that the CMU is powered on.
8092	8092	WARNING	WLAN failure or power off	WLAN Failure The WLAN interface is not working.	Check that the WLAN is not disabled with a discrete input (TP5).
8093	8093	ERROR	Selected Antenna cannot coexist with CMU/ACARS units	Mismatch between CMU and antenna configuration. The CMU interface is enabled together with an ARINC 741/781 antenna. It is not allowed since they are using the same ARINC 429 interface.	Change configuration to use an antenna that does not use the ARINC 429 interface.

Table D-7: SBU events (Continued)

Event ID	ID range	Severity	Description	Explanation	Remedy
8094	8094	WARNING	Enabling ACARS Position reporting violates discrete operation	Mismatch between ACARS position reporting and discrete USIM. The SBU has a discrete USIM installed so that the airplane position is hidden, but at the same time can report if position reporting is enabled in ACARS.	Disable position reporting in ACARS.
8095	8095	WARNING	The password is too weak for ACARS Safety or 700D use. See the manual for password requirements.	Administrator password too weak. The administrator password is too weak when ACARS is enabled, it creates a safety risk. The SBU is probably using the default administrator password.	Change the administrator password following the guidelines provided below: The password must • have at least 8 characters • contain letters, figures and special characters
8096	8096	WARNING	Activation of Self test or SW Upload are not protected by the administrator password.	Software upload and self test unprotected. This alarm will only be seen on an AVIATOR 700D system. The user is allowed to upload software to the SBU or start self-test without a password. This will cause the SBU to reset and can cause the SDU to change from I4 to I3 satellite, and it will have an impact on the ACARS running on the SDU.	In the web interface under User permissions, select **No** at **Upload software** and **Perform self test**. See *Set up user permissions* on page 6-84.
809F	809F	ERROR	Aero basic config is not initialised	The basic configuration of the system is not complete.	Check the configuration in the web interface, see *SBU Configuration tasks* on page 6-13.
80A0	80A0	ERROR	Tracking register failed	The system fails to register on the Tracking server.	Check with your Airtime provider that you have registered with the correct IMSI and IMEI/ICAO address. See *Tracking* on page 6-53.
80A2	80A2	ERROR	Tracking unregistered	The system has not yet registered on the tracking server even though tracking is enabled.	Check that you have the correct IP address, port numbers and encryption key. See *Tracking* on page 6-53.

Table D-7: SBU events (Continued)

WLAN country codes

E.1 Restrictions in WLAN use

Not all countries allow full use of all channels. Also, some countries do not allow operation according to the 802.11g standard. Therefore the WLAN interface must be set up to the right country code.

By default, the SBU is set up to the US country code that allows the WLAN interface to operate according to the 802.11b and 802.11g standards on the channels 1 to 11. If the equipment is used in the countries listed in Table E-1 on page E-2, the default country code "US" can be used. In other countries the country code "other countries" must be used, allowing the interface to operate only according to the 802.11b standard on channels 4-9.

To set up the country code, use the WLAN page of the built-in web interface in the SBU. For further information see *WLAN interface of the SBU (option)* on page 6-32.

E.2 Countries where the “US” country code applies

The below table shows the countries in which country code “US” applies.

Antigua and Barbuda	Estonia	Latvia	Singapore
Aruba	El Salvador	Kuwait	Saudi Arabia
Australia	EU Countries	Latin America	Serbia and Montenegro
Austria	Finland	Liechtenstein	Slovenia
Bahamas	France	Luxembourg	South Africa
Barbados	Germany	Malaysia	South Korea
Belgium	Greece	Malta	Spain
Bermuda	Guam	Mexico	Sweden
Bulgaria	Guatemala	Morocco	Switzerland
Canada	Haiti	Netherlands	Taiwan
Cayman Islands	Honduras	Netherlands Antilles	Thailand
China	Hong Kong	New Zealand	Turkey
Colombia	Hungary	Norway	UK
Costa Rica	Iceland	Oman	Ukraine
Cyprus	Indonesia	Peru	United Arab Emirates
Czech Republic	Ireland	Poland	US
Denmark	Israel	Portugal	Venezuela
Dominican Republic	Italy	Puerto Rico	Virgin Islands / British
Ecuador	Japan	Romania	Virgin Islands / US
Egypt	Jordan	Russia	XA[a]

Table E-1: Countries that accept the country code “US” for WLAN indoor operation

a. The two letter code XA is available for individual use and will not be allocated to countries. (ISO 3166-1, Codes for the representation of names of countries and their subdivisions – Part 1: Country codes)

Terminal commands

F.1 Get started

F.1.1 Connecting to the SDU

Hardware and software requirements

The following items are required to run terminal commands:

- One IBM compatible PC with a 9-pin serial COM port available (if not available, a USB to serial port converter can be used).
- One serial interconnect cable 9-pin to 15-pin Sub-D, Cobham part no. TT-37-112940. Refer to Figure 5-35 on page 5-77.
- The terminal emulator included in the Aero-SDU Configuration Program or another terminal program, e.g. Windows HyperTerminal.

Preparing the terminal

Do as follows to set up the terminal:

1. Connect the SDU front connector to the PC COM port using the TT 37-112940 Data Cable.
2. Open the Aero-SDU Configuration Program. (Other terminal programs: Set the terminal program to 115200 baud, No parity, 8 bit symbols)
3. On the Start up page click **Terminal Emulator**. Press <Enter> a couple of times and confirm that the prompt "H+>" appears on the terminal monitor.
4. **Option**: If you need to communicate with another unit in the installation you can change the shell. Press **Ctrl+x**, then type in the number of the desired unit and press enter.

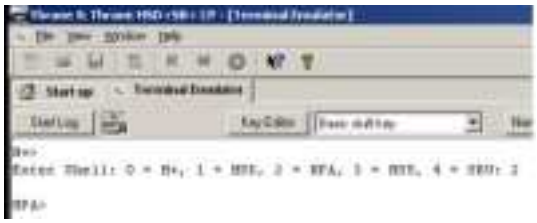


Figure F-1: How to change shells

F.1.2 Connect to the SBU

Hardware and software requirements

The following items are required to run terminal commands:

- One IBM compatible PC with an Ethernet port available.
- One standard Ethernet cable. RJ-45<->RJ-45.
- A suitable Telnet client. In Windows XP and previous versions of Windows, you can use the included HyperTerminal. In Windows Vista and Windows 7 you can use the included DOS-based client, but this is not optimal. A 3rd party client that supports logging to a file is recommended.

Prepare the telnet client

Do as follows to set up the telnet client:

1. Connect the SBU front connector to the PC Ethernet port.
2. Open the Telnet client, and make a TCP/IP (winsock) connection to IP address (host) 192.168.0.1 and port 23 (default).
3. Login with **admin** and 1234 (default) and press <Enter> a couple of times and confirm that the SBU prompt **telnet:/$** appears.

Option: If you need to save the output from HyperTerminal, go to the **Transfer** menu and select **Capture text**... In other clients, the menus will be different.

F.2 Commands for troubleshooting the SDU

Introduction

In this section, some of the useful commands for troubleshooting are listed.

BITE List ("list" command)

To get a list of BITE errors, use the **list** command.

The following options are available with the list command:

Command to Type in (Followed by <Enter>)	Result/Explanation
`list`	Lists all errors for the current flight session.
`list a`	Lists all errors for all flight sessions.
`list <leg>`	Lists all errors for flight session number: leg[a].
`list <id> a`	Lists errors with error id: id, for all flight sessions.
`list <id><leg>`	Lists errors with error id: id, for flight session number: leg[a].

Table F-1: "list" Commands

a. In this context, a leg is defined as a session, that is the time from the system was turned on until it is turned off.

Response example:

The following example shows a response to the command "`list`", that is a list of all errors for the current session. "Session number" corresponds to <leg>
"Error ID" corresponds to <id>, which is the BITE code for the error.

```
H+> list
H+>
LOGFILEMANAGER:Displaying contents of session 11
------------------------------
Session number: 11  Severity: Fatal              Active
Error ID: C801-Communication Test with HPA
Error occurrence: 001           Found during:  CM
Additional Information: '      ' Location: Cabling
First error: 09:40:14-27/08  Last error: 09:40:14-27/08
```

System Log ("slog" command)

To access the system log, use the **slog** command. The following options are available with the slog command:

Command to Type in (Followed by <Enter>)	Result/Explanation
`slog l <prio>...`	Inserts text into the system log with priority <prio>[a].
`slog t`	Shows the priority thresholds.
`slog tp <prio>`	Sets the print threshold. Log entries with priority <prio>[a] or higher will be printed.
`slog ts <prio>`	Sets the store threshold. Log entries with priority <prio>[a] or higher will be stored.
`slog v[arl] [-p<prio>] [-t<text>] [<count>]`	Shows the system log as defined by the parameters. Explanation of parameters: a : All entries r : Reverse order l : Long time format (toggles between long/short time format) (sticky[b]) <prio>: [a] (See table footnote) <text>: Only entries containing <text> <count>: Max. number of entries shown (sticky[b])
`slog R`	Reset system log.

Table F-2: "slog" Commands

a. <prio> : Priority limit (one of {facewnid} or 0-7).
The priority parameters {facewnid} are defined as:
f: System is unusable.
a: Action must be taken immediately.
c: Critical conditions.
e: Error conditions.
w: Warning conditions.
n: Normal but significant condition.
i: Informational.
d: Debug-level messages.

b. "Sticky" means this setting is maintained during future command sessions until the setting is changed by the user.

Response example:

The following example shows a part of a response to the command "`slog va`":

```
H+> slog va

H+>

   Time      Severity  Process   Info

09:15:05.661 WARNING:LogServe:0:System log invalid - reset

09:15:05.663 WARNING:LogServe:0:System log options invalid -
reset

09:14:53.005 NOTICE:    Boot:0:Starting up

09:14:54.523 ERROR:  SATMGR:0:System table checksum failed

09:14:54.525 ERROR:Nav_Main:0:Static RAM failure!!

09:14:55.057 WARNING:FlashDis:0:PIT 1ms tick: Interrupts
disabled too long: 531058 us.

09:14:55.505 WARNING:FlashDis:0:PIT 1ms tick: Interrupts
disabled too long: 505840 us.
```

Call Log ("call_log" command)

To access the call log, use the **call_log** command.

The following options are available with the call_log command:

Command to Type in (Followed by <Enter>)	Result/Explanation
`call_log -p`	Prints the call log.
`call_log -i <number> <device>`	Inserts a call into the call log, with the given phone number and device number.
`call_log -g <device>`	Returns the last call in the call log from the given device.
`call_log -d <device> <index>`	Deletes the call with index <index> from the given device in the call log.
`call_log -c`	Clears the call log.

Table F-3: "call_log" Commands

Response example:

The following example shows a part of a response to the command "`call -p`":

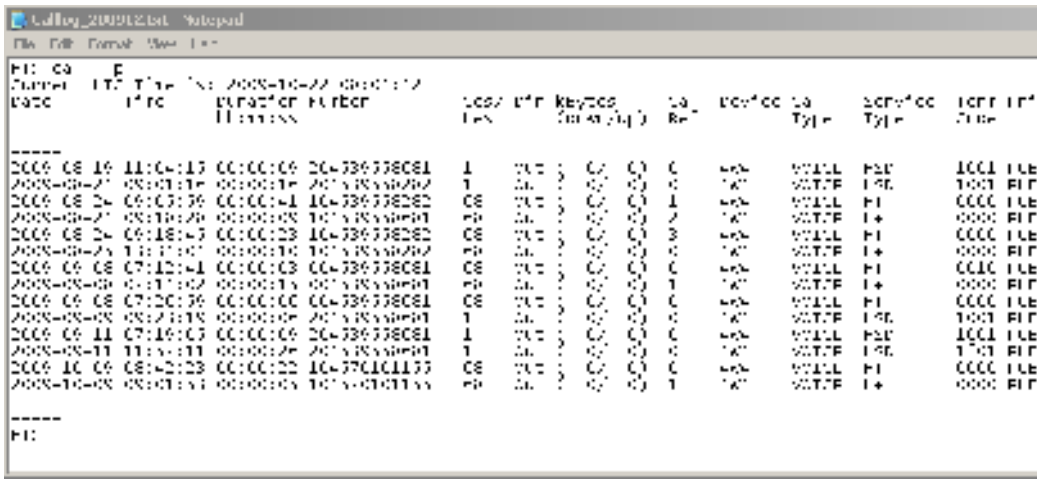


Figure F-2: Troubleshooting SDU, Call Log command: call -p

Flight Test ("flight" command)

To trace flight data, use the **flight** command. The flight test data comprises position data, signal strength and EIRP.

The following options are available with the flight command:

Command to Type in (Followed by <Enter>)	Result/Explanation
`flight -c <time>`	Change the update rate to <time>.
`flight -e`	End flight test traces.
`flight -s`	Start trace of flight test data with an update rate of 1 second.
`flight -s <time>`	Start trace of flight test data with an update rate of <time>. The unit for <time> is 10 ms, that is: <time>=2 corresponds to 20 ms.

Table F-4: "flight" Commands

Response example:

The following example shows a response to the command "`flight -s`", that is flight test data with an update rate of 1 second. The command "`flight -e`" stops the tracing.

```
H+> flight -s


H+> Fri Aug 27 12:26:32 2004 H+Temp 44
NAV POS: Lon   9.13, Lat 55.73, Alt 117 m
NAV ATT: Roll  0.41, Pitch -0.97, Hea 135.71, Speed 0 m/s
DSP:     Azi  73.11, Ele 23.60, VDopp 0 m/s
PRT:     C/No 54.0 EIRP  09.1 FreqOff 006
C0:      C/No 45.1 EIRP  06.5
C1:      C/No 54.1 EIRP  18.5
HSD:     C/No 57.3 EIRP  22.5 FreqOff -01
--
flight -e
```

F.3 Commands for troubleshooting the SBU

F.3.1 Monitor the ARINC interfaces on the SBU

Below is an example on how to get a status for the ARINC interfaces. After the debug command for getting the status report (first line, bold) the status report is shown.

stat -m arinc

```
STAT Report
Module: ARINC, Status: Ok, Message:
REPORT: SHORT
CONFIGURATION
Primary Receiver  : ARINC 704-7 Inertial Reference System (IRS), speed: High
Secondary Receiver: Disabled, speed: Low
Antenna Modem     : Disabled

STATUS ARINC DRIVER
Current Time      : Thu Jan 01 00:00:54 1970
Primary Receiver  : 6 RO_6_IRS_CONNECTED     Qualified    Forwarding forwardingPeriods:1
Secondary Receiver: 0 RO_0_NULL              Await-Label  Standby    forwardingPeriods:0
Antenna Modem     : 1 RT_1_INIT              Await-Label

Primary Receiver:
Label   Status         Error     Active        Age    Value             Name
  101 No Label           422          0          0 0.000000            HDOP
  150 No Label           422          0          0 00:00:00 gnss       UTC Time
  260 No Label           422          0          0 00/00/00            UTC Date
  273 Normal             353         69        158 Self Test           GNSS Sensor Status
  274 Normal             353         69        158 Self Test           GPIRS Status
  310 Normal             353         69        158 55.794067 N         Latitude
  311 Normal             353         69        158 12.523041 E         Longitude
  312 Normal             353         69        158 0.000000 Knots      Ground Speed
  313 Normal             353         69        158 0.000000 Deg        Track Angle True
  314 Normal             353         69        158 0.000000 E          True Heading
  324 Normal             353         69        158 0.010986 Deg        Pitch Angle
  325 Normal             353         69        159 0.120850 Deg        Roll Angle
  336 Normal             353         69        159 -0.015625 Deg/Sec   Inertial Pitch Rate
  337 Normal             353         69        159 0.000000 Deg/Sec    Inertial Roll Rate
  361 Normal             353         69        159 167.250000 Feet     Altitude Inertial
  377 Plus               353         69       159 0x004 IRS (704)     Equipment Identification
Details:
  273 Satellites-Tracked:0 Visible:0
  273 IRS/FMS : Present  Source: Primary
  273 DADC/FMS: Present  Source: Primary
  274 Satellites-Tracked: 0
  274 Primary GPSSU Validity: Valid
  274 Secondary GPSSU Validity: Valid
  274 GPSSU Source: Primary
  377 Source Identifier: Primary


COUNTERS ARINC-429:  Primary  Secondary     Ant-Rx     Ant-Tx
allocation               20          0          0
wordsA429              6752          0          0          0
```

```
discardError              0          0          0          0
framingError              0          0          0
parityError               0          0          0
overflowError             0          0          0
regStatusRead           422          0          0             FPGA Status Read
regTimeTagRead          422          0          0             FPGA TimeTag Read
regCtrlWrite              2          0          5             FPGA Control Write
interrupt                 0          0          0             FPGA Interrupt
reset                     0          0          0          0  Debug only
clearCounters             0          0          0          0
```

F.3.2 Description of the status report

The status report consists of up to seven parts:

1. Report header
2. ARINC driver configuration
3. The overall status for the ARINC driver
4. Status for the Primary ARINC Receiver
5. Status for the Secondary ARINC Receiver, if configured
6. Status for the ARINC Antenna modem, if configured
7. Low level ARINC-429 counters

Below is a detailed description of each part of the status report.

STAT Report

The following lines are part of the standard system header, there is no information relevant for the ARINC interfaces present in the header, you may just ignore these lines:

```
STAT Report
Module: ARINC, Status: Ok, Message:
REPORT: SHORT
```

CONFIGURATION

The configuration part is a mirror of the ARINC information already available at *Set up the navigational input of the SBU* on page 6-51, **SETTINGS > External systems** of the SBU.

STATUS ARINC DRIVER

Current Time: This is the current UTC time, if available. In the example in section F.3.1 the year 1970 indicates that the UTC time is not yet available.

Read the following overview information in the following way:

Interface	State number and name	Status	Source	Source Activations
Primary Receiver	6 RO_6_IRS_CONNECTED	Lost-Label	Forwarding	forwardingPeriods:1
Secondary Receiver	0 RO_0_NULL	Await-Label	Standby	forwardingPeriods:0
Antenna Modem	1 RT_1_INIT	Await-Label		

Table F-5: Status ARINC driver, overview

The states for receivers have the following purpose:

State name	Description
RO_0_NULL	The receiver is not configured and therefore not started.
RO_1_INIT	The receiver is in the progress of starting up.
RO_2_LOOPBACK	A loop back test command has been running and a power-cycle is needed.
RO_4_AHRS_CONNECTED	The AHRS driver is running.
RO_6_IRS_CONNECTED	The IRS driver is running.

Table F-6: Purpose of the states for receivers

The states for the antenna modem can be used for the following purpose:

State name	Description
RT_0_NULL	The antenna modem is not configured and therefore not started.
RT_1_INIT	Awaits the BSU (Beam Steering Unit) start sending the status word.
RT_2_LOOPBACK	A loop back test command has been running and a power-cycle is needed.
RT_3_AMT50	The ARINC AMT-50 / HGA-6000 driver is running.

Table F-7: Purpose of the states for the antenna modem

Status: This reflects the overall status considering all mandatory labels on the interface in question.

Status	Description
Await-Label	At least one mandatory label has never showed up on the interface.
Lost-Label	A label previously received is now missing on the interface.
Unreliable	May be used in the future for selecting between two channels where one of them is more degraded than the other.
Degraded	One or more of the labels is degraded.
Evaluation	All mandatory labels are operational and has to be stable for a period of time before they can be qualified.
Qualified	All mandatory labels are operational and this port can now be forwarded.

Table F-8: Status for all mandatory labels on the interface in question

Source:

Source	Description
Forwarding	This ARINC receiver is forwarding valid navigational date to the SBU. Forwarding means that the data on the interface is used by the system.
Standby	This ARINC receiver is on standby and not forwarding data to the SBU. Standby means that the data on the interface are not used by the system.

Table F-9: Status ARINC driver: Source

Forwarding Periods: The number of periods the interface has being forwarding data to the system.

RECEIVER

Header	Description
Label	The label number in octal number system.
Status	Take status of the label word according to bit 30 and 31 Sign/Status Matrix. See table directly below.
Error	The number of 100mS interval the label has not been operational.
Active	The number of 100mS interval the label has been operational.
Age	The age of the label in ms sampled every 100 ms.
Value	The decoded value of the label
Name	The name of the label according to ARINC-429

Table F-10: Receiver: Header line for the table

The specific label type (BCD/BNR/DISC) can be looked up in the ARINC-429 Specification.

Status	BCD	BNR	DISC
0	Plus	Failure	Normal
1	No Data	No Data	No Data
2	Test	Test	Test
3	Minus	Normal	Failure

Table F-11: Status for label types

The underlined status is the operational state for the specific label type.

SIP setup for Wifi-enabled phones

G.1 Introduction

The built-in PBX of the AVIATOR 700 can route VoIP calls that are terminated in the SIP server of the SBU. If you have a phone with a SIP client and WLAN interface you can connect to the SBU via WLAN and configure the SIP client in your phone to communicate with the SBU. After successful configuration you can use your phone to make calls through the AVIATOR 700 system.

There are two tasks you have to do:

- *Connect to the WLAN interface*
- *Set up a SIP profile*

G.1.1 Connect to the WLAN interface

To connect to the WLAN interface of the SBU, do as follows:

1. Refer to the user documentation of your phone for instructions how to connect to a wireless access point.
2. You can see the name of the wireless network in the web interface at **SETTINGS > WLAN**, **SSID**. The default value is the name of the system type, for example 'AVIATOR 700'.

G.1.2 Set up a SIP profile

SIP telephony and SIP profiles

If your phone has an integrated SIP (Session Initiation Protocol) client you can use SIP telephony between your phone and the SBU, which has an integrated SIP server.

How to set up the SIP profile in your phone depends on your subscription, the SIP server in the terminal and the network which your phone is connected to, in this case the WLAN network on board the aircraft.

Where to get a SIP client application

If your smartphone does not have a SIP client, you can download one from one of the links below:

- Apple iPhone App store (www.apple.com/iphone/from-the-app-store/)
- Android Market (https://play.google.com/store)

Note The SIP client is a third party application. Cobham does not offer technical support for it.

To set up a SIP profile

Set up a SIP profile if you want to connect the SIP client of your phone to the SIP server of the terminal. You need to enter several network specific values so your phone can communicate with the SIP server.

Depending on your phone, some or all of the following parameters may have to be set up in the SIP profile of your phone:

- Profile name
- SIP server and port
- User name
- Password
- Codec priority
- Realm
- Audio configuration, Silence support

User name: When connecting to the AVIATOR 700, the user name should be a local number, i.e. 05xx. This must be configured in the built-in web interface under **SETTINGS > IP handsets**.

Password: When connecting to the AVIATOR 700, the password must match the IP Handset password entered in the web interface of the AVIATOR 700 on the page **SETTINGS > IP handsets**.

Codec priority: The SIP client must have G.729A as highest priority codec and G.711 A-LAW as second highest priority. The G.729A codec is required for the Multi-voice option.

Audio configuration, **Silence support enable**: Set to **No**. The phone should not stop sending data packets even though there is silence and no one speaks.

References

H.1 Applicable standards

[1] IEEE Standard for Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications. IEEE Std 802.3, 2000 Edition (Incorporating IEEE Std 802.3, 1998 Edition, IEEE Std 802.3ac-1998, IEEE Std 802.3ab-1999, and IEEE Std 802.3ad-2000) [Adopted by ISO/IEC and re-designated as ISO/IEC 8802-3:2000(E)].

[2] ISO/IEC 8877:1992 Information technology -- Telecommunications and information exchange between systems -- Interface connector and contact assignments for ISDN Basic Access Interface located at reference points S and T

[3] RTCA/DO-160C and RTCA/DO-160D. Environmental Conditions and Test Procedures for Airborne Equipment. RTCA Inc. July 29, 1997, incl. Change No. 1 (Dec. 14, 2000) and Change No. 2 (June 12, 2001)

[4] RTCA/DO-160E. Environmental Conditions and Test Procedures for Airborne Equipment. RTCA Inc. December 9, 2004

[5] Integrated Services Digital Network (ISDN). Basic User-Network Interface (UNI). ETSI EN 300 012-1 V1.2.2 (ITU I.430))

[6] Integrated Services Digital Network (ISDN). ISDN User Network Interfaces. ITU-T Recommendation I.420

[7] ARINC 429. Mark 33 Digital Information Transfer Systems (DITS)

[8] ARINC 404A. Air Transport Equipment Cases and Racking

[9] ARINC 404B-1. Connectors, Electrical, Rack and Panel, Rectangular, Rear Release Crimp Contacts.

[10] ARINC 702A-1. Advanced Flight Management Computer System. ARINC, January 31, 2000

[11] ARINC 741 P1-10. Aviation Satellite Communication System. Part 1, Aircraft Installation Provisions

[12] ARINC 741 P2-7. Aviation Satellite Communication System. Part 2, System Design and Equipment Functional Description

[13] RFC 1549: PPP in HDLC Framing. December 1993. (Obsoleted by RFC 1662)

[14] CCITT Rec. G.473. Standard US DTMF Telephone

[15] RTCA/DO-178B. Software Considerations in Airborne Systems and Equipment Certification, December 1, 1992

[16] RTCA/DO-254. Design Assurance Guidance for Airborne Electronic Hardware, April 19, 2000

[17] ARINC CHARACTERISTIC 704A. Inertial Reference System

[18] ARINC CHARACTERISTIC 705. Attitude and Heading Reference System

[19] ARINC CHARACTERISTIC 743A. GNSS Sensor

[20] ARINC CHARACTERISTIC 741P1. Aviation Satellite Communication System Part 1. Aircraft installation provisions

[21] ARINC CHARACTERISTIC 781. Mark 3 Aviation Satellite Communication Systems

[22] EIA/TIA-232-E: Interface Between Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange (superseded by TIA-232-F) Published: January 1, 1900. Category: Telecommunications.

H.2 Other references

[23] AVIATOR 700 User Manual.

[24] Cobham: Vendor Service Information Letter: Service migration from Inmarsat I-3 to I-4 satellite constellation (available for download).

See also *Related documentation* on page 1-2.

A

ACARS	Airborne Communications Addressing and Reporting System
ACAS	Aircraft Collision Avoidance System. Early relative of the now operational TCAS (Traffic Alert and Collision Avoidance System) which warns pilots of potential conflicts with other aircraft.
ACP	Audio Control Panel
ACU	Antenna Control Unit
ADF	Automatic Direction Finder. A navigation receiver based on the AM radio band. A very simple device which literally points towards the station that is tuned in.
AES	Aircraft Earth Station
AFIS	Airborne Flight Information System
AHRS	Attitude and Heading Reference System
ALC	Automatic Level Control
AMBE	Advanced Multi-Band Excitation
AMER	Americas (Satellite coverage)
AMS	Audio Management System
AOC	Aeronautical Operational Control
AORE	Atlantic Ocean Region East (Satellite coverage)
AORW	Atlantic Ocean Region West (Satellite coverage)
APAC	Asia Pacific (Satellite Coverage)
APN	Access Point Name. The Access Point Name is used by the terminal operator to establish the connection to the required destination network.
APS	Aircraft Power Supply
ARINC	Aeronautical Radio, Incorporated. A provider of transport communications and systems engineering solutions
AT	AT commands are used for controlling modems.
ATS	Air Traffic Service
AWG	American Wire Gauge

B

BGAN	Broadband Global Area Network

BITE	Built-In Test Equipment. A BITE error is a hardware error detected by the automatic error detection system in the AVIATOR 700 System.
BP	Bottom Plug

C

C-FDM	C-channel Frame Demodulator/Modulator
CID	Context Identifier
CM	Configuration Module
CMU	Communications Management Unit
CP	Cockpit
CP	Configuration Program
CPU	Central programming Unit
CRC	Cyclic Redundancy Check
CS	Circuit switched

D

DCE	Data Communication Equipment. Equipment that does not generate data, but only relays data generated by someone else.
DHCP	Dynamic Host Configuration Protocol. A protocol for assigning dynamic IP addresses to devices on a network. With dynamic addressing, a device can have a different IP address every time it connects to the network.
DME	Distance Measuring Equipment
DSP	Digital Signal Processor
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi Frequency. The signal to the phone company that is generated when you press an ordinary telephone's touch keys. DTMF has generally replaced loop disconnect (pulse) dialing.

E

ECS	Electronic Cable Specialists, Inc., a Carlisle IT company
EEPROM	Electronically Erasable Programmable Read Only Memory
EIA	Electronic Industries Alliance. A US national trade organization that includes the full spectrum of U.S. manufacturers, representing more than 80% of the electronics industry. The alliance provides several standards for the electronics industry.
EIRP	Effective Isotropic Radiated Power
EMC	Electromagnetic Compatibility

ETSI	European Telecommunication Standard Institute

F

FAA	Federal Aviation Administration
FNBDT	Future Narrowband Digital Terminal. A US Government standard for secure voice communication.
FPGA	Field Programmable Gate Array

G

GES	Ground Earth Station.
GND	Ground
GPS	Global Positioning System

H

HGA	High Gain Antenna
HPA	High Power Amplifier
HPR	High Power Relay
HS	High Speed
HSD	High Speed Data

I

I/O	Input/Output
IAI-2	Inmarsat Air Interface-2. The air interface used for BGAN. IAI-2 is an evolution of MPDS with new bearer types, which give a wide range of data rates from 16 kbps up to 492 kbps. By utilizing different modulation schemes, variable coding rate and power adjustment, it is possible to change the bearer type to give optimum throughput with efficient use of the satellite resources.
ICAO	International Civil Aviation Organization
IEEE	Institute of Electrical and Electronics Engineers
ILS	Instrument Landing System. A system of tightly focused transmitters located at the end of a runway that provides flight guidance information to flight crews.
IMEI	International Mobile Equipment Identity. A unique number identifying your terminal
IMSI	International Mobile Subscriber Identity
IOR	Indian Ocean Region (Satellite coverage)
IP	Internet Protocol

IRS	Inertial Reference System
ISDN	Integrated Services Digital Network
ISN	Inmarsat Serial Number
ISP	Internet Service Provider
ITU	International Telecommunication Union

K

kbps	kilobit per second, unit of data transfer rate

L

LAN	Local Area Network
LED	Light Emitting Diode
LES	Land Earth Station.
LRU	Line Replaceable Unit. A separate unit or module which can easily be replaced. Examples are the SDU and the HPA.
LS	Low Speed

M

MCDU	Multifunction Control and Display Unit. Part of the Flight Management System.
MEAS	Middle East, Asia (Satellite coverage)
MES	Mobile Earth Station
MIB	Management Information Base
MOD	Modification
MSN	Multiple Subscriber Numbering. In most pieces of ISDN equipment you can program multiple subscriber numbers. The number programmed into the equipment should be the dial-in number that you wish that piece of equipment to answer.

N

NAT	Network Address Translation. An Internet standard that enables a local-area network to use one set of IP addresses for internal traffic and a second set of addresses for external traffic. A NAT module makes all necessary address translations.
NC	No Connect
NCS	Network Coordination Station
nON	Power-on control signal, active low
NT	Network Termination. A device connecting the customer's data or

	telephone equipment to the local ISDN exchange carrier's line. It provides a connection for terminal equipment (TE) and terminal adaptor (TA) equipment to the local loop.

P

PAST	Person Activated Self Test
PBX	Private Branch Exchange, telephone exchange that serves a particular business or office.
PC	Personal Computer
PDF	Portable Document Format, a file format created by Adobe Systems for document exchange
PDP	Packet Data Protocol. A network protocol used by external packet data networks that communicate with a GPRS network.
PID	Packet IDentifier
POR	Pacific Ocean Region (Satellite coverage)
POST	Power On Self Test. A system test that is activated each time the system is powered on.
POTS	Plain Old Telephony System. Traditional 2-wire system.
PS	Packet switched
PSM	Phase Shift Modulation
PTT	Push-To-Talk

Q

QoS	Quality of Service

R

RAM	Random Access Memory
RF	Radio Frequency
RFHP	Radio Frequency High Power
RTCA	Radio Technical Commission for Aeronautics

S

SATCOM	Satellite Communications
SB	Swift Broadband, based on BGAN and offers similar services, simultaneous voice and broadband data.
SBU	SwiftBroadband Unit. Unit in the satcom system providing access to the aeronautical BGAN service, SwiftBroadband.
SCPC	Single Channel Per Carrier. A VSAT satellite transmission system that uses a

	separate carrier for each of its channels. In an SCPC system, transmissions are sent to the satellite continuously on a single satellite carrier.
SDM	System Definition Manual
SDU	Satellite Data Unit. The controlling unit of the AVIATOR 700 system.
SDU	Service Data Unit. Also known as a data packet.
SIM	Subscriber Identification Module
SIP	Session Initiation Protocol. An application-layer control (signaling) protocol for creating, modifying, and terminating sessions with one or more participants. Used e.g. for Internet telephony.
SLCV	S = coding Standard, L = cause Location, C = cause Class, V = cause Value
SNMP	Simple Network Management Protocol. An Internet-standard protocol for managing devices on IP networks. It is used mostly in network management systems to monitor network-attached devices for conditions that warrant administrative attention.
SSID	Service Set IDentifier. An SSID is the name of a wireless local area network (WLAN). All wireless devices on a WLAN must use the same SSID in order to communicate with each other.
STBO	Starboard
STC	Supplemental Type Certificate. FAA or EASA certification document issued to companies that perform significant modifications on an aircraft.
STE	Secure Terminal Equipment
STU	Secure Telephone Unit

T

TC	Type Certificate
TCAS	Traffic Alert and Collision Avoidance System. A system which warns pilots of potential conflicts with other aircraft.
TDM	Time Division Multiplex
TE	Terminal Equipment
TFTP	Trivial File Transfer Protocol. A very simple file transfer protocol, with the functionality of a very basic form of FTP. Since it is so simple, it is easy to implement in a very small amount of memory.
TIA	Telecommunications Industry Association. TIA is a U.S. non-profit trade association serving the communications and information technology industry. TIA provides several standards for these industries.
TP	Top Plug

V

VFC	Voice Fax Codec
VHF	Very High Frequency. 30-300 MHz, a "straight-line" signal used for communication and navigation.
VOR	VHF Omnidirectional Range

W

WLAN	Wireless Local Area Network
WOW	Weight On Wheels

Numerics

A

B

C

D

E

F

G

H

I

L

Q

R

S

T

U

V

W