Cobham SATCOM
Global Technical Service dept.

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Manual Procedure for GX Network Acquisition on EXPLORER 3075GX and 5075GX

Subject:

The current implementation of the iDirect Core Module (GX modem) software sometimes prevents a smooth satellite acquisition with the EXPLORER 3075GX and 5075GX antennas. This is typically observed when located in an overlap region (two satellites visible at the same time). Specific operation depends on the Core Module (CM) software and the terminal software versions; see below.

You can overcome potential pointing issues with three easy steps:

1. Create Modem and Satellite Profiles (one-time setup)
    - With this you can manually create a number of fixed satellite profiles within the EXPLORER GX terminals; one profile for each of the GX satellites. While one of these profiles is activated, the terminal will ignore other pointing requests from the GX modem.
2. Point the antenna towards the selected GX satellite
3. Activate the built-in GX Satellite profile
    - Once the satellite has been found, the default GX satellite profile can be reactivated to allow the GX modem to enter the GX network. In order for this procedure to work, the user must know which satellite to acquire from the given location.

This 3 step procedure is described in details on the following pages.

When to use the manual procedure:

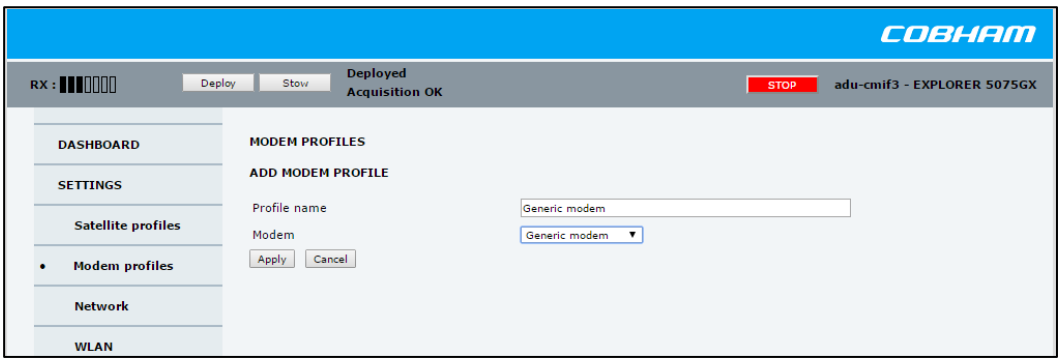
EXPLORER 3075GX: When the "SAT" field and/or Frequency field in the terminal display is frequently changed before the network is manually acquired. Signal bar/readout changes rapidly, when trying to point the terminal.

EXPLORER 5075GX: When the "SAT" field and/or Frequency field in the terminal display is frequently changed and the terminal does not acquire the satellite automatically. Terminal keeps going to the "Homing" state. Terminal is jumping back and forth between two satellites.

STEP 1: Create Modem and Satellite Profiles (one-time setup)

1. Create a generic modem profile.
   From the web MMI, go to **Settings** -> **Modem profiles** -> **New entry**
   Type a name for the modem profile and select **Generic modem** from the drop-down list.

   Select **Apply**.



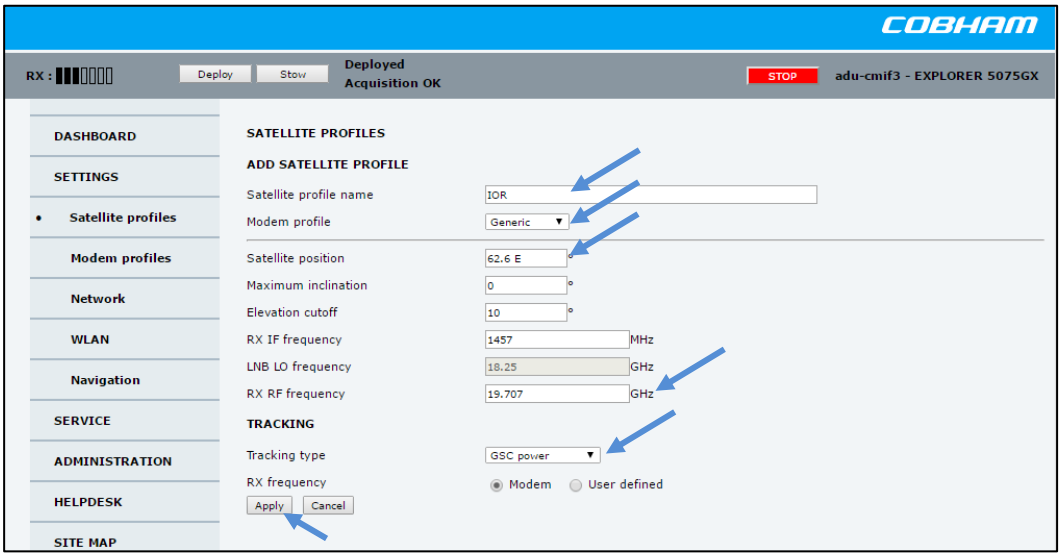
2. Create 3 satellite profiles (one for each GX satellite).
   From the web MMI, go to **Settings** -> **Satellite profiles** -> **New entry**
   Type a name for the satellite profile (e.g. AOR, POR, IOR).

   Select the modem profile you created in step 1 (the same modem is used for all sat-profiles).

   Type in **Satellite position** and **RX RF frequency** only (see list below)

   Select **Tracking Type** = **GSC power** from the drop-down list. (GSC = Global Signalling Channel)

   Select **Apply**.



3. Repeat this for all three satellites (create three profiles – table below).

Satellite	Position	Preferred GSC Frequency*	Comment
IOR (I5F1)	62.6 E	19.707	Write text in setup fields exactly as stated here.
AOR (I5F2)	55 W	19.707	
POR (I5F3)	179.6 E	19.707	

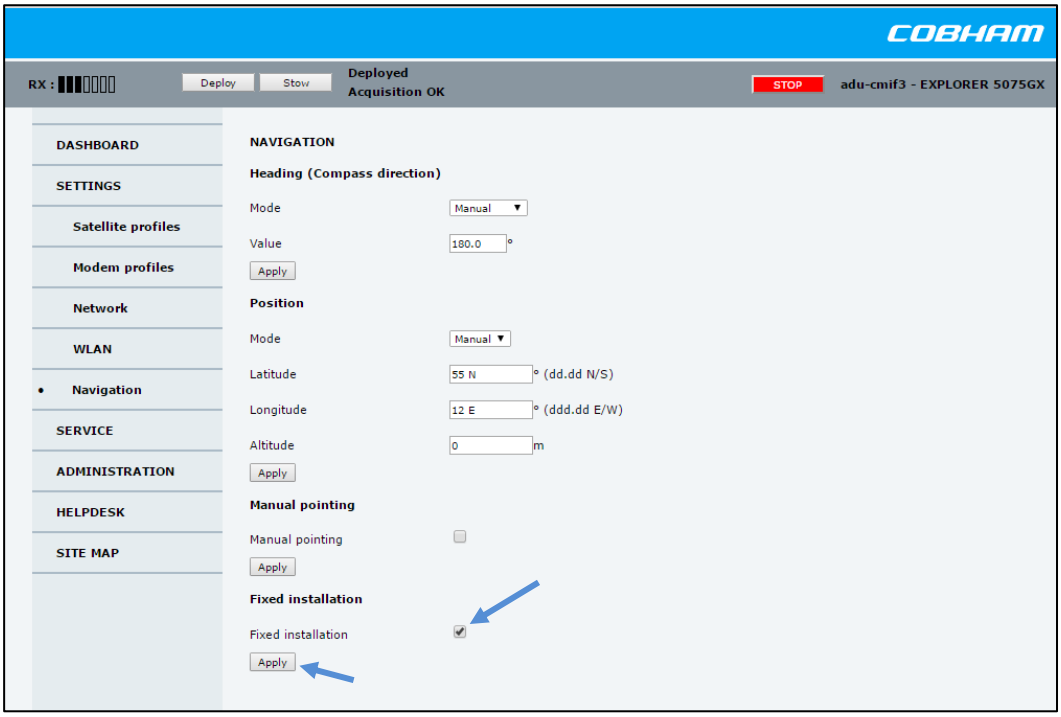
*) Depending on the future network setup (by Inmarsat), the GSC frequency might change. All satellites might utilise the same frequency or they can have independent GSC frequencies. If you experience problems with finding the satellite even though you know you have clear visibility towards it, try changing the GSC frequency to one of the following: 19.70942 or 19.70458

3075GX Pointing and Activation

STEP 2: Point EXPLORER 3075GX

1. Activate the satellite profile for the satellite you would like to point to.

2. In the web MMI, go to **Settings** -> **Navigation** and enable **Fixed installation** (mark the checkbox and click "apply").



3. On the front-display of the unit, press **arrow down** until you get to **Manual pointing.**
   Press **OK** to get into the manual pointing menu.
   The unit will give you the direction to the satellite as azimuth and elevation angles (AZI, ELE).
   Point the antenna according to the standard procedure, see the user manual.

STEP 3: Activate GX Satellite Profile in EXPLORER 3075GX

1. Once the satellite has been found and the signal strength has been optimized, go back to the web MMI and activate the built-in GX Satellite Profile (under satellite profiles).
   Now the GX modem (inside the terminal) will boot. It takes a couple of minutes. You can proceed while booting.

2. Once the modem has booted, the terminal will instruct the modem to try to go into network.
   When display shows **MDM:NETOK**, the GX terminal is in network.

3. Done.

5075GX Pointing and Activation

STEP 2: Point EXPLORER 5075GX

1. Activate the satellite profile for the satellite you would like to point to.

2. If not already deployed, from the web MMI (or the front display of the unit) push **Deploy.** The terminal will now try to find the satellite and optimize the signal strength. Proceed when the acquisition is done.

3. You now need to disable the motors in the panning head to stay connected.
   On the front-display of the unit, press **arrow down** until you get to **Manual pointing.**
   Press **OK** to get into the manual pointing menu.
   Press **arrow down** again to go to the **activate/disable manual pointing** menu.
   Press **OK** to enable manual pointing (this will disable the motors).

STEP 3: Activate GX Satellite Profile in EXPLORER 5075GX

1. Go back to the web MMI and activate the built-in GX Satellite Profile (under satellite profiles). Now the GX modem (inside the terminal) will boot. It takes a couple of minutes. You can proceed while booting.

2. On the terminal, press **arrow down** until you get to **Manual pointing** page.
   Press **OK** to get into the manual pointing menu.
   Press **OK** again. This will tell the terminal and the modem that we are pointing correctly.

3. Once the modem has booted, the terminal will instruct the modem to try to go into network. When display shows **MDM:NETOK**, the GX terminal is in network.

4. Done.

To stow 5075GX when motors are disabled (in Manual Pointing Mode)

When the 5075GX is in manual pointing mode, the motors in the panning head are disabled. Hence, deploy and stow will not function. To get out of manual pointing mode for stowing the antenna, do as follows:

1. On the front-display of the unit, press **arrow down** until you get to **Manual pointing.**

2. Press **OK** to get into the manual pointing menu.

3. Press **arrow down** again to go to the **activate/disable manual pointing** menu.

4. Press **OK** to disable manual pointing.

5. Now you can **Deploy** or **Stow** the terminal as usual.

6. Done.

Background:

CM software 1.1.1.2 and earlier:

The GX CM will not wait for the terminal to complete a scan before issuing a new pointing request. New pointing requests will come with an 80-second interval. While this interval is sometimes too fast for the auto-deploy 5075GX antenna, it is most likely always too fast for a manual acquisition with the 3075GX. In order to allow the user or the terminal to acquire the satellite, the below work-around can be used to override the CM satellite selection.

CM software 1.1.1.3 and later versions:

For the CM software 1.1.1.3 and later, the time-out period has been increased to 600 seconds and a handshake for signalling "scan-complete" has been implemented, allowing the terminal enough time to acquire the satellite. For a 5075GX terminal using software 1.55 or later, this fix should work smoothly when the terminal is in auto-pointing mode (i.e. without using the below work-around). Due to the satellite selection algorithm in the CM, acquisition might still take some time when in overlap regions with zero visibility to the CM's preferred satellite. Nonetheless the acquisition should be successful.

For a 5075GX using software 1.54 or earlier the "scan-complete" handshake will not work, so acquisition will take a long time or not work at all. In this situation, this work-around should be explored.

At present time, manual pointing is not handled well by the CM software. There is no build-in feature for selecting a satellite or to indicate manually that the pointing request issued by the CM is not reachable. Future CM software packages will implement such handshake for manual-point terminals. In general, it is recommended to use the latest CM software, and the below work-around procedure. However, the 600-second time-out in CM software 1.1.1.3 and later will effectively delay the entrance into network once the CM is booted and activated. Basically, the CM will cycle through its beam map file with 600 second intervals without the possibility to override the time-out by indicating "scan-complete". This situation occurs mostly in overlap regions. For this reason, the recommendation for the E3075GX is to use CM software 1.1.1.2 together with this work-around procedure.

Recommended software configurations:

At present time, the following software combinations are recommended to optimize the satellite acquisition process on the EXPLORER GX terminals. Notice especially that the recommended CM software for the E3075GX is not the latest software package.

Unit	CM sw.	Cobham sw.	Use work around	Comment
3075GX	1.1.1.2 or earlier	1.54 or later	Yes	**Recommended for E3075GX.** Acquisition can still take a long time.
	1.1.1.3 or later	1.54 or later	Yes	Entrance into network might take a long time for the CM.
5075GX	1.1.1.2 or earlier	1.54 or later	Yes	
	1.1.1.3 or later	1.55 or later	No	**Recommended for E5075GX.** Use with Auto-pointing

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