

APPLICATION NOTE

Connecting a Phoenix
Mobile Audiocodec to a
EXPLORER™ 700
BGAN-INMARSAT
transponder



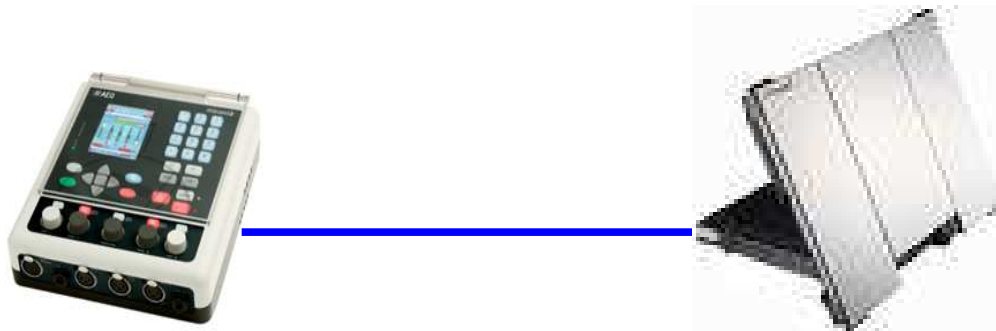
AEQ PHOENIX AUDIOCODECS. APPLICATION NOTE 2

Connecting a Phoenix Mobile Audiocodec to a EXPLORER™ 700 BGAN-INMARSAT transponder

1. DESCRIPTION OF THE SCENARIO

Radio stations, reporters or journalists covering events in areas where ISDN, ADSL, WiFi or any other communications service is not available will now be able to establish IP/ISDN calls using AEQ audiocodecs by means of the BGAN-Inmarsat satellite communications system together with the EXPLORER 700 transponder from Thrane & Thrane. This way, you will be able to connect to your radio station from anywhere in the world. The described procedure is valid with some minor changes for other satellite transponders.

For this purpose only a IP audiocodec such as AEQ Phoenix Mobile (although the same concepts are applicable to Phoenix Studio), plus a EXPLORER 700 transponder.



2. CONNECTIONS

Turn the EXPLORER 700 and align it to the satellite position in order to get the best possible signal (55dB minimum). You must make sure that you have a subscription for BGA-Inmarsat data communications first (pre-pay cards are not suitable for this application).

Connect the LAN interface of Phoenix Mobile to the Ethernet RJ45 (labelled LAN1 or LAN2) of the EXPLORER 700, using a normal Ethernet cable. No more connections are needed, except for the required audio inputs/outputs, of course.

3. SETUP OF THE EXPLORER 700 FOR IP

The EXPLORER 700 transponder can be controlled or configured by means of a Web interface. In order to do so, please connect the system to a laptop or PC with an Ethernet wire or via WLAN or Bluetooth.

NOTE: It is advisable to establish connection using a normal Ethernet cable for the first time, because the EXPLORER 700 unit is supplied with this kind of interface activated by default from factory.

After having connected the computer, just open your Internet browser and type "<http://192.168.0.1>" in the URL bar. After that, the following screen will be presented (with the texts adapted to the default language set up in the EXPLORER 700):

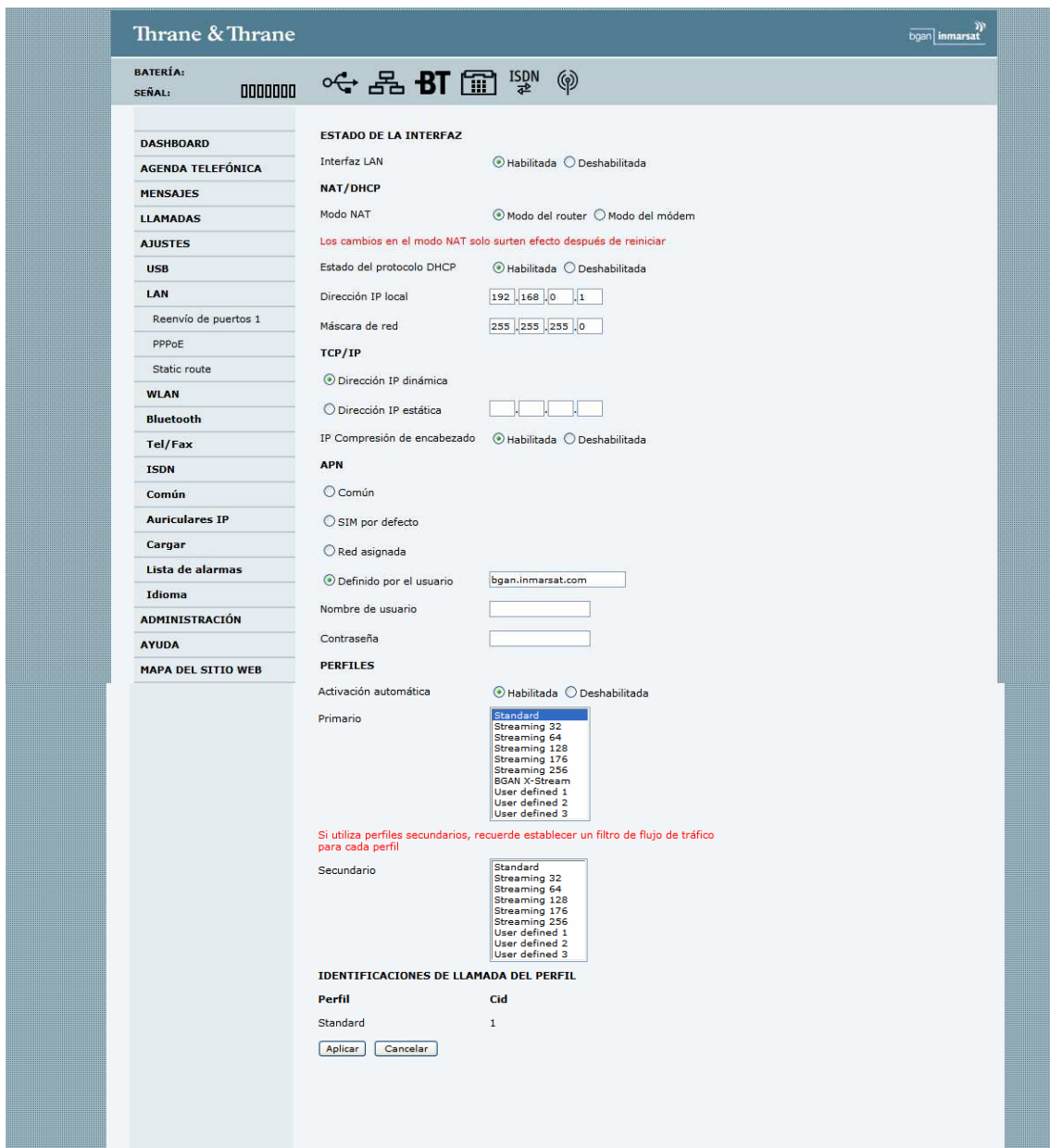


The screenshot shows the web interface of the Explorer 700. At the top, it says 'Thrane & Thrane' and 'bgan inmarsat'. Below that, there are status indicators for 'BATERÍA:' and 'SEÑAL:'. The main content area is divided into several sections:

- DASHBOARD**: A sidebar menu with options like AGENDA TELEFÓNICA, MENSAJES, LLAMADAS, AJUSTES, ADMINISTRACIÓN, AYUDA, and MAPA DEL SITIO WEB.
- PROPIEDADES**: A table listing system properties such as 'Suministrador de Comunicaciones', 'Posición GPS', 'Estado', 'Conectando', 'Número de serie de la unidad', 'Versión del software', 'Dirección IP local', 'Número IMEI', 'Dirección MAC', and 'Dirección WLAN MAC'.
- NÚM. TOTAL DE SESIONES**: A table showing session statistics like 'Llamadas de voz entrantes estándar', 'Llamadas de voz salientes estándar', 'Audio de entrada de 3,1 kHz', and 'Audio de salida de 3,1 kHz'.
- SESIONES DE DATOS EN CURSO**: A section indicating that there are no active data sessions.
- PERFILES DE STREAMING EN LAN**: A section indicating that there are no defined streaming profiles.

Here you will be able to check the signal level, battery status, available services, etc. For more information, please check EXPLORER 700's User Manual.

In the menu at the left, please click on **SETTINGS (AJUSTES)** and, after that, on **LAN**. The following screen will be shown:



The screenshot shows the 'ESTADO DE LA INTERFAZ' (Interface Status) configuration page. The left sidebar contains a menu with options like DASHBOARD, AGENDA TELEFÓNICA, MENSAJES, LLAMADAS, AJUSTES, USB, LAN, WLAN, Bluetooth, Tel/Fax, ISDN, Común, Auriculares IP, Cargar, Lista de alarmas, Idioma, ADMINISTRACIÓN, AYUDA, and MAPA DEL SITIO WEB. The main content area is titled 'ESTADO DE LA INTERFAZ' and includes the following settings:

- Interfaz LAN:** Habilitada Deshabilitada
- NAT/DHCP:** Modo del router Modo del módem
- Estado del protocolo DHCP:** Habilitada Deshabilitada
- Dirección IP local:** 192 | 168 | 0 | 1
- Máscara de red:** 255 | 255 | 255 | 0
- TCP/IP:** Dirección IP dinámica Dirección IP estática
- IP Compresión de encabezado:** Habilitada Deshabilitada
- APN:** Definido por el usuario (bgan.inmarsat.com)
- Nombre de usuario:** [Empty field]
- Contraseña:** [Empty field]
- PERFILES:** Habilitada Deshabilitada
- Primario:** Standard (dropdown menu)
- Secundario:** Standard (dropdown menu)
- IDENTIFICACIONES DE LLAMADA DEL PERFIL:**

Perfil	Cid
Standard	1

The LAN interface parameters must be adjusted as follows:

- **LAN Interface:** Enabled
- **NAT mode:** router mode
- **DHCP protocol status:** Enabled
- **TCP/IP:** dynamic IP
- **APN:** user defined **

** **APN or Access Point Name** must be in “User defined” mode. Some providers ask for and “user” & “password”. Tests carried out so far with the EXPLORER 700 show that, in order to have access to the data channel, the “user defined” field must contain the following string:

bgan.inmarsat.com

Next, click on the APPLY button and the EXPLORER 700 will automatically reboot and ask for the SIM PIN code. Once connected and registered (this action is automatically performed) we must check that the word “DATOS” (DATA) is shown in the LCD of the unit, with an indication at its right showing “0Kb-3Kb-5Kb.....n Kb”. Only then we will be able to connect the Phoenix Mobile to the LAN 1/LAN 2 interface and transmit Audio over IP streams.

NOTE: These tests have been carried out using the ISPs SATCOM and Movistar. *If continuous change between the words “LISTO” (READY) and “DATOS” (DATA) is observed, the unit is not ready to transmit via IP. In this case, check your APN parameters and the received signal level.*

Note that some other ISP providers may use a different APN. As an example, the one obtained from Telefónica de España by checking the option “default SIM” is:

Telefonica.bgan.inmarsat.com

But the tests realized using this APN were not satisfactory.

4. IP CONFIGURATION OF THE PHOENIX

When a Phoenix unit is connected to a network we must have a free IP address within the network range. If this is not possible, we can use DHCP (Dynamic Host Configuration Protocol), that is a standard network protocol that allows IP nodes within a network to obtain their configuration parameters automatically. This way, if you activate DHCP in the Phoenix, it should recognize and assign its own IP address in the connected network.

Next, connect the Phoenix Mobile and set it up to work with SIP protocol, just as we would be connected to a “normal” network.

Enable the SIP Proxy, fill its IP address (or DNS name, “sip.aeq.es”) and the account information (AEQ will supply the unit with a default configuration). Check User Manual paragraph **3.5.3.2.** for more details.

Make sure that the selected channel (Program or Coordination) is assigned to the Ethernet slot: **Menu → Modules Config → Ch.Program → Ethernet**

Go to Menu → Communications → Ethernet Config, and enable DHCP.

Make a call (it is recommended that you first try with a call to phoenixMaster, in order to check that the call is established and audio is received correctly).

NOTE: *Depending on the Internet connection speed, in particular the upstream speed that is lower, we will be able to work comfortably at relatively high bit rates (256Kbps) or we may need to reduce it to 128 or even 64kbps in order to avoid cuts or artefacts in the audio.*



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