

BGAN Application Tester

Controlled test and verification in an emulated Inmarsat BGAN environment

BGAN Application Tester

The BGAN Application Tester (BAT), is a network emulator designed specifically for the Inmarsat BGAN satellite service. The tool emulates a BGAN satellite link, radio access network and core network, right down to the RF link. By emulating the BGAN network you can test end-to-end in a controlled environment, and monitor the effects of a live BGAN network on your application. Testing on the bench with the BAT eliminates the need for line

of sight and airtime, while at the same time enabling test of any network scenario. This way you can reproduce test cases and thereby obtain reliable test results.

Thorough testing is essential throughout terminal and application development and critical to final product quality delivered to end-users. But why do you need an alternative to traditional testing on the live BGAN network? Set up of test environments and the

unpredictability of the live network conditions is both time consuming and costly. More importantly, some rarely occurring network conditions might not even be obtainable for you to reproduce and test sufficiently.

Use of a sandbox network environment offers you complete control of the network conditions under which you wish to test your terminal or application's performance.



TEST TERMINALS AND APPLICATIONS
FOR LAND, MARITIME AND AVIATION



Benefits

- Inmarsat BGAN network specific testing
- Reproduce any network scenario
- End to end and mobility testing on the bench
- Intuitive usage via the graphical user interface
- Improve stability and optimize for minimum airtime usage
- Test, demo and document performance in any network scenario
- Reduce cost and time of test effort – no airtime or line of sight required

Use cases



END-TO-END TESTING - ON THE BENCH!

The BAT is ideal for development, testing and integration of BGAN terminals and applications. In the following we exemplify some of the many uses.

Testing of PS services

The BAT can be used from the development phase, to integration, approval, production and deployment as well as sales and after sales phases of terminals and applications. As a general-purpose tool for BGAN services the BAT usage scenarios are determined completely by the specifics of the terminal or application under test. Some typical examples are described in the following.

Measure Data Generation

The BAT enables measurement of traffic generated by an application. With a laptop running the application, it is possible to measure accurately the amount of data generated. This enables the application provider to minimize the incurred cost of use (airtime) and document this to potential customers.

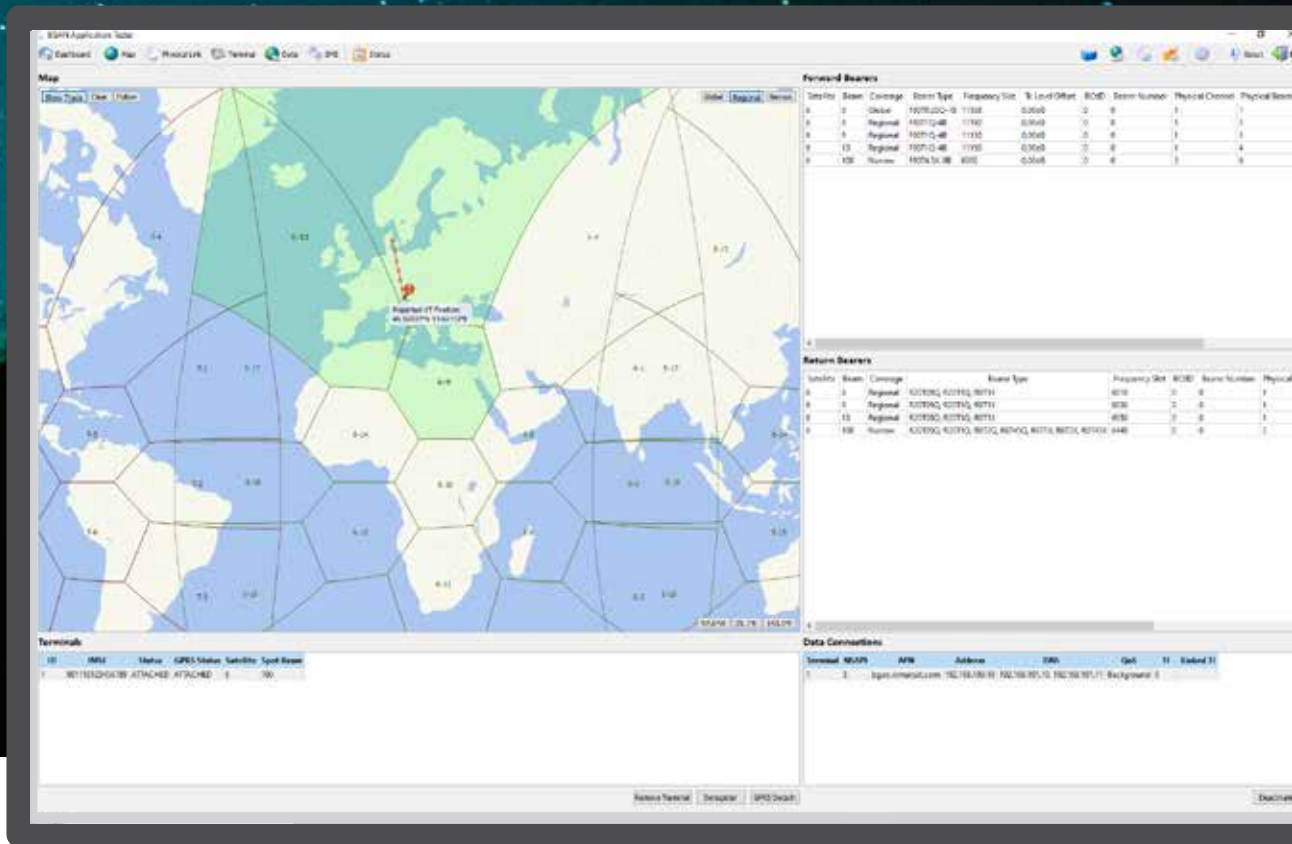
Test of Robustness #1: Mobility

The BAT can be used to test and validate application and terminal performance in scenarios where the terminal is mobile. This includes the aeronautical, maritime, and land-vehicular

terminal classes. The position information can be fed to the terminal using a GPS simulator, and BAT will automatically switch traffic, update location and apply proper channels. This way, it is possible to create and test any desired trajectory. The impact of e.g. moving between spot beams with different traffic characteristics can be evaluated, without the costs that are normally incurred by flying, sailing or driving across spot beam and satellite boundaries on the live BGAN network.

Test of Robustness #2: Congestion

The BAT enables testing in areas with traffic congestion. This is



used to verify that the terminal or application will provide a satisfactory user experience, even when it operates in a location with severe traffic load. Enabled through the BAT user interface, BAT will introduce latency and reduced allocation of bandwidth, caused by sharing bandwidth between multiple users, on the satellite beam. Significant cost is saved compared to the travel cost and time needed to establish a traditional test set-up in a loaded spotbeam which may be thousands of kilometres away.

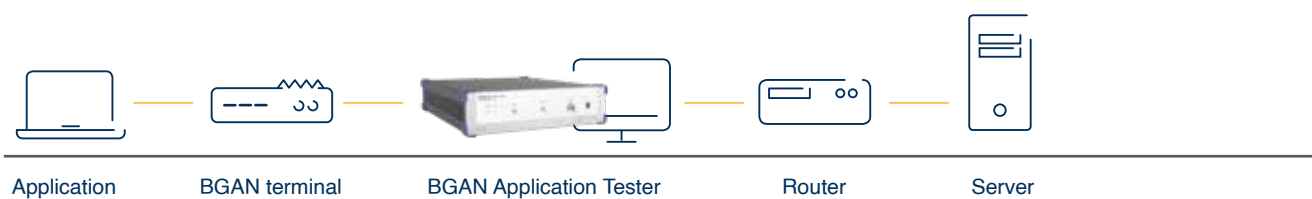
Stability testing: Crypto device

The BAT can be used to validate crypto devices over a BGAN, FBB or SBB connection without going on-air. Crypto devices can be very sensitive to variations in latency on a satellite connection. BAT enables long-term stability testing without air time charges, to test the limits of the crypto device in a shared-bandwidth channel. It can be verified that the crypto device, as well as applications, are able to recover from data congestion, connectivity problems and satellite switches.

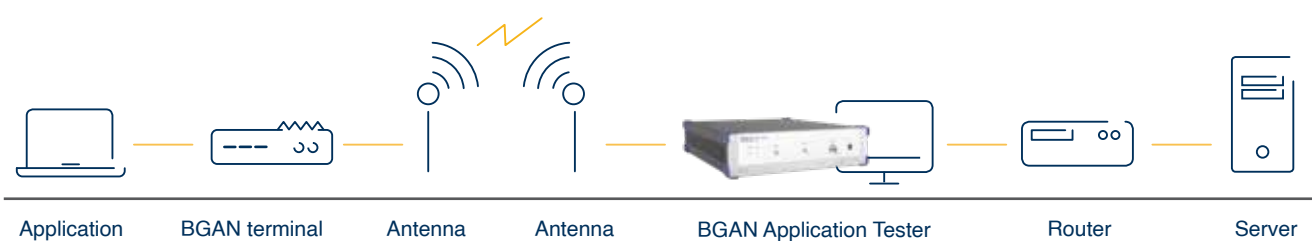
The image above shows the interface of the BAT while testing a simulated flightpath and showing the effects of moving between spotbeams with different characteristics.

Technical description

— **BGAN Application Tester Wired Setup** —



— **BGAN Application Tester Wireless Setup** —



The BAT is a one box solution to which monitor, keyboard and mouse are connected for the user to operate the BAT. The BAT is connected either via coax RF cable or via antenna and RF shield box, to the terminal, and application level traffic is routed to an application server or the internet.

In the emulated environment, an application is able to connect to and operate a terminal as if it was connected to the live network.

The BAT provides a graphical user interface designed to simplify operation of the test tool. The user interface can be used to simulate

a wide range of scenarios such as service rejection, which may affect the performance of the terminal, as well as the total BGAN solution or application, when deployed in the field.

Features

➤ Supported Terminal Classes

- Land-Portable (Class 1, 2, 3)
- Land-Mobile (Class 10, 11, 12)
- Maritime (Class (5), 8, 9, 14)
- Aeronautical (Class 4, 6, 7, 15)

➤ Air-Interface

- Ciphering
- Idle Data Connection (RAB) Release
- Network impairments
- User data plane load impairment
- Spot beam map

➤ Services

- Background IP
- Streaming IP
- Multiple Access Points
- Short Message Service (SMS)

➤ User Interface

- Graphical User Interface

➤ Logs & Traces

- High level logging

➤ Operation

- Manual testing

➤ Other

- BGAN test SIM-Card required (Delivered by GateHouse)
- Multi-channel (Aero)



➤ You get:

- BAT software
- Remote software updates
- Test sim card
- License key
- BMCP (optional)
 - RF coupler
 - Antenna cable
- Training, installation, support (optional)

➤ You already have:

- BGAN terminal
- Router
- GPS simulator (fixed or mobility)
- Tool for generating data:
 - PCs
 - Application + Server

UNLIMITED, ON-THE-BENCH TESTING AND CONTROL OF YOUR TEST ENVIRONMENT!

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