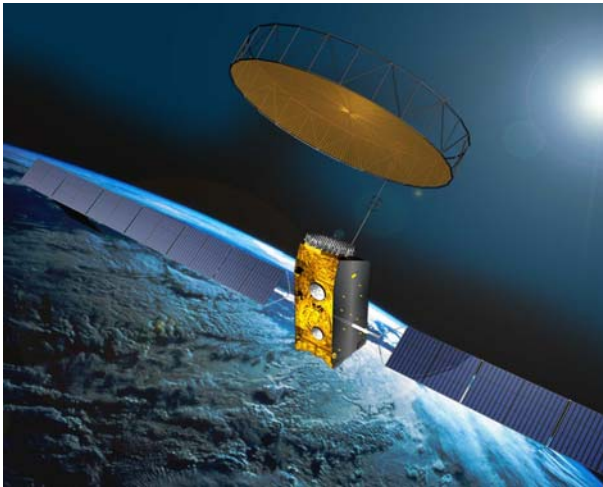


# SBB Arinc 781 Modem Emulator

Cabin application testing without the need for a hardware modem or satellite airtime



Inmarsat's SwiftBroadband (SBB) service enables remote communications services on aircraft. But testing new services over the satellite system is very expensive. TriaGnoSys' SBB Modem Emulator simulates an Arinc 781 attachment 5 modem toward a cabin router or application and the satellite IP network's behaviour.

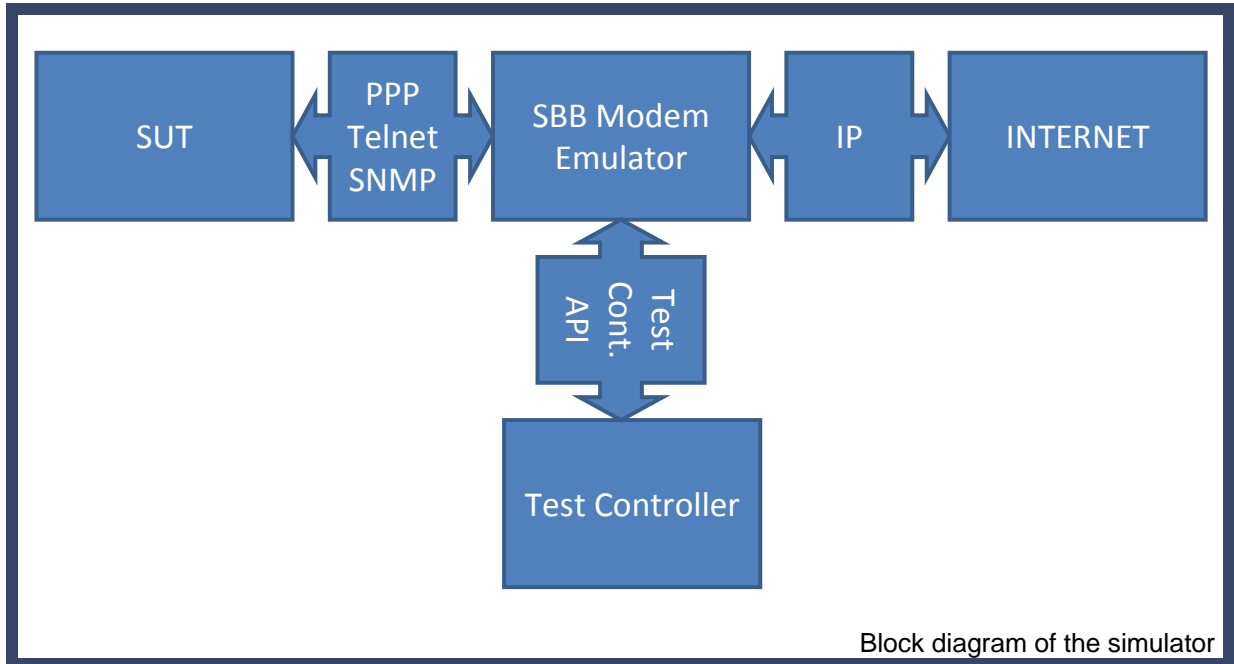
## SBB Modem Emulator highlights:

- The cost of using TriaGnoSys' SBB Emulator is around 10% of the cost of using a SBB modem and satellite airtime
- Emulation of the Arinc 781 Attachment 5 interface. i.e. PPPoE, AT over Telnet, and Arinc 781 MIB over SNMP
- End-to-end application testing, including application performance under different link conditions
- Satellite link characteristics are replicated, like negotiated QoS, delay, jitter drop, and other packet layer infringements
- Re-producible tests for failure conditions like link opening or link modification is not acknowledged

## Key technical functions:

- The SBB Modem Emulator modem provides three IP Ethernet based system interfaces; i) to the System Under Test (SUT), ii) the a ground network for end-to-end routing and iii) a programming interface to a test controller
- The SUT may request modem contexts from the emulator, in exactly the same way it would from a real modem
- Protocols used between the SUT and the emulator modem are according to ARINC 781 attachment 5:
  - PPP/PPPoE for primary contexts
  - AT over Telnet for secondary contexts and context control and modification
  - Arinc 781 MIB via SNMP

## SBB Emulator Details



## Overview of the three system interfaces

1) Interface to SUT	2) Interface to ground network	3) Interface to Test Controller
<p>This interface emulates the real SwiftBroadband modems with Arinc 781 attachment 5 interface and network behaviour at IP layer, in order that all the functions needed by the SUT and cabin applications can be simulated in real time.</p> <p>The modem emulator physical interface is based on an Ethernet port with ppp server in the modem. Eleven primary ppp and secondary contexts can be established. Termination of contexts is controlled by a test controller.</p>	<p>The modem emulator forwards traffic from the SUT to the connected ground network and back.</p> <p>The 'ground network' can be the live Internet or a hosted network representing the ground network and the communication peers within it.</p> <p>IP application traffic in the cabin domain is NAT'ed to the ground network and will appear to come from the PPP IP address assigned to the SUT.</p>	<p>The test controller interface enables the controller to simulate specific modem or satellite network behaviour.</p> <p>The test controller can also check and display the actual state of the links that are opened by the SUT.</p> <p>The test controller can inject packet errors, drop packets or vary the link delay. Signalling responses with service rejection or termination of contexts can be controlled for stability and robustness testing.</p>