emutel™|Maestro

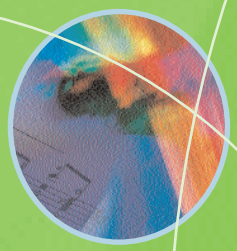
xDSL Simulator

ADSL
SHDSL
VDSL

emutel™|Maestro brings you the perfect solution for testing your DSL equipment. Connect to your product while still in your own testing lab and perform those final tests in a real environment, enabling you to identify and solve any problems before they occur on site.

emutel™|Maestro is a cost-effective network simulator for development, test and demonstration of DSL equipment. The **emutel™|Maestro** is a self-contained 2 port DSLAM simulator for ADSL, SHDSL and VDSL.

The fully flexible modular design of **emutel™|Maestro** supports different manufacturers' chipsets using independent plug-in modules. The unit can emulate different types of xDSL and is therefore ideal for product development and product testing. **emutel™|Maestro** provides a standard platform to carry out performance testing, functional verification, interoperability and conformance testing of CPE equipment - all in one box!



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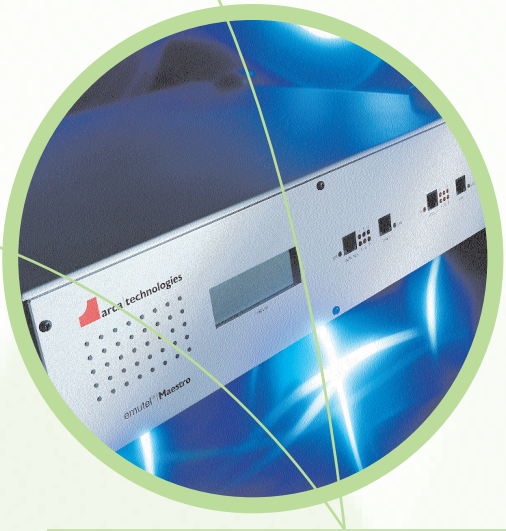


Protocols supported:

RFC 2684/1483 LLC/SNAP, VC MUX, Bridged and Routed
RFC 2364 PPPoA - LLC NLPID
RFC 2364 PPPoA - VC MUX
RFC 2516 PPPoE
RFC 1577 Classical IP
CHAP & PAP Authentication
PPP Configuration
AAL5 Encapsulation

Available Modules:

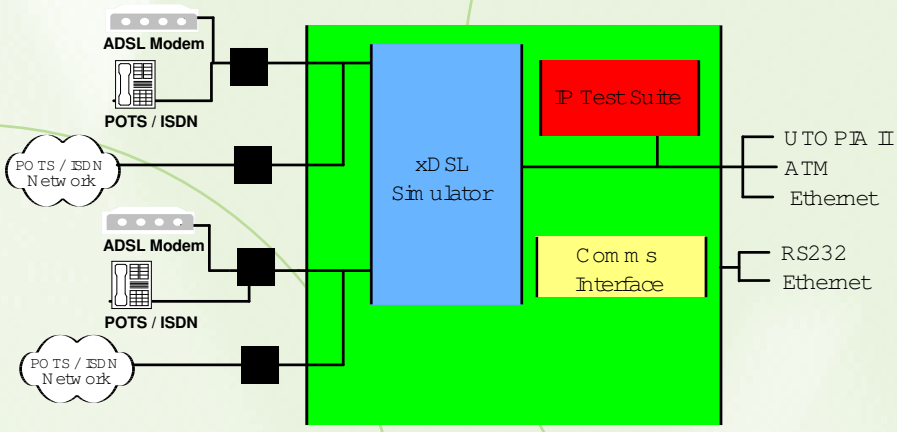
ADSL Alcatel DynaMiTe 20150 Annex A
ADSL GlobeSpan Titanium GS7066 Annex A
ADSL GlobeSpan Titanium GS7066 Annex C
ADSL Texas Instruments AC5 Annex A
ADSL Texas Instruments AC5 Annex B
SHDSL GlobeSpan XDSL2 G2237C1
VDSL Infineon PEB 22812, PEB 22811 and PEB 22810
VDSL Broadcom BCM6020

Analysis Tools:

LEDs - Showtime success and Traffic Flow
LCD - Upstream and Downstream showtime rates
Chipset Statistics - Data Rates, SNR's, Power Levels, attenuation etc
Bit/Tone Graph - Frequency Spectrum of upstream and downstream showtime data
Error Counters - FEC, CRC, HEC etc
Access to Chipset Logging File - Alcatel only
Encapsulation Analyser - shows the protocol analysis between the modem and the Maestro
Internal Webserver - HTTP speed test
Internal FTP server - download and upload testing
Cell analysis of individual modules, ATM VPIs/VCIs and RAW traffic
Graphing analysis of Cells, Bytes, Frames and Errors
AAL5 Error Statistics

The **emutel™|Maestro** provides simulation of up to two Central Office DSL lines. On both ports, you can simultaneously connect your DSL and telephone equipment, effectively testing DSL running over copper wires in a laboratory environment.

- Two independent xDSL ports: ADSL, SHDSL or VDSL
- Multiple manufacturers' chipsets allow wide interoperability tests to be carried out
- Provides access to chipset configuration parameters
- U_R2 compatible using Texas Instruments module
- Can be connected to real analog (POTS) or ISDN lines (via external splitter)
- Connect to external web server using ATM155 Optical/Copper or 10Base-T Ethernet
- Internal HTTP and FTP servers including pre-installed website to enable automatic data upload and download capability for standalone operation and testing
- User friendly GUI interface (95, 98, Me, 2000, NT, XP)
- Command Line Interface (CLI) to allow scripted remote/automated operation
- CLI and GUI interface using either RS-232 or 10Base-T Ethernet
- LCD and LEDs to show the status of each port
- Extensive HELP file



The independently configurable RJ11 ports are provided on the front of the **emutel™|Maestro** to allow connection to Customer Premises Equipment (CPE) devices.

You may also connect to an external line/device (POTS/ISDN) via the line interface. The unit allows xDSL and POTS/ISDN terminals to be connected simultaneously to allow full interoperability testing and demonstration.

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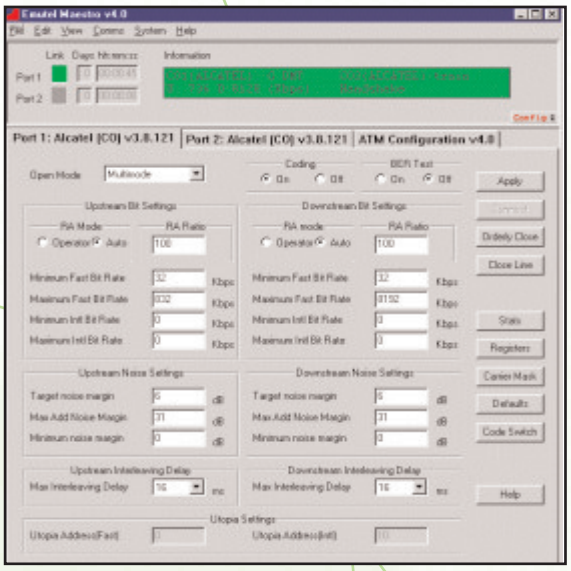
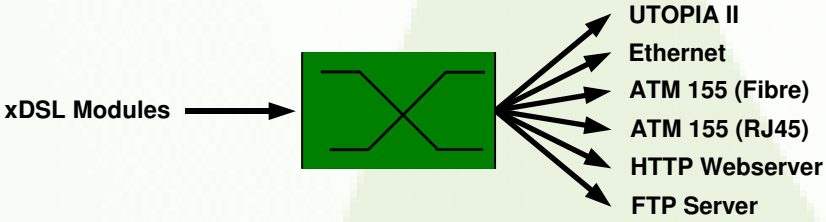


This property sheet is used to configure an xDSL port. It is possible to specify the bit rates (upstream and downstream) which must be achieved to establish an xDSL connection. A variety of noise and encoding options can be selected and the utopia addresses can be configured if required (example shown is Alcatel DynaMiTe).

The ATM settings window is used to configure the channel and routing information. This determines how data flows through the emutel™|Maestro, whether to the Web and FTP internal servers, to the 10Base-T Ethernet port or directly to ATM. The window also allows selection from multiple Ethernet encapsulation protocols for use with internal or external Ethernet servers. The window also allows access to the data throughput statistic and graph windows.

The emutel™|**Maestro** can pass data from the xDSL modules either straight through to the UTOPIA Level 2 connectors for 3rd party external cell analysis and generation or to the internal data processor. Data from the processor can either be transmitted over ATM155 Optical/Copper or undergo protocol termination for further transmission over 10Base-T Ethernet or connection to the internal HTTP and FTP servers.



The internal data processing allows configuration of VPI/VCI interfaces, protocol selection, IP, Gateway, Net mask. 1Mbyte of internal memory has been allocated to uploadable website data. An applet within the pre-loaded website provides HTTP and FTP upload and download capability. The website allows muliple simultaneous accesses over the xDSL connections.

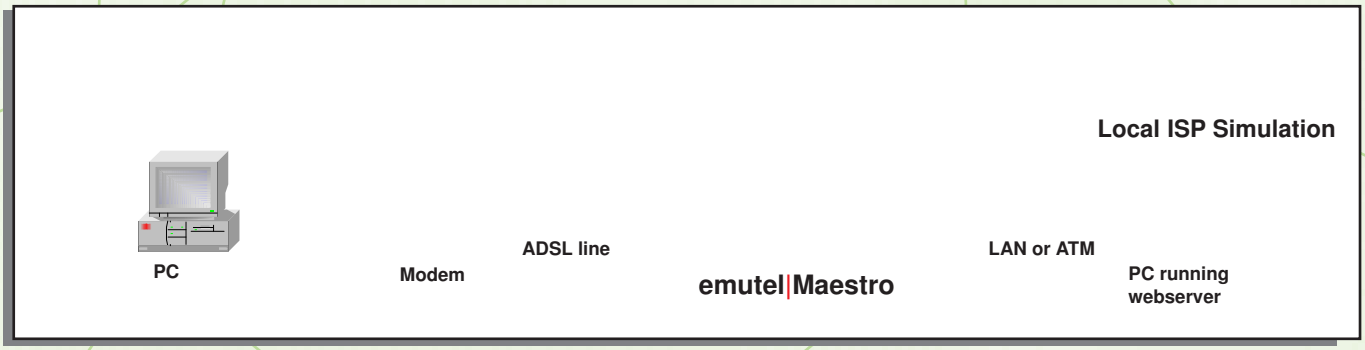
Typical test application for emutel™|Maestro

Engineers in a development environment may want to run different applications e.g. VoIP software, web server or video on a PC. A typical scenario would include connecting a modem into one of the emutel™ |**Maestro**'s xDSL ports. The aggregate side of the emutel™ |**Maestro** could be connected to the ATM or Ethernet port on a PC. This PC would be running a webserver package that would effectively act as a data generator. The modem could then surf this 'Virtual Internet' scenario.

Alternatively, a dedicated data generator could be used instead of a webserver. Some generators can even connect simultaneously into the modem side thus allowing complete control of the data traffic sent and received. This allows the engineer to further test the performance of their modem.

Use emutel™|Maestro for:

- Interoperability testing
- Link analysis
- Performance testing
- Spectral compatibility
- Mode testing
- Automated testing
- Product development
- Statistical generation and logging
- On-site demos
- Production line testing
- Functional verification
- Teaching and Training



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Specification: Features & Capabilities

ADSL Port	2 CO ADSL G.992.1, G.992.2, ANSI T1.413 ports
ADSL Chipsets	**Alcatel** DynaMiTe 20150 (Annex A),
	GlobeSpan Titanium GS7066 (Annex A and C),
	Texas Instruments AC5 Series (Annex A and B)
SHDSL Chipsets	**GlobeSpan** XDSL2 G2237C1
VDSL Chipsets	**Infineon** PEB 22812, PEB 22811 and PEB 22810
	filters: downstream band 0.9-3.3MHz upstream band 4.0-7.9MHz
	data rates: 25.92Mbit/s upstream, 17.28Mbit/s downstream
	line length: to be confirmed
	Broadcom BCM6020
	filters: downstream band 0.01-3.5MHz upstream band 3.85-5.2MHz
	data rates: 7.09Mbit/s upstream, 14.85Mbit/s upstream
	line length: to be confirmed
Data Interface	UTOPIA Level 2, ATM 155 SMF/MMF/UTP, Ethernet 10BaseT
Line Interface	RJ11
Configuration Ports	V24 DB9 connection, Ethernet 10BaseT, RJ45
Display Indicators	LCD, Power, Alarm, External Line Ports, Showtime, Sync, Error and Statuse
Power Requirements	102-132 / 204-260 Vac, 60W
Environmental	0-40^{O}C, 10-80% Humidity (Non Condensing)
Weight	3.5 Kg
Size	7.5cm(h) x 48cm(w) x 35cm(d) or11cm(h) x 48cm(w) x 35cm(d)
Warranty	**emutel™|Maestro** is supplied with one year's product warranty and free technical support

Price and availability of **emutel™|Maestro** can be requested by contacting the **arcatech** sales team.

arcatech - a world leader in emulation since 1993. Our product portfolio includes the **emutel™** range of ISDN PRI, BRI and analog Central Office simulators, emutel™|**Harmony** VoIP Test Platform, emutel™|**Maestro** xDSL simulator, emutel™|**Virtuoso** V5.1 and V5.2 simulator, arcaplex|**Horizon** ISDN multiplexer and arcareach|**Sigma** S-bus extender.

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