Lucent Technologies
Bell Labs Innovations

DSP1690 *WildWire*™ ADSL & V.90 Modem Chip Set with PCI-Bus Interface

FEATURES

- Asymmetric digital subscriber loop (ADSL) remote terminal (RT) chip set
  - — DSP1690 digital signal processor
  - — T7780 ADSL line interface
  - — CSP1034 analog modem line interface
- ITU G.Lite ADSL over existing copper
- Up to 1.536 Mbits/s downstream[1], 512 kbits/s upstream
- Splitterless design, minimizing installation costs
- Simultaneous ADSL and POTS operation
- Based on discrete multitone encoding technique (DMT)
- ITU V.90 data/FAX/voice analog modem capability
- Data mode capabilities:
  - — Ultrahigh V.42bis compression throughput due to parallel access directly to the host PC
  - — ITU-T V.34 extended rates: 33600 bits/s—2400 bits/s
  - — V.32bis and fallbacks
  - — TIA/EIA 602 standard for AT command set
  - — V.42 error correction (LAPM and *MNP*[2])
  - — V.42bis and *MNP* Class 5 data compression
- FAX mode capabilities:
  - — ITU-T V.17, V.29, V.27ter, and V.21 Ch 2
  - — TIA/*EIA*[5] 578 Class 1 FAX
- Hardware integrated:
  - — Integrated dual DSP and multiport memory
  - — Integrated PCI interface, ACPI compliant
  - — 3 V/5 V tolerant interface
  - — PCI bus mastering
  - — Call progress speaker driver
- Power <1.5 W for all operating modes
- Software upgradable, field programmable
- Operating system support:
  - — *Windows*[3]95 & 98
  - — *Windows* NT V 4.0 & *Windows* 2000
  - — Applications include: Internet access and web browsing, voice over IP (internet telephony), distance learning, telecommuting, and video telephony

DESCRIPTION

Lucent Technologies Microelectronics Group's DSP1690 *WildWire* chip set is one of the industry's most compact asymmetric digital subscriber line (ADSL) chip sets, which is built upon the first DSP that integrates both traditional analog modem and ADSL functions on a single chip.

The three-device *WildWire* chip set can be used in personal computers and stand-alone modems. It supports both ADSL and V.90 (56 kbits/s[4]) analog connections. The 1690 incorporates Lucent's *WildWire* Digital Subscriber Line technology, which downloads data at up to 1.5 Mbits/s and does not require an external voice/data splitter.

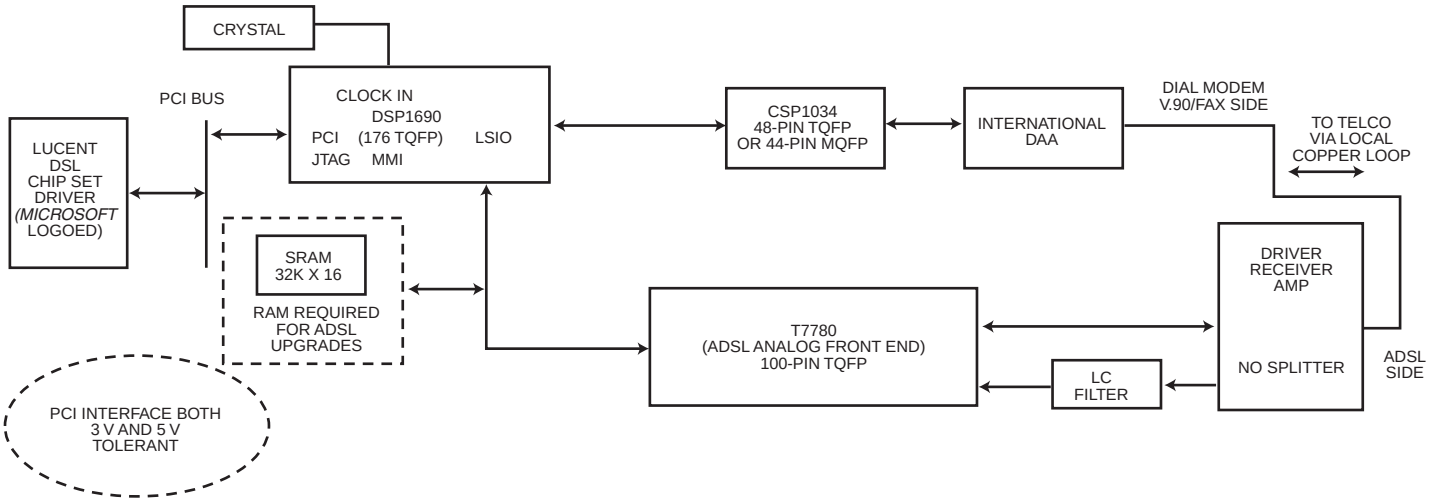
Today's modem chip set must be able to communicate at whatever rates are available from the service provider. Lucent's *WildWire* chip set includes an autodetect feature that determines whether or not the central office has an ADSL connection and allows the user to transmit data at the highest rate available. This alleviates the need to reconfigure PCs from 56 kbits/s modems to ADSL, extends the useful life of the modem, and protects the end users' investment as ADSL is deployed.

The *WildWire* chip set consists of Lucent's 1690 digital signal processor (DSP), an ADSL codec, and an analog modem codec. The DSP1690 couples two of Lucent's DSP1600 cores onto a single device operating at 200 MIPS, and the chip set (DSP and codecs) consumes only 1.5 W of power. Special circuitry couples the DSPs with the PC's memory and processor via the PCI bus to create a system capable of handling 1.5 Mbits/s data speeds. An NDIS miniport driver that is *Microsoft*[3] WHQL compliant is included. This terminates IP/PPP over ATM functions per virtual channels.

This high-level integration improves performance while reducing component count. The net result is an overall decrease in total system costs, board space requirements, and power consumption.

1. While *WildWire* chips are capable of tranferring data at 1.5 Mbits/s, user's individual line conditions affect the transfer rate.
2. *MNP* is a trademark of Microcom, Inc.
3. *Windows* and *Microsoft* are registered trademarks of Microsoft Corporation.
4. Actual speeds over U.S. telephone lines vary and are less than 56K, due to current FCC regulations and line conditions.
5. *EIA* is a registered trademark of Electronic Industries Association.

DSP1690 *WildWire* Chip Set Block Diagram



For additional information, contact your Microelectronics Group Account Manager or the following

INTERNET: **http://www.lucent.com/micro**
E-MAIL: **docmaster@micro.lucent.com**
N. AMERICA: Microelectronics, Lucent Technologies Inc., 555 Union Boulevard, Room 30L-15P-BA, Allentown, PA 18103
1-800-372-2447, FAX 610-712-4106 (In Canada: **1-800-553-2448**, FAX 610-712-4106)
ASIA PACIFIC: Microelectronics Asia/Pacific, Lucent Technologies Inc., 77 Science Park Drive, #03-18 Cintech III, Singapore 118256
Tel. (65) 778-8833, FAX (65) 777-7495
CHINA: Microelectronics Group, Lucent Technologies (China) Co., Ltd., A-F2, 23/F, Zao Fong Universe Building, 1800 Zhong Shan Xi Road, Shanghai 200233 P. R. China **Tel. (86) 21 6440 0468, ext. 316**, FAX (86) 21 6440 0652
JAPAN: Microelectronics, Lucent Technologies Japan Ltd., 7-18, Higashi-Gotanda 2-chome, Shinagawa-ku, Tokyo 141, Japan
Tel. (81) 3-5421-1600, FAX (81) 3-5421-1700
EUROPE: For data requests: Microelectronics Group Dataline: **Tel. (44) 7000 582 368**, FAX (44) 1189 328 148
For technical inquiries: GERMANY: **(49) 89 95086 0** (Munich), UNITED KINGDOM: **(44) 1344 865 900** (Ascot),
FRANCE: **(33) 1 40 83 68 00** (Paris), SWEDEN: **(46) 8 594 607 00** (Stockholm), FINLAND: **(358) 9 4354 2800** (Helsinki),
ITALY: **(39) 02 6608131** (Milan), SPAIN: **(34) 1 807 1441** (Madrid)

November 1999
OT99-333DMOD (Replaces OT98-337DMOD)

Printed On Recycled Paper

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