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Industry's First Single-Chip DMT ADSL Processor

PairGain Technologies Inc. (Nasdaq: PAIR) announced the beginning of field tests and demonstrations for its FALCON DMT RADSL chip, the industry's first single-chip DMT ADSL processor. The PairGain-developed DMT transceiver sets the stage for the commercial roll-out of DMT-based ADSL services, being driven primarily by consumer demand for high-speed Internet access.

The FALCON chip will support DMT ADSL and 'splitterless ADSL', or G.lite, a standard currently under development by the International Telecommunication Union, to simplify modem deployment by eliminating customer premise's splitter installation for simultaneous data and analogue voice connections, making ADSL modems as easy to install and use as analogue modems. There will be no need for additional equipment, modified wiring, or a telephone company installer to visit the consumer's home to start up the service. ADSL will allow the user to hold a phone conversation and access the Internet simultaneously over the same telephone line. The user's computer will be connected to the Internet continuously, with no need to dial in, as is required by today's analogue modems. PairGain's FALCON is capable of transferring data, voice and video at rates over 8 Mbit/s downstream and 1 Mbit/s upstream, all over a single copper telephone line. Data rates are adjustable in increments of 32 kbit/s to enable the longest possible reach. Multimegabit data rates will enable next-generation Internet applications for consumers, such as Internet telephony and video, distance learning, and telemedicine.

Breakthrough chip design

In addition to setting new standards for power consumption and flexibility, the FALCON DMT ADSL chip requires less than 0.55 W for operation, shattering the low-power barrier of other DMT ADSL offerings. The FALCON chip includes all the digital circuitry necessary to implement a DMT transceiver per T1.413, the ADSL standard. It includes standard-compliant DMT modulation, framing, error correction, interleaving and interleave RAM in a single 160-pin PQFP package. The chip also includes advanced system management features, which allow custom features to be easily deployed in the product development stage.

FALCON's high level of integration significantly reduces the chip count needed to implement system-level DMT RADSL products. This lowers the cost of implementation and makes the design of higher density products feasible, both of which are vital to the development of a consumer DSL market. In accordance with PairGain's design philosophy, the FALCON provides a complete and simple 'drop-in' digital solution, with everything needed to implement a standards-compliant DMT ADSL connection on a single chip.

ASIC vs. DSP implementation

PairGain's FALCON chip was designed by PairGain's in-house microelectronics team, using a programmable, full-custom ASIC (Application-Specific Integrated Circuit) optimized for DMT processing rather than a traditional general-purpose DSP (Digital Signal Processing) approach. By designing the chip exclusively for DMT functionality, PairGain achieved full-featured functionality without sacrificing on transistor count, chip size and power dissipation. FALCON has been designed to be far more programmable than traditional ASICs, allowing straight-forward adaptation to support future ADSL standards or extensions. The traditional DSP approach starts with a general-purpose microchip and requires more programming and additional chips for maximum DMT performance.

System-level products

PairGain plans to integrate its DMT ADSL technology into several of its own product lines as well as those of strategic partners. Forthcoming PairGain products include a next-generation xDSL access system that will be capable of supporting thousands of subscribers simultaneously. FALCON will also be deployed in next-generation megabit modems that will be significantly smaller and of higher performance than any xDSL modem available today. PairGain also intends to make FALCON available to strategic partners to develop DMT ADSL modules for telephony switching equipment and digital loop carrier systems. FALCON will also allow for low-cost implementations such as internal PC card modems or designs on the PC motherboard itself. Interoperability PairGain technologies intends to conduct interoperability testing with several DMT ADSL vendors. PairGain is also willing to participate in any formal, public efforts or testing towards interoperability.

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