Intel® SK70740/SK70744 HDSL2 Modem Chip Set

Product Overview

The Intel® SK70740/SK70744 chip set is an ANSI HDSL2 modem that provides symmetric full-duplex, T1 transmission over a single twisted pair. The device is capable of providing Overlapped PAM Transmission with Interlocking Spectrum (OPTIS) power spectral density (PSD). This HDSL2 modem solution consists of two chips:

- SK70740 Analog Front End (AFE)
- SK70744 Transceiver/Framer

The AFE receives a pulse width modulated data stream from the digital transceiver. Switched capacitor filters shape the transmitted signal to suppress out-of-band noise. The receive channel consists of an automatic gain control (AGC) stage and an analog to digital (A/D) converter. The dynamic range of the receive channel is over 80 dB.

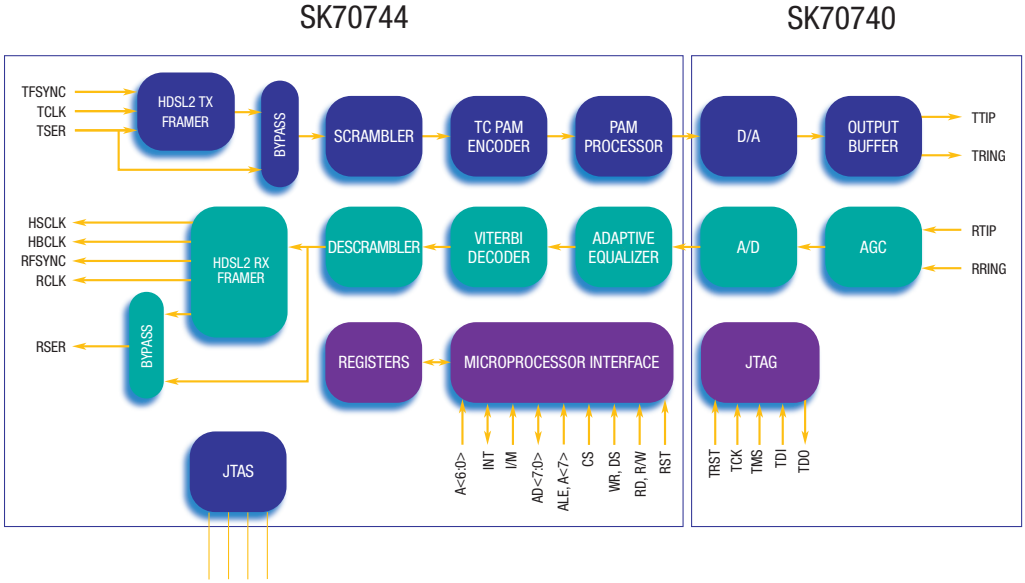
The core of the Transceiver/framer is a Trellis Coded PAM modulator/demodulator. HDSL2 utilizes shaped PAM-16 modulation to minimize interference into other services. In addition, Trellis Coding (TC) and Viterbi Decoding allows the system to provide a high signal-to-noise margin in the presence of crosstalk noise from other services.

The frame mapping function inserts and recovers the HDSL2 overhead. Interrupt alarms are provided for loss-of-sync and CRC errors.

The system also has read/write register access to the Embedded Operations Channel (EOC) bits within the HDSL2 frame. A synchronous TDM interface allows the chip set to be used with common T1 framers.

Key Applications

- Full rate T1 transport systems
- Multi-channel digital pair gain systems
- WAN access for LAN routers and switches
- Integrated access devices
- Wireless access systems



Intel® Internet Exchange Architecture

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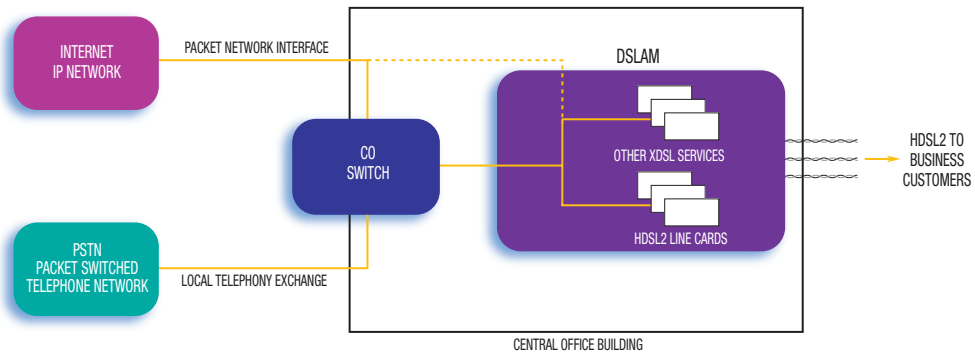
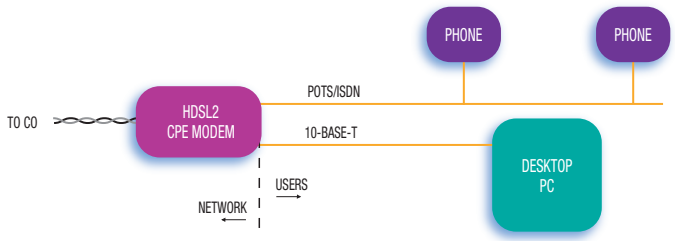
Figure 1:



HDSL2 Line Cards in a DSLAM Application

Deploying HDSL2 in a central-office-based DSLAM environment allows local exchange carriers the option to deploy symmetric guaranteed services for businesses. HDSL2 was designed to be spectrally compatible with other services such as HDSL, ADSL, and T1. As such, HDSL2 can be deployed without disrupting other DSL services in the local loop.

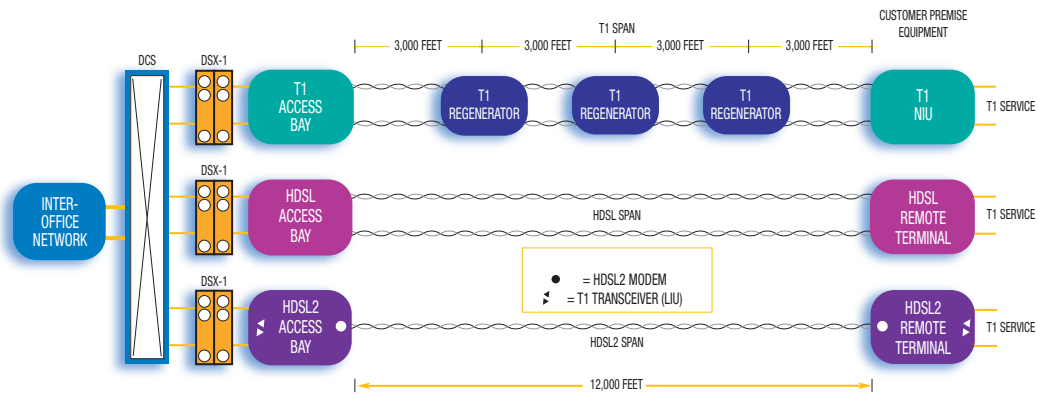
Figure 2:



HDSL2 CPE Modem in an Office Application

A HDSL2 CPE modem will allow symmetric data rates to an office setting of 1.544 Mbps. This can serve as a complete voice/data pipeline to an office. With a single HDSL2 CPE modem, users can get multiple phone lines and PC Ethernet connections.

Figure 3:



HDSL2 Based T1 Delivery

The original T1 carrier required two twisted pairs, plus repeaters spaced at 3,000-foot intervals. First-generation HDSL eliminated the need for repeaters in spans up to 12,000 feet using two twisted pairs. Now, HDSL2 delivers T1 payloads on a single twisted pair.

Features	Benefits
■ HDSL2	■ Allows symmetric T1 transport over a single twisted pair
■ Supports ANSI.T1E1.418	■ Enables interoperability with other HDSL2 standard based equipment
■ Automatic activation	■ Helps minimize the load on the system processor
■ Programmable	■ Supports both remote and central office applications
■ Adaptive equalization and echo canceller	■ Maintains excellent transmission performance with changing noise and line characteristics
■ OPTIS	■ Power spectral density designed to coexist with preexisting services in a multi-pair bundle
■ Generic µP port	■ Interfaces with either Intel or Motorola* 8-bit microcontrollers

Support Products

- SK70740/44 Datasheet
- HDSL2 White Paper
- Product Presentation
- HDSL2 Frequently Asked Questions (FAQs)

Intel® Internet Exchange Architecture

Intel® Internet Exchange Architecture (IXA) is an end-to-end family of high-performance, flexible and scalable hardware and software development building blocks designed to meet the growing performance requirements of today's networks. Based on programmable silicon and software building blocks, Intel® IXA solutions enable faster development, more cost-effective deployment, and future upgradability of network and communications systems. Additional information can be found at www.intel.com/IXA.

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