

V34 Modem Data Modulation Software

<http://www.vocal.com>

ANSI C
Analog Devices
DSP Group
LSI Logic ZSP

VOCAL Technologies modem software libraries include a complete range of ITU compliant modulations, optimized for execution on DSP architectures from leading silicon suppliers. This software is modular and can be executed as a single task under a variety of operating systems or it can execute standalone with its own kernel.

The line interface may be an analog front end (codec and DAA) or a digital interface such as T1/E1, Switched 56, and ISDN. The upper end of this software can provide a PPP, HDLC, V.14 or a direct binary framing layer. Higher data protocol layers, V.42 (including MNP 2-4), V.42 *bis* and MNP 5, are options as well.

This modulation family can be combined with other data modulations (V.90, V.32 *bis*/V.32, and V.22 *bis*/ V.22/V.23/V.21). Automatic modulation determination procedures (Automode) include those of V.8, V.8 *bis* and PN-2330. All data modulation software is fully compatible with VOCAL's facsimile, telephony, speech coder and multimedia systems.

Features:

- Fully compliant with ITU recommendations
- Supports 14 data rates in the range of 2400 bps and 33600 bps (increments of 2400 bps)
- Modem MIB support (RFC 1696)
- Optimized for high performance on leading edge DSP architectures
- Multi-tasking environment compatible
- Symbols rates for 2400, 2743, 2800, 3000, 3200, and 3429 symbols per second
- 200 bps auxiliary channel
- Asymmetric symbol and data rates
- State-of-the-art line probing analysis to automatically determine maximum channel capacity
- MSE fallback/fallforward threshold control to adjust tradeoff between higher data channel rates and symbol error rates

Configurations:

- DAA interface using linear codec at 9.6 kHz, 8.0 kHz, or 16.0 kHz sample rate
- Direct interface to 8.0 kHz PCM data stream (A-law or μ -law)
- PPP (RFC 1662), HDLC, V.14 and direct binary framing layer
- North American and International Dialing/Telephony dialing functions available
- Data protocol layer (V.42/MNP 2-4/V.42 *bis*/MNP 5) available
- VOCAL's Overall Modem Controller (OMC) Layer provides coordinated data modulation/data protocol operation relative to startup, shutdown, modulation retrains and modulation renegotiations.
- System can be combined with V.110 rate adaptation software.
- System can be combined with other modulations (V.90, V.32 *bis*, et al.) and automode procedures (V.8 *bis*, V.8 and PN-2330).
- Data/Facsimile/Voice Distinction upon startup is available. Complete facsimile systems, modulations (V34fax, V.17, et al.) and protocols (T.30), and speech coders available.
- Multiple Modulation Ports can be executed on a single DSP.

Example Resource Requirements (ADSP-2181):

- 16k words program memory, 16k words data memory using overlays between phase 2 and phase 3.
- 26 MIPS for 33,600 bps at the highest symbol rate using 8 kHz sampling rate.
- 27 MIPS for 33,600 bps at the highest symbol rate using 9.6 kHz sampling rate.
- Lower MIPS possible with less frequent adaptive coefficient updates

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