

**Technical Report  
TR-009**

**Channelization for DMT  
and CAP ADSL Line  
Codes: Packet Mode**

**March 1998**

**ABSTRACT:**

This technical report specifies the use of Physical Media Dependent channelization required to implement Packet Mode data transport over Discrete Multitone and Carrierless AM/PM ADSL Systems.

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## 1.0 Introduction

This technical report defines the specific uses of the channelization capabilities for two of the common ADSL physical layer implementations as required for transport of frames across an ADSL link. This report describes such channelization for the user data paths only, management and other channels are defined in the relevant PMD standards. This specification refers directly to existing and developing standards defined by the ANSI T1E1 subcommittee. Specifically, it defines channelization standards for systems implemented using the T1.413 DMT standard[1] and systems designed around the CAP line code and being defined by the CAP/QAM RADSL Ad Hoc group.

This is one document in a series of ADSL Forum technical reports that address transferring variable length frames over an ADSL link. Existing documents include:

- "Framing and Encapsulations Standards for ADSL: Packet Mode", ADSL Forum TR-003.

Future documents in this specification series will describe:

- packet mode reference model
- packet mode service model examples
- address management for FUNI mode transport (WT-016)
- channelization for DMT and CAP ADSL line codes (this document)
- signaling for SVC setup
- management requirements.

This series of documents is required to insure multivendor interoperability for ADSL links.

## 2.0 Discrete Multitone (DMT) PMD Specifics

This section proposes a channelization scheme for use in packet mode ADSL equipment using the ANSI T1.413 DMT PMD layer.

For packet mode systems, the channelization of different payload formats is handled using the ANSI T1.413 standards simplex and duplex channels. The following channels are defined for packet mode operation:

- One required data channel using AS0 downstream and LS0 upstream.
- One optional data channel using AS1 downstream and LS1 upstream.

For the transport of frames over DMT-PMD ADSL, all modems MUST use the AS0 channel downstream and the LS0 channel upstream. Channel AS1 may be used to provide an additional downstream channel and LS1 may be used to provide an additional upstream channel. Any channel may operate over the fast or interleaved paths.

A hybrid implementation of one or more Bit Synchronous (Plesiochronous) channels together with the packet mode channels is not precluded by the above. The bandwidth occupied by the Bit Synchronous channel must first be reserved before allocating the remaining bandwidth to the packet channel. Simultaneous hybrid operation of Packet Mode and ATM Mode over an ADSL line is precluded by this specification.

## 3.0 Carrierless AM/PM (CAP) PMD Specifics

The CAP-PMD defines a single downstream data channel and a single upstream data channel. All higher layer RFC1662 and FUNI data frames should be mapped to these interfaces. For the transport of data link frames in RFC1662 or FUNI mode, all frames MUST be sent over the asymmetric downstream and upstream channels as currently specified in [2]<sup>1</sup>.

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<sup>1</sup> T1E1/97-228 is expected to be finalized by the end of 1997.

## 4.0 References

- [1] ANSI T1.413-1995, Issue 1; Telecommunications - Network and Customer Installation Interfaces - Asymmetric Digital Subscriber Line (ADSL) Metallic Interface.
- [2] M Sorbara et al. "Interface Specification Recommendation for Carrierless AM/PM (CAP) Based Rate Adaptive Digital Subscriber Line (RADSL) Circuits - Baseline Text Proposal," ANSI T1E1/97-228.