

T1.413

ANSI

american national standards institute, inc.

Cable: Standards, New York

International Telex: 42 42 96 ANSI LM

**STATEMENT OF PATENT HOLDER CONCERNING THE USE OF PATENTED
DEVICE OR DESIGN IN CONJUNCTION WITH AN AMERICAN NATIONAL STANDARD**

Note: This form is to be used to record the statement of a patent holder whose patented device or design (pending or approved) may have to be used by a person or organization complying with an American National Standard. This statement is filed and retained pursuant to Section 7.4 of the American National Standards Institute Procedures for Management and Coordination of American National Standards.

1. Name of Patent Holder: Amati Communications Corporation

Address: Amati Communications Corporation
1975 W. El Camino Real #303 Telephone: 415-903-2350
Mt. View, CA 94040

Contact: Mr. Ron Carlini, VP of Strategic Business Development

2. Number and Description of Patent: (use extra sheet if necessary)

Patent Number (s): pending.

Title: Multicarrier Modulation Transmission System with Variable Delay
Invtrs: John M. Cioffi, Po Tong, James T. Aslanis, and Antoinette H. Gooch
Dated: filed, August 17, 1993

Description: This application's claims cover the use of the bandwidth-on-demand feature of the DMT line code to vary the latency and power of applied error-correcting codes to correspond to the varying requirements of different transported multimedia data signals in T1.413 ADSL. This patent also covers the tone-shuffle in T1.413 and its use in mitigating clipping effects in the low-latency ADSL path of T1.413.

Pertinent Claims: All.

Date of Expiration: August 2013-2014

Pending: Approved: (check one)

If pending, indicate date of application:
If patent holder is a transferee of original claimant, attach the transfer agreement.

3. Name of Proposed ANSI Standard: ANSI T1.413-1995 Network and Customer Installation Interfaces - Asymmetric Digital Subscriber Lines (ADSL) Metallic Interface.

List sections of standard to which patent claims relate: Chapters 5,6,7

4. Terms and Conditions of License

Are there any licenses? yes If so, how many? 2, at present.
Please attach a copy of license agreement, if any. (confidential)

5. Statement of Patent Holder

Please check one of the following statements:

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(c) An assurance of non-assertion will be filed with the Patent Office by the effective date of ANSI approval of the listed standard.

Signed: J.M. Cioffi (J.M. Cioffi) Chief Technical Officer

(Name)

(Title)

Company: Amatel Communications Inc.

Date: June 11, 1996



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1975 W. El Camino Real #303 Telephone: 415-903-2350
Mt. View, CA 94040

Contact: Mr. Ron Carlini, VP of Strategic Business Development

2. Number and Description of Patent: (use extra sheet if necessary)

Patent Number (s): pending.

Title: Mitigating Clipping and Quantization Effects in Digital Transmission Systems
Invtrs: Jacky S. Chow, John A.C. Bingham, Mark B. Flowers, John M. Cioffi
Dated: filed, December 13, 1993

Description: This application claims several variations of methods used to reduce effects of clipping with DMT. DMT signals, as they are close to optimum, exhibit necessarily high peak-to-average power ratio. This high PAR can significantly increase the cost of designed equipment. Amati has developed methods to reduce this effect that are claimed in this application, both for echo-cancelled and non echo-cancelled transmission.

Pertinent Claims: All.

Date of Expiration: 2013-2014

Pending: Approved: (check one)

If pending, indicate date of application:
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3. Name of Proposed ANSI Standard: ANSI T1.413-1995 Network and Customer Installation Interfaces - Asymmetric Digital Subscriber Lines (ADSL) Metallic Interface.

List sections of standard to which patent claims relate: Chapters 6,7,10

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Signed: J.M. Cioffi (J.M. Cioffi) Chief Technical Officer
(Name) (Title)
Company: Amati Communications Inc.
Date: June 11, 1996



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Mt. View, CA 94040

Contact: Mr. Ron Carlini, VP of Strategic Business Development

2. Number and Description of Patent: (use extra sheet if necessary)

Patent Number (s): US Patent #5,400,322

Title: Updating of Bit Allocations in a Multicarrier Modulation Transmission System
Invtrs: Ronald R. Hunt and Peter S. Chow
Dated: March 21, 1995

Description: This patent describes the specific protocol or mechanism placed into the T1.413 ADSL Standard for transmitter/receiver sharing of bandwidth-optimization results.

Pertinent Claims: All.

Date of Expiration: August 2010.

Pending: Approved: (check one)

If pending, indicate date of application:
If patent holder is a transferee of original claimant, attach the transfer agreement.

3. Name of Proposed ANSI Standard: ANSI T1.413-1995 Network and Customer Installation Interfaces - Asymmetric Digital Subscriber Lines (ADSL) Metallic Interface.

List sections of standard to which patent claims relate: Chapters 12 and 13.

4. Terms and Conditions of License

Are there any licenses? yes If so, how many? 3, at present.
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Signed:

J. M. Cioffi

(J.M. Cioffi)

Chief Technical Officer

(Name)

(Title)

Company: Amati Communications Inc.

Date: June 11, 1996



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1. Name of Patent Holder: **Stanford University**

Address: **Amati Communications Corporation, (Exclusive License and
Sublicense privilege)
1975 W. El Camino Real #303 Telephone: 415-903-2350
Mt. View, CA 94040**

Contact: **Mr. Ron Carlini, VP of Strategic Business Development**

2. Number and Description of Patent: (use extra sheet if necessary)

Patent Number (s): **US Patent #5,479,447**

Title: **Method and Apparatus for Adaptive Variable Bandwidth Optimization in
High-Speed Data Transmission of a Multicarrier Signal over Digital Subscriber Lines.**

Invtrs: **Peter S. Chow and John M. Cioffi**

Dated: **December 26, 1996**

Description: **This is patent fundamentally claims the adaptive continuous variation
of the transmitter that inherent in the T1.413 ADSL Standard.**

Pertinent Claims: **All.**

Date of Expiration: **December 2013.**

Pending: Approved: (check one)

If pending, indicate date of application:

If patent holder is a transferee of original claimant, attach the transfer agreement.

3. Name of Proposed ANSI Standard: **ANSI T1.413-1995 Network and Customer Installation
Interfaces - Asymmetric Digital Subscriber Lines (ADSL) Metallic Interface.**

List sections of standard to which patent claims relate: **Chapters 12 and 13.**

4. Terms and Conditions of License

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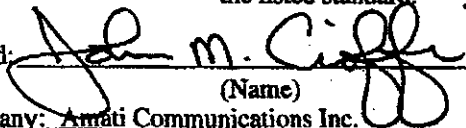
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Signed:



(J.M. Cioffi)

Chief Technical Officer

(Name)

(Title)

Company: Amati Communications Inc.

Date: June 11, 1996



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1. Name of Patent Holder: Stanford University

Address: Amati Communications Corporation, (Exclusive License and Sublicense privilege)
1975 W. El Camino Real #303 Telephone: 415-903-2350
Mt. View, CA 94040

Contact: Mr. Ron Carlini, VP of Strategic Business Development

2. Number and Description of Patent: (use extra sheet if necessary)

Patent Number (s): US Patent #5,285,474

Title: Method for Equalizing a Multicarrier Signal in a Multicarrier Communication System
Invtrs: Jacky S. Chow and John M. Cioffi
Dated: February 8, 1994

Description: This patent distinguishes DMT from other multicarrier methods, and describes a structure used to effect large reduction in the receiver complexity of DMT without performance loss. The FFT size in the standard is too small for best performance of multicarrier (to keep latency to a barely acceptable minimum). This patent's describes means for the receiver to recover the performance loss that would have occurred because of the small-size FFT.

Pertinent Claims: All.

Date of Expiration: June 16, 2012

Pending: Approved: (check one)

If pending, indicate date of application:
If patent holder is a transferee of original claimant, attach the transfer agreement.

3. Name of Proposed ANSI Standard: ANSI T1.413-1995 Network and Customer Installation Interfaces - Asymmetric Digital Subscriber Lines (ADSL) Metallic Interface.
List sections of standard to which patent claims relate: **Chapters 6-10.**

4. Terms and Conditions of License

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Signed: J. M. Cioffi (J.M. Cioffi) Chief Technical Officer
(Name) (Title)
Company: Amati Communications Inc.

Date: June 11, 1996



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Mt. View, CA 94040**

Contact: **Mr. Ron Carlini, VP of Strategic Business Development**

2. Number and Description of Patent: (use extra sheet if necessary)

Patent Number (s): **US Patent #5,317,596**

Title: **Method and Apparatus for Echo Cancellation with Discrete Multitone Modulation**
Invtrs: **Minnie Ho and John M. Cioffi**
Dated: **May 31, 1994**

Description: **This patent describes the structures needed for low-complexity echo cancellation in the T1.413 ADSL Standard. All Category 2 ADSL modems in T1.413 use DMT echo cancellation (and echo cancellation can be used with Category 1 ADSL modems).**

Pertinent Claims: **All**

Date of Expiration: **December 1, 2012**

Pending: Approved: (check one)

If pending, indicate date of application:

If patent holder is a transferee of original claimant, attach the transfer agreement.

3. Name of Proposed ANSI Standard: **ANSI T1.413-1995 Network and Customer Installation Interfaces - Asymmetric Digital Subscriber Lines (ADSL) Metallic Interface.**

List sections of standard to which patent claims relate: **Chapters 6-10,11.**

4. Terms and Conditions of License

Are there any licenses? yes If so, how many? 3, at present.
Please attach a copy of license agreement, if any. (**confidential**)

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Mt. View, CA 94040

Contact: Mr. Ron Carlini, VP of Strategic Business Development

2. Number and Description of Patent: (use extra sheet if necessary)

Patent Number (s): pending.

Title: Frame Synchronization in Multicarrier Transmission Systems
Invtrs: James T. Aslanis and Jacky S. Chow
Dated: filed, July 15, 1994

Description: This method claims the methods used for recovering from microinterruptions in the T1.413 ADSL Standard.

Pertinent Claims: All.

Date of Expiration: July 15, 2014

Pending: Approved: (check one)

If pending, indicate date of application:
If patent holder is a transferee of original claimant, attach the transfer agreement.

3. Name of Proposed ANSI Standard: ANSI T1.413-1995 Network and Customer Installation Interfaces - Asymmetric Digital Subscriber Lines (ADSL) Metallic Interface.

List sections of standard to which patent claims relate: Chapters 6,7

4. Terms and Conditions of License

Are there any licenses? yes If so, how many? 2, at present.
Please attach a copy of license agreement, if any. (confidential)

5. Statement of Patent Holder

Please check one of the following statements:

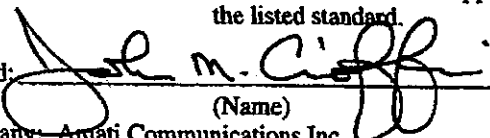
(check one)

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Signed:



(J.M. Cioffi)

Chief Technical Officer

(Name)

(Title)

Company: Amati Communications Inc.

Date: June 11, 1996

(Revised October 1975)



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Mt. View, CA 94040

Contact: Mr. Ron Carlini, VP of Strategic Business Development

2. Number and Description of Patent: (use extra sheet if necessary)

Patent Number (s): pending.

Title: Interpolated and Dithering Method used for reducing required ADS precision in ADSL echo-cancelled DMT

Invtors: Mark B. Flowers, Michael Agah, & John A.C. Bingham,

Dated: filed, June 1996

Description: This keeps the ADC/DAC precision to a minimum level, including 12-bit ADC at 4 Mhz.

Pertinent Claims: All.

Date of Expiration: June 2016

Pending: Approved: (check one)

If pending, indicate date of application:

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3. Name of Proposed ANSI Standard: ANSI T1.413-1995 Network and Customer Installation Interfaces - Asymmetric Digital Subscriber Lines (ADSL) Metallic Interface.

List sections of standard to which patent claims relate: Chapters 6,7,12, 13

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Contact: Mr. Ron Carlini, VP of Strategic Business Development

2. Number and Description of Patent: (use extra sheet if necessary)

Patent Number (s): pending.

Title: Efficient Address Generation for Convolutional Interleaving Using Minimal Amount of Memory
Invtrs: Po Tong
Dated: filed, February 1996

Description: The technique allows for reduction by a factor of 1/4 of the amount of RAM required for convolutional interleaving, specifically for the interleaving scheme used in the T1.413 ADSL Standard.

Pertinent Claims: All.

Date of Expiration: February 2016

Pending: Approved: (check one)

If pending, indicate date of application:

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3. Name of Proposed ANSI Standard: ANSI T1.413-1995 Network and Customer Installation Interfaces - Asymmetric Digital Subscriber Lines (ADSL) Metallic Interface.

List sections of standard to which patent claims relate: Chapters 6-9

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