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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/889,975	07/12/2004	Anton Monk	E010001USCIP2

CONFIRMATION NO. 6587

POA ACCEPTANCE LETTER



OC000000126244586

23446
MCANDREWS HELD & MALLOY, LTD
500 WEST MADISON STREET
SUITE 3400
CHICAGO, IL 60661

Date Mailed: 06/11/2021

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/08/2021.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/tmwilliams/

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

☒

Practitioners associated with Customer Number: 23,446

OR

☐

Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number

Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

☒

The address associated with Customer Number: 23,446

OR

☐

Firm or individual name

Address

City

State

Zip

Country

Telephone

Email

Assignee name and address: ENTROPIC COMMUNICATIONS, LLC
1345 AVENUE OF THE AMERICAS, 46TH FLOOR
NEW YORK, NY 10105

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of the practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee.

Signature /Andrea L. Gothing/

Date 2021-05-04

Name Andrea L. Gothing

Telephone 415-830-0613

Title Licensing Officer and Authorized Signatory, Entropic Communications, LLC

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 18 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt	
EFS ID:	42931635
Application Number:	10889975
International Application Number:	
Confirmation Number:	6587
Title of Invention:	BROADBAND CABLE NETWORK UTILIZING COMMON BIT-LOADING
First Named Inventor/Applicant Name:	Anton Monk
Customer Number:	23446
Filer:	Ronald H. Spuhler/Deborah Wilson
Filer Authorized By:	Ronald H. Spuhler
Attorney Docket Number:	E010001USCIP2
Receipt Date:	08-JUN-2021
Filing Date:	12-JUL-2004
Time Stamp:	16:41:44
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no				
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Assignee showing of ownership per 37 CFR 3.73	29236US03_373c_Statement_A IA-96.pdf	124001 8ba8e228404d1ac923a21c20e04a8ec9c95704ff	no	3
Warnings:					

Information:					
2	Power of Attorney	Entropic- POA_General_Assignee_Entrop icCommunications_ALG.pdf	487892 51444e06ae84b241bfc127dc47c5d6c646944dd7	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			611893		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: ENTROPIC COMMUNICATIONS, LLC

Application No./Patent No.: 10/889,975 Filed/Issue Date: 2004-07-12

Titled: BROADBAND CABLE NETWORK UTILIZING COMMON BIT-LOADING

ENTROPIC COMMUNICATIONS, LLC, a limited liability company

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
- ☐ The extent (by percentage) of its ownership interest is ____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
- B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Anton Monk, Brett Bernath, Ron Porat, Yusuf Ozturk To: ENTROPIC COMMUNICATIONS, INC.

The document was recorded in the United States Patent and Trademark Office at
Reel 015644, Frame 0823, or for which a copy thereof is attached.

2. From: EXCALIBUR ACQUISITION CORPORATION, ENTROPIC COMMUNICATIONS, INC. To: ENTROPIC COMMUNICATIONS, INC.

The document was recorded in the United States Patent and Trademark Office at
Reel 035706, Frame 0267, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: ROPIC COMMUNICATIONS, INC., EXCALIBUR SUBSIDIARY, LLC To: ENTROPIC COMMUNICATIONS, LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 035717, Frame 0628, or for which a copy thereof is attached.

4. From: ENTROPIC COMMUNICATIONS, LLC To: MAXLINEAR COMMUNICATIONS LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 055776, Frame 0482, or for which a copy thereof is attached.

5. From: MAXLINEAR COMMUNICATIONS LLC To: ENTROPIC COMMUNICATIONS, LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 055899, Frame 0291, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

- ☒ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.
- [NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Ronald H. Spuhler/

Signature

Ronald H. Spuhler

Printed or Typed Name

2021-06-08

Date

52245

Title or Registration Number

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/889,975	07/12/2004	Anton Monk	E010001USCIP2

77330
ENTROPIC COMMUNICATIONS, INC.
6350 SEQUENCE DRIVE
SAN DIEGO, CA 92121

CONFIRMATION NO. 6587
POWER OF ATTORNEY NOTICE



OC000000076632332

Date Mailed: 08/05/2015

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/24/2015.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/tlulu/



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/889,975	07/12/2004	Anton Monk	E010001USCIP2

CONFIRMATION NO. 6587

POA ACCEPTANCE LETTER



OC000000076632345

23446
MCANDREWS HELD & MALLOY, LTD
500 WEST MADISON STREET
SUITE 3400
CHICAGO, IL 60661

Date Mailed: 08/05/2015

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/24/2015.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/tlulu/

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint:

☒ Practitioners associated with the Customer Number:

23446

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:

☒ The address associated with Customer Number:

23446

OR

☐ Firm or Individual Name			
Address			
City	State	Zip	
Country			
Telephone	Email		

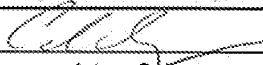
Assignee Name and Address:

Entropic Communications, LLC.
2051 Palomar Airport Road, Suite 100
Carlsbad, CA 92011

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	6/5/15
Name	Adam Spice	Telephone	
Title	Chief Financial Officer		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. This information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Electronic Acknowledgement Receipt	
EFS ID:	23018095
Application Number:	10889975
International Application Number:	
Confirmation Number:	6587
Title of Invention:	BROADBAND CABLE NETWORK UTILIZING COMMON BIT-LOADING
First Named Inventor/Applicant Name:	Anton Monk
Customer Number:	77330
Filer:	Christopher C. Winslade/Deb Wilson
Filer Authorized By:	Christopher C. Winslade
Attorney Docket Number:	E010001USCIP2
Receipt Date:	24-JUL-2015
Filing Date:	12-JUL-2004
Time Stamp:	15:13:16
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment		no			
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Assignee showing of ownership per 37 CFR 3.73	29236US03_373b_Statement_sb96.pdf	431441 ac5dae844131db4ec4609f41244b07aebfc958f7	no	2
Warnings:					
Information:					

2	Power of Attorney	Entropic_POA_PreAIA.pdf	340881 8107f4c6d5473b527f97e45769199b81a37aad1b	no	2
Warnings:					
Information:					
Total Files Size (in bytes):				772322	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Anton Monk, Brett Bernath, Ron Porat, Yusuf Ozturk

Application No./Patent No.: 7,889,759

Filed/Issue Date: 02/15/2011

Titled: **BROADBAND CABLE NETWORK UTILIZING COMMON BIT-LOADING**

Entropic Communications, LLC

, a corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☒ the assignee of the entire right, title, and interest in;
2. ☐ an assignee of less than the entire right, title, and interest in
(The extent (by percentage) of its ownership interest is _____ %); or
3. ☐ the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy therefore is attached.

OR

- B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Anton Monk, Brett Bernath, Ron Porat, Yusuf C To: ENTROPIC COMMUNICATIONS, INC.

The document was recorded in the United States Patent and Trademark Office at
Reel 015644, Frame 0823, or for which a copy thereof is attached.

2. From: ENTROPIC COMMUNICATIONS, INC. and EX To: ENTROPIC COMMUNICATIONS, INC.

The document was recorded in the United States Patent and Trademark Office at
Reel 035706, Frame 0267, or for which a copy thereof is attached.

3. From: ENTROPIC COMMUNICATIONS, INC. and EX To: ENTROPIC COMMUNICATIONS, LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 035717, Frame 0628, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

- ☒ As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Christopher C. Winslade/

07/24/2015

Signature

Date

Christopher C. Winslade, Reg. No. 36308

Attorney for Applicant

Printed or Typed Name

Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

To:	Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
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In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Southern District of California on the following: X Patents or Trademarks:

DOCKET NO.	DATE FILED	US District Court Southern District of California
3:13-cv-01102-WQH-BGS	5/8/13	San Diego, CA
PLAINTIFF	DEFENDANT	
Entropic Communications, Inc.	ViXS Systems, Inc., et al.	
PATENT OR TRADEMARK NO.	PATENT OR TRADEMARK NO.	PATENT OR TRADEMARK NO.
1. 7,295,518	6.	11.
2. 7,889,759	7.	12.
3.	8.	13.
4.	9.	14.
5.	10.	15.

In the above-entitled case, the following patents(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY	
	<u> </u> Amendment <u> </u> Answer <u> </u> Cross Bill <u> </u> Other Pleading	
PATENT OR TRADEMARK NO.	PATENT OR TRADEMARK NO.	PATENT OR TRADEMARK NO.
1.	6.	11.
2.	7.	12.
3.	8.	13.
4.	9.	14.
5.	10.	15.

In the above-entitled case, the following decision has been rendered or judgment issued:

DECISION/JUDGMENT		
CLERK	(BY) DEPUTY CLERK	DATE
W. Samuel Hamrick, Jr.		

COVINGTON & BURLING LLP

BEIJING BRUSSELS LONDON NEW YORK
SAN DIEGO SAN FRANCISCO SEOUL
SHANGHAI SILICON VALLEY WASHINGTON

ERIC A. CALIGIURI
9191 TOWNE CENTRE DRIVE
6TH FLOOR
SAN DIEGO, CA 92122-1225
T 858.678.1808
ecaligiuri@cov.com

June 16, 2014

VIA FIRST CLASS MAIL

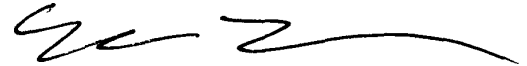
Director of the U.S. Patent and Trademark Office
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA

Re: United States District Court for the Southern District of California
Case No. 3:13-cv-1102-CAB-BGS

Dear Director:

It recently came to our attention that the enclosed "Report on the Filing or Determination of an Action Regarding a Patent or Trademark" from case no. 3:13-cv-1102-CAB-BGS in the United States District Court for the Southern District of California does not appear in the image file wrapper on the Public Pair website. To ensure that the PTO's records are complete, we enclose that report with this letter. The Report relates to U.S. Patents nos. 7,295,518 and 7,889,759.

Sincerely,



Eric A. Caligiuri

EAC

Enclosure

SD: 15980-1

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,889,759 B2
APPLICATION NO. : 10/889975
DATED : February 15, 2011
INVENTOR(S) : Anton Monk et al.

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 11, Line Number 10, it reads “product error rate”; however, it should read “packet error rate”;

AND

Column 13, Line Number 54, it reads “product-error rate”; however, it should read “packet error rate”;

AND

Column 15, Line Number 24, it reads “product-error rate”; however, it should read “packet error rate”;

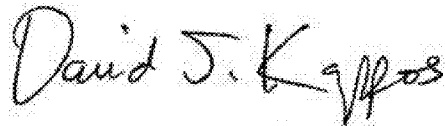
AND

Column 16, Line Number 64, it reads “product-error rate”; however, it should read “packet error rate”;

AND

Column 18, Line Number 3, it reads “product-error rate”; however, it should read “packet error rate”.

Signed and Sealed this
Fourteenth Day of June, 2011

A handwritten signature in black ink, reading "David J. Kappos". The signature is written in a cursive, flowing style with a large initial 'D' and 'K'.

David J. Kappos
Director of the United States Patent and Trademark Office

SPE RESPONSE FOR CERTIFICATE OF CORRECTION

DATE : 4/13/2011 Paper No.: _____
 TO SPE OF : ART UNIT 2464
 SUBJECT : Request for Certificate of Correction for Appl. No.: 10/889975 Patent No.: 7889759 B2
 CofC mailroom date: 4/5/2011

Please respond to this request for a certificate of correction within 7 days.

FOR IFW FILES:

Please review the requested changes/corrections as shown in the **COCIN** document(s) in the IFW application image. No new matter should be introduced, nor should the scope or meaning of the claims be changed.

Please complete the response (see below) and forward the completed response to scanning using document code **COCX**.

FOR PAPER FILES:

Please review the requested changes/corrections as shown in the attached certificate of correction. Please complete this form (see below) and forward it with the file to:

**Certificates of Correction Branch (CofC)
 Randolph Square – 9D10-A
 Palm Location 7580**

Virginia Tolbert
 Certificates of Correction Branch
 571-272-0460

Thank You For Your Assistance

The request for issuing the above-identified correction(s) is hereby:

Note your decision on the appropriate box.

☒ **Approved**

All changes apply.

☐ **Approved in Part**

Specify below which changes **do not** apply.

☐ **Denied**

State the reasons for denial below.

Comments: _____

/ACKY Ngao/
SPE

Art Unit

SPE RESPONSE FOR CERTIFICATE OF CORRECTION

DATE : 4/13/2011 Paper No.: _____
 TO SPE OF : ART UNIT 2464
 SUBJECT : Request for Certificate of Correction for Appl. No.: 10/889975 Patent No.: 7889759C2
 CofC mailroom date: 4/5/2011

Please respond to this request for a certificate of correction within 7 days.

FOR IFW FILES:

Please review the requested changes/corrections as shown in the **COCIN** document(s) in the IFW application image. No new matter should be introduced, nor should the scope or meaning of the claims be changed.

Please complete the response (see below) and forward the completed response to scanning using document code **COCX**.

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Please review the requested changes/corrections as shown in the attached certificate of correction. Please complete this form (see below) and forward it with the file to:

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 Randolph Square – 9D10-A
 Palm Location 7580**

**Virginia Tolbert
 Certificates of Correction Branch
 571-272-0460**

Thank You For Your Assistance

The request for issuing the above-identified correction(s) is hereby:

Note your decision on the appropriate box.

- | | |
|--|---|
| ☐ Approved | All changes apply. |
| ☐ Approved in Part | Specify below which changes do not apply. |
| ☐ Denied | State the reasons for denial below. |

Comments: _____

SPE

Art Unit

Entropic Ref. No.: E010001USCIP2

PATENT
Serial No. 10/889,975

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent No.:	7,889,759	)	
		)	
Issued:	February 15, 2011	)	
		)	
App. No.:	10/889,975	)	
		)	
Filed:	12-Jul-2004	)	
		)	
For:	Broadband Cable Network Utilizing	)	Inventor(s):
	Common Bit-Loading	)	Anton Monk
		)	Brett Bernath
		)	Yusuf Ozturk
		)	Ron Porat
		)	

ATTN: Certificate of Correction Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REQUEST FOR CERTIFICATE OF CORRECTION

UNDER 37 C.F.R. § 1.323

Pursuant to the Provisions of 37 C.F.R. §1.323 Assignee of record, Entropic Communications, Inc., respectfully requests correction by the U.S. Patent and Trademark Office (“USPTO”) of the above-identified U.S. patent and submits the attached PTO/SB/44 form.

I hereby certify that this correspondence is being electronically deposited with the Commissioner for Patents through the USPTO electronic filing system, on:

April 5, 2011
(Date of Deposit)

Tim Ellis
(Name of Person Making Deposit)

/Tim Ellis/
(Signature)

Upon review of U.S. Patent No.: 7,889,759, the following errors indicated in the attached PTO/SB/44 form were found. The corresponding patent column and line numbers in the application for the patent are as follows:

- Patent Column 11, Line Number 10, it reads "product error rate"; however, it should read "packet error rate";
- Patent Column 15, Line Number 24, it reads "product-error rate"; however, it should read "packet error rate";
- Patent Column 15, Line Number 24, it reads "product-error rate"; however, it should read "packet error rate";
- Patent Column 16, Line Number 64, it reads "product-error rate"; however, it should read "packet error rate"; AND
- Patent Column 18, Line Number 3, it reads "product-error rate"; however, it should read "packet error rate".

Applicant respectfully requests the above corrections as indicated above, and indicated on the attached PTO/SB/44 form. Applicant believes these mistakes are clerical in nature and the corrections neither constitutes new matter nor requires reexamination of the patent.

Accordingly, it is respectfully requested that the attached PTO/SB/44 form be duly certified and returned to the undersigned attorney at the earliest convenience of the Office.

The Commissioner is hereby authorized to charge any fees associated with this communication, or credit any overpayment to Deposit Account No. 50-4613.

Respectfully submitted,

Dated: April 5, 2011

By: /Bruce W. Greenhaus/
Bruce W. Greenhaus
Attorney for Applicants
Registration No. 37,339

Entropic Communications, Inc.
6290 Sequence Drive
San Diego, California 92121
Telephone: (619) 980-2612
e-mail address: PatentTeam@entropic.com

**UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION**

Page 1 of 1

PATENT NO. : 7,889,759

APPLICATION NO.: 10/889,975

ISSUE DATE : February 15, 2011

INVENTOR(S) : Anton MONK; Brett BERNATH; Yusuf OZTURK, and Ron PORAT

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Patent Column 11, Line Number 10, it reads "product error rate"; however, it should read "packet error rate";

AND

Patent Column 13, Line Number 54, it reads "product-error rate"; however, it should read "packet error rate";

AND

Patent Column 15, Line Number 24, it reads "product-error rate"; however, it should read "packet error rate";

AND

Patent Column 16, Line Number 64, it reads "product-error rate"; however, it should read "packet error rate";

AND

Patent Column 18, Line Number 3, it reads "product-error rate"; however, it should read "packet error rate".

MAILING ADDRESS OF SENDER (Please do not use customer number below):

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
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4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal				
Application Number:		10889975		
Filing Date:		12-Jul-2004		
Title of Invention:		BROADBAND CABLE NETWORK UTILIZING COMMON BIT-LOADING		
First Named Inventor/Applicant Name:		Anton Monk		
Filer:		Bruce Wayne Greenhaus/Tim Ellis		
Attorney Docket Number:		E010001USCIP2		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Certificate of correction	1811	1	100	100
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				100

Electronic Acknowledgement Receipt	
EFS ID:	9812408
Application Number:	10889975
International Application Number:	
Confirmation Number:	6587
Title of Invention:	BROADBAND CABLE NETWORK UTILIZING COMMON BIT-LOADING
First Named Inventor/Applicant Name:	Anton Monk
Customer Number:	77330
Filer:	Bruce Wayne Greenhaus/Tim Ellis
Filer Authorized By:	Bruce Wayne Greenhaus
Attorney Docket Number:	E010001USCIP2
Receipt Date:	05-APR-2011
Filing Date:	12-JUL-2004
Time Stamp:	14:55:50
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$100
RAM confirmation Number	1283
Deposit Account	504613
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees) Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Certificate of Correction	E010001USCIP2_Request-for-Certificate-of-Correction_4-5-2011.pdf	98172	no	2
			82e9737952508b2606cb0a6e7465ce4f596736df		

Warnings:

Information:

2	Request for Certificate of Correction	E010001USCIP2_sb0044-form_4-5-2011.pdf	231313	no	2
			fd5b4a2564248fb260d3cd38cfd2f59a9b9e5a		

Warnings:

Information:

3	Fee Worksheet (PTO-875)	fee-info.pdf	30177	no	2
			c2301156cd8be8723d2325a4a3d15512bf66e390		

Warnings:

Information:

Total Files Size (in bytes):	359662
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/889,975	02/15/2011	7889759	E010001USCIP2	6587

77330 7590 01/26/2011
ENTROPIC COMMUNICATIONS, INC.
6290 SEQUENCE DRIVE
SAN DIEGO, CA 92121

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 1921 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Anton Monk, San Diego, CA;
Brett Bernath, San Diego, CA;
Yusuf Ozturk, San Diego, CA;
Ron Porat, San Diego, CA;

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

77330 7590 10/06/2010

ENTROPIC COMMUNICATIONS, INC.
6290 SEQUENCE DRIVE
SAN DIEGO, CA 92121

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission Via EFS-Web

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

Tim Ellis	(Depositor's name)
/Tim Ellis/	(Signature)
January 5, 2011	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/889,975	07/12/2004	Anton Monk	E010001USCIP2	6587

TITLE OF INVENTION: BROADBAND CABLE NETWORK UTILIZING COMMON BIT-LOADING

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	01/06/2011

EXAMINER	ART UNIT	CLASS-SUBCLASS
SINKANTARAKORN, PAWARIS	2464	370-465000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Bruce W. Greenhaus

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

Entropic Communications, Inc.

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

San Diego, CA

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☒ Issue Fee
- ☒ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (**Please first reapply any previously paid issue fee shown above**)

- ☐ A check is enclosed.
- ☒ Payment by USPTO Deposit Account No.: 504613
- ☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 504613 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature /Bruce W. Greenhaus/

Date January 5, 2011

Typed or printed name Bruce W. Greenhaus

Registration No. 37339

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Electronic Patent Application Fee Transmittal				
Application Number:		10889975		
Filing Date:		12-Jul-2004		
Title of Invention:		BROADBAND CABLE NETWORK UTILIZING COMMON BIT-LOADING		
First Named Inventor/Applicant Name:		Anton Monk		
Filer:		Bruce Wayne Greenhaus/Tim Ellis		
Attorney Docket Number:		E010001USCIP2		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	1501	1	1510	1510
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1810

Electronic Acknowledgement Receipt	
EFS ID:	9172143
Application Number:	10889975
International Application Number:	
Confirmation Number:	6587
Title of Invention:	BROADBAND CABLE NETWORK UTILIZING COMMON BIT-LOADING
First Named Inventor/Applicant Name:	Anton Monk
Customer Number:	77330
Filer:	Bruce Wayne Greenhaus/Tim Ellis
Filer Authorized By:	Bruce Wayne Greenhaus
Attorney Docket Number:	E010001USCIP2
Receipt Date:	05-JAN-2011
Filing Date:	12-JUL-2004
Time Stamp:	17:25:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$1810
RAM confirmation Number	3969
Deposit Account	504613
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)					
Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)					
Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)					
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	E010001USCIP2_Issue-Fee-Payment_1-5-2011.pdf	104741	no	1
			477637be31ecb8b59ebbd1729d8ed8477701ec8		
Warnings:					
Information:					
2	Fee Worksheet (PTO-875)	fee-info.pdf	32200	no	2
			c643a08fba1262caddea99871bf995bda3871c866		
Warnings:					
Information:					
Total Files Size (in bytes):			136941		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



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 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov



Bib Data Sheet

CONFIRMATION NO. 6587

SERIAL NUMBER 10/889,975	FILING OR 371(c) DATE 07/12/2004 RULE	CLASS 370	GROUP ART UNIT 2464	ATTORNEY DOCKET NO. E010001USCIP2
------------------------------------	---	---------------------	-------------------------------	---

APPLICANTS

Anton Monk, San Diego, CA;
 Brett Bernath, San Diego, CA;
 Yusuf Ozturk, San Diego, CA;
 Ron Porat, San Diego, CA;

**** CONTINUING DATA *******

This application is a CIP of 10/778,505 02/13/2004 ABN
 which is a CON of 09/910,412 07/21/2001 PAT 7,594,249
 which claims benefit of 60/288,967 05/04/2001
 This application 10/889,975
 is a CIP of 10/322,834 12/18/2002 PAT 7,295,518
 which is a CON of 10/230,687 08/29/2002 ABN
 which claims benefit of 60/316,820 08/30/2001
 and claims benefit of 60/363,420 03/12/2002
 and claims benefit of 60/385,361 06/03/2002

**** FOREIGN APPLICATIONS *********IF REQUIRED, FOREIGN FILING LICENSE GRANTED****** 08/24/2004**

Foreign Priority claimed ☐ yes ☐ no	STATE OR COUNTRY CA	SHEETS DRAWING 11	TOTAL CLAIMS 81	INDEPENDENT CLAIMS 5
35 USC 119 (a-d) conditions met ☐ yes ☐ no ☐ Met after Allowance				
Verified and Acknowledged	Examiner's Signature	Initials		

ADDRESS

77330

TITLE

BROADBAND CABLE NETWORK UTILIZING COMMON BIT-LOADING

FILING FEE RECEIVED 4370	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees
		☐ 1.16 Fees (Filing)
		☐ 1.17 Fees (Processing Ext. of time)
		☐ 1.18 Fees (Issue)
		☐ Other _____
		☐ Credit



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UNITED STATES DEPARTMENT OF COMMERCE
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Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

77330 7590 10/06/2010

ENTROPIC COMMUNICATIONS, INC.
6290 SEQUENCE DRIVE
SAN DIEGO, CA 92121

EXAMINER

SINKANTARAKORN, PAWARIS

ART UNIT

PAPER NUMBER

2464

DATE MAILED: 10/06/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/889,975	07/12/2004	Anton Monk	E010001USCIP2	6587

TITLE OF INVENTION: BROADBAND CABLE NETWORK UTILIZING COMMON BIT-LOADING

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	01/06/2011

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

77330 7590 10/06/2010

ENTROPIC COMMUNICATIONS, INC.
6290 SEQUENCE DRIVE
SAN DIEGO, CA 92121

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/889,975	07/12/2004	Anton Monk	E010001USCIP2	6587

TITLE OF INVENTION: BROADBAND CABLE NETWORK UTILIZING COMMON BIT-LOADING

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	01/06/2011

EXAMINER	ART UNIT	CLASS-SUBCLASS
SINKANTARAKORN, PAWARIS	2464	370-465000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
 (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/889,975	07/12/2004	Anton Monk	E010001USCIP2	6587
77330	7590	10/06/2010	EXAMINER	
ENTROPIC COMMUNICATIONS, INC. 6290 SEQUENCE DRIVE SAN DIEGO, CA 92121			SINKANTARAKORN, PAWARIS	
			ART UNIT	PAPER NUMBER
			2464	
DATE MAILED: 10/06/2010				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 1607 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 1607 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	10/889,975	MONK ET AL.	
	Examiner	Art Unit	
	Pao Sinkantarakorn	2464	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 7/7/2010 (Renumbered 1-17,20,18,19, and 21-23, respectively).

2. ☒ The allowed claim(s) is/are 7,10,13,23,26,29,31-34,38,41,44,48-51,56,60,64,72,75, and 78 (Renumbered 1-17,20,18,19, and 21-23, respectively).

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892) 2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____ 4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material	5. ☐ Notice of Informal Patent Application 6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ 7. ☒ Examiner's Amendment/Comment 8. ☐ Examiner's Statement of Reasons for Allowance 9. ☐ Other _____.
--	--

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Bruce Greenhaus on September 30, 2010.

The application has been amended as follows:

Regarding claim 38 line 1, the limitation "claim 30" is replaced with ---claim 31---.

Regarding claim 41 line 1, the limitation "claim 30" is replaced with ---claim 31---.

Regarding claim 44 line 1, the limitation "claim 30" is replaced with ---claim 31---.

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pao Sinkantarakorn whose telephone number is (571) 270-1424. The examiner can normally be reached on Monday-Thursday 9:00am-3:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2464

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. S./
Examiner, Art Unit 2464
9/28/2010

/Ricky Ngo/
Supervisory Patent Examiner, Art
Unit 2464

Index of Claims 	Application/Control No. 10889975	Applicant(s)/Patent Under Reexamination MONK ET AL.
	Examiner Pao Sinkantarakorn	Art Unit 2464

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant				☐ CPA		☐ T.D.		☐ R.1.47	
CLAIM		DATE							
Final	Original	04/05/2010	09/28/2010						
	1	✓	-						
	2	✓	-						
	3	✓	-						
	4	✓	-						
	5	✓	-						
	6	✓	-						
1	7	O	=						
	8	✓	-						
	9	✓	-						
2	10	O	=						
	11	✓	-						
	12	✓	-						
3	13	O	=						
	14	✓	-						
	15	✓	-						
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8	32	O	=						
9	33	O	=						
10	34	O	=						
	35	✓	-						
	36	✓	-						

Index of Claims 	Application/Control No. 10889975	Applicant(s)/Patent Under Reexamination MONK ET AL.
	Examiner Pao Sinkantarakorn	Art Unit 2464

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant				☐ CPA		☐ T.D.		☐ R.1.47	
CLAIM		DATE							
Final	Original	04/05/2010	09/28/2010						
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	39	✓	-						
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12	41	O	=						
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	46	✓	-						
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	70	✓	-						
	71	✓	-						
21	72	O	=						

<i>Index of Claims</i> 	Application/Control No. 10889975	Applicant(s)/Patent Under Reexamination MONK ET AL.
	Examiner Pao Sinkantarakorn	Art Unit 2464

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant				☐ CPA		☐ T.D.		☐ R.1.47	
CLAIM		DATE							
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	74	✓	-						
22	75	O	=						
	76	✓	-						
	77	✓	-						
23	78	O	=						
	79	✓	-						
	80	✓	-						
	81	✓	-						

Search Notes 	Application/Control No. 10889975	Applicant(s)/Patent Under Reexamination MONK ET AL.
	Examiner Pao Sinkantarakorn	Art Unit 2464

SEARCHED			
Class	Subclass	Date	Examiner
370	252,253,465	4/5/2010	PS
455	61,63.1,67.11	4/5/2010	PS
Above	Updated	9/28/2010	PS

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Search	4/5/2010	PS
Inventorship Search	4/5/2010	PS
Updated EAST Search	9/28/2010	PS
Updated Inventorship Search	9/28/2010	PS
Interference Search	9/28/2010	PS

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
370	All	9/28/2010	PS
455	All	9/28/2010	PS

/Pao Sinkantarakorn/
Examiner.Art Unit 2464

EAST Search History**EAST Search History (Interference)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L76	357	(common\$5 near4 modulat\$7) same (SNR (signal near3 noise))	US- PGPUB; USPAT; UPAD	OR	ON	2010/09/28 11:26
L77	10	76.clm.	US- PGPUB; USPAT; UPAD	OR	ON	2010/09/28 11:26

9/ 28/ 2010 1:35:37 PM

**C:\ Documents and Settings\ psinkantarakorn\ My Documents\ EAST
\ Workspaces\ 10889975.wsp**

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	10/889975	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L2	267	(bit adj load\$5) near7 modulat\$7	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L3	40	L2 and coax\$7	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L4	7608491	(@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L5	12	L3 and L4	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L6	1106	common near5 (modulationg modulating)	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L7	44	(select\$5 choos\$5 chose\$2 determin\$8) near7 common near5 (modulationg modulating)	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L8	18	L4 and L7	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L9	17917	(select\$5 choos\$5 chose\$2 determin\$8) near7 (modulationg modulating)	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L10	66654	(select\$5 choos\$5 chose\$2 determin\$8) near7 (modulation modulating)	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L11	32011	modulat\$5 with (QPSK QAM)	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L12	9548	L10 and L11	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L13	2600	L4 and L12	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39

L14	655	L13 and (broadband coax\$7)	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L15	777	(select\$5 choos\$5 chose\$2 determin\$8) near7 (modulation modulating) near7 (most major\$7 (high\$5 near3 number))	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L16	324	L15 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L17	80	L16 and (modulat\$5 with (QPSK QAM))	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L18	3618	((modulation modulating) near3 (scheme techniq\$5 method)) near7 (most majority (high\$5 near3 number) common\$5)	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L19	1348	L18 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L20	584	L18 same (multiple plural\$7)	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L21	161	L20 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L22	6	09/205205	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L23	10149	common near5 modulat\$7	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L24	4750	L23 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L25	5958	common adj5 modulat\$7	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L26	2720	L25 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L27	726	L26 and ("370".clas. "375".clas. "725".clas. "709".clas. "714".clas.)	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39

L28	1815	((most more) near5 (use popular applied)) near7 (modulat\$7)	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L29	659	L28 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L30	148	(determin\$5 select\$5 choos\$5 chose\$2) near7 ((most more) near5 (use popular applied)) near7 (modulat\$7)	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L31	50	L30 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L32	197	(probe inquir\$5) with (modulat\$7 near5 (techni\$5 schem\$7))	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L33	85	L32 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L34	50	common near3 (bit adj load \$5)	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L35	1	10/889975	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L36	544	receiv\$5 with ((modulat\$5) near4 (techni\$7 schem\$7)) with (CSI CQI (channel near3 (stat\$5 quality)))	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L37	544	receiv\$5 with ((modulat\$5) near4 (techni\$7 schem\$7)) with (CSI CQI (channel near3 (stat\$5 quality)))	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L38	28	L37 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L39	202	receiv\$5 with ((modulat\$5) near4 (method type)) with (CSI CQI (channel near3 (stat\$5 quality)))	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L40	33	L39 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L41	9130	(respond\$5 response reply\$5) with (modulat\$7 near4 (techni\$7 schem\$7 method type))	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39

L42	3831	L41 and (@pd< "20010504" or @rlad< "20010504" or @ptad< "20010504" or @prad< "20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L43	5936	(respond\$5 response reply\$5) near7 (modulat\$7 near4 (techni\$7 schem\$7 method type))	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L44	333	(respond\$5 response reply\$5) near7 (modulat\$7 near4 (techni\$7 schem\$7 method type)) near7 (receiv\$5 terminal mobile MS CPE)	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L45	122	L44 and (@pd< "20010504" or @rlad< "20010504" or @ptad< "20010504" or @prad< "20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L46	43711	(transmit\$5 transmission send \$5 sent) near7 (modulat\$7 near4 (info information techni\$7 schem\$7 method type))	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L47	17677	L46 and (@pd< "20010504" or @rlad< "20010504" or @ptad< "20010504" or @prad< "20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L48	19458	L46.ab. L46.bsum.	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L49	8177	L48 and (@pd< "20010504" or @rlad< "20010504" or @ptad< "20010504" or @prad< "20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L50	18354	(transmit\$5 transmission send \$5 sent) near7 (modulat\$7 near4 (info information))	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L51	30943	(transmit\$5 transmission send \$5 sent) near7 (modulat\$7 near4 (techni\$7 schem\$7 method type))	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L52	1175	L51 with (CSI CQI (channel near3 (stat\$5 quality)))	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L53	112	L52 and (@pd< "20010504" or @rlad< "20010504" or @ptad< "20010504" or @prad< "20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L54	29039	(determin\$7 detect\$7 identif \$7) near7 (modulat\$7 near4 (techni\$7 schem\$7 method type))	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39

L55	11892	L54 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L56	325	(notif\$10) near7 (modulat\$7 near4 (techni\$7 schem\$7 method type))	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L57	39	L56 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L58	97	(CPE BCN) near7 (modulat\$7 near4 (techni\$7 schem\$7 method type))	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L59	2513	(CPE BCN) and (modulat\$7 near4 (techni\$7 schem\$7 method type))	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L60	47	L58 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L61	1	12/554608	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L62	389	SNR with BER with PER	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L63	46	L62 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L64	1829	370/252-253.ccls. and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L65	1326	370/465.ccls. and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L66	109	455/61.ccls. and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39
L67	764	455/63.1.ccls. and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/09/28 09:39

L68	1124	455/67.11.ccls. and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US- PGPUB; USPAT	OR	ON	2010/09/28 09:39
L69	1125	(select\$5 choos\$5 chose\$2 determin\$8) near7 (modulation modulating) near7 (common most major\$7 (high\$5 near3 number))	US- PGPUB; USPAT	OR	ON	2010/09/28 09:39
L70	6	L64 and L69	US- PGPUB; USPAT	OR	ON	2010/09/28 09:39
L71	3	L65 and L69	US- PGPUB; USPAT	OR	ON	2010/09/28 09:39
L72	0	L66 and L69	US- PGPUB; USPAT	OR	ON	2010/09/28 09:39
L73	2	L67 and L69	US- PGPUB; USPAT	OR	ON	2010/09/28 09:39
L74	6	L68 and L69	US- PGPUB; USPAT	OR	ON	2010/09/28 09:39
L75	58	common near7 (bit adj load \$5)	US- PGPUB; USPAT	OR	ON	2010/09/28 09:39

9/ 28/ 2010 1:36:48 PM

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:
Anton MONK et al.

Serial No.: 10/889,975

Filed: 12-Jul-2004

For: Broadband cable network utilizing
common bit-loading

Group Art Unit: 2464

Confirmation No. 6587

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attention: **SINKANTARAKORN, PAWARIS**
Examiner

Dear Examiner:

In response to the Office Action dated April 7, 2010, please note the following
remarks and comments:

Amendments to the Claims begin on page 2 of this paper.

Remarks/Comments begin on page 22 of this paper.

I hereby certify that this correspondence is
being electronically deposited with the Commissioner
for Patents through the USPTO electronic filing
system, on:

July 7, 2010

(Date of Deposit)

Tim Ellis

(Name of Person Making Deposit)

/Tim Ellis/

(Signature)

Amendments to the Claims:

1-6. (Cancelled)

7. (Currently Amended) ~~The method of claim 6~~ A method for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in a broadband cable network ("BCN"), the method comprising:

transmitting a probe signal from a transmitting node within the plurality of nodes to a sub-plurality of receiving nodes within the plurality of nodes;

receiving a plurality of response signals from the sub-plurality of receiving nodes wherein each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node; and

determining the common bit-loading modulation scheme from the received plurality of response signals;

receiving the probe signal at one receiving node of the plurality of receiving nodes through a channel path of transmission;

determining the transmission characteristics of the channel path at the one receiving node; and

transmitting a response signal from the one receiving node to the transmitting node,

wherein the transmission characteristics of the channel path are determined by measuring the signal-to-noise ("SNR") characteristics of the received probe signal at the one receiving node and

wherein determining a common bit-loading modulation scheme includes:

comparing a plurality of bit-loading modulation schemes from the
corresponding received plurality of response signals; and

determining the common bit-loading modulation scheme in response to
comparing the plurality of bit-loaded modulation schemes.

8-9. (Cancelled)

10. (Currently Amended) ~~The method of claim 9~~ A method for determining a
common bit-loading modulation scheme for communicating between a plurality of nodes in a
broadband cable network ("BCN"), the method comprising:

transmitting a probe signal from a transmitting node within the plurality of nodes to a
sub-plurality of receiving nodes within the plurality of nodes;

receiving a plurality of response signals from the sub-plurality of receiving nodes
wherein each response signal includes a bit-loading modulation scheme determined by a
corresponding receiving node;

determining the common bit-loading modulation scheme from the received plurality
of response signals;

receiving the probe signal at one receiving node of the plurality of receiving nodes
through a channel path of transmission;

determining the transmission characteristics of the channel path at the one receiving
node;

transmitting a response signal from the one receiving node to the transmitting node,
wherein the transmission characteristics of the channel path are determined by measuring the

bit-error rate ("BER") characteristics of the received probe signal at the one receiving node and

generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path,

wherein determining a common bit-loading modulation scheme includes:

comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

11-12. (Cancelled)

13. (Currently Amended) ~~The method of claim 12,~~ A method for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in a broadband cable network ("BCN"), the method comprising:

transmitting a probe signal from a transmitting node within the plurality of nodes to a sub-plurality of receiving nodes within the plurality of nodes;

receiving a plurality of response signals from the sub-plurality of receiving nodes wherein each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node; and

determining the common bit-loading modulation scheme from the received plurality of response signals;

receiving the probe signal at one receiving node of the plurality of receiving nodes through a channel path of transmission;

determining the transmission characteristics of the channel path at the one receiving node; and

transmitting a response signal from the one receiving node to the transmitting node,

wherein the transmission characteristics of the channel path are determined by measuring the signal-to-noise (“SNR”) characteristics of the received probe signal at the one receiving node,

wherein the transmission characteristics of the channel path are determined by measuring the product-error rate (“PER”) characteristics of the received probe signal at the one receiving node, and

wherein determining a common bit-loading modulation scheme includes;

comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

14-22. (Cancelled)

23. (Currently Amended) ~~The computer readable medium of claim 22~~ A non-transitory computer-readable medium having software for determining a common bit-loading

modulation scheme for communicating between a plurality of nodes in a broadband cable network ("BCN"), the non-transitory computer-readable medium comprising:

logic configured for transmitting a probe signal from a transmitting node within the plurality of nodes to a sub-plurality of receiving nodes within the plurality of nodes;

logic configured for receiving a plurality of response signals from the sub-plurality of receiving nodes wherein each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node;

logic configured for determining the common bit-loading modulation scheme from the received plurality of response signals,

logic configured for receiving the probe signal at one receiving node of the plurality of receiving nodes through a channel path of transmission;

logic configured for determining the transmission characteristics of the channel path at the one receiving node;

logic configured for transmitting a response signal from the one receiving node to the transmitting node; and

logic configured for generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path;

wherein the transmission characteristics of the channel path are determined by logic configured for measuring the signal-to-noise ("SNR") characteristics of the received probe signal at the one receiving node, and

wherein the logic configured for determining a common bit-loading modulation scheme includes:

logic configured for comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

logic configured for determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

24-25. (Cancelled)

26. (Currently Amended) ~~The computer-readable medium of claim 25~~ A non-transitory computer-readable medium having software for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in a broadband cable network ("BCN"), the non-transitory computer-readable medium comprising:

logic configured for transmitting a probe signal from a transmitting node within the plurality of nodes to a sub-plurality of receiving nodes within the plurality of nodes;

logic configured for receiving a plurality of response signals from the sub-plurality of receiving nodes wherein each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node; and

logic configured for determining the common bit-loading modulation scheme from the received plurality of response signals,

wherein the transmission characteristics of the channel path are determined by logic configured for measuring the bit-error rate ("BER") characteristics of the received probe signal at the one receiving node, and

wherein the logic configured for determining a common bit-loading modulation scheme includes:

logic configured for comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

logic configured for determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

27-28. (Cancelled)

29. (Currently Amended) ~~The computer-readable medium of claim 28~~ A non-transitory computer-readable medium having software for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in a broadband cable network ("BCN"), the non-transitory computer-readable medium comprising:

logic configured for transmitting a probe signal from a transmitting node within the plurality of nodes to a sub-plurality of receiving nodes within the plurality of nodes;

logic configured for receiving a plurality of response signals from the sub-plurality of receiving nodes wherein each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node;

logic configured for determining the common bit-loading modulation scheme from the received plurality of response signals; and

logic configured for generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path

wherein the transmission characteristics of the channel path are determined by logic configured for measuring the product-error rate (“PER”) characteristics of the received probe signal at the one receiving node,

wherein determining a common bit-loading modulation scheme includes:

logic configured for comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

logic configured for determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

30. (Cancelled)

31. (Currently Amended) The BCN of claim 30—A broadband cable network (“BCN”) for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in the BCN, the BCN comprising:

a transmitting node within the plurality of nodes, the transmitting node capable of sending a probe signal; and

a sub-plurality of receiving nodes within the plurality of nodes wherein the sub-plurality of receiving nodes are capable of transmitting a sub-plurality of response signals in response to receiving the probe signal, wherein the sub-plurality of response signals includes a plurality of bit-loading modulation schemes, wherein each bit-loading modulation scheme of the plurality of bit-loading modulation schemes is determined by a receiving node within the sub-plurality of receiving nodes,

wherein the transmitting node is capable of determining the common bit-loading modulation scheme from the sub-plurality of response signals,

wherein the transmitting node is further capable of determining the common bit-loading modulation scheme in response to comparing all bit-loading modulation schemes within the plurality of bit-loading modulation schemes.

32. (Original) The BCN of claim 31, wherein each bit-loading modulation scheme utilizes a quadrature phase shift keying (“QPSK”) modulation.

33. (Original) The BCN of claim 31, wherein the each bit-loading modulation scheme utilizes quadrature amplitude modulation (“QAM”).

34. (Original) The BCN of claim 33, wherein each bit-loading modulation scheme is chosen from the group essentially consisting of 64 QAM modulation, 128 QAM modulation, 256 QAM modulation, 512 QAM modulation and 1024 QAM modulation.

35-37. (Cancelled)

38. (Currently Amended) The BCN of claim ~~37~~ 30, wherein a receiving node within the sub-plurality of receiving nodes is capable of:

receiving the probe signal at the receiving node through a channel path of transmission; and

determining the transmission characteristics of the channel path at the receiving node;
and

transmitting a response signal, of the sub-plurality of response signals, from the receiving node to the transmitting node,

wherein the receiving node is capable of determining the transmission characteristics of the channel path by measuring the signal-to-noise (“SNR”) characteristics of the received probe signal at the receiving node

wherein the receiving node is capable of generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the receiving node in response to determining the transmission characteristics of the channel path, and

wherein the transmitting node is capable of determining a common bit-loading modulation scheme by:

comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

39-40. (Cancelled)

41. (Currently Amended) The BCN of claim ~~40~~ 30, wherein a receiving node within the sub-plurality of receiving nodes is capable of:

receiving the probe signal at the receiving node through a channel path of transmission;

determining the transmission characteristics of the channel path at the receiving node;
and

transmitting a response signal, of the sub-plurality of response signals, from the receiving node to the transmitting node,

wherein the receiving node is capable of determining the transmission characteristics of the channel path by measuring the bit-error rate (“BER”) characteristics of the received probe signal at the one receiving node,

wherein the receiving node is capable of generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the receiving node in response to determining the transmission characteristics of the channel path, and

wherein the transmitting node is capable of determining a common bit-loading modulation scheme by:

comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

42-43. (Cancelled)

44. (Currently Amended) The BCN of claim ~~43~~ 30, wherein a receiving node within the sub-plurality of receiving nodes is capable of:

receiving the probe signal at the receiving node through a channel path of transmission;

determining the transmission characteristics of the channel path at the receiving node;
and

transmitting a response signal, of the sub-plurality of response signals, from the receiving node to the transmitting node,

wherein the receiving node is capable of determining the transmission characteristics of the channel path by measuring the product-error rate ("PER") characteristics of the received probe signal at the one receiving node,

wherein the receiving node is capable of generating the response signal,

wherein the response signal utilizes a bit-loading modulation scheme that is generated by the receiving node in response to determining the transmission characteristics of the channel path, and

wherein the transmitting node is capable of determining a common bit-loading modulation scheme by;

comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

45-47. (Cancelled)

48. (Currently Amended) ~~The BCN of claim 46~~ A broadband cable network ("BCN") for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in the BCN, the BCN comprising:

a transmitting node within the plurality of nodes, the transmitting node having means for sending a probe signal; and

a sub-plurality of receiving nodes within the plurality of nodes, wherein the sub-plurality of receiving nodes have means for transmitting a sub-plurality of response signals in response to receiving the probe signal, wherein the sub-plurality of response signals includes a plurality of bit-loading modulation schemes, wherein each bit-loading modulation scheme of the plurality of bit-loading modulation schemes is determined by a receiving node within the sub-plurality of receiving nodes; and

wherein the transmitting node includes means for determining the common bit-loading modulation scheme from the sub-plurality of response signals,

wherein the transmitting node further includes means for determining the common bit-loading modulation scheme in response to comparing all bit-loading modulation schemes within the plurality of bit-loading modulation schemes.

49. (Original) The BCN of claim 48, wherein each bit-loading modulation scheme utilizes a quadrature phase shift keying ("QPSK") modulation.

50. (Original) The BCN of claim 48, wherein the each bit-loading modulation scheme utilizes quadrature amplitude modulation ("QAM").

51. (Original) The BCN of claim 50, wherein each bit-loading modulation scheme is chosen from the group essentially consisting of 64 QAM modulation, 128 QAM modulation, 256 QAM modulation, 512 QAM modulation and 1024 QAM modulation.

52-55. (Cancelled)

56. (Currently Amended) ~~The BCN of claim 55~~ A broadband cable network (“BCN”) for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in the BCN, the BCN comprising:

a transmitting node within the plurality of nodes, the transmitting node having means for sending a probe signal; and

a sub-plurality of receiving nodes within the plurality of nodes, wherein the sub-plurality of receiving nodes have means for transmitting a sub-plurality of response signals in response to receiving the probe signal, wherein the sub-plurality of response signals includes a plurality of bit-loading modulation schemes, wherein each bit-loading modulation scheme of the plurality of bit-loading modulation schemes is determined by a receiving node within the sub-plurality of receiving nodes; and

wherein the transmitting node includes means for determining the common bit-loading modulation scheme from the sub-plurality of response signals,

wherein a receiving node within the sub-plurality of receiving nodes includes:

means for receiving the probe signal at the receiving node through a channel path of transmission;

means for determining the transmission characteristics of the channel path at the receiving node; and

means for transmitting a response signal, of the sub-plurality of response signals, from the receiving node to the transmitting node

wherein the receiving node includes means for determining the transmission characteristics of the channel path by measuring the signal-to-noise (“SNR”) characteristics of the received probe signal at the receiving node,

wherein the receiving node includes means for generating the response signal,
wherein the response signal utilizes a bit-loading modulation scheme that is generated by the
receiving node in response to determining the transmission characteristics of the channel
path,

wherein the transmitting node includes means for determining a common bit-loading
modulation scheme, and

wherein the means for determining a common bit-loading modulation scheme
includes:

means for comparing a plurality of bit-loading modulation schemes from the
corresponding received plurality of response signals; and

means for determining the common bit-loading modulation scheme in
response to the means for comparing the plurality of bit-loaded modulation schemes.

57-59. (Cancelled)

60. (Currently Amended) The BCN of claim ~~59~~ 51, wherein the receiving node
includes means for determining the transmission characteristics of the channel path by
measuring the bit-error rate ("BER") characteristics of the received probe signal at the one
receiving node,

wherein the receiving node includes means for generating the response signal,
wherein the response signal utilizes a bit-loading modulation scheme that is generated by the
receiving node in response to determining the transmission characteristics of the channel
path,

wherein the transmitting node includes means for determining a common bit-loading modulation scheme, and

wherein the means for determining a common bit-loading modulation scheme includes:

means for comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

means for determining the common bit-loading modulation scheme in response to the means for comparing the plurality of bit-loaded modulation schemes.

61-63. (Cancelled)

64. (Currently Amended) The BCN of claim ~~63~~ 51, wherein the receiving node includes means for determining the transmission characteristics of the channel path by measuring the product-error rate ("PER") characteristics of the received probe signal at the one receiving node,

wherein the receiving node includes means for generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the receiving node in response to determining the transmission characteristics of the channel path,

wherein the transmitting node includes means for determining a common bit-loading modulation scheme,

wherein the means for determining a common bit-loading modulation scheme includes:

means for comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

means for determining the common bit-loading modulation scheme in response to the means for comparing the plurality of bit-loaded modulation schemes.

65-71. (Cancelled)

72. (Currently Amended) ~~The BCN of claim 71~~ A broadband cable network ("BCN") for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in the BCN, the BCN comprising:

means for transmitting a probe signal from a transmitting node within the plurality of nodes to a sub-plurality of receiving nodes within the plurality of nodes;

means for receiving a plurality of response signals from the sub-plurality of receiving nodes wherein each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node;

means for determining the common bit-loading modulation scheme from the received plurality of response signals;

means for receiving the probe signal at one receiving node of the plurality of receiving nodes through a channel path of transmission;

means for determining the transmission characteristics of the channel path at the one receiving node;

means for transmitting a response signal from the one receiving node to the transmitting node; and

means for generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path;

wherein the one receiving node includes means for determining the transmission characteristics of the channel path by measuring the signal-to-noise ("SNR") characteristics of the received probe signal at the one receiving node, and

wherein the means for determining a common bit-loading modulation scheme includes:

means for comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

means for determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

73-74. (Cancelled)

75. (Currently Amended) ~~The BCN of claim 74~~ A broadband cable network ("BCN") for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in the BCN, the BCN comprising:

means for transmitting a probe signal from a transmitting node within the plurality of nodes to a sub-plurality of receiving nodes within the plurality of nodes;

means for receiving a plurality of response signals from the sub-plurality of receiving nodes wherein each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node; and

means for determining the common bit-loading modulation scheme from the received plurality of response signals;

means for receiving the probe signal at one receiving node of the plurality of receiving nodes through a channel path of transmission;

means for determining the transmission characteristics of the channel path at the one receiving node;

means for transmitting a response signal from the one receiving node to the transmitting node; and

means for generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path.

wherein the one receiving node includes means for determining the transmission characteristics of the channel path by measuring the bit-error rate ("BER") characteristics of the received probe signal at the one receiving node, and

wherein the means for determining a common bit-loading modulation scheme includes:

means for comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

means for determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

76-77. (Cancelled)

78. (Currently Amended) The BCN of claim ~~77~~ 75, further including means for generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path,

wherein the means for determining a common bit-loading modulation scheme includes:

means for comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

means for determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

79-81. (Cancelled)

REMARKS/ARGUMENTS

Claims 1-81 were pending in the application. Claims 1-6, 8-9, 11-12, 14-22, 24-25, 27-28, 30, 35-37, 39-40, 42-43, 45-46, 52-55, 57-59, 61-63, 65-71, 73-74, 76-77, and 79-81 were rejected. The Examiner objected to Claims 7, 10, 13, 23, 26, 29, 31-34, 38, 41, 44, 47-51, 56, 60, 64, 72, 75 and 78. Claims 7, 10, 13, 23, 26, 29, 31, 38, 41, 44, 48, 56, 60, 64, 72, 75 and 78 have been amended herein. Claims 1-6, 8-9, 11-12, 14-22, 24-25, 27-28, 30, 35-37, 39-40, 42-43, 45-47, 52-55, 57-59, 61-63, 65-71, 73-74, 76-77, and 79-81 have been cancelled. Accordingly, Claims 7, 10, 13, 23, 26, 29, 31-34, 38, 41, 44, 48-51, 56, 60, 64, 72, 75 and 78 are currently pending. Applicants respectfully request reconsideration and allowance of all pending claims.

Discussion of Objections to the Claims

The Examiner indicated in the Office Action Summary on sheet 1 that Claims 7, 10, 13, 23, 26, 29, 31-34, 38, 41, 44, 47-51, 56, 60, 64, 72, 75 and 78 were objected to, but did not expressly indicate the reason for the objection. Applicants infer that the reason is due to their dependency upon otherwise rejected claims. Accordingly, Applicants have amended each of these claims (with the exception of Claim 47, which has been cancelled) in order to overcome the objections. Accordingly, Applicants believe that Claims 7, 10, 13, 23, 26, 29, 31-34, 38, 41, 44, 48-51, 56, 60, 64, 72, 75 and 78 are now in condition for allowance and as such, request reconsideration of these claims.

Discussion of Rejections Under 35 U.S.C. §101

The Examiner has rejected Claims 17-29 as directed to a computer-readable medium, which is defined as "any means that may contain, store, communicate, propagate, or transport the program ...The computer-readable medium may selectively be... propagation medium" (see paragraph 71 of the Specification). The Examiner has kindly suggested that insertion of the phrase "non-transitory" would distinguish the claimed invention from propagated signals in the eyes of the Office. Accordingly, Applicants contend that Claims 23, 26, and 29 are in condition for allowance in light of the additional amendments that incorporate the limitations of the independent claim and interceding claims from which these claims depend.

Applicants have so amended Claims 23, 26 and 29. Claims 17-22, 24, 25, 27 and 28 have been cancelled. Accordingly, the Examiner's rejection of Claims 17-22, 24, 25, 27 and 28 is now moot.

Discussion of Rejections Under 35 U.S.C. §103

The Examiner rejected Claims 1-6, 14-22,30, 35-37,45,46, 52-55, 65-71, and 79-81 under 35 U.S.C. 103(a) as being unpatentable over Ling et al. (US 2009/0323851) in view of Li et al. (US 2009/0279498). Applicants have cancelled each of these claims. As such, Applicants contend that these rejections are now moot.

The Examiner rejected Claims 8,9,11,12,24,25,27,28,39,40,42,43,57-59,61-63,73, 74, 76, and 77 under 35 U.S.C. 103(a) as being unpatentable over Ling et al. in view of Li et al. as applied to claim 4 above, and further in view of Gesbert et al. (US 2005/0031044). Applicants have cancelled each of these claims. As such, Applicants contend that these rejections are now moot.

CONCLUSION

Applicants believe that all claims pending in the application are allowable. Applicants therefore respectfully request that a timely Notice of Allowance be issued in this case.

This is a response to the Office Action mailed on April 7, 2010, and as such, is submitted timely.

If there are any other fees due in connection with the filing of the response, please charge the fees to our Deposit Account No. 50-4613. If a fee is required for an extension of time under 37 CFR 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned.

Respectfully submitted,

Dated: July 7, 2010

By: /Bruce W. Greenhaus/
Bruce W. Greenhaus
Attorney for Applicants
Registration No. 37,339

Entropic Communications, Inc.
6290 Sequence Drive
San Diego, California 92121
Telephone: (619) 980-2612
e-mail address: PatentTeam@entropic.com

Electronic Acknowledgement Receipt	
EFS ID:	7971772
Application Number:	10889975
International Application Number:	
Confirmation Number:	6587
Title of Invention:	Broadband cable network utilizing common bit-loading
First Named Inventor/Applicant Name:	Anton Monk
Customer Number:	77330
Filer:	Bruce Wayne Greenhaus/Tim Ellis
Filer Authorized By:	Bruce Wayne Greenhaus
Attorney Docket Number:	E010001USCIP2
Receipt Date:	07-JUL-2010
Filing Date:	12-JUL-2004
Time Stamp:	21:32:57
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment		no			
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		E010001USCIP2_Response-to-Non-Final-OA_7-7-2010.pdf	140445	yes	24
			321a71ead23a43f6b45dda78aed437b9efd728e1		

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	21
	Applicant Arguments/Remarks Made in an Amendment	22	23
	Amendment/Req. Reconsideration-After Non-Final Reject	24	24
Warnings:			
Information:			
Total Files Size (in bytes):		140445	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.			

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 10/889,975		Filing Date 07/12/2004		☐ To be Mailed	
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)		SMALL ENTITY ☐		OR		OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A		N/A		N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (j), or (m))	N/A	N/A	N/A		N/A		N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A		N/A		N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(j))	minus 20 =	*	X \$	=	OR	X \$	=	X \$	=	X \$
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$	=	OR	X \$	=	X \$	=	X \$
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				OR					
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					OR					
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL		OR	TOTAL		TOTAL		
APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)		(Column 3)		SMALL ENTITY		OTHER THAN SMALL ENTITY	
AMENDMENT	07/07/2010	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)
Total (37 CFR 1.16(i))	* 23	Minus	** 81	= 0	X \$	=	OR	X \$52=	0	0
Independent (37 CFR 1.16(h))	* 5	Minus	***5	= 0	X \$	=	OR	X \$220=	0	0
☐ Application Size Fee (37 CFR 1.16(s))							OR			
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR			
			TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE		TOTAL ADD'L FEE		0
(Column 1)			(Column 2)		(Column 3)		SMALL ENTITY		OTHER THAN SMALL ENTITY	
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)
Total (37 CFR 1.16(i))	*	Minus	**	=	X \$	=	OR	X \$	=	X \$
Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$	=	OR	X \$	=	X \$
☐ Application Size Fee (37 CFR 1.16(s))							OR			
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR			
			TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE		TOTAL ADD'L FEE		
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.										

Legal Instrument Examiner:
/LAWANDA MILTON/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/889,975	07/12/2004	Anton Monk	E010001USCIP2

CONFIRMATION NO. 6587

POWER OF ATTORNEY NOTICE



OC000000041122798

78271

The Eclipse Group LLP
10605 Balboa Blvd
Suite 300
Granada Hills, CA 91344

Date Mailed: 04/19/2010

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/08/2010.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/ttkim/

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/889,975	07/12/2004	Anton Monk	EC04001USU

77330
ENTROPIC COMMUNICATIONS, INC.
6290 SEQUENCE DRIVE
SAN DIEGO, CA 92121

CONFIRMATION NO. 6587
POA ACCEPTANCE LETTER



OC000000041122817

Date Mailed: 04/19/2010

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/08/2010.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/ttkim/

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POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS	Application Number	10/889,975
	Filing Date	12-Jul-2004
	First Named Inventor	Anton Monk
	Title	Broadband cable network utilizing common bi
	Art Unit	2464
	Examiner Name	Pawaris Sinkantarakorn
	Attorney Docket Number	EC04001USU

I hereby revoke all previous powers of attorney given in the above-identified application.

☐ A Power of Attorney is submitted herewith.**OR**☒ I hereby appoint Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

77330

OR☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Please recognize or change the correspondence address for the above-identified application to:

☒ The address associated with the above-mentioned Customer Number.**OR**☐ The address associated with Customer Number:**OR**

☐ Firm or Individual Name			
Address			
City	State	Zip	
Country			
Telephone	Email		

I am the:

☐ Applicant/Inventor.**OR**☒ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) (Form PTO/SB/96) submitted herewith or filed on 01-Feb-2005.**SIGNATURE of Applicant or Assignee of Record**

Signature	/Bruce W. Greenhaus/	Date	08-Apr-2010
Name	Bruce W. Greenhaus	Telephone	(619) 980-2612
Title and Company	V.P. Chief Patent Counsel, Entropic Communications, Inc.		

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.☒ *Total of TWO forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Entropic Communications, Inc.

Application No./Patent No.: 10/889,975

Filed/Issue Date: 12-Jul-2004

Titled: Broadband cable network utilizing common bit-loading

Entropic Communications, Inc., a Corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☒ the assignee of the entire right, title, and interest in;
2. ☐ an assignee of less than the entire right, title, and interest in
(The extent (by percentage) of its ownership interest is _____ %); or
3. ☐ the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

- A. ☒ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 015644, Frame 0823, or for which a copy therefore is attached.

OR

- B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

- ☒ As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (*i.e.*, a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Bruce W. Greenhaus/

Signature

08-Apr-2010

Date

Bruce W. Greenhaus

Printed or Typed Name

V.P. Chief Patent Counsel

Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The information provided by you in this form will be subject to the following routine uses:

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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt	
EFS ID:	7380416
Application Number:	10889975
International Application Number:	
Confirmation Number:	6587
Title of Invention:	Broadband cable network utilizing common bit-loading
First Named Inventor/Applicant Name:	Anton Monk
Customer Number:	78271
Filer:	Bruce Wayne Greenhaus/Tim Ellis
Filer Authorized By:	Bruce Wayne Greenhaus
Attorney Docket Number:	EC04001USU
Receipt Date:	08-APR-2010
Filing Date:	12-JUL-2004
Time Stamp:	17:58:09
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no				
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	E010001USCIP2_POA_4-8-2010.pdf	1465663 12b8769656d555cd35009ef1f67e2d00cf15e1e2	no	2
Warnings:					
Information:					

2	Assignee showing of ownership per 37 CFR 3.73(b).	E010001USCIP2_3-73b_Statement_4-8-2010.pdf	423302 afbce342723f9268e876dae9b7bbdf2f8e6d5c27	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			1888965		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/889,975	07/12/2004	Anton Monk	EC04001USU	6587
78271 7590 04/07/2010 The Eclipse Group LLP 10605 Balboa Blvd Suite 300 Granada Hills, CA 91344			EXAMINER SINKANTARAKORN, PAWARIS	
			ART UNIT 2464	PAPER NUMBER
			MAIL DATE 04/07/2010	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/889,975		Applicant(s) MONK ET AL.	
	Examiner Pao Sinkantarakorn		Art Unit 2464	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 12 July 2004.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-81 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1-6,8-9,11-12,14-22,24-25,27-28,30,35-37,39-40,42-43,45-46,52-55,57-59,61-63,65-71,73-74,76-77,and 79-81 is/are rejected.

7) ☒ Claim(s) 7,10,13,23,26,29,31-34,38,41,44,47-51,56,60,64,72,75 and 78 is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 12 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892) 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.	4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____. 5) ☐ Notice of Informal Patent Application 6) ☐ Other: _____.
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DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Warning

2. Applicant is advised that should claim 47 be found allowable, claim 48 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 17-29 are directed to a computer-readable medium, which is defined as "any means that may contain, store, communicate, propagate, or transport the program...The computer-readable medium may selectively be...propagation medium (see paragraph 71 of the Specification). The cited means that propagate the program

and the cited computer readable medium may selectively be propagation medium suggest that the computer-readable medium may be a signal *per se*. When the broadest reasonable interpretation of a claim covers a signal *per se*, the claim must be rejected under 35 U.S.C. § 101 as covering non-statutory subject matter. In an effort to assist the patent community in overcoming the rejection under 35 U.S.C. § 101, the USPTO suggest the following approach. A claim drawn to such a computer readable medium (or the like) that covers both transitory and non-transitory embodiments may be amended to narrow the claim to cover only statutory embodiments to avoid a rejection under 35 U.S.C. § 101 by adding the limitation “non-transitory” to the claim. Such an amendment would typically not raise the issue of new matter, even when the specification is silent because the broadest reasonable interpretation relies on the ordinary and customary meaning that includes signals *per se*.

Claim Rejections - 35 USC § 103

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-6, 14-22, 30, 35-37, 45, 46, 52-55, 65-71, and 79-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ling et al. (US 2009/0323851) in view of Li et al. (US 2009/0279498).

Regarding claims 1, 17, and 66, Ling et al. disclose a method, a computer-readable medium, a broadband cable network for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in the BCN, the method, the computer-readable medium, the BCN comprising:

means for transmitting a probe signal from a transmitting node within the plurality of nodes to a sub-plurality of receiving nodes within the plurality of nodes (see paragraphs 73-74, transmitting data from N transmit antennas of a transmitting node and receiving the transmitted data by each of N receive antennas);

means for receiving a plurality of response signals from the sub-plurality of receiving nodes (see paragraphs 12 and 114-116, receiving feedback signal from the receive antennas, wherein the feedback signal includes SNR of the transmission channels); and

means for determining the common bit-loading modulation scheme from the received plurality of response signals (see paragraph 116, selecting the modulation scheme based on the channel SNR, wherein the common bit-loading modulation scheme is broadly interpreted as a modulation scheme that is common/best-suited to the channel according to the channel quality).

Ling et al. do not expressly disclose that each response signals includes a bit-loading modulation scheme determined by a corresponding receiving node. However, Li et al., from the same or similar fields of endeavor, disclose that each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node (see paragraphs 27-29, transmitting feedback information to the base station, where the modulation rates may be specified by the subscriber with the feedback information).

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node as taught by Li et al. into the system of Ling et al. in order to accurately select the favorable subcarrier for communication between the base station and the subscribers (see paragraph 29).

Regarding claims 2, 18, and 67, Ling et al. disclose the method, the computer-readable medium, the BCN further including means for transmitting a broadcast signal from the transmitting node to the plurality of receiving nodes, wherein the broadcast signal utilizes the common bit-loaded modulation scheme (see paragraphs 67 and 116, adjusting the modulation scheme for the transmission channel, wherein the transmission channel is a broadcast channel);

regarding claims 3, 19, and 68, the probe signal utilizes a bit-loaded modulation scheme that is capable of being received by all the receiving nodes within the sub-plurality of receiving nodes (see paragraph 116, selecting the modulation scheme for each transmission channel, where it is inherent that the modulation scheme is capable of being received by each of the receiving nodes, otherwise there is no point in selecting the modulation scheme for each transmission channel);

regarding claims 4, 20, and 69, further including:

means for receiving the probe signal at one receiving node of the plurality of receiving nodes through a channel path of transmission (see paragraphs 73-74, receiving transmitted data by each of N receive antennas via MIMO channel);

means for determining the transmission characteristics of the channel path at the one receiving node (see paragraphs 73 and 114, estimating the characteristics of the MIMO channel); and

means for transmitting a response signal from the one receiving node to the transmitting node (see paragraphs 73 and 115, transmitting back a feedback signal to the transmitter system);

regarding claims 5, 21, and 70, the one receiving node includes means for determining the transmission characteristics of the channel path by measuring the signal-to-noise ("SNR") characteristics of the received probe signal at the one receiving node (see paragraph 116, SNR information).

Regarding claims 6, 22, and 71, Ling et al. disclose all of the subject matter of the claimed invention except means for generating the response signal wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path.

However, Li et al., from the same or similar fields of endeavor, disclose means for generating a response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path (see paragraphs 27-29, transmitting feedback information to the base station, where the modulation rates may be specified by the subscriber with the feedback information).

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement means for generating a response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path as taught by Li et al. into the system of Ling et al. in order to accurately select the favorable subcarrier for communication between the base station and the subscribers (see paragraph 29).

Regarding claims 14 and 79, Ling et al. disclose each bit-loading modulation scheme utilizes a quadrature phase shift keying (“QPSK”) modulation scheme (see Table 1 and paragraph 43, QPSK);

regarding claims 15 and 80, each bit-loading modulation scheme utilizes quadrature amplitude modulation (“QAM”) scheme (see Table 1 and paragraph 43, QAM);

regarding claim 16 and 81, each bit-loading modulation scheme is chosen from the group essentially consisting of 64 QAM modulation, 128 QAM modulation, 256 QAM modulation, 512 QAM modulation and 1024 QAM modulation (see Table 1 and paragraph 43, 64 QAM).

Regarding claims 30 and 46, Ling et al. disclose a broadband cable network (“BCN”) for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in the BCN, the BCN comprising:

a transmitting node within the plurality of nodes, the transmitting node having means for sending a probe signal (see paragraphs 73-74, transmitting data from N transmit antennas of a transmitting node and receiving the transmitted data by each of N receive antennas); and

a sub-plurality of receiving nodes within the plurality of nodes, wherein the sub-plurality of receiving nodes have means for transmitting a sub-plurality of response signals in response to receiving the probe signal (see paragraphs 12 and 114-116,

receiving feedback signal from the receive antennas, wherein the feedback signal includes SNR of the transmission channels),

wherein the transmitting node includes means for determining the common bit-loading modulation scheme from the sub-plurality of response signals (see paragraph 116, selecting the modulation scheme based on the channel SNR, wherein the common bit-loading modulation scheme is broadly interpreted as a modulation scheme that is common/best-suited to the channel according to the channel quality).

Ling et al. do not expressly disclose that each response signals includes a bit-loading modulation scheme determined by a corresponding receiving node. However, Li et al., from the same or similar fields of endeavor, disclose that each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node (see paragraphs 27-29, transmitting feedback information to the base station, where the modulation rates may be specified by the subscriber with the feedback information).

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node as taught by Li et al. into the system of Ling et al. in order to accurately select the favorable subcarrier for communication between the base station and the subscribers (see paragraph 29).

Regarding claims 35 and 52, Ling et al. disclose the transmitting node further including:

means for receiving the probe signal at one receiving node of the plurality of receiving nodes through a channel path of transmission (see paragraphs 73-74, receiving transmitted data by each of N receive antennas via MIMO channel);

means for determining the transmission characteristics of the channel path at the one receiving node (see paragraphs 73 and 114, estimating the characteristics of the MIMO channel); and

means for transmitting a response signal from the one receiving node to the transmitting node (see paragraphs 73 and 115, transmitting back a feedback signal to the transmitter system);

regarding claims 36 and 53, the one receiving node includes means for determining the transmission characteristics of the channel path by measuring the signal-to-noise ("SNR") characteristics of the received probe signal at the one receiving node (see paragraph 116, SNR information).

Regarding claims 37 and 54, Ling et al. disclose all of the subject matter of the claimed invention except means for generating the response signal wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path.

However, Li et al., from the same or similar fields of endeavor, disclose means for generating a response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path (see paragraphs 27-29,

transmitting feedback information to the base station, where the modulation rates may be specified by the subscriber with the feedback information).

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement means for generating a response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path as taught by Li et al. into the system of Ling et al. in order to accurately select the favorable subcarrier for communication between the base station and the subscribers (see paragraph 29).

Regarding claim 55, Ling et al. disclose the transmitting node includes means for determining a common bit-loading modulation scheme (see paragraph 116, selecting the modulation scheme based on the channel SNR, wherein the common bit-loading modulation scheme is broadly interpreted as a modulation scheme that is common/best-suited to the channel according to the channel quality);

regarding claims 45 and 65, the transmitting node and the receiving nodes are the same type of devices (see Figure 1, the transmitting node and the receiving nodes are all MIMO devices).

9. Claims 8, 9, 11, 12, 24, 25, 27, 28, 39, 40, 42, 43, 57-59, 61-63, 73, 74, 76, and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ling et al. in view of Li et al. as applied to claim 4 above, and further in view of Gesbert et al. (US 2005/0031044).

Regarding claims 8, 11, 24, 27, 39, 42, 57, 61, 73, and 76, Ling et al. in view of Li et al. disclose all of the subject matter of the claimed invention except a system, wherein the transmission characteristics of the channel path are determined by measuring the bit-error rate ("BER") or the product-error rate ("PER") characteristics of the received probe signal.

However, Gesbert et al., from the same or similar fields of endeavor, disclose the system, wherein the transmission characteristics of the channel path are determined by measuring the bit-error rate ("BER") or the product-error rate ("PER") characteristics of the received probe signal (see paragraphs 13-15).

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement the system, wherein the transmission characteristics of the channel path are determined by measuring the bit-error rate ("BER") or the product-error rate ("PER") characteristics of the received probe signal as taught by Gesbert et al. into the system of Ling et al. in view of Li et al. in order to maximize data capacity, signal quality, spectral efficiency or throughput of the channel (see paragraph 18).

Regarding claims 9, 12, 25, 28, 40, 43, 58, 62, 74, and 77, Ling et al. disclose all of the subject matter of the claimed invention except means for generating the response signal wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path.

However, Li et al., from the same or similar fields of endeavor, disclose means for generating a response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path (see paragraphs 27-29, transmitting feedback information to the base station, where the modulation rates may be specified by the subscriber with the feedback information).

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement means for generating a response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path as taught by Li et al. into the system of Ling et al. in order to accurately select the favorable subcarrier for communication between the base station and the subscribers (see paragraph 29).

Regarding claims 59 and 63, Ling et al. disclose the transmitting node includes means for determining a common bit-loading modulation scheme (see paragraph 116, selecting the modulation scheme based on the channel SNR, wherein the common bit-loading modulation scheme is broadly interpreted as a modulation scheme that is common/best-suited to the channel according to the channel quality).

Conclusion

10. **Examiner's Note:** Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although

the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

If the Applicant is of the opinion that an interview would help advance prosecution in this case, they are welcome to call the Examiner, Pao Sinkantarakorn, at the number listed below to schedule an interview. The Examiner prefers interview requests be accompanied with a detailed agenda via fax. The Examiner's fax number is (571) 270-2424. The Examiner is willing to consider proposed amendments, clarify rejections, and discuss any other issues that are presented by the applicant or applicant's representative. Please note that the Examiner may not be able to accommodate all requests due to scheduling constraints. It is recommended that interview requests be sent with ample time to schedule an interview.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pao Sinkantarakorn whose telephone number is (571)

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270-1424. The examiner can normally be reached on Monday-Thursday 9:00am-3:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. S./
Examiner, Art Unit 2464
4/5/2010

/Ricky Ngo/
Supervisory Patent Examiner, Art
Unit 2464

Notice of References Cited	Application/Control No. 10/889,975	Applicant(s)/Patent Under Reexamination MONK ET AL.	
	Examiner Pao Sinkantarakorn	Art Unit 2464	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2009/0323851	12-2009	Ling et al.	375/267
*	B	US-2009/0279498	11-2009	Li et al.	370/329
*	C	US-2005/0031044	02-2005	Gesbert et al.	375/259
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims 	Application/Control No. 10889975	Applicant(s)/Patent Under Reexamination MONK ET AL.
	Examiner Pao Sinkantarakorn	Art Unit 2464

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant			☐ CPA			☐ T.D.			☐ R.1.47			
CLAIM			DATE									
Final	Original	04/05/2010										
	1	✓										
	2	✓										
	3	✓										
	4	✓										
	5	✓										
	6	✓										
	7	O										
	8	✓										
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	30	✓										
	31	O										
	32	O										
	33	O										
	34	O										
	35	✓										
	36	✓										

Index of Claims 	Application/Control No. 10889975	Applicant(s)/Patent Under Reexamination MONK ET AL.
	Examiner Pao Sinkantarakorn	Art Unit 2464

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant			☐ CPA			☐ T.D.			☐ R.1.47		
CLAIM		DATE									
Final	Original	04/05/2010									
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	69	✓									
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	71	✓									
	72	O									

<i>Index of Claims</i> 	Application/Control No. 10889975	Applicant(s)/Patent Under Reexamination MONK ET AL.
	Examiner Pao Sinkantarakorn	Art Unit 2464

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant				☐ CPA				☐ T.D.				☐ R.1.47			
CLAIM			DATE												
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	75	O													
	76	✓													
	77	✓													
	78	O													
	79	✓													
	80	✓													
	81	✓													

Search Notes 	Application/Control No. 10889975	Applicant(s)/Patent Under Reexamination MONK ET AL.
	Examiner Pao Sinkantarakorn	Art Unit 2464

SEARCHED			
Class	Subclass	Date	Examiner
370	252,253,465	4/5/2010	PS
455	61,63.1,67.11	4/5/2010	PS

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Search	4/5/2010	PS
Inventorship Search	4/5/2010	PS

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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Examiner.Art Unit 2464



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BIB DATA SHEET

CONFIRMATION NO. 6587

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.		
10/889,975	07/12/2004	725	2464	EC04001USU		
APPLICANTS Anton Monk, San Diego, CA; Brett Bernath, San Diego, CA; Yusuf Ozturk, San Diego, CA; Ron Porat, San Diego, CA;						
** CONTINUING DATA ***** This application is a CIP of 10/778,505 02/13/2004 ABN which is a CIP of 09/910,412 07/21/2001 PAT 7,594,249 which claims benefit of 60/288,967 05/04/2001 This application 10/889,975 07/12/2004 is a CIP of 10/322,834 12/18/2002 PAT 7,295,518 which is a CON of 10/230,687 08/29/2002 ABN which claims benefit of 60/316,820 08/30/2001 and claims benefit of 60/363,420 03/12/2002 and claims benefit of 60/385,361 06/03/2002						
** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 08/24/2004						
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and /PAO SINKANTARAKORN/ Examiner's Signature Acknowledged		☐ Met after Allowance Initials	STATE OR COUNTRY CA	SHEETS DRAWINGS 11	TOTAL CLAIMS 81	INDEPENDENT CLAIMS 5
ADDRESS The Eclipse Group LLP 10605 Balboa Blvd Suite 300 Granada Hills, CA 91344 UNITED STATES						
TITLE Broadband cable network utilizing common bit-loading						
FILING FEE RECEIVED 4370	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:			☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit		

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	1	10/889975	US-PGPUB; USPAT	OR	ON	2010/03/29 10:44
S2	246	(bit adj load\$5) near7 modulat\$7	US-PGPUB; USPAT	OR	ON	2010/03/29 10:48
S3	37	S2 and coax\$7	US-PGPUB; USPAT	OR	ON	2010/03/29 10:48
S4	7596587	(@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/29 10:49
S5	12	S3 and S4	US-PGPUB; USPAT	OR	ON	2010/03/29 10:49
S6	1062	common near5 (modulationg modulating)	US-PGPUB; USPAT	OR	ON	2010/03/29 11:01
S7	41	(select\$5 choos\$5 chose\$2 determin\$8) near7 common near5 (modulationg modulating)	US-PGPUB; USPAT	OR	ON	2010/03/29 11:02
S8	18	S4 and S7	US-PGPUB; USPAT	OR	ON	2010/03/29 11:02
S9	17036	(select\$5 choos\$5 chose\$2 determin\$8) near7 (modulationg modulating)	US-PGPUB; USPAT	OR	ON	2010/03/29 11:03
S10	62625	(select\$5 choos\$5 chose\$2 determin\$8) near7 (modulation modulating)	US-PGPUB; USPAT	OR	ON	2010/03/29 11:03
S11	29466	modulat\$5 with (QPSK QAM)	US-PGPUB; USPAT	OR	ON	2010/03/29 11:04
S12	8626	S10 and S11	US-PGPUB; USPAT	OR	ON	2010/03/29 11:04
S13	2553	S4 and S12	US-PGPUB; USPAT	OR	ON	2010/03/29 11:04

S14	639	S13 and (broadband coax\$7)	US-PGPUB; USPAT	OR	ON	2010/03/29 11:43
S15	725	(select\$5 choos\$5 chose\$2 determin\$8) near7 (modulation modulating) near7 (most major\$7 (high\$5 near3 number))	US-PGPUB; USPAT	OR	ON	2010/03/29 14:32
S16	316	S15 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/29 14:32
S17	76	S16 and (modulat\$5 with (QPSK QAM))	US-PGPUB; USPAT	OR	ON	2010/03/29 14:33
S18	3407	((modulation modulating) near3 (scheme techniq\$5 method)) near7 (most majority (high\$5 near3 number) common\$5)	US-PGPUB; USPAT	OR	ON	2010/03/29 14:54
S19	1321	S18 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/29 14:55
S20	548	S18 same (multiple plural\$7)	US-PGPUB; USPAT	OR	ON	2010/03/29 14:56
S21	157	S20 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/29 14:56
S22	5	09/205205	US-PGPUB; USPAT	OR	ON	2010/03/29 15:01
S23	9630	common near5 modulat\$7	US-PGPUB; USPAT	OR	ON	2010/03/29 16:54
S24	4696	S23 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/29 16:54
S25	5659	common adj5 modulat\$7	US-PGPUB; USPAT	OR	ON	2010/03/29 16:57
S26	2694	S25 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/29 16:57
S27	715	S26 and ("370".clas. "375".clas. "725".clas. "709".clas. "714".clas.)	US-PGPUB; USPAT	OR	ON	2010/03/29 16:57

S28	1699	((most more) near5 (use popular applied)) near7 (modulat\$7)	US-PGPUB; USPAT	OR	ON	2010/03/30 10:24
S29	654	S28 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/30 10:24
S30	140	(determin\$5 select\$5 choos\$5 chose\$2) near7 ((most more) near5 (use popular applied)) near7 (modulat\$7)	US-PGPUB; USPAT	OR	ON	2010/03/30 10:27
S31	49	S30 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/30 10:27
S32	185	(probe inquir\$5) with (modulat\$7 near5 (techni\$5 schem\$7))	US-PGPUB; USPAT	OR	ON	2010/03/30 10:48
S33	82	S32 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/30 10:49
S34	47	common near3 (bit adj load \$5)	US-PGPUB; USPAT	OR	ON	2010/03/31 10:00
S35	1	10/889975	US-PGPUB; USPAT	OR	ON	2010/03/31 10:11
S36	469	receiv\$5 with ((modulat\$5) near4 (techni\$7 schem\$7)) with (CSI CQI (channel near3 (stat\$5 quality)))	US-PGPUB; USPAT	OR	ON	2010/03/31 11:57
S37	469	receiv\$5 with ((modulat\$5) near4 (techni\$7 schem\$7)) with (CSI CQI (channel near3 (stat\$5 quality)))	US-PGPUB; USPAT	OR	ON	2010/03/31 13:00
S38	26	S37 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/31 13:00
S39	183	receiv\$5 with ((modulat\$5) near4 (method type)) with (CSI CQI (channel near3 (stat\$5 quality)))	US-PGPUB; USPAT	OR	ON	2010/03/31 13:17
S40	32	S39 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/31 13:18
S41	8536	(respond\$5 response reply\$5) with (modulat\$7 near4 (techni\$7 schem\$7 method type))	US-PGPUB; USPAT	OR	ON	2010/03/31 14:18

S42	3776	S41 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/31 14:18
S43	5557	(respond\$5 response reply\$5) near7 (modulat\$7 near4 (techni\$7 schem\$7 method type))	US-PGPUB; USPAT	OR	ON	2010/03/31 14:18
S44	303	(respond\$5 response reply\$5) near7 (modulat\$7 near4 (techni\$7 schem\$7 method type)) near7 (receiv\$5 terminal mobile MS CPE)	US-PGPUB; USPAT	OR	ON	2010/03/31 14:19
S45	116	S44 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/31 14:19
S46	40976	(transmit\$5 transmission send \$5 sent) near7 (modulat\$7 near4 (info information techni\$7 schem\$7 method type))	US-PGPUB; USPAT	OR	ON	2010/03/31 14:32
S47	17443	S46 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/31 14:32
S48	18299	S46.ab. S46.bsum.	US-PGPUB; USPAT	OR	ON	2010/03/31 14:32
S49	8088	S48 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/31 14:33
S50	17305	(transmit\$5 transmission send \$5 sent) near7 (modulat\$7 near4 (info information))	US-PGPUB; USPAT	OR	ON	2010/03/31 14:33
S52	28835	(transmit\$5 transmission send \$5 sent) near7 (modulat\$7 near4 (techni\$7 schem\$7 method type))	US-PGPUB; USPAT	OR	ON	2010/03/31 14:34
S54	1033	S52 with (CSI CQI (channel near3 (stat\$5 quality)))	US-PGPUB; USPAT	OR	ON	2010/03/31 14:35
S55	108	S54 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/31 14:35
S56	27282	(determin\$7 detect\$7 identif \$7) near7 (modulat\$7 near4 (techni\$7 schem\$7 method type))	US-PGPUB; USPAT	OR	ON	2010/03/31 14:44

S57	11707	S56 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/31 14:44
S58	287	(notif\$10) near7 (modulat\$7 near4 (techni\$7 schem\$7 method type))	US-PGPUB; USPAT	OR	ON	2010/03/31 15:01
S59	37	S58 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/31 15:01
S60	87	(CPE BCN) near7 (modulat\$7 near4 (techni\$7 schem\$7 method type))	US-PGPUB; USPAT	OR	ON	2010/03/31 15:27
S61	2339	(CPE BCN) and (modulat\$7 near4 (techni\$7 schem\$7 method type))	US-PGPUB; USPAT	OR	ON	2010/03/31 15:28
S62	42	S60 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/03/31 15:28
S63	1	12/554608	US-PGPUB; USPAT	OR	ON	2010/04/01 14:46
S64	344	SNR with BER with PER	US-PGPUB; USPAT	OR	ON	2010/04/01 16:45
S65	43	S64 and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/04/01 16:45
S66	1782	370/252-253.ccls. and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/04/05 11:29
S67	1295	370/465.ccls. and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/04/05 11:29
S68	109	455/61.ccls. and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/04/05 11:29
S69	761	455/63.1.ccls. and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US-PGPUB; USPAT	OR	ON	2010/04/05 11:29

S70	1115	455/67.11.ccls. and (@pd<"20010504" or @rlad<"20010504" or @ptad<"20010504" or @prad<"20010504")	US- PGPUB; USPAT	OR	ON	2010/04/05 11:29
S71	1045	(select\$5 choos\$5 chose\$2 determin\$8) near7 (modulation modulating) near7 (common most major\$7 (high\$5 near3 number))	US- PGPUB; USPAT	OR	ON	2010/04/05 11:30
S72	3	S66 and S71	US- PGPUB; USPAT	OR	ON	2010/04/05 11:30
S73	3	S67 and S71	US- PGPUB; USPAT	OR	ON	2010/04/05 11:30
S74	0	S68 and S71	US- PGPUB; USPAT	OR	ON	2010/04/05 11:30
S75	2	S69 and S71	US- PGPUB; USPAT	OR	ON	2010/04/05 11:30
S76	6	S70 and S71	US- PGPUB; USPAT	OR	ON	2010/04/05 11:30
S77	55	common near7 (bit adj load \$5)	US- PGPUB; USPAT	OR	ON	2010/04/05 11:37

4/ 5/ 2010 1:08:14 PM



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	PATENT NUMBER	GROUP ART UNIT	FILE WRAPPER LOCATION
10/889,975		2623	

Correspondence Address / Fee Address Change

The following fields have been set to Customer Number 78271 on 03/24/2008

- Correspondence Address
- Maintenance Fee Address

The address of record for Customer Number 78271 is:

The Eclipse Group LLP
10605 Balboa Blvd
Suite 300
Granada Hills, CA 91344



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	PATENT NUMBER	GROUP ART UNIT	FILE WRAPPER LOCATION
10/889,975		2623	

Correspondence Address / Fee Address Change

The following fields have been set to Customer Number 78271 on 03/17/2008

- Correspondence Address
- Maintenance Fee Address

The address of record for Customer Number 78271 is:

The Eclipse Group LLP
10605 Balboa Blvd
Suite 300
Granada Hills, CA 91344

FAX COVER SHEET**THE ECLIPSE GROUP**

10605 Balboa Blvd., Suite 300
Granada Hills, CA 91344
Phone: (818) 488-8140
Fax: (818) 332-4205

**RECEIVED
CENTRAL FAX CENTER****SEP 01 2006**

Send to: USPTO	From: Mariana Paula Noli
Company: USPTO	Date: September 1, 2006
Fax Number: (571) 273-8300	Phone No.: (818) 488-8143

- ☐ Urgent
- ☐ Reply ASAP
- ☐ Please comment
- ☐ Please review
- ☐ For your information

Total pages, including cover: 5

Comments:

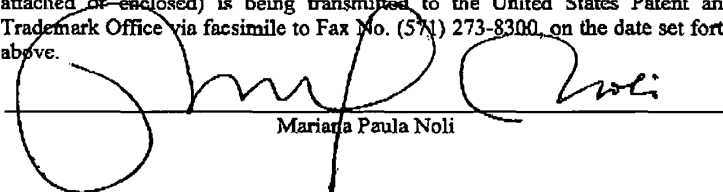
Applicant: Entropic Communications, Inc.
Title: "BROADBAND CABLE NETWORK UTILIZING COMMON BIT-LOADING"
Application No.: 10/889,975
Attorney Docket Number: EC04001USU

Please acknowledge receipt of the following LOSS OF ENTITLEMENT TO SMALL ENTITY STATUS UNDER 37 C.F.R. § 1.27 (g)(2):

- 1) Loss of Entitlement to Small Entity Status under 37 C.F.R. § 1.27(g) (2) (2 pages + copy); and
- 2) Credit Card Authorization in the amount of \$2,905.00 (1 page).

CERTIFICATE OF TRANSMISSION

I hereby certify that this document (along with any papers referenced as being attached or enclosed) is being transmitted to the United States Patent and Trademark Office via facsimile to Fax No. (571) 273-8300, on the date set forth above.


Mariana Paula Noli

The Eclipse Group Docket No. EC04001USU

DOCKET NO.: EC04001USU
APPLICANT: Entropic Communications, Inc.
TITLE: Broadband Cable Network Utilizing Common Bit-Loading
SERIAL NO.: 10/889,975
FILING DATE: 07/12/2004
EXAMINER: Not Yet Assigned
GROUP ART UNIT: 2611
CONFIRMATION NO.: 6587

RECEIVED
CENTRAL FAX CENTER
SEP 01 2006

CERTIFICATE OF TRANSMISSION	
I certify that on <u>September 1, 2006</u> , the attached correspondence is being transmitted via facsimile to the Commissioner for Patents at (571) 273-8300.	
09/06/2006 10:11:20	Mariana Paula Noli

09/06/2006 RNEBRAHT 00000001 10889975

01 FC:1001	790.00 OP
02 FC:1051	130.00 OP
03 FC:1201	400.00 OP
04 FC:1202	3050.00 OP
05 FC:1253	1020.00 OP

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22213-1450

LOSS OF ENTITLEMENT TO SMALL ENTITY STATUS
UNDER 37 C.F.R. § 1.27(g)(2)

Dear Commissioner:

The above-referenced patent application has been assigned to Applicant Entropic Communications, Inc. ("Entropic"), by Assignment recorded February 1, 2005, at Reel 015644, Frame 0823. Entropic's status as a small entity has changed due to its entry into a License Agreement in connection with this matter with an entity that does not qualify as a small entity. The undersigned attorney was not made aware of the License Agreement until after the filing date of this application. The above-referenced patent application is no longer entitled to small entity status.

The Eclipse Group Docket No. EC04001USU

Because this matter was erroneously submitted as an application entitled to small entity status and in order to correct this inadvertent mistake, enclosed herewith is a Credit Card Authorization in the amount of \$2,905.00 to cover the difference in fees between the current fee for a non-provisional application submitted by an entity not entitled to small entity status and the fee for a non-provisional application submitted by a small entity previously paid with a Transmittal of Missing Parts submitted January 26, 2005, together with the additional fees required for the late oath or declaration surcharge, the additional claims, and a three-month extension of time. The Commissioner is hereby authorized to charge any additional fees as required or credit any overpayment to Deposit Account No. 50-2542. A duplicate copy of this notification of Loss of Entitlement to Small Entity Status is enclosed.

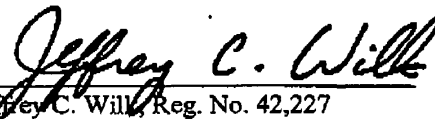
Correction of the entity status of said application is respectfully requested to be entered into the records of the United States Patent and Trademark Office. This change of entity status is signed by an attorney of record as required by 37 C.F.R. § 1.33(b).

Respectfully submitted,

THE ECLIPSE GROUP LLP
Attorney for Applicant

Date: 08/31/06

By


Jeffrey C. Will, Reg. No. 42,227

10605 Balboa Blvd., Suite 300
Granada Hills, CA 91344

(818) 488-8148 Telephone
(818) 332-4205 Facsimile
jcw@eclipsegrp.com

Enc. Credit Card Authorization

Customer No. 34408

The Eclipse Group Docket No. EC04001USU

Because this matter was erroneously submitted as an application entitled to small entity status and in order to correct this inadvertent mistake, enclosed herewith is a Credit Card Authorization in the amount of \$2,905.00 to cover the difference in fees between the current fee for a non-provisional application submitted by an entity not entitled to small entity status and the fee for a non-provisional application submitted by a small entity previously paid with a Transmittal of Missing Parts submitted January 26, 2005, together with the additional fees required for the late oath or declaration surcharge, the additional claims, and a three-month extension of time. The Commissioner is hereby authorized to charge any additional fees as required or credit any overpayment to Deposit Account No. 50-2542. A duplicate copy of this notification of Loss of Entitlement to Small Entity Status is enclosed.

Correction of the entity status of said application is respectfully requested to be entered into the records of the United States Patent and Trademark Office. This change of entity status is signed by an attorney of record as required by 37 C.F.R. § 1.33(b).

Respectfully submitted,

THE ECLIPSE GROUP LLP
Attorney for Applicant

Date: 08/31/06

By: Jeffrey C. Will
Jeffrey C. Will, Reg. No. 42,227

10605 Balboa Blvd., Suite 300
Granada Hills, CA 91344

(818) 488-8148 Telephone
(818) 332-4205 Facsimile
jcw@eclipsegrp.com

Enc. Credit Card Authorization

Customer No. 34408

Transaction List

Search by

☐ Accounting Date: Operator ID:
(MMDDYY)

Accounting Date

Starts:

Ends:

☒ Name/Number:

☐ Attny Docket No.:

☐ Deposit Account No.:



Accounting Date	Operator ID	Seq. No.	Txn Src	Fee Code	St	Amount	Name/Number	Dep Acct
02/04/2005	RAMPTAS	134	SALE	8021	A	40.00	10889975	
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02/01/2005	SSITHIB1	27	SALE	2201	A	200.00	10889975	
02/01/2005	SSITHIB1	26	SALE	2202	A	1,525.00	10889975	
02/01/2005	SSITHIB1	25	SALE	2051	A	65.00	10889975	
02/01/2005	SSITHIB1	24	SALE	2001	A	395.00	10889975	



Adjustment Detail

Authorization Detail



Adjustment date: 09/06/2006 RMEBRAHT
02/01/2005 SSITHIB1 00000017 10889975
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02 FC:2051 -65.00 OP

Adjustment date: 09/06/2006 RMEBRAHT
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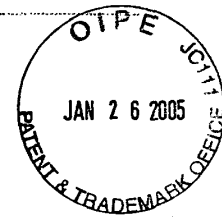
Adjustment date: 09/06/2006 RMEBRAHT
02/01/2005 SSITHIB1 00000017 10889975
05 FC:2253 -510.00 OP

FAX COVER SHEET



THE ECLIPSE GROUP

10453 Raintree Lane
Northridge, CA 91326
Phone: (818)831-9431
Fax: (818) 332-4205



Send to: Mail Stop Missing Parts	From: Mariana Paula Noli
Company: USPTO	Date: January 26, 2005
Fax Number: (703) 746-4060	Phone No.: (818) 885 1685

- ☐ Urgent
☐ Reply ASAP
☐ Please comment
☐ Please review
☐ For your information

Total pages, including cover: 17

Comments:

Applicant: Entropic Communications, Inc.
 Title: "Broadband Cable Network Utilizing Common Bit-Loading"
 Application No.: 10/889,975
 Attorney Docket Number: EC04001USU

Please acknowledge receipt of the following RESPONSE TO NOTICE OF MISSING PARTS:

- 1) Transmittal of Missing Parts (2 pages + copy)
- 2) Copy of the Notice of Missing Parts mailed on August 26, 2004 (2 pages)
- 3) Copy of the Combined Declaration and POA signed by inventors Anton Monk, Brett Bernath, Yusuf Ozturk and Ron Porat (6 pages)
- 4) Preliminary Amendments Under 37 C.F.R. §1.115 (4 pages)
- 4) Credit Card Authorization in the amount of \$ 2,695.00 (1 page)

Certificate of Transmission

I hereby certify that this document (along with any papers referenced as being attached or enclosed) is being transmitted to the United States Patent and Trademark Office via facsimile to Fax No. (703) 746-4060, on the date set forth above.

Mariana Paula Noli

RECEIVED
 FEB - 1 2005
 OIPE/JCWS

Atty. Docket: EC04001USU

PATENT
SERIAL NO. 10/889,975

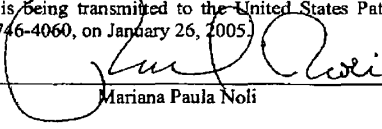
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of SiRF Technology, Inc.)
Inventor(s): Anton Monk et al.) Group Art: 2611
Serial No.: 10/889,975) Examiner: Unassigned
Filed: 07/12/2004)
Title: Broadband Cable Network Utilizing Common Bit-Loading)



CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence (along with any paper referred to as being attached or enclosed) is being transmitted to the United States Patent and Trademark Office, Fax No. (703) 746-4060, on January 26, 2005.


Mariana Paula Noli

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF MISSING PARTS

Dear Commissioner:

Applicants are in receipt of the Notice of Missing Parts, dated August 26, 2004, setting a two month shorten statutory period of October 26, 2004 to respond.

Applicants respectfully request an additional three (3) month extension of time to respond to the Notice of Missing Requirements pursuant to 37 C.F.R. 1.136(a). An additional \$510.00 is enclosed to cover the required extension fee.

In response to the Notice of Missing Parts, Applicant has enclosed the following:

1. A Copy of the Notice of Missing Parts mailed on August 26, 2004. (2 pages)
2. A Copy of the combined declaration and POA signed by inventors Anton Monk, Brett Bernath, Yusuf Ozturk and Ron Porat. (6 pages)
3. Preliminary Amendments under 37 C.F.R. § 1.115. (4 pages)

Atty. Docket: EC04001USU**PATENT
SERIAL NO. 10/889,975**

4. Credit Card Authorization in the amount of \$2,695.00 (\$395.00 Basic Statutory Filing Fee; \$65.00 late oath or declaration surcharge for this application; \$1,725.00 for additional claims, \$510.00 for three month extension of time).

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment, to our Deposit Account No. 502542. A copy of this sheet is enclosed.

Respectfully submitted,
THE ECLIPSE GROUP

Date: 01/26/2005

By: _____

Jeffrey C. Wilk

Jeffrey C. Wilk, Reg. No. 42,227
Attorney for Applicants

10453 Raintree Lane
Northridge, CA 91326
(818) 831-9431 Telephone
(818) 332-4205 Facsimile

Customer No. 34408

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01/26/2005 15:56 8183324205

THE ECLIPSE GROUP

PAGE 05/17

Page 1 of 2



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/889,975	07/12/2004	Magnus Berggren	BC04001USU

34408
THE ECLIPSE GROUP
10453 RAINTREE LANE
NORTHRIDGE, CA 91326

CONFIRMATION NO. 6587

FORMALITIES LETTER

OC000000812640681

Date Mailed: 08/26/2004



NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.
Applicant must submit \$ 770 to complete the basic filing fee for a non-small entity. If appropriate, applicant may make a written assertion of entitlement to small entity status and pay the small entity filing fee (37 CFR 1.27).
- The oath or declaration is missing.
A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(e) of \$130 for a non-small entity, must be submitted with the missing items identified in this letter.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Additional claim fees of \$1270 as a non-small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.

SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is \$2170 for a Large Entity

- \$770 Statutory basic filing fee.
- \$130 Late oath or declaration Surcharge.

02/01/2005 SSITHIB1 00000017 10889975
01 FC:2001 395.00 OP
02 FC:2051 65.00 OP
02/01/2005 SSITHIB1 00000017 10889975
03 FC:2202 1525.00 OP
04 FC:2201 200.00 OP

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01/26/2005 15:56

8183324205

THE ECLIPSE GROUP

PAGE 06/17

Page 2 of 2

- Total additional claim fee(s) for this application is \$1270
 - \$172 for 2 independent claims over 3.
 - \$1098 for 61 total claims over 20.

Replies should be mailed to: Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

*A copy of this notice **MUST** be returned with the reply.*

TEV
Customer Service Center
Initial Patent Examination Division (703) 308-1202
PART 1 - ATTORNEY/APPLICANT COPY

DEC-20-2004 MON 11:11 AM

FAX NO.

P. 04



Atty. Docket No. EC04001USU

PATENT

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below-named inventor, I hereby declare that:

1. My residence, post office address, and citizenship are as stated below next to my name.
2. I believe I am the original and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention titled:

BROADBAND CABLE NETWORK UTILIZING COMMON BIT-LOADING

the specification of which (check one):

- ☐ is attached hereto.
- ☒ was filed on: July 12, 2004 as
- ☐ Application Serial No.: 10/889,975
- ☐ and was amended on: _____

3. I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims.

4. I acknowledge the duty to disclose information which is material to patentability as described in 37 C.F.R. 1.56, which is defined on the attached page.

5. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

6. I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose material information as defined in 37 C.F.R. 1.56, which is defined on the attached page, which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Serial No. 10/889,975

- 1 -

FROM : ENTROPIC COMMUNICATIONS

FAX NO. : 858 546-2411

Jan. 25 2005 12:04PM P2

Prior United States Application(s)

10/778,505	February 13, 2004	Pending
(Application Serial No.)	(Filing Date)	(Status)-(Patented, pending, abandoned)
09/910,412	July 21, 2001	Pending
(Application Serial No.)	(Filing Date)	(Status)-(Patented, pending, abandoned)

7. I hereby appoint Jennifer H. Hamilton (Reg. No. 41,814), Francisco A. Rubio-Campos (Reg. No. 45,358), Gregory B. Gulliver (Reg. No. 44,138), Jeffrey C. Wilk (Reg. No. 42,227), David P. Gloekler (Reg. No. 41,037), and other registered patent attorneys and agents of the firm The Eclipse Group, as my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith.

Please direct all correspondence to:

Jennifer H. Hamilton
THE ECLIPSE GROUP
10453 Raintree Lane
Northridge, CA 91326

Please direct telephone calls to Jennifer H. Hamilton at 818.831.9431 (facsimile 818.332.4205).

Full name of first joint inventor:	Anton Monk
Date:	
Residence and Post Office Address:	5706 Willowmere Lane San Diego, CA 92130
Citizenship:	US
Full name of second joint inventor:	Brett Bernath
Date:	_____
Residence and Post Office Address:	4167 Calle Marde Ballenas San Diego, CA 92130
Citizenship:	US

Serial No. 10/889,975

- 2 -

Prior United States Application(s)

10/778,505	February 13, 2004	Pending
(Application Serial No.)	(Filing Date)	(Status)-(Patented, pending, abandoned)
09/910,412	July 21, 2001	Pending
(Application Serial No.)	(Filing Date)	(Status)-(Patented, pending, abandoned)

7. I hereby appoint Jennifer H. Hamilton (Reg. No. 41,814), Francisco A. Rubio-Campos (Reg. No. 45,358), Gregory B. Gulliver (Reg. No. 44,138), Jeffrey C. Wilk (Reg. No. 42,227), David P. Gloekler (Reg. No. 41,037), and other registered patent attorneys and agents of the firm The Eclipse Group, as my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith.

Please direct all correspondence to:

Jennifer H. Hamilton
THE ECLIPSE GROUP
10453 Raintree Lane
Northridge, CA 91326

Please direct telephone calls to Jennifer H. Hamilton at 818.831.9431 (facsimile 818.332.4205).

Full name of first joint inventor: Anton Monk

Date:

Residence and Post Office Address: 5706 Willowmere Lane
San Diego, CA 92130

Citizenship: US

Full name of second joint inventor: Brett Bernath

Date:

Residence and Post Office Address: 4167 Calle Marde Ballenas
San Diego, CA 92130

Citizenship: US

Serial No. 10/889,975

- 2 -

Full name of third joint inventor: Yusuf Ozturk

Date:

Residence and Post Office Address: 12/17/2004
13092 Cayote Avenue,
San Diego, CA 92129

Citizenship: Turkey

Full name of fourth joint inventor: Ron Porat

Date:

Residence and Post Office Address: 8663 Via Mallorca #90
La Jolla, CA 92037

Citizenship: Israel

Serial No. 10/889,975

- 3 -

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01/26/2005 15:56 8183324205

THE ECLIPSE GROUP

PAGE 11/17

DEC-20-2004 MON 11:12 AM

FAX NO.

P. 05

Full name of third joint inventor: Yusuf Ozturk

Date:

Residence and Post Office Address: 13092 Cayote Avenue,
San Diego, CA 92129

Citizenship: Turkey

Full name of fourth joint inventor: Ron Porat

Date:

Residence and Post Office Address: Ron Porat 12/19/04
2760 Farragut #112
San Diego, CA 92106

Citizenship: Israel

Serial No. 10/889,075

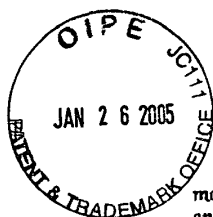
- 3 -

PAGE 11/17 * RCVD AT 1/26/2005 6:57:38 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-2/1 * DNIS:7464060 * CSID:8183324205 * DURATION (mm-ss):05-52

FROM :ENTROPIC COMMUNICATIONS

FAX NO. :858 546-2411

Jan. 25 2005 12:04PM P4

**Section 1.56 Duty to Disclose Information Material to Patentability.**

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is cancelled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

- (1) prior art cited in search reports of a foreign patent office in a counterpart application, and
- (2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

- (1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or
- (2) It refutes, or is inconsistent with, a position the applicant takes in:
 - (i) Opposing an argument of unpatentability relied on by the Office, or
 - (ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

- (1) Each inventor named in the application;
- (2) Each attorney or agent who prepares or prosecutes the application; and
- (3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

(e) In any continuation-in-part application, the duty under this section includes the duty to disclose to the Office all information known to the person to be material to patentability, as defined in paragraph (b) of this section, which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

Serial No. 10/889,975

- 4 -

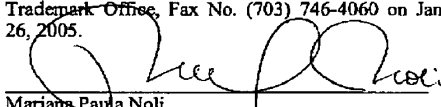


PATENT
Docket No.: EC04001USU
10/889,975

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Anton Monk et al. DOCKET NO.: EC04001USU
SERIAL NO.: 10/889,975 GROUP ART UNIT: 2611
DATE FILED: July 12, 2004 EXAMINER: Not yet assigned
Confirmation No.: 6587

TITLE: BROADBAND CABLE NETWORK UTILIZING COMMON BIT-LOADING

Certificate of Transmission I hereby certify that this correspondence (along with any paper referred to as being attached or enclosed) is being facsimile transmitted to the United States Patent and Trademark Office, Fax No. (703) 746-4060 on January 26, 2005.  Mariana Paula Noli
--

January 26, 2005

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT UNDER 37 C.F.R. § 1.115

Sir:

This Preliminary Amendment is being submitted with Applicants' Response to Notice to File Missing Parts of Non-provisional Application mailed August 26, 2004. Entry of the Amendment is respectfully requested.

02/01/2005 SSITHIB1 00000017 10889975

05 FC:2253

510.00 OP



PATENT
Docket No.: EC04001USU
10/889,975

TO THE SPECIFICATION

Please amend the specification as follows:

Please replace the list of inventors at the top of page 1 with the following:

INVENTORS

ANTON MONK

BRETT BERNATH

YUSUF OZTURK

&

RON PORAT

Please replace the paragraph [001] on page 1 with the following rewritten paragraph:

[001] This application is a continuation-in-part of U. S. Utility Application Serial No. ~~10/788,505~~10/778,505 titled "Network Interface Device and Broadband Local Area Network Using Coaxial Cable," filed February 13, 2004, which is a continuation of U. S. Utility Application Serial No. 09/910,412 titled "Network Interface Device and Broadband Local Area Network Using Coaxial Cable," filed July 21, 2001, which claims the benefit of U. S. Provisional Application Serial No. 60/288,967 titled "Network Interface and Broadband Local Area Network Using Coaxial Cable," filed May 4, 2001, all of which applications are incorporated herein, in their entirety, by this reference. This application is also a continuation-in-part of U. S. Utility Application Serial No. 10/322,834 titled "Broadband Network for Coaxial Cable Using Multi-carrier Modulation," filed December 18, 2002, which is a continuation of U. S. Utility Application Serial No. 10/230,687 titled "Broadband Network for Coaxial Cable Using Multi-

- 2 -

PATENT
Docket No.: EC04001USU
10/889,975

carrier Modulation,” filed August 29, 2002, now abandoned, which claims the benefit of the following U. S. Provisional Applications: (a) Serial No. 60/316,820 titled “Broadband Local Area Network Using Coaxial Cable,” filed August 30, 2001; (b) Serial No. 60/363,420 titled “Method of Bit and Energy Loading to Reduce Interference Effects in Devices Sharing a Communication Medium,” filed March 12, 2002; and (c) Serial No. 60/385,361 titled “Power Loading to Reduce Interference Effects in Devices Sharing a Communication Medium,” filed June 3, 2002, all of which applications are incorporated herein, in their entirety, by this reference.

PATENT
Docket No.: EC04001USU
10/889,975

REMARKS

The enclosed amendments amend the specification by naming Anton Monk as the first named inventor and naming Brett Bernath, Yusuf Ozturk and Ron Porat as the additional inventors, in conformity with the Combined Declaration and Power of Attorney concurrently submitted herewith, and also corrects a typographical error in the Reference to Earlier-Filed Applications of the specification. Therefore, these amendments do not involve any new matter or objectionable changes.

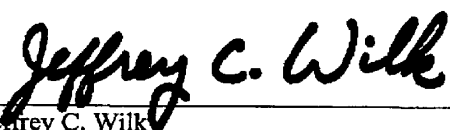
CONCLUSION

Entry of the Amendment is respectfully requested.

Respectfully submitted,
THE ECLIPSE GROUP

Date: January 26, 2005

By: _____


Jeffrey C. Wilk
Attorney for Applicant

Customer No. 34408

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2003

Application or Docket Number

10089975

CLAIMS AS FILED - PART I

(Column 1) (Column 2)

TOTAL CLAIMS	81	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	81 minus 20 =	61
INDEPENDENT CLAIMS	5 minus 3 =	2
MULTIPLE DEPENDENT CLAIM PRESENT ☐		

* If the difference in column 1 is less than zero, enter "0" in column 2

CLAIMS AS AMENDED - PART II

(Column 1) (Column 2) (Column 3)

AMENDMENT A	11/26/05	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	* 81	Minus	= 81	= 1
	Independent	* 5	Minus	= 5	= 1
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐				

(Column 1) (Column 2) (Column 3)

AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	*	Minus	=	=
	Independent	*	Minus	=	=
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐				

(Column 1) (Column 2) (Column 3)

AMENDMENT C		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	*	Minus	=	=
	Independent	*	Minus	=	=
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐				

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
 The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

SMALL ENTITY TYPE ☐ OR

OTHER THAN SMALL ENTITY

RATE	FEE
BASIC FEE	385.00
XS 9=	
X43=	
+145=	
TOTAL	

RATE	FEE
BASIC FEE	770.00
XS 18=	1098
2 X86=	172
+290=	
TOTAL	2090

SMALL ENTITY OR

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
XS 9=	
X43=	
+145=	
TOTAL	
ADDIT. FEE	

RATE	ADDITIONAL FEE
XS 18=	50
X86=	360
+290=	
TOTAL	
ADDIT. FEE	

RATE	ADDITIONAL FEE
XS 9=	
X43=	
+145=	
TOTAL	
ADDIT. FEE	

RATE	ADDITIONAL FEE
XS 18=	
X86=	
+290=	
TOTAL	
ADDIT. FEE	

RATE	ADDITIONAL FEE
XS 9=	
X43=	
+145=	
TOTAL	
ADDIT. FEE	

RATE	ADDITIONAL FEE
XS 18=	
X86=	
+290=	
TOTAL	
ADDIT. FEE	

BEST AVAILABLE COPY

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD						Application or Docket Number 10/889,975			
Substitute for Form PTO-875									
APPLICATION AS FILED - PART I									
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY			
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)			
BASIC FEE (37 CFR 1.16(a), (b), or (c))									
SEARCH FEE (37 CFR 1.16(k), (l), or (m))									
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))									
TOTAL CLAIMS (37 CFR 1.16(i))		minus 20 =	x 25 =		x 50 =				
INDEPENDENT CLAIMS (37 CFR 1.16(h))		minus 3 =	x 100 =		x 200 =				
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).								
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(g))									
* If the difference in column 1 is less than zero, enter "0" in column 2			TOTAL		TOTAL				
APPLICATION AS AMENDED - PART II									
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)		
Total (37 CFR 1.16(i))	81	minus 81	=	x 25 =		x 50 =			
Independent (37 CFR 1.16(h))	5	minus 5	=	x 100 =		x 200 =			
Application Size Fee (37 CFR 1.16(s))									
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIMS (37 CFR 1.16(g))									
TOTAL ADD'L FEE						TOTAL ADD'L FEE			
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)		
Total (37 CFR 1.16(i))		minus	=	x		x			
Independent (37 CFR 1.16(h))		minus	=	x		x			
Application Size Fee (37 CFR 1.16(s))									
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIMS (37 CFR 1.16(g))									
TOTAL ADD'L FEE						TOTAL ADD'L FEE			

* If the entry in column 1 is less than the entry in column 2, enter "0" in column 3.

** If the Highest Number Previously Paid For (37 CFR 1.16(h)) is greater than the entry in column 1, enter "0" in column 3.

*** If the Highest Number Previously Paid For (37 CFR 1.16(h)) is greater than the entry in column 1, enter "0" in column 3.

The Highest Number Previously Paid For (37 CFR 1.16(h)) is the highest number found in the appropriate box in column 1.

This collection of information is required by 37 CFR 1.16. The information is required to determine if you are eligible to file (and by the USPTO) to process an application. Confidentiality is governed by 35 U.S.C. 42 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time required to complete this form and/or suggestions for reducing the burden should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

19889745

APPLICATION NUMBER

?	Rejected	—	(Through Humeral) Cancelled	N	Non-Elected	A	Appeal
=	Allowed	+	Restricted	I	Interference	O	Objected

Claim	Date	Claim	Date	Claim	Date
1		51		101	
2		52		102	
3		53		103	
4		54		104	
5		55		105	
6		56		106	
7		57		107	
8		58		108	
9		59		109	
10		60		110	
11		61		111	
12		62		112	
13		63		113	
14		64		114	
15		65		115	
16		66		116	
17		67		117	
18		68		118	
19		69		119	
20		70		120	
21		71		121	
22		72		122	
23		73		123	
24		74		124	
25		75		125	
26		76		126	
27		77		127	
28		78		128	
29		79		129	
30		80		130	
31		81		131	
32		82		132	
33		83		133	
34		84		134	
35		85		135	
36		86		136	
37		87		137	
38		88		138	
39		89		139	
40		90		140	
41		91		141	
42		92		142	
43		93		143	
44		94		144	
45		95		145	
46		96		146	
47		97		147	
48		98		148	
49		99		149	
50		100		150	

If more than 150 claims or 10 actions
staple additional sheet here



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov

APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/889,975	07/12/2004	Magnus Berggren	EC04001USU

34408
 THE ECLIPSE GROUP
 10453 RAINTREE LANE
 NORTHRIDGE, CA 91326

CONFIRMATION NO. 6587

FORMALITIES LETTER



OC000000013640681

Date Mailed: 08/26/2004

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

*Filing Date Granted***Items Required To Avoid Abandonment:**

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.
Applicant must submit \$ 770 to complete the basic filing fee for a non-small entity. If appropriate, applicant may make a written assertion of entitlement to small entity status and pay the small entity filing fee (37 CFR 1.27).
- The oath or declaration is missing.
A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(e) of \$130 for a non-small entity, must be submitted with the missing items identified in this letter.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Additional claim fees of **\$1270** as a non-small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.

SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is **\$2170** for a Large Entity

- **\$770** Statutory basic filing fee.
- **\$130** Late oath or declaration Surcharge.

- Total additional claim fee(s) for this application is **\$1270**

- **\$172** for **2** independent claims over 3.
- **\$1098** for **61** total claims over 20.

Replies should be mailed to: Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

*A copy of this notice **MUST** be returned with the reply.*

TCU!

Customer Service Center
Initial Patent Examination Division (703) 308-1202

PART 3 - OFFICE COPY

22651 U.S. PTO
071204

PTO/SB/05 (04-04)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office. U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

UTILITY PATENT APPLICATION TRANSMITTAL <i>(Only for new nonprovisional applications under 37 CFR 1.53(b))</i>	Attorney Docket No.	EC04001USU
	First Inventor	Magnus Breggren
	Title	Broadband Cable Network Utilizing Common Bit-Loading
	Express Mail Label No.	EU 245163392 US

19270 U.S. PTO
101889975
071204

APPLICATION ELEMENTS <i>See MPEP chapter 600 concerning utility patent application contents.</i>	ADDRESS TO: Commissioner for Patents P.O. Box 1450 Alexandria VA 22313-1450
--	---

1. ☐ Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
2. ☐ Applicant claims small entity status.
See 37 CFR 1.27.
3. ☒ Specification [Total Pages 48]
(preferred arrangement set forth below)
 - Descriptive title of the invention
 - Cross Reference to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to sequence listing, a table, or a computer program listing appendix
 - Background of the Invention
 - Brief Summary of the Invention
 - Brief Description of the Drawings *(if filed)*
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
4. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets 11]
5. Oath or Declaration [Total Sheets]
 - a. ☐ Newly executed (original or copy)
 - b. ☐ Copy from a prior application (37 CFR 1.63(d))
(for continuation/divisional with Box 18 completed)
 - i. ☐ **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s) name in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
6. ☐ Application Data Sheet. See 37 CFR 1.76

7. ☐ CD-ROM or CD-R in duplicate, large table or Computer Program *(Appendix)*
8. Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all necessary)*
 - a. ☐ Computer Readable Form (CRF)
 - b. Specification Sequence Listing on:
 - i. ☐ CD-ROM or CD-R (2 copies); or
 - ii. ☐ Paper
 - c. ☐ Statements verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

9. ☐ Assignment Papers (cover sheet & document(s))
10. ☐ 37 CFR 3.73(b) Statement ☐ Power of Attorney
(when there is an assignee)
11. ☐ English Translation Document *(if applicable)*
12. ☐ Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations
13. ☐ Preliminary Amendment
14. ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
15. ☐ Certified Copy of Priority Document(s)
(if foreign priority is claimed)
16. ☐ Nonpublication Request under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or its equivalent.
17. ☐ Other:

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title, or in an Application Data Sheet under 37 CFR 1.76:

☐ Continuation
 ☐ Divisional
 ☒ Continuation-in-part (CIP)
 of prior application No.: 10/788,505
10/322,834

Prior application information: Examiner Faille, Andrew I. Art Unit: 2611
 For CONTINUATION OR DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

19. CORRESPONDENCE ADDRESS

☒ Customer Number: 34408 OR ☐ Correspondence address below

Name			
Address			
City	State	Zip Code	
Country	Telephone	Fax	

Name (Print/Type)	Francisco A. Rubio-Campos	Registration No. (Attorney/Agent)	45,348
Signature		Date	July 12, 2004

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

BROADBAND CABLE NETWORK UTILIZING COMMON BIT-LOADING

INVENTORS

MAGNUS BERGGREN

RON LEE

WEE-PENG GOH

ANTON MONK

ITZHAK GURANTZ

BRETT BERNATH

LADD EL WARDANI

RON PORAT

BACKGROUND OF THE INVENTION

1. Reference to Earlier-Filed Applications

[001] This application is a continuation-in-part of U. S. Utility Application Serial No. 10/788,505 titled "Network Interface Device and Broadband Local Area Network Using Coaxial Cable," filed February 13, 2004, which is a continuation of U. S. Utility Application Serial No. 09/910,412 titled "Network Interface Device and Broadband Local Area Network Using Coaxial Cable," filed July 21, 2001, which claims the benefit of U. S. Provisional Application Serial No. 60/288,967 titled "Network Interface and Broadband Local Area Network Using Coaxial Cable," filed May 4, 2001, all of which applications are incorporated herein, in their entirety, by this reference. This application is also a continuation-in-part of U. S. Utility Application Serial No. 10/322,834 titled "Broadband Network for Coaxial Cable Using Multi-carrier Modulation," filed

December 18, 2002, which is a continuation of U. S. Utility Application Serial No. 10/230,687 titled "Broadband Network for Coaxial Cable Using Multi-carrier Modulation," filed August 29, 2002, now abandoned, which claims the benefit of the following U. S. Provisional Applications: (a) Serial No. 60/316,820 titled "Broadband Local Area Network Using Coaxial Cable," filed August 30, 2001; (b) Serial No. 60/363,420 titled "Method of Bit and Energy Loading to Reduce Interference Effects in Devices Sharing a Communication Medium," filed March 12, 2002; and (c) Serial No. 60/385,361 titled "Power Loading to Reduce Interference Effects in Devices Sharing a Communication Medium," filed June 3, 2002, all of which applications are incorporated herein, in their entirety, by this reference.

2. Field of Invention

[002] The invention relates to broadband communication networks, and in particular to broadband communication networks utilizing coaxial cable.

3. Related Art

[003] The worldwide utilization of external television ("TV") antennas for receiving broadcast TV, and of cable television and satellite TV is growing at a rapid pace. These TV signals from an external TV antenna, cable TV and satellite TV (such as from direct broadcast satellite "DBS" system) are usually received externally to a building (such as a home or an office) at a point-of-entry ("POE"). There may be multiple TV receivers and/or video monitors within the building and these multiple TV receivers may be in signal communication with the POE via a broadband cable network that may include a plurality of broadband cables and broadband cable splitters. Generally, these broadband

cable splitters distribute downstream signals from the POE to various terminals (also known as “nodes”) in the building. The nodes may be connected to various types of customer premise equipment (“CPE”) such as cable converter boxes, televisions, video monitors, cable modems, cable phones and video game consoles.

[004] Typically, these broadband cables and broadband cable splitters are implemented utilizing coaxial cables and coaxial cable splitters, respectively. Additionally, in the case of cable TV or satellite TV, the multiple TV receivers may be in signal communication with the broadband cable network via a plurality of cable converter boxes, also known as set-top boxes (“STBs”), that are connected between the multiple TV receivers and the broadband cable network via a plurality of network nodes.

[005] Typically, a STB connects to a coaxial cable from a network node (such as the wall outlet terminal) to receive cable TV and/or satellite TV signals. Usually, the STB receives the cable TV and/or satellite TV signals from the network node and converts them into tuned TV signals that may be received by the TV receiver and/or video signals that may be received by a video monitor.

[006] In FIG. 1, an example known broadband cable network 100 (also known as a “cable system” and/or “cable wiring”) is shown within a building 102 (also known as customer premises or “CP”) such as a typical home or office. The broadband cable system 100 may be in signal communication with an optional cable service provider 104, optional broadcast TV station 106, and/or optional DBS satellite 108, via signal path 110, signal path 112 and external antenna 114, and signal path 116 and DBS antenna 118,

/ respectively. The broadband cable system 100 also may be in signal communication with optional CPEs 120, 122 and 124, via signal paths 126, 128 and 130, respectively.

[007] In FIG. 2, another example known broadband cable system is shown within a building (not shown) such as a typically home. The cable system 200 may be in signal communication with a cable provider (not shown), satellite TV dish (not shown), and/or external antenna (not shown) via a signal path 202 such as a main coaxial cable from the building to a cable connection switch (not shown) outside of the building. The cable system 200 may include a POE 204 and main splitter 206, a sub-splitter 208, and STBs A 210, B 212 and C 214.

[008] Within the cable system 200, the POE 204 may be in signal communication with main splitter 206 via signal path 216. The POE 204 may be the connection point from the cable provider which is located external to the building of the cable system 200. The POE 202 may be implemented as a coaxial cable connector, transformer and/or filter.

[009] The main splitter 206 may be in signal communication with sub-splitter 208 and STB A 210 via signal paths 218 and 220, respectively. The sub-splitter 208 may be in signal communication with STB B 212 and STB C 214 via signal paths 222 and 224, respectively. The main splitter 206 and sub-splitter 208 may be implemented as coaxial cable splitters. The STB A 210, B 212 and C 214 may be implemented by numerous well known STB coaxial units such as cable television set-top boxes and/or satellite television set-top boxes. Typically, the signal paths 202, 216, 218, 220, 222 and 224 may be implemented utilizing coaxial cables.

[0010] In an example operation, the cable system 200 would receive CATV, cable and/or satellite radio frequency ("RF") TV signals 226 via signal path 202 at the POE 204. The POE 204 may pass, transform and/or filter the received RF signals to a second RF signal 228 that may be passed to the main splitter 206 via signal path 216. The main splitter 206 may then split the second RF signal 228 into split RF signals 230 and 232. The split RF signal 230 is then passed to the sub-splitter 208 and the split RF signal 232 is passed to the STB A 210 via signal paths 218 and 220, respectively. Once the split RF signal 232 is received by the STB A 210, the STB A 210 may convert the received split RF signal 232 into a baseband signal 238 that may be passed to a video monitor (not shown) in signal communication with the STB A 210.

[0011] Once the split RF signal 230 is received by the sub-splitter 208, the sub-splitter 208 splits the received split RF signal 230 into sub-split RF signals 234 and 236 that are passed to STB B 212 and STB C 214 via signal paths 222 and 224, respectively. Once the sub-split RF signals 234 and 236 are received by the STB B 212 and STB C 214, respectively, the STB B 212 and STB C 214 may convert the received sub-split RF signals 234 and 236 into baseband signals 240 and 242, respectively, that may be passed to video monitors (not shown) in signal communication with STB B 212 and STB C 214.

[0012] As the utilization of the numbers and types of CPEs in buildings increase (such as the number of televisions, video monitors, cable modems, cable phones, video game consoles, etc., increase in a typical home or office environment), there is a growing need for different CPEs to communicate between themselves in a network type of environment within the building. As an example, users in a home may desire to play network video

games between different rooms in home environment utilizing the coaxial cable network installed throughout the home. Additionally, in another example, users in a home may want to share other types of digital data (such video and/or computer information) between different rooms in a home.

[0013] Unfortunately, most broadband cable networks (such as the examples shown in both FIG. 1 and FIG. 2) presently utilized within most existing buildings are not configured to allow for easy networking between CPEs because most broadband cable networks utilize broadband cable splitters that are designed to split an incoming signal from the POE into numerous split signals that are passed to the different nodes in different rooms.

[0014] As an example, in a typical home the signal splitters are commonly coaxial cable splitters that have an input port and multiple output ports. Generally, the input port is known as a common port and the output ports are known as tap ports. These types of splitters are generally passive devices and may be constructed using lumped element circuits with discrete transformers, inductors, capacitors, and resistors and/or using strip-line or microstrip circuits. These types of splitters are generally bi-directional because they may also function as signal combiners, which sum the power from the multiple tap ports into a single output at the common port.

[0015] However, presently many CPEs utilized in modern cable and DBS systems have the ability to transmit as well as receive. If a CPE is capable of transmitting an upstream signal, the transmitted upstream signal from that CPE typically flows through the signal splitters back to the POE and to the cable and/or DBS provider. In this reverse flow

direction, the signal splitters function as signal combiners for upstream signals from the CPEs to the POE. Usually, most of the energy from the upstream signals is passed from the CPEs to the POE because the splitters typically have a high level of isolation between the different connected terminals resulting in significant isolation between the various CPEs.

[0016] The isolation creates a difficult environment to network between the different CPEs because the isolation results in difficulty for transmitting two-way communication data between the different CPEs. Unfortunately, CPEs are becoming increasingly complex and a growing number of users desire to connect these multiple CPEs into different types of networks.

[0017] Therefore, there is a need for a system and method to connect a variety of CPEs into a local network, such as local-area network ("LAN"), within a building such as a home or office. Additionally, there is a need for a system and method to connect a variety of CPEs into a local network, such as a LAN, within a building such as a home or office while allowing the utilization of an existing coaxial cable network within the building.

SUMMARY

[0018] A broadband cable network ("BCN") for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in the BCN is disclosed. The BCN may include a transmitting node within the plurality of nodes where the transmitting node is capable of sending a probe signal to the plurality of nodes, and at

least one receiving node within the plurality of nodes in signal communication with the transmitting node. The at least one receiving node is capable of transmitting a first response signal in response to receiving the probe signal. The first response signal includes a first bit-loading modulation scheme determined by the at least one receiving node. The transmitting node is further capable of determining the common bit-loading modulation scheme from the first response signal.

[0019] The BCN may further include a sub-plurality of receiving nodes within the plurality of nodes wherein the sub-plurality of receiving nodes are capable of transmitting a sub-plurality of response signals in response to receiving the probe signal. The sub-plurality of response signals may include other bit-loading modulation schemes and each bit-loading modulation scheme may be determined by a receiving node within the sub-plurality of receiving nodes. The transmitting node may be capable of determining the common bit-loading modulation scheme from the first response signal and the sub-plurality of response signals.

[0020] As an example of operation, the BCN is capable of transmitting a probe signal from the transmitting node to the plurality of receiving nodes and receiving a plurality of response signals from the corresponding receiving nodes of the plurality of receiving nodes, wherein each of the response signals includes a bit-loading modulation scheme determined by the corresponding receiving node. The BCN is further capable of determining the common bit-loading modulation scheme from the received plurality of response signals.

[0021] Other systems, methods, features and advantages of the invention will be or will become apparent to one with skill in the art upon examination of the following figures and detailed description. It is intended that all such additional systems, methods, features and advantages be included within this description, be within the scope of the invention, and be protected by the accompanying claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] The invention can be better understood with reference to the following figures. The components in the figures are not necessarily to scale, emphasis instead being placed upon illustrating the principles of the invention. In the figures, like reference numerals designate corresponding parts throughout the different views.

[0023] FIG. 1 shows a block diagram of an example implementation of a known broadband cable system within a building.

[0024] FIG. 2 shows a block diagram of another example implementation of a known broadband cable system within the building shown in FIG. 1.

[0025] FIG. 3 shows a block diagram of an example implementation of a broadband cable network ("BCN") within a building.

[0026] FIG. 4 shows a functional diagram showing the communication between the different nodes shown in the BCN of FIG. 3 in a unicast mode.

[0027] FIG. 5 shows another functional diagram showing the communication between the different nodes shown in the BCN of FIG. 3 in a broadcast mode.

[0028] FIG. 6 shows a block diagram of an example implementation of the BCN shown in FIG. 3 when node A is communicating to node B.

[0029] FIG. 7 shows a block diagram of another example implementation of the BCN shown in FIG. 3 when node A is communicating to node C.

[0030] FIG. 8 shows a block diagram of an example implementation of the BCN shown in FIG. 3 when node C is communicating to node B.

[0031] FIG. 9 shows a plot of the transfer function versus frequency for the channel path between node A and node B and the channel path between node A and node C shown in both FIGs. 6 and 7.

[0032] FIG. 10A shows a plot of the bit-loading constellation versus carrier number for the channel path between node A and node B shown in FIG. 9.

[0033] FIG. 10B shows a plot of the bit-loading constellation versus carrier number for the channel path between node A and node C shown in FIG. 9.

[0034] FIG. 10C shows a plot of the bit-loading constellation versus carrier number for the resulting broadcast channel path between node A and node B and node A and node C based on the constellations shown in FIGs. 10A and 10B.

[0035] FIG. 11 shows a flowchart illustrating the method performed by the BCN shown in FIG. 3.

DETAILED DESCRIPTION

[0036] In the following description of the preferred embodiment, reference is made to the accompanying drawings that form a part hereof, and in which is shown by way of illustration a specific embodiment in which the invention may be practiced. It is to be understood that other embodiments may be utilized and structural changes may be made without departing from the scope of the present invention.

[0037] In FIG. 3, a block diagram of an example implementation of a broadband cable network (“BCN”) 300 utilizing common bit-loading within a customer premises (“CP”) 302 is shown. The CP 302 may be a building such as a home or office having a plurality of customer premises equipment (“CPE”) 304, 306 and 308 in signal communication with the BCN 300 via a plurality of corresponding CPE signal paths 310, 312 and 314. The BCN 300 may be in signal communication optionally with an external antenna (not shown), cable provider (not shown) and/or direct broadcast satellite (“DBS”) provider (not shown) via external BCN path 316.

[0038] The BCN 300 may include a point-of-entry (“POE”) 320, a splitter network 322 and a plurality of nodes such as node A 324, node B 326 and node C 328. The splitter network 322 may be in signal communication with the POE 320, via signal path 330, and the plurality of nodes 324, 326 and 328 via signal paths 332, 334 and 336, respectively. The nodes 324, 326 and 328 may be in signal communication with the CPEs 304, 306 and 308 via signal paths 310, 312 and 314, respectively.

[0039] In an example operation, the BCN 300 receives input radio frequency (“RF”) signals from optionally the external antenna (not shown), cable provider (not shown)

and/or direct broadcast satellite (“DBS”) provider (not shown) at the POE 320 via external BCN path 316. The BCN 300 then passes the input RF signals from POE 320 to the splitter network 322, via signal path 330, and the splitter network 322 splits the input RF signal into split RF signals that are passed to the nodes 324, 326 and 328 via signal paths 332, 334 and 336, respectively. It is appreciated by those skilled in the art that the BCN 300 may be implemented as a coaxial cable network utilizing coaxial cables and components.

[0040] In FIG. 4, a functional diagram 400 showing the communication between various nodes 402, 404 and 406 corresponding to the nodes in the BCN 300, FIG. 3, is shown. The nodes 402, 404 and 406 may be interconnected between node pairs utilizing corresponding inter-node channels between the node pairs. It is appreciated by those skilled in the art that even if the nodes are individually connected with one another via a signal inter-node channel between the node pairs, each inter-node channel between node pairs may be asymmetric. Therefore, inter-node channels between node A 402, node B 404 and node C 406 may be asymmetric and therefore utilize different bit-loading modulation schemes depending on the direction of the signals between the nodes. As a result, the typically asymmetric inter-node channels between node A 402, node B 404 and node C 406 may be described by the corresponding direction-dependent node channels AB, BA, AC, CA, BC and CB.

[0041] As an example, node A 402 is in signal communication with node B 404 via signal paths 408 and 410. Signal path 408 corresponds to the AB channel and signal path 410 corresponds to the BA channel. Additionally, node A 402 is also in signal

communication with node C 406 via signal paths 412 and 414. Signal path 412 corresponds to the AC channel and signal path 414 corresponds to the CA channel. Similarly, node B 404 is also in signal communication with node C 406 via signal paths 416 and 418. Signal path 416 corresponds to the BC channel and signal path 418 corresponds to the CB channel.

[0042] In this example, the AB channel corresponds to the channel utilized by node A 402 transmitting to node B 404 along signal path 408. The BA channel corresponds to the reverse channel utilized by node B 404 transmitting to node A 402 along signal path 410. Similarly, the AC channel corresponds to the channel utilized by node A 402 transmitting to node C 406 along signal path 412. The CA channel corresponds to the reverse channel utilized by node C 406 transmitting to node A 402 along signal path 414. Moreover, the BC channel corresponds to the channel utilized by node B 404 transmitting to node C 406 along signal path 416. The CB channel corresponds to the reverse channel utilized by node C 406 transmitting to node B 404 along signal path 418.

[0043] In example of operation, in order for node A 402 to transmit the same message to both node B 404 and node C 406 using the AB channel along signal path 408 and AC channel along signal path 412, node A 402 will need to transmit (i.e., “unicast”) the same message twice, once to node B 404 and a second time to node C 406 because channel AB and channel AC may utilize different bit-loading modulation schemes.

[0044] In FIG. 5, another functional diagram 500 showing the communication between various nodes 502, 504 and 506 corresponding to the nodes in the BCN 300, FIG. 3, is shown. In FIG. 5, node A 502 may transmit a message in a broadcast mode (also known

as a “multicast” mode) simultaneously to node B 504 and node C 506 using an A-BC channel via signal path 508. The message transmission utilizing the A-BC channel, along signal path 508, is the equivalent of simultaneously transmitting a broadcast message from node A 502 to node B 504 via an AB channel along signal path 510 and to node C 506 via an AC channel along signal path 512 in a fashion that is similar to transmission described in FIG. 4. However, in order to insure that both node B 504 and node C 506 receive the transmissions broadcast signal from node A 502, node A 502 utilizes a bit-loading modulation scheme that is known as a common bit-loaded modulation scheme. The common bit-loaded modulation scheme transmitted via the A-BC channel, along signal path 508, is a combination of the bit-loading modulation scheme transmitted via the AB channel, along signal path 510, and the AC channel, along signal path 512.

[0045] It is appreciated by those skilled in the art that the different channels typically utilize different bit-loading modulation schemes because the channels are physically and electrically different in the cable network. Physically the channels typically vary in length between nodes and electrically vary because of the paths through and reflections from the various cables, switches, terminals, connections and other electrical components in the cable network. Bit-loading is the process of optimizing the bit distribution to each of the channels to increase throughput. A bit-loading scheme is described in U. S. Utility Application Serial No. 10/322,834 titled “Broadband Network for Coaxial Cable Using Multi-carrier Modulation,” filed December 18, 2002, which is incorporated herein, in its entirety, by reference.

[0046] The BCN may operate with waveforms that utilize bit-loaded orthogonal frequency division multiplexing (OFDM). Therefore, the BCN may transmit multiple carrier signals (i.e, signals with different carrier frequencies) with different QAM constellations on each carrier. As an example, over a bandwidth of about 50 MHz, the BCN may have 256 different carriers which in the best circumstances would utilize up to 256 QAM modulation carriers. If instead the channel is poor, the BCN may utilize BPSK on all the carriers instead of QAM. If the channel is good in some places and poor in others, the BCN may utilize high QAM in some parts and lower types modulation in others.

[0047] As an example, in FIG. 6, a block diagram of an example implementation of the BCN 600 is shown. The BCN 600 may be in signal communication with a cable provider (not shown), satellite TV dish (not shown), and/or external antenna (not shown) via a signal path 602 such as a main coaxial cable from the customer premises to a cable connection switch (not shown) outside of the customer premises.

[0048] The BCN 600 may include a POE 604 and main splitter 606, a sub-splitter 608, nodes A 610, B 612 and C 614, and STBs A 616, B 618 and C 620. Within the BCN 600, the POE 604 may be in signal communication with main splitter 606 via signal path 622. The POE 604 may be the connection point from the cable provider which is located external to the customer premises of the BCN 600. The POE 604 may be implemented as a coaxial cable connector, transformer and/or filter.

[0049] The main splitter 606 may be in signal communication with sub-splitter 608 and node C 614 via signal paths 624 and 626, respectively. The sub-splitter 608 may be in

signal communication with node A 610 and node B 612 via signal paths 628 and 630, respectively. The main splitter 606 and sub-splitter 608 may be implemented as coaxial cable splitters. Node A 610 may be in signal communication with STB A 616 via signal path 632. Similarly, node B 612 may be in signal communication with STB B 618 via signal path 634. Moreover, node C 614 may be in signal communication with STB C 620 via signal path 636. STBs A 616, B 618 and C 620 may be implemented by numerous well known STB coaxial units such as cable television set-top boxes and/or satellite television set-top boxes. Typically, the signal paths 602, 622, 624, 626, 628, 630, 632, 634 and 636 may be implemented utilizing coaxial cables.

[0050] As an example of operation, if node A 610 transmits a message to node B 612, the message will propagate through two transmission paths from node A 610 to node B 612. The first transmission path 640 travels from node A 610 through signal path 628, sub-splitter 608 and signal path 630 to node B 612. The second transmission path includes transmission sub-paths 642 and 644. The first sub-path 642 travels from node A 610 through signal path 628, sub-splitter 608, signal path 624, main splitter 606 and signal path 622 to POE 604. The second sub-path 644 travels from POE 604, through signal path 622, main splitter 606, signal path 624, sub-splitter 608 and signal path 630.

[0051] The first transmission path 640 is typically very lossy and experiences a high amount of attenuation because of the isolation between the outputs of sub-splitter 608. The second transmission path, however, does not experience the attenuation of the first transmission path 640. The second transmission path results from the transmission of message signal 646 from node A 610 to the POE 604 along the first sub-path 642 which

results in a reflected message signal 648 from the POE 604. The reflected message signal 648 results from impedance mismatches between the POE 604 and the rest of the BCN 600.

[0052] As another example, in FIG. 7, another block diagram of an example implementation of the BCN 700 is shown. Similar to FIG. 6, in FIG. 7, the BCN 700 may be in signal communication with a cable provider (not shown), satellite TV dish (not shown), and/or external antenna (not shown) via a signal path 702 such as a main coaxial cable from the customer premises to a cable connection switch (not shown) outside of the customer premises.

[0053] The BCN 700 may include a POE 704 and main splitter 706, a sub-splitter 708, nodes A 710, B 712 and C 714, and STBs A 716, B 718 and C 720. Within the BCN 700, the POE 704 may be in signal communication with main splitter 706 via signal path 722. The POE 704 may be the connection point from the cable provider which is located external to the customer premises of the BCN 700. The POE 704 may be implemented as a coaxial cable connector, transformer and/or filter.

[0054] The main splitter 706 may be in signal communication with sub-splitter 708 and node C 714 via signal paths 724 and 726, respectively. The sub-splitter 708 may be in signal communication with node A 710 and node B 712 via signal paths 728 and 730, respectively. The main splitter 706 and sub-splitter 708 may be implemented as coaxial cable splitters. Node A 710 may be in signal communication with STB A 716 via signal path 732. Similarly, node B 712 may be in signal communication with STB B 718 via signal path 734. Moreover, node C 714 may be in signal communication with STB C 720

via signal path 736. STBs A 716, B 718 and C 720 may be implemented by numerous well known STB coaxial units such as cable television set-top boxes and/or satellite television set-top boxes. Typically, the signal paths 702, 722, 724, 726, 728, 730, 732, 734 and 736 may be implemented utilizing coaxial cables.

[0055] As an example of operation, if node A 710 transmits a message to node C 714, the message will propagate through two transmission paths from node A 710 to node C 714. The first transmission path 740 travels from node A 710 through signal path 728, sub-splitter 708, signal path 724, main splitter 706 and signal path 726 to node C 714. The second transmission path includes transmission sub-paths 742 and 744. The first sub-path 742 travels from node A 710 through signal path 728, sub-splitter 708, signal path 724, main splitter 706 and signal path 722 to POE 704. The second sub-path 744 travels from POE 704, through signal path 722, main splitter 706, and signal path 726 to node C 714.

[0056] The first transmission path 740 is typically very lossy and experiences a high amount of attenuation because of the isolation between the outputs of sub-splitter 708 and main splitter 706. The second transmission path, however, does not experience the attenuation of the first transmission path 740. The second transmission path results from the transmission of message signal 746 from node A 710 to the POE 704 along the first sub-path 742 which results in a reflected message signal 748 from the POE 704. The reflected message signal 748 results from mismatches between the POE 704 and therest of the BCN 700.

[0057] As still another example, in FIG. 8, another block diagram of an example implementation of the BCN 800 is shown. Similar to FIGs. 6 and 7, in FIG. 8, the BCN 800 may be in signal communication with a cable provider (not shown), satellite TV dish (not shown), and/or external antenna (not shown) via a signal path 802 such as a main coaxial cable from the customer premises to a cable connection switch (not shown) outside of the customer premises.

[0058] The BCN 800 may include a POE 804 and main splitter 806, a sub-splitter 808, nodes A 810, B 812 and C 814, and STBs A 816, B 818 and C 820. Within the BCN 800, the POE 804 may be in signal communication with main splitter 806 via signal path 822. The POE 804 may be the connection point from the cable provider which is located external to the customer premises of the BCN 800. The POE 804 may be implemented as a coaxial cable connector, transformer and/or filter.

[0059] The main splitter 806 may be in signal communication with sub-splitter 808 and node C 814 via signal paths 824 and 826, respectively. The sub-splitter 808 may be in signal communication with node A 810 and node B 812 via signal paths 828 and 830, respectively. The main splitter 806 and sub-splitter 808 may be implemented as coaxial cable splitters. Node A 810 may be in signal communication with STB A 816 via signal path 832. Similarly, node B 812 may be in signal communication with STB B 818 via signal path 834. Moreover, node C 814 may be in signal communication with STB C 820 via signal path 836. STBs A 816, B 818 and C 820 may be implemented by numerous well known STB coaxial units such as cable television set-top boxes and/or satellite

television set-top boxes. Typically, the signal paths 802, 822, 824, 826, 828, 830, 832, 834 and 836 may be implemented utilizing coaxial cables.

[0060] As an example of operation, if node C 814 transmits a message to node B 812, the message will propagate through two transmission paths from node C 814 to node B 812. The first transmission path 840 travels from node C 814 through signal path 826, main splitter 806, signal path 824, sub-splitter 808 and signal path 830 to node B 812. The second transmission path includes two transmission sub-paths 842 and 844. The first sub-path 842 travels from node C 814 through signal path 826, main splitter 806, and signal path 822 to POE 804. The second sub-path 844 travels from POE 804, through signal path 822, main splitter 806, signal path 824, sub-splitter 808 and signal path 830 to node B 812.

[0061] The first transmission path 840 is typically very lossy and experiences a high amount of attenuation because of the isolation between the outputs of sub-splitter 808 and main splitter 806. The second transmission path, however, does not experience the attenuation of the first transmission path 840. The second transmission path results from the transmission of message signal 846 from node C 814 to the POE 804 along the first sub-path 842 which results in a reflected message signal 848 from the POE 804. The reflected message signal 848 results from mismatches between the POE 804 and rest of the BCN 800.

[0062] In FIG. 9, a plot 900 of the maximum bit-loading constellation 902 versus frequency 904 is shown for the channel path utilized by node A to transmit to node B and the channel path utilized by node A to transmit to node C. Line 906 represents the AB

channel and line 908 represents the AC channel. The AB channel has a null 910 that represents the reflection distance from the POE to node B. The AC channel has nulls 912 and 914. Null 912 represents the reflection distance from the POE to node C and null 914 represents a harmonic that is a multiple value of the value of null 912. In general, the nulls are caused by the properties, e.g., amplitudes and time delays, that are unique to each transmission path in the network.

[0063] Returning to FIG. 5, the BCN, in order to insure that both node B 504 and node C 506 are able to receive a broadcast signal transmitted from node A 502, utilizes a bit-loading modulation scheme that is known as the common bit-loaded modulation scheme. The common bit-loaded modulation scheme transmitted via the A-BC channel, along signal path 508, is a combination of the bit-loading modulation scheme transmitted via the AB channel, along signal path 510, and the AC channel, along signal path 512.

[0064] Therefore, in FIG. 10A, a plot 1000 of carrier frequency signals of various bit-loading constellations 1002 versus carrier number 1004 for the AB channel path between node A and node B is shown. Line 1006 represents the AB channel and follows an envelope of the constellation sizes of the 8 different carrier number signals within the AB channel. As an example, within the AB channel carrier number signals 1 and 8 may transmit at a constellation size of 256 QAM, carrier number signals 2, 3 and 7 may transmit at a constellation size of 128 QAM, carrier number signals 4 and 6 may transmit at a constellation size of 64 QAM, and carrier number signal 5 may be OFF (i.e., no carrier signal of any constellation size may be transmitted because of the null in the channel characteristics).

[0065] Similarly in FIG. 10B, a plot 1008 of carrier frequency signals of various bit-loading constellations 1010 versus carrier number 1012 for the AC channel path between node A and node C is shown. Line 1014 represents the AC channel and follows an envelope of the constellation sizes of the 8 different carrier number signals within the AC channel. As an example, within the AC channel carrier number signals 1, 2, 4, 6 and 8 may transmit at a constellation size of 128 QAM, carrier number signal 5 may transmit at a constellation size of 256 QAM, and carrier number signals 3 and 7 may be OFF (again, no carrier signals may be transmitted because of nulls in the channel characteristics).

[0066] In FIG. 10C, a plot 1016 of the common carrier frequency signals of various bit-loading constellations 1018 versus carrier number 1020 for the A-BC channel path between node A and nodes B and C is shown. In this example, plot 1016 shows that within the A-BC channel, carrier number signals 1, 2 and 8 may transmit at a constellation size of 128 QAM, carrier number signals 4 and 6 may transmit at a constellation size of 64 QAM, and carrier number signals 3, 5 and 7 are OFF. These carrier number signal values are the result of comparing the carrier number signals from the AB channel in FIG. 10A and the corresponding carrier number signals from the AC channel in FIG. 10B and choosing the lowest corresponding modulation value for each carrier number. The resulting common carrier frequency signals in FIG. 10C graphically represent signals utilizing the common bit-loaded modulation scheme. These signals would be able to transmit information from node A to node B and node C simultaneously.

[0067] FIG. 11 shows a flowchart 1100 illustrating the method performed by the BCN shown in FIG. 3. In FIG. 11, the process starts in step 1102. In step 1104, a transmitting

node transmits a probe signal from the transmitting node to a plurality of receiving nodes. In response, the receiving nodes receive the probe signal from the transmitting node. In step 1106, a receiving node of the plurality of receiving nodes receives the probe signal through the appropriate channel path of transmission. The receiving node then determines the transmission characteristics of the channel path from the transmitting node to the receiving node in step 1108 and in response to the determined transmission characteristics of the channel path, the receiving node determines a bit-loaded modulation scheme for the transmission characteristics of the channel path in step 1110. It is appreciated by those skilled in the art that the transmission characteristics of the channel path may be determined by measuring the metric values of the channel path. Examples of the metric values may include the signal-to-noise ratio (also known as the “SNR” and “S/N”) and/or the bit-error rate (“BER”) or product error rate (PER), or power level or similar measurement of the received signal at the corresponding remote device. Additionally, other signal performance metric values are also possible without departing from the scope of the invention.

[0068] The receiving node then, in step 1112, transmits a response signal to the transmitting node, informing the transmitting node of the recently-determined bit-loaded modulation scheme.

[0069] The transmitting node then receives a plurality of response signals, in step 1114, from the corresponding receiving nodes wherein each of the response signals informs the transmitting node of the corresponding bit-loaded modulation scheme determined by each of the plurality of receiving nodes. In response to receiving the plurality of response

signals, the transmitting node, in step 1116, compares the plurality of bit-loaded modulation schemes from the corresponding received plurality of response signals and, in step 1118, determines the common bit-loaded modulation scheme. Once the transmitting node determines the common bit-loaded modulation scheme, the transmitting node, in step 1120, transmits a broadcast signal relaying the common bit-loaded modulation scheme to the plurality of receiving nodes. This broadcast signal may either contain handshake information from the transmitting node to the plurality of receiving nodes or it may actually be a communication message containing information such as video, music, voice and/or other data.

[0070] In decision step 1122, if all the nodes in BCN have performed the handshake process that determines the common bit-loaded modulation scheme in steps 1102 through 1120, the handshake process is complete and process ends in step 1124, at which time the BCN may begin to freely transmit information between the various nodes. If instead, there are still nodes in the BCN that have not performed the handshake process that determines the common bit-loaded modulation scheme in steps 1102 through 1120, the process then returns to step 1126. In step 1126, the BCN selects the next node in the BCN and the process steps 1102 to 1122 repeat again. Once all the nodes in the BCN have performed the handshake process, the handshake process is complete and process ends in step 1124 at which time the BCN may begin to freely transmit information between the various nodes.

[0071] The process in FIG. 11 may be performed by hardware or software. If the process is performed by software, the software may reside in software memory (not

shown) in the BCN. The software in software memory may include an ordered listing of executable instructions for implementing logical functions (i.e., “logic” that may be implemented either in digital form such as digital circuitry or source code or in analog form such as analog circuitry or an analog source such as an analog electrical, sound or video signal), may selectively be embodied in any computer-readable (or signal-bearing) medium for use by or in connection with an instruction execution system, apparatus, or device, such as a computer-based system, processor-containing system, or other system that may selectively fetch the instructions from the instruction execution system, apparatus, or device and execute the instructions. In the context of this document, a “computer-readable medium” and/or “signal-bearing medium” is any means that may contain, store, communicate, propagate, or transport the program for use by or in connection with the instruction execution system, apparatus, or device. The computer readable medium may selectively be, for example but not limited to, an electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus, device, or propagation medium. More specific examples, that is “a non-exhaustive list” of the computer-readable media, would include the following: an electrical connection (electronic) having one or more wires, a portable computer diskette (magnetic), a RAM (electronic), a read-only memory “ROM” (electronic), an erasable programmable read-only memory (EPROM or Flash memory) (electronic), an optical fiber (optical), and a portable compact disc read-only memory “CDROM” (optical). Note that the computer-readable medium may even be paper or another suitable medium upon which the program is printed, as the program can be electronically captured, via for instance, optical

scanning of the paper or other medium, then compiled, interpreted or otherwise processed in a suitable manner if necessary, and then stored in a computer memory.

[0072] While various embodiments of the invention have been described, it will be apparent to those of ordinary skill in the art that many more embodiments and implementations are possible that are within the scope of this invention.

CLAIMS

What is claimed is:

1. A method for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in a broadband cable network ("BCN"), the method comprising:

transmitting a probe signal from a transmitting node within the plurality of nodes to a sub-plurality of receiving nodes within the plurality of nodes;

receiving a plurality of response signals from the sub-plurality of receiving nodes wherein each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node; and

determining the common bit-loading modulation scheme from the received plurality of response signals.

2. The method of claim 1, further including transmitting a broadcast signal from the transmitting node to the plurality of receiving nodes, wherein the broadcast signal utilizes the common bit-loaded modulation scheme.

3. The method of claim 1, wherein the probe signal utilizes a bit-loaded modulation scheme that is capable of being received by all the receiving nodes within the sub-plurality of receiving nodes.

4. The method of claim 1, further including:

receiving the probe signal at one receiving node of the plurality of receiving nodes through a channel path of transmission;

determining the transmission characteristics of the channel path at the one receiving node; and

transmitting a response signal from the one receiving node to the transmitting node.

5. The method of claim 4, wherein the transmission characteristics of the channel path are determined by measuring the signal-to-noise ("SNR") characteristics of the received probe signal at the one receiving node.

6. The method of claim 5, further including generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path.

7. The method of claim 6, wherein determining a common bit-loading modulation scheme includes:

comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

determining the common bit-loading modulation scheme in response to
comparing the plurality of bit-loaded modulation schemes.

8. The method of claim 4, wherein the transmission characteristics of the
channel path are determined by measuring the bit-error rate ("BER") characteristics of
the received probe signal at the one receiving node.

9. The method of claim 8, further including generating the response signal,
wherein the response signal utilizes a bit-loading modulation scheme that is generated by
the one receiving node in response to determining the transmission characteristics of the
channel path.

10. The method of claim 9, wherein determining a common bit-loading
modulation scheme includes:

comparing a plurality of bit-loading modulation schemes from the corresponding
received plurality of response signals; and

determining the common bit-loading modulation scheme in response to
comparing the plurality of bit-loaded modulation schemes.

11. The method of claim 4, wherein the transmission characteristics of the channel path are determined by measuring the product-error rate (“PER”) characteristics of the received probe signal at the one receiving node.

12. The method of claim 11, further including generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path.

13. The method of claim 12, wherein determining a common bit-loading modulation scheme includes;

comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

14. The method of claim 1, wherein each bit-loading modulation scheme utilizes a quadrature phase shift keying (“QPSK”) modulation scheme.

15. The method of claim 1, wherein the each bit-loading modulation scheme utilizes quadrature amplitude modulation (“QAM”).

16. The method of claim 15, wherein each bit-loading modulation scheme is chosen from the group essentially consisting of 64 QAM modulation, 128 QAM modulation, 256 QAM modulation, 512 QAM modulation and 1024 QAM modulation.

17. A computer-readable medium having software for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in a broadband cable network ("BCN"), the computer-readable medium comprising:

logic configured for transmitting a probe signal from a transmitting node within the plurality of nodes to a sub-plurality of receiving nodes within the plurality of nodes;

logic configured for receiving a plurality of response signals from the sub-plurality of receiving nodes wherein each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node; and

logic configured for determining the common bit-loading modulation scheme from the received plurality of response signals.

18. The computer-readable medium of claim 17, further including logic configured for transmitting a broadcast signal from the transmitting node to the plurality of receiving nodes, wherein the broadcast signal utilizes the common bit-loaded modulation scheme.

19. The computer-readable medium of claim 17, wherein the probe signal utilizes a bit-loaded modulation scheme that is capable of being received by all the receiving nodes within the sub-plurality of receiving nodes.

20. The computer-readable medium of claim 17, further including:

logic configured for receiving the probe signal at one receiving node of the plurality of receiving nodes through a channel path of transmission;

logic configured for determining the transmission characteristics of the channel path at the one receiving node; and

logic configured for transmitting a response signal from the one receiving node to the transmitting node.

21. The computer-readable medium of claim 20, wherein the transmission characteristics of the channel path are determined by logic configured for measuring the signal-to-noise ("SNR") characteristics of the received probe signal at the one receiving node.

22. The computer-readable medium of claim 21, further including logic configured for generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path.

23. The computer-readable medium of claim 22, wherein the logic configured for determining a common bit-loading modulation scheme includes:

logic configured for comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

logic configured for determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

24. The computer-readable medium of claim 17, wherein the transmission characteristics of the channel path are determined by logic configured for measuring the bit-error rate ("BER") characteristics of the received probe signal at the one receiving node.

25. The computer-readable medium of claim 24, further including logic configured for generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path.

26. The computer-readable medium of claim 25, wherein the logic configured for determining a common bit-loading modulation scheme includes:

logic configured for comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

logic configured for determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

27. The computer-readable medium of claim 17, wherein the transmission characteristics of the channel path are determined by logic configured for measuring the product-error rate ("PER") characteristics of the received probe signal at the one receiving node.

28. The computer-readable medium of claim 27, further including logic configured for generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path.

29. The computer-readable medium of claim 28, wherein determining a common bit-loading modulation scheme includes:

logic configured for comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

logic configured for determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

30. A broadband cable network ("BCN") for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in the BCN, the BCN comprising:

a transmitting node within the plurality of nodes, the transmitting node capable of sending a probe signal;

a sub-plurality of receiving nodes within the plurality of nodes wherein the sub-plurality of receiving nodes are capable of transmitting a sub-plurality of response signals in response to receiving the probe signal, wherein the sub-plurality of response signals includes a plurality of bit-loading modulation schemes, wherein each bit-loading modulation scheme of the plurality of bit-loading modulation schemes is determined by a receiving node within the sub-plurality of receiving nodes; and

wherein the transmitting node is capable of determining the common bit-loading modulation scheme from the sub-plurality of response signals.

31. The BCN of claim 30, wherein the transmitting node is further capable of determining the common bit-loading modulation scheme in response to comparing all bit-loading modulation schemes within the plurality of bit-loading modulation schemes.

32. The BCN of claim 31, wherein each bit-loading modulation scheme utilizes a quadrature phase shift keying ("QPSK") modulation.

33. The BCN of claim 31, wherein the each bit-loading modulation scheme utilizes quadrature amplitude modulation ("QAM").

34. The BCN of claim 33, wherein each bit-loading modulation scheme is chosen from the group essentially consisting of 64 QAM modulation, 128 QAM modulation, 256 QAM modulation, 512 QAM modulation and 1024 QAM modulation.

35. The BCN of claim 30, wherein a receiving node within the sub-plurality of receiving nodes is capable of:

receiving the probe signal at the receiving node through a channel path of transmission;

determining the transmission characteristics of the channel path at the receiving node; and

transmitting a response signal, of the sub-plurality of response signals, from the receiving node to the transmitting node.

36. The BCN of claim 35, wherein the receiving node is capable of determining the transmission characteristics of the channel path by measuring the signal-to-noise ("SNR") characteristics of the received probe signal at the receiving node.

37. The BCN of claim 36, wherein the receiving node is capable of generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the receiving node in response to determining the transmission characteristics of the channel path.

38. The BCN of claim 37, wherein the transmitting node is capable of determining a common bit-loading modulation scheme by:

comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

39. The BCN of claim 35, wherein the receiving node is capable of determining the transmission characteristics of the channel path by measuring the bit-error rate ("BER") characteristics of the received probe signal at the one receiving node.

40. The BCN of claim 39, wherein the receiving node is capable of generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the receiving node in response to determining the transmission characteristics of the channel path.

41. The BCN of claim 40, wherein the transmitting node is capable of determining a common bit-loading modulation scheme by:

comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

42. The BCN of claim 35, wherein the receiving node is capable of determining the transmission characteristics of the channel path by measuring the product-error rate ("PER") characteristics of the received probe signal at the one receiving node.

43. The BCN of claim 42, wherein the receiving node is capable of generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the receiving node in response to determining the transmission characteristics of the channel path.

44. The BCN of claim 43, wherein the transmitting node is capable of determining a common bit-loading modulation scheme by;

comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

45. The BCN of claim 30, wherein the transmitting node and the receiving nodes are the same type of devices.

46. A broadband cable network ("BCN") for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in the BCN, the BCN comprising:

a transmitting node within the plurality of nodes, the transmitting node having means for sending a probe signal; and

a sub-plurality of receiving nodes within the plurality of nodes, wherein the sub-plurality of receiving nodes have means for transmitting a sub-plurality of response signals in response to receiving the probe signal, wherein the sub-plurality of response signals includes a plurality of bit-loading modulation schemes, wherein each bit-loading modulation scheme of the plurality of bit-loading modulation schemes is determined by a receiving node within the sub-plurality of receiving nodes; and

wherein the transmitting node includes means for determining the common bit-loading modulation scheme from the sub-plurality of response signals.

47. The BCN of claim 46, wherein the transmitting node further includes means for determining the common bit-loading modulation scheme in response to

comparing all bit-loading modulation schemes within the plurality of bit-loading modulation schemes.

48. The BCN of claim 46, wherein the transmitting node further includes means for determining the common bit-loading modulation scheme in response to comparing all bit-loading modulation schemes within the plurality of bit-loading modulation schemes.

49. The BCN of claim 48, wherein each bit-loading modulation scheme utilizes a quadrature phase shift keying ("QPSK") modulation.

50. The BCN of claim 48, wherein the each bit-loading modulation scheme utilizes quadrature amplitude modulation ("QAM").

51. The BCN of claim 50, wherein each bit-loading modulation scheme is chosen from the group essentially consisting of 64 QAM modulation, 128 QAM modulation, 256 QAM modulation, 512 QAM modulation and 1024 QAM modulation.

52. The BCN of claim 46, wherein a receiving node within the sub-plurality of receiving nodes includes:

means for receiving the probe signal at the receiving node through a channel path of transmission;

means for determining the transmission characteristics of the channel path at the receiving node; and

means for transmitting a response signal, of the sub-plurality of response signals, from the receiving node to the transmitting node.

53. The BCN of claim 52, wherein the receiving node includes means for determining the transmission characteristics of the channel path by measuring the signal-to-noise ("SNR") characteristics of the received probe signal at the receiving node.

54. The BCN of claim 53, wherein the receiving node includes means for generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the receiving node in response to determining the transmission characteristics of the channel path.

55. The BCN of claim 54, wherein the transmitting node includes means for determining a common bit-loading modulation scheme.

56. The BCN of claim 55, wherein the means for determining a common bit-loading modulation scheme includes:

means for comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

means for determining the common bit-loading modulation scheme in response to the means for comparing the plurality of bit-loaded modulation schemes.

57. The BCN of claim 51, wherein the receiving node includes means for determining the transmission characteristics of the channel path by measuring the bit-error rate ("BER") characteristics of the received probe signal at the one receiving node.

58. The BCN of claim 57, wherein the receiving node includes means for generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the receiving node in response to determining the transmission characteristics of the channel path.

59. The BCN of claim 58, wherein the transmitting node includes means for determining a common bit-loading modulation scheme.

60. The BCN of claim 59, wherein the means for determining a common bit-loading modulation scheme includes:

means for comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

means for determining the common bit-loading modulation scheme in response to the means for comparing the plurality of bit-loaded modulation schemes.

61. The BCN of claim 51, wherein the receiving node includes means for determining the transmission characteristics of the channel path by measuring the product-error rate ("PER") characteristics of the received probe signal at the one receiving node.

62. The BCN of claim 61, wherein the receiving node includes means for generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the receiving node in response to determining the transmission characteristics of the channel path.

63. The BCN of claim 62, wherein the transmitting node includes means for determining a common bit-loading modulation scheme.

64. The BCN of claim 63, wherein the means for determining a common bit-loading modulation scheme includes:

means for comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

means for determining the common bit-loading modulation scheme in response to the means for comparing the plurality of bit-loaded modulation schemes.

65. The BCN of claim 46, wherein the transmitting node and the receiving nodes are the same type of devices.

66. A broadband cable network ("BCN") for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in the BCN, the BCN comprising:

means for transmitting a probe signal from a transmitting node within the plurality of nodes to a sub-plurality of receiving nodes within the plurality of nodes;

means for receiving a plurality of response signals from the sub-plurality of receiving nodes wherein each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node; and

means for determining the common bit-loading modulation scheme from the received plurality of response signals.

67. The BCN of claim 66, further including means for transmitting a broadcast signal from the transmitting node to the plurality of receiving nodes, wherein the broadcast signal utilizes the common bit-loaded modulation scheme.

68. The BCN of claim 66, wherein the probe signal utilizes a bit-loaded modulation scheme that is capable of being received by all the receiving nodes within the sub-plurality of receiving nodes.

69. The BCN of claim 66, further including:

means for receiving the probe signal at one receiving node of the plurality of receiving nodes through a channel path of transmission;

means for determining the transmission characteristics of the channel path at the one receiving node; and

means for transmitting a response signal from the one receiving node to the transmitting node.

70. The BCN of claim 69, wherein the one receiving node includes means for determining the transmission characteristics of the channel path by measuring the signal-to-noise ("SNR") characteristics of the received probe signal at the one receiving node.

71. The BCN of claim 70, further including means for generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path.

72. The BCN of claim 71, wherein the means for determining a common bit-loading modulation scheme includes:

means for comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

means for determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

73. The BCN of claim 69, wherein the one receiving node includes means for determining the transmission characteristics of the channel path by measuring the bit-error rate ("BER") characteristics of the received probe signal at the one receiving node.

74. The BCN of claim 73, further including means for generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path.

75. The BCN of claim 74, wherein the means for determining a common bit-loading modulation scheme includes:

means for comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

means for determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

76. The BCN of claim 69, wherein the one receiving node includes means for determining the transmission characteristics of the channel path by measuring the product-error rate ("PER") characteristics of the received probe signal at the one receiving node.

77. The BCN of claim 75, further including means for generating the response signal, wherein the response signal utilizes a bit-loading modulation scheme that is generated by the one receiving node in response to determining the transmission characteristics of the channel path.

78. The BCN of claim 77, wherein the means for determining a common bit-loading modulation scheme includes:

means for comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

means for determining the common bit-loading modulation scheme in response to comparing the plurality of bit-loaded modulation schemes.

79. The BCN of claim 66, wherein each bit-loading modulation scheme utilizes a quadrature phase shift keying ("QPSK") modulation scheme.

80. The BCN of claim 66, wherein the each bit-loading modulation scheme utilizes quadrature amplitude modulation ("QAM") scheme.

81. The BCN of claim 80, wherein each bit-loading modulation scheme is chosen from the group essentially consisting of 64 QAM modulation, 128 QAM modulation, 256 QAM modulation, 512 QAM modulation and 1024 QAM modulation.

ABSTRACT

A broadband cable network ("BCN") for determining a common bit-loading modulation scheme for communicating between a plurality of nodes in the BCN is disclosed. The BCN may include a transmitting node within the plurality of nodes where the transmitting node is capable of sending a probe signal to the plurality of nodes, and at least one receiving node within the plurality of nodes in signal communication with the transmitting node. The at least one receiving node is capable of transmitting a first response signal in response to receiving the probe signal. The first response signal includes a first bit-loading modulation scheme determined by the at least one receiving node. The transmitting node is further capable of determining the common bit-loading modulation scheme from the first response signal.

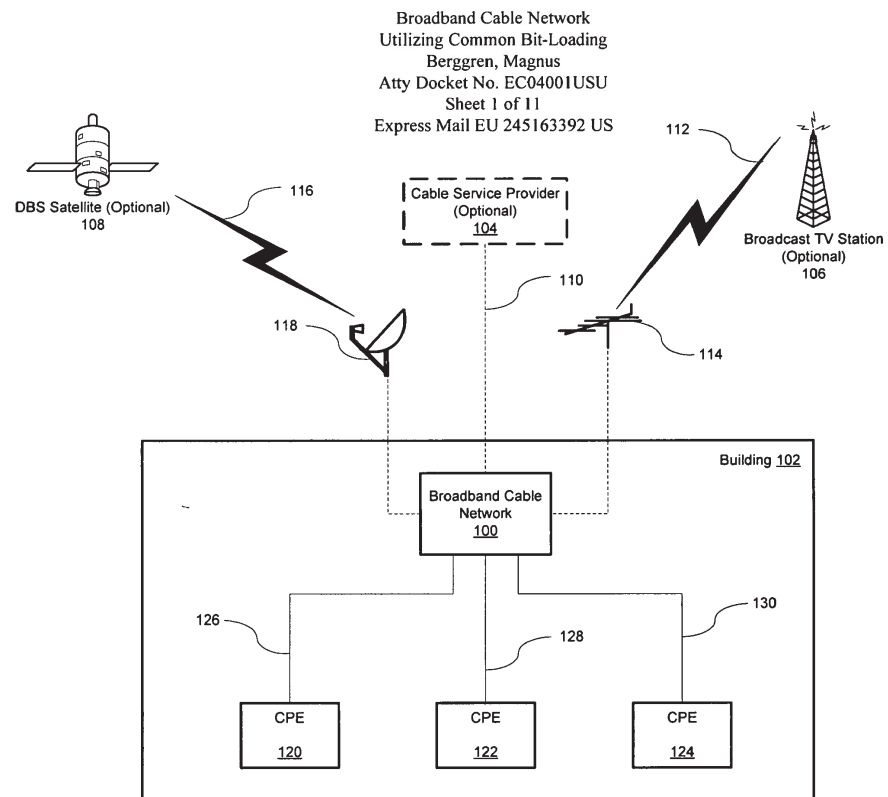


FIG. 1 (Prior Art)

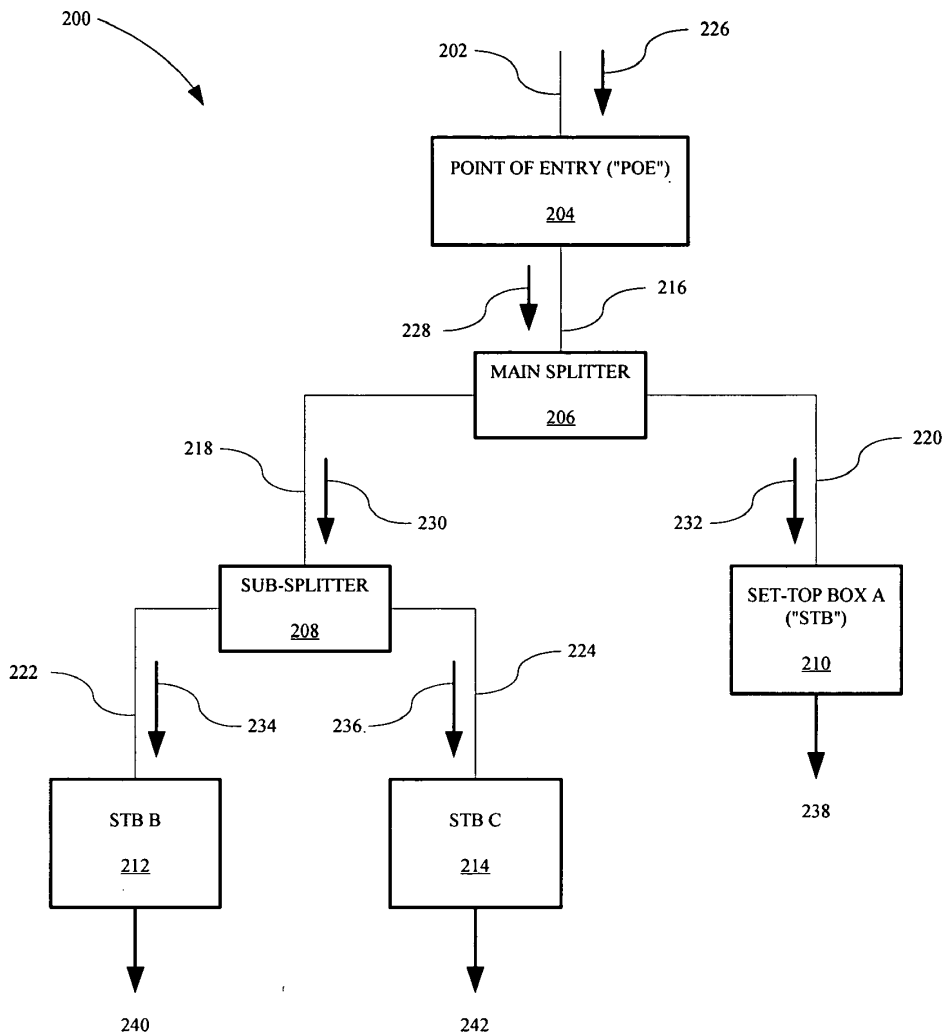


FIG. 2 (Prior Art)

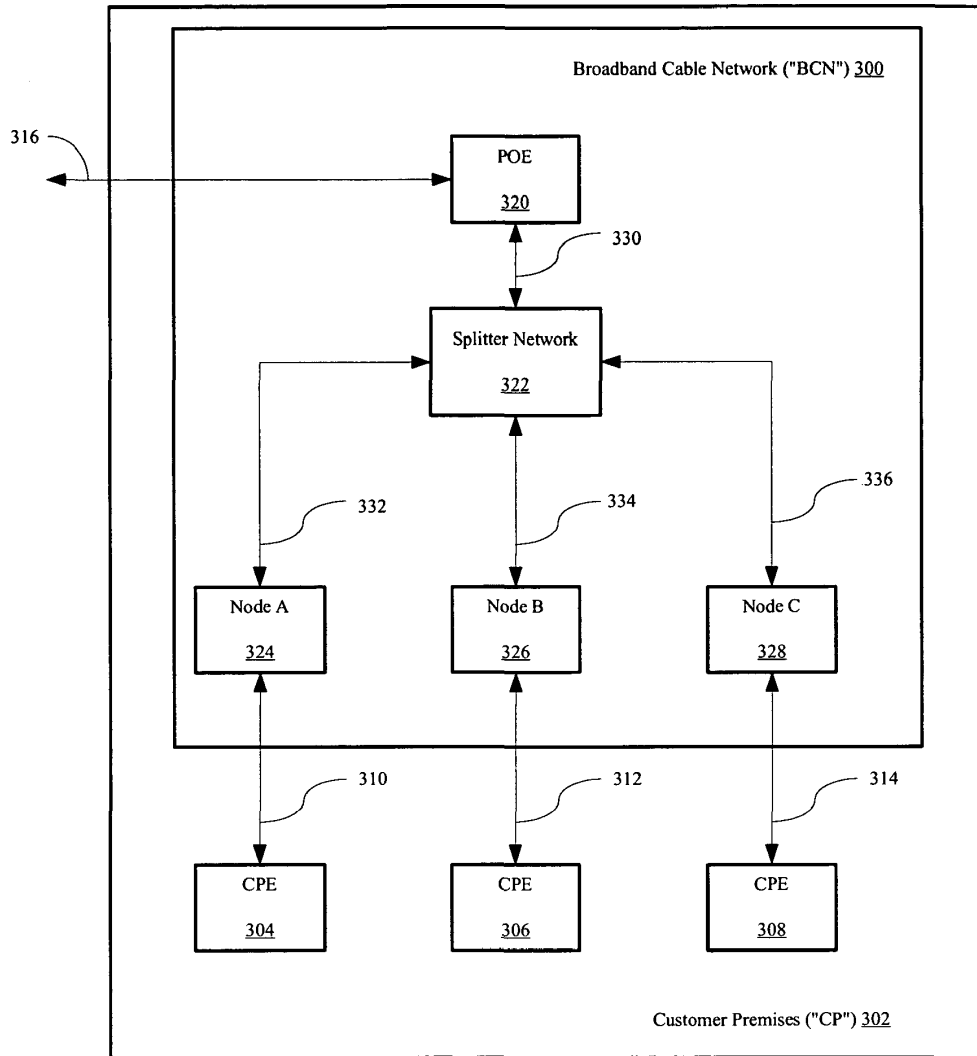


FIG. 3

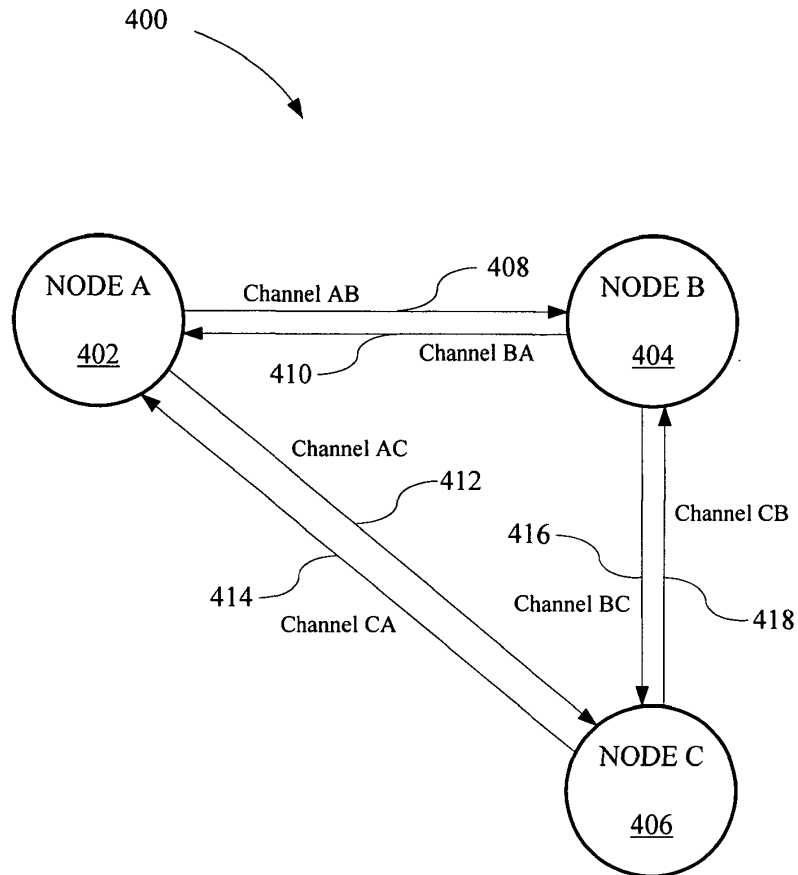


FIG. 4

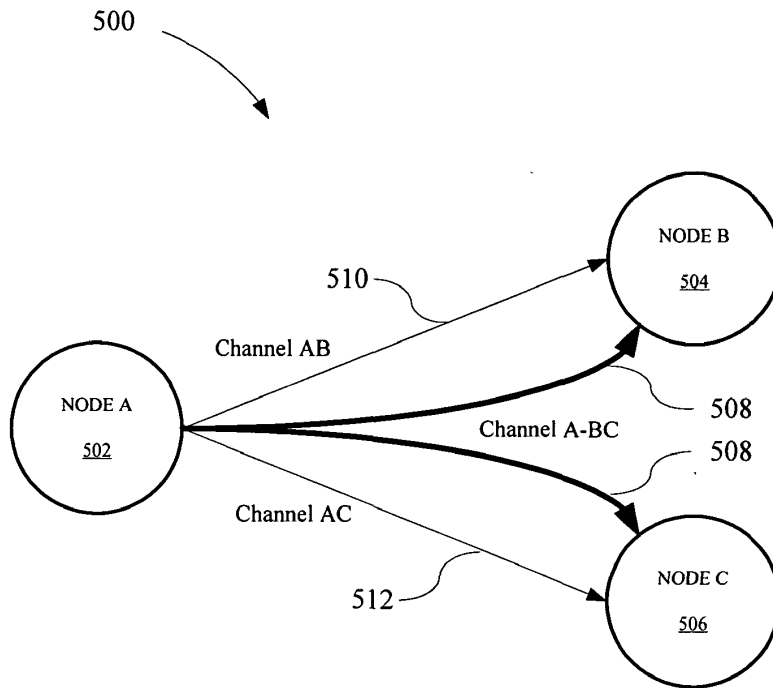


FIG. 5

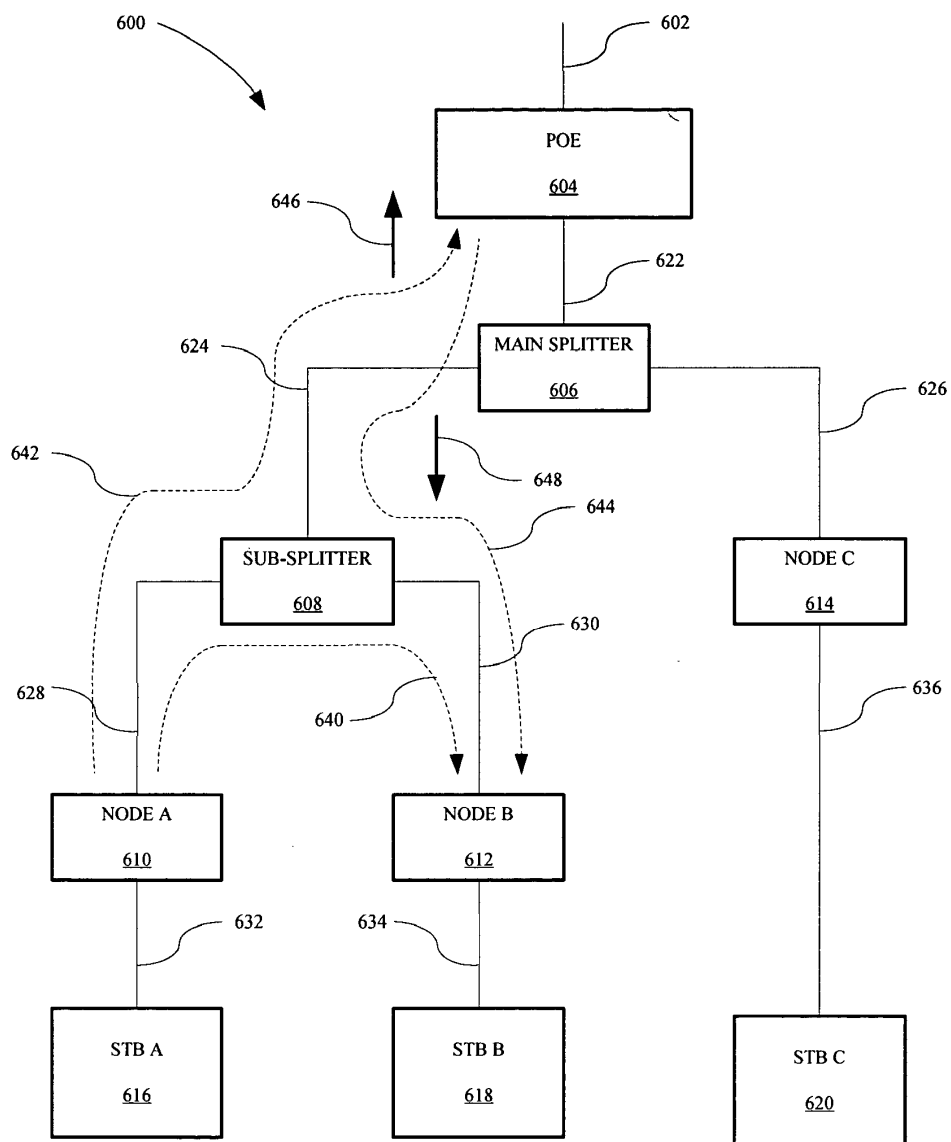


FIG. 6

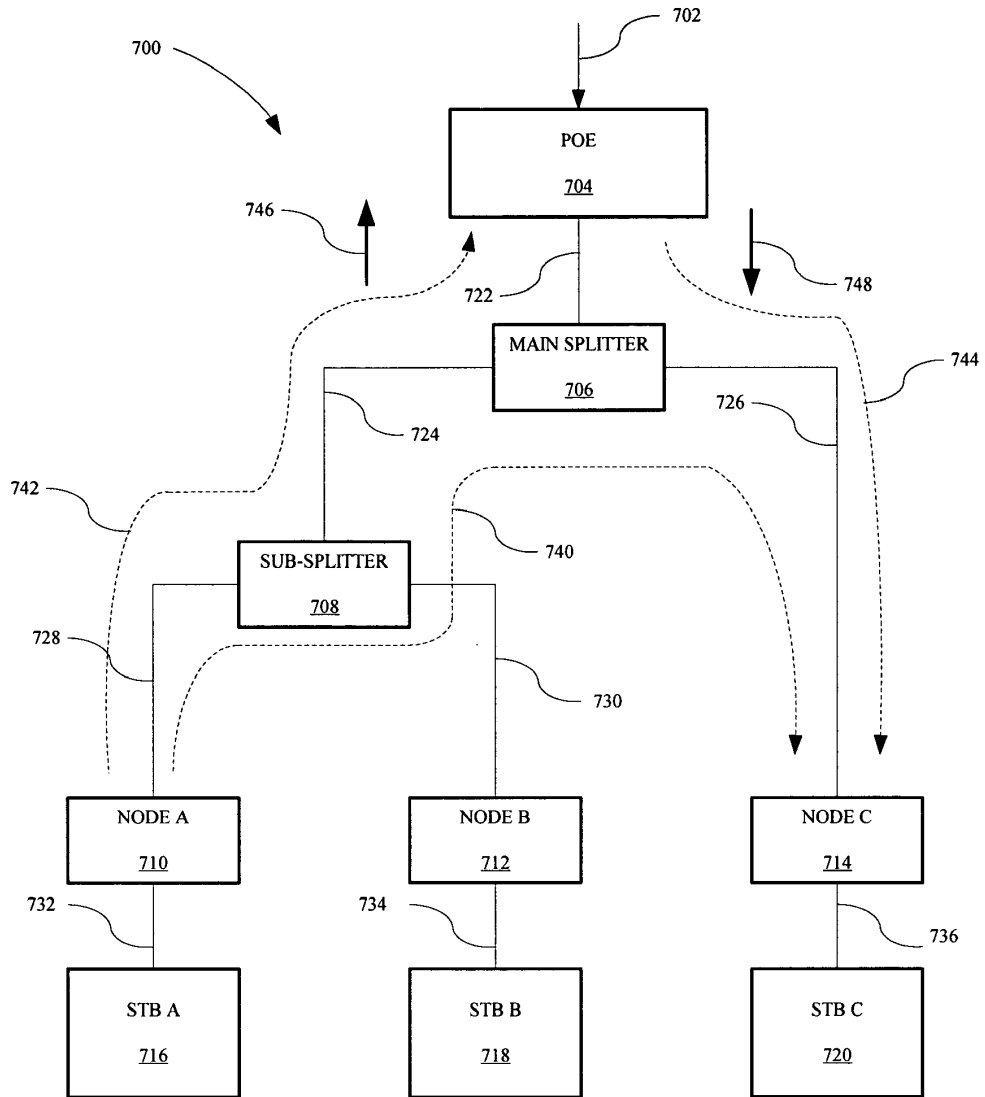


FIG. 7

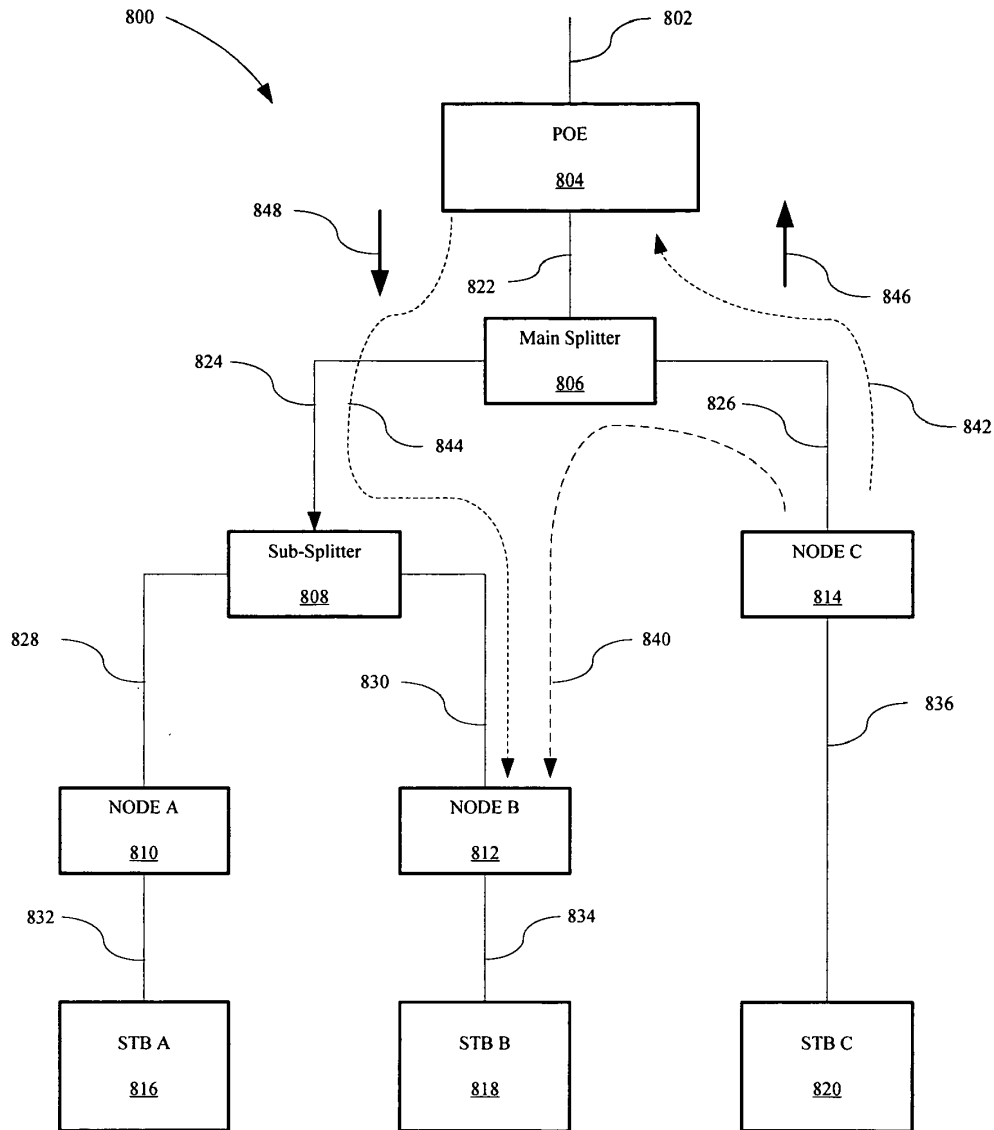


FIG. 8

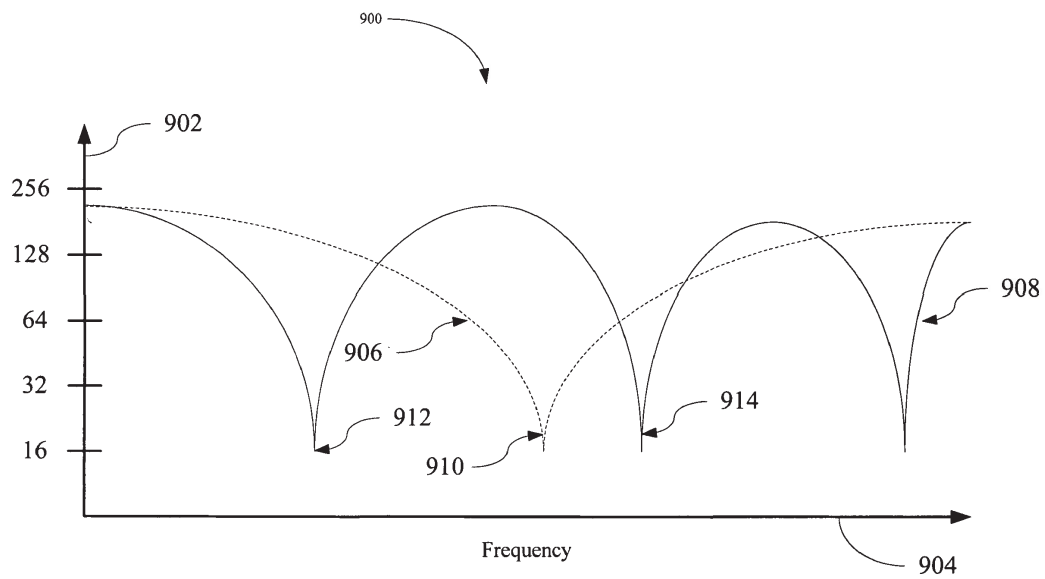


FIG. 9

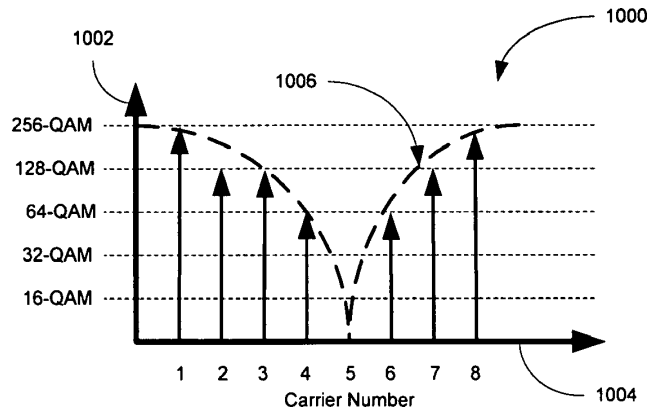


FIG. 10A

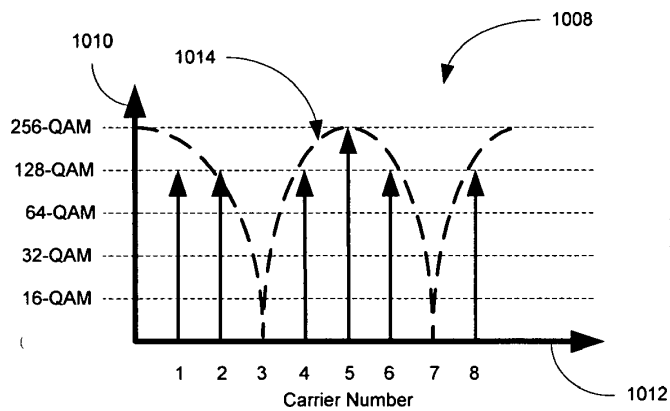


FIG. 10B

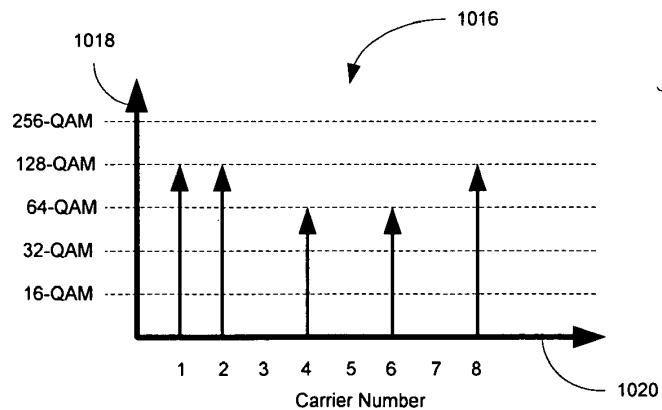


FIG. 10C

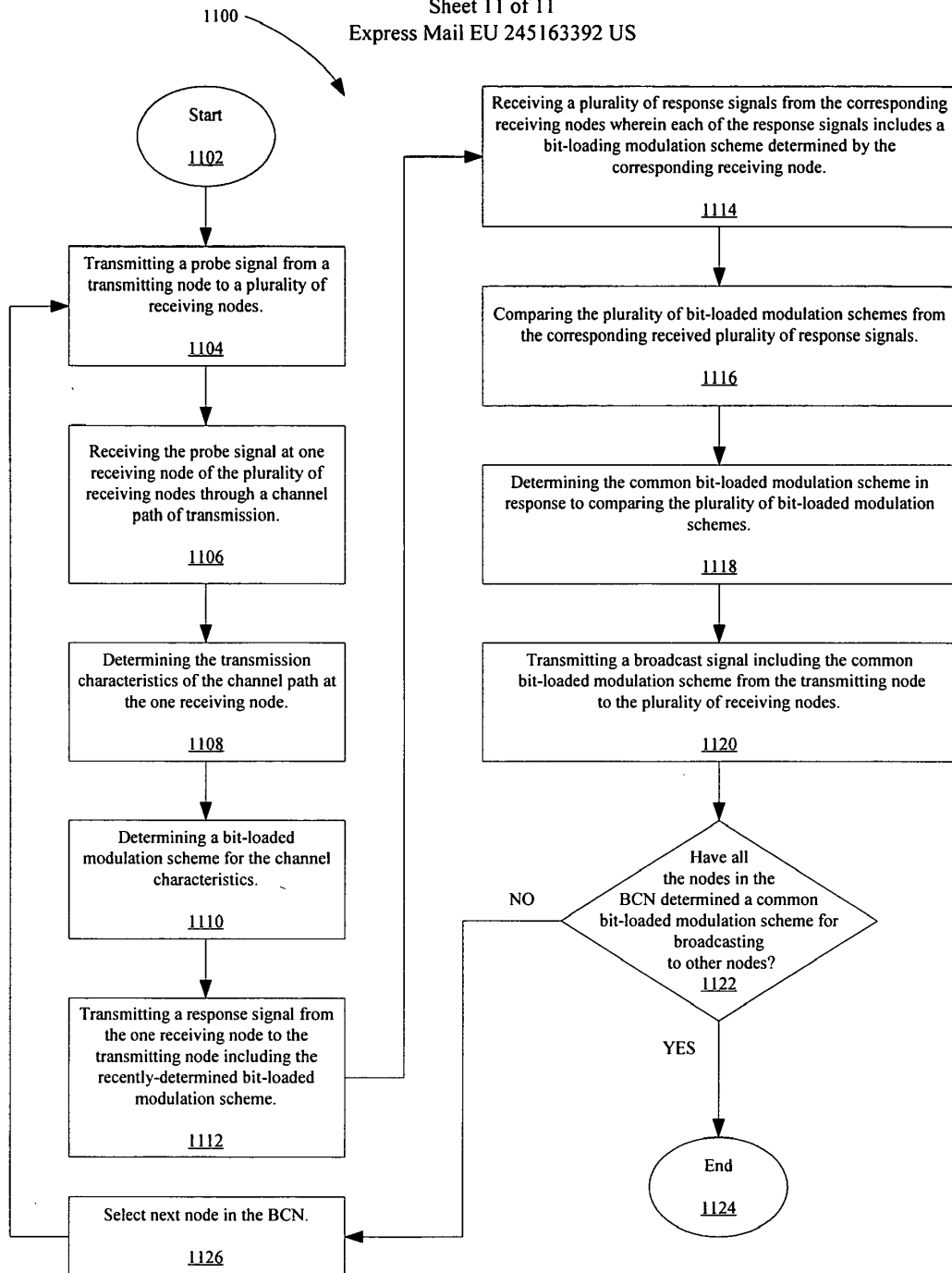


FIG. 11

PATENT APPLICATION FEE DETERMINATION RECORD

Effective October 1, 2003

Application or Docket Number

10889975

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	81	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	81 minus 20 = *	61
INDEPENDENT CLAIMS	5 minus 3 = *	2
MULTIPLE DEPENDENT CLAIM PRESENT ☐		

* If the difference in column 1 is less than zero, enter "0" in column 2

CLAIMS AS AMENDED - PART II

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus	**
Independent	*	Minus	***
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus	**
Independent	*	Minus	***
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus	**
Independent	*	Minus	***
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

SMALL ENTITY TYPE

RATE	FEE
BASIC FEE	385.00
X\$ 9=	
X43=	
+145=	
TOTAL	

OTHER THAN SMALL ENTITY

RATE	FEE
BASIC FEE	770.00
X\$18=	1098
2X86=	172
+290=	
TOTAL	2040

SMALL ENTITY TYPE

RATE	ADDITIONAL FEE
X\$ 9=	
X43=	
+145=	
TOTAL ADDIT. FEE	

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X\$18=	
X86=	
+290=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$ 9=	
X43=	
+145=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X86=	
+290=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$ 9=	
X43=	
+145=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X86=	
+290=	
TOTAL ADDIT. FEE	