

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMCAST CABLE COMMUNICATIONS, LLC,
Petitioner,

v.

ROVI GUIDES, INC.,
Patent Owner.

Patent No. 7,200,855

Filing Date: May 24, 2001

Issue Date: April 3, 2007

Title: METHOD AND APPARATUS OF MULTIPLEXING A PLURALITY OF
CHANNELS IN A MULTIMEDIA SYSTEM

Inter Partes Review No.: IPR2020-00787

**PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.100 *et seq.***

Petition 1 of 3

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EXHIBITS

- Ex. 1001: U.S. Patent No. 7,200,855 (“the ’855 patent”)
- Ex. 1002: Declaration of Dr. Vernon Thomas Rhyne, III
- Ex. 1003: Excerpts from the File History of U.S. App. No. 09/864,602
- Ex. 1004: In re Certain Digital Video Receivers, Broadband Gateways, and Related Hardware and Software Components, Investigation No. 337-TA-1158 (U.S.I.T.C.), July 17, 2019 – Complainants’ Notice of Patent Priority Dates / Conception Dates
- Ex. 1005: U.S. Patent No. 8,601,519 (“Hicks”)
- Ex. 1006: Excerpts from *PCI Local Bus Specification, Revision 2.2*, PCI Special Interest Group, December 18, 1998 (“PCI”)
- Ex. 1007: Declaration of Doanh Vu
- Ex. 1008: Declaration of Stephen Kunin
- Ex. 1009: Reserved
- Ex. 1010: *Extending PCI Performance Beyond the Desktop*, Shlomo Weiss and Ehud Finkelstein, Computer, June 1999, pp. 80-87
- Ex. 1011: U.S. Patent No. 6,218,864 (“Young”)
- Ex. 1012: U.S. Patent No. 5,808,694 (“Usui”)
- Ex. 1013: Declaration of Dr. Carrie Gardner
- Ex. 1014: Excerpts from *Computer Networks*, Andrew S. Tanenbaum, Prentice Hall, Third Edition, 1996 (“Tanenbaum”)
- Ex. 1015: Excerpts from *Communication Systems*, Simon Haykin, John Wiley & Sons, Fourth Edition, 2001 (“Haykin”)
- Ex. 1016: Excerpts from *MPEG-2*, John Watkinson, Focal Press, 1999 (“Watkinson”)

- Ex. 1017: Excerpts from *Digital Video: An Introduction to MPEG-2*, B. Haskell *et al.*, Chapman & Hall, 1997 (“Haskell”)
- Ex. 1018: Excerpts from *Cable Television Handbook*, Eugene R. Bartlett, McGraw-Hill Video/Audio Professional, First Edition, 2000 (“Bartlett”)
- Ex. 1019: U.S. Patent No. 5,870,474 (“Wasilewski”)
- Ex. 1020: U.S. Patent No. 6,493,873 (“Williams”)
- Ex. 1021: Excerpts from In re Certain Digital Video Receivers, Broadband Gateways, and Related Hardware and Software Components, Investigation No. 337-TA-1158 (U.S.I.T.C.), January 14, 2020 – Transcript of Telephonic Conference
- Ex. 1022: Excerpts from In re Certain Digital Video Receivers, Broadband Gateways, and Related Hardware and Software Components, Investigation No. 337-TA-1158 (U.S.I.T.C.), January 28, 2020 – Transcript of Administrative Hearing Volume VI
- Ex. 1023: In re Certain Digital Video Receivers, Broadband Gateways, and Related Hardware and Software Components, Investigation No. 337-TA-1158 (U.S.I.T.C.), October 21, 2019 – Joint Claim Construction Chart
- Ex. 1024: In re Certain Digital Video Receivers, Broadband Gateways, and Related Hardware and Software Components, Investigation No. 337-TA-1158 (U.S.I.T.C.), January 22, 2020 – Comcast Respondents’ Notice of Withdrawal of Claim Terms
- Ex. 1025: In re Certain Digital Video Receivers, Broadband Gateways, and Related Hardware and Software Components, Investigation No. 337-TA-1158 (U.S.I.T.C.), March 20, 2020 – Order No. 35: Initial Determination Granting Complainants’ Third Unopposed Motion for Partial Termination of the Investigation Without Prejudice [Motion Docket No. 1158-033]
- Ex. 1026: Excerpts from *Telecommunications Engineer’s Reference Book*, Fraidoon Mazda, Editor, Butterworth-Heinemann Ltd, 1993

- Ex. 1027: Excerpts from *Dictionary of Computing*, Fourth Edition, Oxford University Press, 1996
- Ex. 1028: Excerpts from *Switched, Fast, and Gigabit Ethernet*, Third Edition, Robert Breyer and Sean Riley, Macmillan Technical Publishing, 1999
- Ex. 1029: Reserved
- Ex. 1030: Excerpts from *Newton's Telecom Dictionary*, Sixteenth Edition, Telecom Books, 2000
- Ex. 1031: U.S. Patent No. 7,039,021 ("Kokudo")
- Ex. 1032: Reserved
- Ex. 1033: Excerpts from *Internetworking With TCP/IP Vol I: Principles, Protocols, and Architecture*, Third Edition, Prentice-Hall, Inc., 1995.
- Ex. 1034: Excerpts from *Wireless LANs: Implementing Interoperable Networks*, Jim Geier, Macmillan Technical Publishing, 1999
- Ex. 1035: Reserved
- Ex. 1036: Reserved
- Ex. 1037: U.S. Patent No. 4,386,436 ("Kocher")
- Ex. 1038: U.S. Patent No. 6,487,362 ("Yuen")
- Ex. 1039: U.S. Patent No. 6,408,128 ("Abecassis")
- Ex. 1040: U.S. Patent No. 6,452,923 ("Gerszberg")
- Ex. 1041: U.S. Patent No. 5,990,927 ("Hendricks")
- Ex. 1042: U.S. Patent No. 7,031,380 ("Cheng")
- Ex. 1043: Excerpts from *The MPEG Handbook MPEG-1, MPEG-2, MPEG-4*, John Watkinson, Focal Press, 2001 ("Watkinson2001")

- Ex. 1044: Excerpt of *In re Certain Digital Video Receivers, Broadband Gateways, and Related Hardware and Software Components*, Investigation No. 337-TA-1158 (U.S.I.T.C.), Verified Complaint Under Section 337 of the Tariff Act of 1930, as Amended
- Ex. 1045: U.S. Patent No. 6,400,280 (“Osakabe”)
- Ex. 1046: Excerpts from *FireWire System Architecture: IEEE 1394a*, Don Anderson, Addison-Wesley, 1999 (“Anderson”)
- Ex. 1047: PCI System Architecture, Fourth Edition, Tom Shanley and Don Anderson, Addison-Wesley, 1999 (“Shanley”)

I. MANDATORY NOTICES

A. Real Parties in Interest

The real parties-in-interest are (i) Comcast Corporation, (ii) Comcast Business Communications, LLC, (iii) Comcast Cable Communications Management, LLC, (iv) Comcast Cable Communications, LLC, (v) Comcast Holdings Corporation, (vi) NBCUniversal Shared Services, LLC (formerly known as Comcast Shared Services, LLC), (vii) Comcast of Santa Maria, LLC, (viii) Comcast of Lompoc, LLC, (ix) Comcast Financial Agency Corporation, and (x) Comcast STB Software I, LLC. These entities are referenced below as “Comcast entity __” or as “Comcast entities __,” where “__” is one or more of (i) through (x).

The '855 Patent has been asserted against Comcast entities (i), (iii), (iv), and (v) by Rovi Corporation of San Jose, California, and Rovi Guides, Inc. of San Jose, California. The action, before the International Trade Commission, is *In the Matter of Certain Digital Video Receivers, Broadband Gateways, and Related Hardware and Software Components*, Inv. No. 337-TA-1158 (“ITC Investigation”), which was instituted on May 22, 2019. The '855 Patent was also asserted in the Central District of California in *Rovi Guides, Inc. v. Comcast Corporation*, No. 2:19-CV-03096 (C.D. Cal). That case is stayed until the determination of the ITC Investigation becomes final. The earliest date of service on any of the Comcast entities named in these proceedings was April 25, 2019.

No unnamed entity is funding, controlling, or directing this Petition for IPR of the '855 Patent, or otherwise has an opportunity to control or direct this Petition or Petitioner's participation in any resulting IPR.

B. Related Matters

According to the Office's records from PAIR, the '855 patent does not claim priority to any application and no application claims priority to the '855 patent. The '855 patent is also the subject of concurrently-filed related petitions for *inter partes* review that assert different grounds of unpatentability.

C. Lead & Back-Up Counsel, and Service Information

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II. RELIEF REQUESTED

Petitioner petitions for review and cancellation of claims 1-63 of U.S. Patent No. 7,200,855 (“855 patent” or “the Patent”). Ex. 1001.

III. OVERVIEW

A. Technical Background

The Patent relates to “in-home local area networking,” and specifically to the distribution of multiplexed multimedia content to a plurality of devices. Ex. 1001, Abstract, 1:7-9; Ex. 1002, ¶¶ 47-48. However, solutions for distributing multimedia content using an in-home multiplexed network and equipment were already well-known. Ex. 1002, ¶¶ 49-53, 70, 82-83, 86-87.

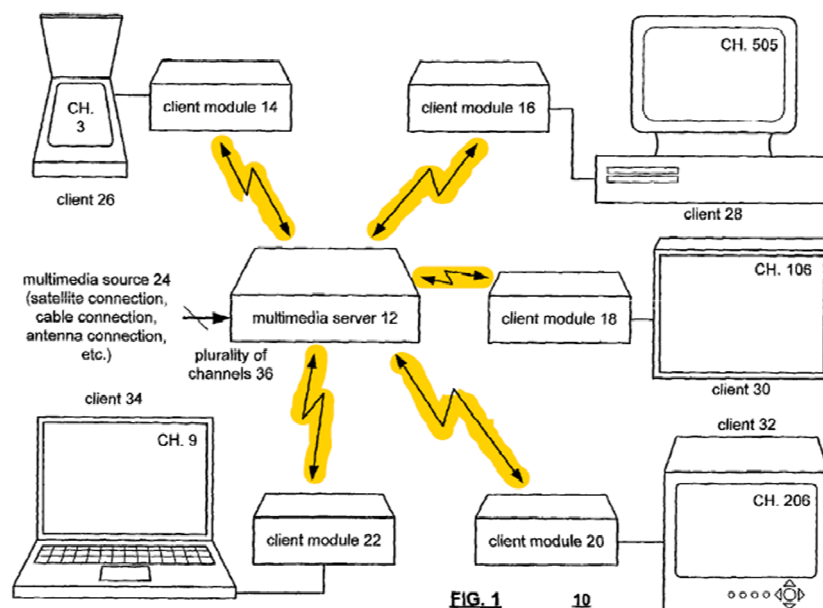
Hicks teaches a digital residential entertainment system including a broadband multimedia gateway (BMG) that demodulates multiplexed content from a variety of sources, and distributes that content to users over an in-house data network. Ex. 1005 at 2:16-45, 6:28-42, Fig. 1. A person of ordinary skill in the art (“PHOSITA”) would have found it obvious to augment Hicks’s BMG with the shared bus protocol defined in the PCI standard such that it taught the claims of the Patent.

Various claimed techniques—including time or frequency-division multiplexing for transmission of data (including video content), user control of content via remote control devices, and data compression, encryption, and authentication used in transmitting and accessing multimedia content—were all well-known to a PHOSITA and taught by the prior art references cited herein as of

May 24, 2001. Ex. 1002, ¶¶ 88-134; Ex. 1014 at 6-16, 23-25; Ex. 1015 at 19-22; Ex. 1016 at 25-27, 57-62; Ex. 1017 at 91-92, 118, 154, 172-176, 184; Ex. 1018 at 93-98; Ex. 1019 at 1:32-2:61; Ex. 1026 at 8-13; Ex. 1041 at 2:23-29, 3:41-48, 9:27-42, 11:64-13:21, 25:52-60, 29:20-31:10.

B. Brief Description of Alleged Invention

The Patent describes a server that distributes multimedia (e.g., television channels) to client devices (televisions) within a home. Ex. 1001 at 1:7-9, 5:46-6:8; Ex. 1002, ¶ 48. The server receives a plurality of channels from a plurality of multimedia sources (e.g., CATV, satellite, DVD), and multiplexes selected channels over a wired or wireless “communication path” (such as a known “ISO standardized communication system”), to a plurality of clients (televisions, laptops, etc.). Ex. 1001 at 5:46-53, 11:25-36, 12:18-22, Figs. 1-6; Ex. 1002, ¶¶ 48, 52-56.



Ex. 1001, Fig. 1 (annotated)

Channel commands are generated with a remote control at a client device and sent to the multimedia server via the communication path. Ex. 1001 at 7:23-31, 11:37-49, 12:2-11; Ex. 1002, ¶¶ 57-59. Various system components and data paths of the system are illustrated below. Ex. 1001 at 2:65-67, 11:25-12:58, 38:66-40:30, 41:19-55; Ex. 1002, ¶¶ 60-67.

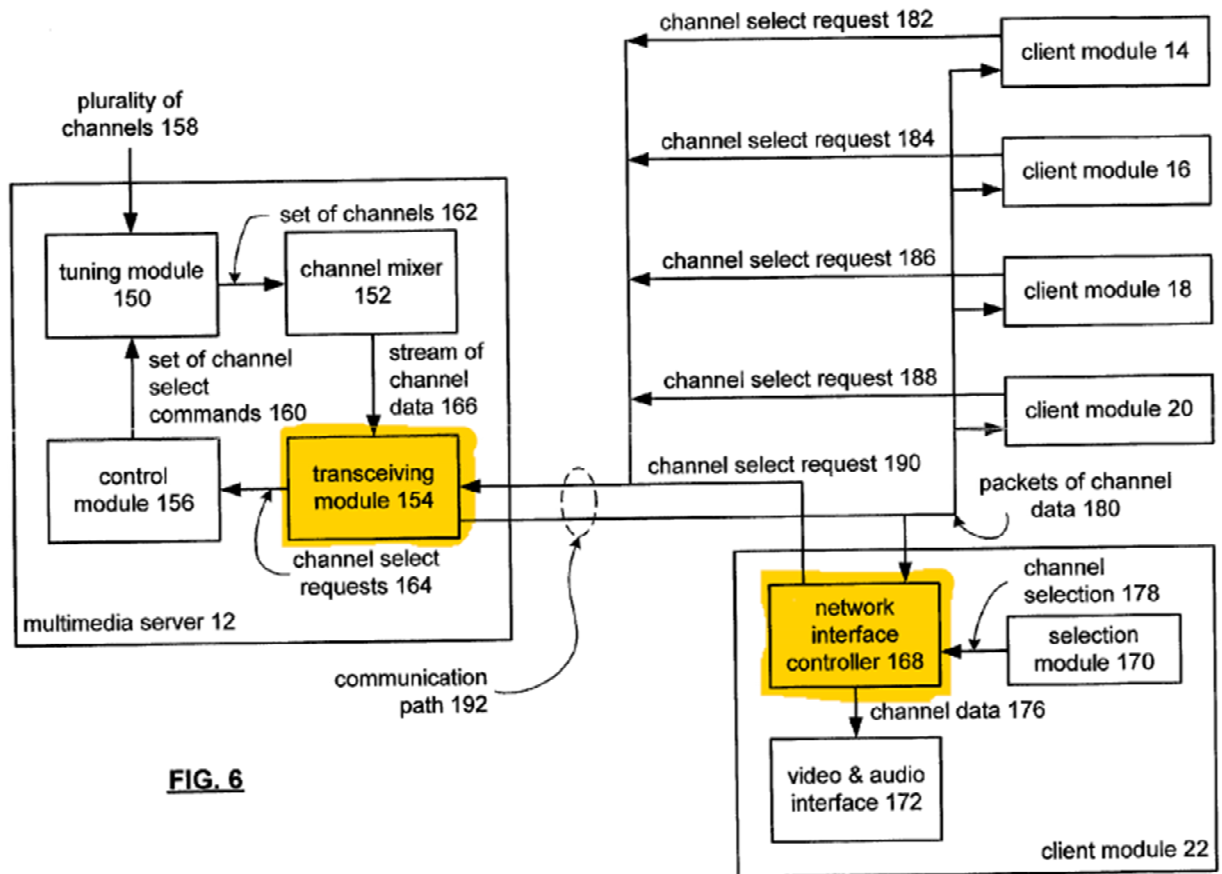


FIG. 6

Ex. 1001, Fig. 6 (annotated)

C. Prosecution History

The Patent application was filed May 24, 2001. The prosecution history is summarized in Ex. 1002, ¶¶ 68-85, but certain events are referenced below.

During prosecution, a final Office action rejected all claims except those directed to “monitoring a shared bus at specific time intervals, identifying a data frame at one of the specific time intervals that contains at least a portion of one of the plurality of channel selection commands.” Ex. 1003 at 1-11, 52-67, and 106-124. The applicant then amended each independent claim to include these limitations. *Id.* at 125-159; Ex. 1002, ¶¶ 72-82.

The examiner took official notice that several limitations were well-known and obvious, including: encrypting/decrypting information for security, compressing data for bandwidth purposes, and packetizing and framing. Ex. 1003 at 7, 58, 60-62, 64, 114, 117-118, 120-121. The applicant never traversed the examiner’s official notice and never contested the rejection of claims corresponding to these limitations. *Id.* at 12-51, 68-105, and 125-159; Ex. 1002, ¶¶ 70-71, 73-83.

D. Scope and Content of the Prior Art

The earliest priority date for the ’855 patent is May 24, 2001. Ex. 1004. None of the following prior art was cited or considered by the examiner during examination of the Patent application. Ex. 1002, ¶ 85; Ex. 1003:

1. U.S. Pat. No. 8,601,519 (“Hicks”)

Hicks (Ex. 1005) is a U.S. patent issued from an application filed December 28, 2000, and is prior art under 35 U.S.C. § 102(e) (pre-AIA). Ex. 1002, ¶ 120.

Hicks teaches a Broadband Multimedia Gateway (BMG) (highlighted below) that receives audio/video channels from various sources, and multiplexes the channels over a network to a plurality of set-top boxes (STBs) using different protocols and media. Ex. 1005, Abstract, 2:28-45, 3:36-67, 5:43-50, 6:1-42, Figs. 1, 2, 6; Ex. 1002, ¶ 121. A user selects programs using a remote control at a client device. Ex. 1005 at 10:54-11:47, Fig. 3; Ex. 1002, ¶ 121.

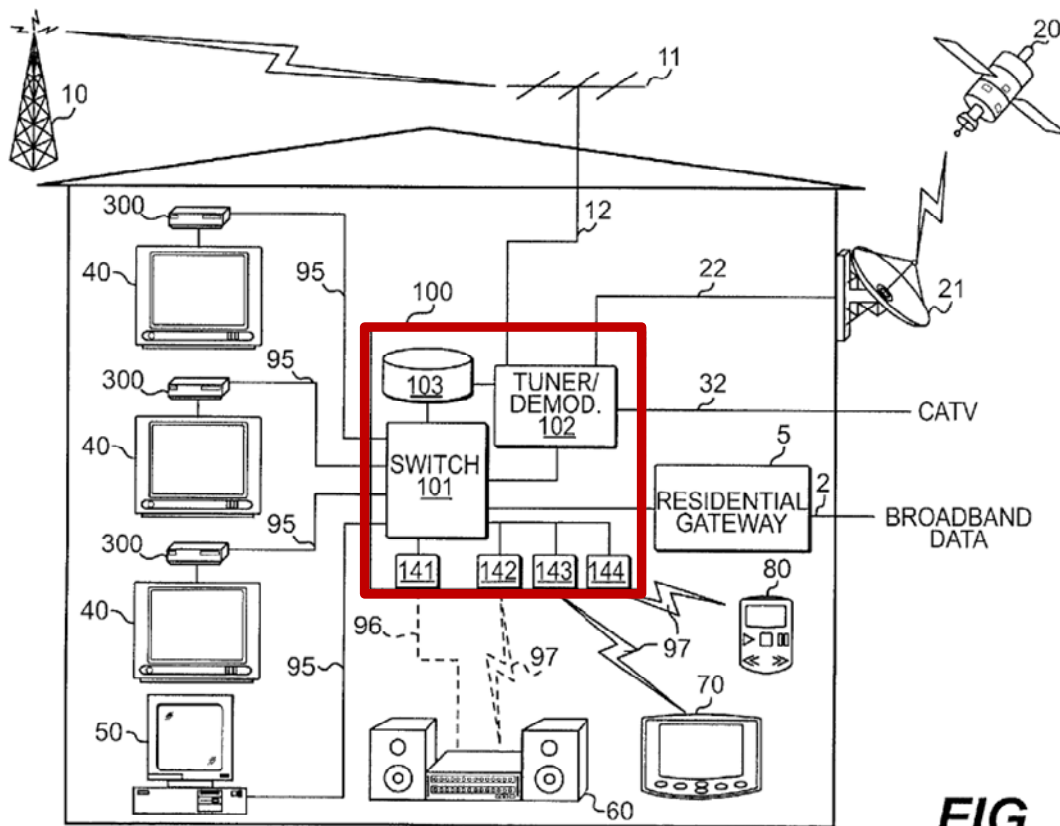


FIG. 1

Ex. 1005, Fig. 1 (annotated)

The multiplexed channels are sent using various standards, such as MPEG, Ethernet, Internet Protocol), and can be compressed/decompressed,

encrypted/decrypted, and encoded/decoded. Ex. 1005 at 3:31-35, 4:1-11, 4:44-50, 6:43-50, 8:38-67, 10:54-11:47, Figs. 1, 3, 6, claim 3; Ex. 1002, ¶ 122.

2. U.S. Pat. No. 6,218,864 / PCI Local Bus Specification, Rev. 2.2 (“PCI”)

U.S. Pat. No. 6,218,864 (Ex. 1011), which incorporates-by-reference PCI (Ex. 1006), issued April 17, 2001 from an application filed August 10, 1999. Ex. 1011, front page, 1:46-48. These references have a prior art date of August 10, 1999 under 35 U.S.C. § 102(e) (pre-AIA). Ex. 1002 at 123-126 (a PHOSITA would have understood the ’864 patent as incorporating-by-reference the complete [Exhibit 1006]), Ex. 1007 (authenticating Ex. 1006 in the ’864 patent file wrapper); Ex. 1008 at 23-34 (Ex. 1006 was submitted with the application when filed); 37 C.F.R. 1.11(a); *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000).

PCI, as included in the ’864 patent file wrapper, is prior art under 35 U.S.C. § 102(a) (pre-AIA) as of August 17, 2001. Ex. 1008 at 35-39 (the file wrapper including Ex. 1006 was publicly available); Ex. 1002 at 125.

PCI, as being publically available February 1999, is prior art under 35 U.S.C. § 102(b) (pre-AIA). Ex. 1013, ¶¶ 14-32; *see also* Ex. 1047 at 4 (“The latest version, 2.2 . . . became available in February of 1999.”); Ex. 1001 at 13:13-15, 18:47-50, 52:23-26 (identifying “PCI” as an internal shared bus).

PCI specifies a PCI Local Bus (“shared bus”) including a synchronous bus architecture with data transfers being performed in frames at specific clocked time intervals. Ex. 1006 at 21, 24, 29-31, 46, 67-68, Figs. 3-5, 3-6; Ex. 1002, ¶¶ 126-128.

3. Wireless LANs (“Grier”)

Grier (Ex. 1034) was published in 1999, and is prior art under 35 U.S.C. § 102(b) (pre-AIA). Ex. 1013, ¶¶ 38-40.

Grier teaches the IEEE-802.11 wireless communication standard including client device authentication and Wired Equivalent Privacy (“WEP”) encryption. Ex. 1034 at 43-44, 64-68; Ex. 1031 at 1:14-2:20, Figs. 1, 2; Ex. 1002, ¶¶ 129-130.

4. MPEG-2 (“Watkinson”)

Watkinson (Ex. 1016) was published in 1999, and is prior art under 35 U.S.C. § 102(b) (pre-AIA). Ex. 1013, ¶¶ 28-37.

Watkinson teaches aspects of MPEG-2 video and audio encoding including compression, packetizing and framing. Ex. 1016 at 11-13, 32-33, 52-56; Ex. 1002, ¶¶ 132-133.

5. U.S. Patent No. 5,808,694 (“Usui”)

Usui (Ex. 1012) issued September 15, 1998, and is prior art under 35 U.S.C. § 102(b) (pre-AIA).

Usui teaches a remote control including the same channel command options as recited in the Patent claims, for example, as in [1E]. Ex. 1012 at 6:18-7:3, Fig. 1; Ex. 1002, ¶ 134.

6. U.S. Patent No. 6,400,280 (“Osakabe”)

Osakabe (Ex. 1045) issued from an application filed December 5, 1997, and is prior art under 35 U.S.C. § 102(e) (pre-AIA).

Osakabe discloses an IEEE-1394 shared bus that communicates remote control commands and MPEG video streams between devices. Ex. 1045 at Abstract, 7:28-48; Ex. 1002, ¶ 119.

IV. IDENTIFICATION OF CHALLENGE PURSUANT TO 37 C.F.R. § 42.104(b)

Petitioner requests review of claims 1–63 on the following grounds and references.

Grounds	References	Basis	Claims Challenged
1	Hicks and PCI	§ 103(a)	1-63
2	Hicks, PCI, and Usui ¹	§ 103(a)	1-17, 19-20, 38-39, 54

¹ Independent claims 18, 28, 37, and 53 do not include limitations for which Usui is cited.

3	Hicks, PCI, and Grier	§ 103(a)	2, 5, 20-21, 29, 39, 42, 53-63
4	Hicks, PCI, Usui, and Grier	§ 103(a)	2, 5, 20, 39, 54
5	Hicks, PCI, and Watkinson	§ 103(a)	6-11, 13, 22-24, 26, 31-32, 34, 43-48, 50, 57-60, 62
6	Hicks, PCI, Usui, and Watkinson	§ 103(a)	6-11, 13
7-12	Grounds 1-6 and Osakabe, respectively	§ 103(a)	<i>See</i> Grounds 1-6 above

A. Level of Ordinary Skill

The alleged invention relates to the field of in-home networking. Ex. 1001 at 1:5-22; Ex. 1002, ¶ 32. A PHOSITA at the time of the alleged invention (May 24, 2001) would have had a bachelor's degree in electrical engineering, computer engineering, computer science, or a similar discipline and at least two years of experience with distributed computing systems such as multimedia systems, or would have had equivalent experience either in industry or research, such as designing, developing, evaluating, testing, or implementing the aforementioned technologies. Ex. 1002, ¶¶ 33-38.

B. Claim Construction

All claim terms should be construed according to their ordinary and customary meaning to a PHOSITA at the time of the alleged invention, except as identified below. 37 C.F.R. § 42.100(b). Ex. 1002, ¶¶ 39-46.

1. As Proposed in the ITC Investigation

The Parties in the ITC Investigation provided claim constructions (and the Administrative Law Judge (ALJ) adopted claim constructions) for certain claim terms. Ex. 1021 at 61-63²; Ex. 1023 at 5-8; Ex. 1024 at 1. This Petition applies all of the constructions adopted by the ALJ and proposed by both parties as alternatives in the analysis below. Ex. 1002, ¶¶ 39-40.³

2. Interpretation as Means Plus Function

No claims of the Patent include a means/step plus function limitation. To the extent Patent Owner argues any of claims 28-63 include a means-plus-function term,

² The ALJ refers to an October 28 claim construction chart which is believed to be Ex. 1023 (dated October 21). The date appears to be an error.

³ Claims 1-2, 8-12, 16-25, 29, 31-33, 38-39, 42, 45-49, and 54-61 recite the phrase “at least one of [A] and [B],” where “[A] and [B]” is a comma delineated list of singular items. Though not expressly construed, both parties in the ITC proceeding and the examiner during examination treated these phrases as requiring only one of the items, which: is indicated by the “at least one of” preceding each list, is consistent with the supporting disjunctive lists in the specification, and avoids ambiguous claim interpretations where the listed items are mutually exclusive. Ex. 1001 at 42:64-43:7; Ex. 1003 at 108; Ex. 1028 at 37-42; Ex. 1002, ¶¶ 41-46.

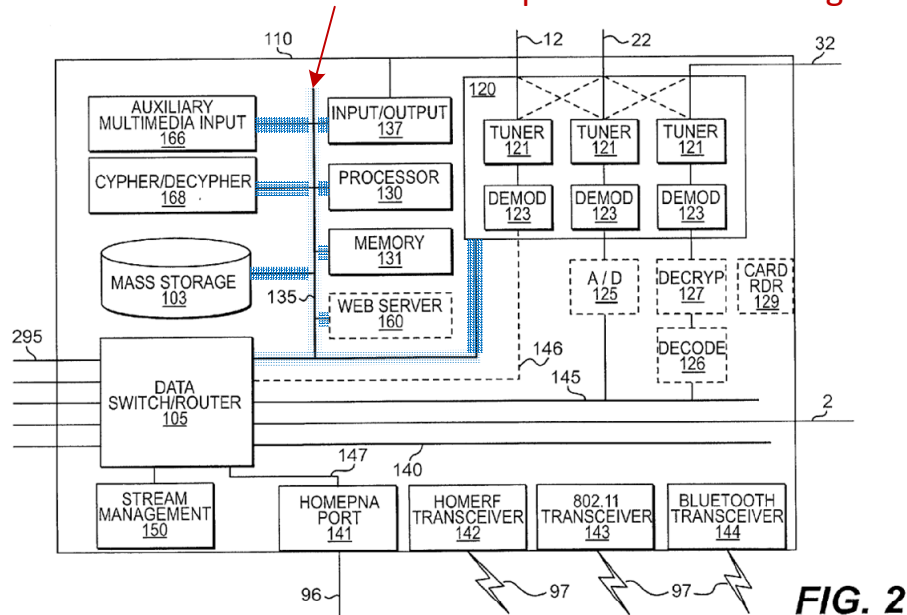
the corresponding structure in the Patent, and how that structure is disclosed by the references is identified in the analysis of each claim below (*see* 37 C.F.R. § 42.104(b)(3)).

V. SPECIFIC GROUNDS FOR UNPATENTABILITY

A. Grounds 1 and 2: Claims 1-63 Are Obvious Over Hicks and PCI (Ground 1) and Claims 1-17, 19-20, 38-39, 54 are Obvious Over Hicks, PCI, and Usui (Ground 2)

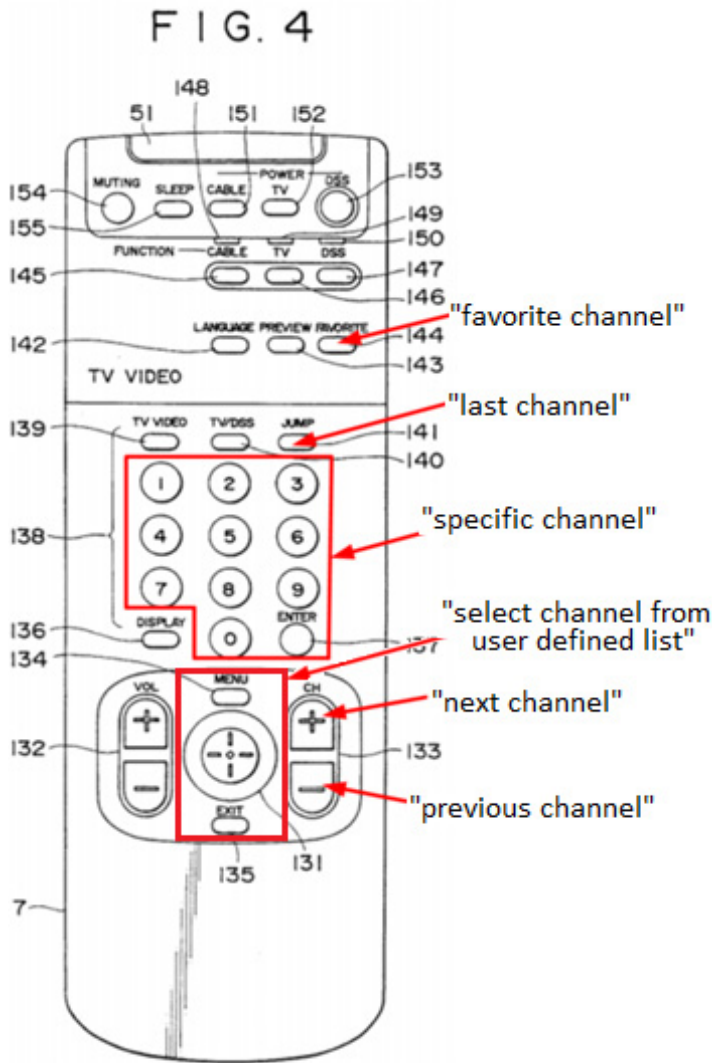
Hicks's BMG, with its internal shared bus implemented according to PCI, renders all claims obvious. Ex. 1002, ¶¶ 138-139.

Hicks's BMG with "shared bus" implemented according to PCI



Ex. 1005, Fig. 2 (annotated)

These claims are also rendered obvious by Hicks and PCI combined with Usui, which teaches each specific "channel selection command" type recited in claims 1, 19, 38, and 54 (if these command types are missing from Hicks). Ex. 1002, ¶¶ 140-141.



Ex. 1012, Fig. 4 (annotated)

1. Claim 1 (Grounds 1/2)

Claim 1 is obvious over Hicks in view of PCI (Ground 1) and Hicks in view of PCI and Usui (Ground 2).

a. [1A] *A method of multiplexing a plurality of channels in a multimedia system, the method comprises:*

Per the parties' proposed ITC constructions, Hicks's BMG (Fig. 1 (100)) (the claimed "multimedia system") is a multimedia server (claims 1, 37, 53), including a

tuning module (claim 28), within a user's home as part of an in-home communication network. Ex. 1005 at 2:16-45, 3:54-67; Ex. 1023 at 5; Ex. 1002, ¶¶ 142-147; *see also* Ex. 1005, Abstract, 5:57-6:16, 7:56-63, 8:15-21, 11:48-12:3, Figs. 1 (100), 2 (110), 6 (600).

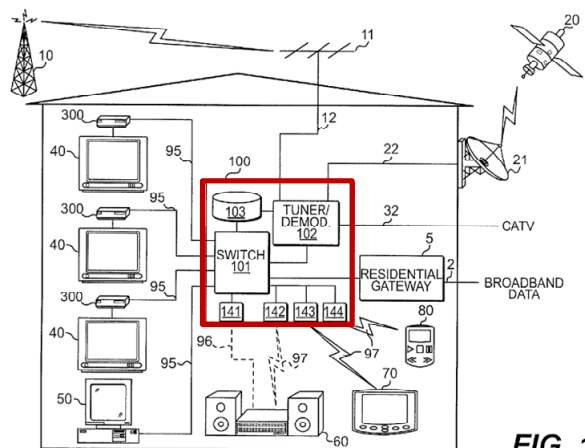


FIG. 1

Ex. 1005, Fig. 1 (annotated)

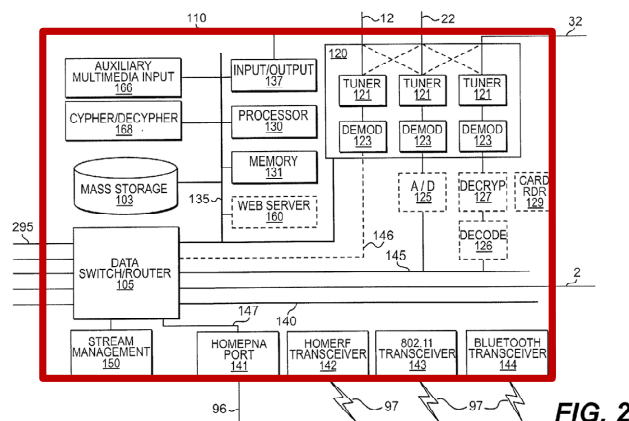


FIG. 2

Ex. 1005, Fig. 2 (annotated)

The BMG extracts multiplexed channels (programs) from multimedia sources (e.g., an antenna, direct broadcast satellite (DBS), or cable TV (CATV)), and re-multiplexes the channels onto a shared bus within the BMG and onto a local network for transmission to STBs 300, thus disclosing [1A]. Ex. 1005 at 4:44-50, 7:16-23, 8:15-67, 11:3-8; Ex. 1002, ¶¶ 147-148.

b. [1B] *receiving a plurality of channels from a multimedia source;*

Tuners/demodulators (102, 120) in Hicks's BMG receive a plurality of information signals ("receiving a plurality of channels") multiplexed in a composite information signal from CATV, satellite, terrestrial broadcast TV or radio, mass

storage, etc. (each a “multimedia source”). Ex. 1005 at 3:43-58, 6:1-42; Ex. 1002, ¶¶ 149-151; *see also* Ex. 1005 at 6:66-7:23, 8:22-51, 9:17-21, 12:4-10, 12:44-47, 12:57-66, 17:60-18:3, 18:50-60, Figs. 1-4, 6.

c. [1C] *receiving a plurality of channel selection commands by: receiving, from a plurality of clients, a plurality of channel selection requests; and*

Hicks’s users enter remote control instructions (“channel selection commands”) at respective STBs (using a broadcast program guide, search function, or direct channel number entry), and the STBs communicate these instructions via the in-home network formatted according to a particular communication protocol (“channel selection requests”), which the BMG receives at its data switch/router 105 (Figure 2), thus disclosing [1C]. Ex. 1005 at 4:21-62, 11:20-47, 12:4-51 (step 440), 15:9-11, Figs. 2, 6 (95, 105), 4 (steps 440-470); Ex. 1002, ¶¶ 152-157.

Each message requests “that the digital multimedia content be delivered to the digital STB,” and in response to receiving the message, the BMG sends the identified content to the STB. Ex. 1005 at 4:41-50, 12:4-51, Fig. 4 (steps 440-470); Ex. 1002, ¶¶ 157-158. Hicks’s in-home network uses well-known standard protocols including Ethernet, IEEE-802.11, and Internet Protocol to communicate the messages in frames and/or packets including header information that includes an address of the STB from which the message originated. Ex. 1005 at 3:2-26, 5:43-48; Ex. 1030 at 8-11 (“Ethernet Frame,” definition of “Frame”), 14 (“Internet Protocol Datagram”),

17 (definition of “Packet”); Ex. 1002, ¶¶ 159-163; *see also* Ex. 1005 at 5:43-48, 5:62-67, 7:37-45, 8:15-21, 9:49-54, 10:56-61, 11:4-8; Ex. 1033 at 37 (IP datagram format), 39-40 (frame and packet encapsulation), 44-45, 53, 59-61, Fig. 7.5; Ex. 1034 at 83-88.

Thus, the messages (“plurality of channel selection requests”) received from the STBs (“plurality of clients”) each identifies a particular channel and STB to which the content should be delivered, meeting the agreed upon ITC construction of “channel selection request.” Ex. 1023 at 5; Ex. 1002, ¶¶ 157-159, 164.

d. [1D] *processing the plurality of channel selection requests to produce the plurality of channel selection commands,*

Hicks’s data switch 105 (Figures 2, 6) receives each STB’s instructions in the protocol format of the in-home network—for example, using Ethernet, IEEE-802.11, and/or IP encoded data (“channel selection requests”), and Hicks’s processor 130 (Figures 2, 6) would de-encapsulate the instructions (“channel selection commands”) from the protocol format in order to interpret them, thus performing [1D]. Ex. 1005 at 3:14-26, 5:43-48, 8:15-21, 11:4-8, 11:20-47; Ex. 1001 at 12:18-25; Ex. 1030 at 8-9 (“Ethernet Switch”), 11 (“Ethernet Frame,” definition of “Frame”), 14 (“Internet Protocol Datagram”), 17 (definition of “Packet”); Ex. 1033 at 37, 39-40 (“Datagram Encapsulation”), 44-45, 53, 59-61 (Internet Layer routing), Fig. 7.5; Ex. 1034 at 68-69, 83-88; Ex. 1002, ¶¶ 159-163, 166-169, 171.

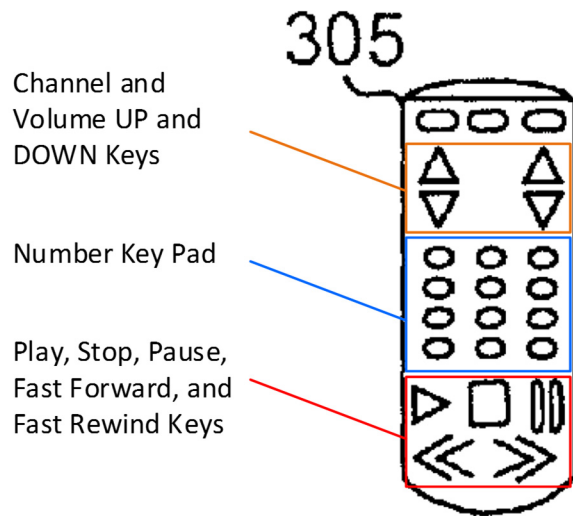
Hicks's processor 130 processes the STB instructions to produce a "select second transmission instruction" (Ex. 1005 at 12:42-44 (step 450)) to control a tuner in signal processing circuit 120 (Figures 2, 6) (also the claimed "channel selection commands"), thus providing another example of [1D]. Ex. 1005 at 4:21-50, 8:44-54, 12:38-51, Fig. 12 (450); Ex. 1002, ¶¶ 166-168, 170-171.

Both the original user instructions and the control instructions sent from the processor to the tuner, meet both parties' proposed ITC constructions of "channel selection commands". Ex. 1023 at 6-7; Ex. 1002, ¶¶ 165, 169-171; *see also* Ex. 1001 at 12:18-25.

- e. [1E] *wherein the each of the plurality of channel selection commands includes at least one of: last channel selection command, next channel selection command, previous channel selection command, favorite channel selection command, and select channel from user define list*

Hicks (Ground 1) or Hicks and Usui (Ground 2) teaches [1E]. Ex. 1002, ¶¶ 172-194.

Hicks's remote control (Figure 3) selects a channel using a broadcast program guide, performing a search function, or entering a channel number. Ex. 1005 at 4:38-44, 4:55-62, 9:35-39, 11:20-33, 11:41-47; Ex. 1002, ¶¶ 180-181.



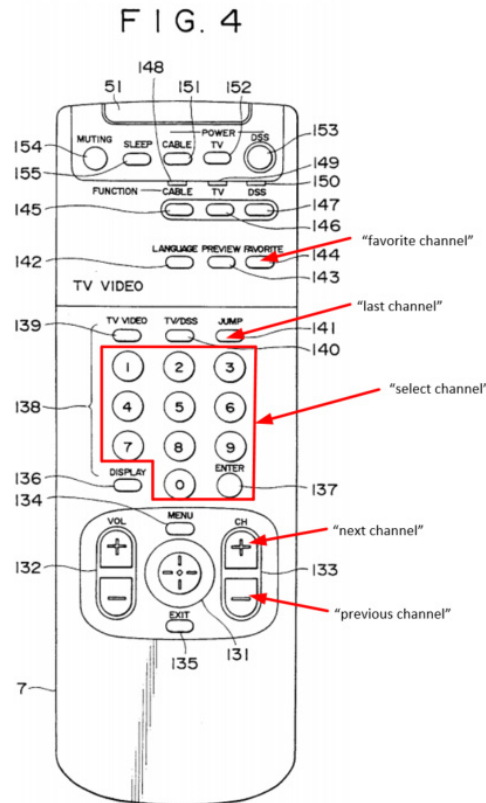
Ex. 1005, Fig. 3 (cropped and annotated)

A PHOSITA would recognize that the remote control includes well known channel up and down keys and a number key pad, which were ubiquitously included on TV and STB remote controls. Ex. 1037 at 4:53-65, Fig. 1; Ex. 1038 at 26:53-33, Fig. 12; Ex. 1039 at 10:4-6, Fig. 2; Ex. 1040 at 26:40-45, Fig. 1; Ex. 1041 at 29:49-57, Fig. 13b; Ex. 1002, ¶ 182.

As discussed above for [1D] (*see supra* § V.A.1.d), remote control selections generate instructions (“channel selection command”) embedded in a network protocol message (e.g., Ethernet frame and IP packet) (“channel selection request”). When the GUI is controlled by the remote control up or down key selections, channel number selection via the key pad, or selection from the search function, the generated instructions would include the claimed “next channel selection command,” “previous channel selection command,” “favorite channel selection command,” and

“select channel from user define list” as broadly described in the patent. Ex. 1005 at 4:38-44, 4:55-62, 11:20-33, 11:41-47, Fig. 3; Ex. 1002, ¶¶ 173-179, 183-184; *see also* Ex. 1001 at 42:25-27, 42:64-43:29, 61:19-22 (describing commands).

If Hicks lacks [1D], it would have been obvious to implement Hicks’s remote control and GUI according to Usui’s system for integrating broadcast TV and satellite TV program guides and including remote commander 7 (shown below) for controlling the system. Ex. 1012 at 1:65-2:16, 7:39-44, 8:19-10:5 (process for combining EPGs), 10:26-62, 12:55-13:43 (user-specified EPG data), 16:20-40, Figs. 1 (system), 4 (remote controller) 12-14, 18 (integrated program guides); Ex. 1002, ¶¶ 185-186.



Ex. 1012, Fig. 4 (annotated)

Remote commander 7 includes channel up/down button 133 (“next channel selection command” and “previous channel selection command”), jump button 141 (“last channel selection command”), and favorite button 144 (“favorite channel selection command”). Ex. 1012 at 6:18-7:3, 15:50-16:39, Fig. 4; Ex. 1002, ¶¶ 188-189. Usui further describes selecting channels from user specified program guides (“select channel from user define list”). Ex. 1012 at 8:8-15, 9:7-40, 12:55-13:18, 13:48-14:23; Ex. 1002, ¶ 187.

It would have been obvious to apply Usui’s teaching to Hicks, because Usui recognizes the problem of receiving separate EPG data from different sources (broadcast TV and satellite TV) as would have existed in Hicks, and combining that data into Usui’s single user-specified EPG would improve the Hicks system by allowing users to select from only programs the user is interested in. Ex. 1005 at 6:8-16, 8:24-26, 11:34-47, Figs. 1-2 (sources 12, 22, 32); Ex. 1012 at 1:52-63, 2:27-34, 3:9-10, 7:36-39, 9:7-40, 12:66-13:18, Figs. 3A (61), 5 (221), 11 (S81); Ex. 1002, ¶¶ 190-191. Usui’s remote commander 7 would further give the Hicks user a better experience by providing more easily accessible options for channel selection. Ex. 1012 at 15:50-16:39; Ex. 1002, ¶ 192. Such a combination would be the use of a known technique (Usui’s remote commander and integrated and user-defined EPG) to improve a similar device (Hicks’s remote control and BMG having a program

guide and multiple source inputs) in the same way (modifying Hicks's remote control and program guide according to those taught in Usui). Ex. 1002, ¶¶ 191-192.

A PHOSITA would have had a reasonable expectation of success in combining Hicks and Usui. Using Usui's remote commander 7 and user-defined EPG with Hicks's system would merely require reprogramming Hicks's client STBs and BMG to receive the specific additional command instructions generated by Usui's remote commander 7 instead of those generated by Hicks's remote control, and to run Usui's EPG software instead of Hicks's program guide. This would be well within the capability of a PHOSITA. Ex. 1005 at 9:22-48, 11:20-48, 16:59-17:12; Ex. 1002, ¶¶ 193-194.

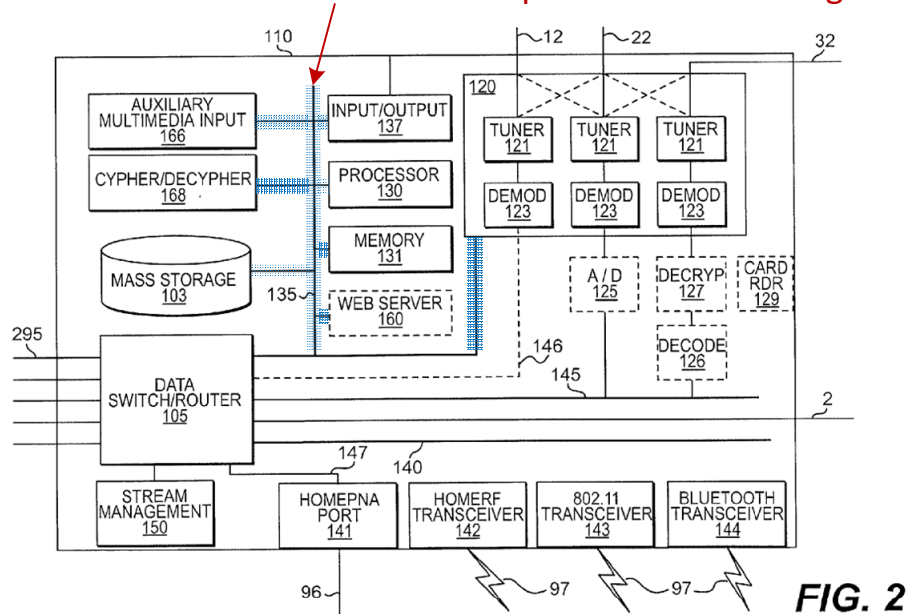
- f. [1F] *wherein the receiving the plurality of channel selection commands further includes monitoring a shared bus at specific time intervals, identifying a data frame at one of the specific time intervals that contains at least a portion of one or the plurality of channel selection commands, and decoding, based on a data conveyance protocol of the multimedia system, the data frame to recapture the at least a portion of the one of the plurality of channel selection commands;*

Hicks discloses a "shared system bus 135" (Figure 2) (also "system data bus 620" in Figure 6) enabling several components in the BMG—including data switch 105, processor 130, and signal processing circuit 120—to communicate. Ex. 1005 at 8:38-60, 9:22-32, 11:20-12:51. This bus is internal to the BMG and transfers data between the BMG components (105, 130, 135, 620), thus meeting both parties' ITC

constructions, and that adopted by the ALJ, of “shared bus.” Ex. 1021 at 61:6-62:2; Ex. 1023 at 7; Ex. 1002, ¶¶ 195, 198-199.

It would have been obvious to implement Hicks’s system data bus using a shared bus architecture as taught by PCI. Ex. 1002, ¶¶ 199-201, 210; Ex. 1011 at 1:46-48; Ex. 1006.

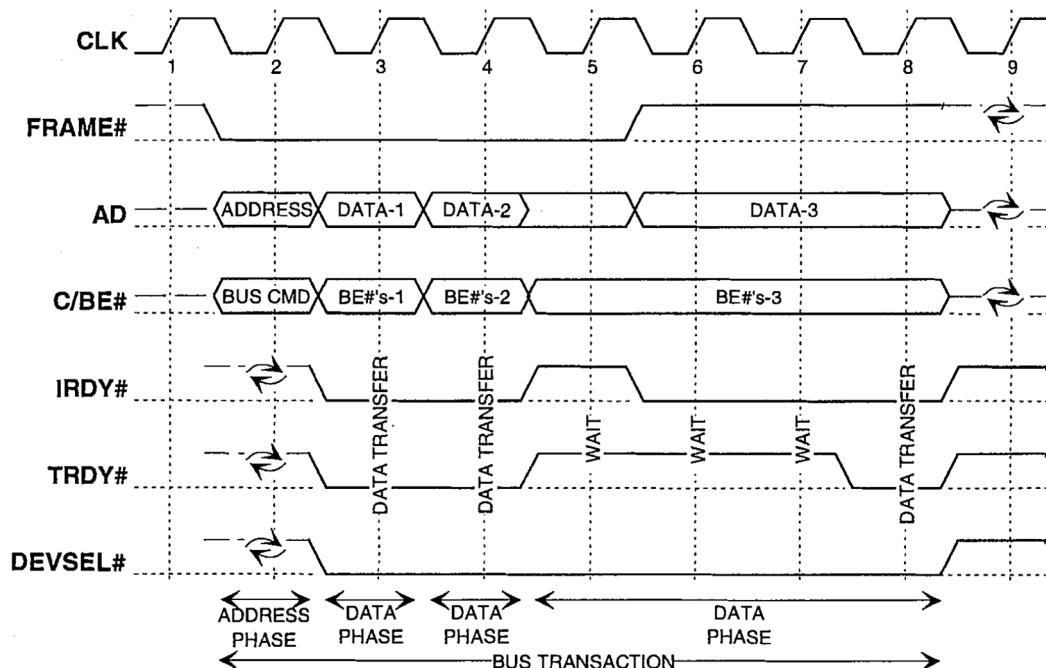
Hicks’s BMG with “shared bus” implemented according to PCI



Ex. 1005, Fig. 2 (annotated)

As illustrated below, a PCI bus transaction comprises a frame (indicated by the “FRAME#” signal) in which address (header section) and data values (data section) are multiplexed and sequentially transmitted between devices on the same wires (“AD” signals) with the receiving device sampling the data on the rising edge of a system clock (enumerated as 1-9 on CLK). Ex. 1006 at 24 (“Multiplexed

architecture”), 28-29 (“CLK,” “AD[31::00]”), 46-48 (devices monitor address to “determine if it is the target”), 67-69 (Figs. 3-5, 3-6); Ex. 1002, ¶¶ 201-206.



Ex. 1006 at 68, Fig. 3-6

As noted above with respect to [1D] (V.A.1.d), Hicks discloses the claimed “channel selection commands” as (1) instructions embedded in IP packets (“channel selection requests”) received by processor 130, and (2) instructions sent from processor 130 to signal processing circuit 120 for controlling its tuner, both of which would be transferred over the system data bus (135, 260) implemented according to PCI. Ex. 1005 at 4:21-50, 5:43-50, 12:38-51; *see also* Ex. 1005 at 3:14-26, 8:15-21, 8:38-60, 11:20-12:51, Figs. 2, 6; Ex. 1002, ¶¶ 166-171 198. Thus, processor 130 (Figures. 2, 6), and signal processing circuit 120 (Figures 2, 6) would monitor the system data bus (135/620) (“shared bus”) at the rising edge of CLK (“specific time

intervals”) to identify the PCI frame (“data frame”) that contains the channel selection commands, and decode the multiplexed data on the AD signals to receive the commands (“recapture the at least a portion of the one of the plurality of channel selection commands”) as required by [1F]. Ex. 1006 at 28 (CLK), 46-47 (monitoring address to “determine if it is the target”), 67-68 (read and write timing); Ex. 1005 at 4:21-50, 8:38-60 (tuners coupled to “shared system bus 135”), 12:38-51, Figs. 2, 6; Ex. 1002, ¶¶ 203-207.

Processor 130 and signal processing circuit 120 would use the address and other control signals (at clock edge #2 in the figure above) to determine it was the target device and the type of transaction before decoding the data (Data-1, Data-2, etc. in Figure 3-6 above) to recapture a channel selection command, thus meeting the proposed ITC claim constructions, and that adopted by the ALJ, of the “identifying” step. Ex. 1002, ¶¶ 207-209; Ex. 1021 at 62:3-63:10; Ex. 1023 at 7.

A PHOSITA would have been motivated to implement Hicks’s system data bus according to the PCI standard and would have had a reasonable expectation of success in doing so, since PCI was an industry standard, specifically designed to work with and often implemented with Hicks’s Pentium III processor, and was widely deployed, including in off-the-shelf equipment. Ex. 1005 at 9:22-25; Ex. 1006 at 23 (system block diagram), 113 (referring to “x86”, a processor family including the Pentium III), 225 (“compatible with existing Intel x86”), 228-229, 283

(“Base Class 0Bh” for “Pentium” processor); Ex. 1010 (discussing PCI in industrial applications); Ex. 1028 at 44-45 (“In 1997, all Pentium processor class or higher systems had PCI slots”), 48-51 (discussing wide use of PCI with Ethernet cards); Ex. 1002, ¶¶ 210-211, 214-215. Thus, implementing Hicks’s system data bus using the PCI standard would have simply been combining prior art elements (Pentium III processor and the PCI standard) according to known methods (the PCI standard) to yield predictable results. Ex. 1002, ¶¶ 212-213. Implementing Hicks’s system data bus with PCI would also have been obvious to try, since PCI was one of only a finite number widely implemented techniques for transmitting data at the time the ’855 patent was filed. Ex. 1005 at 9:22-35; Ex. 1010 at 1-3, 9; Ex. 1002, ¶ 213.

g. [1G] *selecting a channel of the plurality of channels per channel selection command of the plurality of channel selection commands to produce selected channels; and*

Hicks’s Processor receives each user’s instruction (“channel selection command”) from each STB (Figure 4, box 445), and generates another instruction (Figure 4, box 460) sent to signal processing circuit 120 (also a “channel selection command”). Ex. 1005 at 12:38-51. Hicks’s tuner 121 in signal processing circuit 120 selects a channel in accordance with these instructions to produce each selected channel for delivery to the STB, thus disclosing [1G]. Ex. 1005 at 4:21-50, 8:22-60, 12:38-51; Ex. 1002, ¶¶ 216-220; *see also* Ex. 1005 at Abstract, 2:16-27, 3:14-67, 6:1-50, 8:24-9:21, 10:54-11:34, Figs. 2, 6.

h. [1H] encoding each of the selected channels based on the data conveyance protocol of the multimedia system to produce a set of encoded channel data.

Hicks describes that the information signals (channels) selected by the tuners/demodulators are communicated over system bus 135 of Figure 2 (or system data bus 620 of Figure 6), which would be implemented according to PCI (*see supra* § V.A.1.f). Ex. 1005 at 3:54-67, 7:16-23, 8:38-47, 9:17-21, 11:48-12:3, Figs. 2, 6 (annotated below); Ex. 1002, ¶¶ 221-222.

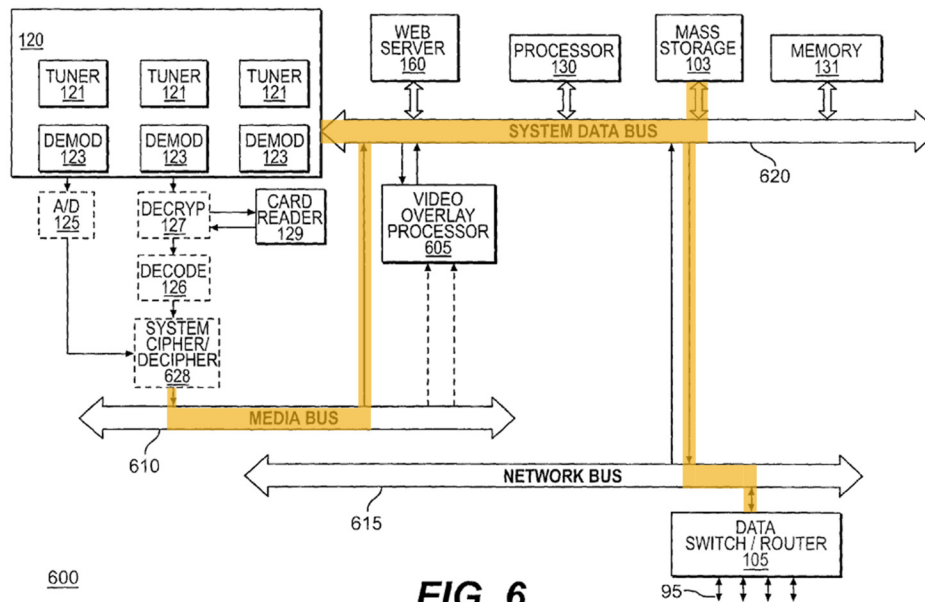


FIG. 6

Ex. 1005, Fig. 6 (annotated)

Accordingly, the combined Hicks and PCI (or Hicks, Usui, and PCI) system (including the processor 130 and signal processing circuit 120) would encode the selected channels in a PCI Frame based upon the PCI data conveyance protocol, thus disclosing [1H]. Ex. 1005 at 8:44-47, 11:48-67, Figs. 2 (135), 6 (620); Ex. 1006 at

46-47 (describing basic PCI transaction), 67-68 (read and write PCI transactions); Ex. 1002, ¶¶ 223-224; *see also* Ex. 1005 at 3:54-67, 6:57-7:31, 9:17-21; Ex. 1006 at 42-43.

2. Claims 2 and 5 (Grounds 1/2)

[2A] *The method of claim 1, wherein the processing the plurality of channel selection requests further comprises at least one of:*

[2B] *interpreting at least one channel selection request to identify at least one client of the plurality of clients and at least one of the channel selection requests of the plurality of channel selection requests;*

[2C] *authenticating a client of the plurality of clients that provides a specific channel selection request; and*

[2D] *authenticating the specific channel selection request.*

[5A] *The method of claim 1, wherein the receiving the plurality of channel selection commands further comprises at least one of:*

[5B] *decrypting each of the plurality of channel selection commands; and*

[5C] decompressing each of the plurality of channel selection commands.

Claim 2 requires only one of [2B]-[2D], and claim 5 requires only [5B] or [5C], be performed. Ex. 1002, ¶¶ 41-45.

Hicks's BMG receives protocol encapsulated STB messages ("channel selection request") requesting that particular channels be delivered to particular STBs, and the BMG processes them to extract the requested channels ("interpreting . . . to identify . . . at least one of the channel selection requests") and sends the channels to the STBs that requested them ("interpreting to identify at least one client"), thus performing [2B]. Ex. 1005 at 3:54-64, 4:21-44, 4:38-50, 8:47-54, 11:20-47 ("remote control instructions"), 11:48-12:51, 12:38-41, 15:9-11, Figs. 2, 4; Ex. 1002, ¶¶ 157-158, 227-228.

Hicks's BMG further implements an IEEE-802.11 communication to connect, and that Stream Management 150 maintains an "established session" between, two end points (the BMG and client STB). Ex. 1005 at 3:14-31, 7:45-55, 9:62-10:4; Ex. 1002, ¶¶ 229-230. A PHOSITA would understand this disclosure as the BMG authenticating a STB that requests a channel ([2C]) and also decrypting each of the channel selection commands ([5B]), since a "session" implies client authentication, and since IEEE-802.11 is a network protocol that authenticates each client device and encrypts (requiring decryption of) communications over the network using

Wired Equivalent Privacy (WEP) encryption/decryption.⁴ Ex. 1031 at 1:14-2:20, Figs. 1, 2; Ex. 1034 at 43-44, 64-68;⁵ Ex. 1002, ¶¶ 231-232. Hicks also discloses that when a user selects a program, the BMG's Conditional Access System controls access to "pay-per-view services" and "types of programs or channels" based on "electronic keys, user profiles, user identifiers, access rights, financial information, and other data" stored on a "Consumer" smart card, thus disclosing [2D]. Ex. 1005 at 4:4-11, 8:60-67, 10:35-53, 18:39-41, *compare* Ex. 1001 at 43:17-29; Ex. 1002, ¶¶ 233-236; *see also* Ex. 1005 at 1:54-62, 9:33-44, 13:15-22, 18:39-41.

3. Claim 3 (Grounds 1/2)

The method of claim 1 further comprises: receiving a second plurality of channels from a second multimedia source.

Hicks discloses the claimed "plurality of channels" as the channels available from one of the multimedia sources, *e.g.*, CATV (*see* Section V.A.1.b), and the claimed "receiving a second plurality of channels from a second multimedia source"

⁴ The applicant did not traverse during examination "Official Notice" that decrypting was well known in the art. *See supra* § III.C.

⁵ Claims 2 and 5 are also obvious based on Grounds 3/4 4 (*see infra* § V.B), relying on Ex. 1034 as prior art.

as channels available from another of the multimedia sources, *e.g.*, a satellite. Ex. 1005 at 3:43-47, 6:1-42, 8:22-37, 12:38-51, 17:60-18:3, Fig. 2 (12, 22, 32); Ex. 1002, ¶¶ 237-240; *see also* Ex. 1005 at 3:8-13, 3:54-58, 6:66-7:31, 9:17-21, 12:57-66, 18:50-60, Fig. 4 .

4. Claim 4 (Grounds 1/2)

The method of claim 3, wherein the selecting a channel further comprises: selecting a channel from either the plurality of channels or the second plurality of channels per each of the channel selection commands, wherein each of the channel selection commands includes identity of the multimedia source or the second multimedia source and identity of the channel.

Each Hicks user provides an instruction identifying a specific channel from a specific source amongst a plurality of multimedia sources (“broadcast and on-demand video,” “audio content,” “a broadcast satellite television channel,” “programs . . . transmitted by a CATV system, a DBS system, a terrestrial TV system”), and these instructions (channel selection commands) are forwarded to processor 130, which causes processor 130 to send instructions (also channel selection commands) to the signal processing circuit 120. Ex. 1005 at 4:25-50, 8:22-37, 8:47-54, 11:4-8, 11:26-31, 12:38-51 (steps 440-450); Ex. 1002, ¶¶ 241-243, 245-249; *see also* Ex. 1005 at 3:43-47, 6:1-42, 6:66-7:31, 11:4-8, 15:9-11. Thus, each

command “includes identity of the multimedia source or the second multimedia source and identity of the channel” as required by claim 4. Ex. 1002, ¶¶ 246-247, 250. Responding to each command, tuners in signal processing circuit 120 select the requested channel from the requested source, thus “selecting [from] the plurality of channels or the second plurality of channels” as recited in claim 4. Ex. 1005 at 4:46-50, 4:59-62, 8:24-37, 11:26-29, 12:47-51; Ex. 1002, ¶¶ 244, 250.

5. Claim 6 (Grounds 1/2)

The method of claim 1, wherein each of the plurality of channels is compressed, wherein the selecting a channel further comprises: selecting a group of compressed channels of the plurality of channels per at least one of the plurality of channel selection commands, wherein the group of compressed channels includes the channel.

Hicks’s plurality of channels received from the multimedia sources include MPEG video streams, which are “compressed.” Ex. 1016 at 11-14, 16-22, 32-33; Ex. 1002, ¶¶ 94-99, 251-253.

In response to a channel selection command, Hicks’s BMG tunes to a composite information signal (“group of compressed channels”) which includes the selected channel (information signal) multiplexed with other information signals, thus disclosing the “selecting” Ex. 1005 at 4:44-50, 6:26-42; Ex. 1002, ¶¶ 254-255, 259.

Moreover, the Patent acknowledges that receiving multiple MPEG encoded channels together in a 6 MHz RF channel was known, requiring selecting channels together, thus conceding claim 6 was already known. Ex. 1001 at 42:31-38, 49:52-55, 51:23-27; Ex. 1016 at 55; Ex. 1017 at 11 (section 1.6); Ex. 1002, ¶¶ 256-258.

6. Claim 7 (Grounds 1/2)

The method of claim 6, wherein the encoding further comprises: encoding the group of compressed channels into packets or frames based on the data conveyance protocol.

Hicks's BMG sends the selected channels as MPEG video streams from the tuners to data switch 105 through shared system bus 135 (and 160), and from data switch 105 over the network to the STBs. Ex. 1005 at 4:46-50, 8:44-47, 11:49-12:3, Figs. 1-2, 6; Ex. 1002, ¶¶ 260-261. Hicks discloses various protocols, such as Ethernet, IEEE-802.11, and IP, which would encode the channels into frames and packets, thus disclosing claim 7.⁶ Ex. 1005 at 3:14-26, 5:43-50; Ex. 1030 at 8-11 ("Frame", Ethernet Frames), 14 (IP datagram is a "self-contained packet"), 17

⁶ The applicant did not traverse during examination "Official Notice" that packetizing and framing were well known in the art. *See supra* § III.C

(“Packet”); Ex. 1033 at 37-40, 59-61 (IP communication); Ex. 1034 at 68-69 (IEEE-802.11 frame), 85-88 (IP communication); Ex. 1002, ¶¶ 160, 162-163, 262.

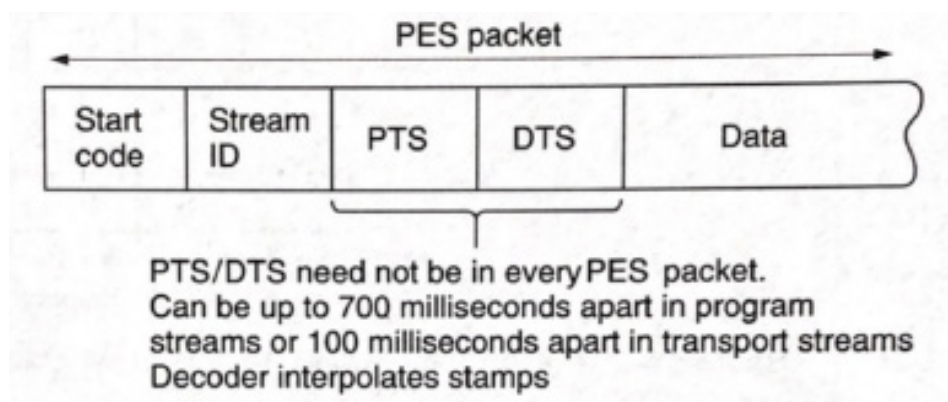
As discussed in Section V.A.1.h, in the combination of Hicks and PCI, data (including the selected channels) is sent via shared bus encoded in PCI frames, thus also disclosing claim 7. Ex. 1005 at 8:44-47; Ex. 1006 at 46-47 (describing FRAME#), 67-68 (read and write PCI transactions) (Figs. 3-5, 3-6); Ex. 1002, ¶¶ 222-223, 261-262; *see also* Ex. 1005 at 3:54-58, 7:17-23, 9:17-21, 11:56-59, Figs. 2 (135), 6 (620); Ex. 1006 at 42-43.

7. Claim 8 (Grounds 1/2)

*The method of claim 1, wherein the encoding further comprises: packetizing data of each of the selected channels into a packet that includes a header section and a data section, wherein the header section includes at least one of identity the selected channel, type of data of the selected channel, identity of the multimedia source, encryption enable/disable, type of encryption, compression enable/disable, type of compression, and packet sequence number.*⁷

⁷ The applicant did not traverse during examination “Official Notice” that packetizing was well known in the art. *See supra* § III.C

Claim 8 recites a packet including data and a header that requires “at least one” of a list of elements. Ex. 1002, ¶¶ 41-45. Hicks’s BMG encodes analog channels into multiple “MPEG-2 digital information signal[s],” which refers to encoding audio and video according to the ISO 13818 MPEG-2 standard. Ex. 1005 at 6:44-50, 8:54-60; Ex. 1016 at 11 (MPEG-2 is an audio/video encoding ISO standard); Ex. 1017 at 18 (Section 2.2); Ex. 1002, ¶¶ 265-266. This encoding includes compressing and packetizing data into packetized elementary stream (PES) packets (illustrated below), each including a header section and data section, where the header includes a “Stream ID” indicating the packet contains video or audio data (claim 8 “type of data of the selected channel”). Ex. 1016 at 32-33 (describing packetizing process), 52-53 (describing PES packet with Stream ID); Ex. 1017 at 37 (“stream_id,” Table 3.1); Ex. 1002, ¶¶ 266-270; *see also* Ex. 1016 at 11-14, 54-56; Ex. 1017 at 18-20.



Ex. 1016 at 53, Fig. 6.1

8. Claim 9 (Grounds 1/2)

The method of claim 8 further comprises: conveying the packet using at least one of: Carrier Sense Multiple Access (CSMA), CSMA with collision avoidance, and CSMA with collision detection.

Claim 9 requires conveying the packet using one of three CSMA techniques. Ex. 1002, ¶¶ 41-45. Hicks's network implements Ethernet, which conveys the MPEG-2 encoded channels using CSMA with collision detection, thus disclosing claim 9. Ex. 1005 at 4:44-50, 8:18-20, 9:54-57; Ex. 1028 at 25-27 ("Fast Ethernet CSMA/CD"), 31 (Gigabit Ethernet MAC with CSMA/CD); Ex. 1002, ¶¶ 272-274; *see also* Ex. 1005 at 3:2-5, 3:41-43, 3:58-64, 5:65-67, 7:41-55, 8:38-47, 9:49-54.

9. Claim 10 (Grounds 1/2)

The method of claim 1, wherein the encoding further comprises: framing data of each of the selected channels into frame that includes header section and a data section, wherein the header section includes at least one of identity the selected channel, type of data of the selected channel, identity of the multimedia source, encryption enable/disable, type of encryption,

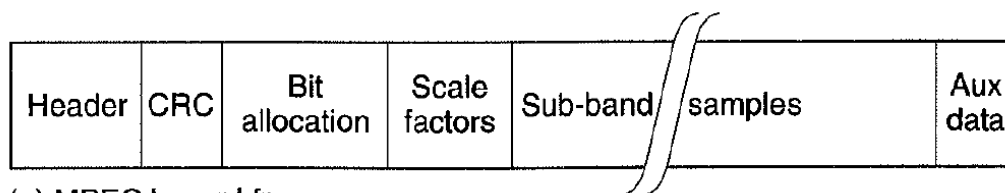
*compression enable/disable, type of compression, and
frame number.*⁸

Claim 10 is similar to claim 8, except that where claim 8 recites “packetizing” and “packet,” claim 10 recites “framing” and “frame.” Ex. 1002, ¶ 276. The Patent, concedes that a PHOSITA would understand that packets and frames are interchangeable. Ex. 1001 at 29:38-42, 30:16-28, 31:8-10 (“packets may be frames of data”); Ex. 1030 at 8, 10 (“Frame”), 17 (“Packet”); Ex. 1034 at 68-69; Ex. 1016 at 48, 52-53; Ex. 1002, ¶¶ 276-280. Moreover, Patent Owner’s expert in the ITC investigation conceded that the two terms “are often used interchangeably.” Ex. 1022 at 1745-1746; Ex. 1002 at 279. Therefore, Hicks discloses claim 10 for the same reasons discussed above with respect to claim 8. *See supra* § V.A.7 (citing Ex. 1005 at 6:44-50, 8:54-60; Ex. 1016 at 11-14, 32-33, 41, 52-56; Ex. 1017 at 11, 18-20, 37; Ex. 1002, ¶¶ 265-270).

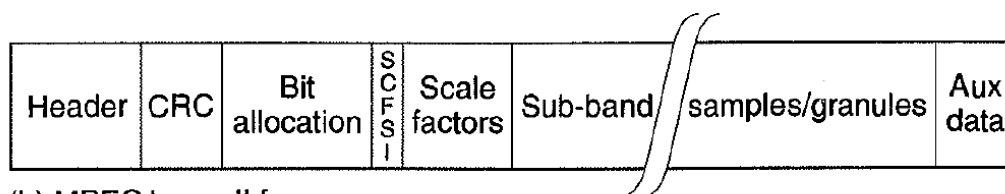
Hicks further discloses encoding MPEG-2 audio channels. Ex. 1005 at 6:1-8, 6:44-50, 8:54-60, 9:52-57; Ex. 1002, ¶ 281; *see also* Ex. 1005 at 3:58-64, 4:21-25, 7:31-37. MPEG-2 audio is formatted in frames (illustrated below) that include a header section and a data section, where the header identifies the “type of data of the

⁸ The applicant did not traverse during examination “Official Notice” that framing was well known in the art. *See supra* § III.C

selected channel [and], type of compression” (MPEG 1 or 2, Layer 1, 2, or 3 encoding, sampling frequency, channel mode, etc.), thus disclosing claim 10, which requires “at least one” of a list of items in the header. Ex. 1016 at 41, 48 (describing MPEG-1 and 2 audio frames); Ex. 1043 at 77-78 (Fig. 4.32); Ex. 1017 at 64; Ex. 1002, ¶¶ 41-45, 281-284.



(a) MPEG Layer I frame



(b) MPEG Layer II frame

Ex. 1043 at 78, Fig. 4.32.

10. Claim 11 (Grounds 1/2)

The method of claim 10 further comprises: conveying the frame in accordance with at least one of: a time division multiplexing data conveyance protocol, and frequency division multiplexing data conveyance protocol.

Claim 11 is ambiguous as to whether “the frame” in claim 11 refers back to “data frame” in claim 1 or “frame” in claim 10. Hicks teaches claim 11 for either case. Ex. 1002, ¶ 286.

The “data frame” in claim 1 is disclosed as communications on Hicks’s system data bus 620 (and 135), and the “frame” in claim 10 is disclosed by Hicks’s MPEG-2 encoded audio, which is also sent over this bus from analog-to-digital converter 125 to data switch 105. Ex. 1005 at 6:43-57, 8:44-60, 11:52-59, Figs. 2, 6 (data path from A/D 125 to data switch 105 through system data bus 620); Ex. 1002, ¶ 290; *see also* Ex. 1005 at 3:58-64, 7:31-37, 8:54-60, 9:49-61, 15:3-11. As discussed above in Section V.A.1.f ([1F]), Hicks’s system data bus is implemented according the PCI standard, which is a “time division multiplexing data conveyance protocol.” Ex. 1006 at 24 (“Multiplexed architecture”), 29 (“*Address and Data* are multiplexed on the same PCI pins”); Ex. 1002, ¶¶ 196-215, 287-289; *see also* Ex. 1006 at 27, 42-43, 46-49, 67-69 (Figs. 3-5, 3-6), 108.

In addition, MPEG-2 as identified in Hicks, also defines that packets in PESs are time multiplexed together in MPEG-2 program or transport streams. Ex. 1016 at 11, 14-15, 32-33 (Fig. 1.13, reproduced below), 26, 52-60; Ex. 1017 at 11, 18-20; Ex. 1002, ¶¶ 290-295.

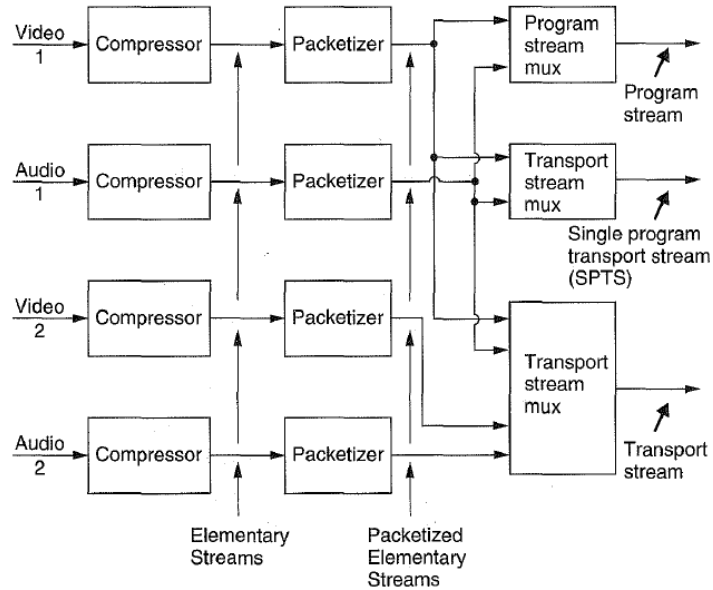


Figure 1.13 The bitstream types of MPEG-2. See text for details.

Ex. 1016 at 32, Fig. 1.13.

Hicks’s MPEG-2 streams are thus conveyed according to the claimed “time division data conveyance protocol.” Ex. 1002, ¶ 296; Ex. 1005 at 6:43-56, 8:54-60; Ex. 1016 at 32-33.

Hicks further discloses that the network over which the channels are transmitted could be a “(HomePNA) Version 2.0” network. Ex. 1005 at 3:14-35, 7:45-48, Fig. 2; Ex. 1002, ¶ 297. This protocol simultaneously conveys voice and data signals using frequency division multiplexing over a home’s telephone wiring, thus disclosing the claimed “frequency division multiplexing data conveyance protocol.” Ex. 1030 at 12-13; Ex. 1042 at 1:62-2:8; Ex. 1002, ¶ 297.

11. Claim 12 (Grounds 1/2)

[12A] The method of claim 1, wherein the encoding further comprises at least one of:

[12B] *multilevel encoding data of each of the selected channels;*

[12C] *non return to zero (NRZ) encoding the data of each of the selected channels;*

[12D] *Manchester encoding the data of each of the selected channels;*

[12E] *block encoding the data of each of the selected channels; and*

[12F] *nB/mB encoding the data of each of the selected channels, where $n < m$.*

Hicks and PCI teach each of [12B]-[12F], though claim 12 requires only one of these. Ex. 1002, ¶¶ 41-45, 299-307. As noted in Section V.A.1.h, Hicks encodes selected channels according to the PCI protocol, which includes encoding the data on the AD bus with an additional parity bit “PAR,” which is a type of “block encoding” and “nB/MB encoding” (specifically, a 36B/37B block code). Ex. 1006 at 30, 114-117; Ex. 1027 at 4-5; Ex. 1026 at 5-6; Ex. 1028 at 34-35; Ex. 1002, ¶¶ 300-302.

Hicks’s BMG also communicates those channels over 10Base-T and 100Base-T Ethernet. Ex. 1005 at 8:18-20; Ex. 1002, ¶ 303; *see also* Ex. 1005 at 3:41-43, 3:58-64, 5:65-67, 7:41-55. Ethernet 10Base-T uses “Manchester encoding” of physical layer data, and Ethernet 100Base-T uses “multilevel encoding,” “non

return to zero (NRZ) encoding,” “block encoding,” and “nB/mB encoding” as illustrated in the annotated block diagram below. Ex. 1028 at 28-29, 34-44; Ex. 1002, ¶¶ 304-306.

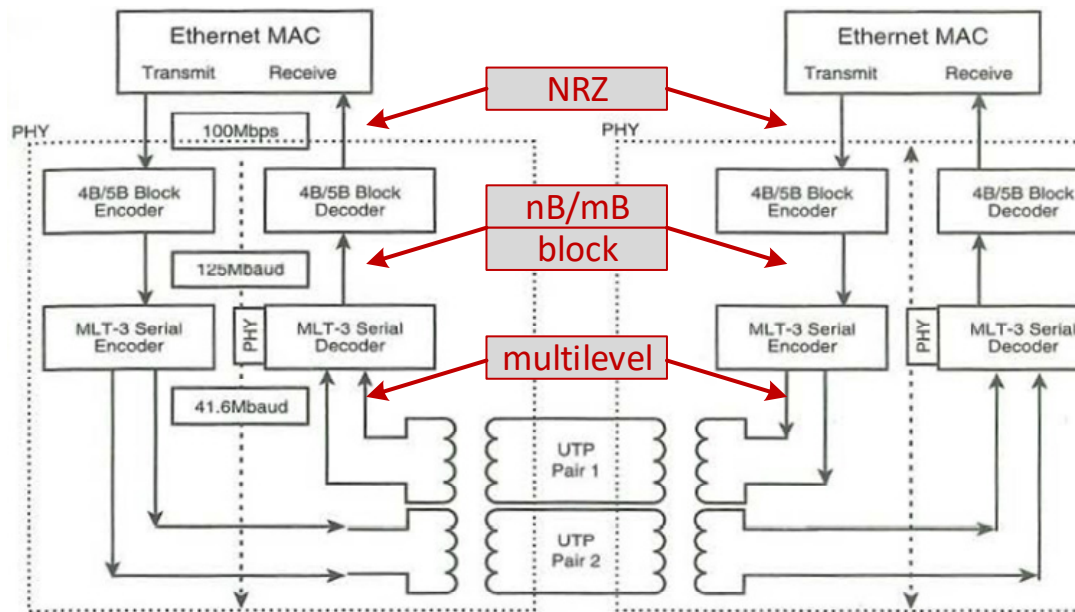


FIGURE 6.1 The Ethernet physical layer architecture consists of block encoding/decoding and serial or line encoding/decoding. The figure shows 100BASE-TX as an example.

Ex. 1028 at 38, Fig. 6.1 (annotated)

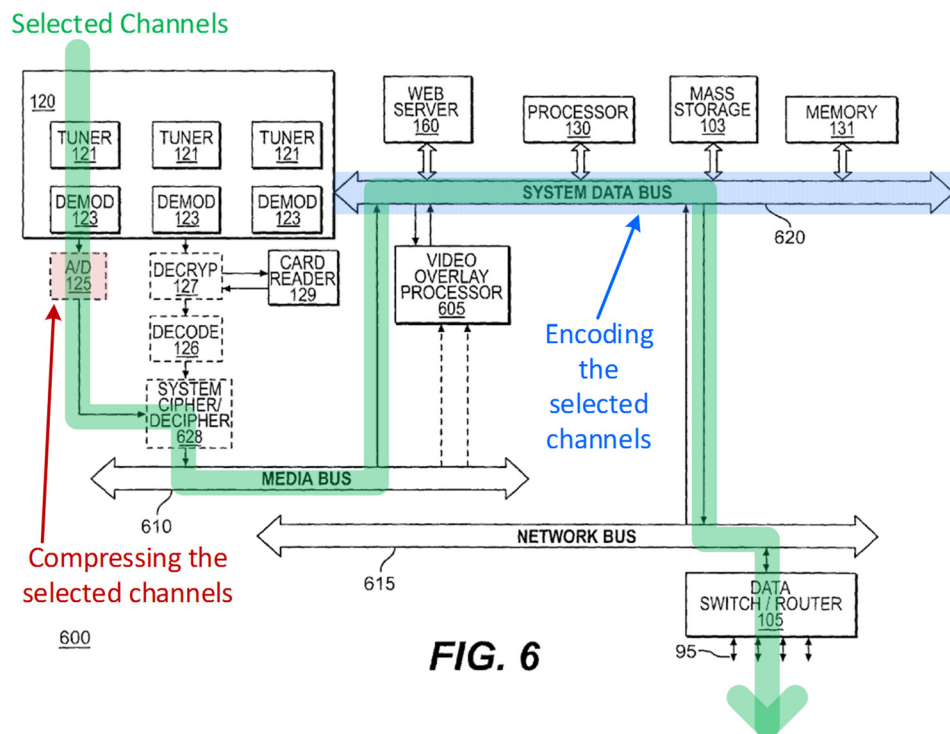
12. Claim 13 (Grounds 1/2)

*The method of claim 1 further comprises: data compressing the selected channels prior to encoding.*⁹

Hicks’s BMG compresses analog information signals received by tuner 12

⁹ The applicant did not traverse during examination “Official Notice” that data compression was well known in the art. *See supra* § III.C

into MPEG-2 signals, which as discussed above with respect to [1H], are encoded into PCI frames (containing sequential 32-bit encoded data and parity) for transmission over system data bus 620 to data switch 105 for transmission over the network to the STBs. *See supra* § V.A.1.h; Ex. 1005 at 8:44-60, 11:48-12:3, Figs. 2 (135), 6 (annotated below); Ex. 1006 at 46-47 (describing basic PCI transaction), 67-68 (read and write PCI transactions); Ex. 1002, ¶¶ 221-224, 308-312; *see also* Ex. 1005 at 3:54-67, 4:44-50, 6:43-52, 7:16-23, 9:17-21, 9:49-61, 15:3-11; Ex. 1006 at 42-43. As shown in annotated Figure 6 of Hicks below, the “compressing” occurs “prior to encoding.” Ex. 1002, ¶¶ 312-314.



Ex. 1005, Fig. 6 (annotated)

13. Claim 14 (Grounds 1/2)

The method of claim 1 further comprises: encrypting the selected channels prior to encoding.¹⁰

Hicks's user selected channels are encrypted by the system cipher/decipher 628 of the BMG 600, which, as discussed above with respect to [1H], are encoded into PCI frames on the system data bus and into a protocol format on the in-home network for transmission to the STBs. *See supra* § V.A.1.h; Ex. 1005 at 4:4-11, 9:7-17, 11:48-12:3, Figs. 2, 6 (annotated below); Ex. 1006 at 46-47 (describing basic PCI transaction), 67-69 (read and write PCI transactions); Ex. 1002, ¶¶ 221-224, 315-318. As shown in below, the “encrypting” occurs “prior to encoding.” Ex. 1002, ¶¶ 317-319.

¹⁰ The applicant did not traverse during examination “Official Notice” that data encryption was well known in the art. *See supra* § III.C

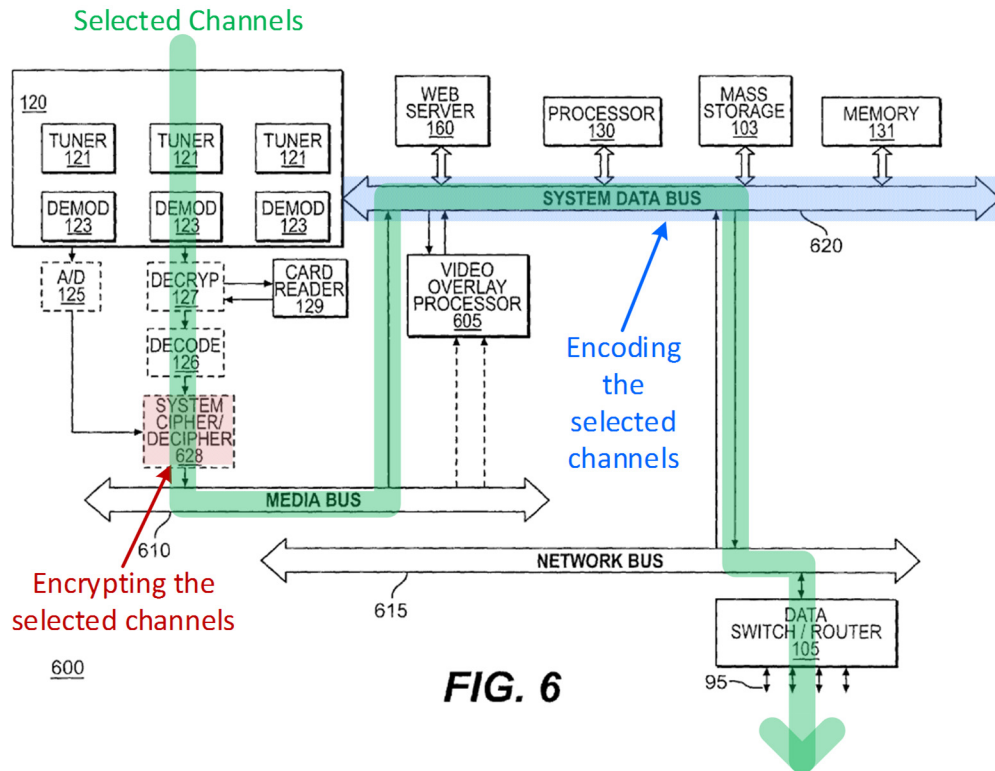


FIG. 6

Ex. 1005, Fig. 6 (annotated)

14. Claim 15 (Grounds 1/2)

[15A] *The method of claim 1 further comprises:*

receiving a single channel from a multimedia source;

[15B] *selecting the single channel based on at least one of the plurality of channel selecting commands to produce a selected single channel; and*

[15C] *encoding the selecting single channel based on the data conveyance protocol.*

Elements [15A], [15B], and [15C] are substantially the same as [1B], [1G], and [1H], except that claim 15 recites “a single channel” instead of “a plurality of channels” in claim 1. Within the claim 1 “plurality of channels” is a “single

channel,” as recited in claim 15. Ex. 1002, ¶¶ 320-321. Thus, the Hicks and PCI combination disclose claim 15 for the same reasons discussed above with respect to [1B], [1G], and [1H] in which a plurality of channels (including the “single channel”) is received by tuner 121, the single channel is selected by demodulator 123 in response to a STB channel selection command, which sends the selected channel encoded in PCI frames via the system data bus to data switch 105, which encodes the channel in a protocol format over the in-home network. *See supra* §§ V.A.1.b, V.A.1.g, V.A.1.h; Ex. 1005 at 4:44-50, 6:23-42, 8:22-38, 8:44-54, 11:50-59, 12:38-51, Figs. 2 (135), 6 (620); Ex. 1006 at 46-47 (describing basic PCI transaction), 67-68 (read and write PCI transactions). Ex. 1002, ¶¶ 149-151, 216-224, 320-323; *see also* Ex. 1005 at 2:16-27, 3:14-67, 6:1-50, 6:57-7:31, 8:55-9:21, 10:54-11:33, 12:4-10, 12:57-66; 17:60-18:3, 18:50-60, Fig. 4; Ex. 1006 at 42-43.

If the “single channel” of claim 15 cannot be one of the claim 1 “plurality of channels,” Hicks and PCI would disclose claim 15 for the same reasons as discussed with respect to [1B], [1G], and [1H], except that the “plurality of channels” would be from one of Hicks’s multimedia sources (e.g., DBS radio 22), whereas the “single channel” would be from one of the other multimedia sources (e.g., CATV 32, terrestrial broadcast TV, or DVD player) disclosed in Hicks. Ex. 1005 at 3:43-47, 6:1-42, 8:22-37, 12:4-51 (e.g., steps 460-470), 17:60-18:3, 18:50-60, Figs. 1-2 (11,

22, 32, 166); Ex. 1002, ¶ 324; *see also* Ex. 1005 at 3:8-12, 3:54-58, 6:66-7:31, 8:22-37, 17:60-18:3, 18:50-60.

15. Claim 16 (Grounds 1/2)

[16A] *The method of claim 15, wherein the receiving the single channel further comprises at least one of:*

[16B] *receiving the single channel of audio data and video data from an output of a video cassette recorder;*

[16C] *receiving the single channel of audio data and video data from an output of a DVD player;*

[16D] *receiving the single channel of audio data and video data from an output of a camcorder;*

[16E] *receiving the single channel of audio data from an output of a compact disk player;*

[16F] *receiving the single channel of audio data from an output of a cassette player;*

[16G] *receiving the single channel of at least one of data and audio data from a telephone connection; and*

[16H] *receiving the single channel of at least one of data, audio data, and video data from a modem.*

Hicks discloses several of the claim 16 elements, only one of which is required. Ex. 1002, ¶¶ 41-45, 325-328. Hicks discloses receiving via auxiliary

multimedia input 166 an information signal (e.g., a single channel) that may include “an audio-video signal from a DVD . . . Compact Disc (CD) device, . . . [or] VCR” (claimed “DVD player,” “compact disk player,” and “video cassette recorder” respectively). Ex. 1005 at 4:50-55, 8:4-7, 9:1-15; Ex. 1002, ¶¶ 326-327. The information signals are conveyed through the BMG system data bus, which in the Hicks/PCI combination, encodes the information signal in PCI frames according to the PCI protocol. *Id.*; Ex. 1006 at 46-47, 67-68, Figs. 3-5, 3-6; Ex. 1002, ¶¶ 149-151, 216-224, 326-327.

16. Claim 17 (Grounds 1/2)

[17A] *The method of claim 1, wherein the receiving the plurality of channels further comprises at least one of:*

[17B] *receiving audio and video data for each of the plurality of channels from a satellite connection;*

[17C] *receiving audio and video data for each of the plurality of channels from a set-top box;*

[17D] *receiving audio and video data for each of the plurality of channels from a cable connection;*

[17E] *receiving audio and video data for each of the plurality of channels from a high-definition television receiver; and*

[17F] receiving audio and video data for each of the plurality of channels from an antenna.

Hicks describes several of these elements, only one of which is required. Ex. 1002, ¶¶ 41-45. Hicks's BMG receives a plurality of audio and video channels, including high definition television (HDTV), from satellite, cable, and terrestrial (antenna) broadcast TV, and the BMG sends those channels to a STB, which decodes the channels and converts them to a display format that may be output to (and received by) a television 40. Ex. 1005 at 2:35-39, 3:43-47, 6:5-16, 9:54-56, 10:59-11:2, Figs. 1-2 (11, 22, 32); Ex. 1002, ¶¶ 329-331; *see also* Ex. 1005 at 18:50-53. Hicks thus discloses claim 17. Ex. 1002, ¶ 332.

17. Claim 18 (Ground 1)

Claim 18 recites a method with elements that correspond to the elements of claims 1, 3, and 8 as follows:

[18A]	[1A]
[18B]	[1B] + claim 3
[18C]	[1F]
[18D]	[1G]
[18E]	[1H]
[18F]	claim 8

Claim 18 is a method claim with 18[A], 18[D], and 18[E] (see claim listings appendix) being substantially the same respectively as [1A], [1G], and [1H] of claim

1, and 18[F] being substantially the same as claim 8. Hicks and PCI disclose these claim 18 elements for the same reasons discussed above with respect to the corresponding claim 1 elements and claim 8. *See supra* §§ V.A.1.a, V.A.1.g-V.A.1.h, V.A.7; Ex. 1002, ¶¶ 334-335, 341-343; Ex. 1005 at 2:16-45, 12:38-51, Ex. 1006 at 67-68.

Element [18B] (“receiving a channel from each of a plurality of sources to produce a plurality of channels”) is substantially the same as the combination of [1B] (“receiving a plurality of channels from a multimedia source”) and the claim 3 (“receiving a second plurality of channels from a second multimedia source”). Element [18B] is thus disclosed by Hicks and PCI for the same reasons discussed above with respect to [1B] and claim 3. *See supra* §§ V.A.1.b, V.A.3; Ex. 1002, ¶ 237-246, 336; Ex. 1005 at 6:1-42.

Element [18C] is substantially the same as [1F], except that whereas [1F] recites “**identifying a data frame** ... and decoding, based on a data conveyance protocol of the multimedia system, **the data frame** ...” (emphasis added), [18C] recites “**identifying a data frame** ... and decoding, based on a data conveyance protocol of the multimedia system, **the at least one packet** ...” (emphasis added). As discussed above (with respect to claim 10), Patent Owner’s expert treats (at least in some contexts) (Ex. 1022 at 1745-1746), and the Patent treats (Ex. 1001 at 29:38-41, 30:16-28, 31:8-10), “packet” and “frame” as interchangeable, and this is also

how a PHOSITA would understand the terms. *See supra* § V.A.9; Ex. 1030 at 8 (Ethernet frames), 10 (“Frame”), 17 (“Packet”); Ex. 1002, ¶¶ 337-338. Thus, if “the at least one packet” refers back to “a data frame” in [18F], Hicks and PCI teach [18C] for the same reasons as [1F]. *See supra* V.A.1.f; Ex. 1002, ¶¶ 195-215, 338-339; Ex. 1006 at 67-69.

If “the at least one packet” is something else, Hicks discloses this element because as discussed above with respect to [1D], Hicks’s BMG processor receives channel selection commands encapsulated within IP packets within PCI frames over the system data bus, and would de-encapsulate the commands from the frames and packets, thus performing [18C]. *See supra* § V.A.1.d; Ex. 1005 at 5:43-48; Ex. 1033 at 39-40 (frame and packet encapsulation), 63-64 (describing datagram/packet and frame processing); Ex. 1002, ¶¶ 159-163, 166-170, 340.

18. Claims 19-20 (Grounds 1/2) and 21-27 (Ground 1)

Claim 19 is substantially identical to [1C]-[1E] of claim 1, except that claim 19 recites a “specific channel selection command” as an additional optional channel selection command. Claim 20 depends from claim 19 and is substantially identical to claim 2. The combination of Hicks and PCI, and the combination of Hicks, PCI, and Usui, disclose claims 19 and 20 for the same reasons discussed above, and alternatively because Hicks’s BMG receives a request via a graphical user interface or via channel number entered with a remote control, and Usui’s system receives a

request via channel number entered with numeric keypad 13, which are each a “specific channel selection command.” *See supra* §§ V.A.1.c-V.A.1.e, V.A.2; Ex. 1005 at 4:21-59, 12:4-51; Ex. 1012 at 6:36-42; Ex. 1002, ¶¶ 152-194, 226-235, 345-346.

Claims 21-27 are substantially identical to claims 5 and 9-14, respectively, and disclosed by Hicks and PCI for the same reasons discussed above. *See supra* §§ V.A.2, V.A.8-V.A.13; Ex. 1002, ¶¶ 229-232, 271-319, 346-352; Ex. 1005 at 7:37-55, 8:18-20, 8:54-60, 9:7-17, 10:35-53; Ex. 1006 at 67-69, Ex. 1034 at 43-44; Ex. 1016 at 11-15, 31-33, 48-53; Ex. 1028 at 25-29, 34-44; Ex. 1042 at 1:62-2:8.

19. Claim 28 (Ground 1)

Claim 28 recites a “tuning module” with elements that correspond to the elements of claim 1 as follows:

[28A]	[1A]
[28B]	[1B]
[28C]	[1G]
[28D]	[1H]
[28E]	
[28F]	[1F]

Element [28A] recites a “tuning module for using in multimedia system,” the functions of which are similarly performed by the [1A] “method of multiplexing a

plurality of channels in a multimedia system.” The corresponding structure of “tuning module” includes processing module 882 (microprocessor) and memory 884 (RAM, magnetic tape drive) storing operational instructions.¹¹ Ex. 1001 at 41:40-64. Hicks’s BMG includes the same or equivalent structure of a processor 130 (Pentium III processor) and memory 131 (RAM, magnetic storage device) storing operational instructions that control the operation of the BMG to perform the same functions as described above with respect to [1A]. *See supra* § V.A.1.a; Ex. 1002, ¶¶ 353-355; Ex. 1005 at 2:16-45, 9:22-48.

Elements [28B] and [28C] recite a “plurality of selectors” —which are described as tuners (370-376, 450-454, 480) and/or multiplexors (430-434, 456-460) (operated according to instructions executed by processing module 882)—that respectively perform substantially the same steps as [1B] and [1G], except that [28C] recites “outputs a channel” as compared to “selecting a channel” in [1G]. Ex. 1001 at 41:56-64, 42:20-24; *see also* Ex. 1001 at 25:27-29, 26:32-34, 27:50-55, 39:1-10; Ex. 1002, ¶¶ 356-357. As discussed above with respect to [1B] and [1G], Hicks’s tuners 121 and demodulators 123 under the control of processor 130 perform these

¹¹ Claims 28-63 do not include means plus function limitations, but to the extent Patent Owner argues they do, the corresponding structure in the Patent, and how that structure is disclosed by the references, is identified herein.

functions (including outputting and selecting a channel) and have the same or equivalent structure to that disclosed in the Patent. *See supra* §§ V.A.1.b, V.A.1.g; Ex. 1002, ¶¶ 149-150, 216-219, 356-357; Ex. 1005 at 4:38-50, 6:1-42, 8:22-54, 12:38-51.

Element [28D] recites an “encoding module” that performs substantially the same step as [1H]. The Patent discloses the “encoding module” as a function performed by processing module 882 executing instructions and additionally including “buffers” that may be “memory devices” for buffering data. Ex. 1001 at 39:13-17, 41:56-64, 42:25-30. As discussed above with respect to [1H], this function is performed by Hicks’s processor circuit 130 (executing instructions) and signal processing circuit 120 interfaced to Hicks’s shared PCI bus. *See supra* § V.A.1.h; Ex. 1002, ¶¶ 221-224, 358; Ex. 1005 at 8:47-51, 9:22-48; Ex. 1006 at 67-68. According to PCI, each device connected to the bus requires physical (i.e., memory) address spaces, through which data is transmitted. Ex. 1006 at 47-50 (describing memory and I/O address space). Thus, Hicks’s BMG with a PCI bus has the identical or equivalent structure to that described in the Patent. Ex. 1002, ¶ 358.

Elements [28E] and [28F] recite a “bus interface module” including a “receiving module” including a “decoding module” to perform substantially the same step as [1F] (“monitoring” and “decoding”), except that:

- (A) [28E] additionally recites “transmit the encoded channel data in accordance with the data conveyance protocol”; and
- (B) [28F] recites “identify at least one packet” instead of “identifying a data frame” as in [1F].

These modules are described as functions performed by processing module 882 executing instructions. Ex. 1001 at 39:61-40:2, 41:56-64, 42:45-50. As discussed above with respect to [1F], the BMG—including processor 130 (executing the instructions) and signal processing circuit 120 connected to Hick’s shared PCI bus—perform the steps of [1F] and include the same or equivalent structure to that disclosed in the Patent. *See supra* §V.A.1.f; Ex. 1002, ¶¶ 198-215, 359; Ex. 1005 at 12:38-51; Ex. 1006 at 67-69. To the extent Element [28F] requires a particular hierarchy of the “bus interface,” “receiving,” and “decoding” “modules,” a PHOSITA would have considered how to arrange the modules to be an obvious design choice since different arrangements even when implementing the same function provide different advantages, such as ease of programming (using a hierarchy) versus efficiency and memory usage (using a flat design), which a PHOSITA would have considered a mere rearrangement of parts in determining how to go about structuring a program. Ex. 1002, ¶ 363; *In re Kuhle*, 526 F.2d 553, 555 (CCPA 1975) (“Use of such means of electrical connection in lieu of those used in

the references solves no stated problem and would be an obvious matter of design choice within the skill in the art.").

Regarding the difference between “packet” and “frame,” as discussed above (as to claims 10 and 18), the Patent Owner’s expert in the ITC, and the Patent treats, “packet” and “frame” as interchangeable, and this is also how a PHOSITA would understand the terms. *See supra* §§ V.A.9, V.A.17 (citing Ex. 1001 at 29:38-42, 30:16-28, 31:8-10; Ex. 1030 at 8, 10, 17; Ex. 1034 at 68-69; Ex. 1016 at 48, 52-53; Ex. 1022 at 1745-1746; Ex. 1002, ¶¶ 360-361. Moreover, as addressed above with respect to [1D], Hicks’s BMG processor receives channel selection commands encapsulated within IP packets and thus “identity [*sic*] at least one of the packets” as recited in [28F]. *See supra* § V.A.1.d; Ex. 1005 at 5:43-48, 8:44-54, 12:38-51; Ex. 1033 at 39-40 (frame and packet encapsulation), 63-64 (describing datagram/packet and frame processing); Ex. 1002, ¶¶ 159-163, 166-170, 362; *see also* Ex. 1033 at 63-64.

20. Claims 29-36 (Ground 1)

Claim 30 recites “a second plurality of selectors” that performs substantially the same steps as [28B] and [28C] as well as claim 3 and 4, which as discussed above with respect to these elements and claims, is performed by additional tuners and demodulators (“second plurality of selectors”) in Hicks. *See supra* §§ V.A.3, V.A.4,

V.A.19; Ex. 1005 at 3:54-58, 4:12-15, 6:38-42, 8:22-37; Ex. 1002, ¶¶ 237-250, 356-357, 366.

Claims 29 and 31-35 recite various “module[s]” that respectively perform substantially the same steps of claims 5, 8, 10, and 12-14. The Patent discloses each of the recited modules as functions performed by processing module 882 (processor) executing instructions. Ex. 1001 at 39:39-42 (claim 33 encoding modules), 39:51-60 (claim 31 “packetizing module”), 40:14-24 (claim 32 “framing module”), 41:19-26 (data compression module 862 and encrypting module 860), 41:56-64 (processing module 882), 42:25-50. As discussed above with respect to claims 5, 8, 10, and 12-14, Hicks’s processor 130 (executing the instructions) controls tuners/demodulators, signal processing circuit 120, A/D 125, data switch 105, cipher/decipher logic 168/628 to perform these functions and includes the same or equivalent structure to that disclosed in the Patent. *See supra* §§ V.A.2, V.A.7, V.A.9, V.A.11-V.A.13; Ex. 1002, ¶¶ 228-232, 264-270, 275-284, 299-319, 365, 367-371; *see also* Ex. 1005 at 4:44-47, 6:1-42, 7:37-55, 8:15-20, 8:47-60, 9:7-17, 9:22-48, 10:35-53, 11:26-29, 12:38-51; Ex. 1006 at 24, 67-69, Ex. 1016 at 11-15, 31-33, 48-53; Ex. 1028 at 18, 25-29, 36-41; Ex. 1034 at 43-44; Ex. 1042 at 1:62-2:8.

Claim 36 recites a “bus controller.” As described above with respect to [1F], [1H], and [28E] and [28F], in the combination of Hicks and PCI, Hicks’s shared bus is implemented according to the PCI standard which specifies that one of the devices

in a data transaction (e.g., processor 130, signal processing circuit 120) operates as a PCI master (claimed “bus controller”) to control transactions over the bus, including “receiving of the plurality of channel selection commands and . . . transmitting of the encoded channel data” as recited in claim 36. *See supra* §§ III.D.2, V.A.1.f, V.A.1.h, V.A.19; Ex. 1006 at 41-42 (“Bus commands indicate to the target the type of transaction the master is requesting”), 43, 67-68 (Figs. 3-5, 3-6); Ex. 1002, ¶¶ 126-128, 195-215, 221-224, 372.

21. Claim 37 (Ground 1)

Elements [37A] and [37B] recite “[an] apparatus . . . compris[ing]: processing module; and memory include[ing] . . . operational instructions that cause the processing module to:” perform [37C]-[37G], which are substantially identical to the elements of claim 1 as follows:

[37A]	[1A]
[37B]	-
[37C]	[1B]
[37D]	[1F]
[37E]	
[37F]	[1G]
[37G]	[1H]

The corresponding structure to [37A]/[37B] includes processing module 882 (microprocessor) and memory 884 (RAM, magnetic tape drive) storing operational

instructions. Ex. 1001 at 41:40-64. In the combination of Hicks and PCI, Hicks's BMG (including a shared PCI bus as combined in [1F]) includes the same or equivalent structure of processor 130 (Pentium III processor) and memory 131 (RAM, magnetic storage device) storing instructions that control the operation of the BMG to perform [37C]-[37G] as described above with respect to corresponding [1B] and [1F]-[1H]. *See supra* §§ V.A.1.a-V.A.1.b, V.A.1.f-V.A.1.h; Ex. 1002, ¶¶ 373-381; Ex. 1005 at 9:22-48; *see also* Ex. 1005 at 2:16-45, 6:1-42, 8:22-60, 12:38-51; Ex. 1006 at 46-47, 67-69.

22. Claims 38-39 (Grounds 1/2), Claims 40-52 (Ground 1)

Claim 38 is substantially identical to [1C]-[1E] of claim 1, except claim 38 recites a “specific channel selection command” as an additional optional channel selection command. Claim 39 depends from claim 38 and is substantially identical to claim 2. The combination of Hicks and PCI, and the combination of Hicks, PCI, and Usui, disclose claims 38 and 39 for the same reasons discussed above, and because Hicks's BMG receives a request via a graphical user interface or via channel number entered with a remote control, and Usui's system receives a request via channel number entered with numeric keypad 13, which are each a “specific channel selection command.” *See supra* §§ V.A.1.c-V.A.1.e, V.A.2; Ex. 1005 at 4:21-59, 12:4-51, Figs. 4, 6; Ex. 1012 at 6:36-42; Ex. 1002, ¶¶ 382-385.

Claims 40-52 are substantially identical to claims 3-15, respectively, and are disclosed by Hicks and PCI for the same reasons discussed above. *See supra* §§ V.A.2-V.A.14; Ex. 1002, ¶¶ 385-397. Ex. 1005 at 4:44-47, 6:1-42, 7:37-55, 8:18-20, 8:54-60, 9:7-17, 10:35-53, 11:26-29, 12:38-51; Ex. 1006 at 24, 67-69, Ex. 1034 at 43-44; Ex. 1016 at 11-15, 31-33, 48-53; Ex. 1028 at 25-29, 34-44; Ex. 1042 at 1:62-2:8.

23. Claim 53 (Ground 1)

Elements [53A] and [53B] recite “[an] apparatus . . . compris[ing]: processing module; and memory . . . include[ing] operational instructions that cause the processing module to:” perform [53C]-[53G], which are substantially identical to the elements of claim 1 as follows:

[53A]	[1A]
[53B]	-
[53C]	[1B] + claim 3
[53D]	[1C] + [1F]
[53E]	[1D] + claims 2, 4
[53F]	[1G]
[53G]	[1H]

The corresponding structure to [53B] includes processing module 882 (microprocessor) and memory 884 (RAM, magnetic tape drive) storing operational

instructions. Ex. 1001 at 41:40-64. In the combination of Hicks and PCI, Hicks's BMG includes the same or equivalent structure of a processor 130 (Pentium III processor) and memory 131 (RAM, magnetic storage device) storing instructions that control the operation of the BMG to perform [53C]-[53G] as described above with respect to respective corresponding elements [1B]+claim 3, [1C]+[1F], [1D]+claims 2 and 4, [1G], [1H], respectively. *See supra* §§ V.A.1.a-V.A.1.d, V.A.1.f-V.A.1.h, V.A.2-V.A.4; Ex. 1002, ¶¶ 398-413; Ex. 1005 at 9:22-48; Ex. 1006 at 46-47.

More particularly, [53A] and [53F]-[53G] are substantially the same as [1A], and [1G]-[1H] of claim 1 and disclosed by Hicks and PCI for the same reasons discussed above with respect to those claim 1 elements. *See supra* §§ V.A.1.a, V.A.1.g-V.A.1.h; Ex. 1002, ¶¶ 401, 411-413; Ex. 1005 at 2:16-45, 8:22-54, 12:38-51, Ex. 1006 at 67-68.

Element [53C], which recites “receiving a channel from each of a plurality of sources to produce a plurality of channels,” is substantially the same as the combination of [1B] (“receiving a plurality of channels from a multimedia source”) and claim 3 (“receiving a second plurality of channels from a second multimedia source”), and thus is disclosed by Hicks for the same reasons discussed above with respect to [1B] and claim 3. *See supra* §§ V.A.1.b, V.A.3; Ex. 1002, ¶ 403; Ex. 1005 at 6:1-42.

Element [53D] is substantially the same as [1C] and [1F], except whereas [1F] recites “recapture . . . channel selection commands,” [53D] recites “recapture . . . channel selection requests.” Hicks’s BMG processor receives channel selection commands encapsulated within channel selection requests (IP packets), and thus, when the processor recaptures the “commands” as described above with respect to [1F], it also recaptures the “requests” as recited in [53D]. *See supra* §§ V.A.1.c V.A.1.f; Ex. 1002, ¶¶ 152-164, 195-215, 404-407; *see also* Ex. 1005 at 4:38-44; 5:43-48, 12:38-41; Ex. 1006 at 46-48, 67-69; Ex. 1030 at 8-11; Ex. 1033 at 37, 44-45.

Element [53E] is substantially the same as [1D] and the second clause of claim 4 (“wherein each of the channel selection commands includes identity of the multimedia source or the second multimedia source and identity of the channel”), and thus is disclosed by Hicks and PCI for the same reasons discussed above with respect to [1D] and claim 4. *See supra* §§ V.A.1.d, V.A.4; Ex. 1002, ¶¶ 165-171, 241-250, 408-409; Ex. 1005 at 4:21-50, 8:44-54, 11:26-29, 12:38-51. Element [53E] further adds, “determine whether the request can [be] supported, and, if so,” prior to “producing a plurality of channel selection commands.” This added step is disclosed by Hicks for the same reasons discussed above with respect to claim 2. Specifically, [2C] (“authenticating a client”) or [2D] (“authenticating the specific channel selection request”) are each ways to determine if a request can be supported before

a command could be produced as recited in [53E]. *See supra* § V.A.2; Ex. 1002, ¶¶ 226-236, 241-250, 408-410; Ex. 1005 at 3:14-31, 7:45-55, 10:35-53; Ex. 1034 at 43-44.

Moreover, the phrase “if so” in [53E] requires the producing of the commands (and thus the performance of [53F] and [53G], which depends on a command being produced) only when the request can be supported. Hicks and PCI disclose [53A]-[53E] even when a request cannot be supported, for example, when a client or request is not authenticated. Hicks and PCI thus disclose claim 53 even if the “producing” of [53E] and [53F]-[53G] were not disclosed. Ex. 1002, ¶ 408.

24. Claims 54 (Grounds 1/2), Claims 55-63 (Ground 1)

Claim 54 is substantially identical to [1E] of claim 1, except claim 54 recites a “specific channel selection command” as an additional optional channel selection command. The combination of Hicks and PCI, and the combination of Hicks, PCI, and Usui, disclose claim 54 for the same reasons discussed above, and because Hicks’s BMG receives a request via a graphical user interface or via channel number entered with a remote control, and Usui’s system receives a request via channel number entered with numeric keypad 13, which are each a “specific channel selection command.” *See supra* § V.A.1.e; Ex. 1005 at 4:21-59, 12:4-51, Figs. 4, 6; Ex. 1012 at 6:36-42; Ex. 1002, ¶¶ 414-415.

Claims 55-63 are substantially identical to claims 2, 5, and 8-14, respectively, and are disclosed by Hicks and PCI for the same reasons discussed above. *See supra* §§ V.A.2, V.A.7-V.A.13; Ex. 1002, ¶¶ 416-423. Ex. 1005 at 7:37-55, 8:18-20, 8:54-60, 9:7-17, 10:35-53; Ex. 1006 at 24, 67-69, Ex. 1034 at 43-44; Ex. 1016 at 11-15, 31-33, 48-53; Ex. 1017 at 37; Ex. 1028 at 25-29, 34-44; Ex. 1042 at 1:62-2:8.

B. Grounds 3 and 4: Claims 2, 5, 20-21, 29, 39, 42, and 53-63 are Obvious Over Hicks, PCI, and Grier (Ground 3), and Claims 2, 5, 20, 39, and 54 Are Obvious Over Hicks, PCI, Usui, and Grier (Ground 4)

1. Claims 2 and 5 (Grounds 3/4)

In Grounds 1 and 2 above, Hicks's disclosure of IEEE-802.11 is relied upon for teaching limitations of claims 2 and 5. *See supra* § V.A.2; Ex. 1002, ¶¶ 229-232; Ex. 1005 at 3:14-35, 7:49-55, Fig. 2 (143). If Patent Owner argues that Hicks lacks sufficient detail as to such disclosure, Grier, which is cited above as background knowledge for the details of IEEE-802.11, teaches the implementation of Hicks's IEEE-802.11 interface, including the aspects of authenticating clients connected to the IEEE-802.11 network ([2C]) and decrypting communications, including the channel selection commands, received over the IEEE-802.11 interface ([5B]). Ex. 1034 at 43-44, 64-68; Ex. 1002, ¶¶ 229-232, 429-432.

The combinations of Hicks, PCI and Grier, and Hicks, PCI, Usui, and Grier would have been obvious as nothing more than the combination of prior art elements according to known methods to yield predictable results, because Hicks includes an

IEEE-802.11 interface 143 (Ex. 1005 at 7:49-55, Fig. 2 (143)), and Grier discloses how to implement that interface according to the IEEE-802.11 standard (including authentication and WEP encryption to ensure privacy and security), which was already widely commercially deployed. Ex. 1034 at 15, 20-23, 83-88; Ex. 1002, ¶¶ 424-426. Moreover, the IEEE-802.11 authentication and WEP encryption would have improved Hick's system by providing privacy and security for wireless communications, which could be intercepted by unauthorized or unwanted third parties. Ex. 1034 at 36, 43-44, 65-68. Ex. 1002, ¶ 427.

A PHOSITA would have reasonably expected success in implementing the combinations since Hicks's BMG was already specifically designed with an IEEE-802.11 interface, and the IEEE-802.11 protocol disclosed in Grier was an industry standard that was already commercially deployed. Ex. 1034 at 15, 20-23. Ex. 1002, ¶ 428.

2. Claims 20-21, 29, 39, 42, 53-63 (Ground 3), Claims 20, 39, and 54 (Ground 4)

The analysis of independent claim 53 (and thus the analysis of its dependent claims 54-63) is based partially on that of claim 2 (that the [2C] and [2D] "authenticating" performs the [53E] function of "determine whether the request can be supported"). *See supra* § 0. Also, claims 20, 39, and 55 are substantially identical to claim 2, and claims 21, 29, 42, and 56 are substantially identical to claim 5. Thus, claims 20-21, 29, 39, 42, and 53-63 are disclosed by Hicks/PCI/Grier and claim 20,

39, and 54 are further disclosed by Hicks/PCI/Usui/Grier for the same reasons discussed above with respect to these claims in grounds 1 and 2, and for the further reasons discussed above with respect to claims 2 and 5 in grounds 3 and 4. *See supra* § V.B.1; Ex. 1002, ¶¶ 424--440.

C. Grounds 5 and 6: Claims 6-11, 13, 22-24, 26, 31-32, 34, 43-48, 50, 57-60, and 62 Are Obvious Over Hicks, PCI, and Watkinson (Ground 5), and Claims 6-11 and 13 Are Obvious Over Hicks, PCI, Usui, and Watkinson (Ground 6)

1. Claims 6-11 and 13 (Grounds 5/6)

In Grounds 1 and 2 above, encoding according to the MPEG-2 standard as disclosed in Hicks is relied upon for teaching limitations of claims 6-11 and 13. *See supra* §§ V.A.5-10 and 12; Ex. 1002, ¶ 441. If Patent Owner argues that Hicks lacks sufficient detail as to such disclosure, Watkinson, which is cited above as background knowledge for each of these claims, teaches how to encode audio and video data according to the MPEG-2 standard. Ex. 1016 at 11-14; Ex. 1002, ¶¶ 132, 442. Watkinson, which published in 1999, is also prior art under 35 U.S.C. 102(b). Ex. 1013 at 34-38.

As to claim 6 (and dependent claim 7), Watkinson teaches that Hicks's plurality of MPEG-2 channels are "compressed" and multiplexed together in an MPEG-2 transport stream, thereby being selected together by Hicks's tuner per a channel selection command. *See supra* § V.A.5; Ex. 1005 at 4:44-50, 6:26-42,

12:38-51; Ex. 1016 at 11-12, 15-16 (MPEG applications), 32-33, Fig. 1.13, 55-56 (“Transport Streams”); Ex. 1002, ¶¶ 443-444, 447-452.

As to claim 8 (and dependent claim 9), Watkinson teaches that Hicks’s encoding of analog channels into MPEG-2 streams includes “packetizing” data into PES packets that each include header and data sections, where the header “identifies the type of data stream” (e.g., Stream ID identifying the stream as audio or video). *See supra* §V.A.7; Ex. 1005 at 6:43-57, 8:54-60, 9:49-61, 15:3-12; Ex. 1016 at 32-33 (packetizing process), 52-53 (PES packets), 55-56 (TS packets); Ex. 1017 at 37, 43-44, 64-65; Ex. 1002, ¶¶ 443-447, 450-451.

As to claim 10 (and dependent claim 11), Watkinson discloses that Hicks’s encoding of analog channels into MPEG-2 streams would include “framing” data into audio frames having header and data sections where the header identifies “the type of data of the selected channel [and], type of compression” (e.g., MPEG version 1 or 2, Layer 1, 2, or 3 encoding, sampling frequency, channel mode, etc.). *See supra* § V.A.9; Ex. 1016 at 48-49 (Layer 1 audio frame); Ex. 1017 at 64-65 (Layer 1 audio frame header); Ex. 1043 at 78; Ex. 1002, ¶¶ 444, 450-451. Further with regard to claim 11, Watkinson discloses that the MPEG-2 audio frame would be packetized and conveyed in a “time division multiplex[ed]” MPEG-2 program or transport stream. *See supra* § V.A.11; Ex. 1016 at 11, 14-15, 32-33 (Fig. 1.13), 54-59 (disclosing TS multiplexing process and a TS multiplexer); Ex. 1017 at 11

(section 1.6), 18-20 (disclosing TS multiplexing); Ex. 1002, ¶¶ 443-445, 447-448, 450-452.

As to claim 13, Watkinson discloses Hicks's encoding of analog channels into MPEG-2 streams would include "data compressing the selected channels." *See supra* § V.A.12; Ex. 1016 at 11-22 (describing compression principles), 32-33; Ex. 1002, ¶ 450.

It would have been obvious to apply the teachings of Watkinson to Hicks and PCI (and Hicks, PCI, and Usui) because MPEG-2 as disclosed in Watkinson is specifically identified in Hicks, and following the specific teaching in Watkinson would have improved the Hicks system. Ex. 1005 at 4:44-50, 6:44-52; Ex. 1002, ¶ 454; *see also* Ex. 1005 at 7:36-37, 8:59-60, 9:54-57, 15:3-5. Specifically, using Watkinson's MPEG-2 teachings would enable the BMG to: (A) handle only one type of program encoding and decoding resulting in the savings of hardware resources, software design, and storage; (B) receive programs over noisy and error prone channels and work with multimedia sources that existed at the time, which sent programs in MPEG-2 transport streams (e.g., DVB over satellite); and (C) optimize shared bandwidth on the in-home LAN by compressing programs and using MPEG-2 transport streams. Ex. 1016 at 14-15 (MPEG for VOD and HDTV); Ex. 1043 at 219-220 (MPEG as used in DVB), 240-247 (MPEG over Ethernet); Ex. 1017 at 19-20 (describing MPEG applications in noisy and error prone channels); Ex. 1030 at

18-19 (statistical TDM for optimizing bandwidth); Ex. 1002, ¶¶ 455-458. Thus, combining Watkinson with Hicks/PCI and Hicks/PCI/Usui would have been nothing more than the obvious application of a known technique (Watkinson's MPEG-2 encoding standard) to a known device ready for improvement (Hicks's BMG that receives and distributes multiplexed audio and video signals) to yield a predictable result (more effective distribution of programs according to the MPEG-2 standard to a plurality of client STBs). Ex. 1002, ¶ 458.

A PHOSITA would have had a reasonable expectation of success in implementing the Hicks BMG using Watkinson's MPEG-2 encoding standards. Hicks's BMG was already specifically designed to encode and decode MPEG-2 streams, because MPEG-2 was already commercially used and widely known, and because Hicks's BMG included a processor and memory that would have been able to implement the MPEG-2 features with software modifications and with the addition of MPEG hardware that existed at the time. Ex. 1005 at 6:43-57, 8:54-60; Ex. 1016 at 39-40 (existing MPEG applications); Ex. 1043 at 219-240 (examples of known DVB encoders and receiver, DVRs, PVRs); Ex. 1017 at 112-114 (Digital Video Networks), 121-122 (DBS systems); Ex. 1002, ¶¶ 459-460.

2. Claims 22-24, 26, 31-32, 34, 43-48, 50, 57-60, and 62 (Ground 5)

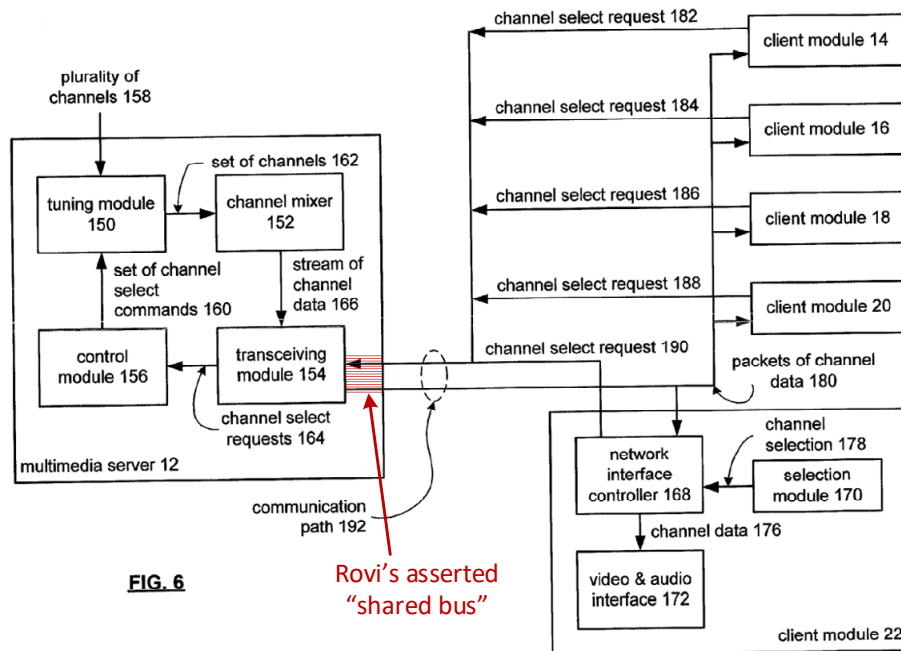
Dependent claims 22-24, 26, 31-32, 34, 43-48, 50, 57-60, and 62 are each substantially identical to one of claims 6-11 and 13, and disclosed by the

Hicks/PCI/Watkinson combination for the same reasons discussed above with respect to grounds 1 and 2, and for the further reasons discussed above in this section.

See supra §§ V.A.5-V.A.10, V.A.12, V.C.1; Ex. 1002, ¶ 461.

D. Grounds 7-12: Grounds 1-6 Further Combined with Osakabe

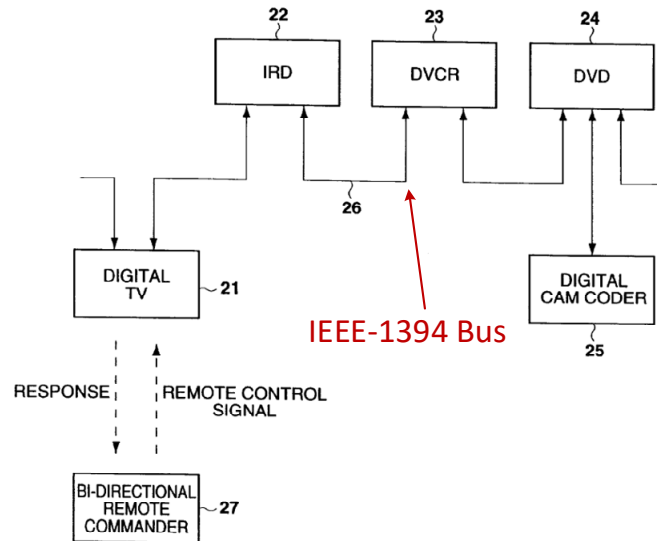
In the ITC proceedings, Patent Owner asserted that “monitoring a shared bus” (Elements [1F], [18D], [28F], [37D], [53D]) was performed by a gateway monitoring a “MoCA and/or other local network.” Ex. 1044, ¶ 67. This is analogous to the multimedia server 12 monitoring communication path 192 of Figure 6 of the Patent (as opposed to monitoring “shared bus 824” in the Patent, and in contrast to Petitioner’s construction of a “bus within a multimedia server used for data transfer between components of the multimedia server”). Ex. 1023 at 7; Ex. 1001 at 39:4-7, 40:43-44, Figs. 12, 14-16; Ex. 1002, ¶ 462.



Ex. 1001, Fig. 6 (annotated)

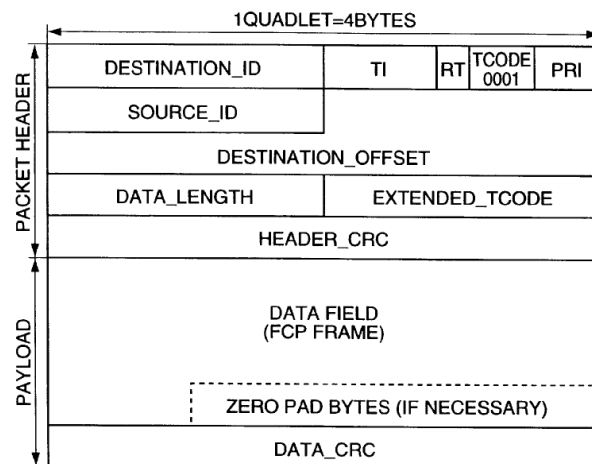
Even if the “shared bus” were as Patent Owner suggests, there were obvious choices for implementing Hicks’s networks, which would have performed the steps of Element [1F]. Hicks does not limit its network implementation to just one type. Ex. 1005 at 3:14-35, 7:37-58, 8:18-20, 11:4-8. For example, grounds 1-6 each further combined with Osakabe (Grounds 7-12) would also render claims 1-63 obvious. Ex. 1045; Ex. 1002, ¶ 463.

Osakabe discloses multimedia devices networked together with an IEEE-1394 (“Firewire”) bus that transfers remote control commands in “asynchronous packet[s]” and streaming MPEG video in “isochronous packet[s]” between devices. Ex. 1045 at 4:65-5: 52; Ex. 1002, ¶ 464; *see also* Ex. 1045 at 5:53-6:9, 6:19-34, 6:53-7:12, 7:28-60; Ex. 1046 at 37, 49-57, 61, 74-78.



Ex. 1045, Fig. 3 (annotated)

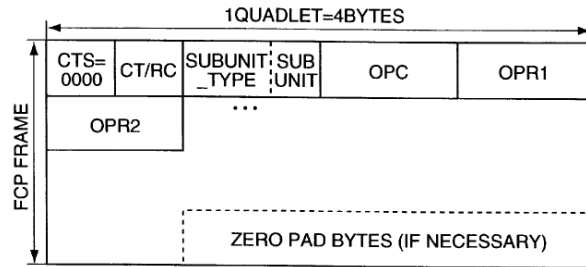
The asynchronous packet (illustrated below) includes a header identifying the source and destination of the packet, and a payload including a remote control command encapsulated in a “function control protocol (FCP)” frame. Ex. 1045 at 8:14-60; Ex. 1002, ¶ 465.



Ex. 1045, Fig. 6 (asynchronous packet)

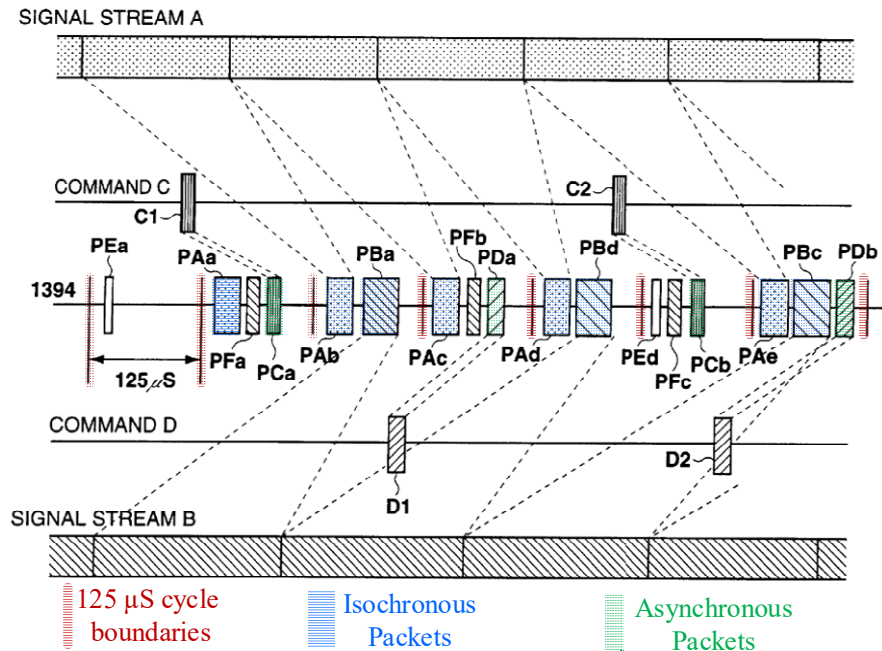
The FCP frame’s header identifies a command type (e.g., Control or Status), a device type (e.g., Tuner), and the payload as an FCP formatted frame—and the

payload includes an operation code (OPC) and one or more operands (OPR) that together provide the remote control command. Ex. 1045 at 8:61-9:58; Ex. 1002, ¶ 466.



Ex. 1045, Fig. 8 (FCP Frame)

IEEE-1394 bus transactions occur in 125 μ S cycles, with isochronous packets containing streaming MPEG data transmitted in pre-assigned bandwidths (portions of the cycle), followed by a “fairness interval” in which asynchronous packets/FCP frames containing remote control commands are transmitted. Ex. 1045 at 5:20-52; Ex. 1046 at 54-57, 61-63; Ex. 1002, ¶¶ 467-468.



Ex. 1045, Fig. 4 (annotated)

It would have been obvious to implement or extend Hick's broadband data network with Osakabe's IEEE-1394 bus so that Hicks's STB commands (channel selection commands) are formatted and encapsulated within Osakabe's FCP frames within asynchronous packets (channel selection requests), and Hicks's MPEG-2 encoded channels are sent to the STBs in Osakabe's isochronous frames. Ex. 1045 at 5:20-52; Ex. 1045, Fig. 4, 5:20-52; *see also* Ex. 1046 at 54-57; Ex. 1002, ¶ 469.

Hicks (in each of the Grounds 1-6 combinations) combined with Osakabe discloses [1F], [18D], [28F], [37D], and [53D] limitation of "monitor[ing a] shared bus at specific time intervals" in which "shared bus" is construed as the local network (or the multimedia server's interface to the local network). Each of these claim elements differ slightly in further reciting: "identifying [*a data frame* OR

packets]" and "decoding ... to recapture the at least a portion of ... channel selection [*commands* OR *requests*]." Osakabe's IEEE-1394 interface performs each of these elements by monitoring the IEEE-1394 bus to identify asynchronous packets ("packets") including FCP frames ("data frame") at the fairness interval ("specific time interval") of the 125 μ S cycles, and decoding these communications to recapture the contents therein ("at least a portion of the [request and command]." Ex. 1045 at 5:20-26; Ex. 1046 at 55 (fairness interval), 73, 81 (detecting transmission of packets), 86 (125 μ S cycle); Ex. 1002, ¶¶ 470-471; *see also* Ex. 1045 at 4:65-5:7, 5:27-6:9, 6:19-34, 6:53-7:12, 7:28-60; 8:14-60 (describing asynchronous packets), 8:61-9:58 (describing FCP frames); Ex. 1046 at 54, 56-57, 61-66.

Osakabe further discloses that a device receiving an FCP command frame responds with an FCP response frame indicating whether the command was accepted or rejected, and if accepted, executing the command, thus additionally disclosing the [1D] and [53E] and claims 19 and 38 step of "processing . . . [to produce a] plurality of channel selection commands" and the claims 2, 20, 39, and 55 step of "interpreting [the] request to identify at least one client [] and at least one of the channel selection requests []. Ex. 1045 at 6:2-9, 7:10-16, 8:14-19, 8:48-55, 9:1-6, 9:13-19; Ex. 1046 at 50-51; Ex. 1002, ¶472. The remaining elements of claims 1-63 are disclosed as described above with respect to Grounds 1-6.

A PHOSITA would have been motivated to implement Hicks's local network using, or to add as an additional network, Osakabe's IEEE-1394 network, because: (A) Hick's BMG is compatible with any of a variety of high and low bandwidth shared networks; (B) IEEE-1394 performs the same Hicks functions of communicating commands and streaming MPEG video; and (C) IEEE-1394 is scalable, doesn't require user configuration, and was already used with Set top boxes such as those in Hicks. Ex. 1005 at 4:38-50, 7:24-55, 9:49-61, 12:38-51; Ex. 1045 at 4:65-5:7, 5:20-34, 5:59-6:9, 6:19-34, 6:53-7:12, 7:28-60; Ex. 1046 at 35-57, 74-78; Ex. 1002, ¶¶ 473-474. As such, combining Osakabe with Hicks and the other references in Grounds 1-6 is nothing more than combining prior art elements according to known methods ((Hick's BMG/STBs and Osakabe's IEEE-1394 bus and command protocol) to yield predictable results (since the IEEE-1394 bus has been previously integrated with the PCI bus applied in Grounds 1-6)). Ex. 1046 at 35-44; Ex. 1010 at 1-3, 9; Ex. 1002, ¶ 474. Moreover, Osakabe improves upon Hicks by providing a format for commands as FCP opcodes/operands and using responses to acknowledge command reception, thus providing an obvious improvement to the Hicks's system applied in the same way as Osakabe's system implements those techniques. Ex. 1002, ¶ 474.

A PHOSITA would have reasonably expected success in combining Osakabe with Hicks, PCI and the other references for the same reasons described above—

IEEE-1394 (as a shared bus) and the PCI (as Hicks's internal bus) were already widely deployed with off-the-shelf equipment available that integrated the two bus protocols together, and IEEE-1394 was designed to stream MPEG video as disclosed in Hicks and Watkinson. Ex. 1046 at 35, 44-46, 88-97; Ex. 1010 at 1, 7, 9; Ex. 1006 at 113, 225, 228-229, 283; Ex. 1002, ¶ 475.

For the reasons stated above with respect to Grounds 1-6 (Sections V.A, V.C), and for the additional reasons stated above in this section, claims 1-63 would have been obvious in view of Grounds 7-12 as identified in table at the beginning of Section IV (page 11). Ex. 1002, ¶ 476.

VI. GROUNDS FOR STANDING & FEE PAYMENT

Petitioner certifies that the '855 patent is available for *inter partes* review, and that Petitioner is not barred or estopped from requesting *inter partes* review challenging claims 1-63 on the identified grounds in this Petition.

The undersigned authorizes the charge of any required fees to Deposit Account No. 19-0733.

VII. CONCLUSION

For the foregoing reasons, *inter partes* review of claims 1-63 of the '855 patent should be instituted and claims 1-63 should be canceled.

Dated: April 22, 2020

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CERTIFICATION UNDER 37 CFR § 42.24(d)

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for Inter Partes Review totals 13,987, which is less than the 14,000 allowed under 37 CFR § 42.24(a)(1)(i). This total includes 13,905 words as counted by the Word Count feature of Microsoft Word and 82 words used in annotations.

Pursuant to 37 C.F.R. § 42.24(a)(1), this count does not include the table of contents, the table of authorities, mandatory notices under § 42.8, the certificate of service, this certification of word count, the claims listing appendix, or appendix of exhibits.

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Dated: April 22, 2020

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.105, I hereby certify that I caused a true and correct copy of the Petition for *Inter Partes* Review in connection with U.S. Patent No. 7,200,855 and supporting evidence to be served via FedEx Priority Overnight on April 22, 2020, on the following:

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CLAIM LISTING APPENDIX

U.S. Pat. No. 7,200,855

Designation	Claim Language
Claim 1	
[1A]	1. A method of multiplexing a plurality of channels in a multimedia system, the method comprises:
[1B]	receiving a plurality of channels from a multimedia source;
[1C]	receiving a plurality of channel selection commands by: receiving, from a plurality of clients, a plurality of channel selection requests; and
[1D]	processing the plurality of channel selection requests to produce the plurality of channel selection commands,
[1E]	wherein the each of the plurality of channel selection commands includes at least one of: last channel selection command, next channel selection command, previous channel selection command, favorite channel selection command, and select channel from user define list;
[1F]	wherein the receiving the plurality of channel selection commands further includes monitoring a shared bus at specific time intervals, identifying a data frame at one of the specific time intervals that contains at least a portion of one or the plurality of channel selection commands, and decoding, based on a data conveyance protocol of the multimedia system, the data frame to recapture the at least a portion of the one of the plurality of channel selection commands;
[1G]	selecting a channel of the plurality of channels per channel selection command of the plurality of channel selection commands to produce selected channels; and
[1H]	encoding each of the selected channels based on the data conveyance protocol of the multimedia system to produce a set of encoded channel data.
Claim 2	
[2A]	2. The method of claim 1, wherein the processing the plurality of channel selection requests further comprises at least one of:
[2B]	interpreting at least one channel selection request to identify at least one client of the plurality of clients and at least one of the channel selection requests of the plurality of channel selection requests;

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[2C]	authenticating a client of the plurality of clients that provides a specific channel selection request; and
[2D]	authenticating the specific channel selection request.
Claim 3	
3	3. The method of claim 1 further comprises: receiving a second plurality of channels from a second multimedia source.
Claim 4	
4	4. The method of claim 3, wherein the selecting a channel further comprises: selecting a channel from either the plurality of channels or the second plurality of channels per each of the channel selection commands, wherein each of the channel selection commands includes identity of the multimedia source or the second multimedia source and identity of the channel.
Claim 5	
[5A]	5. The method of claim 1, wherein the receiving the plurality of channel selection commands further comprises at least one of:
[5B]	decrypting each of the plurality of channel selection commands; and
[5C]	decompressing each of the plurality of channel selection commands.
Claim 6	
6	6. The method of claim 1, wherein each of the plurality of channels is compressed, wherein the selecting a channel further comprises: selecting a group of compressed channels of the plurality of channels per at least one of the plurality of channel selection commands, wherein the group of compressed channels includes the channel.
Claim 7	
7	7. The method of claim 6, wherein the encoding further comprises: encoding the group of compressed channels into packets or frames based on the data conveyance protocol.
Claim 8	
8	8. The method of claim 1, wherein the encoding further comprises: packetizing data of each of the selected channels into a packet that includes a header section and a data section, wherein the header section includes at least one of identity the

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	selected channel, type of data of the selected channel, identity of the multimedia source, encryption enable/disable, type of encryption, compression enable/disable, type of compression, and packet sequence number.
Claim 9	
9	9. The method of claim 8 further comprises: conveying the packet using at least one of: Carrier Sense Multiple Access (CSMA), CSMA with collision avoidance, and CSMA with collision detection.
Claim 10	
10	10. The method of claim 1, wherein the encoding further comprises: framing data of each of the selected channels into frame that includes header section and a data section, wherein the header section includes at least one of identity the selected channel, type of data of the selected channel, identity of the multimedia source, encryption enable/disable, type of encryption, compression enable/disable, type of compression, and frame number.
Claim 11	
11	11. The method of claim 10 further comprises: conveying the frame in accordance with at least one of: a time division multiplexing data conveyance protocol, and frequency division multiplexing data conveyance protocol.
Claim 12	
[12A]	12. The method of claim 1, wherein the encoding further comprises at least one of:
[12B]	multilevel encoding data of each of the selected channels;
[12C]	non return to zero (NRZ) encoding the data of each of the selected channels;
[12D]	Manchester encoding the data of each of the selected channels;
[12E]	block encoding the data of each of the selected channels; and
[12F]	nB/mB encoding the data of each of the selected channels, where $n < m$.
Claim 13	
13	13. The method of claim 1 further comprises: data compressing the selected channels prior to encoding.
Claim 14	

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14	14. The method of claim 1 further comprises: encrypting the selected channels prior to encoding.
Claim 15	
[15A]	15. The method of claim 1 further comprises: receiving a single channel from a multimedia source;
[15B]	selecting the single channel based on at least one of the plurality of channel selecting commands to produce a selected single channel; and
[15C]	encoding the selecting single channel based on the data conveyance protocol.
Claim 16	
[16A]	16. The method of claim 15, wherein the receiving the single channel further comprises at least one of:
[16B]	receiving the single channel of audio data and video data from an output of a video cassette recorder;
[16C]	receiving the single channel of audio data and video data from an output of a DVD player;
[16D]	receiving the single channel of audio data and video data from an output of a camcorder;
[16E]	receiving the single channel of audio data from an output of a compact disk player;
[16F]	receiving the single channel of audio data from an output of a cassette player;
[16G]	receiving the single channel of at least one of data and audio data from a telephone connection; and
[16H]	receiving the single channel of at least one of data, audio data, and video data from a modem.
Claim 17	
[17A]	17. The method of claim 1, wherein the receiving the plurality of channels further comprises at least one of:
[17B]	receiving audio and video data for each of the plurality of channels from a satellite connection;
[17C]	receiving audio and video data for each of the plurality of channels from a set-top box;
[17D]	receiving audio and video data for each of the plurality of channels from a cable connection;
[17E]	receiving audio and video data for each of the plurality of channels from a high-definition television receiver; and

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[17F]	receiving audio and video data for each of the plurality of channels from an antenna.
Claim 18	
[18A]	18. A method of multiplexing channels in a multimedia system the method comprises:
[18B]	receiving a channel from each of a plurality of sources to produce a plurality of channels;
[18C]	receiving a plurality of channel selection commands by monitoring a shared bus at specific time intervals, identifying a data frame at one of the specific time intervals that contains at least a portion of one of the plurality of channel selection commands, and decoding, based on a data conveyance protocol of the multimedia system, the at least one packet to recapture the at least a portion of the one of the plurality of channel selection commands;
[18D]	selecting a channel of the plurality of channels per channel selection command of the plurality of channel selection command to produce selected channels; and
[18E]	encoding each of the selected channels based on the data conveyance protocol of the multimedia system to produce a set of encoded channel data
[18F]	by packetizing data of each of the selected channels into a packet that includes a header section and a data section, wherein the header section includes at least one of: identity the selected channel, type of data of the selected channel, identity of the multimedia source, encryption enable/disable, type of encryption, compression enable/disable, type of compression, and packet sequence number.
Claim 19	
[19A]	19. The method of claim 18, wherein the receiving the channel selection commands further comprises: receiving, from a plurality of clients, a plurality of channel selection requests; and
[19B]	processing the plurality of channel selection requests to produce the plurality of channel selection commands, wherein the each of the plurality of channel selection commands includes at least one of: specific channel selection command, last channel selection command, next channel selection

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	command, previous channel selection command, favorite channel selection command, and select channel from user define list.
Claim 20	
[20A]	20. The method of claim 19, wherein the processing the plurality of channel selection requests further comprises at least one of:
[20B]	interpreting at least one channel selection request to identify at least one client of the plurality of clients and at least one of the channel selection requests of the plurality of channel selection requests;
[20C]	authenticating a client of the plurality of clients that provides a specific channel selection request; and
[20D]	authenticating the specific channel selection request.
Claim 21	
[21A]	21. The method of claim 18, wherein the receiving the plurality of channel selection commands further comprises at least one of:
[21B]	decrypting each of the plurality of channel selection commands; and
[21C]	decompressing each off the plurality of channel selection commands.
Claim 22	
[22A]	22. The method of claim 18 further comprises: conveying the packet using at least one of: Carries Sense Multiple Access (CSMA), CSMA with collision avoidance, and CSMA with collision detection.
Claim 23	
[23A]	23. The method of claim 18, wherein the encoding further comprises: framing data of each of the selected channels into a frame that includes header section and a data section, wherein the header section includes at least one of identity the selected channel, type of data of the selected channel, identity of the multimedia source, encryption enable/disable, type of encryption, compression enable/disable, type of compression, and frame number.
Claim 24	

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[24A]	24. The method of claim 23 further comprises: conveying the frame in accordance with at least one of: a time division multiplexing data conveyance protocol, and frequency division multiplexing data conveyance protocol.
Claim 25	
[25A]	25. The method of claim 23, wherein the encoding further comprises at least one of:
[25B]	multilevel encoding data of each of the selection channels;
[25C]	non return to zero (NRZ) encoding the data of each of the selected channels;
[25D]	Manchester encoding the data oil each of the selected channels;
[25E]	block encoding the data of each of the selection channels; and
[25F]	nB/mB encoding the data of each of the selected channels, where $n < m$.
Claim 26	
[26A]	26. The method of claim 18 further comprises: data compressing the selected channels prior to encoding.
Claim 27	
[27A]	27. The method of claim 18 further comprises: encrypting the selected channels prior to encoding.
Claim 28	
[28A]	28. A tuning module for using in multimedia system the tuning module comprises:
[28B]	plurality of selectors, wherein each of the plurality of selectors is operably coupled to receive a plurality of channels,
[28C]	wherein each of the plurality of selectors outputs a channel of the plurality of channels based on a respective one of a plurality of channel selection commands to produce selected channels;
[28D]	encoding module operably coupled to encode the selected channels based on a data conveyance protocol of the multimedia system to produce encoded channel data; and
[28E]	bus interface module operably coupled transmit the encoded channel data in accordance with the data conveyance protocol,
[28F]	the bus interface module including a receiving module that is operably coupled to monitor packets from a shared bus at specific time intervals and to identity at least one of the packets

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	at one of the specific time intervals, that contains at least a portion of one of the plurality of channel selection commands to produce an identified packet, wherein the receiving module comprising decoding module to decode the identified packet, based on the data conveyance protocol, to recapture at least a portion of the one of the plurality of channel selection commands.
Claim 29	
[29A]	29. The tuning module of claim 28, wherein the bus interface module further comprises at least one of:
[29B]	decrypting module for decrypting each of the plurality of channel selection commands; and
[29C]	decompressing module for decompressing each of the plurality of channel selection commands.
Claim 30	
[30A]	30. The tuning module of claim 28 further comprises: second plurality of selectors, wherein each of the second plurality of selectors is operably coupled to receive a second plurality of channels,
[30B]	wherein each of the second plurality of selectors outputs a channel of the second plurality of channels based on a respective one at the plurality of channel selection commands to produce second selected channels.
Claim 31	
[31A]	31. The tuning module of claim 28, wherein the encoding module further comprises: packetizing module for packetizing data at each of the selected channels into a packet that includes a header section and a data section, wherein the header section includes at least one of identity of the selected channel, type of data of the selected channel, identity of a multimedia source, encryption enable/disable, type of encryption, compression enable/disable, type of compression, and packet sequence number.
Claim 32	
[32A]	32. The tuning module of claim 28, wherein the encoding module further comprises: framing module for framing data of each of the selected channels into a frame that includes header section and a data section, wherein the header section includes

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	at least one of identity the selected channel, type of data of the selected channel, identity of the multimedia source, encryption enable/disable, type of encryption, compression enable/disable, type of compression, and frame number.
Claim 33	
[33A]	33. The tuning module of claim 28, wherein the encoding module further comprises at least one of:
[33B]	multilevel encoding module for multilevel encoding of data of each of the selected channels;
[33C]	non return to zero (NRZ) encoding module for NRZ encoding of the data of each of the selected channels;
[33D]	Manchester encoding module for Manchester encoding of the data of each of the selected channels;
[33E]	block encoding module for block encoding of the data of each of the selected channels; and
[33F]	nR/mR encoding module for nB/mB encoding of the data of each of the selected channels, where $n < m$.
Claim 34	
[34A]	34. The tuning module of claim 28 further comprises: data compressing module operably coupled to the plurality of selectors and the encoding module, wherein the data compressing module receives the selected channels from the plurality of selectors, compresses the selected channels to produce compressed channels, and provides the compressed channels to the encoding module.
Claim 35	
[35A]	35. The tuning module of claim 28 further comprises: encryption module operably coupled to the plurality of selectors and the encoding module, wherein the encryption module receives the selected channels from the plurality of selectors, encrypts the selected channels to produce encrypted channels, and provides the encrypted channels to the encoding module.
Claim 36	
36	36. The tuning module of claim 28 further comprises: bus controller operably coupled to the bus interface module, wherein the bus controller controls receiving of the plurality of

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	channel selection commands and controls the transmitting of the encoded channel data.
Claim 37	
[37A]	37. An apparatus for multiplexing a plurality of channels in a multimedia system, the apparatus comprises:
[37B]	processing module; and memory operably coupled to the processing module, wherein the memory includes operational instructions that cause the processing module to:
[37C]	receive a plurality of channels from a multimedia source;
[37D]	receive a plurality of channel selection commands by: monitoring a shared bus at specific time intervals; and identifying a data frame at one of the specific time intervals that contains at least a portion of one of the plurality of channel selection commands;
[37E]	decode, based on a data conveyance protocol of the multimedia system, the data frame to recapture the at least a portion of the one of the plurality of channel selection commands;
[37F]	select a channel of the plurality of channels per channel selection command of the plurality of channel selection commands to produce selected channels; and
[37G]	encode each of the selected channels based on a the data conveyance protocol of the multimedia system to produce a set of encoded channel data.
Claim 38	
[38A]	38. The apparatus of claim 37, wherein the memory further comprises operational instructions that cause the processing module to receive the channel selection commands by: receiving, from a plurality of clients, a plurality of channel selection requests; and
[38B]	processing the plurality of channel selection requests to produce the plurality of channel selection commands,
[38C]	wherein the each of the plurality of channel selection commands includes at least one of: specific channel selection command, last channel selection command, next channel selection command, previous channel selection command, favorite channel selection command, and select channel from user define list.

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Claim 39	
[39A]	39. The apparatus of claim 38, wherein the memory further comprises operational instructions that cause the processing module to process the plurality of channel selection requests by at least one of:
[39B]	interpreting at least one channel selection request to identity at least one client of the plurality of clients and at least one of the channel selection requests of the plurality of channel selection requests;
[39C]	authenticating a client of the plurality of clients that provides a specific channel selection request; and
[39D]	authenticating the specific channel selection request.
Claim 40	
40	40. The apparatus of claim 37, wherein the memory further comprises operational instructions that cause the processing module to: receive a second plurality of channels from a second multimedia source.
Claim 41	
41	41. The apparatus of claim 40, wherein the memory further comprises operational instructions that cause the processing module to select a channel by: selecting a channel from either the plurality of channels or the second plurality of channels per each of the channel selection commands, wherein each of the channel selection commands includes identity of the multimedia source or the second multimedia source and identity of the channel.
Claim 42	
[42A]	42. The apparatus of claim 37, wherein the memory further comprises operational instructions that cause the processing module to receive the plurality of channel selection commands by at least one of:
[42B]	decrypting each of the plurality of channel selection commands; and
[42C]	decompressing each of the plurality of channel selection commands.
Claim 43	
43	43. The apparatus of claim 37, wherein each of the plurality of channels is compressed, and wherein the memory further

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	comprises operational instructions that cause the processing module to select a channel by: selecting a group of compressed channels of the plurality of channels per at least one of the plurality of channel selection commands, wherein the group of compressed channels includes the channel.
Claim 44	
44	44. The apparatus of claim 43, wherein the memory further comprises operational instructions that cause the processing module to encode each of the selected channels by: encoding the group of compressed channels into packets or frames based on the data conveyance protocol.
Claim 45	
45	45. The apparatus of claim 37, wherein the memory further comprises operational instructions that cause the processing module to encode each of the selected channels by: packetizing data of each of the selected channels into a packet that includes a header section and a data section, wherein the header section includes at least one of identity the selected channel, type of data of the selected channel, identity of the multimedia source, encryption enable/disable, type of encryption, compression enable/disable, type of compression, and packet sequence number.
Claim 46	
46	46. The apparatus of claim 45, wherein the memory further comprises operational instructions that cause the processing module to: convey the packet using at least one of: Carrier Sense Multiple Access (CSMA), CSMA with collision avoidance, and CSMA with collision detection.
Claim 47	
47	47. The apparatus of claim 37, wherein the memory further comprises operational instructions that cause the processing module to encode each of the selected channels by: framing data of each of the selected channels into a frame that includes header section and a data section, wherein the header section includes at least one of identity the selected channel, type of data of the selected channel, identity of the multimedia source, encryption enable/disable, type of encryption, compression enable/disable, type of compression, and frame number.

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Claim 48	
48	48. The apparatus of claim 47, wherein the memory further comprises operational instructions that cause the processing module to: convey the frame in accordance with at least one of: a time division multiplexing data conveyance protocol, and frequency division multiplexing data conveyance protocol.
Claim 49	
[49A]	49. The apparatus of claim 37, wherein the memory further comprises operational instructions that cause the processing module to encode each of the selected channels by at least one of:
[49B]	multilevel encoding data of each of the selected channels;
[49C]	non return to zero (NRZ) encoding the data of each of the selected channels;
[49D]	Manchester encoding the data of each of the selected channels;
[49E]	block encoding the data of each of the selected channels; and
[49F]	nB/mB encoding the data of each of the selected channels, where $n < m$.
Claim 50	
50	50. The apparatus of claim 37, wherein the memory further comprises operational instructions that cause the processing module to: compress the selected channels prior to encoding.
Claim 51	
51	51. The apparatus of claim 37, wherein the memory further comprises operational instructions that cause the processing module to: encrypt the selected channels prior to encoding.
Claim 52	
[52A]	52. The apparatus of claim 37, wherein the memory further comprises operational instruction that cause the processing module to: receive a single channel from a multimedia source;
[52B]	select the single channel based on at least one of the plurality of channel selection commands to produce a selected single channel; and
[52C]	encode the selecting single channel based on the data conveyance protocol.
Claim 53	
[53A]	53. An apparatus for multiplexing channels in a multimedia system, the apparatus comprises:

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[53B]	processing module; and memory operably coupled to the processing module, wherein the memory includes operational instructions that cause the processing module to:
[53C]	receiving a channel from each of a plurality of sources to produce a plurality of channels;
[53D]	receiving, from a plurality of clients, a plurality of channel selection requests by monitoring shared bus at specific time intervals, identifying a data frame at one of the specific time intervals that contains at least a portion of one of the plurality of channel selection requests, decoding, based on a data conveyance protocol of the multimedia system, the data frame to recapture the at least a portion of the one of the plurality of channel selection requests; and
[53E]	processing the plurality of channel selection requests to determine whether the request can supported, and, if so, producing a plurality of channel selection commands, wherein each of the plurality of channel selection commands includes an identity of one of the plurality of sources, and an identity of the channel;
[53F]	selecting a channel of the plurality of channels per channel selection command of the plurality of channel selection command to produce selected channels; and
[53G]	encoding each of the selected channels based on the data conveyance protocol of the multimedia system to produce a set of encoded channel data.
Claim 54	
[54A]	54. The apparatus of claim 53, wherein the each of the plurality of channel selection commands includes at least one of: specific channel selection command, last channel selection command, next channel selection command, previous channel selection command, favorite channel selection command, and select channel from user define list.
Claim 55	
[55A]	55. The apparatus of claim 53, wherein the memory further comprises operational instructions that cause the processing module to process the plurality of channel selection requests by at least one of:

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[55B]	interpreting at least one channel selection request to identify at least one client of the plurality of clients and at least one of the channel selection requests of the plurality of channel selection requests;
[55C]	authenticating a client of the plurality of clients that provides a specific channel selection request; and
[55D]	authenticating the specific channel selection request.
Claim 56	
[56A]	56. The apparatus of claim 53, wherein the memory further comprises operational instructions that cause the processing module to receive the plurality of channel selection commands by at least one of:
[56B]	decrypting each of the plurality of channel selection commands; and
[56C]	decompressing each of the plurality of channel selection commands.
Claim 57	
57	57. The apparatus of claim 53, wherein the memory further comprises operational instructions that cause the processing module to encode each of the selected channels by: packetizing data of each of the selected channels into a packet that includes a header section and a data section, wherein the header section includes at least one of identity the selected channel, type of data of the selected channel, identity of the multimedia source, encryption enable/disable, type of encryption, compression enable/disable, type of compression, and packet sequence number.
Claim 58	
58	58. The apparatus of claim 57, wherein the memory further comprises operational instructions that cause the processing module to: convey the packet using at least one of: Carrier Sense Multiple Access (CSMA), CSMA with collision avoidance, and CSMA with collision detection.
Claim 59	
59	59. The apparatus of claim 53, wherein the memory further comprises operational instructions that cause the processing module to encoding each of the selected channels by: framing

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	data of each of the selected channels into a frame that includes header section and a data section, wherein the header section includes at least one of identity the selected channel, type of data of the selected channel, identity of the multimedia source, encryption enable/disable, type of encryption, compression enable/disable, type of compression, and frame number.
Claim 60	
60	60. The apparatus of claim 59, wherein the memory further comprises operational instruction that cause the processing module to: convey the frame in accordance with at least one of: a time division multiplexing data conveyance protocol, and frequency division multiplexing data conveyance protocol.
Claim 61	
[61A]	61. The apparatus of claim 53, wherein the memory further comprises operational instructions that cause the processing module to encode each of the selected channels by at least one of:
[61B]	multilevel encoding data of each of the selected channels;
[61C]	non return to zero (NRZ) encoding the data of each of the selected channels;
[61D]	Manchester encoding the data of each of the selected channels;
[61E]	block encoding the data of each of the selected channels; and
[61F]	nB/mB encoding the data of each of the selected channels, where $n < m$.
Claim 62	
62	62. The apparatus of claim 53, wherein the memory further comprises operational instructions that cause the processing module to: compress the selected channels prior to encoding.
Claim 63	
63	63. The apparatus of claim 53, wherein the memory further comprises operational instructions that cause the processing module to: encrypt the selected channels prior to encoding.