IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of:	Harvey et al.	
U.S. Patent No.:	7,747,217	Attorney Docket No.: 39843-0028IP1
Issue Date:	June 29, 2010	
Appl. Serial No.:	08/487,526	
Filing Date:	June 7, 1995	
Title:	SIGNAL PROCESSING APPARATUS AND METHODS	

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PETITION FOR *INTER PARTES* REVIEW OF UNITED STATES PATENT NO. 7,747,217 PURSUANT TO 35 U.S.C. §§ 311–319, 37 C.F.R. §§ 42.1-42.123

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EXHIBITS

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SAM-1003	Declaration of Dr. John Villasenor re the '217 Patent
SAM-1004	Curriculum Vitae of Dr. John Villasenor
SAM-1005	WO 81/02961 to John Campbell *et al.* ("Campbell-A")
SAM-1006	U.S. Patent No. 4,051,532 to Francis H. Hilbert *et al.* ("Hilbert")
SAM-1007	MCS-48™ Family of Single Chip Microcomputers User's Manual (1978)
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SAM-1010	Certificate of Service from *Personalized Media Communications, LLC v. Samsung Electronics America, Inc. And Samsung Electronics Co., Ltd.*, Case No. 2:15-cv-01754-JRG-RSP
SAM-1011	U.S. Patent No. 4,536,791 to John Campbell *et al.* ("Campbell-B")
SAM-1012	U.S. Patent Application No. 06/135,987 ("Campbell-C")
SAM-1013	Webster's New Collegiate Dictionary (1977)
SAM-1014	U.S. Patent No. 4,087,626 to Roy Henry Brader

Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. ("Petitioner" or "Samsung") petitions for *inter partes* review ("IPR") under 35 U.S.C. §§ 311–319 and 37 C.F.R. §§ 42.1-42.123 of claims 1-5, 7-9, 11, 30-32, and 38 ("the Challenged Claims") of U.S. Patent No. 7,747,217 ("the '217 Patent"). As explained in this petition, Petitioner demonstrates a reasonable likelihood that at least one of the Challenged Claims is unpatentable. Indeed, the Challenged Claims are shown unpatentable based on teachings set forth in at least the references presented in this petition. Moreover, Petitioner respectfully requests institution of this IPR, and cancelation of the Challenged Claims as unpatentable.

I. MANDATORY NOTICES UNDER 37 C.F.R § 42.8

A. Real Party-In-Interest

Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. are the real parties-in-interest.

B. Related Matters

Patent Owner filed a complaint alleging infringement of the '217 patent in a lawsuit against Petitioner in the Eastern District of Texas (*Personalized Media Communications, LLC. v. Samsung Electronics America, Inc., et al.*, Civil Action No. 2:15-cv-01754). Petitioner is concurrently filing petitions for IPR of related patents in IPR2017-00289, IPR2017-00290, IPR2017-00291, IPR2017-00292, IPR2017-00293, IPR2017-00294, and IPR2017-00295.

C. Counsel

Petitioner provides the following designation of counsel.

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D. Service Information

Please address all correspondence/service to the address listed above. Petitioner consents to electronic service by email at IPR39843-0028IP1@fr.com, with a copy to PTABInbound@fr.com.

II. PAYMENT OF FEES

Petitioner authorizes charge of necessary fees to Deposit Acct. 06-1050.

III. REQUIREMENTS FOR IPR

A. Grounds for Standing

Petitioner certifies that the '217 Patent is available for IPR. This Petition is being filed within one year of service of a complaint against Petitioner on November 18, 2015. *See* Ex. 1010. Petitioner is not barred or estopped from requesting this review of the Challenged Claims.

B. Challenge and Relief Requested

Petitioner requests an IPR of the Challenged Claims on the grounds set forth

in the table shown below, and requests that each of the Challenged Claims be found unpatentable. An explanation of how these claims are unpatentable under the statutory grounds identified below is provided in the form of detailed description and claim charts that follow, indicating where each element can be found in the cited prior art, and the relevance of that prior art. Additional explanation and support for each ground of rejection is set forth in SAM-1003, Declaration of John Villasenor, referenced throughout this Petition.

Ground	'217 Patent Claims	Basis for Rejection
1	**1-5, 7-9, 11, 30-32, and 38**	§103: Campbell-A in view of Hilbert
2	**1-5, 7-9, 11, 30-32, and 38**	§103: Campbell-B Patent in view of Hilbert

The earliest proclaimed priority date of the '217 Patent is Nov. 3, 1981. As shown below, each reference pre-dates this date and qualifies as prior art:

Reference	Date	Prior art §
Campbell-A	Published: Oct. 15, 1981	102(a)
Campbell-B	Priority date: March 31, 1980	102(e)
Hilbert	Issue date: Sept. 27, 1977	102(b)

While Campbell-B was issued in 1985, it is entitled to priority of Mar. 31, 1980. Campbell-B was filed June 4, 1984, with claims that are fully supported based on subject matter that appeared within Campbell-C, filed Mar. 31, 1980. Campbell-B is a continuation of U.S. Application Serial No. 06/348,937 ("'937

Application"), which was filed on Nov. 27, 1981 as a CIP of Application No. 06/135,987 ("Campbell-C"), filed on Mar. 31, 1980. Co-pendency existed at each mentioned filing. The validity of Campbell-B priority claim to the Campbell-C Application is illustrated through citations that appear below relative to claim 1 of Campbell-B. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375 (Fed. Cir. 2015).

Campbell-B Claim 1	**Campbell-C Priority Application Support**
1. In a television communications system having a central station for transmitting a plurality of television signals at different frequency channels to a plurality of user stations remote from said central stations, each having a tuner for selecting one of said television signals, a method of utilizing said central station to limit access of said user stations to only certain ones of said television signals, comprising:	Claim 1; *see also* 1:24-2:2, 3:10-14, 5:1-27, FIGS. 1, 2, 6.
transmitting each of said category codes from the central station to its respective user station to precondition each user station by authorization from the central station to selectively access said predetermined categories of television signals;	Claim 1; *see also* 6:18-26, 7:20-25, 8:1-2, 8:30-37, 16:20-28, 17:21-33, FIG. 11.
generating a plurality of program codes at said central station to limit user access to said predetermined categories of television signals, one of said program codes being generated for each television signal, each of said program codes including predetermined control data for enabling access to one of said television signals;	Claim 1; *see also* FIG. 11, 1:24-2:2, 3:10-14, 6:18-26, 17:1-20.
transmitting one of said program codes with each of said television signals to each of said user stations being tuned to receive one of said television signals;	Claim 1; *see also* FIG. 11, 6:18-26, 17:1-20.
comparing the control data of said program code	Claim 1; *see also* 3:22-25,

to the enabling data of the category code provided by the central station to each user station; and	21:1-22:18, FIG. 12.
enabling only each user station which has a category code with enabling data corresponding to the control data of said program code, whereby said enabled user station can receive and process any said tuned television signal within a predetermined category of said television signals corresponding to said category code.	Claim 1; *see also* 15:13-22, 21:1-22:18, FIG. 12.

As such, Campbell-A qualifies as prior art under 35 U.S.C. § 102(a) as of October 15, 1981. Campbell-B qualifies as prior art under 35 U.S.C. § 102(e) as of March 31, 1980 with respect to the same subject matter disclosed in Campbell-1C, the earliest priority document. String citations throughout this Petition indicate the overlapping disclosures of Campbell-A/B/C (collectively "Campbell"). Campbell-A and Campbell-B are asserted in separate, contingent grounds of this Petition–Grounds-1&2–to account for any chance that Patent Owner may attempt to avoid full vetting of the Challenged Claims by swearing behind the prior art date of Campbell-A, which precedes the '217 Patent's earliest claimed priority date by less than one month.

IV. INTRODUCTION

A. Overview of the '217 Patent

The '217 Patent generally relates to the transmission, reception, processing, and presentation of information carried on various types of electronic signals (e.g., standard radio and television signals). SAM-1001, Abstr. In the Patent Owner's

own words, "[t]he system encompasses the prior art (television, radio, broadcast hardcopy, computer communications, etc.)." *See id*. The '217 Patent asserts that one of its purposes is "to provide means and methods whereby a simple[] point-to-multipoint transmission (such as a television or radio broadcast) can cause simultaneous generation of user specific information at a plurality of subscriber stations." SAM-1001, 6:48-52.

The Challenged Claims relate to methods and apparatuses for coordinating and outputting multimedia presentations. *See* SAM-1001, Claim 1. The receiver station receives a plurality of signals that include at least two media, the at least two media including a first medium received in a digital data channel. *See id.* The receiver station determines content of the medium(s) other than the first medium by comparing identifiers, one of which identifies content of the other medium(s). *See id.* The receiver station coordinates a multimedia presentation that includes a presentation using information from the first medium and a second medium for which a matching identifier is determined, and outputs the multimedia presentation for display. *See id.* The Challenged Claims relate generally to a description involving a television program titled "Wall Street Week" that it describes as an example "of television based combined medium programming." SAM-1001, 15:10-12; *see generally* SAM-1001, 11:25-15:12; *see also* SAM-1003, ¶¶ 36-40.

The specification of the '217 patent uses the phrase "well known in the art"

156 times. As this petition will demonstrate, this is not by accident. Neither the exemplary claim nor any other claim recite anything more than trivial variations of what was taught by the prior art.

B. Summary of the Prosecution History of the '217 Patent

The '217 Patent issued from U.S. application no. 08/487,526 (the '526 App), which was filed on June 7, 1995, and claims priority through a string of continuation applications to November 3, 1981. During original prosecution, the claims of the '526 App were rejected in seven separate Office actions and subject to an appeal decision from the Board of Patent Appeals and Interferences (BPAI). *See generally* SAM-1002. Over the course of the seven years between the first office action and the first notice of allowance, the claim underwent substantial amendments.

In the first four Office actions, the Examiner asserted a number of rejections under 35 U.S.C. §§ 102 and 103 based on U.S. Patent No. 4,536,791 to Campbell (hereinafter Campbell-B), which is the U.S. national-phase filing of WO 81/02961. Though the written record is quite voluminous, the last time Patent Owner appears to have addressed Campbell-B on the record was in its response dated February 4, 2002. *See* SAM-1002, pp. 1755-1965. In this response, Patent Owner argued that "Applicants have steadfastly maintained throughout all of their interviews with the PTO and submissions to the PTO that Campbell does not teach 'simultaneous or

sequential presentation.'" SAM-1002, p. 1805. This argument appears related to the argument Patent Owner advanced its response dated December 29, 1998, where Patent Owner argued that "[t]here is no suggestion that the Campbell system organizes video and teletext for a single multimedia programming presentation." SAM-1002, p. 934.

Without acknowledging the propriety of Patent Owner's arguments regarding the teachings of Campbell-B, the Examiner issued a subsequent Office action dated July 30, 2002 that applied at least eight rejections under 35 U.S.C. § 102 and at least seven rejections under 35 U.S.C. § 103, none directly based on Campbell-B. At no point thereafter was a rejection of the later-amended claims based on Campbell-B set forth or considered on the record. As explained in greater detail in Section VI, *infra*, Patent Owner's assertion that Campbell-B did not suggest "organiz[ing] video and teletext for a single multimedia programming presentation" was incorrect. Indeed, the BPAI later found that "it was known to superimpose teletext data over program video," but did not have an opportunity to consider the applicability of Campbell to the claims. *See* SAM-1002, p. 5838.

To this point, Patent Owner ultimately appealed the Examiner's rejections to the BPAI. In its appeal decision, the BPAI upheld rejections of each of the independent claims, though it found that certain dependent claims contained subject matter that distinguished the prior art before the panel. *See* SAM-1002, p.

5945. In its lengthy decision, the Board adopted a number of interpretations of the then-pending claims that the Examiner later took special note of in the Notice of Allowance, including that "identifying/determining content. . . [c]orresponds to recognizing an identifier associated with a program," and that "content of a medium . . . [s]ays something about the substance of the media." SAM-1002, pp. 6011-6012.

In response to the appeal decision, Patent Owner substantially amended the claims, adding that the first medium is "received in a digital data channel," that the "determining" and "coordinating" steps are performed "through use of processor instructions resident on said computer at said receiver station," and that "said content of said second medium explains a significance of said presentation using said information." SAM-1002, p. 5948. The BPAI never had an opportunity to independently consider whether these amendments overcame the rejections it previously asserted in its Decision or the other prior art of record. Rather, after an interview regarding these claims, the Examiner allowed the claims based on an Examiner's amendment that further added that the "determining" step comprises the now-recited "processing" and "comparing" steps. SAM-1002, p. 6011-6034.

Importantly, at no point on the record were the issued claims contrasted with the teachings or suggestions of the previously withdrawn Campbell-B reference. Moreover, at no point during prosecution did the Office assert or the Patent Owner

attempt to consider or distinguish a combination of Campbell and Hilbert, as set forth in Section VI.

V. CLAIM CONSTRUCTION

The claims of the ’217 Patent should be given their broadest reasonable interpretation. Pursuant to PTO regulations, “[a] claim in an unexpired patent . . . shall be given its broadest reasonable construction in light of the specification of the patent in which it appears.” 37 C.F.R. § 42.100(a); *see also Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144 (2016) (The regulation calling for the use of the Broadest Reasonable Interpretation (BRI) “represents a reasonable exercise of the rulemaking authority that Congress delegated to the Patent Office.”). This means that the claim terms of the ’217 Patent should be given a meaning “consistent with the ordinary and customary meaning of the term (unless the term has been given a special definition in the specification),” and “must be consistent with the use of the claim term in the interpretation that those skilled in the art would reach.” MPEP § 2111 (citing *In re Cortright*, 165 F.3d 1353, 1359 (Fed. Cir. 1999)).[1]

[1] Petitioner expressly reserves the right to advance different constructions in the matter now pending in the district court, as the applicable claim construction

A. "medium" / "media"

The Challenged Claims recite the terms "medium" and, as a plural, "media." The broadest reasonable interpretation of this term is at least broad enough to encompass "forms of electronically transmitted programming, such as audio, video, graphics, and/or text, television programing (including its video and audio components) is a single form of media." This is the construction reached by the District Court in the co-pending litigation, and is no inconsistent with the specification of the '271 Patent. SAM-1008, p. 25.

The '217 Patent teaches that "television, radio, and broadcast print are [] mass media." SAM-1001, 1:38-39. It clarifies that television is a single type of programming: "[t]he stations so automated may transmit any form of electronically transmitted programming, including television, radio, print, data and combined

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standard for that proceeding ("ordinary and customary meaning") is different than the broadest reasonable interpretation standard applied in IPR. Further, due to the different claim construction standards in the proceedings, Petitioner identifying any feature in the cited references as teaching a claim term of the '217 Patent is not an admission by Petitioner that that claim term is met by any feature for infringement purposes, or that the claim term is enabled or meets the requirements for written description.

medium programming." SAM-1001, 167:52-58; *see also* SAM-1008, p. 23. Moreover, U.S. Patent No. 4,694,490 (to which the '217 Patent claims priority) states that its "method provides techniques whereby, automatically, single channel, single medium presentations, be they television, radio, or other electronic transmissions, may be recorded, coordinated in time with other programing previously transmitted and recorded, or processed in other fashions." '490 patent at 3:51-56 (emphasis added).

The prosecution history of the '217 Patent supports the district court's construction. In the Notice of Allowance dated February 25, 2010, the Examiner asserted that a "medium" is "a channel of communication such as radio, television, newspaper, book or Internet." SAM-1002, p. 6011. Similarly, in the Appeal Decision dated January 15, 2009, the BPAI concluded that "[t]he synchronizing pulse in a television signal is an electrical feature of the television signal, but the signal itself is not the 'medium'; the medium is the picture and sound information carried by the television signal or the caption information." SAM-1002, p. 5794.

For at least these reasons, broadest reasonable interpretation of "medium" or "media" is at least broad enough to encompass "form(s) of electronically transmitted programming, such as audio, video, graphics, and/or text, television programing (including its video and audio components) is a single form of media." *See* SAM-1003, ¶¶ 43-46.

B. "computer"

Claim 1 recites "a computer at said receiver station." The broadest reasonable construction of the term "computer" is at least broad enough to encompass "a programmable electronic device that can store, retrieve, and process data."

The '217 Patent does not define the term "computer." However, the Webster's Collegiate Dictionary defined "computer" as "a programmable electronic device that can store, retrieve, and process data." SAM-1013, p. 232. Similarly, in other proceedings, the Board has previously construed the term "computer" to encompass "any machine capable of receiving input, processing, storing, and outputting data." *SDI Technologies, Inc. v. Bose Corporation*, IPR2013-00350, Paper 11, pp. 9-10 (PTAB Dec. 11, 2013). This is not inconsistent with the usage of the term "computer" in the '217 Patent.

For instance, in the "Wall Street Week" example described in the '217 Patent, the '217 Patent actual describes a "microcomputer 205" and uses this term generally to refer to a device at the receiver station configured to perform certain preprogrammed tasks. *See, e.g.*, SAM-1001, 11:58-63 ("Microcomputer, 205, is preprogrammed to receive said input of signals at its asynchronous communications adapter and to respond in a predetermined fashion to instruction signals embedded in the 'Wall Street Week' programming transmission."

(emphasis added)). Though the '217 Patent describes examples of components the microcomputer 205 may include, the '217 Patent refers to the microcomputer 205 as "conventional." *See* SAM-1001, 10:65-11:6.

Accordingly, the broadest reasonable construction of the term "computer" is at least broad enough to encompass "a programmable electronic device that can store, retrieve, and process data." SAM-1003, ¶¶ 47-50.

VI. THERE IS A REASONABLE LIKELIHOOD THAT AT LEAST ONE CLAIM OF THE '217 PATENT IS UNPATENTABLE

As detailed below, this petition establishes a reasonable likelihood that the Requester will prevail with respect to the Challenged Claims of the '217 Patent. To this end, identified citations to portions of the applied references are merely exemplary, as these references are read by Petitioner as comprehensive and integrated disclosures, with Petitioner intending that the citations simply illustrate how the full and integrated teachings of the references apply to each of the noted claim elements. In this manner, the full disclosure of each reference within a given ground is hereby applied by Petitioner to each claim element, as an integrated teaching.

A. [GROUNDS 1 & 2] Claims 1-5, 7-9, 11, 30-32, and 38 are unpatentable under 35 U.S.C. § 103 based on Campbell-A in view of Hilbert and Campbell-B in view of Hilbert

WO 81/02961 (Campbell-A) is the PCT version of Patent No. 4,536,791 (Campbell-B), and therefore includes completely overlapping disclosure.

Accordingly, description of and combination based on Campbell-A are equally applicable to Campbell-B. Accordingly, the following sections provide a single description relevant to each of Grounds 1 and 2, with parallel citations to each of Campbell-A (SAM-1005), Campbell-B, (SAM-1011), and Campbell-C (SAM-1012).

1. Overview of Campbell and Hilbert

Campbell describes "[a]n addressable cable television control system [that] controls television program and data signal transmission from a central station (11) to a plurality of user stations." SAM-1005, abstract; SAM-1011, abstract; SAM-1012, abstract. This television system is "relatively inexpensive and simple" and "provides a substantial amount of textual data per channel for use either to provide additional data to supplement a channel television program or as a separate all textual and graphic channel." SAM-1005, 3:28-36; SAM-1011, 2:53-63; SAM-1012, 3:10-18.

FIG. 1, an annotated version of which is reproduced below, illustrates a simplified block diagram of Campbell's system. The system includes a head end station 11 (highlighted in red) and one or more subscriber stations, each of which include an addressable converter 40 and user television 36 (highlighted in green). *See* SAM-1003, ¶ 52. The head end station 11 combines a "plurality of video signals transmitted from television program systems 16" with "data [gathered]

from a wide variety of sources," and transmits the combined signals to the subscriber stations of "a plurality of subscribers." *See* SAM-1005, 6:10-29; SAM-1011, 4:24-48; SAM-1012, 5:2-21.

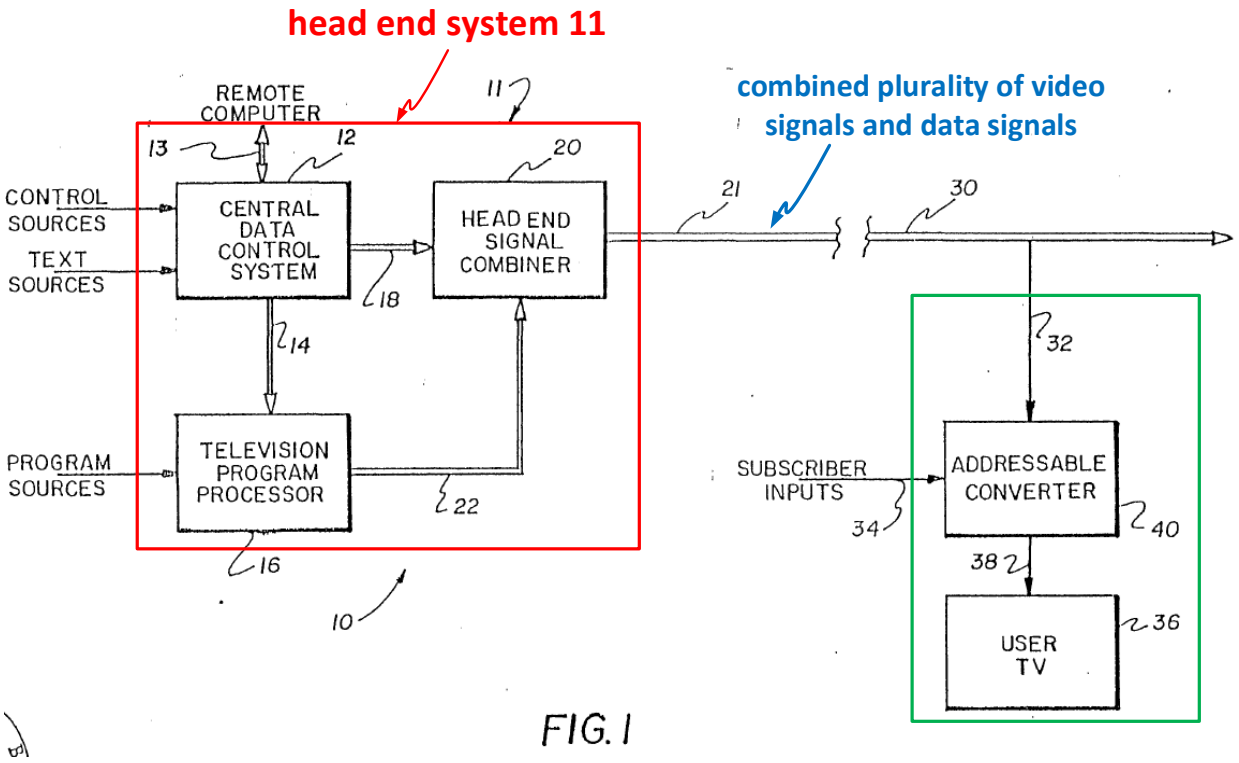
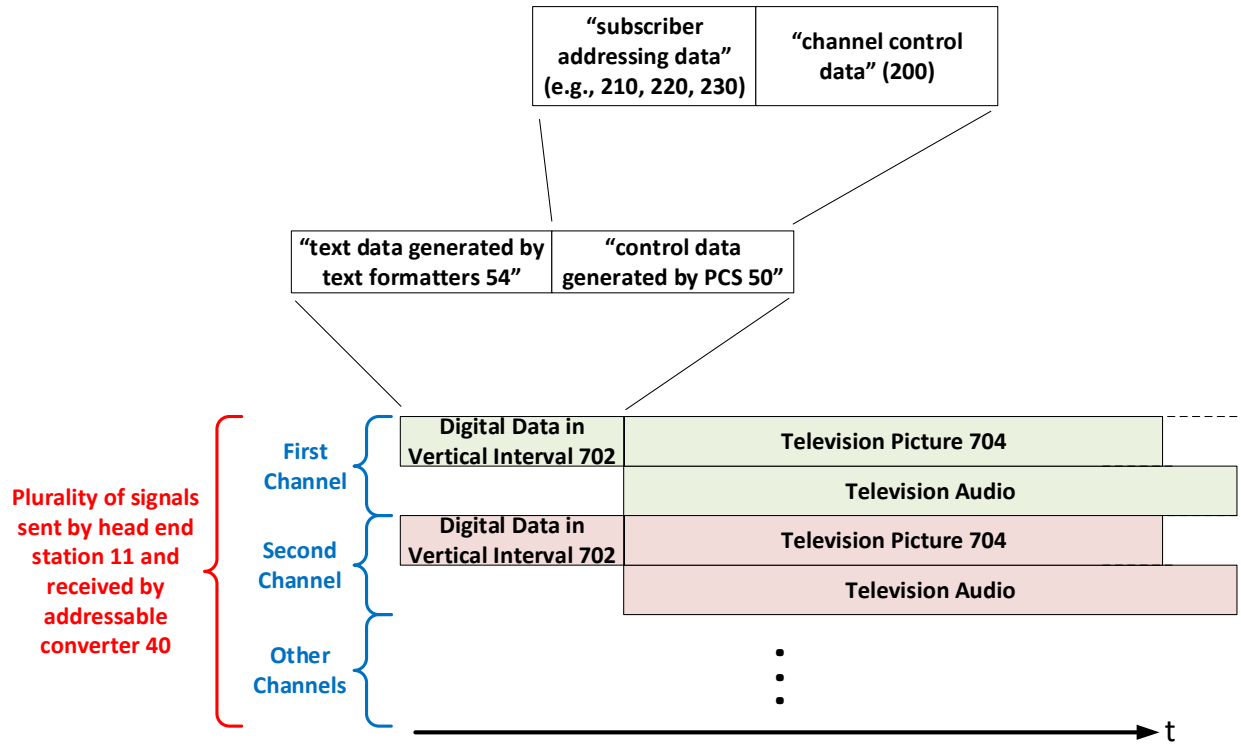


FIG. 1

Specifically, the head end station 11 "receives data from a wide variety of sources such as weather, news, stock and others . . . ." SAM-1005, 7:16-19; SAM-1011, 5:5-9; SAM-1012, 6:1-4. The data can take the form of "text or graphics." SAM-1005, 7:19-21; SAM-1011, 5:9-11; SAM-1012, 6:4-6. The head end station 11 also receives "data that contains a mixture of subscriber addressing signals and channel control signals." SAM-1005, 7:8-10; SAM-1011, 4:64-67; SAM-1012, 5:29-32. The head end station 11 combines all of this additional data "with video

signals in a plurality of different channel frequencies" by incorporating the additional data "into the vertical blanking intervals of video signals generated by a variety of television program sources." SAM-1005, 6:17-20; SAM-1011, 4:33-37; SAM-1012, 5:9-12.

The vertical blanking interval "in the video signal occurs 60 times each second as the cathode ray tube beam sweeps from the bottom to the top of the TV screen and is [normally] relatively unused for the transmission of data." SAM-1005, 2:36-3:3; SAM-1011, 2:17-20; SAM-1012, 2:31-34. According to Campbell's invention, the portion of the standard analog video signal that represents the vertical interval is replaced by a binary digital data packet that represents the additional, supplemental data and the subscriber addressing and channel control data. SAM-1005, 10:19-26, 11:10-21; SAM-1011, 7:6-15, 7:41-45; SAM-1012, 7:21-31. "Preferably, a different type of textual data are inserted into the vertical interval of each video channel so that a complementary text channel may be selected by each remote subscriber" for each video channel. SAM-1005, 8:7-9; SAM-1011, 5:38-41; SAM-1012, 6:29-31. The following diagram illustrates the combined plurality of signals transmitted from head end station 11 to the subscriber stations, which would have been obvious to a POSITA based on the disclosure of Campbell. SAM-1003, ¶ 54.



Each subscriber station includes an addressable converter 40 and a television 36. SAM-1005, 6:33-35; SAM-1011, 4:53-55; SAM-1012, 5:25-27. "The converter, under direction of converter control logic, processes the RF data-loaded television signals from [the] combined video output" of the head end system. SAM-1005, 12:33-13:1; SAM-1011, 8:46-52; SAM-1012, 11:1-6. The operation of the addressable converter 40 and its components is described with regard FIGS 6-12, with FIG. 6 providing an overall block diagram of the converter. *See* SAM-1005, 12:32-33; SAM-1011, 8:46-47; SAM-1012, 11:1-2.

First, RF/data separator 100 of converter 40 extracts subscriber control information from the received combined signals. SAM-1005, 13:4-6; SAM-1011, 8:55-58; SAM-1012, 11:9-11. The received combined signals are then passed

through a conventional tuner 106, which converts the received combined signals from radio frequency (RF) to the intermediate frequency (IF). SAM-1005, 13:6-12, FIG. 6; SAM-1011, 8:58-65; SAM-1012, 11:11-17. The IF version of the combined signals are sent to IF/amp detector 112, which separates the audio portion of the combined signals from the video portion. SAM-1005, 13:12-14; SAM-1011, 8:65-68; SAM-1012, 11:17-19.

The video portion of the combined signals is passed to two components: a vertical interval data extractor 114 and a conventional video descrambler 116. SAM-1005, 13:16-20, 13:27-30; SAM-1011, 9:3-7, 9:15-18; SAM-1012, 11:21-24, 11:28-30. "Vertical interval data extractor 114 provides a serial data stream extracted from the vertical interval of the scrambled video signal to the converter control logic 104." SAM-1005, 13:20-22; SAM-1011, 9:7-10; SAM-1012, 11:21-24. The supplemental text data extracted by the vertical interval data extractor is processed by the converter control logic 104, stored in display memory 130, and prepared for display with relation to the descrambled video data by text/graphics generator 118. SAM-1005, 14:1-13, 14:36-15:5; SAM-1011, 9:27-42, 10:2-10; SAM-1012, 12:1-12, 12:35-13:4. As a result of this process, "a vast array of textual and graphic material may be transmitted to the subscriber in addition to normal television programming." SAM-1005, 25:14-16; SAM-1011, 16:66-68; SAM-1012, 23:21-23.

The converter control logic 104 of the addressable converter 40 directs the above-described processing of the received signals. SAM-1005, 12:33-34; SAM-1011, 8:47-49; SAM-1012, 11:2-4. This direction is regulated according to the process shown in FIG. 12. SAM-1005, 22:16-18; SAM-1011, 14:67-15:2; SAM-1012, 20:18-20. Specifically, when a user selects a new television channel for display, the converter control logic 104 outputs a blank screen on the user's television and mutes the audio while it determines whether the user has the proper permissions to view to the television program. *See* SAM-1005, 22:19-34; SAM-1011, 15:3-21; SAM-1012, 20:21-21:5.

To make this permission determination, the converter control logic 104 performs comparisons using the control data (i.e., subscriber addressing data and channel control data) included in the vertical interval of the video signal. SAM-1005, 22:30-34; SAM-1011, 15:16-21; SAM-1012, 21:1-15. If the control data included in the vertical interval indicates that the user does not have permission to view the program, the converter control logic 104 directs the text/graphics generator 118 to output "an appropriate message for display on the television screen of the user indicating that the user station is not authorized for reception of the program currently being broadcast on a selected channel." SAM-1005, 23:12-20, 24:6-9; SAM-1011, 15:40-50, 16:11-14; SAM-1012, 21:20-28, 22:15-18. Otherwise, if permission is granted, the converter control logic 104 enables output

of the video, audio, and/or text data associated with a selected television program to the user's television. SAM-1005, 23:29-32; SAM-1011, 15:61-65; SAM-1012, 22:2-5.

Campbell describes that "[t]he text information of some complementary text channels may also be formatted to supplement the television programs on its complementary program channel." SAM-1005, 26:2-5; SAM-1011, 17:28-31; SAM-1012, 24:12-14. In one example, "the textual material may amplify various new stories, shopping advertisements and other programming briefly presented over the television program channel." SAM-1005, 26:5-7; SAM-1011, 17:31-34; SAM-1012, 24:14-16. Moreover, Campbell describes that the text/graphics generator 118 is capable of superimposing text over the television program video. *See* SAM-1005, 14:7-11 ("text/graphics generator 118 includes a plurality of video switches . . . [that] permit the channel number display to be superimposed on the video signal of the channel which is being presented"), claim 34; SAM-1011, 9:34-39; SAM-1012, 12:6-10; *see also* SAM-1003, ¶ 60.

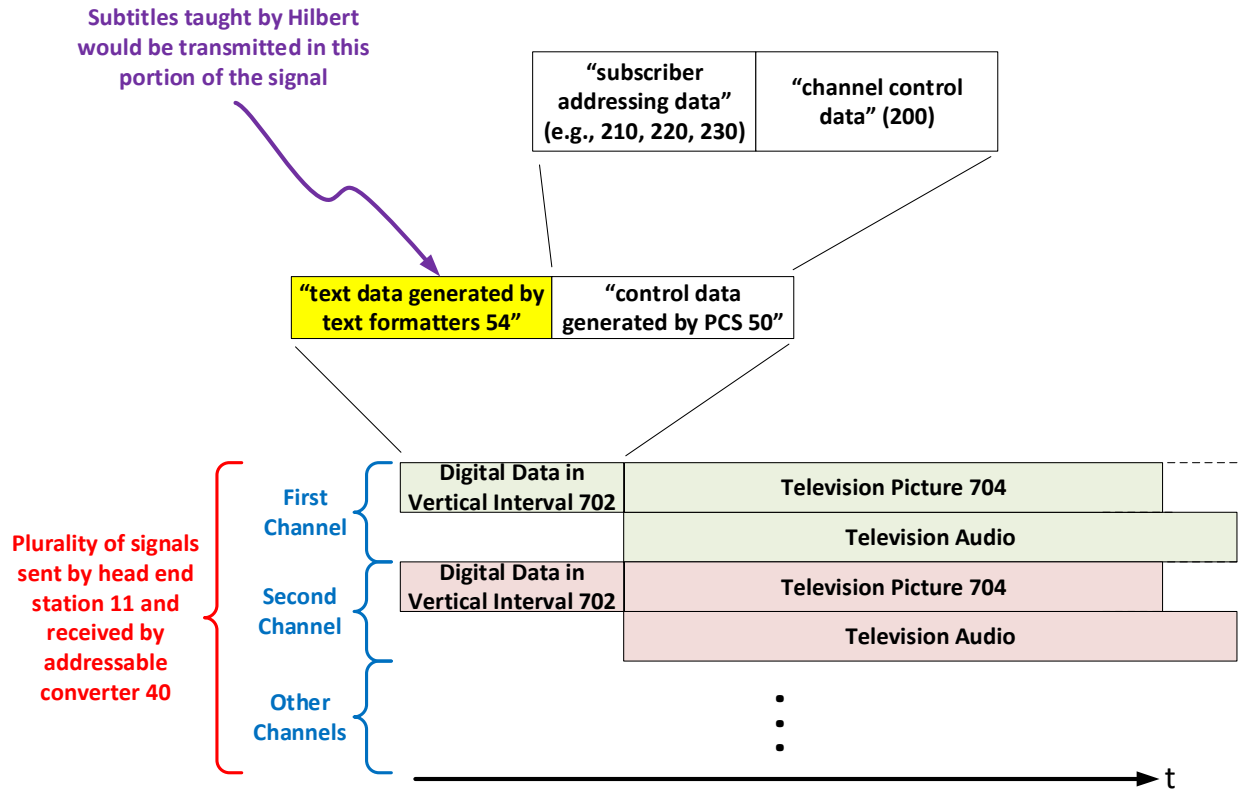
Accordingly, it would have been obvious to a POSITA to modify the text/graphics generator 118 to superimpose the additional text data included in the vertical interval over the video of the associated television program, particularly where that additional data is formatted to "supplement" and "amplify" the television programs. SAM-1003, ¶ 61. Indeed, the BPAI previously found that

techniques of superimposing supplemental information on an associate television program picture was well known as of the Critical Date. *See* SAM-1002, pp. 5820, 5838.

For example, Hilbert teaches a system for inserting an "auxiliary signal" into a standard cable video signal for transmission to subscribers. *See* SAM-1006, abstract. Hilbert teaches that, as early as Hilbert's filing date of July 19, 1975, "[i]t [was] desirable to include additional information beyond the picture and sound information presently transmitted for the purpose of channel identification, subtitles for deaf persons, special notices and the like." SAM-1006, 1:9-13 (emphasis added). Subtitles for deaf persons, in particular, are necessarily superimposed on the television program's picture in order to supplement the audio. To this point, Hilbert teaches circuitry within its receiver (e.g., switching circuit 20 and adder circuit 22) that "the combined composite processed video signals, including all of the alternating phase auxiliary signal components as well as the normal video signal components," are output to the television. *See* SAM-1006, 4:31-55.

Though Hilbert describes an alternative method of inserting auxiliary information into a conventional television signal, a POSITA considering the teachings of Campbell and Hilbert would have been motivated to modify Campbell's head end station 11 to insert auxiliary data such as the "subtitles for

deaf persons" taught by Hilbert into the text data portion of the vertical interval of the conventional video signal (i.e., replacing the "text data generated by text formatters 54", without affecting the "control data generated by PCS 50"), and to modify the text/graphics generator 118 to superimpose the auxiliary information onto the associated television video output to the user TV 36. SAM-1003, ¶ 63. The following signal diagram, which would have been obvious based on the teachings of Campbell and Hilbert, highlights in yellow where in the combined signal created by the head end unit 11 of Campbell the subtitles would be inserted. SAM-1003, ¶ 63.



A POSITA would have had a reasonable expectation of success in making these modifications, because Campbell already teaches that the text/graphics generator 118 is capable of text superimposition. *See* SAM-1005, 14:7-11; SAM-1011, 9:34-39; SAM-1012, 12:6-10; *see also* SAM-1003, ¶ 64. Moreover, Campbell teaches that the head end station 11 is capable of inserting text data into the vertical interval at "an effective text character transfer rate of about 240 characters per second." SAM-1005, 9:30-31; SAM-1011, 6:44-46; SAM-1012, 9:8-9. This is more than enough throughput to support readable subtitles, because average reading speed across seventeen common languages is only 14.38 ± 3.9 characters per second. SAM-1003, ¶ 64 (citing SAM-1009, p. 1).

2. Claim 1

Campbell and Hilbert render obvious "*[a] method of outputting a multimedia presentation at a receiver station adapted to receive a plurality of signals, said method comprising the steps of*," as recited in claim 1. *See* SAM-1003, ¶¶ 66-68. As summarized in Section VI.A.1, *supra*, Campbell describes a one-way cable television system 10 that includes a head end station 11 (highlighted in red in the following annotated reproduction of FIG. 1) and one or more receiver stations (highlighted in green below). *See* SAM-1003, ¶ 66. The head end station 11 combines a "plurality of video signals transmitted from television program systems 16" with "data [gathered] from a wide variety of sources," and transmits

the combined signals to the receiver stations of "a plurality of subscribers." *See* SAM-1005, 6:10-29; SAM-1011, 4:24-48; SAM-1012, 5:2-21.

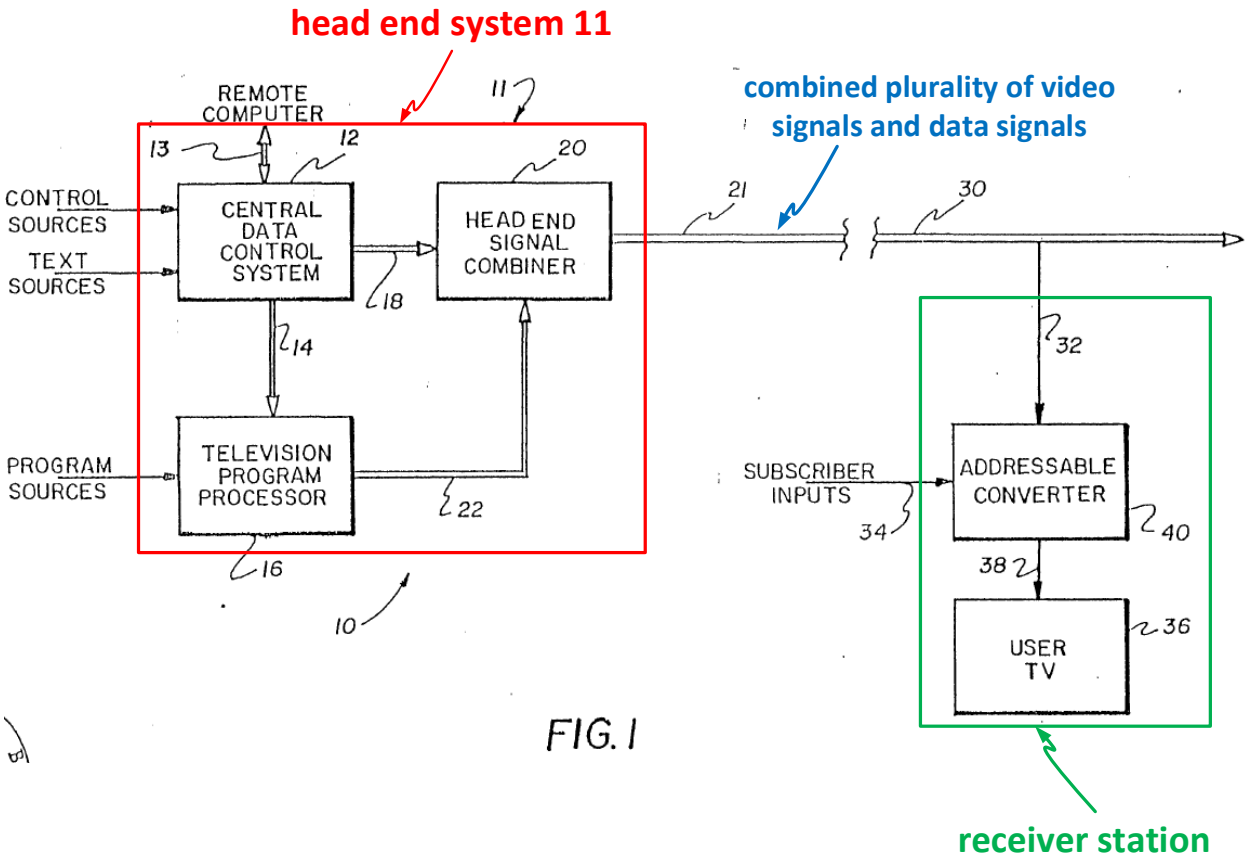


FIG. 1

Specifically, the head end station 11 "receives data from a wide variety of sources such as weather, news, stock and others . . . ." SAM-1005, 7:16-19; SAM-1011, 5:5-9; SAM-1012, 6:1-4. The data can take the form of "text or graphics" (i.e., a first "medium" under that term's broadest reasonable interpretation). SAM-1005, 7:19-21; SAM-1011, 5:9-11; SAM-1012, 6:4-6. The head end station 11 combines this additional data "with video signals in a plurality of different channel frequencies" (i.e., a second "medium" under that term's broadest reasonable interpretation) by incorporating the additional data "into the vertical blanking

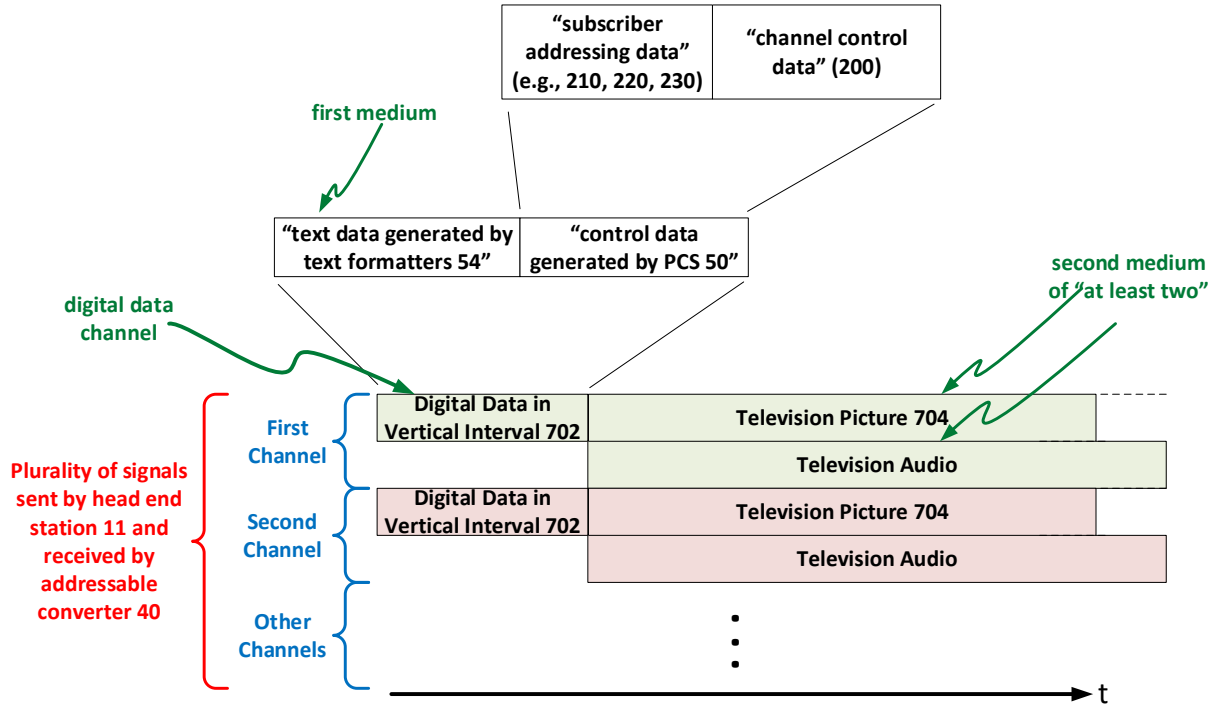
intervals of video signals generated by a variety of television program sources." SAM-1005, 6:17-20; SAM-1011, 4:33-37; SAM-1012, 5:9-12.

As summarized in Section VI.A.1, *supra*, and explained in greater detail below, it would have been obvious that the addressable converter 40 of each receiver station extracts the "text or graphics" data that forms the first medium from the vertical interval of the video signal and superimposes that "text or graphics" data onto the television program picture (i.e., the second medium) to create a multimedia presentation that is output to and displayed on the user television 36. *See* SAM-1003, ¶ 68.

Campbell and Hilbert render obvious "*receiving said plurality of signals including at least two media which include a first medium received in a digital data channel from a source external to said receiver station*," as recited in claim 1. *See* SAM-1003, ¶¶ 69-71. According to Campbell's invention, the portion of the standard analog video signal that represents the vertical interval is replaced by a binary digital data packet that represents the additional, supplemental data and the subscriber addressing and channel control data. SAM-1005, 10:19-26, 11:10-21; SAM-1011, 7:6-15, 7:41-45; SAM-1012, 7:21-31. "Preferably, a different type of textual data are inserted into the vertical interval of each video channel so that a complementary text channel may be selected by each remote subscriber" for each video channel. SAM-1005, 8:7-9; SAM-1011, 5:38-41; SAM-1012, 6:29-31. As

described above, the additional "text or graphics" data is the first medium and the television program is the second medium of the recited "at least two media."

The following diagram illustrates the combined plurality of signals transmitted from head end station 11 to the receiver stations. SAM-1003, ¶ 70.



In order to create the combined plurality of signals (including the (1) text/graphics data inserted in the VI and (2) the television program of a channel that are the claimed "at least two media), Campbell describes that the head end system 11 replaces the "standard analog video signal" corresponding to the vertical interval with "a binary digital data packet" that represents the additional "text or graphics" received from the external sources. *See* SAM-1005, 7:16-21, 8:5-17, 10:23-26, 11:9-23, 12:9-18; SAM-1011, 5:5-15, 5:36-51, 7:11-15, 7:40-57, 8:18-

29; SAM-1012, 6:1-10, 6:27-39, 7:20-33, 10:9-18; *see also* SAM-1003, ¶ 71. In other words, the digital data packet inserted into the vertical interval forms a digital data channel for the additional "text or graphics" received from the external sources. SAM-1003, ¶ 71. Thus, the first medium (i.e., the additional text and graphics) is received by the receiver station in a digital data channel (i.e., the digital data packet inserted into the vertical interval) from a source external to said receiver station (i.e., the head end system 11).

Campbell and Hilbert render obvious "*storing information from said first medium in a storage medium at a computer at said receiver station*," as recited in claim 1. *See* SAM-1003, ¶¶ 72-74. The addressable converter 40 is a computer under that term's broadest reasonable interpretation. In particular, Campbell describes that the addressable converter 40 receives the "data-loaded television signals" output by the head end-station (*see* SAM-1005 at 12:32-13:1; SAM-1011 8:46-52; SAM-1012, 11:1-6), processes these signals under the direction of converter control logic unit 104 that contains a microprocessor unit 410 (*see* SAM-1005 at 12:32-36, 14:29-35, 22:16-22, 23:28-32; SAM-1011 at 8:46-52, 9:62-10:2, 14:67-15:7, 15:59-65; SAM-1012 at 11:1-6, 12:28-34, 20:18-24, 22:1-5), stores data extracted from vertical interval in display memory 130 (*see* SAM-1005 at 14:1-6; SAM-1011 at 9:27-33; SAM-1012 at 12:1-5), and outputs the television program data and extracted text data to user television 36 (SAM-1005 at 12:32-

13:1, 14:7-27; SAM-1011 at 8:46-52, 9:34-61; SAM-1012 at 11:1-6, 12:6-27). SAM-1003, ¶ 72. Thus, the addressable converter 40 is a computer. SAM-1003, ¶ 72.

Campbell describes the addressable converter 40 stores the text data inserted into the vertical interval sent from the head end system (i.e. information from said first medium) in display memory 30 (i.e., a storage medium at a computer at said receiver station). *See* SAM-1005, 14:1-6; SAM-1011 at 9:27-33; SAM-1012 at 12:1-5.[2] Specifically, Campbell describes that vertical interval data extractor 114

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[2] Though Campbell does not explicitly state that the text data extracted from the vertical interval is "stored" in display memory 130, the extracted text data (referred to as "screen control data") is the only information described by Campbell as being input to or output from the display memory 30. *See* SAM-1005, FIG. 6, 14:1-6, 33:4-10; SAM-1011, FIG. 6, 9:27-33, 22:6-14; SAM-1012, FIG. 6, 12:1-5; *see also* SAM-1003, ¶ 73. Because it is called a "memory", a POSITA would have found it obvious that the text data would have been stored, at least temporarily, in the display memory 130 before being output to the text/graphics generator 118. SAM-1003, ¶ 73. Indeed, with regard to the "full-channel teletext" embodiment, Campbell describes that the display memory 130 is

"provides a serial data stream extracted from the vertical interval of the scrambled video signal to the converter control logic 104." SAM-1005, 13:20-22; SAM-1011, 9:7-10; SAM-1012, 11:21-24. "The converter control logic 104 directs screen control data [i.e., the text data extracted from the vertical interval] on data link 124 to a display memory 130 which in turn sends the formatted display characters along data link 132 to the text/graphics generator 118 for display." SAM-1005, 14:3-6; SAM-1011, 9:29-33; SAM-1012, 12:2-5; *see also* SAM-1003, ¶ 74.

Campbell and Hilbert render obvious "*determining content, through use of processor instructions resident on said computer at said receiver station, of each medium received after said first medium in said plurality of signals, wherein determining content of each medium comprises*," as recited in claim 1. *See* SAM-1003, ¶¶ 75-81. In particular, the addressable converter 40 "compare[s] program codes sent from the head end station identifying each television program to user codes sent from the head end station identifying the access parameters of each subscriber." SAM-1005, 17:33-18:4 (emphasis added); SAM-1011, 11:66-12:8; SAM-1012, 14:22-15:4. By comparing these codes, the addressable converter

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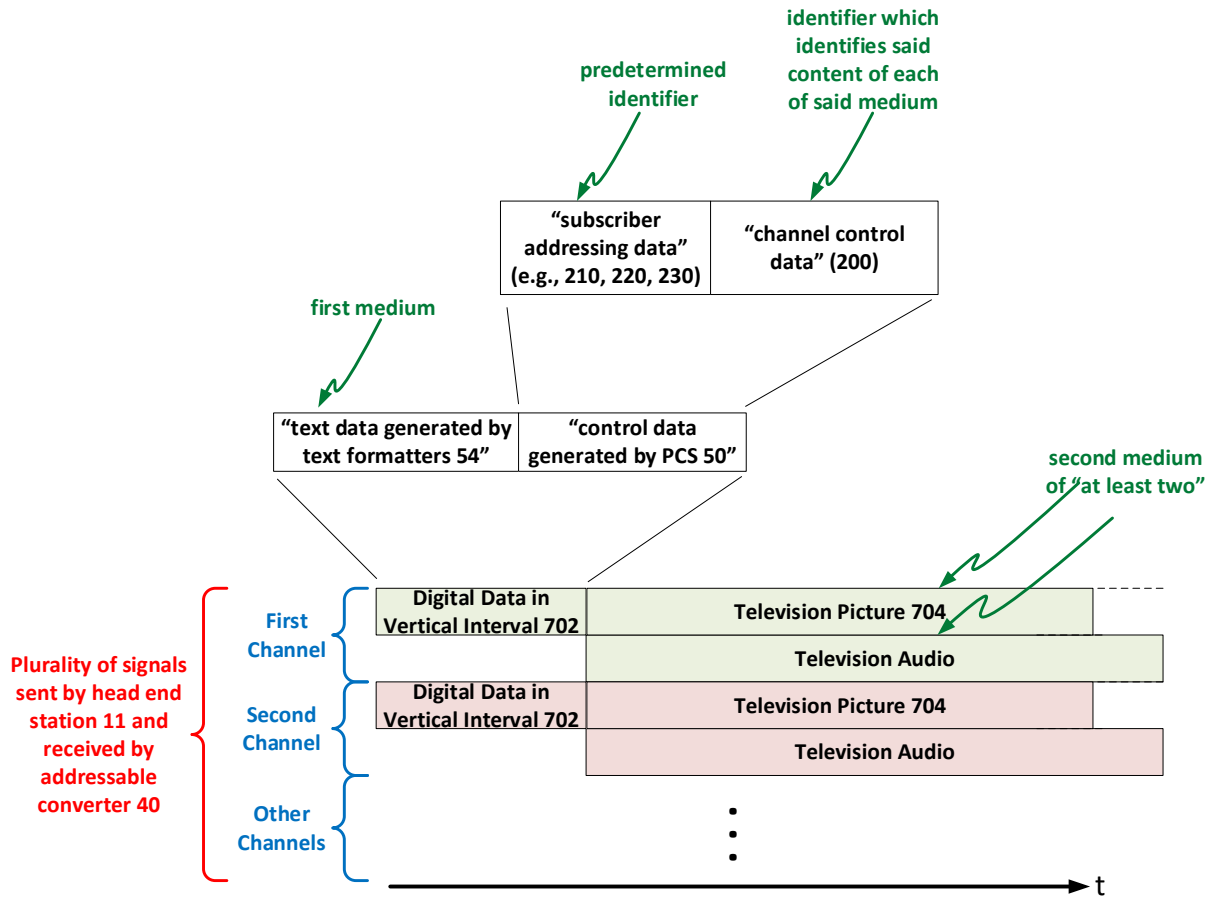
"filled" with the text data that is then formatted by text/graphics generator 118. *See* SAM-1005, 33:4-10; SAM-1011, 22:6-14.

determines content of the cable television program (i.e., the second medium of the two mediums that comprise the received at least two media) in order to evaluate eligibility.

The following diagram illustrates the control data in the combined plurality of signals transmitted from head end station 11 to the receiver stations. SAM-1003, ¶ 76.

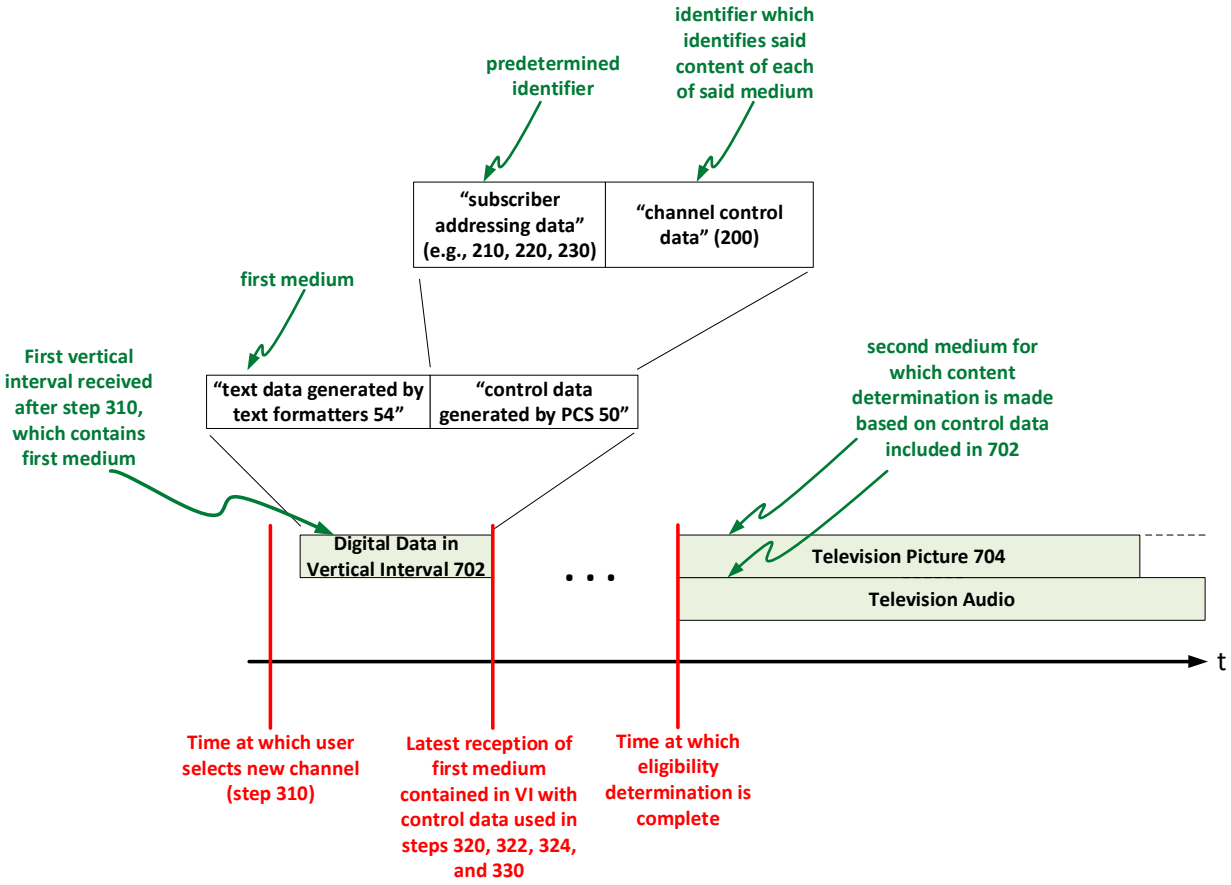


One portion of the comparisons performed by the converter control logic 104 includes a determination "as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the

channel number selected" (step 330 of FIG. 12). SAM-1005, 23:23-26; SAM-1011, 15:54-57; SAM-1012, FIG. 12, 20:18-22:18. "This is done by comparing the eligibility code threshold 238 of eligibility word 230 to the eligibility code 206 of channel control word 200." SAM-1005, 23:26-28; SAM-1011, 15:57-59; SAM-1012, FIG. 12, 20:18-22:18. Campbell describes that "the eligibility code 206 defines a rating which may be assigned to many of the television programs for subject matter which may not be suitable for viewing by all parties at the user station." SAM-1005, 19:27-29 (emphasis added); SAM-1011, 13:15-18; SAM-1012, 17:13-15. In other words, the eligibility code 206 identifies the rating of the content of the television program and is used by the converter control logic 104 to determine whether the content of the television program is suitable for the user. SAM-1003, ¶ 78. Thus, step 330 represents at least one determination of content of the second medium made as part of the comparisons performed by converter control logic 104. SAM-1003, ¶ 78.

Notably, Campbell describes that the steps performed immediately after a user selects a new program channel (step 310) are to blank the television display (step 312) and mute the audio (step 314). *See* SAM-1005, 22:16-29; SAM-1011, 14:67-15:15; SAM-1012, 20:18-31. To this end, the converter control logic 104 disables the video descrambler 116 and audio level/mute control unit 120 until the eligibility determinations are completed, causing the converter 40 to effectively

ignore any signals comprising the television program (i.e., the second medium) until step 332 of the process shown in FIG. 12. *See* SAM-1005, 23:28-32; SAM-1011, 15:59-65; SAM-1012, 22:1-5; *see also* SAM-1003, ¶ 79. Accordingly, the above-described content determination based on the control data comparisons is performed with regard to the second medium received after the vertical interval that contains both a first medium and the control data. SAM-1003, ¶ 79. This timing is illustrated in the following signal diagram. SAM-1003, ¶ 79.



Furthermore, the comparisons described with regard to FIG. 12 are performed by the microprocessor unit 410 of converter control logic 104. *See*

SAM-1005, 14:30-31, 22:30-34; SAM-1011, 9:63-64, 15:16-21; SAM-1012, 12:29-30, 21:1-5; *see also* SAM-1003, ¶ 80. Campbell describes that the "[m]icroprocessor 410 is preferably a single microprocessor chip containing a random access memory, a read-only memory and timer." SAM-1005, 14:31-33; SAM-1011, 9:63-64; SAM-1012, 12:29-30. "Suitable chips for microprocessor 410 and timer decoder unit 414 are chip numbers 8048 and 8041 respectively, both manufactured by Intel Corporation." SAM-1005, 15:20-23; SAM-1011, 10:29-31; SAM-1012, 13:19-22. A POSITA would have known that Intel chip number 8048 is a programmable processor that relies upon stored instructions to perform its operations. SAM-1003, ¶ 80 (citing SAM-1007, pp. 9-10, 18-20).

Accordingly, the microprocessor unit 410 of converter control logic 104 determines content, through use of processor instructions resident on said computer at said receiver station (i.e., the programmable instructions that cause the operation of microprocessor 410), of each medium received after said first medium in said plurality of signals.

Campbell and Hilbert render obvious "*processing an identifier which identifies said content of each of said medium*," as recited in claim 1. *See* SAM-1003, ¶¶ 82-84. As described with regard to the "determining content" step addressed above, by comparing control codes received in the vertical interval of the video signal, the addressable converter 40 determines content of the cable

television program (i.e., the second medium of the two mediums that comprise the received at least two media) in order to evaluate eligibility.

One portion of the comparisons performed by the converter control logic 104 includes a determination "as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected" (step 330 of FIG. 12). SAM-1005, 23:23-26; SAM-1011, 15:54-57; SAM-1012, FIG. 12, 20:18-22:18. "This is done by comparing the eligibility code threshold 238 of eligibility word 230 to the eligibility code 206 of channel control word 200." SAM-1005, 23:26-28; SAM-1011, 15:54-57; SAM-1012, FIG. 12, 20:18-22:18. A comparison that includes channel control word 200 first requires processing the channel control word 200 (e.g., extraction of the channel control word 200 from the vertical interval and parsing the codes of the channel control word 200). SAM-1003, ¶ 83.

Campbell describes that "the eligibility code 206 defines a rating which may be assigned to many of the television programs for subject matter which may not be suitable for viewing by all parties at the user station." SAM-1005, 19:27-29 (emphasis added); SAM-1011, 13:15-18; SAM-1012, 17:13-15. In other words, the eligibility code 206 identifies the rating of the content of the television program (e.g., "mature"). SAM-1003, ¶ 84. An indication that the content is "mature" or "suitable for children" is one manner in which content is identified. SAM-1003, ¶

84. Notably, the claim does not require "unique" identification of the content. Thus, the eligibility code 206 is at least one of the codes processed by the converter control logic 104 that is an "*identifier which identifies said content of each of said medium*," as recited in claim 1.

Campbell and Hilbert render obvious "*comparing said processed identifier to a predetermined identifier, wherein said predetermined identifier is determined at a time prior to receiving said plurality of signals*," as recited in claim 1. *See* SAM-1003, ¶¶ 85-87. As described with regard to the "processing an identifier" step addressed above, one portion of the comparisons performed by the converter control logic 104 includes a determination "as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected" (step 330 of FIG. 12). SAM-1005, 23:23-26; SAM-1011, 15:54-57; SAM-1012, FIG. 12, 20:18-22:18. "This is done by comparing the eligibility code threshold 238 of eligibility word 230 to the eligibility code 206 of channel control word 200." SAM-1005, 23:26-28; SAM-1011, 15:57-59; SAM-1012, FIG. 12, 20:18-22:18. As described above, the eligibility code 206 is the processed identifier which identifies said content of each of said medium.

The eligibility threshold code 238 of eligibility word 230 with which eligibility code 206 is compared is a predetermined identifier determined at a time

prior to receiving said plurality of signals. Specifically, "[t]he eligibility threshold code 238 is set by the authorized party [and] identifies certain eligibility codes 206 transmitted as part of channel control word 200 for certain television programs which require limited access because of the subject matter." SAM-1005, 21:12-15 (emphasis added); SAM-1011, 14:17-22; SAM-1012, 19:8-11. Thus, the eligibility threshold code 238 is an identifier. SAM-1003, ¶ 86.

Moreover, Campbell describes that eligibility word 230 (of which eligibility threshold code 238 is a part) is one "subscriber addressing word." SAM-1005, 21:5-6; SAM-1011, 14:9-10; SAM-1012, 19:1-2. These subscriber addressing words are "normally originated by the subscriber at the time he begins the service and may be periodically altered by the system operator at the request of the subscriber desires." SAM-1005, 19:35-20:5 (emphasis added); SAM-1011, 13:25-33; SAM-1012, 17:21-27. Thus, the eligibility threshold code 238 is a predetermined identifier that is determined at a time prior to receiving said plurality of signals. SAM-1003, ¶ 87.

Campbell and Hilbert render obvious "*coordinating, through use of processor instructions resident on said computer at said receiver station, a presentation using said information with a presentation of a medium comprising an identifier that matches said predetermined identifier based on said step of determining content*," as recited in claim 1. *See* SAM-1003, ¶¶ 88-91. As

explained above in Section VI.A.1, *supra*, a POSITA considering the teachings of Campbell and Hilbert would have been motivated to modify Campbell's head end station 11 to insert auxiliary data such as the "subtitles for deaf persons" taught by Hilbert into the text data portion of the vertical interval of the conventional video signal (i.e., replacing the "text data generated by text formatters 54", without affecting the "control data generated by PCS 50"), and to modify the text/graphics generator 118 to superimpose the auxiliary information onto the associated television video output to the user TV 36. SAM-1003, ¶ 88.

In this combination, the text/graphics generator 118 coordinates "*a presentation using said information*" (i.e., subtitles based on the text inserted in the vertical interval) with "*a presentation of a medium comprising an identifier that matches said predetermined identifier*" (i.e., the television program), as recited in claim 1, by superimposing the subtitles over the television program. SAM-1003, ¶ 89. This coordination of presentations is based on the step of determining content, because, according to the process illustrated in FIG. 12, the superimposition would only be able to take place after the comparisons of control data that determine the eligibility of the user to view the television program and control enablement of the video descrambler 116 and audio level/mute control unit 120. *See* SAM-1005, 23:28-32; SAM-1011, 15:59-65; SAM-1012, 22:1-5.

Moreover, the coordination is performed through use of processor instructions resident on said computer at said receiver station. As noted above, the converter control logic 104 controls the enabling step 332 that results in the superimposition of the subtitles over the television program. *See* SAM-1005, 24:6-9; SAM-1011, 16:11-14; SAM-1012, 22:15-18. "The central control logic 104 is carried out by a microprocessor unit 410," which, as previously established, is a programmable processor that relies upon stored instructions to perform its operations. *See* SAM-1005, 14:30-31, 15:20-23; SAM-1011, 9:63-64, 10:29-31; SAM-1012, 12:29-30, 13:19-22; *see also* SAM-1003, ¶ 90.

Accordingly, through its enablement of the text/graphics generator 118, the converter control logic 104 coordinates, through use of processor instructions resident on said computer at said receiver station, a presentation using said information with a presentation of a medium comprising an identifier that matches said predetermined identifier based on said step of determining content, as recited in claim 1.

Campbell and Hilbert render obvious "*outputting and displaying said multimedia presentation to a user at said receiver station based on said step of coordinating such that said presentation using said information has a predetermined relationship to said content of said medium comprising an identifier that matches said predetermined identifier*," as recited in claim 1. *See* SAM-1003,

¶¶ 92-93. As described above with regard to the "coordinating" step, the text/graphics generator 118 coordinates a presentation using said information (i.e., subtitles based on the text inserted in the vertical interval) with a presentation of a medium comprising an identifier that matches said predetermined identifier (i.e., the television program) by superimposing the subtitles over the television program. SAM-1003, ¶ 92.

Campbell describes that "output of generator 118 is connected to a channel 3 or 4 modulator 134 which in turn is connected to a subscriber's television set." SAM-1005, 14:11-13; SAM-1011, 9:39-42; SAM-1012, 12:10-12. Accordingly, the channel 3 or 4 modulator 134 outputs the multimedia presentation coordinated by the text/graphics generator 118 to the user television 36, which displays the multimedia presentation. SAM-1003, ¶ 92.

A POSITA would have found it obvious that said presentation using said information (i.e., the subtitles based on the text inserted in the vertical interval) has a predetermined relationship to said content of said medium comprising an identifier that matches said predetermined identifier (i.e., the television program) in the output and displayed multimedia presentation. *See* SAM-1003, ¶ 93. For example, subtitles were known to have a temporal relationship to their associated television program, because the subtitles are a visual representation of the audio signal and need to be displayed synchronously with the associated portions of the

audio signal in order to adequately relate to the video portion of the television program to which the audio signal is synchronized. SAM-1003, ¶ 93. Moreover, subtitles were known to have a spatial relationship to their associated television program, because the subtitles were displayed at a position (e.g., the bottom) on the television screen to minimize the impact of the resulting occlusion of the underlying video portion of the television program SAM-1003, ¶ 93.

Campbell and Hilbert render obvious that "*said content of said medium comprising an identifier that matches said predetermined identifier explains a significance of said presentation using said information*," as recited in claim 1. *See* SAM-1003, ¶ 94. It would have been obvious to a POSITA that the television program (i.e., the content of said medium comprising an identifier that matches said predetermined identifier) explains the significance of subtitles superimposed thereon (i.e., the presentation using said information). SAM-1003, ¶ 94. For example, in the case that the television program is a narrated nature program, the video of the nature program visually explains the significance of the written narration included in the subtitles. SAM-1003, ¶ 94.

3. Claim 2

Campbell and Hilbert render obvious that "*each of said plurality of signals is received from an external transmitter station*," as recited in claim 2. *See* SAM-1003, ¶ 95. In particular, Campbell describes that the addressable converters 40

receive the "combined cable television and data signal" from a remote head end system 11. SAM-1005, 6:10-29, 12:32-13:1; SAM-1011, 4:24-48, 8:46-52; SAM-1012, 5:2-21, 11:1-6. The remote head end system 11 is an external transmitter station. SAM-1003, ¶ 95. Campbell describes that "[t]he head end unit then transmits the combined cable television and data signal to remote subscribers." SAM-1005, 6:26-27; SAM-1011, 4:43-45; SAM-1012, 5:18-19.

4. Claim 3

Campbell and Hilbert render obvious that "*said external transmitter station is an intermediate transmitter station*," as recited in claim 3. *See* SAM-1003, ¶ 96. In particular, Campbell describes that head end system 11 is an intermediate transmitter station. "A head end station 11 includes a central data system 12 utilizing a control computer which gathers data from a wide variety of sources and formats the data for transmission on video frequency channels." SAM-1005, 6:11-14 (emphasis added), 7:26-28; SAM-1011, 4:26-30, 5:16-19; SAM-1012, 5:3-6, 6:11-13. Thus, the head end station 11 is an intermediary between the "wide variety of sources" and the subscriber's addressable converters 40. SAM-1003, ¶ 96.

5. Claim 4

Campbell and Hilbert render obvious that "*said content of said medium comprising an identifier that matches said predetermined identifier explains said*

significance in audio," as recited in claim 4. *See* SAM-1003, ¶ 97. As explained in Section VI.A.2, *supra*, with regard to the "explains a significance" limitation of claim 1, it would have been obvious to a POSITA that the audio portion of the television program (i.e., the content of said medium comprising an identifier that matches said predetermined identifier) explains the significance of subtitles superimposed thereon (i.e., the presentation using said information). SAM-1003, ¶ 97. For example, in a case where the subtitles are a foreign language translation of native language audio, the native language audio would explain the foreign language subtitles to a viewer. SAM-1003, ¶ 97.

6. Claim 5

Campbell and Hilbert render obvious that "*said determining step causes a tuner at said receiver station to communicate said audio to an audio output device*," as recited in claim 5. *See* SAM-1003, ¶ 98. According to the process illustrated in FIG. 12, the converter control logic 104 would only enable output of the multimedia presentation after the comparisons of control data that determine the eligibility of the user to view the television program and result in enablement of the video descrambler 116 and audio level/mute control unit 120. *See* SAM-1005, 23:28-32; SAM-1011, 15:59-65; SAM-1012, 22:1-5. As shown in the following annotated version of FIG. 6, the audio level/mute control unit 120 is

between the tuner 106 and the output of the audio by channel 3 or 4 modulator 134. SAM-1003, ¶ 98.

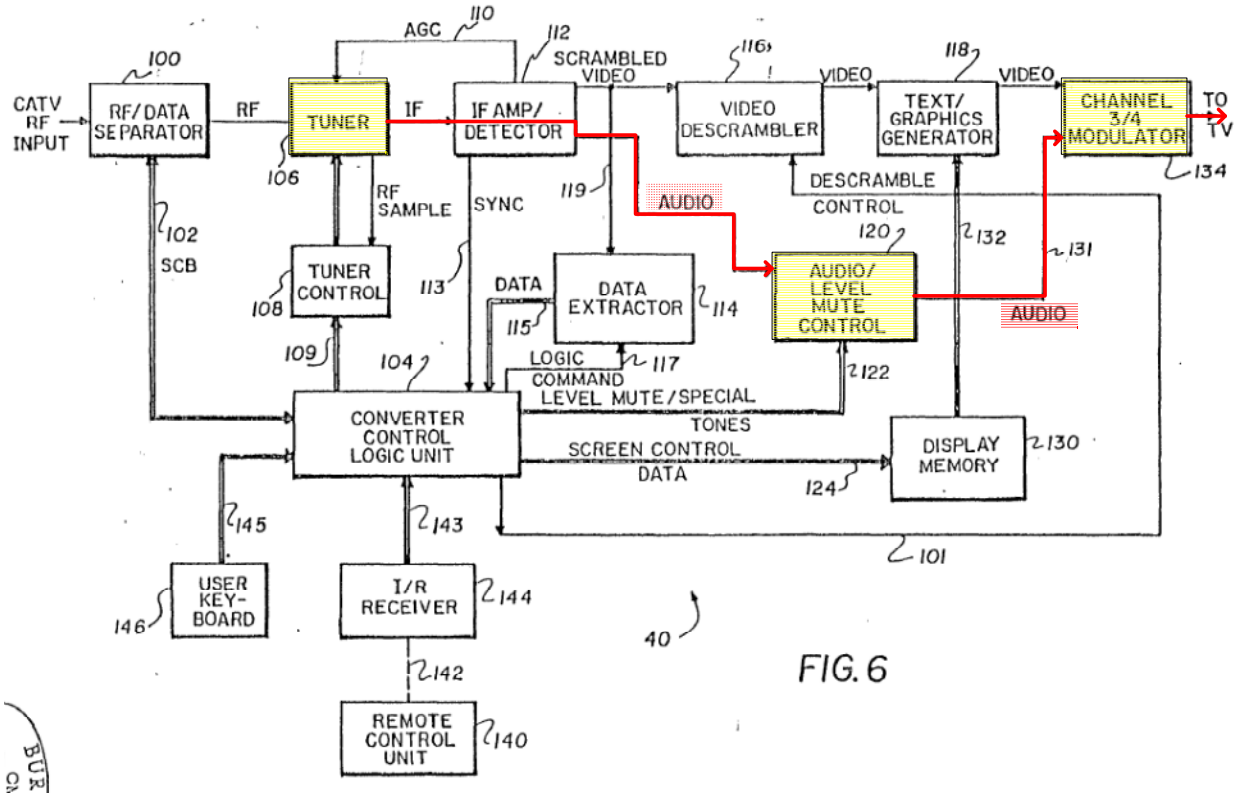


FIG. 6

7. Claim 7

Campbell and Hilbert render obvious that "*said content of said medium comprising an identifier that matches said predetermined identifier includes audio*," as recited in claim 7. *See* SAM-1003, ¶ 99. As described in Section VI.A.2, *supra*, with regard to the "comparing" and "coordinating" steps, the content of said medium comprising an identifier that matches said predetermined identifier is a television program selected by the user in step 310 and for which the converter control logic 104 determines the user is authorized in steps 320, 322,

324, and 330. *See generally* SAM-1005, 22:16-24:9, FIG. 12; SAM-1011, 14:67-16:14; SAM-1012, 20:18-22:18. Campbell describes that television program includes audio. *See* SAM-1005, 12:33-13:1, 13:34-36, 22:28-32; SAM-1011, 8:46-52, 9:23-26, 15:12-15; SAM-1012, 11:1-6, 11:34-36, 20:29-31.

8. Claim 8

Campbell and Hilbert render obvious that "*said content of said medium comprising an identifier that matches said predetermined identifier includes video*," as recited in claim 8. *See* SAM-1003, ¶ 100. As described in Section VI.A.2, *supra*, with regard to the "comparing" and "coordinating" steps, the content of said medium comprising an identifier that matches said predetermined identifier is a television program selected by the user in step 310 and for which the converter control logic 104 determines the user is authorized in steps 320, 322, 324, and 330. *See generally* SAM-1005, 22:16-24:92, FIG. 12; SAM-1011, 14:67-16:14; SAM-1012, 20:18-22:18. Campbell describes that television program includes video. *See* SAM-1005, 12:33-13:1, 13:12-15, 22:28-32; SAM-1011, 8:46-52, 9:23-26, 15:12-15; SAM-1012, 11:1-6, 11:34-36, 20:29-31.

9. Claim 9

Campbell and Hilbert render obvious that "*storing said medium comprising an identifier that matches said predetermined identifier at said receiver station*," as recited in claim 9. *See* SAM-1003, ¶¶ 101-102. As described in Section VI.A.2,

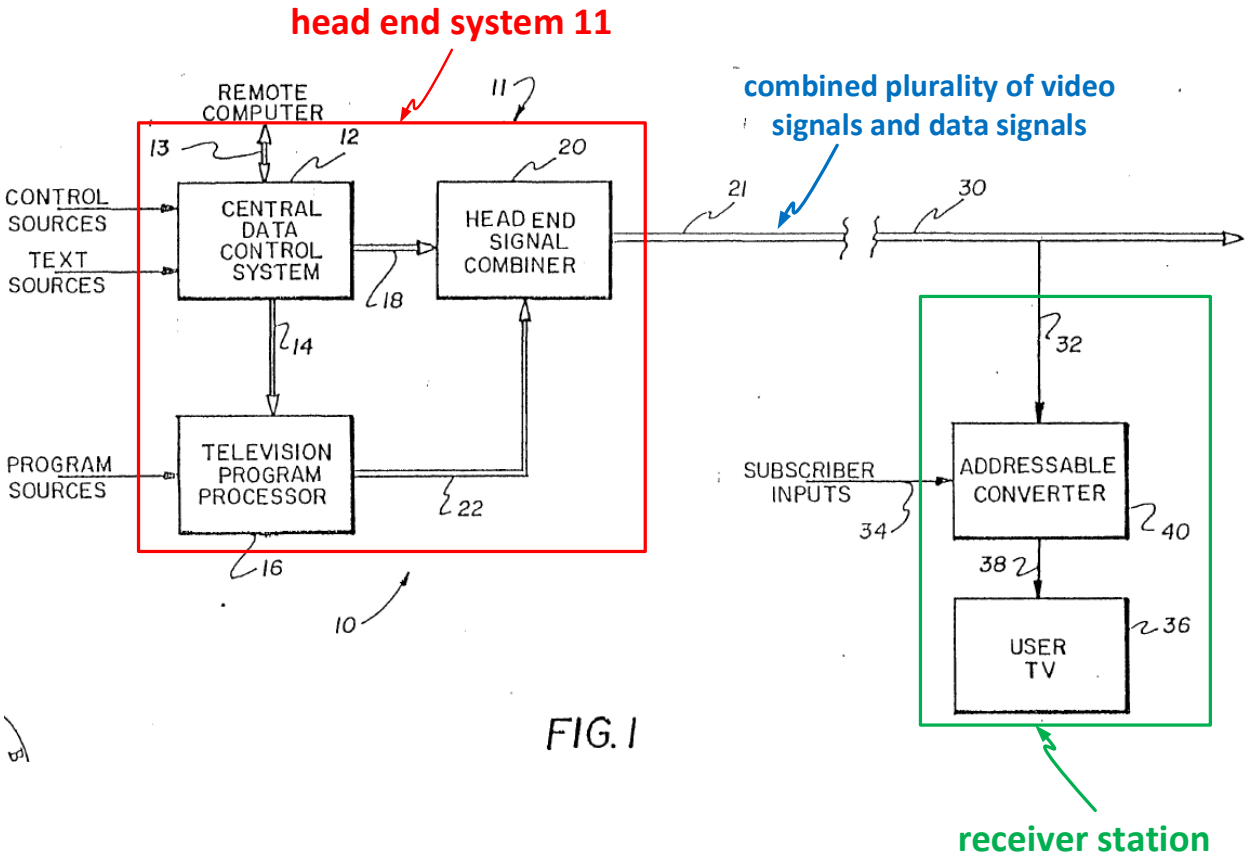
supra, with regard to the "comparing" and "coordinating" steps, the content of said medium comprising an identifier that matches said predetermined identifier is a television program selected by the user in step 310 and for which the converter control logic 104 determines the user is authorized in steps 320, 322, 324, and 330. *See generally* SAM-1005, 22:16-24:92, FIG. 12; SAM-1011, 14:67-16:14; SAM-1012, 20:18-22:18.

Campbell describes that the addressable converter (i.e., the receiver station) includes a descrambler unit 116 that stores the video of the television program (i.e., said medium comprising an identifier that matches said predetermined identifier). In particular, Campbell describes that "[a] conventional video descrambler unit 116 processes the scrambled base-band video signal from the tuner and provides a descramble base band video signal which is directed to a text/graphics generator 118." SAM-1005, 13:27-30; SAM-1011, 9:15-18; SAM-1012, 11:28-30. A POSITA would have found it obvious for the "conventional video descrambler unit" to include buffers for temporarily storing portions of the video signal as part of the video descrambler. SAM-1003, ¶ 102 (citing SAM-1014, FIG. 2, 4:5-19).

10. Claim 11

Campbell and Hilbert render obvious that "*[a] method of outputting a multimedia presentation at a receiver station adapted to process a plurality of signals, said plurality of signals including first and second media of said*

multimedia presentation, said method comprising the steps of," as recited in claim 11. *See* SAM-1003, ¶¶ 103-105. As summarized in Section VI.A.1, *supra*, Campbell describes a one-way cable television system 10 that includes a head end station 11 (highlighted in red in the following annotated reproduction of FIG. 1) and one or more receiver stations (highlighted in green below). *See* SAM-1003, ¶ 103. The head end station 11 combines a "plurality of video signals transmitted from television program systems 16" with "data [gathered] from a wide variety of sources," and transmits the combined signals to the receiver stations of "a plurality of subscribers." *See* SAM-1005, 6:10-29; SAM-1011, 4:24-48; SAM-1012, 5:2-21.



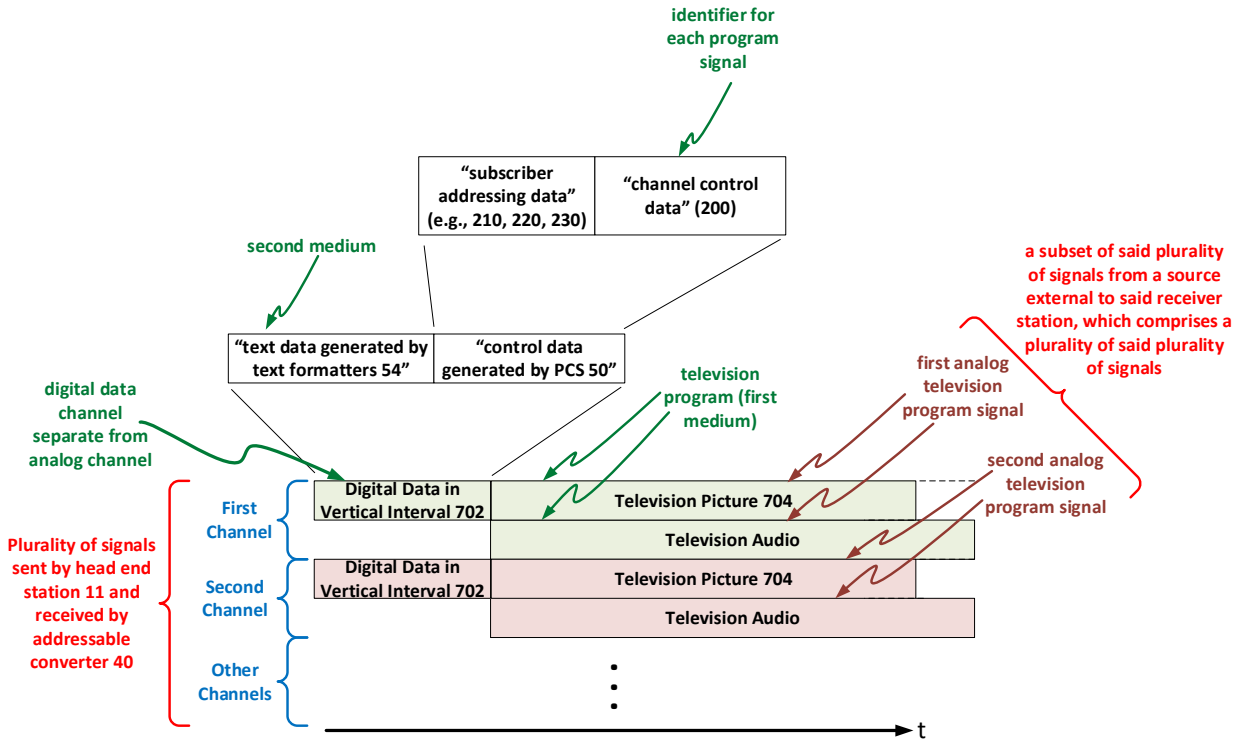
Specifically, the head end station 11 "receives data from a wide variety of sources such as weather, news, stock and others . . . ." SAM-1005, 7:16-19; SAM-1011, 5:5-9; SAM-1012, 6:1-4. The data can take the form of "text or graphics" (i.e., a "medium" under that term's broadest reasonable interpretation). SAM-1005, 7:19-21; SAM-1011, 5:9-11; SAM-1012, 6:4-6. The head end station 11 combines this additional data "with video signals in a plurality of different channel frequencies" (i.e., another "medium" under that term's broadest reasonable interpretation) by incorporating the additional data "into the vertical blanking intervals of video signals generated by a variety of television program sources." SAM-1005, 6:17-20; SAM-1011, 4:33-37; SAM-1012, 5:9-12.

As summarized in Section VI.A.1, *supra*, and explained in greater detail below, it would have been obvious that the addressable converter 40 of each receiver station extracts the "text or graphics" data that forms a second medium from the vertical interval of the video signal and superimposes that "text or graphics" data onto the television program picture (i.e., a first medium) to create a multimedia presentation that is output to and displayed on the user television 36. *See* SAM-1003, ¶ 105.

Campbell and Hilbert render obvious "*receiving a subset of said plurality of signals from a source external to said receiver station, each signal of said subset of said plurality of signals including an identifier, wherein said subset of said*

plurality of signals comprises a plurality of said plurality of signals," as recited in claim 11. *See* SAM-1003, ¶¶ 106-108.

As described in Section VI.A.1, *supra*, the portion of "the standard analog video signal" that represents the vertical interval is "replaced by a binary digital data packet" that represents the additional, supplemental data and the subscriber addressing and channel control data. SAM-1005, 10:19-26, 11:10-21; SAM-1011, 7:6-15, 7:41-45; SAM-1012, 7:21-31. "Preferably, a different type of textual data are inserted into the vertical interval of each video channel so that a complementary text channel may be selected by each remote subscriber" for each video channel. SAM-1005, 8:7-9; SAM-1011, 5:38-41; SAM-1012, 6:29-31. The following diagram illustrates the combined plurality of signals transmitted from head end station 11 to the receiver stations. SAM-1003, ¶ 106.



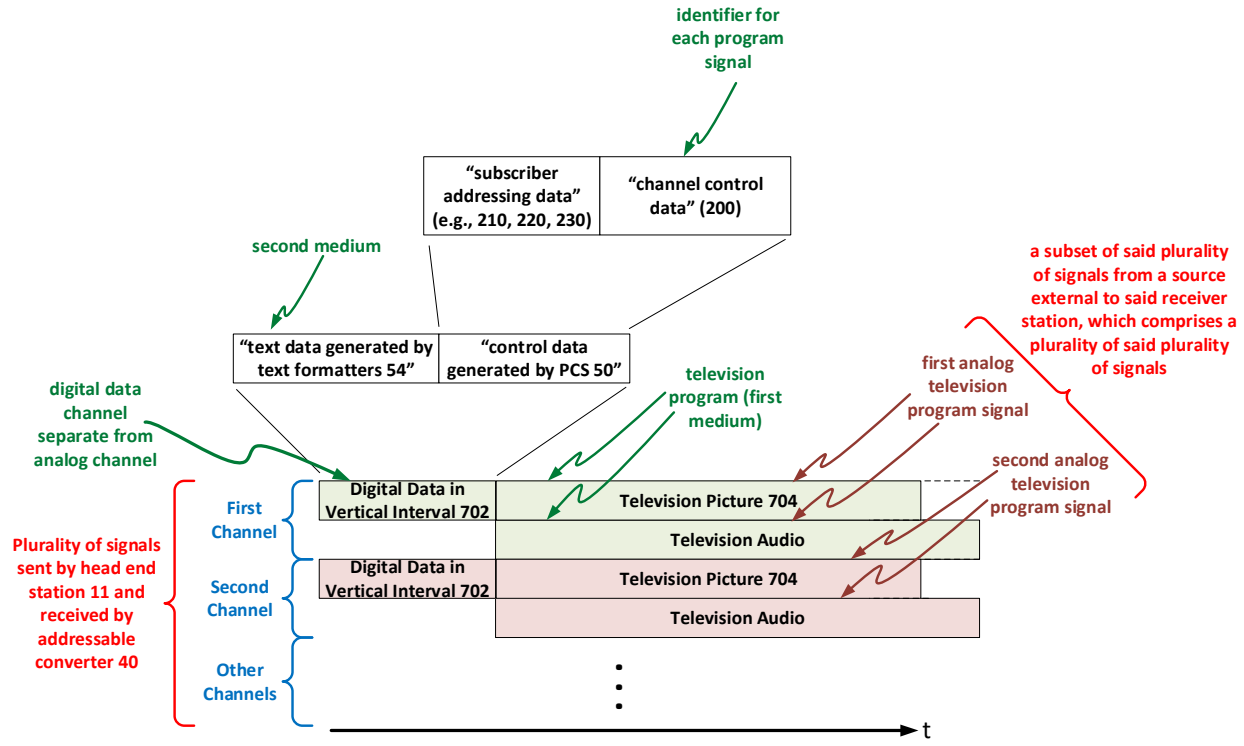
As shown in the signal diagram, each television program (i.e., first medium) of each channel is carried by an analog television program signal. *See* SAM-1005, 8:18-20 ("In order to understand how a data signal is transmitted on the vertical interval of a television program signal, the vertical interval of a conventional television signal will be described" (emphasis added)), 10:23-26; SAM-1011, 5:52-55, 7:11-15; SAM-1012, 8:1-3; *see also* SAM-1003, ¶ 107. Each television program signal is associated with an identifier (i.e., channel control word 200) that is inserted into the vertical interval. *See* SAM-1005, 11:9-23, 19:6-36; SAM-1011, 7:40-57, 12:58-68; SAM-1012, 7:20-33, 16:20-28; *see also* SAM-1003, ¶ 107.

Thus, the receiver station receives a subset of said plurality of signals from a source external to said receiver station (i.e., the first and second program signals

are a subset of all program signals on all channels), each signal of said subset of said plurality of signals including an identifier (i.e., channel control word 200), wherein said subset of said plurality of signals comprises a plurality of said plurality of signals (i.e., the subset includes both first and second program signals). *See* SAM-1003, ¶ 108.

Campbell and Hilbert render obvious "*receiving said second medium in a digital data channel from a source external to said receiver station*," as recited in claim 11. *See* SAM-1003, ¶ 109. As described in Section VI.A.2, *supra*, in order to create the combined plurality of signals, Campbell describes that the head end system 11 replaces the "standard analog video signal" corresponding to the vertical interval with "a binary digital data packet" that represents the additional "text or graphics" received from the external sources. *See* SAM-1005, 7:16-21, 8:5-17, 10:23-26, 11:9-23, 12:9-18; SAM-1011, 5:5-15, 5:36-51, 7:11-15, 7:40-57, 8:18-29; SAM-1012, 6:1-10, 6:27-39, 7:20-33, 10:9-18; *see also* SAM-1003, ¶ 109. In other words, the digital data packet inserted into the vertical interval forms a digital data channel for the additional "text or graphics" received from the external sources. SAM-1003, ¶ 109. Thus, the second medium (i.e., the additional text and graphics) is received by the receiver station in a digital data channel (i.e., the digital data packet inserted into the vertical interval) from a source external to said receiver station (i.e., the head end system 11).

Campbell and Hilbert render obvious that "*said second medium is not included in said subset of said plurality of signals*," as recited in claim 11. *See* SAM-1003, ¶ 110. As described above with regard to the "receiving" limitation, Campbell describes that the head end system 11 replaces the "standard analog video signal" corresponding to the vertical interval with "a binary digital data packet" that represents the additional "text or graphics" received from the external sources. *See* SAM-1005, 7:16-21, 8:5-17, 10:23-26, 11:9-23, 12:9-18; SAM-1011, 5:5-15, 5:36-51, 7:11-15, 7:40-57, 8:18-29; SAM-1012, 6:1-10, 6:27-39, 7:20-33, 10:9-18; *see also* SAM-1003, ¶ 110. As shown in the following signal diagram, the second medium is discrete within the signals received by the receiver station, because it can be separated by frequency from the audio portion of the television program signal and separated temporally from the video portion of the television program signal. SAM-1003, ¶ 110. Thus, the additional "text or graphics" that comprise the second medium are not included in said subset of said plurality of signals.



Campbell and Hilbert render obvious "*controlling a microcomputer at said receiver station, through execution of processor instructions to process each identifier of each signal of said subset of said plurality of signals*," as recited in claim 11. *See* SAM-1003, ¶¶ 111-113.

As described in Section VI.A.2, *supra*, each time a user selects a different channel, the microprocessor unit 410 of central control logic 104 executes a set of programmable processor instructions to implement the operation in the flow diagram shown in FIG. 12. *See* SAM-1005, 14:29-31, 22:16-21; SAM-1011, 9:62-10:2, 14:67-15:7; SAM-1012, 12:28-34, 20:18-24; *see also* SAM-1003, ¶ 111. As described in Section VI.A.2, *supra*, part of these operations of FIG. 12 includes the

central control logic 104 comparing control codes received in the vertical interval. *See* SAM-1005, 17:33-18:4; SAM-1011, 11:66-12:8; SAM-1012, 14:22-15:4.

One portion of the comparisons performed by the converter control logic 104 includes a determination "as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected" (step 330 of FIG. 12). SAM-1005, 23:23-26; SAM-1011, 15:54-57; SAM-1012, FIG. 12, 20:18-22:18. "This is done by comparing the eligibility code threshold 238 of eligibility word 230 to the eligibility code 206 of channel control word 200." SAM-1005, 23:26-28; SAM-1011, 15:57-59; SAM-1012, FIG. 12, 20:18-22:18. A comparison that includes channel control word 200 first requires processing the channel control word 200 (e.g., extraction of the channel control word 200 from the vertical interval and parsing the codes of the channel control word 200). SAM-1003, ¶ 112.

Thus, in the case where a user sequentially selects the first channel and the second channel, microprocessor unit 410 of central control logic 104 is controlled by programmable instructions to process each identifier (i.e., channel control word 200) of each signal of said subset of said plurality of signals. SAM-1003, ¶ 113. The microprocessor unit 410 of central control logic 104 is a microcomputer. *See* SAM-1007, pp. 1, 9-10.

Campbell and Hilbert render obvious "*controlling a microcomputer at said receiver station, through execution of processor instructions to . . . compare each processed identifier to a predetermined identifier*, *wherein said predetermined identifier is determined at a time prior to receiving said plurality of signals and identifies content of said first medium*" as recited in claim 11. *See* SAM-1003, ¶¶ 114-116.

As described in Section VI.A.2, *supra*, each time a user selects a different channel, the microprocessor unit 410 of central control logic 104 executes a set of programmable processor instructions to implement the operation in the flow diagram shown in FIG. 12. *See* SAM-1005, 14:29-31, 22:16-21; SAM-1011, 9:62-10:2, 14:67-15:7; SAM-1012, 12:28-34, 20:18-24; *see also* SAM-1003, ¶ 114. As described in Section VI.A.2, *supra*, part of these operations of FIG. 12 includes the central control logic 104 comparing control codes received in the vertical interval. *See* SAM-1005, 17:33-18:4; SAM-1011, 11:66-12:8; SAM-1012, 14:22-15:4.

One portion of the comparisons performed by the converter control logic 104 includes a determination "as to whether the eligibility code threshold for the user station is exceeded by the eligibility code of the program currently on the channel number selected" (step 330 of FIG. 12). SAM-1005, 23:23-26; SAM-1011, 15:54-57; SAM-1012, FIG. 12, 20:18-22:18. "This is done by comparing the eligibility code threshold 238 of eligibility word 230 to the eligibility code 206

of channel control word 200." SAM-1005, 23:26-28; SAM-1011, 15:57-59; SAM-1012, FIG. 12, 20:18-22:18.

As described in Section VI.A.2, *supra*, with regard to the "comparing" step, the eligibility threshold code 238 is an identifier. *See* SAM-1005, 21:12-15; SAM-1011, 14:17-22; SAM-1012, 19:8-11; *see also* SAM-1003, ¶ 115. Specifically, "[t]he eligibility threshold code 238 is set by the authorized party [and] identifies certain eligibility codes 206 transmitted as part of channel control word 200 for certain television programs which require limited access because of the subject matter." SAM-1005, 21:12-15 (emphasis added); SAM-1011, 14:17-22; SAM-1012, 19:8-11. In other words, the eligibility threshold code 238 identifies the content of the first medium that a user is eligible to view. SAM-1003, ¶ 115. For example, eligibility threshold code 238 could indicate that a user is eligible to view "mature" content, which indicates that any given television program a user selects may be identified as "mature" content. SAM-1003, ¶ 115. Moreover, as described in Section VI.A.2, *supra*, the eligibility threshold code 238 is determined at a time prior to receiving said plurality of signals. *See* SAM-1005, 19:35-20:5, 21:5-6; SAM-1011, 13:25-33, 14:9-10; SAM-1012, 17:21-27, 19:1-2; *see also* SAM-1003, ¶ 115.

Thus, in the case where a user sequentially selects the first channel and the second channel, microprocessor unit 410 of central control logic 104 is controlled

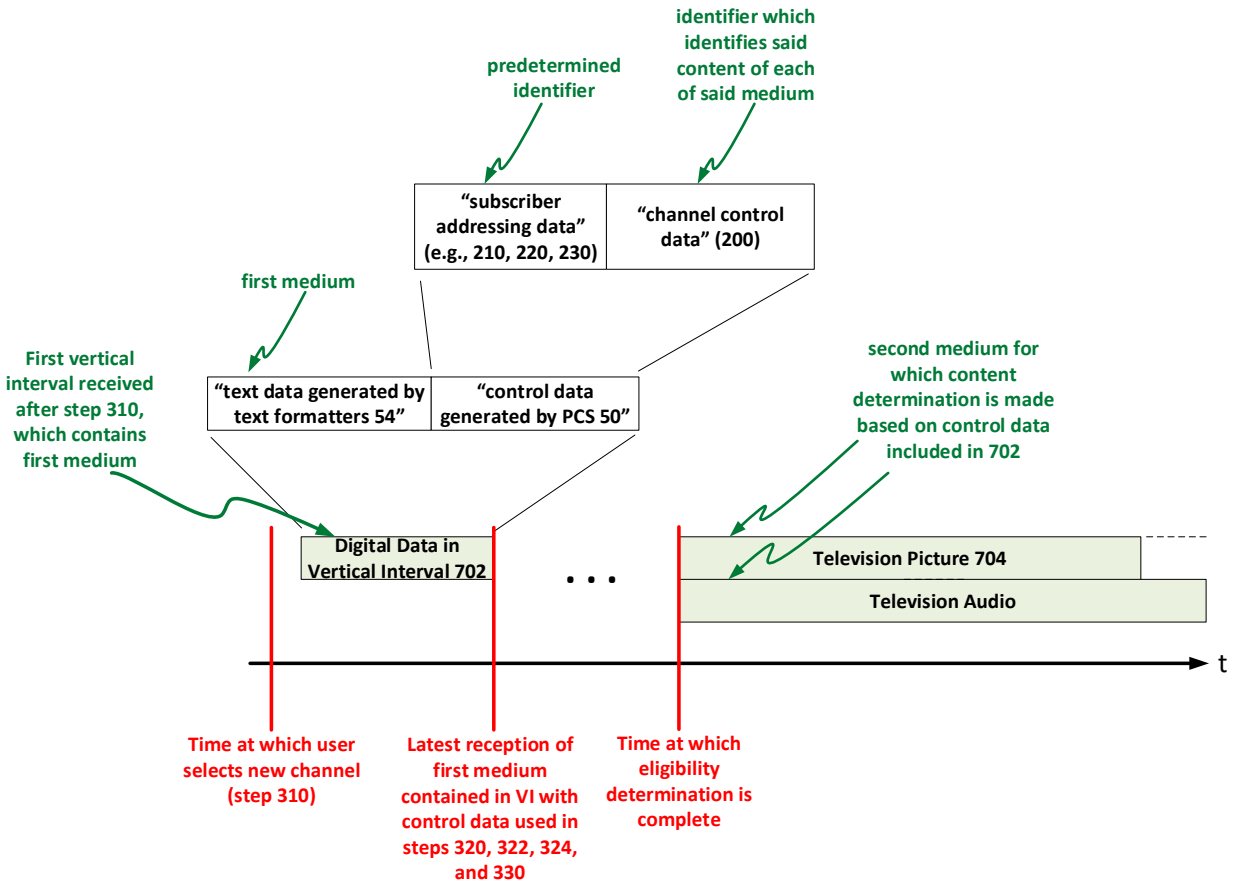
by programmable instructions to compare each processed identifier (eligibility code 206 of channel control word 200) to a predetermined identifier (eligibility code threshold 238 of eligibility word 230). *See* SAM-1003, ¶ 116.

Campbell and Hilbert render obvious "*controlling a microcomputer at said receiver station, through execution of processor instructions to . . . process only a signal of said subset of said plurality of signals that includes an identifier that matches said predetermined identifier to provide said first medium of said multimedia presentation*," as recited in claim 11. *See* SAM-1003, ¶¶ 117-119.

As described in Section VI.A.2, *supra*, each time a user selects a different channel, the microprocessor unit 410 of central control logic 104 executes a set of programmable processor instructions to implement the operation in the flow diagram shown in FIG. 12. *See* SAM-1005, 14:29-31, 22:16-21; SAM-1011, 9:62-10:2, 14:67-15:7; SAM-1012, 12:28-34, 20:18-24; *see also* SAM-1003, ¶ 117. As further described in Section VI.A.2, *supra*, the central control logic 104 only processes a program signal after a positive comparison has been determined between the eligibility code 206 of channel control word 200 and the eligibility code threshold 238 of eligibility word 230. *See* SAM-1005, 23:21-32; SAM-1011, 15:51-65; SAM-1012, FIG. 12, 20:18-22:18; *see also* SAM-1003, ¶ 117.

In particular, Campbell describes that the steps performed immediately after a user selects a new program channel (step 310) are to blank the television display

(step 312) and mute the audio (step 314). *See* SAM-1005, 22:16-29; SAM-1011, 14:67-15:15; SAM-1012, 20:18-31. To this end, the converter control logic 104 disables the video descrambler 116 and audio level/mute control unit 120 until the eligibility determinations are completed, causing the converter 40 to effectively ignore any signals comprising the television program (i.e., the second medium) until step 332 of the process shown in FIG. 12. *See* SAM-1005, 23:28-32; SAM-1011, 15:59-65; SAM-1012, 22:1-5; *see also* SAM-1003, ¶ 118. This timing is illustrated in the following signal diagram. SAM-1003, ¶ 118.



Thus, microprocessor unit 410 of central control logic 104 is controlled by programmable instructions to process only a signal of said subset of said plurality of signals that includes an identifier that matches said predetermined identifier to provide said first medium of said multimedia presentation. *See* SAM-1003, ¶ 119.

Campbell and Hilbert render obvious "*controlling a microcomputer at said receiver station, through execution of processor instructions to . . . identify content of said second medium*," as recited in claim 11. *See* SAM-1003, ¶ 120.

As described in Section VI.A.2, *supra*, each time a user selects a different channel, the microprocessor unit 410 of central control logic 104 executes a set of programmable processor instructions to implement the operation in the flow diagram shown in FIG. 12. *See* SAM-1005, 14:29-31, 22:16-21; SAM-1011, 9:62-10:2, 14:67-15:7; SAM-1012, 12:28-34, 20:18-24; *see also* SAM-1003, ¶ 120.

Campbell describes that the text data transmitted from text formatters 54 to converter 40 may be arranged in the form of a text transmission word 250. *See* SAM-1005, 22:3-15; SAM-1011, 14:51-66; SAM-1012, 20:5-17. "Text transmission word 250 preferably includes a text identification code 252 indicating that the following data is to be treated as text." SAM-1005, 22:5-7; SAM-1011, 14:54-56; SAM-1012, 20:7-9. A POSITA would have found it obvious that the microprocessor unit 410 of central control logic 104 would execute programmable instructions to detect the text identification code 252 within the data extracted from

the vertical interval by vertical interval data extractor 114 in order to identify the additional text and graphics (i.e., the second medium) within the "serial data stream output by the vertical interval data extractor 114. SAM-1003, ¶ 120.

Campbell and Hilbert render obvious "*controlling a microcomputer at said receiver station, through execution of processor instructions to . . . generate information based on said second medium based on identifying said content of said second medium, and*," as recited in claim 11. *See* SAM-1003, ¶¶ 121-122.

As explained above in Section VI.A.1, *supra*, a POSITA considering the teachings of Campbell and Hilbert would have been motivated to modify Campbell's head end station 11 to insert auxiliary data such as the "subtitles for deaf persons" taught by Hilbert into the vertical interval of the conventional video signal, and to modify the text/graphics generator 118 to superimpose the auxiliary information onto the associated television video output to the user TV 36. SAM-1003, ¶ 121. In this combination, it would have been obvious that the central control logic 104 would be programmed to control the display memory 30 and text/graphics generator 118 to generate the subtitles (i.e., information based on said second medium).

Moreover, as described above with regard to the "process only" limitation, the converter control logic 104 disables the video descrambler 116 and audio level/mute control unit 120 until the eligibility determinations are completed,

causing the converter 40 to effectively ignore any signals comprising the television program (i.e., the second medium) until step 332 of the process shown in FIG. 12. *See* SAM-1005, 23:28-32; SAM-1011, 15:59-65; SAM-1012, 22:1-5; *see also* SAM-1003, ¶ 122. Based on these teachings, it would have been obvious to a POSITA to control the display memory 30 and text/graphics generator 118 to generate the subtitles as a result of successful comparison of the control signals (and thus identification of the content of the first and second mediums) is complete. Accordingly, the generation of the information is based on identifying said content of said second medium.

Campbell and Hilbert render obvious "*controlling a microcomputer at said receiver station, through execution of processor instructions to . . . coordinate presentation of said first medium and said information based on said second medium; and*," as recited in claim 11. *See* SAM-1003, ¶¶ 123-124.

As explained above in Section VI.A.1, *supra*, a POSITA considering the teachings of Campbell and Hilbert would have been motivated to modify Campbell's head end station 11 to insert auxiliary data such as the "subtitles for deaf persons" taught by Hilbert into the vertical interval of the conventional video signal, and to modify the text/graphics generator 118 to superimpose the auxiliary information onto the associated television video output to the user TV 36. SAM-1003, ¶ 123.

In this combination, the text/graphics generator 118 coordinates a presentation of said first medium (i.e., the television program) and said information based on said second medium (i.e., subtitles based on the text inserted in the vertical interval) SAM-1003, ¶ 123.

Moreover, the converter control logic 104 controls the enabling step 332 that results in the superimposition of the subtitles over the television program. *See* SAM-1005, 24:6-9; SAM-1011, 16:11-14; SAM-1012, 22:15-18. "The central control logic 104 is carried out by a microprocessor unit 410," which, as previously established, is a programmable processor that relies upon stored instructions to perform its operations. *See* SAM-1005, 14:30-31, 15:20-23; SAM-1011, 9:63-64, 10:29-31; SAM-1012, 12:29-30, 13:19-22; *see also* SAM-1003, ¶ 124.

Accordingly, through its enablement of the text/graphics generator 118, the microprocessor unit 410 of converter control logic 104 coordinate presentation of said first medium and said information based on said second medium, as recited in claim 1.

Campbell and Hilbert render obvious "*outputting and displaying said multimedia presentation to a user at said receiver station based on said step of controlling such that content of said first medium has a predetermined relationship to said information based on said second medium, said content of said first medium explains a significance of said information based on said second medium*,"

as recited in claim 11. *See* SAM-1003, ¶ 125. This is effectively the same step as the "outputting and displaying" step recited in claim 1, except the first medium and the second medium are reversed. Accordingly, this limitation is rendered obvious for the same reasons as explained with regard to the "outputting and displaying" step recited in claim 1. *See* Section VI.A.2, *supra*.

11. Claim 30

Claim 30 is simply a restatement of the method of claim 1 in apparatus form. Accordingly, the limitations of claim 30 are rendered obvious for at least the same reasons as discussed above with regard to claim 1.

Campbell and Hilbert render obvious "*[a] multimedia presentation apparatus*," as recited in claim 30. *See* SAM-1003, ¶ 127. In particular, the receiver station that includes the addressable converter 40 and user television 36 is a multimedia presentation apparatus. SAM-1003, ¶ 127.

Campbell and Hilbert render obvious "*at least one receiver that receives a plurality of signals from a source external to said multimedia presentation apparatus, said plurality of signals including at least two media which include a first medium received in a digital data channel*," as recited in claim 30. *See* SAM-1003, ¶ 128. As described in Section VI.A.2, *supra*, with regard to the "receiving" step, the addressable converter 40 "receives a plurality of signals from a source external to said multimedia presentation apparatus, said plurality of signals

including at least two media which include a first medium received in a digital data channel." Accordingly, the addressable converter 40 (and, more particularly, the RF/data separator 100 at which the "RF data-loaded television signals" are input to the addressable converter on line 21) renders obvious the "receiver" recited in claim 30. *See* SAM-1005, 12:32-13:9; SAM-1011, 8:46-62; SAM-1012, 11:1-14; *see also* SAM-1003, ¶ 128.

Campbell and Hilbert render obvious "*a microcomputer that stores information from said first medium in a storage medium at said receiver station, determines content of each received medium received after said first medium in said plurality of signals and coordinates a presentation using said information with a presentation of a second medium based on said microcomputer determining content of said second medium by processing an identifier which identifies said content of each of said medium received after said first medium and comparing said processed identifier to a predetermined identifier, wherein said predetermined identifier is determined at a time prior to receiving said plurality of signals and said second medium includes an identifier that matches said predetermined identifier*, " as recited in claim 30. *See* SAM-1003, ¶ 129. As described in Section VI.A.2, *supra*, the microprocessor unit 410 of converter control logic 104 performs the "determining" and "coordinating" steps. Accordingly, for at least the reasons described above with regard to the "determining" and "coordinating" steps of

claim 1, the microprocessor unit 410 of converter control logic 104 renders obvious the "microcomputer" recited in claim 30.

Campbell and Hilbert render obvious "*at least one output device operatively connected to said at least one receiver and said microcomputer that outputs and displays a multimedia presentation to a user at said multimedia presentation apparatus based on said coordinating such that said presentation using said information has a predetermined relationship to said content of said second medium and said content of said second medium explains a significance of said presentation using said information*," as recited in claim 30. *See* SAM-1003, ¶ 130. As described in Section VI.A.2, *supra*, with regard to the "outputting and displaying" step of claim 1, the channel 3 or 4 modulator 134 outputs the multimedia presentation coordinated by the text/graphics generator 118 to the user television 36, which displays the multimedia presentation. SAM-1003, ¶ 130. Accordingly, for at least the reasons described above with regard to the "outputting and displaying" step of claim 1, the channel 3 or 4 modulator 134 and the user television 36 render obvious the "at least one output device" recited in claim 30.

12. Claim 31

Campbell and Hilbert render obvious that "*said microcomputer determines said content of said second medium by processing an identifier transmitted from said source external to said multimedia presentation apparatus, said multimedia*

presentation apparatus further comprising a detector operatively connected to said microcomputer that detects said identifier," as recited in claim 31. *See* SAM-1003, ¶¶ 131-132. As described in Section VI.A.2, *supra*, with regard to the "determining content" and "processing an identifier" steps, the eligibility code 206 is at least one of the codes processed by the converter control logic 104 that is an identifier which identifies said content of each of said medium. Campbell describes that the eligibility code 206 is part of the plurality of signals received from the head end station 11. *See* SAM-1005, 7:33-8:4, 19:6-34; SAM-1011, 5:25-35, 12:58-13:24; SAM-1012, 6:18-26, 16:20-17:20; *see also* SAM-1003, ¶ 131. Accordingly, the microprocessor unit 410 of central control logic 104 determines said content of said second medium by processing an identifier (i.e., eligibility code 206) transmitted from said source external to said multimedia presentation apparatus. *See* Section VI.A.2, *supra*.

Moreover, Campbell describes that the addressable converter 40 includes a vertical interval data extractor 114 that "provides a serial data stream extracted from the vertical interval of the scrambled video signal to the converter control logic 104." SAM-1005, 13:20-22; SAM-1011, 9:7-10; SAM-1012, 11:21-24. In other words, the vertical interval data extractor 114 extracts both the text data generated by text formatters 54 and the control data generated by PCS 50, which includes the subscriber addressing data and the channel control data, from the

received signals. SAM-1003, ¶ 132. Thus, the vertical interval data extractor 114 is a detector operatively connected to said microcomputer that detects said identifier.

13. Claim 32

Campbell and Hilbert render obvious that "*said multimedia presentation apparatus receives a multichannel signal, said multimedia presentation apparatus further comprising a converter operatively connected to said at least one receiver that communicates a portion of said multichannel signal*," as recited in claim 32. *See* SAM-1003, ¶¶ 133-135. In particular, Campbell describes that, within head end station 11, "the signal is sent to master head end unit 20 where it is combined with signals from other channel processors to provide the total multiple channel CATV signal for output on line 21 to the cable plant [30]." SAM-1005, 8:12-15; SAM-1011, 5:45-48; SAM-1012, 6:34-37. According to Campbell:

> FIGURE 1 shows a single cable plant 30 servicing a plurality of cable television subscribers by way of a one-way data link 32. The transmitted signals are received by an addressable converter 40 on a one-way data bus 32. Converter 40 then processes the data on line 38 as determined by subscriber input 34 for desired viewing on one or more television sets 36.

SAM-1005, 6:30-35; SAM-1011, 4:49-55; SAM-1012, 5:22-27.

As described with regard to FIG. 12, the converter 40 is configured to allow a user to select a single channel from amongst the multiple channel CATV signal.

See SAM-1005, 22:16-21, 23:28-32; SAM-1011, 14:67-15:7, 15:59-65; SAM-1012, 20:18-24, 22:1-5. As explained in Section VI.A.1, *supra*, in the proposed combination of Campbell and Hilbert, the text/graphics generator 118 of converter 40 is modified to output the multimedia presentation (i.e., combination of the television program and the subtitles) associated with the channel selected by the user. *See* SAM-1003, ¶ 135.

14. Claim 38

Claim 38 is simply a restatement of the method of claim 1 in apparatus form. Accordingly, the limitations of claim 38 are rendered obvious for at least the same reasons as discussed above with regard to claim 11.

Campbell and Hilbert render obvious "*[a] multimedia presentation apparatus*," as recited in claim 38. *See* SAM-1003, ¶ 137. In particular, the receiver station that includes the addressable converter 40 and user television 36 is a multimedia presentation apparatus.

Campbell and Hilbert render obvious that "*a receiver that receives a subset of a plurality of signals from an external source, each signal of said subset of said plurality of signals including an identifier, wherein said plurality of signals including includes a first medium and a second medium of a multimedia presentation and said subset of said plurality of signal comprises a plurality of said plurality of signals*," as recited in claim 38. *See* SAM-1003, ¶ 138. As

described in Section VI.A.10, *supra*, with regard to the "receiving" step, the addressable converter 40 "receives a subset of a plurality of signals from an external source, each signal of said subset of said plurality of signals including an identifier, wherein said plurality of signals including includes a first medium and a second medium of a multimedia presentation and said subset of said plurality of signal comprises a plurality of said plurality of signals." Accordingly, the addressable converter 40 (and, more particularly, the RF/data separator 100 at which the "RF data-loaded television signals" are input to the addressable converter on line 21) renders obvious the "receiver" recited in claim 38. *See* SAM-1005, 12:32-13:9; SAM-1011, 8:46-62; SAM-1012, 11:1-14; *see also* SAM-1003, ¶ 138.

Campbell and Hilbert render obvious that "*a microprocessor that identifies content of said first medium by processing each identifier of said subset of said plurality of signals and comparing each processed identifier to a predetermined identifier, wherein said predetermined identifier is determined at a time prior to receiving said plurality of signals and identifies content of said first medium, that processes only a signal of said subset of said plurality of signals that includes an identifier that matches said predetermined identifier, that receives said second medium in a digital data channel transmitted from a source external to said multimedia presentation apparatus, wherein said second medium is not included in*

said subset of said plurality of signals, that identifies content of said second medium, that generates information based on said second medium based on said identifying content of said second medium and that executes processor instructions, and that coordinate presentation of said first medium and said information based on said second medium such that content of said first medium has a predetermined relationship to said information based on said second medium and said content of said first medium explains a significance of said information based on said second medium" as recited in claim 38. *See* SAM-1003, ¶ 139. As described in Section VI.A.10, *supra*, the microprocessor unit 410 of converter control logic 104 "identifies content of said first medium . . .", "processes only . . .", "receives said second medium . . . ", "identifies content of said second medium . . .", "generates information . . .", and "coordinate[s] presentation . . . ," as recited in claim 11. Accordingly, for at least the reasons described above with regard to these operations recited in claim 11, the microprocessor unit 410 of converter control logic 104 renders obvious the "microprocessor" recited in claim 38.

Campbell and Hilbert render obvious that "*an output device that outputs and displays said coordinated presentation of said first medium and information from said second medium*," as recited in claim 38. *See* SAM-1003, ¶ 140. As described in Sections VI.A.1 and VI.A.10, *supra*, with regard to the "outputting and displaying" steps of claims 1 and 11, the channel 3 or 4 modulator 134 outputs the

multimedia presentation coordinated by the text/graphics generator 118 to the user television 36, which displays the multimedia presentation. SAM-1003, ¶ 140. Accordingly, for at least the reasons described above with regard to the "outputting and displaying" step of claims 1 and 11, the channel 3 or 4 modulator 134 and the user television 36 render obvious the "at least one output device" recited in claim 38.

VII. CONCLUSION

This Petition establishes that it is more likely than not that that the Challenged Claims of the ’217 Patent are not patentable pursuant to the grounds presented. Accordingly, Petitioner respectfully requests institution of an IPR for those claims of the ’217 Patent for each of the grounds presented herein.

Respectfully submitted,

Dated: November 11, 2016

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CERTIFICATION UNDER 37 CFR § 42.24

Under the provisions of 37 CFR § 42.24, the undersigned hereby certifies that the word count for the foregoing Petition for *Inter Partes* Review totals 13,943 words, which is less than the 14,000 allowed under 37 CFR § 42.24(a)(i).

Respectfully submitted,

Dated: November 18, 2016

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on November 18, 2016, a complete and entire copy of this Petition for *Inter partes* Review and all supporting exhibits were provided via Federal Express, to the Patent Owner by serving the correspondence address of record as follows:

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