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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UNIFIED PATENTS INC.,
Petitioner

v.

SYNCHVIEW TECHNOLOGIES, LLC,
Patent Owner

Case No. IPR2019-00470
Patent No. 6,788,882

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 6,788,882**

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I. INTRODUCTION

Petitioner Unified Patents Inc. (“Petitioner” or “Unified”) respectfully requests *inter partes* review (“IPR”) of Claims 1-3, 5-10, 12, 13, 16-25, 27, 28, and 31-33 (collectively, the “Challenged Claims”) of U.S. Patent No. 6,788,882 (“the ’882 Patent,” Ex. 1001).

The ’882 Patent relates to a digital video recording system that records multiple broadcast programs at the same time and, during recording, stores program time information that enables a user to “surf” channels in the past by browsing a guide with program blocks for recorded programs. *See id.* at *Abstract*; *see also id.* at 8:59-9:7; Figs. 9-10. However, channel surfing in the past using video-on-demand services, including those employing digital video recorders, and “catch-up viewing” were already known features of digital recording systems, as demonstrated by *Girard* and *Cooper*, cited herein. The Challenged Claims are obvious over the prior art cited herein and, therefore, should be found unpatentable.

II. SUMMARY OF THE PATENT

A. Description of the Alleged Invention of the ’882 Patent

The ’882 Patent is in the field of video storage and playback systems and methods, and is particularly related to systems and methods for storing (i.e., recording) a plurality of video streams on re-writable, random-access media and time- and channel-based retrieval thereof. *See ’882 Patent* (Ex. 1001) at 1:10-14. At the time of the ’882 Patent, video recording was often done on video cassette

recorders (VCRs). VCRs suffered from limitations in that they required a consumer to remember to record a program, were inherently slow due to navigating on magnetic tape, and did not allow for simultaneous recording and/or viewing of multiple programs. The '882 Patent purported to solve this problem using a digital video recorder (DVR) system and a method of operating the same. The application of hard-disk digital video recording systems for video-on-demand systems were recognized by at least the early-to-mid 1990s. *See Tjaden Decl.* (Ex. 1007) at ¶¶28-30.

The DVR system claimed by the '882 Patent purported to avoid the pitfalls of VCR storage and playback by (1) concurrently and continuously storing a plurality of channels on a mass data storage unit, and (2) providing a user with a channel viewer that retrieves a portion of one of the plurality of channels from the mass data storage unit. *See '882 Patent* (Ex. 1001) at 1:63-2:5. The '882 Patent accomplishes this by concurrently storing multiple programs and allowing a user to choose what to view temporally (i.e., based on the time a given program aired) and spatially (i.e., based on the channel on which the program aired). *Id.* at 2:6-9. In this regard, the '882 Patent acknowledges that the ability of a viewer to view past programs would be limited by the cost of equipment, which affects the storage capacity of the equipment. *Id.* at 2:11-16.

One of the purported advantages of the '882 Patent's DVR system over the prior VCR art was that by allowing the recording of multiple broadcasts at once

along with time information, a user could browse multiple channels in the past, much as though they were surfing through multiple channels in the present. *Id.* at 2:63-3:4; *see also id.* at 5:38-57. Another purported advantage was catch-up viewing. *Id.* at 3:31-38, 5:31-36; *see also File History* (Ex. 1002) at 229. With catch-up viewing, if a user wanted to view a live broadcast that had already begun, the user could watch the show from its beginning at a faster pace via the DVR system, such as by skipping commercials, to “catch up” with the live broadcast. *Id.* The prior art VCR systems did not have these features due to the “inherently sequential nature of the recording medium.” *Id.* at 5:58-63.

B. Summary of the Prosecution History of the '882 Patent

The '882 Patent issued from an application filed on April 17, 1998.¹ *See* '882 Patent (Ex. 1001). The original proposed claims recited limitations such as a digital video recorder concurrently storing video streams in a mass data storage unit and a channel viewer that retrieves a portion of one of a plurality of channels. *File History*, (Ex. 1002) at 60-68. The examiner repeatedly rejected these claims as obvious, citing prior art such as U.S. Patent 5,371,551 to Logan *et al.* (Ex. 1006) and U.S. Patent 5,774,170 to Hite *et al.* (Ex. 1022) (“*Hite*”), *inter alia*. In an initial office action, all claims were rejected except for dependent claims 5 and 24, which recited storing a

¹ For the purposes of this Petition, Petitioner assumes this to be the earliest priority date of the '882 Patent.

plurality of channels together with time information to allow the plurality of channels to be synchronized with respect to one another. *See File History* (Ex. 1002) at 122, 56, 61. The applicant then rewrote claims 5 and 24 in independent form and proposed new amendments to other claims. The independent claims that ultimately issued recited limitations very similar to claims 5 and 24; therefore, this summary focuses on the history related to those claims. *Id.* at 138-39.

Although the new independent claims 5 and 24 recited the same limitation related to storing a plurality of channels together with time information, the examiner rejected these claims in a new round of rejections, finding that *Hite* (Ex. 1022) taught the synchronization of multiple channels and recording them concurrently in memory. *See File History* (Ex. 1002) at 176. *Hite* was cited for its disclosure of using a time stamp to time-synchronize television broadcast commercials. *Id.* at 176-77. The applicant appealed the examiner's rejection, primarily arguing that (1) although *Hite* taught simultaneous broadcasting of commercials, it did not teach the concurrent storage of a plurality of channels, and (2) that *Hite* failed to teach *how* channels were synchronized with respect to one another. *Id.* at 235-36.

The examiner then applied a new reference, U.S. Patent 5,283,659 to Akiyama *et al.* ("*Akiyama*," Ex. 1023), for the concept of concurrently and continuously receiving and storing a plurality of channels together with time information to allow the channels to be synchronized with respect to one another. *See id.* at 261-62. The

applicant responded that *Akiyama* did not disclose concurrently and continuously receiving and storing channels, but instead taught multiple sub-signals of a single, “high-level” channel. *Id.* at 275. The examiner responded that “channel” should be defined as a complete, independently reproducible video signal, and rejected the applicant’s arguments regarding *Akiyama*. *Id.* at 282.

In response to the examiner’s continued rejection over *Akiyama*, the applicant amended claims 5 and 24 to recite “television broadcast programs,” and “television broadcasts” to traverse the examiner’s rejection. *Id.* at 309. The applicant did not address *Akiyama*’s teachings related to synchronizing different video signals. The examiner then indicated that pending claims 5 and 24 were allowable. *Id.* at 331. The applicant cancelled the other independent claims that stood rejected over prior art and amended the remaining claims to depend from claims 5 and 24. *Id.* at 342-45. Therefore, the applicant’s primary purported distinction over the prior art related to concurrently and continuously recording television broadcast programs, together with time information to allow synchronization of the recorded broadcast programs.

C. Level of Ordinary Skill in the Art

A person having ordinary skill in the art (“PHOSITA”) would have been a person having, as of April 17, 1998: (1) at least an undergraduate degree in computer science, computer engineering, electrical engineering or a similar technical field; and (2) two or more years of experience in analysis, design, or development related

to video storage and playback systems, particularly in the context of television broadcast systems. *See Tjaden Decl.* (Ex. 1003) at ¶¶25-27.

III. REQUIREMENTS FOR *INTER PARTES* REVIEW UNDER 37 C.F.R. § 42.104

A. Grounds for Standing

Petitioner certifies that the '882 Patent is available for IPR and that Petitioner is not barred or estopped from requesting IPR challenging the Challenged Claims. 37 C.F.R. § 42.104(a).

B. Identification of Challenged Claims and Relief Requested

In view of the prior art, evidence, and analysis discussed in this Petition, IPR should be instituted and Claims 1-3, 5-10, 12, 13, 16-25, 27, 28, 31-33 of the '882 Patent should be found unpatentable and cancelled based on the following proposed grounds of unpatentability. 37 C.F.R. § 42.104(b)(2).

Proposed Grounds of Unpatentability	Exhibit No.
Claims 1-3, 5-9, 12, 13, 16, 19-24, 27, 28, and 31 are obvious over U.S. Patent 5,751,282 to Girard <i>et al.</i> (“ <i>Girard</i> ”) and U.S. Patent 6,901,209 to Cooper <i>et al.</i> (“ <i>Cooper</i> ”)	1003 1004
Claims 10, 12, 25, and 27 are obvious over <i>Girard</i> , <i>Cooper</i> , and U.S. Patent 6,226,447 to <i>Sasaki et al.</i> (“ <i>Sasaki</i> ”)	1003 1004 1005
Claims 17-18 and 32-33 are obvious over <i>Girard</i> , <i>Cooper</i> , and U.S. Patent 5,371,551 to Logan <i>et al.</i> (“ <i>Logan</i> ”)	1003 1004 1006

In view of the prior art, evidence, and arguments herein, the Challenged Claims are unpatentable and should be cancelled. 37 C.F.R. § 42.104(b)(1). Based

on the prior art references identified below in light of the knowledge of a PHOSITA, IPR of these claims should be granted. 37 C.F.R. § 42.104(b)(2). This review is governed by pre-AIA 35 U.S.C. §§ 102 and 103.

Section IV, *infra*, identifies where each element of the Challenged Claims is found in the prior art. 37 C.F.R. § 42.104(b)(4). The exhibit numbers of the evidence relied upon to support the challenges are provided above and the relevance of the evidence to the challenges raised is provided in Section IV. 37 C.F.R. § 42.104(b)(5). **Exhibits 1001-1025** are also attached.

C. Claim Construction

In IPR proceedings, claims are interpreted under the same standard applied by Article III courts (i.e. the *Phillips* standard) in post-grant proceedings. *See* 37 C.F.R. § 42.100(b); *see also* 83 Fed. Reg. 197 (Oct. 11, 2018); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (*en banc*). Under this standard, words in a claim are given their plain meaning, which is the meaning understood by a person of ordinary skill in the art after reading the entire patent. *Phillips*, 415 F.3d 1303, 1312-13. The analysis focuses on how the patentee used the claim term in the claims, specification, and prosecution history. *Id.* Dictionaries or other extrinsic sources may assist in determining the plain and ordinary meaning but cannot override a meaning that is unambiguous from the intrinsic evidence. *Id.*

At this time, Petitioner proposes the following express construction consistent with the *Phillips* standard. Though Petitioner does not waive its right to address

additional issues of claim construction that may arise in the future, Petitioner proposes that claim terms not specifically discussed below should be given their plain meaning in light of the specification at this time.

i. “concurrently and continuously receives and digitally stores” / “concurrently and continuously digitally storing” (Claims 1, 19)

The claims of the '882 Patent require that television broadcasts be received and digitally stored “concurrently and continuously.” *See* '882 Patent (Ex. 1001) at Claims 1, 19. In the '882 Patent, “concurrently” means that multiple video streams must be recorded onto the mass storage unit simultaneously. *See id.* at 6:44-48 (“The present invention provides for all channels, or some subset thereof, to be concurrently recorded, at all times, onto a random-access medium. One way to record multiple channels concurrently is to duplicate the set-top box functionality a number of times equal to the number of channels to be recorded”); *see also id.* at 11:42-47 (concurrent storing may be achieved by recording a plurality of channels as separate files on one disk); 14:40-49 (teaching writing channels to a “combined channel file”). During prosecution, the applicant and examiner each used the term “concurrently” interchangeably with “simultaneously.” *File History* (Ex. 1002) at 237-38 (“Krause provides no teaching or suggestion of receiving and storing a plurality of channels simultaneously.”); *see also id.* at 186, 212, 236-37, 255, 281.

“Continuously” is broadly defined in the specification as “without interruption over at least a finite period of time.” The '882 Patent provides that the term

“continuously” does “not preclude interruption” in recording over the course of an entire program. ’882 Patent (Ex. 1001) at 2:17-23. For example, if a system were programmed to detect and skip recording of dead-air time or commercials in the middle of a program, this would not render the simultaneous recording non-continuous under the patentee’s explicit definition of this term. *See id.* at 2:23-27. All that is required to satisfy continuous recording of a program, therefore, is some finite, non-incidental, amount of recording of the program.

Therefore, “concurrently and continuously” should be construed, in the context of Claims 1 and 19, to mean “simultaneously digitally storing more than one television broadcast program, without interruption over at least a finite period of time.”

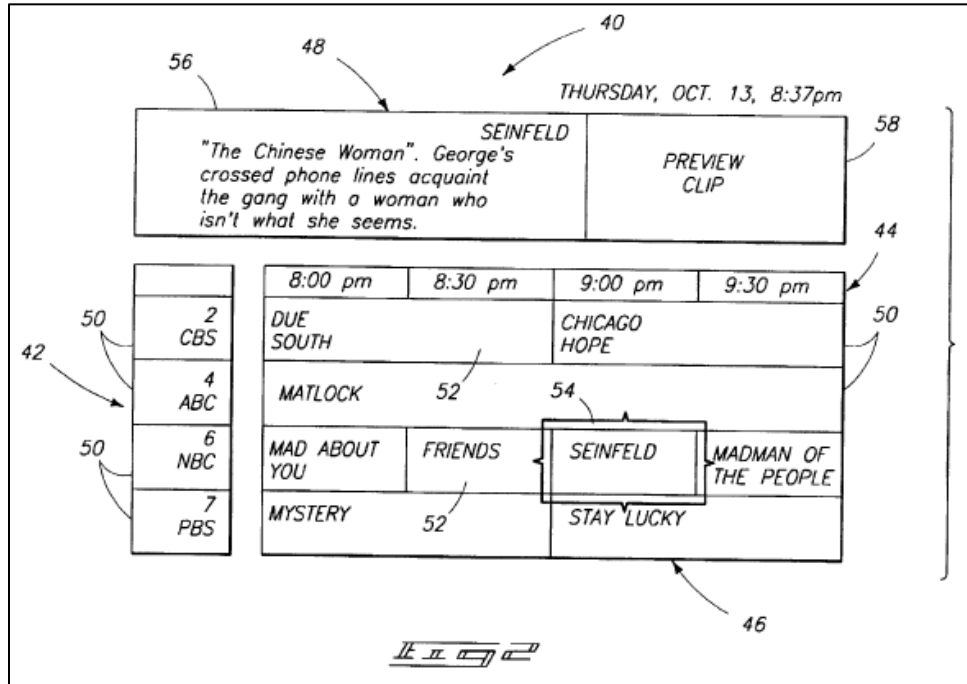
IV. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. Ground 1: Claims 1-3, 5-9, 12, 13, 16, 19-24, 27, 28, and 31 are obvious over *Girard* in view of *Cooper*

U.S. Patent 5,751,282 to Girard et al. (“*Girard*”) was filed on June 13, 1995, and, therefore, is prior art to the ’882 Patent under at least 35 U.S.C. 102(e). *See Girard* (Ex. 1003).

Girard teaches an interactive television system that simultaneously and continuously stores multiple real-time television broadcasts from multiple channels together with time information on a centralized head-end server. *See id.* at 4:34-5:6,

Fig. 1 (head end server 22). More specifically, programs themselves are stored digitally in predetermined or mapped locations on a set of hard-disk servers, collectively referred to as the “continuous media server,” a component of the head end server *Id.* at 4:56-5:12; *see also id.* at 2:18-24, Fig. 1 (continuous media server 68 as part of the head-end server 22), Fig. 3 (architecture of continuous media server 68). Meanwhile, program information and pointers to the particular disk location of programs in the continuous media server, are initially stored in an SQL database and provided to a set-top box (“STB”) running an electronic program guide (“EPG”) to retrieve data from the continuous media server. *Id.* at 2:24-35; *see also id.* at 5:33-56, 6:28-32, 6:59-67, Fig. 5 (Step 110). Using the EPG on the STB, a user may surf channels in the past, present, and future. *See id.* at 4:9-21. For example, to view a past program, a user simply moves a remote-control cursor to the left (i.e., into the past) on a particular channel (e.g., NBC) displayed on the EPG. *Id.* at 4:15-18; *see also id.* at 6:46-64; *see also id.* at 3:55-64 (explaining the use of a remote-controlled “focus frame” for navigating the EPG). The EPG also displays relevant program information of a highlighted program. One embodiment of the EPG is illustrated at Figure 2 of *Girard*:



Id. at Fig. 2; *see also id.* at 3:31-64. Upon selection of a program, the continuous media server transmits the recorded program (or, in the case of future programs, a preview of the program) to the user's STB. *See, e.g., id.* at 5:63-6:7, 6:52-64.

Girard teaches that its system allows a user to manipulate the stored digital video data in a non-linear manner, such as by fast-forwarding, pausing, rewinding, or replaying, etc. any portion of a stored program. *Id.* at 7:5-10. Further, because it is capable of simultaneously recording and displaying programs, *Girard's* system also enables "catch-up" viewing for a current program that has already begun. *See id.* at 7:11-25.

Like the '882 Patent, *Girard* relates to systems and methods for storing a plurality of video streams on re-writable, random access media and allowing the time- and channel- based retrieval thereof using an EPG; therefore, *Girard* is within

the same field of endeavor as the '882 Patent. *See Girard* (Ex. 1003) at Abstract; *see also id.* at 4:49-65 (describing the use of high-capacity storage disks for storing multiple video streams); 4:9-24 (“[T]he electronic programming guide 40 can be manipulated to display current programming line-ups, past programming line-ups, and future programming line-ups ...”); 7:57-65; Fig. 2 (showing an EPG with channel and time information for past, present, and future programs); *see also id.* at 6:34-7:56 and Figs. 6-8 (describing the selection, retrieval, and playback of present, past, and future programs). Further, *Girard* is reasonably pertinent to at least one problem with which the '882 Patent was concerned, such as overcoming lack of functionality in prior art VCR-based systems to easily switch between multiple recorded videos. *See id.* at 7:57-61 (“The interactive television system of this invention affords the convenience of an on-screen electronic programming guide and the flexibility of video on demand service. The EPG allows the viewer to intuitively scroll through past current, or future programs and select a desired show.”); 7:17-21 (“The viewer is not really rewinding the show in the sense of a VCR cassette, but instead is changing from the real-time video data stream of the current ‘Seinfeld’ program to the stored video data stream of the earlier segment of the same ‘Seinfeld’ program.”); *see also* '882 Patent (Ex. 1001) at 8:59-65 (describing “Surfing Back in Time,” and explaining how the invention enables a user to scroll to a past program at a later time); *see also id.* at Fig. 10; 1:51-60.

Further, both *Girard* and the '882 Patent describe solving the problem of simultaneously recording and watching video to enable “catch-up viewing,” i.e., starting a current program from the beginning and catching up to the real-time broadcast. *Girard* (Ex. 1003) at 7:11-25; *see also, e.g.*, '882 Patent (Ex. 1001) at 3:34-38, 5:32-37, 12:8-27, Fig. 12. *Girard*, therefore, is analogous art to the '882 Patent. *See Tjaden Decl.* (Ex. 1007) at ¶¶46-47.

U.S. Patent 6,901,209 to Cooper *et al.* (“*Cooper*”) was filed on June 8, 1995, and, therefore, is prior art to the '882 Patent at least under 35 U.S.C. § 102(e). *See Cooper* (Ex. 1004). *Cooper* relates to a local user apparatus for recording and efficiently storing and viewing multiple television programs at random and whenever desired. *See id.* at Abstract; *see also id.* at 1:58-62, Fig. 1. A data manager is able to record multiple program data streams along with program information on a local memory storage device, called the Program Data Storage, such as a hard disk or optical disk drive that has a random-access capability. *See id.* at 5:56-6:13. As the Program Data Storage reaches its capacity, previously stored programs become overwritten based on a set of priorities set by the system or user, such as a priority set by the user or based on a most/least overwrite rule. *Id.* at 6:14-61. Figure 1 illustrates one embodiment of the architecture of *Cooper*'s digital video recording system, while Figure 5 illustrates an example of a user interface for choosing what programs to record (including the selection of multiple programs aired at the same time for recording) and how long to maintain them:

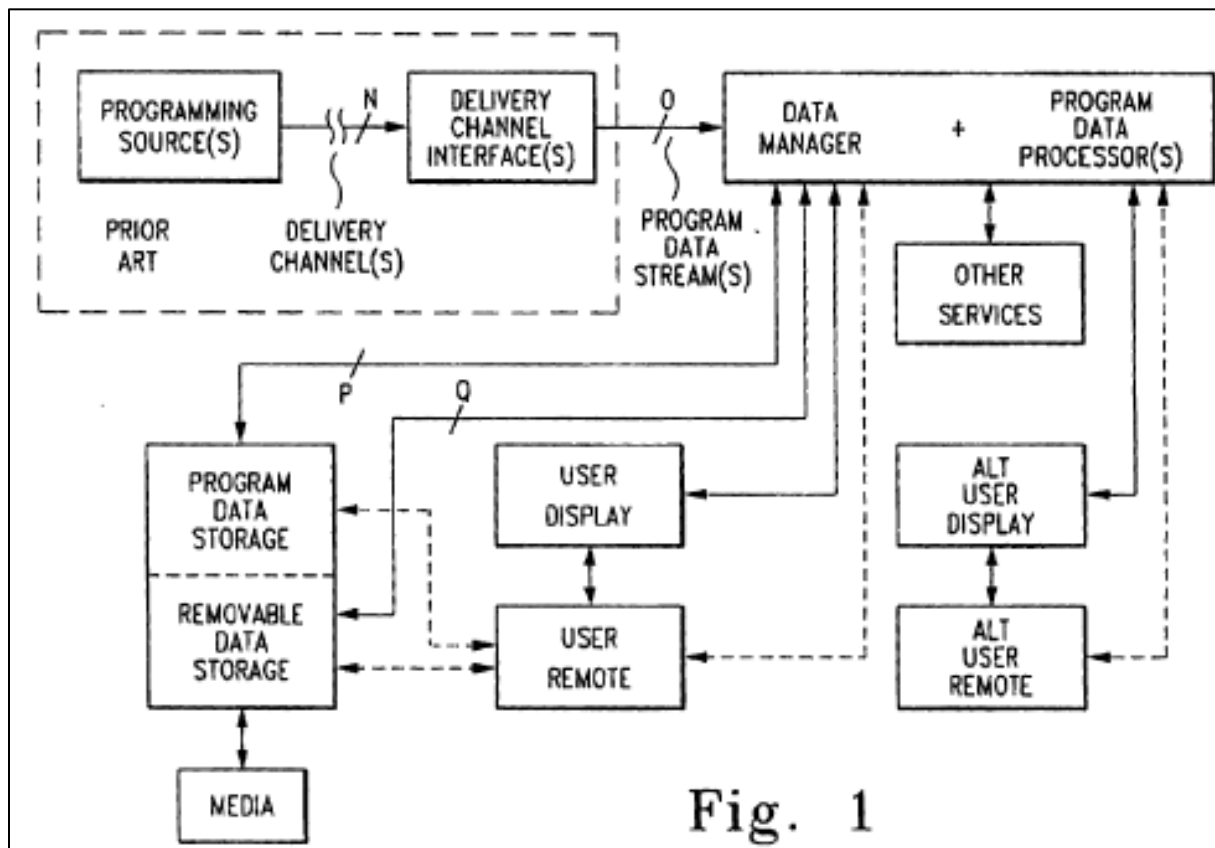


Fig. 1

PROGRAM DATA STREAM NUMBER	IDENTIFIER	PROGRAM STORAGE TIME 1	STORAGE TIME 1 PRIORITY	STORE PERIOD	MOST/LEAST RECENT OVERWRITE	PROGRAM STORAGE TIME 2	STORAGE TIME 2 PRIORITY	STORE PERIOD	MOST/LEAST RECENT OVERWRITE
1	SPORTS	6:00 PM 7:00 PM M-F	1	1 WEEK	LEAST	2:00 PM END Sa	2	1 WEEK	
2	HOBBIES								
3	NEWS	6:00 PM 6:30 PM M-F	2	2 DAY	LEAST	ALL	3		LEAST
4	MUSIC								

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z HOUR DAY WEEK MONTH M-F [EXIT]
 0 1 2 3 4 5 6 7 8 9 * # - : M T W Th F Sa Su AM PM DAILY WEEKLY S-S MOST LEAST

Fig. 5

Cooper is within the same field of endeavor as the '882 Patent because it relates to video storage and playback, including storing a plurality of video streams on re-writable, random-access media, as well as any programming guide information. *Cooper* (Ex. 1004) at Abstract; *see also id.* at 1:59-62 (“[I]t will be possible for each user to select and view one and/or multiple programs virtually at random (within the limits of storage availability) whenever he desires.”); *see also id.* at 5:33-6:13; *see also id.* at 11:37-42; *see also id.* at 37:10-21 (storing “any programming guide information” received via, e.g., a program data stream). Further, *Cooper* is reasonably pertinent to at least one problem with which the '882 Patent was concerned, such as how to enable “catch-up viewing.” *See* '882 Patent (Ex. 1001) at 12:8-25; *see also id.* at 2:2-8, 5:32-37, Fig. 12. *Cooper* accomplishes this by allowing a user to watch a current broadcast from the beginning, but at an accelerated pace to catch up with a real-time broadcast. *See Cooper* (Ex. 1004) at 11:53-12:13. *Cooper*, therefore, is analogous art to the '882 Patent. *See Tjaden Decl.* (Ex. 1007) at ¶52.

i. Claim 1

1[P] A digital video recorder (DVR) for recording a plurality of television broadcast programs, comprising:

To the extent the preamble is limiting, *Girard* teaches, or at least renders obvious, the preamble. *Girard* discloses an “interactive television system,” (i.e., a

DVR) which includes a head end server coupled to one or more remote set top boxes for recording and replaying a plurality of television broadcast programs:

With reference to FIG. 1, centralized head end server 22 provides the multiple different channels of programs to the set-top box and EPG within each home ... Head end server 22 includes two servers: a continuous media server 68 and a database server 70. Continuous media server 68 is operatively coupled to real-time encoder 62 to record and store the video data streams. Continuous media server 68 includes a program storage 72 to store the video data streams provided by encoder 62. The program storage is preferably embodied as a disk array storage subsystem as shown in FIG. 3. ... The storage disks are individually of high capacity, with example sizes of one to several Gigabytes each.

See Girard (Ex. 1003) at 4:34-62²; *see also id.* at 5:5-6 (“The video data streams are stored digitally on the storage disks in predetermined or mapped locations.”); 3:11-22 (“Head end server 22 is interconnected to the end viewers’ homes 24a-24d via a multi-tier distribution structure 30...Each distribution node 34 is connected to multiple STBs 26a-26d via conventional home entry lines ...”); Abstract. *See Tjaden Decl.* (Ex. 1007) at ¶¶42-44.

1[a] a mass data storage unit that concurrently and continuously receives and digitally stores a plurality of television broadcast programs together with time information to allow said plurality of stored television broadcast programs to be synchronized with respect to one another

(1) “Concurrently and Continuously Receives and Digitally Stores a Plurality of Television Broadcast Programs”

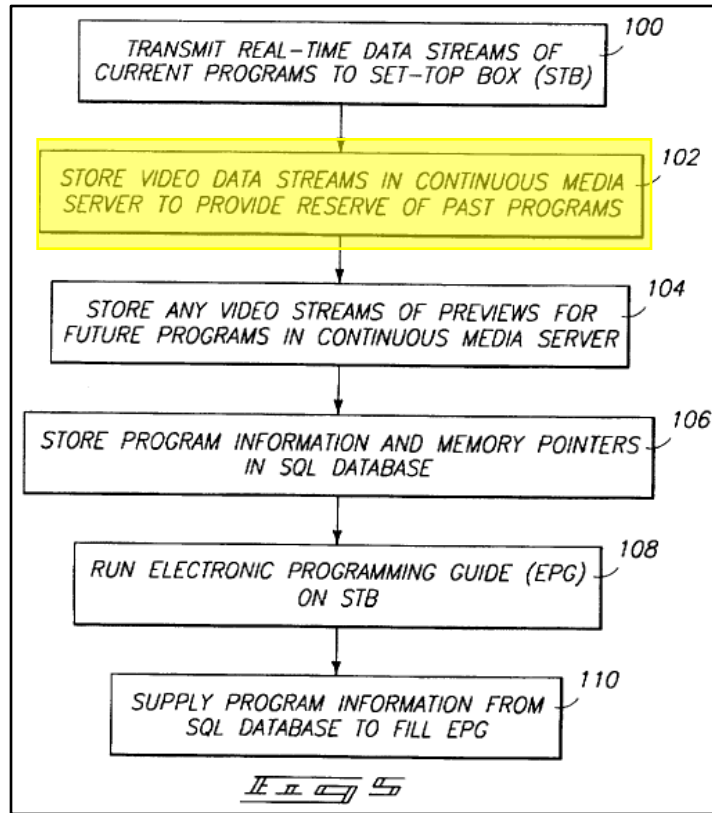
² Unless otherwise indicated, all emphasis has been added by Petitioner

Girard teaches or at least renders obvious this limitation. *Girard* discloses a head end server 22 (i.e. a mass data storage unit) that includes a continuous media server that records and digitally stores multiple “real-time video data streams” corresponding to multiple television broadcast programs occurring at the same time:

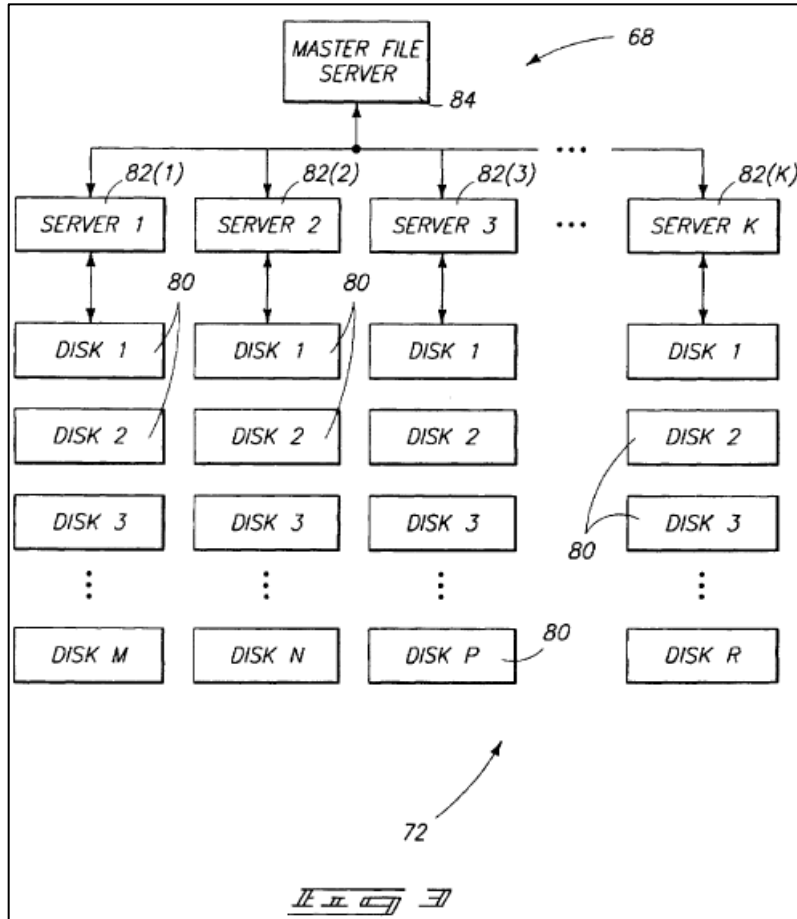
A real-time video data stream encoded by encoder 62 is amplified and transmitted from head end server 22 to set-top boxes (STB) 24a-24d (step 100). The real-time video data streams provide all of the current programs available on the cable system, as is conventionally done. At this time, the video data streams of the current programs are stored in program storage 72 of continuous media server 68 to provide a reserve of past programs (step 102).

Girard (Ex. 1003) at 6:13-20; *see also id.* at 2:18-23, 4:48-65 (a continuous media server includes multiple storage disks of high capacity “to provide a sufficient reserve of previously played programs”); *see also id.* at 5:5-6 (“The video data streams are stored digitally ...”); *see also id.* at 5:24-25, Claim 4; *see also id.* at 5:6-14 (video data streams stored redundantly in the event a disk fails).

Girard discloses a digital video recorder that “concurrently and continuously” receives and stores a plurality of television broadcasts. Specifically, *Girard* teaches that the system receives and digitally stores multiple video data streams of entire television programs aired at the same time in “real-time;” therefore it receives and stores a plurality of programs, uninterrupted for at least a finite period of time, simultaneously, as shown in Figure 5 below:



Id. at Fig. 5 (annotated). Indeed, *Girard* states that all of the steps described in Figure 5 above, such as transmitting data streams to users and storing real-time video data streams (plural) in a continuous media server to provide a reserve of past programs, “are occurring continuously and simultaneously.” *See id.* at 6:11-12. It is able to accomplish storing multiple, entire programs simultaneously using high-capacity storage disks located at dedicated servers coordinated and controlled by a master file server:



Id. at Fig. 3; see also *id.* at 4:66-5:4. See *Tjaden Decl.* (Ex. 1007) at ¶42.

(2) “Together With Time Information to Allow said Plurality of Stored Television Broadcast Programs to be Synchronized With Respect to One Another”

Girard further teaches that the programs are stored on the head end server together with their respective scheduled viewing times (i.e., time information), along with other program information, using the SQL database portion of the head end server to allow the recorded programs to be synchronized with respect to one another upon replay by a viewer via an electronic program guide (“EPG”):

The program information (e.g. program title, scheduled viewing time, closed caption. etc.) is stored the SQL database 90 (step 106). The EPG

is run on the individual STBs [set-top boxes] 26a-26d so that each viewer is presented with their own controllable, manipulable on-screen program grid (step 108). As the viewer scrolls the EPG screen backward or forward, up or down, the STB sends an SQL inquiry back to head end server 22. The SQL database 90 then supplies the program information used to fill in the panels and grid (step 110).

Id. at 6:23-32, 5:38-41; *see also id.* at Figs. 2, 4 (showing that the SQL database includes program time along with other information regarding a stored program), 7. Like with the '882 Patent, the programs are synchronized with respect to one another so that a user may “channel surf” between stored programs displayed in their respective time slots on a program guide. *See id.*; *see also id.* at 3:55-64, 6:46-7:4, Fig. 2 (describing using the EPG, which draws time information from the database of the head-end server, to scroll between different programs according to different time slots); *compare with '882 Patent* (Ex. 1001) at 2:66-3:4 (“The time information can synchronize corresponding portions of the plurality of channels that the DVR recorded concurrently. This allows a user to surf synchronized, prerecorded channels in a way that imitates the real-time channel surfing ...”).

Using Fig. 2 of *Girard* as an example, the user may surf back in time from the current time of 8:37 p.m. to choose between past television broadcast programs recorded at the same time of 8:00 p.m., such as “Matlock” on channel 4 or “Mad About You” on channel 6; the user is able to do so because the programs have been recorded along with time information so as to allow them to each be synchronized

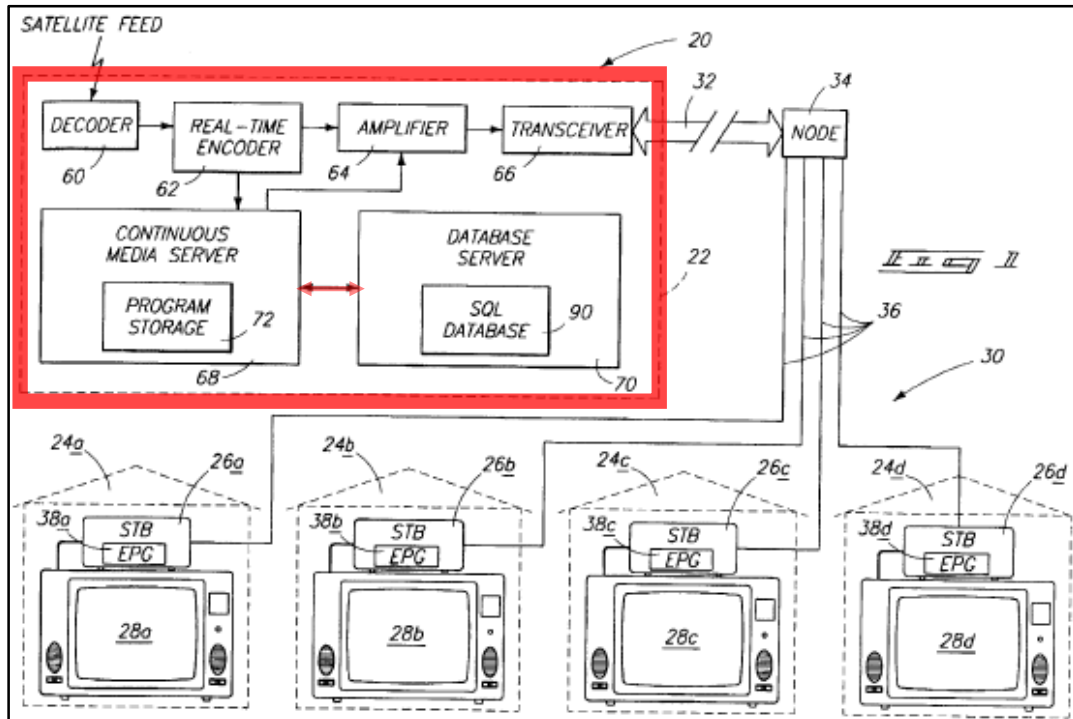
with respect to one another, e.g., at their 8:00 p.m. original broadcast time. *Girard* (Ex. 1004) at 3:55-64, 4:12-20, 6:46-7:4, Fig. 2; *see also Tjaden Decl.* (Ex. 1007) at ¶43. Further, *Girard* teaches that staggered pointers are stored to allow a video data stream for a program to be accessed at points of time in the middle of a program, in addition to the start time of the program (e.g., accessing a recorded program at its 8:02 p.m. point, as opposed to its 8:00 p.m. start time point). *Girard* (Ex. 1004) at 5:23-31; *see also Tjaden Decl.* (Ex. 1007) at ¶43.

The stored time information also allows a set-top box user to directly control a digital video stream as it is retrieved from the head end server. For example, a user can fast-forward, pause, replay, etc., any portion of a past show being retrieved. *Id.* at 7:5-10. Even when watching current programming, the viewer may rewind the stored portion of the program to its beginning start time and “catch up” to the real-time stream. *Id.* at 7:11-25. Because the head end server (i.e., mass data storage unit) stores program times in its SQL database with the programs stored in the continuous media server, and because this time information is used to synchronize programs with respect to one another on an EPG for replay by a user, *Girard* teaches storing programs with time information to allow the plurality of television broadcast programs to be synchronized with respect to one another upon replay by a user. *See Tjaden Decl.* (Ex. 1007) at ¶¶42-44.

(3) “*Mass data storage unit*”

The '882 Patent does not limit the “mass data storage unit” to any specific logical or physical structure: “Those skilled in the art will understand that the logical or physical structure of the underlying disk storage does not limit the scope of the present invention.” '882 Patent (Ex. 1001) at 4:1-9. Therefore, Claim 1 does not require that time information be stored on the same physical disk or structure as the program data to satisfy the requirement that the time information be stored “with” the broadcast programs.

In *Girard*, the SQL database and continuous media servers are logically “with” one another at the head end server; indeed, the database server communicates directly only with the continuous media server, indicating that the database server operates with the continuous media server to store time- and channel-based memory pointers to locations of programs within the continuous media server:



Girard (Ex. 1003) at Fig. 1(annotated to highlight the head end server and the interaction between the continuous media and database servers); *see also id.* at 4:48-49 (“Head end server 22 includes two servers: a continuous media server 68 and a database server 70.”); *see also id.* at 2:18-27, 5:33-36; *see also id.* at 5:47-51, 6:23-25 (step 106 in Fig. 6), 6:62-64 (step 138 in Fig. 6), and 2:25-27. Therefore, the plurality of television broadcast programs are stored at the head end server “together with” time information at the head end server and this limitation is satisfied. *See Tjaden Decl.* (Ex. 1007) at ¶¶42, 48.

However, to the extent PO argues that this limitation requires storing the plurality of programs and the time information on the same *physical* disk or device, a PHOSITA would have nonetheless found it obvious to do so based on *Girard*. *See id.* at ¶48. A PHOSITA would have also been prompted to do so by *Girard*’s express teaching of including both of these servers in the single “head end server” of *Girard*. *Id.* A PHOSITA would have had a reasonable expectation of success because running multiple server instances on the same piece of hardware was well-known at the time and conventional hardware was available for this purpose. *Id.* at ¶¶36, 48; *see also Athena Automation Ltd. v. Husky Injection Molding Systems Ltd.*, Case IPR2013-00167, No. 51 at 15 (P.T.A.B. Jul. 23, 2014) (citing *In re Lockhart* , 190 F.2d 208, 210 (C.C.P.A. 1951)) (noting the general rule that “there is no invention in making integral that which was before in separate parts”). Including the program

and time information on the same device would not have had a deleterious effect on the operation of *Girard*'s system. *See Tjaden Decl.* (Ex. 1007) at ¶48.

Girard therefore teaches or at least renders obvious a mass data storage unit (i.e., its head end server) that concurrently and continuously receives and digitally stores a plurality of television broadcast programs together with time information to allow said plurality of stored television broadcast programs to be synchronized with respect to one another upon replay by a user of a set-top box running an electronic program guide. *Tjaden Decl.* (Ex. 1007) at ¶¶42-44.

1[b] a channel viewer, coupled to said mass storage unit, that retrieves a portion of one of said plurality of stored television broadcast programs from said mass data storage unit based on a received command and presents said portion on a video display device.

Girard teaches or renders obvious this limitation, or, alternatively *Girard* in view of *Cooper* renders this limitation obvious. *Girard* teaches set-top boxes interface with the SQL database (together, the “channel viewer”) and coupled to the head end server via, for example, a high bandwidth fiber optic cable network employing conventional home entry lines, such as twisted-pair lines or coaxial cable. *Id.* at 3:11-22; *see also id.* at Abstract (“An interactive television system has a centrally located head end server coupled to service multiple, remotely located set-top boxes.”). The set-top boxes provide a viewer with an electronic program guide that, like the '882 Patent, allows a user to surf programs in the past, present, and

future both temporally (i.e., based on program time) for past, present, and future programs) and spatially (i.e. based on different channels):

[A]n interactive television system comprises a centrally located head end server coupled to service multiple, remotely located set-top boxes. Each set-top box runs an electronic programming guide (EPG) that provides an on-screen program grid that lists program titles in relation to their scheduled viewing times and channel numbers. The viewer can scroll through the program grid, backward and forward, or up and down, to review past, current, and future programs. A database, resident at the head end server, supplies the program titles and scheduled viewing times of the past, current, and future programs to the electronic programming guide as the viewer scrolls through the menu.

The head end server transmits to the EPG all real-time video data streams of the available programs. A continuous media server, resident at the head end server, stores the video data streams to maintain a reserve of previously played past programs.

Girard (Ex. 1003) at 2:5-22; *see also id.* at 5:57-62, Fig. 2.

The set-top box running an EPG also receives user commands to select and retrieve programs (or program previews, in the case of future programs) from the head end server's continuous media server based on a user command for display by the set-top box on a television:

When the viewer selects a past program, the database provides a pointer to a location in the disk array that is associated with the selected past program. The continuous media server uses the pointer to retrieve a

video data stream of the selected past program and supplies the video data stream to the set-top box.

Id. at 2:28-35; *see also id.* at 3:8-10 (“The set-top boxes receive the video signals from the head end server and control which programs are displayed on their associated televisions.”). A set-top box, together with the head-end server’s SQL database, constitutes the claimed “channel viewer” because together, they provide a user with a channel database, a displayed channel guide, and a means for interacting with the same to select programs for display, or presentation, on the television coupled to the set-top box. *See Tjaden Decl.* (Ex. 1007) at ¶¶43-44; *see also Girard* (Ex. 1003) at 3:8-10 (“The set-top boxes receive the video signals from the head end server and control which programs are displayed on their associated television.”), 3:61-64, 6:43-45, 7:2-4. This aligns with the ’882 Patent’s description of embodiments of a “channel viewer.” *See* ’882 Patent (Ex. 1001) at 3:12-13 (“In one embodiment of the present invention, the channel viewer displays a channel guide on the video display device.”), 2:1-5 (“a channel viewer, coupled to the mass data storage unit, that retrieves a portion of one of the plurality of channels from the mass data storage unit based on a received command and presents the portion on a video display device”); 3:5-7 (“In one embodiment of the present invention, the channel viewer comprises a channel guide database containing pointers to locations in the mass data storage unit.”). *Girard*, therefore, teaches this limitation, or at least renders it obvious. *See Tjaden Decl.* (Ex. 1007) at ¶¶43-44.

Claim 1 does not specify whether the channel viewer must be locally coupled to the mass storage unit or whether it can be remotely distributed from the mass data storage unit; therefore it should not be construed to be limited to local or remote coupling. However, to the extent it is argued that claim 1 requires that the channel viewer be coupled to a local mass storage unit, this limitation is nonetheless obvious over the combination of *Girard* and *Cooper*. *Cooper* describes a system in which multiple previously-played television programs are stored as they are received on a storage unit (“Program Data Storage”) that is local to the user display device and watched at a time and speed convenient to the user. *See Cooper* (Ex. 1004) at Abstract; *see also, e.g., id.* at 5:66-6:13, claim 1 (37:52-60—program storage is at the “given user’s location”). Like *Girard*, *Cooper* teaches that multiple television programs are simultaneously retrieved and digitally stored in *Cooper*’s Program Data Storage. *See id.* at 5:66-6:13 (“all” of the program data streams are stored as the data is presented); *see also id.* at Claim 40 (43:48-49—“said program data storage recording at least two selected ones of the multiple delivered programs.”). The Program Data Storage, along with a Data Manager for managing stored data, is coupled to a User Display, such as an LCD display. *Id.* at 7:1-4. Data is stored in a compressed MPEG-2 (i.e., digital) format. *See, e.g., id.* at 8:20-25.

There are many reasons a PHOSITA would have been motivated to incorporate *Cooper*’s teachings of local digital storage of multiple television programs simultaneously, in addition to the remote digital storage of multiple

television programs simultaneously, as taught by *Girard*, to allow a user to immediately access stored programs without having to stream from the head end server. *See Tjaden Decl.* (Ex. 1007) at ¶53. For example, while the capacity of such a storage device would be limited by the cost of, and the user's available physical space for, storage hardware, a PHOSITA would have recognized that such concerns would be offset by the user's ability to select only particularly desired programs for recording on the local program storage. *See id.* Further, local storage would allow a user to immediately access recorded programs, including when "offline." *Id.* It would have been simple enough to implement *Girard's* teachings of an interactive television system for allowing a user to view and select past programs, albeit at a smaller scale depending on the user's physical storage capacity. *Id.* And, as explained by *Cooper*, a PHOSITA would have "understood from the teachings herein that multiple delivery channels, delivery channel interfaces, program data streams, program data processors, user displays, computers, and user remotes may be utilized individually or in combinations as desired." *See Cooper* (Ex. 1004) at 4:30-34. Therefore, the specific architecture setup of a digital video recording system, such as *Girard's* interactive television system, would have been a matter of routine design preference based on two available and predictable applications—local or remote storage. *See Tjaden Decl.* (Ex. 1007) at ¶¶53, 34-35. A PHOSITA would have had a reasonable expectation of success in supplementing *Girard's* remote storage with additional local storage of television programs, as taught by *Cooper*, as

the specific location of the mass storage unit would not have impacted the interactive television system's ability to allow a user to play back recorded channel content, and local storage of videos on a set-top box was commonly done by 1998. *See id.*

Therefore, Claim 1 is obvious over *Girard* in combination with *Cooper*.

ii. Claim 2

2. The DVR as recited in claim 1 wherein said mass data storage unit stores said plurality of channels on a first-in-first-out basis.

As discussed, Claim 1 is obvious over the combination of *Girard* and *Cooper*. *See supra*, Sec. IV.A.i, Claim 1. Claim 2 recites storing a plurality of channels on a first-in-first-out basis. *See* '882 Patent (Ex. 1001) at 6:5-7, 2:44-47.

Girard does not explicitly teach storing a plurality of channels on a first-in-first-out basis, but it does teach that “many large capacity storage disks are employed to provide a sufficient reserve of previously played past programs.” *Girard* (Ex. 1003) at 4:63-65. A PHOSITA would have understood from *Girard*'s teaching of having a “sufficient reserve” of past programs that *Girard* would not be able to continue to store programs indefinitely without reaching storage capacity and, thus would have had to automatically remove stored programs to make room for new ones. The most logical and obvious means to make room for new programs would have been to remove the oldest programs (i.e., first in, first out). *See Tjaden Decl.* (Ex. 1007) at ¶¶37-38 (citing, e.g., *Logan* (Ex. 1006)); *see also id.* at ¶42. However,

to the extent this limitation is not obvious over *Girard* alone, the combination of *Girard* and *Cooper* teaches this limitation.

Cooper teaches a “least recent overwrite” feature whereby if the program data storage lacks sufficient memory to store new television program data, the user may program the system to overwrite the “least recent” stored version (i.e., first-in-first-out) of a program:

The MOST/LEAST RECENT OVERWRITE lets the User choose to have the incoming program overwrite the most recent or least recent stored version of the same program if there is no memory available to store an incoming program because of relatively low priority as compared to what is stored in memory.

Cooper (Ex. 1004) at 11:18-23. In view of *Girard*'s teaching of having a “sufficient reserve” of past programs, a POSITA would have been motivated to incorporate *Cooper*'s teachings of overwriting the least-recently stored program (i.e., the oldest program, since *Cooper* teaches storing programs in real time) in the event of low available storage capacity. A PHOSITA would have been motivated to incorporate *Cooper*'s teachings of overwriting the oldest data first because this technique was an obvious and logical means to determine which programs should stay and which should be removed to create space for new programs. *See Tjaden Decl.* (Ex. 1007) at ¶¶54, 37-38. A PHOSITA would have recognized that such a feature would have desirably removed program content that the user is least likely to want to continue to retain because it would have been the content that the user has had stored the

longest and, thus, had the longest amount of time to view before its removal. *Id.* Such modification of *Girard* to use *Cooper*'s least recent overwrite feature would have required minor modifications, if any, in the software at the head end server of *Girard* (or any local storage device). *Id.* Further, such changes would have been implemented with a reasonable expectation of success given the similarity of the systems and the fact that *Girard* already teaches storing time information with programs and recognizes that it would have a finite reserve of stored programs. *See id;* *see also Girard* (Ex. 1003) at 4:63-65. *See Tjaden Decl.* (Ex. 1007) at ¶54.

Therefore, Claim 2 is obvious over the combination of *Girard* and *Cooper*.

iii. Claim 3

3. The DVR as recited in claim 1 wherein said mass data storage unit concurrently stores said plurality of channels in separate files based on channel and timeslot identification.

As discussed, Claim 1 is obvious over the combination of *Girard* and *Cooper*. *See supra*, Sec. IV.A.i, Claim 1. Further, *Girard* teaches this limitation, or at least renders it obvious. *Girard* teaches that the video streams are stored in “predetermined mapped locations” of dedicated servers that are managed by a “master file server.” (i.e. stored concurrently as separate files). *See Girard* (Ex. 1003) at 4:56-5:6; *see also id.* at Fig. 3. *Girard* further teaches that the EPG, which is populated based on “scheduled viewing times and channel numbers,” sends a user’s selection to an SQL database of the head end server, which uses this information to provide the relevant pointer location in the continuous media server

of the head end server to retrieve and then deliver the corresponding television program to the user. *Id.* at 2:8-11, 5:47-56, 5:63-6:7 (describing that video data streams are obtained based on scheduled viewing times); *see also id.* at Abstract, 3:31-42. For example, *Girard* describes the process below by which a viewer obtains a past showing of a show, *Frasier*:

FIG. 7 shows a preferred process when a viewer selects a past program. ... For instance, suppose a viewer wanted to watch the "Frasier" episode on Tuesday, October 11, two nights before the currently running programming of October 13. The viewer would scroll back to Tuesday, October 11, 9:00 pm PST, and then up or down to the NBC channel to find a listing of "Frasier". ... The viewer can then select the highlighted program title in the EPG (step 134). The EPG sends an SQL inquiry to the SQL database 90 requesting the selected "Frasier" show (step 136). The SQL database returns a pointer to the location at which the video data stream of "Frasier" is stored in program storage 72 (step 138).

The EPG then passes the pointer to the continuous media server 68 and requests it to access the "Frasier" video data stream (step 140). The continuous media server retrieves the video data stream from the disk array storage subsystem, and transmits it to the requesting EPG (step 142).

Id. at 6:46-7:4; *see also id.* at Fig. 7. The pointer locations are identified based at least on a user's selection of a channel and scheduled program time; therefore,

Girard teaches storing the plurality of channels in separate files based on channel and timeslot identification.³ See *Tjaden Decl.* (Ex. 1007) at ¶42.

Therefore, Claim 3 is obvious over *Girard* in combination with *Cooper*.

iv. Claim 5

5. The DVR as recited in claim 1 wherein said channel viewer comprises a channel guide database containing pointers to locations in said mass data storage unit.

As discussed, Claim 1 is obvious over the combination of *Girard* and *Cooper*. See *supra*, Sec. IV.A.i, Claim 1. Further, *Girard* teaches, or at least renders obvious, this limitation. As discussed, *Girard*'s set-top box with program guide coupled to *Girard*'s SQL database constitutes the claimed "channel viewer." See *supra*, Sec. A.i, Claim 1[b]. *Girard* further teaches that the SQL database in communication with the set-top boxes provides pointers to locations of programs stored in the head end server's continuous media server and that the pointers are used to retrieve programs selected by the user from the EPG:

When the viewer selects a past program [from the electronic program guide], the database provides a pointer to a location in the disk array that is associated with the selected past program. The continuous media

³ As the '882 Patent explains, the term "file" is not limited to any particular data structure scheme. '882 Patent (Ex. 1001) at 2:59-6; *Tjaden Decl.* (Ex. 1007) at ¶42, n.28.

server uses the pointer to retrieve a video data stream of the selected past program and supplies the video data stream to the set-top box.

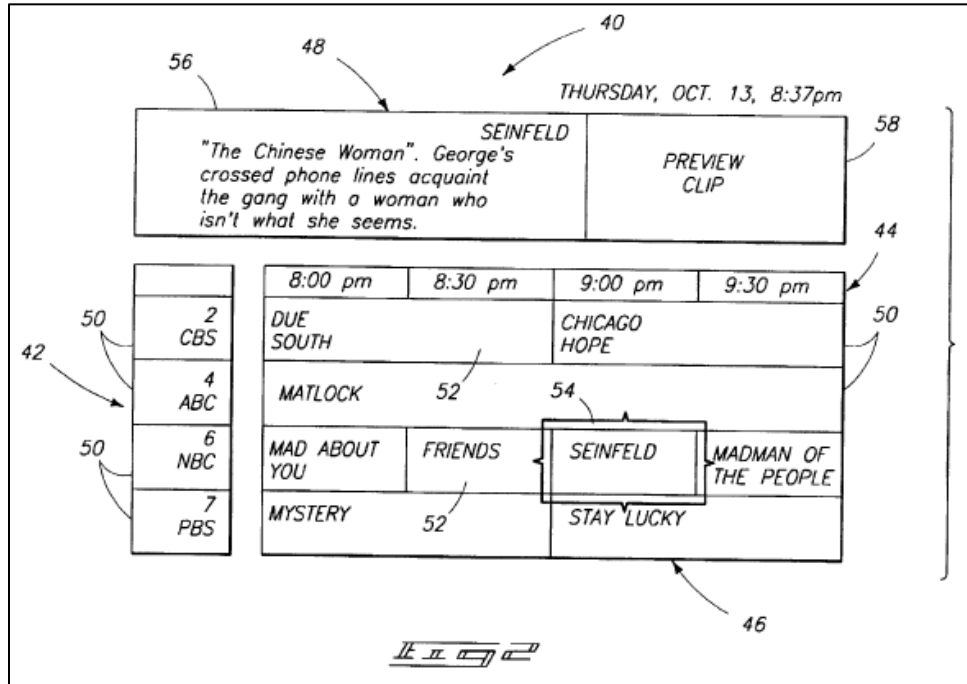
Girard (Ex. 1003) at 2:30-35; *see also id.* at 5:12-14 (“The locations of the video data streams are kept in a map and each video data stream can be accessed through pointers to the particular disk location.”); *see also, e.g., id.* at 2:24-27, 5:47-56, 6:60-7:4; Claim 4 (“... the database also holding pointers to locations for accessing the past programs stored on the disk array storage subsystem.”); Fig. 5 (Step 106), Fig. 7 (Step 138).

Therefore, Claim 5 is obvious over *Girard* in combination with *Cooper*.

v. **Claim 6**

6. The DVR as recited in claim 1 wherein said channel viewer displays a channel guide on said video display device, said channel guide providing information regarding a content of said plurality of channels.

As discussed, Claim 1 is obvious over the combination of *Girard and Cooper*. *See supra*, Sec. IV.A.i, Claim 1. Further, *Girard* teaches, or at least renders obvious, this limitation. As discussed, *Girard* teaches that the set-top box, which is part of the “channel viewer,” displays an electronic program guide (EPG) (i.e., a channel guide) on a television. *See supra*, Sec. A.i, Claim 1[b]. As shown below, *Girard*’s EPG provides “information regarding a content of said plurality of channels” at least because the guide displays the particular programs contained in the plurality of channels (e.g., “Seinfeld,” “Friends,” “Matlock,” etc.):



Id. at Fig. 2. *Girard* also teaches this limitation in that its EPG includes a “program summary panel” (item 48 in Figure 2) that can be used to display information regarding the contents of channels:

Program summary panel 48 includes a text description window 56 and a preview window 58. The text description window 56 displays program information related to the program that is highlighted by the focus frame 54 in program grid 46. Here, the NBC program "Seinfeld" is highlighted. The text description window 56 lists the program title "Seinfeld", and a program description of the current episode.

Id. at 3:65-4:4; *see also id.* at 3:31-39.

Therefore, Claim 6 is obvious over *Girard* in combination with *Cooper*.

vi. Claim 7

7. The DVR as recited in claim 6 wherein said channel guide contains links to locations in said mass data storage unit.

As discussed, Claim 6 is obvious over the combination of *Girard* and *Cooper*. See *supra*, Sec. IV.A.v, Claim 6. As also discussed, *Girard* teaches that the channel guide database contains pointers to locations in the memory of the mass data storage unit. See *supra*, Sec. A.v, Claim 6. Further, *Girard* teaches, or at least renders obvious, this limitation. *Girard* teaches that the television system is “interactive” and that, when the user navigates the EPG (i.e., the channel guide) by using a remote control to place a focus frame over a desired program to select it for viewing (*Girard* (Ex. 1003) at 3:55-64), the SQL database will provide the pointer to the location of the selected program in the memory of the mass data storage unit:

The EPG is used to scroll to current, past, or future programs. The user selects the desired program title from the depicted program grid. ... If the program title from the EPG grid corresponds to a past program, the set-top box requests a previously played program. The head end server retrieves the video data stream of the past program from the program store 72 and transmits it to the requesting set-top box for display.

Id. at 5:60-6:3; see also *id.* at 6:46-7:4.

When the viewer selects a past program [from the electronic program guide], the database provides a pointer to a location in the disk array that is associated with the selected past program. The continuous media server uses the pointer to retrieve a video data stream of the selected past program and supplies the video data stream to the set-top box.

Id. at 2:30-35; *see also id.* at 5:12-14, 2:24-27, 5:47-56, 6:60-7:4; Claim 4 (“... the database also holding pointers to locations for accessing the past programs stored on the disk array storage subsystem.”); Fig. 5 (Step 106), Fig. 7 (Step 138). Because the user uses the focus frame to highlight and select a program for playing, which causes a pointer to the location of the program to be accessed in the head end server, a PHOSITA would have understood that the program guide contains “links” to locations in the head end server (i.e., mass data storage unit). *See Tjaden Decl.* (Ex. 1007) at ¶44 n.30.

Therefore, Claim 7 is obvious over *Girard* in combination with *Cooper*.

vii. Claim 8

8. The DVR as recited in claim 1 further comprising a pointing device, cooperable with said channel viewer, that allows a user to issue said command.

As discussed, Claim 1 is obvious over the combination of *Girard* and *Cooper*. *See supra*, Sec. IV.A.i, Claim 1. Further, *Girard* teaches, or at least renders obvious, this limitation. *Girard* teaches using a remote control (i.e. a pointing device) to move a focus frame to select a desired program to play (i.e. allows a user to issue said command:

The viewer controls the program selection with a single focus frame 54 which is graphically overlaid on the program grid 46. Focus frame 54 can be moved up or down within a time slot, or left and right within a channel line-up, to choose a desire[d] program. A remote control handset ... or other manipulating mechanism 60 can be used to position the focus frame 54. This implementation is preferable, although other

types of program selectors may be used to identify and choose a program for display on the television.

Id. at 3:55-64. Because the remote control allows a user to move a “focus frame” box within the EPG to make selections, it is a “pointing device,” and *Girard* teaches the limitation of Claim 8. The remote control (i.e. pointing device) cooperates with the set-top box, which is part of the claimed “channel viewer,” as set forth for Claim 1[b] above (i.e. cooperable with said channel viewer), to allow the user to issue the command to play the selected program, because the set-top box receives the user’s selection from the command and then communicates with the head end server to retrieve the stored program. *See id.* at 6:34-45, 6:59-64; *see also id.* at 3:55-64 (the remote control may be used in place of a touch panel “on the set-top box for manipulating the focus frame).

Therefore, Claim 8 is obvious over *Girard* in combination with *Cooper*.

viii. Claim 9

9. The DVR as recited in claim 1 wherein said channel viewer presents said portion nonlinearly.

As discussed, Claim 1 is obvious over the combination of *Girard* and *Cooper*. *See supra*, Sec. IV.A.i, Claim 1. Further, *Girard* teaches, or at least renders obvious, this limitation. Claim 9 recites that the channel viewer presents the portion of the program selected for viewing “nonlinearly,” i.e., in a manner that skips, repeats, reverses, randomizes, or displays the portion at a rate that differs from real time. *See* ’882 Patent (Ex. 1001) at 3:31-38. *Girard* teaches this concept. For example, *Girard*

teaches that “the viewer can manipulate the video data stream as desired in a manner similar to controlling conventional VCR systems. For example, the viewer can fast forward, pause, replay, etc. any portion of the [program]” using the set-top box. *Girard* (Ex. 1003) at 7:5-10; *see also id.* at 7:11-25. Likewise, *Cooper* teaches displaying program information non-linearly, such as by playing back stored programs at a rate faster or slower than normal so that a user may catch up to a real-time program, a feature identified as desirable in *Girard*. *See, e.g., Cooper* (Ex. 1004) at 11:53-57; *see also id.* at 12:4-15; *see also* Sec. C.ii, Claim 18, *infra* (citing *Girard* (Ex. 1003) at 7:11-23 for catch-up viewing concept).

Therefore, Claim 9 is obvious over the combination of *Girard* and *Cooper*. *See Tjaden Decl.* (Ex. 1007) at 45,

ix. Claim 12

12. The DVR as recited in claim 1 further comprising an archive storage unit, coupled to said channel viewer, that stores said portion.

The '882 Patent describes an “archive storage unit” as a unit that stores a portion of a video selected for archiving, i.e., to escape overwriting. *See* '882 Patent (Ex. 1001) at 3:50-58, 11:9-18.

As discussed, Claim 1 is obvious over the combination of *Girard* and *Cooper*. *See supra*, Sec. A.i, Claim 1. Further, *Cooper* teaches, or at least renders obvious, this limitation. *Cooper* teaches a Removable Data Storage (i.e., an archive storage unit) coupled to the set-top box for storing said portion:

[I]t will be recognized that a Removable Data Storage capability (in addition or separately) may be required or desirable with the user having the ability to direct the Data Manager to cause a known program or programs to be stored thereon either from the Program Data Storage, or directly from the Delivery Channel Interface. The Removable Media may then be physically removed and/or replaced—for example for storage for archive purposes or to be moved to other locations.

Cooper (Ex. 1004) at 6:53-61; *see also id.* at 6:65-67 (“Program data from removable Data Storage Media may also be read therefrom for example via media previously archived or received from other locations.”).

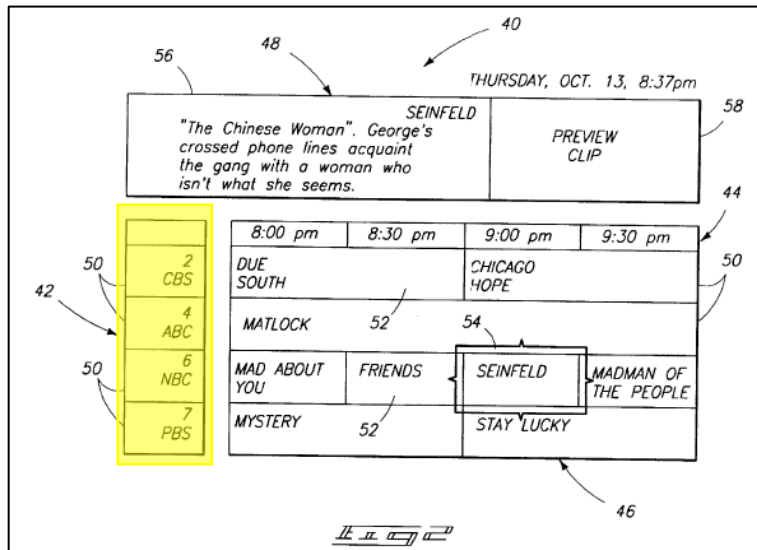
A PHOSITA would have been motivated to incorporate the use of removable data storage, as taught by *Cooper*, for archive purposes into the set-top box system of *Girard* to allow viewers to obtain *Cooper*’s benefit of creating an archive. A PHOSITA would have appreciated that this would provide the benefits of avoiding the overwriting of their individual favorite programs and also creating a backup copy. *Terveen Decl.* (Ex. 1007) at ¶55. Further, a PHOSITA would have had a reasonable expectation of success in incorporating such a feature into the system of *Girard*, as modified by *Cooper*, as both systems relate to the storage and playback of digital media, and the concept of setting aside stored programs in an archive to avoid overwriting was well known in the art. *Id.*

Therefore, Claim 12 is obvious over *Girard* in combination with *Cooper*.

x. **Claim 13**

13. The DVR as recited in claim 1 further comprising a channel selector, coupled to said mass data storage unit, that allows a user to identify said plurality of channels.

As discussed, Claim 1 is obvious over the combination of *Girard* and *Cooper*. See *supra*, Sec. A.i, Claim 1. Further, *Girard* teaches, or at least renders obvious, this limitation. *Girard* teaches that the set-top box, which is remotely and communicatively coupled to the head end server (i.e., mass storage unit), provides an EPG (i.e., a channel selector). See *Girard* (Ex. 1003) at Abstract; see also *id.* at 2:8-17. The EPG presents a channel-based program grid that shows programs available through different channels to a viewer (i.e., to allow a user to identify a plurality of channels). An example of the program grid, with the identification of channels highlighted, is below:



See id. at Fig. 2 (annotated); *see also id.* at 3:44-45 (“Program grid 46 consists of multiple program titles 52 organized in channel-based rows and time-based columns.”); 6:46-55.

Therefore, Claim 13 is obvious over *Girard* in combination with *Cooper*.

xi. Claim 16

16. The DVR as recited in claim 1 wherein said plurality of channels are formatted in a selected one of: [a] NTSC analog TV, [b] PAL/SECAM analog TV, [c] digital TV, [d] analog HDTV, and [e] digital HDTV.

As discussed, Claim 1 is obvious over the combination of *Girard* and *Cooper*. *See supra*, Sec. A.i, Claim 1. Claim 16 is further obvious over the combination of *Girard* and *Cooper*. *Girard* teaches that the head end server receives the video signals for the channels from “a satellite feed or other cable system” and stores them digitally. *See, Girard* (Ex. 1003) at 4:39-41; *see also, e.g., id.* at 5:5. Although *Girard* does not specify the format of the channels being received at the head-end server, it was known that broadcasters using direct broadcast satellite at the time transmitted channels in a digital format that would be converted to NTSC format to accommodate a U.S.A.-based user's analog television (satisfying 16[a] & 16[c]). *See Tjaden Decl.* (Ex. 1007) at ¶57 (citing Ex. 1021, FCC 97-116). *Girard* also provides the NBC channel as an example of one broadcast channel; by 1997, it was known that broadcast companies like NBC provided digital broadcasts (satisfying 16[c]). *See id.* Therefore, Claim 16 is obvious over the disclosure of *Girard* in light of what a PHOSITA would have known by the time of the '882 Patent. *See id.*

Further, *Cooper* also teaches that video may be received according to MPEG-compressed (digital) HDTV (satisfying 16[e]). *See id.* at ¶58; *see also Cooper* (Ex. 1004) at 25:16-28; *see also id.* at 25:54-56. It would have been obvious to incorporate *Cooper*'s teachings related to the type of broadcasts that could be received and synchronizing broadcast signals compressed under different formats into the system of *Girard*. A PHOSITA would have been motivated to allow a system to accommodate as many different types and qualities of broadcasts as were popularly available. *See Tjaden Decl.* (Ex. 1007) at ¶58. *Girard* is agnostic regarding the type of programming received, and the means to encode broadcasts of different formats, including HDTV, was well-known by 1998; therefore, a PHOSITA would have had a reasonable expectation of success incorporating *Cooper*'s teachings of receiving digital HDTV into the system of *Girard*. *See id.*

Therefore, Claim 16 is obvious over *Girard* in combination with *Cooper*.

xii. Claim 19

19[P]. A method of operating a digital video recorder, comprising the steps of:

This limitation is obvious over *Girard*, as discussed regarding claim 1[P]. *See supra*, Sec. IV.A.i, Claim 1. Specifically, *Girard* teaches methods for operating an interactive television system, which includes a set-top box coupled to a head end server and which collectively constitutes the claimed digital video record, enabling a user to retrieve stored television programs. *See id.; see also Tjaden Decl.* (Ex. 1007) at ¶¶42-44.

19[a]. receiving a plurality of television broadcasts, each television broadcast including a video signal

Girard teaches that the head-end server receives a plurality of television broadcasts, each of which includes a video signal. *See supra*, Sec. IV.A.i, Claim 1[a]; *see also Girard* (Ex. 1003) at 4:39-41 (“The head end server receives the video signals from another source, such as a satellite feed or other cable system.”); *see also Tjaden Decl.* (Ex. 1007) at ¶¶42, 57.

19[b]. concurrently and continuously digitally storing said plurality of television broadcasts on a mass data storage unit and storing said plurality of television broadcasts together with time information to allow said plurality of stored television broadcasts to be synchronized with respect to one another upon replay of said stored television broadcasts.

As discussed regarding Claim 1[a], this limitation is obvious over the combination of *Girard* and *Cooper*. *Girard* teaches that the head end server is a mass data storage unit that comprises, *inter alia*, a continuous media server that concurrently and continuously digitally stores multiple television broadcasts on a series of disk servers. *See supra*, Sec. IV.A.i, Claim 1[a]. Further, as discussed regarding claim 1[a], the head end server also contains an SQL database so that the television broadcasts may be stored together with time information to allow the broadcasts to be synchronized with respect to one another upon replay using an electronic program guide running on an end-user’s set-top box. *See id*; *see also Tjaden Decl.* (Ex. 1007) at ¶42; *see also id.* at ¶48 (to the extent required, it would

have been obvious to store broadcasts physically with time information, not just logically).

To the extent that this system requires that the mass-data storage unit be stored locally with a set-top box, this limitation is obvious over the combination of *Girard* and *Cooper*, for the reasons discussed regarding Claim 1[b]. *See supra*, Sec. IV.A.i, Claim 1[a]; *see also Tjaden Decl.* (Ex. 1007) at ¶53.

xiii. Claim 20

20. The method as recited in claim 19 further comprising creating pointers to locations in said mass data storage unit in a channel guide database.

As discussed, Claim 19 is obvious over the combination of *Girard* and *Cooper*. *See supra*, Sec. IV.A.xii, Claim 19. Further, *Girard* teaches, or at least renders obvious, this limitation. *See supra*, Sec. IV.A.iv, Claim 5; *see also Girard* (Ex. 1003) at Fig. 5 (Step 106—memory pointers initially stored, i.e., “created,” upon the storage of a program in a continuous media server); 6:8-12 (the steps in Figure 5 are performed simultaneously). Therefore Claim 20 is obvious over *Girard* in combination with *Cooper*. *See id.*; *see also Tjaden Decl.* (Ex. 1007) at ¶42.

xiv. Claim 21

21. The method as recited in claim 19 further comprising the step of displaying a channel guide on a video display device, said channel guide providing information regarding a content of at least one of said plurality of channels.

As discussed, Claim 19 is obvious over the combination of *Girard* and *Cooper*. *See supra*, Sec. IV.A.xii, Claim 19. Further, *Girard* teaches, or at least

renders obvious, this limitation. *See supra*, Sec. IV.A.v, Claim 6. Therefore Claim 21 is obvious over *Girard* in combination with *Cooper*. *See id.*; *see also Tjaden Decl.* (Ex. 1007) at ¶¶42-44.

xv. Claim 22

22. The method as recited in claim 21 wherein said channel guide contains links to locations in said mass data storage unit.

As discussed, Claim 21 is obvious over the combination of *Girard* and *Cooper*. *See supra*, Sec. IV.A.xiv, Claim 21. Further, *Girard* teaches, or at least renders obvious, this limitation. *See supra*, Sec. IV.A.vi, Claim 7. Therefore, Claim 22 is obvious over *Girard* in combination with *Cooper*. *See id.*; *see also Tjaden Decl.* (Ex. 1007) at ¶44 n.28.

xvi. Claim 23

23. The method as recited in claim 19 further comprising the step of receiving a command to replay one of said stored television broadcasts.

As discussed, Claim 19 is obvious over the combination of *Girard* and *Cooper*. *See supra*, Sec. IV.A.xii, Claim 19. Further, *Girard* teaches, or at least renders obvious, this limitation. *Girard* teaches that the set-top box receives selections on an electronic programming guide (i.e., commands) to replay a previously played program from the past that has been stored on the head-end server (i.e., one of the stored television broadcasts). *See Girard* (Ex. 1003) at 1:6-8, 2:30-35, 3:55-64, 5:63-6:3, 6:46-7:4. Therefore, Claim 23 is obvious over *Girard* in combination with *Cooper*. *See Tjaden Decl.* (Ex. 1007) at ¶42-44.

xvii. Claim 24

24. The method as recited in claim 23 wherein said one of said stored television broadcasts is displayed nonlinearly.

As discussed, claim 23 is obvious over the combination of *Girard* and *Cooper*. See *supra*, Sec. IV.A.xvi, Claim 23. Further, *Girard* teaches, or at least renders obvious, this limitation. See *supra*, Sec. IV.A.viii, Claim 9. Therefore, Claim 24 is obvious over *Girard* in combination with *Cooper*. See *id.*; see also *Tjaden Decl.* (Ex. 1007) at ¶45.

xviii. Claim 27

27. The method as recited in claim 19 further comprising the step of storing one of said television broadcasts in an archive storage unit.

As discussed, Claim 19 is obvious over the combination of *Girard* and *Cooper*. See *supra*, Sec. IV.A.xii, Claim 19. Further, this limitation is obvious over the combination of *Girard* and *Cooper*. See *supra*, Sec. IV.A.ix, Claim 12. For the reasons discussed regarding Claim 12, Claim 27 is obvious over at least the combination of *Girard*, and *Cooper*. See *id.*; see also *Tjaden Decl.* (Ex. 1007) at ¶¶50, 55.

xix. Claim 28

28. The method as recited in claim 19 further comprising the step of allowing a user to identify said plurality of television broadcasts in a channel selector.

As discussed, Claim 19 is obvious over the combination of *Girard* and *Cooper*. See *supra*, Sec. IV.A.xii, Claim 19. Further, *Girard* teaches, or at least

renders obvious, this limitation. *See supra*, Sec. A.x, Claim 13. Therefore, Claim 28 is obvious over *Girard* in combination with *Cooper*. *See id.*; *see also Tjaden Decl.* (Ex. 1007) at ¶43.

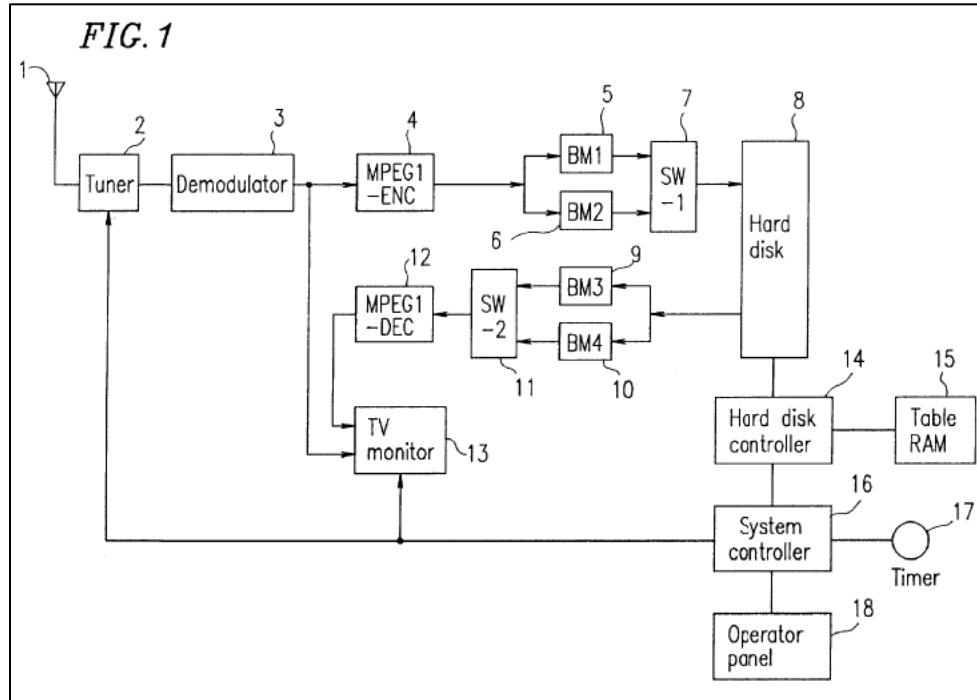
xx. Claim 31

31. The method as recited in claim 19 further comprising the step of decoding said plurality of television broadcasts from a selected one of: [a] NTSC analog TV, [b] PAL/SECAM analog TV, [c] digital TV, [d] analog HDTV, and [e] digital HDTV.

As discussed, claim 19 is obvious over the combination of *Girard* and *Cooper*. *See supra*, Sec. A.xii Claim 19. Further, this limitation is obvious over at least the combination of *Girard* and *Cooper*. *See supra*, Sec. xii, Claim 16. For the reasons discussed regarding Claim 16, Claim 31 is obvious over *Girard* in combination with *Cooper*. *See id.*; *see also Tjaden Decl.* (Ex. 1007) at ¶¶57-58.

B. Ground 2: Claims 10, 12, 25, and 27 are obvious over *Girard*, *Cooper*, and *Sasaki*

U.S. Patent 6,226,447 to *Sasaki et al.* (“*Sasaki*”) was filed on August 23, 1995, and, therefore, is prior art to the ’882 Patent at least under 35 U.S.C. § 102(e). *See Sasaki* (Ex. 1005). *Sasaki* relates to the simultaneous recording and display of video signals so that a user may view multiple programs at once. *See id.* at Abstract, 1:7-9. Video is compressed using an MPEG encoder and stored locally on a hard-disk apparatus. *See id.* at 1:49-67; *see also id.* at 6:48-55. The system allows one program to be recorded on a storage device while another is displayed on a television simultaneously:



Id. at Fig. 1 (video recording system); *see also id.* at 5:1-14 (one program may be recorded while another is displayed); *see also id.* at 14:45-48 (where multiple tuners are employed, the system may record multiple programs simultaneously).

Sasaki is analogous art to the '882 Patent. *See Tjaden Decl.* (Ex. 1007) at ¶160. *Sasaki* is within the field of endeavor of the '882 Patent because it relates to video storage and playback, including receiving and displaying a plurality of video signals using multiple tuners. *Id.* at 15:7-11; *see also id.* at Figs. 6-7; *see also id.* at 15:32-35 (“[V]ideos on a larger number of TV channels can be recorded in the hard-disk apparatus having the same recording capacity as that of a conventional one.”). Further, *Sasaki* is related to at least one problem with which the '882 Patent was concerned, such as allowing a user to catch up with a real-time broadcast by

watching a simultaneously recording broadcast in a fast-forwarding mode. *See id.* at 4:52-67.

xxi. Claim 10

10. The DVR as recited in claim 1 wherein said mass data storage unit receives, digitally compresses and digitally stores said plurality of channels.

As discussed, Claim 1 is obvious over the combination of *Girard* and *Cooper*. *See supra*, Sec. IV.A.i, Claim 1. Further, *Sasaki* teaches a hard disk apparatus for recording and reproducing multiple television broadcasts. *See Sasaki* (Ex. 1005) at Abstract. *Sasaki* teaches that the video recording apparatus includes an “image compression means for compressing an amount of information per unit time of the received continuous video signal.” *See id.* at 1:49-54; *see also id.* at 2:54-57, 3:21-25 (image signal is digitized for compression purposes). It accomplishes this, for example, using an MPEG encoder. *See id.* at 8:51-58. A PHOSITA would have been motivated to incorporate *Sasaki*’s teachings of compressing recorded video signals to ensure efficient memory economy, thus allowing a storage device to store more video data. *See Tjaden* (Ex. 1007) at ¶61; *see also, e.g., Cooper* (Ex. 1004) at 37:10-11 (“[I]t is preferred to store MPEG compressed data for reasons of memory economy.”). Further, a PHOSITA would have had a reasonable expectation of success incorporating such concepts into the system of *Girard* (as modified by *Cooper*), which teaches digitally storing video, as the means to include compression

as part of the encoding process because MPEG encoding techniques were becoming increasingly well known in the art before 1998. *See Tjaden* (Ex. 1007) at ¶61.

Therefore, Claim 10 is obvious over *Girard* in view of *Cooper*, in further view of *Sasaki*.

xxii. Claim 12

12. The DVR as recited in claim 1 further comprising an archive storage unit, coupled to said channel viewer, that stores said portion.

The '882 Patent describes an “archive storage unit” as a unit that stores a portion of a video selected for archiving, i.e., to escape overwriting. *See* '882 Patent (Ex. 1001) at 3:50-58, 11:9-18.

As discussed, Claim 1 is obvious over the combination of *Girard* and *Cooper*. *See supra*, Sec. IV.A.i, Claim 1. Further *Sasaki* teaches this limitation. Specifically, *Sasaki* teaches that “information for prohibiting overwriting data of the retrieved video signal is added to the retrieved video signal so as to be stored into the hard disk apparatus.” *Sasaki* (Ex. 1005) at 3:37-39; *see also id.* at claim 20. Therefore, where a video is appropriately flagged, the hard disk storage unit precludes the overwriting of that video, thereby acting as an archive storage unit coupled with a channel viewer. A PHOSITA would have been motivated to incorporate *Sasaki*'s teachings of employing a hard disk apparatus as an archive storage unit into the system of *Girard* (as modified by *Cooper*), as such a feature would allow a user to indefinitely replay a program he or she particularly enjoyed without fear of losing it.

See Tjaden (Ex. 1007) at ¶62. Indeed, *Cooper* describes a similar feature, whereby a user could give stored programs different priority levels that would need to be superseded by a new program before being overwritten, and it teaches that programs may be stored on a removable data storage unit for archive purposes. *See Cooper* (Ex. 1004) at 11:6-17. A PHOSITA would have recognized that such features would allow a user to balance memory economy on a storage unit with user interests. *See Tjaden* (Ex. 1007) at ¶62. Further, a PHOSITA would have had a reasonable expectation of success in implementing this feature into the system of *Girard*. For particularly popular programs, or where the user is storing programs locally (as in the combination of *Girard* and *Cooper*), the system would predictably preserve specific desired programs, without substantially affecting reserves for additional programming. *See id.* Therefore, this limitation is obvious over the *Girard* in view of *Cooper*, in further view of *Sasaki*.

xxiii. Claim 25

25. The method as recited in claim 19 wherein said step of concurrently and continuously digitally storing comprises the step of receiving, digitally compressing and digitally storing said plurality of channels.

As discussed, Claim 19 is obvious over the combination of *Girard* and *Cooper*. *See supra*, Sec. IV.A.xii, Claim 19. Further, this limitation is obvious over *Girard*, *Cooper*, and *Sasaki*. *See supra*, Sec. IV.B.i, Claim 10. For the reasons discussed regarding Claim 10, Claim 25 is obvious over at least the combination of *Girard*, *Cooper*, and *Sasaki*. *See id.*; *see also Tjaden* (Ex. 1007) at ¶61.

xxiv. Claim 27

27. The method as recited in claim 19 further comprising the step of storing one of said television broadcasts in an archive storage unit.

As discussed, Claim 19 is obvious over the combination of *Girard* and *Cooper*. See *supra*, Sec. IV.A.xii, Claim 19. Further, this limitation is obvious over *Girard*, *Cooper*, and *Sasaki*. See *supra*, Sec. IV.B.ii, Claim 12. For the reasons discussed regarding Claim 12, Claim 27 is obvious over at least the combination of *Girard*, *Cooper*, and *Sasaki*. See *id.*; see also *Tjaden* (Ex. 1007) at ¶62.

C. Ground 3: Claims 17-18 and 32-33 are obvious over *Girard*, *Cooper*, and *Logan*

U.S. Patent 5,371,551 to Logan *et al.* (“*Logan*”) issued on December 6, 1994, and, therefore, is prior art to the ’882 Patent under at least 35 U.S.C. § 102(b). See *Logan* (Ex. 1006). *Logan* relates to a broadcast recording and playback system that employs a hard-disk memory and circular buffer for recording and replaying one or more programs according to a user’s command. See *id.* at Abstract. *Logan* was cited during prosecution of the ’882 Patent, but not in accordance with the prior art combinations proposed herein or with *Girard* or *Cooper*. Here, *Logan* is recited specifically for its teachings related to skipping a displayed broadcast based on specific time intervals, including to skip over unwanted advertisements.

Logan is analogous art to the ’882 Patent. See *Tjaden Decl.* (Ex. 1007) at ¶64. *Logan* is within the field of endeavor of the ’882 Patent because it relates to the video storage and playback, particularly of broadcast video streams. See *Logan* (Ex. 1006)

at Abstract; *see also id.* at 1:8-14. Further, *Logan* is related to at least one problem concerned by the '882 Patent. Specifically, like the '882 Patent, *Logan* sought to overcome drawbacks in existing VCR systems by employing digital recording techniques for storing programs in a random-access, re-writable memory. *See id.* at 1:17-32; *see also id.* at 3:16-20, 5:22-27 (explaining that the oldest data stored on the hard disk is overwritten so that the system may continuously store data); *see also* '882 Patent (Ex. 1001) at 1:10-14; *see also id.* at 8:1-9.

i. Claim 17

17. The DVR as recited in claim 1 wherein said DVR selectively moves by one commercial time unit within said one of said plurality of channels in response to a second received command.

As discussed, Claim 1 is obvious over the combination of *Girard* and *Cooper*. *See supra*, Sec. IV.A.i, Claim 1. *Girard* teaches enabling catch-up viewing and using a fast-forwarding command, but it does not explicitly disclose that the fast-forwarding occurs according to a specific commercial time unit. *Girard* (Ex. 1003) at 7:5-10.

However, *Logan* renders this limitation obvious. *Logan* teaches storing recorded channels and enabling a viewer to view a selected channel in “a mosaic of reduced-size images representing images stored in the buffer at spaced time intervals [i.e., commercial time units], thereby allowing a viewer to readily locate and select a scene of interest to be replayed.” *Logan* (Ex. 1006) at 2:4-8. As explained by *Logan*, a PHOSITA would be motivated to incorporate such a feature to fast-forward

over a given time interval to “skip over annoying advertisements.” *See id.* at 1:19-24; *see also id.* at 2:30-35 (“[T]he viewer may skip unwanted segments of the viewed broadcast by altering the location from which the displayed images are read in order to bypass the display of unwanted material.”). A PHOSITA would have had a reasonable expectation of success in incorporating such a feature into the interactive television system of *Girard*. Like *Girard*, *Logan* teaches the storage and replay of digital video. *Girard* already teaches fast-forwarding; therefore, implementing *Logan*’s specific means of fast-forwarding program information by specific time intervals into the similar system of *Girard* would have merely required the straightforward incorporation of known programming techniques into a similar system to achieve the predictable and desirable purpose of allowing users to skip over unwanted content, such as advertisements. *See Tjaden Decl.* (Ex. 1007) at ¶65.

Therefore, Claim 17 is obvious over *Girard* in view of *Cooper*, in further view of *Logan*.

ii. Claim 18

18. The DVR as recited in claim 17 wherein said received command is employable to achieve catch-up viewing.

As discussed, Claim 17 is obvious over the combination of *Girard*, *Cooper*, and *Logan*. *See supra*, Sec. IV.C.i, Claim 17. This limitation is obvious over *Girard*; alternatively, this limitation is obvious over the combination of *Girard* and *Cooper*. Claim 18 refers to “said received command,” which refers to the “received

command” recited in Claim 1. This received command is the command for playing a stored portion of a program. *Girard* teaches that this played stored portion of a program can be played in a way to achieve catch-up viewing:

It is further noted that a combination of viewing current and past programs can be employed. For instance, suppose a viewer is watching the real-time video data stream of the current "Seinfeld" program, but is distracted during the middle portion of the show. The viewer could simply "rewind" to the point at which they were distracted and replay it. The viewer is not really rewinding the show, in the sense of a VCR cassette, but instead is changing from the real-time video data stream of the current "Seinfeld" program to the stored video data stream of the earlier segment of the same "Seinfeld" program. The viewer will be able to scan the stored segment and **catch up** to the real-time video data stream.

Girard (Ex. 1003) at 7:11-23.

Cooper also teaches that its system may receive a command employable to achieve catch-up viewing, one which would have been obvious to incorporate into the system of *Girard*. Although *Girard* does not specify the specific way in which catch-up viewing is accomplished, such elaboration would have been unnecessary because a PHOSITA would have known of various ways to accomplish catch-up viewing. *See Tjaden Decl.* (Ex. 1007) at ¶56; *see also id.* at ¶51, 45. One such alternative included that taught in *Cooper*. *Cooper* teaches a method of

accomplishing catch-up viewing by accelerating the rate at which a past part of a current program is played:

The Auto Store Buffer catch up rate allows a user to return to viewing a program being received from the Program Data Stream after a pause, while insuring he will be viewing the stored portion of the program from the Auto Store Buffer. It is desirable to read this information out of the buffer at faster than normal rate. In this fashion, the program is read out of the buffer faster than the program being written into the buffer and consequently the buffer length will be continually shortened to zero. This feature both returns the User to real time viewing, thus allowing him to finish viewing the program when it actually ends

Cooper (Ex. 1004) at 12:4-14.

A slight accelerated rate would have been of little notice by a user, and would allow a user to avoid having to skip over certain parts of the broadcast to catch up.

Tjaden Decl. (Ex. 1007) at ¶56. A PHOSITA would have been motivated to incorporate this known technique for catch-up viewing into the similar system of *Girard* as one of many ways to accomplish catch-up viewing and would have had a reasonable expectation of success in doing so. *Id*

Therefore, Claim 18 is obvious over *Girard* in view of *Cooper*, in further view of *Logan*.

iii. Claim 32

32. The method as recited in claim 19 further comprising the step of selectively moving by one commercial time unit within said one of said plurality of television broadcasts in response to a received command.

As discussed, Claim 19 is obvious over the combination of *Girard* and *Cooper*. *See supra*, Sec. IV.A.xii, Claim 19. Further, *Logan* renders this limitation obvious. *See supra*, Sec. IV.C.i, Claim 17. For the reasons discussed regarding Claim 17, Claim 32 is obvious over the combination of *Girard*, *Cooper*, and *Logan*. *See id.*; *see also Tjaden Decl.* (Ex. 1007) at ¶65.

iv. Claim 33

33. The method as recited in claim 32 wherein said step of selectively moving comprises the step of engaging in catch-up viewing.

As discussed, Claim 32 is obvious over *Girard*, alone or in combination with *Cooper*. *See supra*, Sec. IV.B.iii, Claim 32. Further, both *Girard* and *Cooper* teach this limitation. *See supra*, Sec. IV.C.ii, Claim 18. For the reasons discussed regarding Claim 18, Claim 33 is obvious over the combination of *Girard*, *Cooper*, and *Logan*. *See id.*; *see also Tjaden Decl.* (Ex. 1007) at ¶¶51, 47, 56.

V. CONCLUSION

For the foregoing reasons, Petitioner respectfully requests *inter partes* review of Claims 1-3, 5-10, 12, 13, 16-25, 27, 28, and 31-33 of U.S. Patent No. 6,788,882.

Respectfully submitted,
ERISE IP, P.A.

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ATTORNEYS FOR PETITIONER

VI. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8(A)(1)

A. Real Parties-in-Interest

Pursuant to 37 C.F.R. § 42.8(b)(1), Petitioner certifies that Unified is the real party-in-interest, and further certifies that no other party exercised control or could exercise control over Unified's participation in this proceeding, the filing of this petition, or the conduct of any ensuing trial. In view of *Worlds Inc. v. Bungie, Inc.*, 903 F.3d 1237, 1242–44 (Fed. Cir. 2018), Unified has submitted voluntary discovery in support of its certification. See EX1024 (Petitioner's Voluntary Interrogatory Responses).

B. Related Matters

Pursuant to 37 C.F.R. § 42.8(b)(2), the '882 Patent is presently the subject of the following patent infringement lawsuits:

- *SynchView Technologies, LLC v. Channel Master, LLC*, No. 1:18-cv-00725 (D. Del. May 14, 2018); and
- *SynchView Technologies, LLC v. Grande Communications Networks LLC*, No. 1:18-cv-00412, (W.D. Tex. May 14, 2018).

C. Lead and Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3)

Petitioner provides the following designation and service information for lead and back-up counsel. 37 C.F.R. § 42.8(b)(3) and (b)(4). Jason Mudd will serve as lead counsel. Jonathan Bowser will serve as first back-up counsel. Eric Buresh, Ashraf Fawzy, and Michelle Callaghan will serve as additional back-up counsel.

Please direct all correspondence regarding this proceeding to lead and back-up counsel at their respective email addresses listed below. 37 C.F.R. § 42.8(b)(4).

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APPENDIX OF EXHIBITS

Exhibit 1001	U.S. Patent No. 6,788,882 (“’882 Patent”)
Exhibit 1002	File History for ’882 Patent (“ <i>File History</i> ”)
Exhibit 1003	U.S. Patent 5,751,282 to Girard <i>et al.</i> (“ <i>Girard</i> ”)
Exhibit 1004	U.S. Patent 6,901,209 to Cooper <i>et al.</i> (“ <i>Cooper</i> ”)
Exhibit 1005	U.S. Patent 6,226,447 to Sasaki <i>et al.</i> (“ <i>Sasaki</i> ”)
Exhibit 1006	U.S. Patent 5,371,551 to Logan <i>et al.</i> (“ <i>Logan</i> ”)
Exhibit 1007	Declaration of Dr. Gary Tjaden (“ <i>Tjaden Decl.</i> ”)
Exhibit 1008	Curriculum Vitae of Dr. Gary Tjaden
Exhibit 1009	Richard S. Rosenbloom and Michael A. Cusumano, <i>Technological Pioneering a Competitive Advantage: The Birth of the VCR Industry</i> , California Management Review, Vol. 29, No. 4 (1987) (“ <i>Rosenbloom</i> ”)
Exhibit 1010	U.S. Patent 5,719,988 to Blecksmith <i>et al.</i> , filed Feb. 21, 1996 (“ <i>Blecksmith</i> ”)
Exhibit 1011	U.S. Patent 5,734,853 to Hendricks <i>et al.</i> , filed Dec. 2, 1993 (“ <i>Hendricks</i> ”)
Exhibit 1012	U.S. Patent 4,972,396 to Rafner, filed Oct. 24, 1988 (“ <i>Rafner</i> ”)
Exhibit 1013	Masahiro Kageyama <i>et al.</i> , <i>A Free Time-shift DVD Video Recorder</i> , IEEE Transactions on Consumer Electronics, Vol. 43, No. 3, pp. 469-74 (Aug. 1997) (“ <i>Kageyama</i> ”)
Exhibit 1014	U.S. Patent 5,047,867 to Strubbe <i>et al.</i> , filed June 8, 1989 (“ <i>Strubbe</i> ”)
Exhibit 1015	Michael B. Jones, <i>The Microsoft Interactive TV System: An Experience Report</i> , Microsoft Corporation, Technical Report MSR-TR-97-18 (July 1997) (“ <i>Jones</i> ”)
Exhibit 1016	Lawrence A. Rowe, <i>et al.</i> , <i>A Distributed Hierarchical Video-on-Demand System</i> , Proceedings of the International Conference on Image Processing, 334-37 (1995) (“ <i>Rowe</i> ”)
Exhibit 1017	George H. Forman <i>et al.</i> , <i>The Challenges of Mobile Computing</i> , University of Washington, Dept. of Computer Science & Engineering, Tech Report #93-11-03 (Mar. 9, 1994) (“ <i>Forman</i> ”)
Exhibit 1018	Thomas C. Rakow and Peter Muth, <i>The V³ Video Server—Managing Analog and Digital Video Clips</i> , SIGMOD '93 Proceedings of the 1993 ACM SIGMOD international conference on Management of data, 556-57 (1993) (“ <i>Rakow</i> ”)
Exhibit 1019	David J. DeWitt <i>et al.</i> , <i>A Study of Three Alternative Workstation-Server Architectures for Object Oriented Database Systems</i> , Proceedings of the 16th VLDB Conference Brisbane, Australia (1990) (“ <i>DeWitt</i> ”)

Exhibit 1020	George T. Waters, <i>Television in the Digital Era</i> , EBU Technical Review (Autumn 1996) (summarizing a lecture delivered in Dublin on May 15, 1996) (“ <i>Waters</i> ”)
Exhibit 1021	Federal Communications Commission, Fifth Report and Order FCC 97-116 (April 21, 1997) (“FCC 97-116”)
Exhibit 1022	U.S. Patent 5,774,170 to Hite <i>et al.</i> (“ <i>Hite</i> ”)
Exhibit 1023	U.S. Patent 5,283,659 to Akiyama <i>et al.</i> (“ <i>Akiyama</i> ”)
Exhibit 1024	Petitioner’s Voluntary Interrogatory Responses
Exhibit 1025	Microsoft Computer Dictionary, 5th Edition

CERTIFICATION OF WORD COUNT

The undersigned certifies pursuant to 37 C.F.R. § 42.24 that the foregoing Petition for *Inter Partes* Review, excluding any table of contents, mandatory notices under 37 C.F.R. §42.8, certificates of service or word count, or appendix of exhibits, contains 13,533 words according to the word-processing program used to prepare this document (Microsoft Word).

Dated: December 30, 2018

BY: /s/ Jason R. Mudd
Jason R. Mudd, Reg. No. 57,700
ATTORNEY FOR PETITIONER

**CERTIFICATE OF SERVICE ON PATENT OWNER
UNDER 37 C.F.R. § 42.105**

Pursuant to 37 C.F.R. §§ 42.6(e) and 42.105, the undersigned certifies that on December 30, 2018, a complete and entire copy of this Petition for *Inter Partes* Review, including all exhibits listed in the Appendix of Exhibits, as well as the accompanying Power of Attorney, was provided via Federal Express to the Patent Owner by serving the counsel of record for the '882 Patent as listed on PAIR⁴:

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Dated: December 30, 2018

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⁴ The primary correspondence address of record is P.O. Box 1247, Seattle, WA 98111-1247. Because P.O. Boxes do not accept mail from Federal Express, Petitioner used counsel of record's main Seattle Office address. A copy of the Petition will also be sent to the P.O. Box via U.S.P.S. Priority Mail Express on December 31, 2018.