

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMCAST CABLE COMMUNICATIONS, LLC,
Petitioner,

v.

ENTROPIC COMMUNICATIONS, LLC,
Patent Owner.

Patent No. 9,825,826
Filing Date: November 23, 2015
Issue Date: November 21, 2017

Title: METHOD AND APPARATUS FOR SPECTRUM MONITORING

Inter Partes Review No.: IPR2024-00442

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

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EXHIBITS

Ex. 1001:	U.S. Patent No. 9,825,826 (“the ’826 Patent”)
Ex. 1002:	Expert Declaration of David B. Lett
Ex. 1003:	Curriculum Vitae of David B. Lett
Ex. 1004:	Certified Prosecution History of the ’826 Patent
Ex. 1005:	Certified Copy of U.S. Provisional Application No. 61/532,098 (“the ’826 Provisional”)
Ex. 1006:	U.S. Patent No. 8,792,008 (“the ’008 Patent”)
Ex. 1007-1008:	Reserved
Ex. 1009:	U.S. Pub. No. 2005/0114879 (“Kamieniecki”)
Ex. 1010:	U.S. Pub. No. 2010/0120386 (“Konstantinos”)
Ex. 1011:	U.S. Patent No. 8,649,421 (“Renken”)
Ex. 1012:	Certified Copy of U.S. Provisional Application No. 61/444,611 (“Renken Provisional”)
Ex. 1013-1014:	Reserved
Ex. 1015:	U.S. Pub. No. 2004/0181813 (“Ota”)
Ex. 1016-1019:	Reserved
Ex. 1020:	Claim Construction Memorandum Opinion and Order dated June 26, 2023, <i>Entropic Comms., LLC v. Charter Comms., Inc.</i> , 2:22-CV-00125-JRG (E.D. Tex.)
Ex. 1021:	U.S. Pub. No. 2005/0183130 (“Sadja”)
Ex. 1022:	U.S. Pub. No. 2010/0299713 (“Salinger”)
Ex. 1023:	Excerpts of IEEE 100, “The Authoritative Dictionary of IEEE Standard Terms” (7 th ed. 2000)
Ex. 1024:	U.S. Pub. No. 2008/0089402 (“Massey”)

- Ex. 1025: U.S. Patent No. 7,573,531 (“Aggarwal”)
- Ex. 1026: Excerpts of W. Ciciora, J. Farmer, D. Large, and M. Adams, “Modern Cable Television Technology Video, Voice, and Data Communications” (2nd ed. 2004) (“Ciciora”)
- Ex. 1027: U.S. Patent No. 7,340,230 (“Khoini-Poorfard”)
- Ex. 1028: U.S. Pub. No. 2003/0217362 (“Summers”)
- Ex. 1029: U.S. Pub. No. 2006/0256799 (“Eng”)

MANDATORY NOTICES

Real Parties in Interest (37 C.F.R. § 42.8(b)(1))

The real parties-in-interest for this petition are (i) Comcast Corporation, (ii) Comcast Cable Communications, LLC, and (iii) Comcast Cable Communications Management, LLC. These entities are referenced below as “Comcast entity _” or as “Comcast entities __,” where “__” is one of or more of (i)-(iii).

No unnamed entity is funding, controlling, or directing this Petition for *inter partes* review (IPR) of U.S. Patent No. 9,825,826 (“the ’826 Patent”), or otherwise has an opportunity to control or direct this Petition or Petitioner’s participation in any resulting IPR.

Related Matters (37 C.F.R. § 42.8(b)(2))

The ’826 Patent, along with related U.S. Patent No. 8,792,008 (“the ’008 Patent”), is asserted against Comcast Corp., Comcast Cable Communications, LLC, and Comcast Cable Communications Management, LLC in the Central District of California in *Entropic Communications, LLC v. Comcast Corp. et al.*, 2:23-cv-01050-JWH-KES (C.D. Cal.) (“CDCA Litigation”). The earliest date of service on any Comcast entity named in the CDCA Litigation was February 16, 2023.

The ’826 and ’008 Patents are also being asserted against Cox Communications, Inc., CoxCom LLC, and Cox Communications California, LLC in

the Central District of California in *Entropic Communications, LLC v. Cox Communications, Inc. et al.*, 2:23-cv-01049-JWH-KES (C.D. Cal.).

The '008 Patent was previously asserted against DirecTV, LLC, AT&T, Inc., AT&T Services, Inc., and AT&T Communications, LLC in the Central District of California in *Entropic Communications, LLC v. DirecTV, LLC et al.*, 2:22-cv-07775-JWH-KES (C.D. Cal.), and against DISH Network Corporation, DISH Network L.L.C., and DISH Network Service L.L.C. in the Central District of California in *Entropic Communications, LLC v. Dish Network Corporation et al.*, 2:22-cv-07959-JWH-KES (C.D. Cal.) but the '008 Patent was dismissed with prejudice from those cases on September 8, 2023, and September 27, 2023, respectively.

The '826 and '008 Patents were previously asserted against Charter Communications, Inc., Spectrum Advanced Services, LLC, and Spectrum Management Holding Company, LLC in *Entropic Communications, LLC v. Charter Communications, Inc.*, 2:22-cv-00125 (E.D. Tex.) which was terminated pursuant to a settlement on December 10, 2023.

According to the Office's records, the '826 Patent is a continuation of U.S. Pat. App. No. 14/341,880, filed July 28, 2014 (issued as U.S. Pat. No. 9,203,653), which is a continuation of U.S. Pat. App. No. 13/607,916, filed September 10, 2012 (issued as the '008 Patent), which claims priority to U.S. Provisional App. No. 61/532,098, filed September 8, 2011.

The '008 Patent was subject of a prior *inter partes* review in *DISH Network Corp. et al. v. Entropic Communications, LLC.*, IPR2023-00393 (PTAB February 6, 2023). This *inter partes* review was terminated prior to institution of trial, following joint motion by the parties. *Id.*, Paper No. 15 (PTAB September 13, 2023).

Petitioner is also filing a petition for *inter partes* review against the '008 Patent.

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

Petitioner designates counsel listed below. A power of attorney for counsel is being concurrently filed.

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I. INTRODUCTION

Comcast Cable Communications, LLC (“Petitioner”) petitions for *inter partes* review and cancellation of claims 1-18 of the ’826 Patent (Ex. 1001).

II. SUMMARY OF ARGUMENT

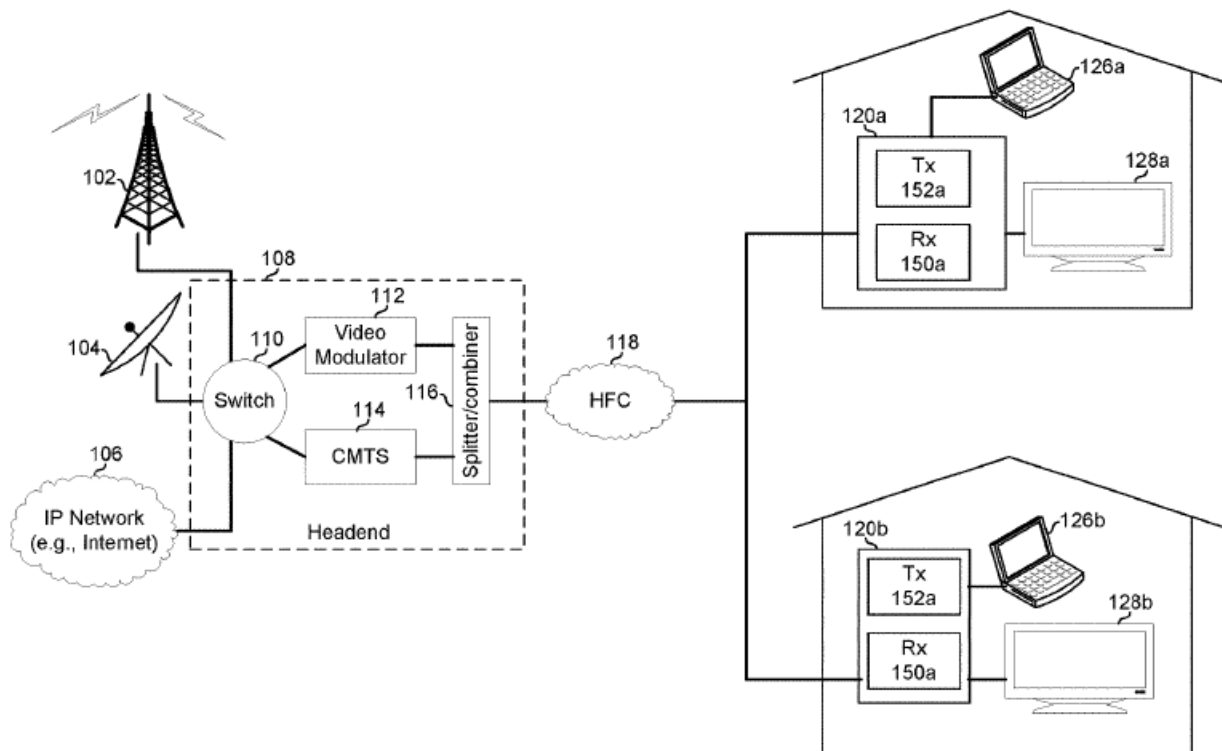
The ’826 Patent addresses television network quality, and claims systems for monitoring characteristics of a first portion of a received digitized television signal while also processing a second portion to recover its information (e.g., television channel), and for sending, to a source of the signal, messages that are based on those characteristics.

As set forth below, the prior art recognized both the problem and the solution offered in the ’826 Patent – prior art television systems already recognized the need for monitoring the quality of television signals that their customers receive, and already described systems that would allow customer devices, such as television set-top boxes and cable modems, to measure and report on various signal quality metrics. The prior art even already developed *improved* digital multi-channel receivers to support even greater numbers of simultaneous channels. Claims 1-18 of the ’826 Patent are unpatentable and should be canceled.

III. OVERVIEW OF THE '826 PATENT

A. Brief Description

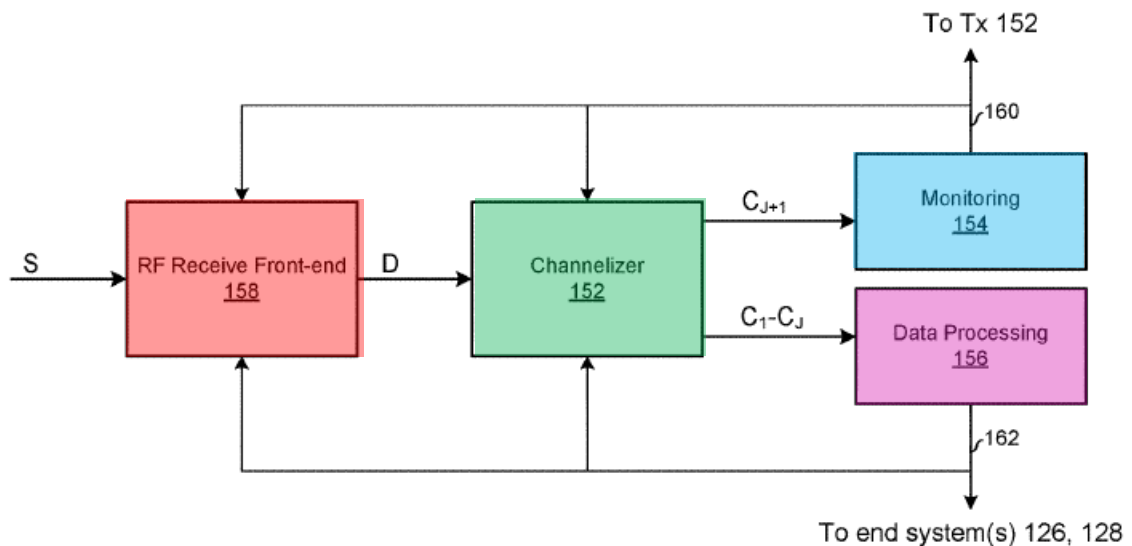
The '826 Patent describes a system in which a headend 108 transmits a signal (e.g., containing television signals and/or data signals) via hybrid fiber-coaxial network 118 to receiving gateways 120a, 120b. Ex. 1001, 2:45-3:15, Fig. 1A; Ex. 1002, ¶¶ 31-32.



Ex. 1001, Fig. 1A

Figure 1B shows receiver components. A radio frequency (RF) front-end 158 (red) may receive and digitize an incoming signal S, and the digitized signal D is

provided to a channelizer 152¹ (green) to select frequency bands within the signal S and output them to a monitoring module 154 (blue) and/or processing module 156 (purple). Ex. 1001, 3:27-4:64, 6:54-7:6; Ex. 1002, ¶ 33.



Ex. 1001, Fig. 1B (annotated)

The monitoring module 154 (blue) determines signal characteristics, such as signal to noise ratio, of the band it receives, and may send the characteristics, and/or an indication of whether a communication parameter of a channel is outside of acceptable bounds, to the headend. Ex. 1001, 3:45-4:5; Ex. 1002, ¶ 34.

¹ The '826 Patent's specification uses numeral '102' for the channelizer, but this appears to be a mistake in view of Figs. 1A (using '102' for the antenna) and 1B (showing '152' for the channelizer).

The data processing module 156 (purple) processes the bands it receives to recover data on the television channel(s) therein, and outputs corresponding data to end systems 126 via an interface, such as HDMI (High Definition Multimedia Interface) and/or Ethernet. Ex. 1001, 4:6-27; Ex. 1002, ¶ 35.

B. Prosecution History

U.S. Application No. 14/948,947, which led to the '826 Patent, was filed on November 23, 2015. Ex. 1004, p. 103. This application was a continuation of U.S. Application No. 14/341,880 (now U.S. Patent No. 9,203,653, “the '653 Patent”), which in turn was a continuation of the '008 Patent, and ultimately claimed priority to U.S. Provisional Application No. 61/532,098. *Id.*; Ex. 1002, ¶ 36.

All claims were rejected on the ground of nonstatutory double-patenting in view of claims from the '653 Patent, and as being obvious over a combination of Krafft (U.S. Pub. No. 2012/0163290) and Sasaki (U.S. Pub. No. 2005/0152557). Ex. 1004, pp. 111-120. Krafft, entitled “Internet Protocol Low Noise Block Front End Architecture,” was cited for most features, but the Office conceded that Krafft did not “control the transmission of network management messages back to said headend based on said measured characteristic of said received signal.” Ex. 1004, pp. 116-119. The Office alleged it would have been obvious to send feedback for generating adjustments, and cited Sasaki to show a multi-speaker audio system adjusting speaker output based on calculated transfer characteristics (e.g.,

propagation delay) of sounds from various speakers. Ex. 1004, p. 119; Ex. 1002, ¶ 37.

Subsequently, Applicant filed a Terminal Disclaimer, and argued that Sasaki's transfer characteristics are not actually transmitted anywhere. Ex. 1004, pp. 135-144. However, the Office maintained the rejection, noting that since Sasaki showed that a server could determine the transfer characteristics of the sounds, then the server must be receiving some sort of "measured/determined characteristics" of that sound. Ex. 1004, pp. 155-157; Ex. 1002, ¶ 38.

In response, Applicant again argued against Sasaki, this time asserting that Sasaki did not "control the transmission" of a message based on the cited transfer characteristic. Ex. 1004, pp. 168-176. The Office maintained its position, explaining that it was obvious to modify Krafft to use feedback as taught by Sasaki. Ex. 1004, pp. 181-182; Ex. 1002, ¶ 39.

The Applicant then added, without detailed discussion, the limitation "wherein said measured characteristic is different than said network management messages." Ex. 1004, pp. 187-193. This resulted in allowance. Ex. 1004, p. 200; Ex. 1002, ¶ 40.

C. Earliest Priority Date for the Claims

The '826 Patent claims priority to September 8, 2011, the filing date of U.S. Provisional Application No. 61/532,098 (hereinafter, "the '826 Provisional," Ex.

1005). However, the '826 Patent claims are not entitled to that priority date, as the claims recite features that were not found in the provisional application.

The priority date to which the '826 Patent claims are entitled is September 10, 2012, the filing date of the '008 Patent (the first utility application in the '826 Patent's priority chain). They are not entitled to claim priority to the provisional application because that application does not satisfy the written description requirements with respect to the current claims. Ex. 1002, ¶¶ 41-42. To provide the benefit of an earlier priority date, a patent application must comply with 35 U.S.C. § 120, which requires that the application provide sufficient written-description support for the claims. Similarly, a provisional application must meet the requirements of 35 U.S.C. § 119(e), which requires the application to provide a sufficient written description of the claimed invention. 35 U.S.C. § 119(e). Patent Owner has the burden of demonstrating compliance with these requirements. *In re NTP, Inc.*, 654 F.3d 1268, 1276 (Fed. Cir. 2011).

The test for written description is whether a person of ordinary skill in the art can recognize that the disclosure demonstrated possession of the invention as of the filing date. *Ariad Pharmaceuticals, Inc. v. Eli Lilly and Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). This is a factual question. *Id.*; *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1562 (Fed. Cir. 1991). Each of the claimed limitations must be described; that they are obvious over the description is insufficient.

Lockwood v. American Airlines, Inc., 107 F.3d 1565, 1571-1572 (Fed. Cir. 1997) (“Entitlement to a filing date does not extend to subject matter which is not disclosed, but would be obvious over what is expressly disclosed. It extends only to that which is disclosed. ... [A]ll the limitations must appear in the specification.”).

Both independent claims of the '826 Patent recite features involving a “hybrid fiber coaxial (HFC) network,” but the provisional lacks disclosure of such a network. Ex. 1001, claims 1, 10; Ex. 1005, pp. 2-20; Ex. 1002, ¶ 41. The HFC network first appears in the disclosure of the '008 Patent, and accordingly the claims of the '826 Patent are only entitled to the benefit of the filing date of the '008 Patent (September 10, 2012). Ex. 1001, Fig. 1A; Ex. 1006, Fig. 1A; Ex. 1002, ¶ 41.

Furthermore, both independent claims recite “the transmission of network management messages back to said headend based on said measured characteristic of said received signal, wherein said measured characteristic is different than said network management messages.” Ex. 1001, claims 1, 10. There is no disclosure of a “network management message” in the '826 Provisional. Ex. 1005, *passim*; Ex. 1002, ¶ 42. There is no discussion of transmitting, to the headend and based on a measured characteristic, a “network management message” wherein “said measured characteristic is different than said network management messages.” Ex. 1005, *passim*; Ex. 1002, ¶ 42. Claims 2 and 11 elaborate that these messages “indicate whether a parameter is outside of acceptable bounds,” and the '826 Provisional also

lacks disclosure of this feature. Ex. 1005, *passim*; Ex. 1002, ¶ 42. Because claims 1, 2, 10, and 11 recite features not found in the '826 Provisional, these claims are not entitled the priority date of the '826 Provisional. Claims 3-9 and 13-18 depend from one or more of these claims, and are also not entitled to the priority date of the '826 Provisional.

Petitioner maintains that the references used herein are prior art regardless of whether the '826 Patent claims are entitled to the provisional application's filing date, and the prior art features discussed below refer to features that were known to a person of ordinary skill in the art prior to the earliest priority date for the '826 Patent. The primary issues effected by the priority date determination are whether the Board needs to engage in a *Dynamic Drinkware* analysis with regard to the Renken references, and whether the entirety of Renken is prior art or only those portions supported by the Renken Provisional.

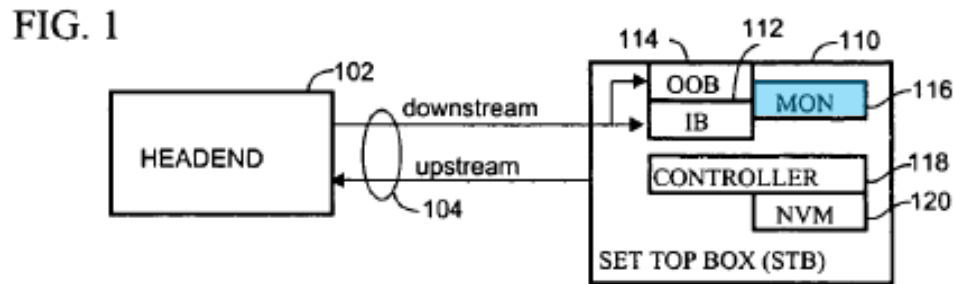
IV. OVERVIEW OF PRIOR ART

A. Kamieniecki

Kamieniecki (Ex. 1009) is a U.S. Published Application published on May 26, 2005, and is prior art pursuant to at least pre-AIA 35 U.S.C. § 102(b). Kamieniecki was not considered during prosecution of the '826 Patent. Ex. 1001, cover; Ex. 1002, ¶ 64.

Kamieniecki describes monitoring signal quality on a cable television network. Ex. 1009, [0001]. Kamieniecki monitors signal quality for different channels as the characteristics of one channel may be different from those of another channel. Ex. 1009, [0005], [0008], [0014]-[0015], [0017]; Ex. 1002, ¶¶ 65-66.

Kamieniecki's monitor 116 (blue) is in its set-top box (STB), so that signal quality may be monitored at subscriber locations. Ex. 1009, [0007]-[0008], [0013]-[0017], Fig. 1; Ex. 1002, ¶¶ 66-67. Figure 1 (below) illustrates a system in which a headend 102 transmits downstream signals to a set-top-box (STB) 110.



Ex. 1009, Fig. 1 (annotated)

STB 110 includes an in-band (IB) tuner 112 for receiving in-band data such as MPEG-2 transport streams, audio, and video. Ex. 1009, [0004], [0013]-[0014], Fig. 1; Ex. 1002, ¶¶ 67-69. STB 110 also includes an out-of-band (OOB) tuner 114 for receiving out-of-band data such as instructions. Ex. 1009, [0013], Fig. 1; Ex. 1002, ¶¶ 67-69. The IB tuner 112 and OOB tuner 114 allow STB 110 to receive OOB

communications simultaneously with IB communications. Ex. 1009, [0013]; Ex. 1002, ¶ 70.

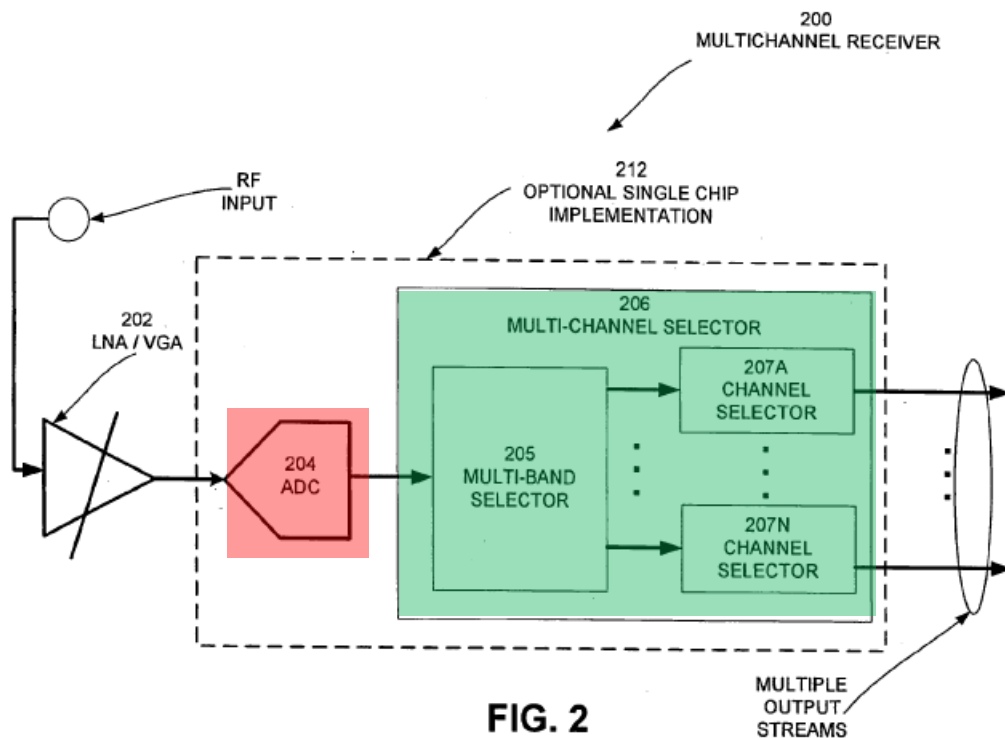
The monitor 116 generates signal quality information regarding the IB and/or OOB channels. Ex. 1009, [0014]; Ex. 1002, ¶¶ 71-72. This signal quality information can include information about channel absence/presence, error count, signal level estimates, and errors/dropouts, and may be transmitted by STB 110 to the headend 102. Ex. 1009, [0007]-[0009], [0014]-[0023]; Ex. 1002, ¶¶ 71, 76. Kamieniecki performs its monitoring at periodic intervals, going to “sleep” between monitoring events. Ex. 1009, [0008], [0015]; Ex. 1002, ¶ 72. When it is time to monitor its channels, STB 110 sequentially tunes to each channel in its channel map, collecting channel statistics for each channel. Ex. 1009, [0008], [0015], Fig. 2; Ex. 1002, ¶¶ 72-74. The channel map lists all of the IB and OOB channels, but Kamieniecki notes that fewer than all channels may be monitored. Ex. 1009, [0008], [0013], [0015], [0017], [0022], Fig. 2; Ex. 1002, ¶ 73.

Kamieniecki states that STB 110 may perform its monitoring “automatically in the background so as not to disturb any viewer experiences; i.e., when the STB is turned ‘off’ and in an idle state.” Ex. 1009, [0008], [0017]-[0018]; Ex. 1002, ¶¶ 74-75.

B. Konstantinos

Konstantinos (Ex. 1010) is a U.S. Published Application that was published on May 13, 2010, and is prior art pursuant to pre-AIA 35 U.S.C. § 102(b). Konstantinos was not considered during prosecution of the '826 Patent. Ex. 1001, cover; Ex. 1002, ¶ 77.

Entitled “Multi-Channel Receiver Architecture and Reception Method,” Konstantinos states that “[c]urrent television receivers receive a single channel through a single tuner,” and that “[t]he evolving market for data and programming services will demand that receivers have the capability of multi-channel tuning.” Ex. 1010, [0001]; Ex. 1002, ¶¶ 78-80. To address this demand, Konstantinos discloses a multi-channel receiver (MCR) 200.



Ex. 1010, Fig. 2 (annotated)

The MCR 200 comprises a low-noise amplifier and variable gain amplifier (LNA/VGA) 202, which receives a “composite broadband RF input signal (e.g., a cable TV signal consisting of multiple channels bundled together between 50-1000 MHz).” Ex. 1010, [0043], [0114]-[0115], Fig. 2; Ex. 1002, ¶¶ 81-82. The output of LNA/VGA 202 is “digitized in its entirety with an ADC [Analog-to-Digital Converter] 204” (red). Ex. 1010, [0043], [0116], Fig. 2; Ex. 1002, ¶ 82. “The output of ADC 204 comprises a multi-channel digital signal,” which may then be provided to a Multi-Channel Selector 206 (green), which selects channels of interest. Ex. 1010, [0044]-[0046], [0117]-[0118], Fig. 2; Ex. 1002, ¶¶ 83-85. As an example,

Konstantinos' multi-channel decoder may process and deliver 16 TV streams simultaneously. Ex. 1010, [0106], [0119]; Ex. 1002, ¶ 86.

C. Renken

Renken (Ex. 1011) is a U.S. Patent, filed on February 17, 2012, that claims priority to and incorporates by reference U.S. Provisional Application 61/444,611 ("Renken Provisional," Ex. 1012). Ex. 1011, cover, 1:7-10. Renken is prior art under pre-AIA 35 U.S.C. § 102(e) as explained below. Renken was not considered during prosecution of the '826 Patent. Ex. 1001, cover; Ex. 1002, ¶¶ 87-88.

Renken discloses a measurement-capable cable modem (MCCM) that has multiple receivers, and can use idle receivers to perform measurements on downstream channels and report results to a central measurement controller. Ex. 1011, Abstract; Ex. 1012, p. 3²; Ex. 1002, ¶¶ 89-90. The MCCM 100, shown below in Figure 2, operates under the control of controller 200, and includes an upstream transmitter circuit 10 and a downstream receiver circuit 20:

² Citations to the Renken Provisional use the superimposed exhibit page numbers, and not the original numbers appearing at the bottom of some pages. Also note that Renken includes multiple figures identified as Fig. 1 and Fig. 2.

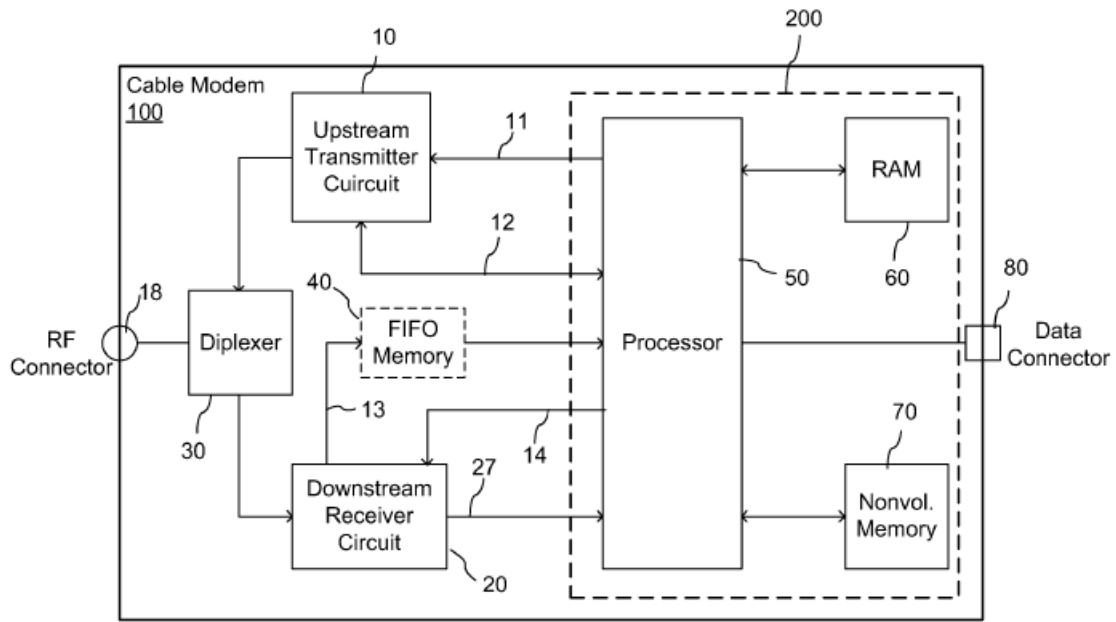


Fig. 2

Ex. 1011, Fig. 2

Ex. 1011, 9:19-10:11, Fig. 2; Ex. 1012, pp. 5-6; Ex. 1002, ¶¶ 91-93. An embodiment of the downstream receiver circuit 20 is shown in greater detail in Figure 3.

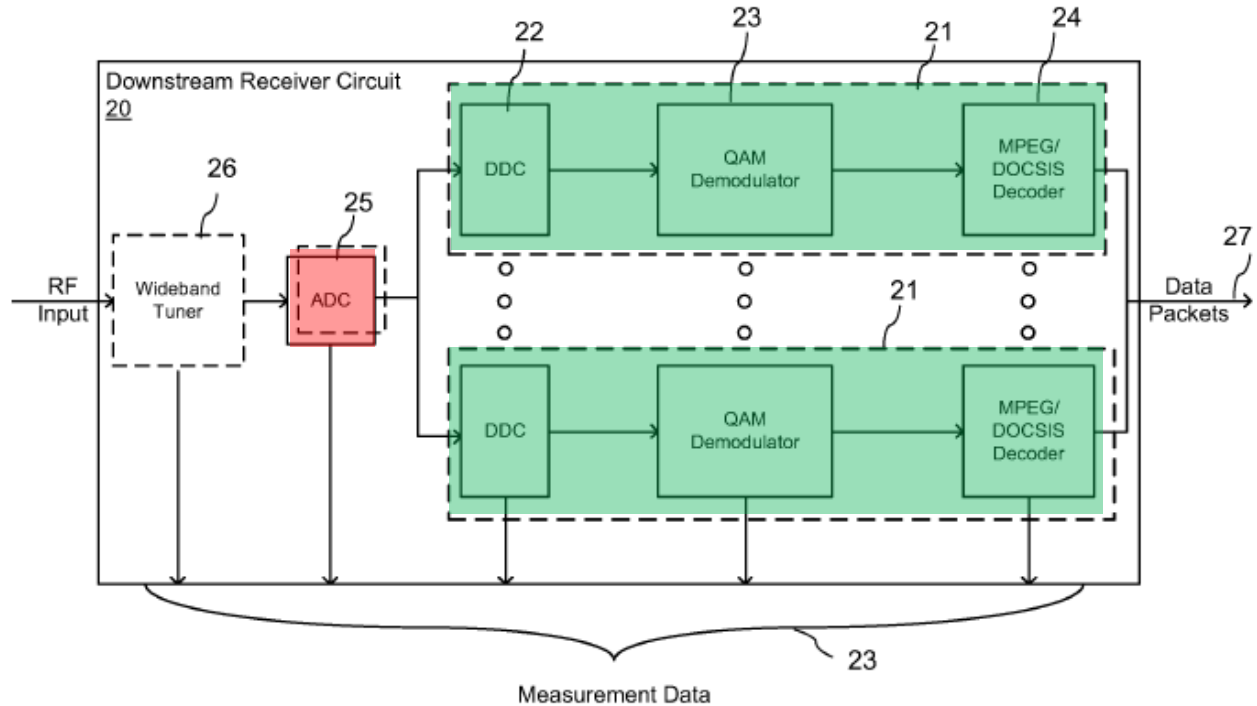


Fig. 3

Ex. 1011, Fig. 3 (annotated)

Ex. 1011, 10:56-57, Fig. 3; Ex. 1012, p. 6; Ex. 1002, ¶ 94.

The receiver circuit 20 includes a wideband tuner 26 for tuning to a selected group of downstream RF channels, an analog-to-digital converter (ADC) 25 (**red**) for converting the RF channels into digitized intermediate frequency (IF) signals, and a plurality of receivers 21 (**green**), each comprising a digital down converter 22, QAM demodulator 23, and MPEG/DOCSIS decoder 24, that are each capable of selecting, demodulating, and decoding a single downstream channel. Ex. 1011, 10:56-62, 11:22-32, 11:39-40, 12:22-13:21, Fig. 3; Ex. 1012, pp. 6-7. Renken shows multiple receivers 21 for receiving multiple channels to support DOCSIS 3.0 (Data

Over Cable Service Interface Specification), and notes that the number of channels is expected to increase. Ex. 1011, 10:62-67, Fig. 3; Ex. 1012, p. 6; Ex. 1002, ¶¶ 90, 95.

The MCCM 100 may receive a request, from a central measurement controller (CMC) 7, to perform measurements using one or more idle receivers, and the MCCM 100 may send its measurement results back to the CMC 7. Ex. 1011, 9:5-18; Ex. 1012, pp. 3-4, 10; Ex. 1002, ¶¶ 95-96. The MCCM 100 may obtain, from its components, various types of measurement data, such as spectrum-style measurements, signal level, carrier-to-noise ratio, signal-to-noise ratio, frequency response, and modulation error ratio. Ex. 1011, 11:39-12:5, 12:38-44, 12:56-67; Ex. 1012, pp. 3-8, 14. Renken also includes signal-to-noise ratio, which a POSITA would understand is used interchangeably with modulation error ratio. Ex. 1011, 12:62-13:5; Ex. 1002, ¶ 96.

1. Renken is Entitled to a Priority Date of February 18, 2011

As shown below, the Renken Provisional provides written description support for at least claims 1 and 10 of Renken. Ex. 1002, ¶¶ 97-113. Because at least one claim of Renken is entitled to the filing date of the Renken Provisional, Renken is prior art under pre-AIA 35 U.S.C. § 102(e) even if the '826 Patent is entitled to claim priority to its provisional application. *Dynamic Drinkware, LLC v. National Graphics, Inc.*, 800 F.3d 1375, 1381 (Fed. Cir. 2015).

Renken – Claims 1 and 10	Renken Provisional Support
1. A measurement-capable cable modem (MCCM) comprising:	Ex. 1012, pp. 3-9, 13-14, Figs. 1-2 (pp. 5-6); Ex. 1002, ¶ 99.
a cable port for connecting to a cable network;	Ex. 1012, pp. 3-6, 9, 13-14, Fig. 1 (p. 5) (RF Connector); Ex. 1002, ¶ 100
a data port for connecting to a customer premises equipment (CPE) for providing customer services;	Ex. 1012, pp. 3-5, Fig. 1 (p. 5) (Data Connector); Ex. 1002, ¶ 101
a plurality of transmitters coupled to the cable port for transmitting upstream digital communication signals from the CPE over one or more upstream channels of the cable network;	Ex. 1012, pp. 3-8, Fig. 1 (p. 5) (Upstream Transmitter(s)); Ex. 1002, ¶ 102
a plurality of receivers coupled to the cable port for receiving downstream digital communication signals over one or more downstream channels of the cable network for communicating to the CPE; and,	Ex. 1012, pp. 3-8, Fig. 1 (p. 5), Fig. 2 (p. 6) (Downstream Receiver(s)); Ex. 1002, ¶ 103
a modem controller coupled to the transmitters and the receivers for controlling thereof, wherein the modem controller is configured for tunably allocating at least one of the receivers and at least one of the transmitters for data communications	Ex. 1012, pp. 3-8, Fig. 1 (p. 5) (Processor, RAM, Non-Volatile Memory) (idle receivers used to perform tests while other receivers continue to provide data services

Renken – Claims 1 and 10	Renken Provisional Support
between the cable network and the CPE, while leaving at least another one of the receivers as a currently idle receiver that is not allocated for the data communications, or leaving at least another one of the transmitters as a currently idle transmitter that is not allocated for the data communications;	for the subscriber); Ex. 1002, ¶ 104
wherein the modem controller further comprises a measurement controller for utilizing the currently idle receiver or the currently idle transmitter to perform a network measurement.	Ex. 1012, pp. 3-6, 9-11, 13-15 (Local Measurement Controller; and alternatively, the Processor executing the measurement program); Ex. 1002, ¶ 105
10. A method for monitoring a cable network comprising a network node,	Ex. 1012, p. 3-8, 5, 9, 13-15 (cable plant and location of CMTS); Ex. 1002, ¶ 106
a cable modem termination system (CMTS) disposed at least in part at the network node,	Ex. 1012, pp. 3-8, 5, 9, 13-15 (CMTS); Ex. 1002, ¶ 107
a cable modem (CM) disposed at a customer location for connecting to a customer premises equipment (CPE), and	Ex. 1012, pp. 3-15 (MCCM/CM), Fig. 1 (p. 5); Ex. 1002, ¶ 108
a cable link for connecting the CMTS to the CM for providing customer services,	Ex. 1012, pp. 3-4, 8, 9, 12-15 (“cable plant”, “cable network”); Ex. 1002, ¶ 109

Renken – Claims 1 and 10	Renken Provisional Support
wherein the CM comprises a plurality of receivers for receiving downstream data communication signals from the CMTS over one or more downstream channels and a plurality of transmitters for transmitting upstream data communication signals over one or more upstream channels to the CMTS, the method comprising:	See discussion of “transmitters” and “receivers” in claim 1 above; Ex. 1002, ¶ 110
a) allocating at least one of the receivers and at least one of the transmitters to data communications between the CMTS and the CPE, leaving at least another one receiver or at least another one transmitter as a currently idle receiver or transmitter, respectively, that is not allocated to the data communications;	See discussion of “tunably allocating” in claim 1 above; Ex. 1002, ¶ 111
b) performing a network measurement using the currently idle receiver or the currently idle transmitter.	Ex. 1012, pp. 3-15 (e.g., p. 3 “to perform a variety of signal-level measurements ...”); Ex. 1002, ¶ 112

D. Sadja

Sadja (Ex. 1021) is a U.S. Published Application that was published on August 18, 2005, and is prior art pursuant to pre-AIA 35 U.S.C. § 102(b). Sadja was

not considered during prosecution of the '826 Patent. Ex. 1001, cover; Ex. 1002, ¶ 114.

Sadja discloses a cable television diagnostic system where STBs monitor various performance aspects of the digital signal that they are receiving including Signal-to-Noise Ratio, Carrier-to-Noise Ratio, Bit Error Rate, power level, Modulation Error Ratio, and Quadrature Amplitude Modulation data. Ex. 1021, Abstract, [0018], [0038], [0042], [0049], [0073], [0081], [0084]; Ex. 1002, ¶¶ 115-116. When polled by the headend, the STB responds by providing requested performance data for analysis and diagnosis of problems. Ex. 1021, Abstract, [0059], [0082]-[0084], [0087], [0090]. Sadja discloses that alarms may be raised if a value falls outside of specified limits. Ex. 1021, [0075]; Ex. 1002, ¶ 116.

E. Salinger

Salinger (Ex. 1022) is a U.S. Published Application that was published on November 25, 2010, and is prior art pursuant to at least pre-AIA 35 U.S.C. § 102(a) and (e). Salinger was not considered during prosecution of the '826 Patent. Ex. 1001, cover; Ex. 1002, ¶ 117.

Salinger discloses probes that can be installed throughout a coaxial cable plant, including at a cable tap leading to a subscriber premises, to monitor one or more communication parameters on some or all downstream channels. Ex. 1022, Abstract, [0005], [0018], [0031], [0043], [0063]; Ex. 1002, ¶¶ 118-120. The

parameters monitored by the probe include signal level, Modulation Error Ratio, phase noise, Signal to Noise Ratio, Bit Error Rate, and Carrier to Noise Ratio. Ex. 1022, [0018], [0035]-[0037]; Ex. 1002, ¶ 118. The probe reports monitoring data back to a central point (e.g., a Cable Modem Termination System) on a periodic basis or may send an immediate message if a parameter exceeds predefined limits. Ex. 1022, [0005], [0049], [0064], Ex. 1002, ¶¶ 118-120.

F. Aggarwal

Aggarwal (Ex. 1025) is a U.S. Patent that was issued on August 11, 2009, and is prior art pursuant to at least pre-AIA 35 U.S.C. § 102(b). Aggarwal was not considered during prosecution of the '826 Patent. Ex. 1001, cover; Ex. 1002, ¶ 121.

Aggarwal discloses a television receiver that measures whether a frequency offset is within an acceptable range in order to determine if a signal is available for reception. Ex. 1025, 2:32-47, 3:6-14, 4:53-5:14, 7:42-56, 9:11-10:41, Fig. 2-4; Ex. 1002, ¶¶ 122-125.

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

A. Claims for Which Review is Requested and Grounds on Which Challenge Is Based

Petitioner requests review of claims 1–18 on the following grounds in view of the knowledge of a person of ordinary skill in the art.

Ground	References	Basis	Claims Challenged
A	Kamieniecki in view of Konstantinos	§ 103	1-18
B	Kamieniecki in view of Konstantinos and Sadja	§ 103	3, 12
C	Kamieniecki in view of Konstantinos and Aggarwal	§ 103	5, 14
D	Kamieniecki in view of Konstantinos and Salinger	§ 103	7, 16
E	Renken	§ 103	1-18
F	Renken in view of Aggarwal	§ 103	5, 14

None of the prior art listed in the table above was before the examiner during prosecution of the '826 Patent.

B. 314(a) Discretion Does Not Apply

1. *Fintiv* Discretionary Denial Is Unwarranted

The *Fintiv* factors as set forth in the Director's June 21, 2022 Guidance Memorandum do not warrant discretionary denial.

Factor One (whether a stay may be granted)

Factor one appears neutral. Petitioner has filed IPR petitions challenging all eight patents asserted in the District Court in case no. 2:23-cv-01050. If trial is instituted, and the case is not dismissed based on Petitioner's pending motion to dismiss the Second Amended Complaint, then Petitioner expects to request a stay, as decisions in Petitioner's favor would resolve the dispute in its entirety.

Factor Two (proximity of trial date)

Factor two favors institution. Petitioner has filed a motion to dismiss the District Court case, Patent Owner has filed an Amended Complaint, and Petitioner will renew its Motion to Dismiss in order to seek dismissal of the operative complaint. In addition, no schedule beyond claim construction has been entered, and the Court has not set a trial date.

Factor Three (investment in parallel proceeding)

Factor three favors institution. To date, the investment by the District Court has been limited to considering motions to dismiss on the pleadings.

Factor Four (overlap between issues)

Factor four strongly favors institution. The petition challenges all claims in the '826 Patent while only claims 1-4, 6, 8, and 9 are asserted in the District Court.

Factor Five (petitioner and defendant are same party)

Factor five does not warrant denial as Petitioner is a defendant in the District Court case.

Factor Six (other circumstances including merits)

Factor six favors institution. Petitioner presents compelling unpatentability challenges that merit institution.

C. 325(d) Discretion Does Not Apply

Considering the two-part framework discussed in *Advanced Bionics, LLC v. Med-El Elektromedizinische Geräte GMBH*, No. IPR2019-01469, Paper 6 at 8-9

(PTAB Feb. 13, 2020), the Board should not exercise its §325(d) discretion to deny institution. The grounds raised by this Petition are not the same or substantially the same as the art and arguments raised during prosecution, and to the extent that they are, Examiner erred in a manner material to the patentability of the challenged claims.

D. Level of Ordinary Skill

A person of ordinary skill in the art (a “POSITA”) at the time of the alleged invention would have had a degree in electrical engineering or a similar discipline, and three-to-four years of experience working with television signal processing and communication systems. Additional education may substitute for professional experience and significant work experience may substitute for formal education. Ex. 1002, ¶¶ 44-46.

As set forth in his attached declaration, David B. Lett at least meets the level of skill of a POSITA. Ex. 1002, ¶¶ 1-30.

E. Claim Construction

All claim terms herein should be given their ordinary and customary meaning to a POSITA, as they would be given in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b); Ex. 1002, ¶ 47.

In the *Entropic v. Charter* case, the District Court entered an Order on June 26, 2023, construing “network management messages” in the ’826 Patent to mean

“messages which report on the network based on the measured characteristics.” Ex. 1020, pp. 26-29. The District Court also found that since the claim requires the measured characteristic to be different than the network management messages, merely sending the measured characteristic is insufficient. Ex. 1020, pp. 28-29. The Court’s construction and remarks are consistent with the ordinary and customary meaning of the claim language. The District Court did not construe any other terms from the ’826 Patent. Ex. 1002, ¶¶ 52-53.

Petitioner does not contend that the claims include any means-plus-function limitations but identifies the following claim elements, including their respective structures, in the case the Board finds them to be means-plus-function elements. Ex. 1002, ¶¶ 48-49.

“processing circuitry operable to”

To the extent the Board finds this is a means-plus-function term in claim 10, the function is processing said selected second portion of said digitized signal to recover information carried in said plurality of channels; and the corresponding structure is hardware, software, firmware, or any combination of one or more thereof, that carries out the recited function. Ex. 1001, 2:32-36, 3:16-21, 4:6-18, 4:65-5:9, Figs. 1B-1C; Ex. 1002, ¶ 50.

“monitoring circuitry operable to”

To the extent the Board finds this is a means-plus-function term in claim 10, the function is analyzing said selected first portion of said digitized signal to measure a characteristic of said received signal and controlling the transmission of network management messages back to said headend based on said measured characteristic of said received signal; and the corresponding structure is physical electronic hardware components and associated software/firmware that carries out the recited function. Ex. 1001, 2:32-36, 3:16-21, 3:45-4:5, 4:65-5:9, Figs. 1B-1C; Ex. 1002, ¶ 51.

VI. SPECIFIC GROUNDS FOR UNPATENTABILITY

A. Grounds A-D: Claims 1-18 are Rendered Obvious by Kamieniecki in View of Konstantinos, Claims 3 and 12 are Rendered Obvious by Kamieniecki in View of Konstantinos and Sadja, Claims 5 and 14 are Rendered Obvious by Kamieniecki in View of Konstantinos and Aggarwal, and Claims 7 and 16 are Rendered Obvious by Kamieniecki in View of Konstantinos and Salinger

As set forth below, claims 1-18 would have been obvious to a POSITA in view of Kamieniecki combined with Konstantinos, claims 3 and 12 would have further been obvious to a POSITA in view of Kamieniecki combined with Konstantinos and Sadja, claims 5 and 14 would have further been obvious to a POSITA in view of Kamieniecki combined with Konstantinos and Aggarwal, and claims 7 and 16 would have further been obvious to a POSITA in view of

Kamieniecki combined with Konstantinos and Salinger. Ex. 1002, ¶¶ 54-86, 114-237.

2. Overview of Combination

The Kamieniecki-Konstantinos combination replaces the IB and OOB tuners in Kamieniecki's STB with Konstantinos' multi-channel receiver. This is a natural evolution of television technology specifically taught by Konstantinos. Ex. 1002, ¶¶ 127-129. Konstantinos describes how existing television receivers receive a single channel through a single tuner, that the conventional approach of using multiple single-channel tuners in parallel becomes impractical as the number of simultaneously required channels goes beyond two, and that the evolving market for data and programming services will demand the capability of multi-channel tuning. Ex. 1010, [0001], [0006], [0008], [0011], [0016]; Ex. 1002, ¶ 130. Konstantinos further describes that the Data Over Cable Service Interface Specification (DOCSIS) 3.0 standard requires the simultaneous reception of at least 4 channels (e.g., for the transmission of Internet data) and that the full cable TV band can have up to 100 channels between 50-1000 MHz. Ex. 1010, [0011]. Konstantinos offers the solution of a multi-channel receiver (which may be implemented on a single IC (integrated circuit)) able to provide improved multi-channel functionality. Ex. 1010, Abstract, [0016]-[0017], [0042], [0107]; Ex. 1002, ¶ 130.

A POSITA would recognize that Konstantinos suggests an improvement to systems like that of Kamieniecki. Ex. 1002, ¶ 131. As Konstantinos recognizes, Kamieniecki's separate tuners become impractical in view of the increased demand for multi-channel tuning, because each time an RF input is replicated for separate tuners, the signal quality degrades, and Konstantinos' receiver avoids this loss by digitizing the RF input in its entirety, and then making selections from that digitized version. Ex. 1010, [0006]-[0007], [0043], [0045], [0049]. A POSITA would recognize that using Konstantinos' multi-channel receiver in place of Kamieniecki's IB and OOB tuners would offer savings in terms of cost and component complexity while providing improved multi-channel capability. Ex. 1002, ¶¶ 130-131.

A POSITA would have been motivated to apply Konstantinos' multi-channel receiver to the monitoring STB of Kamieniecki to enable simultaneous tuning of larger numbers of channels (e.g., four or more) as required by new cable technologies such as DOCSIS 3.0 and the advent of cable offerings with up to 100 TV channels. Ex. 1010, [0011]; Ex. 1002, ¶ 149. Digitizing multiple channels simultaneously would also allow for faster channel switching (with multiple decoders) because there would be reduced delay while the tuner switches to a new channel's frequency. Ex. 1002, ¶ 149. A POSITA would have understood that Kamieniecki's IB/OOB tuners could be replaced beneficially by Konstantinos'

multi-channel receiver providing enhanced capabilities and reducing cost and complexity through a single chip solution. Ex. 1010, [0044]; Ex. 1002, ¶ 150.

Combining Konstantinos with Kamieniecki also would be merely using known techniques (a multi-channel digital receiver) to improve similar devices (Kamieniecki's STB having multiple TV tuners) to yield a predictable result (converting a received RF signal into multiple digital outputs). Ex. 1002, ¶ 151. A POSITA had the skill to implement Konstantinos' teachings with Kamieniecki because Kamieniecki's IB and OOB tuners use the same inputs (an RF signal) and same outputs (digital signal of the desired channel) as those of Konstantinos' multi-channel receiver and the POSITA would be familiar with the design of RF receivers. Id. A POSITA would thus have been able to implement Konstantinos' multi-channel receiver into Kamieniecki's STB with expectation of success and without undue experimentation. Id.

A POSITA would also have recognized that the problem addressed by Kamieniecki's remote monitoring solution would still remain even when using Konstantinos' receiver in the combined system. Ex. 1002, ¶ 132. Accordingly, it would have been obvious to a POSITA to use Konstantinos' multi-channel receiver in place of the IB and OOB tuners in the Kamieniecki STB while still monitoring the channels and reporting the monitoring back to the headend, as doing so merely

combines prior art elements according to known methods to yield predictable results. Ex. 1002, ¶¶ 131-132.

Additional details of the motivation for combining Kamieniecki and Konstantinos will be discussed below.

3. Independent Claim 1

a. [1A]: “A method comprising:”

While the preamble [1A]³ is not limiting, Kamieniecki-Konstantinos teaches the claimed system, as discussed below. Ex. 1002, ¶¶ 133-134.

b. [1B]: “performing by one or more circuits of a receiver coupled to a television and data service provider headend via a hybrid fiber coaxial (HFC) network:”

Kamieniecki describes a set-top box (STB) 110 (“receiver”) receiving a plurality of IB and one or more OOB channels from a headend 102 (“headend”) over a cable network 104 that includes a combination of coaxial cable and fiber optic cable (“hybrid fiber coaxial (HFC) network”). Ex. 1009, [0005], [0013]-[0022], Fig. 1; Ex. 1002, ¶¶ 135-137. A POSITA would understand that set-top-boxes are “coupled to a television and data service provider headend” so that television channels may be watched and data may be received. Ex. 1002, ¶ 138. Kamieniecki

³ The limitations of the claims appear and are labelled in the Claims Listing Appendix.

describes television and data services offered by a cable operator's headend, such as video programs and pay-per-view events ("television"), and interactive applications and program guide tuning data ("data"). Ex. 1009, [0001]-[0002], [0013]; Ex. 1002 ¶ 138.

The various steps in the claim, discussed below, are performed by the STB 110 in the Kamieniecki-Konstantinos combination, and accordingly, Kamieniecki-Konstantinos shows limitation [1B]. Ex. 1002, ¶¶ 139-140.

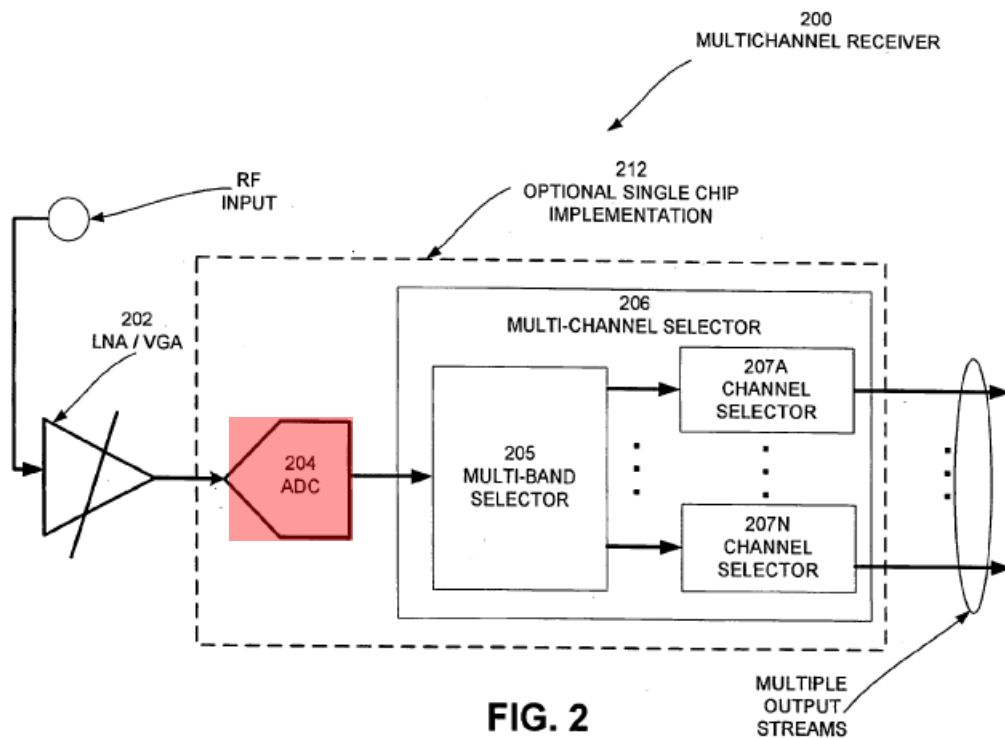
- c. **[1C]: receiving, via said HFC network, a signal that carries a plurality of channels, wherein said channels comprise one or both of television channels and data channels;**

As discussed above in regard to limitation [1B], Kamieniecki's STB receives IB and OOB channels ("signal") from headend 102. Ex. 1009, Fig. 1, Ex. 1002, ¶¶ 141-142. The IB channels comprise audio and video content of television programs ("television channels"), and the OOB channels comprise program guide tuning data and polling instructions ("data channels"). Section VI.A.2.b, *supra*; Ex. 1009, [0001]-[0005], [0008]-[0009], [0013]-[0014], [0017], [0023]-[0025]; Ex. 1002, ¶ 142.

Accordingly, Kamieniecki-Konstantinos shows limitation [1C]. Ex. 1002, ¶ 143.

d. [1D]: “digitizing said received signal to generate a digitized signal;”

Konstantinos describes an analog-to-digital converter 204 (red) as part of its multi-channel receiver 200 shown in Figure 2 below. Ex. 1010, [0042]-[0046], [0114]-[0116], Figs. 2, 9; Ex. 1002, ¶¶ 144-146.



Ex. 1010, Fig. 2 (annotated)

The RF input received by Konstantinos’ multi-channel receiver 200 is digitized “in its entirety with an ADC 204.” Ex. 1010, [0043]; Ex. 1002, ¶ 147. This RF input may be a cable TV signal including multiple channels, and the digitization samples “the whole RF signal”, such that no channel information is lost, to thereby allow “any combination of the available channels of the original composite signal”

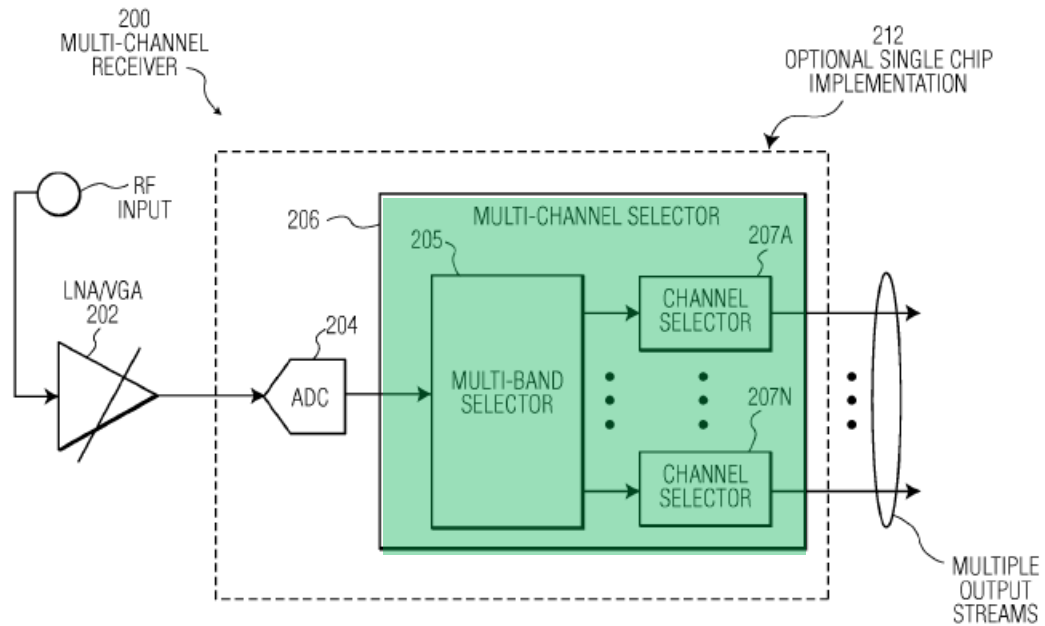
to be selected. Ex. 1010, [0043], [0048]-[0049], [0104]-[0105], [0114]-[0116]; Ex. 1002, ¶ 147. Konstantinos also receives both TV and DOCSIS (data) channels. Ex. 1010, [0011]; Ex. 1002, ¶ 147.

In the Kamieniecki-Konstantinos combination, the IB and OOB channels of Kamieniecki would be the RF input that is received by Konstantinos' multi-channel receiver 200. Ex. 1002, ¶ 148. The digitization of the Kamieniecki IB and OOB channels by Konstantinos' ADC 204 results in a multi-channel digital signal ("digitized signal") that is a digitized equivalent of the RF input signal. Ex. 1010, [0043], [0048]-[0049], [0116]; Ex. 1002, ¶ 148.

Therefore, Kamieniecki-Konstantinos renders obvious limitation [1D]. Ex. 1002, ¶ 152.

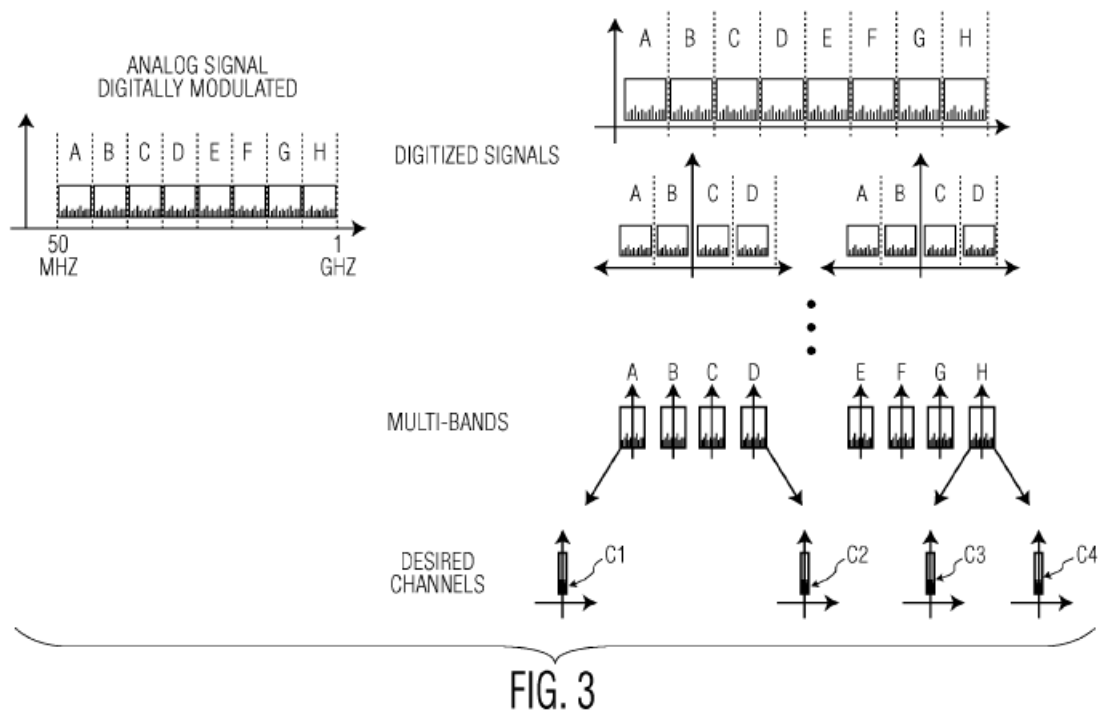
e. [1E]: "selecting a first portion of said digitized signal; selecting a second portion of said digitized signal;"

Konstantinos describes a multi-channel selector 206 (**green**), which includes a multi-band selector 205 and multiple channel selectors 207A-N, which select channels from the digitized broadband input signal, and outputs them concurrently, as illustrated in Figure 2. Ex. 1010, [0044]-[0046], [0117], Fig. 2; Ex. 1002, ¶¶ 153-154.



Ex. 1010, Fig. 2 (annotated)

Konstantinos' Figure 3 illustrates how the incoming analog signals, from 50MHz to 1GHz, are received and digitized, and then desired channels are selected for output:



Ex. 1010, Fig. 3

Ex. 1010, [0045]-[0051], Fig. 3; Ex. 1002, ¶¶ 155-158.

This channel selection uses a two-step process, in which a multi-band selector 205 first makes a “coarse” selection of sub-bands (multi-bands in Fig. 3), and channel selectors 207A-N then make a “fine” selection of desired channels. Ex. 1010, [0045]-[0046], [0102]-[0105], Fig. 3; Ex. 1002, ¶¶ 155-158. Konstantinos states that “[b]y replicating the fine selector, one can realize a multiplicity of digital tuners very efficiently.” Ex. 1010, [0105]. Konstantinos further describes controlling the multi-band selector to determine which channels to deliver at its output. Ex. 1010, [0117]-[0118]. Konstantinos gives an example in which sixteen TV streams are simultaneously selected and output by the receiver, and notes that

“any combination of the available channels of the original composite signal can be selected and delivered to the output.” Ex. 1010, [0105]-[0106]; Ex. 1002, ¶ 158. In the combination, some channels (“first portion”) are selected for monitoring, while some channels (“second portion”) are selected for viewing by a user. Ex. 1002, ¶ 158.

Kamieniecki describes a desire to monitor some or all channels in the channel map, and does so by waiting for an idle time and then looping through the channels one at a time. Ex. 1009, [0015], [0017], Fig. 2; Ex. 1002, ¶ 159. This is due to: 1) the fact that Kamieniecki’s STB only has a single IB tuner, and 2) Kamieniecki wishes to do its monitoring without disturbing user experience. Ex. 1009, [0013], [0017]; Ex. 1002, ¶ 159.

As combined with Konstantinos’ multi-channel receiver, a POSITA would have recognized that Kamieniecki’s measurements can be made without waiting for an idle time, and can be done in parallel without disturbing users, and that this would have been advantageous since network errors are not limited to user idle times, and it would have been desirable to monitor signal quality at times of heavy network use as well. Ex. 1002, ¶ 159. The channel(s) to be monitored (“first portion of said digitized signal”), and the channel(s) desired for normal operation (“second portion of said digitized signal”), e.g., a TV channel a user is watching, would be output via parallel channel selectors 207A-N. A POSITA would also have recognized that

Konstantinos' interface circuit outputting the multiple output streams would allow for outputs from the multi-channel selector to be sent to different locations, such as decoders and/or the Kamieniecki monitor 116. Ex. 1010, [0121]; Ex. 1009, Fig. 1; Ex. 1002, ¶¶ 159-160.

Accordingly, Kamieniecki-Konstantinos renders obvious limitation [1E]. Ex. 1002, ¶ 161.

f. [1F]: “processing said selected second portion of said digitized signal to recover information carried in said plurality of channels;”

Television channels need to be processed so that their content can be recovered and viewed. Ex. 1002, ¶¶ 162-163. Kamieniecki describes that the IB channels include MPEG-2 transport streams which contain content of the television channel. Ex. 1009, [0004]. Kamieniecki's STB obviously would have a decoder to process the MPEG-2 stream (“recover information carried in said plurality of channels”) in order for the subscriber to view the content. Ex. 1009, [0013]; Ex. 1002, ¶¶ 163-164. Kamieniecki further describes processing OOB communications to receive instructions (“recover information carried in said plurality of channels”). Ex. 1009, [0013]; Ex. 1002, ¶ 164.

Konstantinos also describes channel and source decoders that are used to process a TV channel, such as an MPEG stream, and recover its content for viewing by a user (“recover information carried in said plurality of channels”). Ex. 1010,

[0030], [0042], [0106]-[0107], [0117]-[0119]; Ex. 1002, ¶ 165. Konstantinos further describes an “information extraction digital signal processor (IEP)” which processes information from received channel(s) to improve reception quality (“recover information carried in said plurality of channels”). Ex. 1010, [0108]-[0111], [0120]; Ex. 1002, ¶ 165.

Accordingly, Kamieniecki-Konstantinos shows limitation [1F]. Ex. 1002, ¶ 166.

g. [1G]: “analyzing said selected first portion of said digitized signal to measure a characteristic of said received signal; and”

Kamieniecki describes a monitor 116, which monitors signal quality of the channels it receives (“analyzing said selected first portion of said digitized signal”). Ex. 1009, [0006]-[0007], [0014]-[0016], [0024], Fig. 1; Ex. 1002, ¶¶ 167-169. Monitor 116 analyzes the digital signal it receives from the IB and/or OOB tuners and determines signal quality information (“measure a characteristic of said received signal”) such as error count and signal level estimates. Ex. 1009, [0007], [0014], [0022], Fig. 1; Ex. 1002, ¶ 168. In Kamieniecki-Konstantinos, monitor 116 would receive one or more digital output streams for analysis from Konstantinos’ receiver 200. Ex. 1002, ¶ 170.

Accordingly, Kamieniecki-Konstantinos shows limitation [1G]. Ex. 1002, ¶ 171.

- h. [1H]: “controlling the transmission of network management messages back to said headend based on said measured characteristic of said received signal, wherein said measured characteristic is different than said network management messages.”**

Kamieniecki describes that it efficiently detects and diagnoses plant faults and issues, and that it may send information back to the headend as it is collected. Ex. 1009, [0006]-[0008], [0014], [0017]; Ex. 1002, ¶¶ 172-173. Among the information that Kamieniecki describes sending back to the headend is “channel absence/presence” information (“network management messages”). Ex. 1009, [0014]-[0024]; Ex. 1002, ¶ 173. A POSITA would have considered it obvious to determine the presence (or absence) of a channel by determining whether the channel can be detected – e.g., whether its signal level is high enough, or error count is low enough, for the channel to be considered present. Kamieniecki already discloses measurement of “signal level” and “error count”, and it would have been obvious to a POSITA to use these measured characteristics as a basis for Kamieniecki’s “channel absence/presence.” Ex. 1009, [0007], [0014], [0022]. This simply uses Kamieniecki’s features in a predictable way to achieve predictable results. Ex. 1002, ¶ 173. A POSITA also would have understood that the “channel absence/presence” status information is different from the particular measured characteristic that led to the conclusion that a channel was absent/present – e.g., “channel absence/presence” is different from the signal level that was too low. Ex. 1002, ¶ 173.

Kamieniecki describes how signal quality information, such as the “channel absence/presence,” may be transmitted to the headend “as it is collected,” and a POSITA would have understood that in order to efficiently address a fault like the absence of a channel, it would be obvious to send that information as it is collected (“controlling the transmission of network management messages back to said headend based on said measured characteristic of said received signal”), rather than waiting for the STB to be polled by the headend. Ex. 1009, [0014]; Ex. 1002, ¶ 174.

Accordingly, a POSITA would have considered it obvious for Kamieniecki’s STB to send a “channel absence/presence” message (“network management message”) whenever a channel’s signal level or error level (“measured characteristic”) is unacceptable. Ex. 1002, ¶ 174.

Therefore, Kamieniecki-Konstantinos discloses limitation [1H], and renders claim 1 obvious. Ex. 1002, ¶ 175.

4. Dependent Claim 2

- a. “The method of claim 1, wherein said network management messages indicate whether a parameter is outside of acceptable bounds.”**

As discussed in limitation [1H], Kamieniecki reports “channel presence/absence” for a monitored channel to the headend, and a POSITA would have understood that this would include whether a channel’s signal level or error count was outside acceptable bounds. Section VI.A.2.h, *supra*; Ex. 1002, ¶¶ 176-

177. Accordingly, Kamieniecki-Konstantinos renders obvious the limitations of claim 2. Ex. 1002, ¶ 178.

5. Dependent Claim 3

a. “The method of claim 2, wherein said parameter is a modulation parameter of said received signal.”

In regard to “modulation parameter”, the only description in the ’826 Patent is of determining “type and/or amount of modulation.” Ex. 1001, 3:45-49; Ex. 1002, ¶¶ 179-180. A POSITA would have understood that in order to process digital television content, Kamieniecki-Konstantinos would need to determine the type of modulation in the channel. Ex. 1009, [0013]-[0014]; Ex. 1002, ¶ 180. A POSITA would also have understood that the “error count” and “errors/dropouts” of Kamieniecki would include errors occurring in the modulation (or demodulation) of that channel. Ex. 1009, [0014]-[0015], [0020], [0022]; Ex. 1002, ¶ 180.

If it is determined that Kamieniecki does not disclose that said parameter is a modulation parameter, it is disclosed by Sadja. Sadja describes a set top box that is instructed by a headend to monitor various aspects of a received signal, including Quadrature Amplitude Modulation (QAM) modulation error ratio (MER), QAM Automatic Gain Control, QAM SNR, and QAM CNR, and report them when polled by the headend. Ex. 1021, Abstract, [0049], [0059], [0081]-[0084]; Ex. 1002, ¶ 181. A POSITA would have understood any of these to be a modulation parameter. Ex. 1002, ¶ 181.

A POSITA would have been motivated to apply Sadjja's teaching of monitoring modulation parameters to the monitoring system of Kamieniecki-Konstantinos because it would improve the ability of Kamieniecki-Konstantinos to monitor signal quality and diagnose problems with the cable plant. Ex. 1009, [0006]-[0007]; Ex. 1021, [0084]; Ex. 1002, ¶ 182. A POSITA would have supplemented Kamieniecki's monitoring capabilities with Sadjja's monitoring of modulation parameters because it would provide enhanced capabilities. Ex. 1002, ¶ 182.

Combining Sadjja with Kamieniecki-Konstantinos would be merely using known techniques (Sadjja's STB monitoring of modulation parameters) to improve similar devices (devices with signal monitoring capability) to yield a predictable result (a device capable of monitoring additional signal quality parameters). Ex. 1002, ¶ 183. A POSITA would have had the skill to implement Sadjja's teachings in the system of Kamieniecki-Konstantinos because implementing monitoring of additional signal quality characteristics (Sadjja's modulation parameter monitoring) would merely require similar programming already used by Kamieniecki-Konstantinos' monitor 116 and controller 118 to monitor the signal quality characteristics discussed in Kamieniecki. *Id.* A POSITA would have been able to implement Sadjja's modulation monitoring into Kamieniecki-Konstantinos' STB without undue experimentation. *Id.*

As discussed in limitation [1H] and claim 2, Kamieniecki reports “channel presence/absence” for a monitored channel to the headend, and a POSITA would have understood that this would include whether a channel’s modulation parameters were outside acceptable bounds such that the channel cannot be displayed properly. Sections VI.A.2.h, VI.A.3, *supra*; Ex. 1002, ¶ 184. Accordingly, Kamieniecki-Konstantinos and Kamieniecki-Konstantinos-Sadja render obvious the limitations of claim 3. Ex. 1002, ¶ 185.

6. Dependent Claim 4

a. “The method of claim 2, wherein said parameter is a transmit power of said received signal.”⁴

As discussed above with respect to [1H], Kamieniecki describes sending information about “channel absence/presence” to the headend based on measuring signal level at monitor 116. Section VI.A.2.h, *supra*; Ex. 1009, [0014], [0022]-[0023]; Ex. 1002, ¶¶ 186-188. A POSITA would have understood that signal level of a received signal being too low is a known symptom of the transmit power at the transmitter of the signal being outside of acceptable bounds, as it would indicate that the transmission of that signal was not strong enough to reach the receiver with an

⁴ Petitioner does not concede that this limitation is definite or supported by the specification.

acceptable signal level. Ex. 1002, ¶ 188. As discussed in limitation [1H] and claim 2, Kamieniecki reports “channel presence/absence” for a monitored channel to the headend, and a POSITA would have understood that this would include whether a channel’s power level was outside acceptable bounds such that the channel cannot be displayed properly. Sections VI.A.2.h, VI.A.3; Ex. 1002, ¶ 188. Accordingly, Kamieniecki-Konstantinos renders obvious the limitations of claim 4. Ex. 1002, ¶ 189.

7. Dependent Claim 5

a. “The method of claim 2, wherein said parameter is a frequency offset of said received signal.”

In regard to “frequency offset”, there is no description in the ’826 Patent of measuring frequency offset, only that the CMTS may adjust frequency offset. Ex. 1001, 3:11-15; Ex. 1002, ¶ 191. However, a POSITA would have found it obvious that in receiving and processing the signal, Kamieniecki-Konstantinos would determine the frequency offset, and that this would be an example of an underlying signal parameter that would lead to a channel being deemed “present” as described in Kamieniecki – for example, the channel signal is at the correct carrier frequency such that it was received well enough to be deemed “present.” Ex. 1009, [0013]-[0014]; Ex. 1010, [0042]-[0046]; Ex. 1002, ¶ 192.

If it is determined that Kamieniecki-Konstantinos does not disclose said parameter is frequency offset, it is disclosed by Aggarwal (Ex. 1025). Aggarwal

describes a system where a television receiver may measure whether the frequency offset is within an acceptable range in order to determine if a signal is available for reception. Ex. 1025, 2:32-47, 3:6-14, 4:53-5:14, 9:33-10:41; Ex. 1002, ¶ 193.

A POSITA would have been motivated to apply Aggarwal's teaching of monitoring frequency offset to the monitoring system of Kamieniecki-Konstantinos because it would improve the ability of Kamieniecki-Konstantinos to monitor signal quality and diagnose problems by determining whether a channel is missing. Ex. 1009, [0006]-[0007]; Ex. 1002, ¶ 194. A POSITA would have supplemented Kamieniecki-Konstantinos' monitoring capabilities with Aggarwal's monitoring of frequency offset because it would provide enhanced capabilities. Ex. 1002, ¶ 194.

Combining Aggarwal with Kamieniecki-Konstantinos would be merely using known techniques (monitoring frequency offset) to improve similar devices (devices with signal monitoring capability) to yield a predictable result (a device capable of monitoring additional signal quality parameters). Ex. 1002, ¶ 195. A POSITA would have had the skill to implement Aggarwal's teachings in the system of Kamieniecki-Konstantinos because implementing monitoring of additional signal quality characteristics (Aggarwal's frequency offset monitoring) would merely require similar programming already being used in Kamieniecki-Konstantinos' monitor 116 and controller 118. *Id.* A POSITA would thus have been able to

implement Aggarwal's monitoring into Kamieniecki-Konstantinos' STB without undue experimentation. *Id.*

As discussed in limitation [1H] and claim 2, Kamieniecki reports "channel presence/absence" for a monitored channel to the headend, and a POSITA would have understood that this would include whether a channel's frequency offset was outside acceptable bounds such that the channel cannot be displayed properly (e.g., the channel cannot be displayed at all or only with severely degraded signal quality). Sections VI.A.2.h, VI.A.3, *supra*; Ex. 1002, ¶ 196. Accordingly, Kamieniecki-Konstantinos and Kamieniecki-Konstantinos-Aggarwal render obvious the limitations of claim 5. Ex. 1002, ¶ 197.

8. Dependent Claim 6

a. "The method of claim 1, wherein said characteristic is signal power vs. frequency."

As discussed above with respect to [1G], Kamieniecki describes measuring the signal level ("signal power") of the channels it monitors. Section VI.A.2.g; Ex. 1009, [0014]-[0015], [0022]-[0023]; Ex. 1002, ¶¶ 198-199. A POSITA would have understood that each channel has its own frequency, so the signal power of a particular channel would be a signal power for that channel's frequency ("signal power vs. frequency"). Ex. 1002, ¶ 199. As discussed in limitation [1H], Kamieniecki reports "channel presence/absence" for a monitored channel to the headend, and a POSITA would have understood that this would include whether a

channel's signal power was outside acceptable bounds such that the channel cannot be displayed properly. Section VI.A.2.h, *supra*; Ex. 1002, ¶ 199. Accordingly, claim 6 is rendered obvious by Kamieniecki-Konstantinos. Ex. 1002, ¶ 200.

9. Dependent Claim 7

a. “The method of claim 1, wherein said characteristics is signal phase vs. frequency.”

Kamieniecki's STB measures signal quality information, and gives some examples, but doesn't explicitly list “signal phase.” Ex. 1009, [0005], [0014]-[0023]; Ex. 1002, ¶¶ 201-202. However, Kamieniecki and Konstantinos both discuss digital signals, and Konstantinos acknowledges that in conventional I/Q receiver architectures, phase noise is one of the “dominant noise contaminating mechanisms.” Ex. 1009, [0004]; Ex. 1010, [0009]; Ex. 1002, ¶ 202. It would have been obvious to a POSITA to use the Kamieniecki monitor to measure and report on this “dominant” source of noise contamination – Kamieniecki's goal is to monitor signal quality so that such impairments can be detected. *Id.* As discussed in claim 6, a POSITA would also have understood that each channel has its own frequency, so the phase noise of a particular channel would be phase noise of that channel's frequency (“signal phase vs. frequency”). Ex. 1002, ¶ 202.

If it is determined Kamieniecki-Konstantinos does not disclose signal phase, it would have been obvious in view of Salinger (Ex. 1022). Salinger uses probes to monitor performance in a cable network, sending alerts if a parameter exceeds

predefined limits. Ex. 1022, [0003], [0005], Ex. 1002, ¶ 203. Salinger lists a variety of parameters monitored by its probe, and includes modulation error ratio (MER) as including effects of phase noise, and identifies phase noise as an example of signal degradation. Ex. 1022 [0036]; Ex. 1002, ¶ 203. A POSITA would have considered it obvious to have Kamieniecki-Konstantinos' monitor include MER and phase noise as among the various measured signal quality parameters. Ex. 1002, ¶ 203. This modification would have involved using a known technique (measuring phase noise via MER) to improve a similar device (Kamieniecki-Konstantinos' signal quality monitor) to achieve predictable results, and would have been obvious to a POSITA. Ex. 1002, ¶ 204. The modification also would not have required undue experimentation, as the measurement of MER and signal phase would simply use similar components/programming as those already used by the Kamieniecki-Konstantinos monitor. Ex. 1002, ¶ 204.

As discussed in limitation [1H], Kamieniecki reports “channel presence/absence” for a monitored channel to the headend, and a POSITA would have understood that this would include whether a channel's MER or error count (due to phase noise) was outside acceptable bounds such that the channel cannot be displayed properly. Section VI.A.2.h, *supra*; Ex. 1002, ¶ 205.

Accordingly, claim 7 is rendered obvious by Kamieniecki-Konstantinos as well as Kamieniecki-Konstantinos-Salinger. Ex. 1002, ¶ 206.

10. Dependent Claim 8

- a. **“The method of claim 1, wherein said characteristic is one of: signal-to-noise ratio, peak-to-average ratio, noise levels, bit error rate, and symbol error rate.”**

Kamieniecki monitors various signal qualities, including “error count,” of each monitored channel, and a POSITA would have understood that bit error rate and symbol error rate were well-known examples of error counts. Ex. 1009, [0014], [0022]-[0023]; Ex. 1002, ¶¶ 207-208.

Konstantinos also discloses monitoring various signal characteristics using its information extraction processor, including Bit-Error-Rate and Signal-to-Noise Ratio and a POSITA would also have known that in order to calculate Signal-to-Noise Ratio, the noise level of the signal must be measured. Ex. 1010, [0109]; Ex. 1002, ¶ 209. A POSITA would also have understood that each of these are common ways of measuring signal quality and that when Konstantinos’ receiver is added to Kamieniecki’s STB, these additional characteristics would be obvious to include with the signal quality information obtained by Kamieniecki’s monitor 116, as that is the simple combination of a known feature (the signal quality parameters of Konstantinos) to a known method (the signal quality monitoring of Kamieniecki) to yield predictable results (reporting signal quality information). Ex. 1002, ¶ 209.

As discussed in limitation [1H], Kamieniecki reports “channel presence/absence” for a monitored channel to the headend, and a POSITA would

have understood that this would include whether a channel's error rate, noise level, or signal-to-noise ratio was outside acceptable bounds such that the channel cannot be displayed properly. Section VI.A.2.h, *supra*; Ex. 1002, ¶ 210.

Accordingly, claim 8 is rendered obvious by Kamieniecki-Konstantinos. Ex. 1002, ¶ 211.

11. Dependent Claim 9

- a. “The method of claim 1, configuring, by said one or more circuits, a bandwidth and/or center frequency of said selected first portion of said digitized signal.”**

The '826 Patent describes the “center frequency” and “bandwidth” while configuring its band selectors 302 (**green**) – they are provided the center frequency (k) and bandwidth (Δ) of the band they are to select, and this is illustrated in Figure 3:

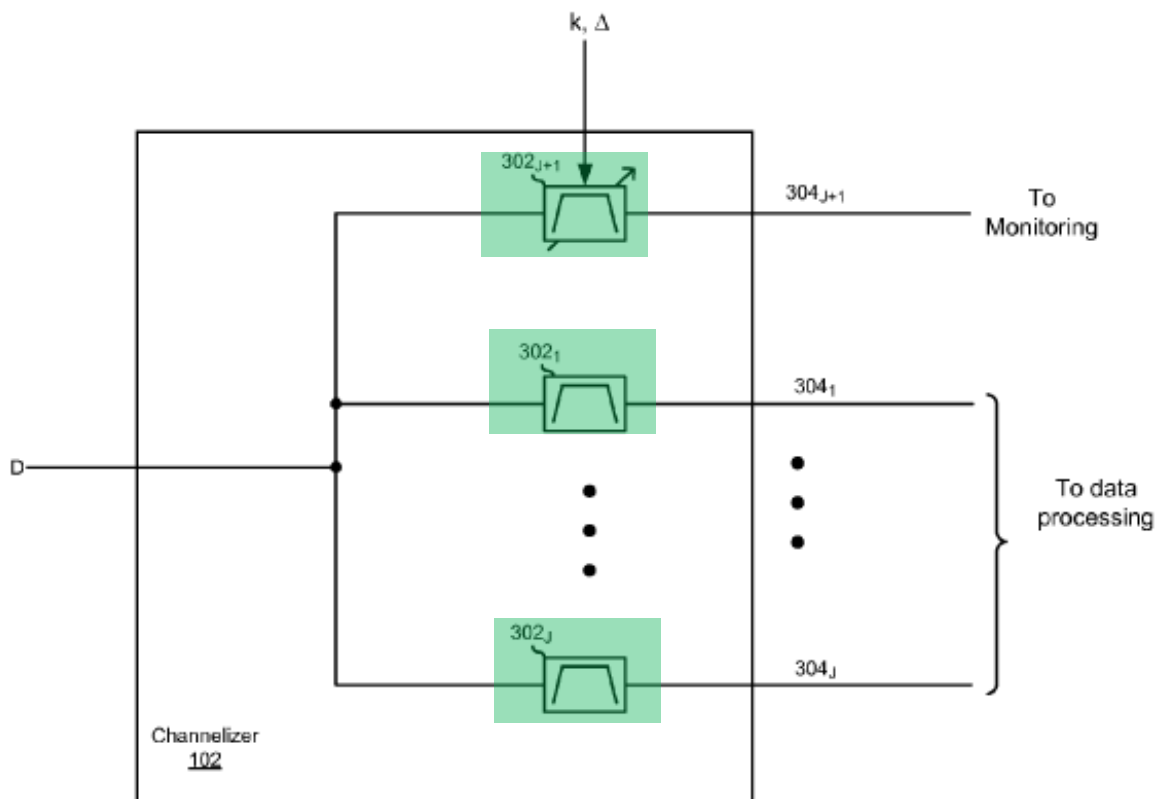
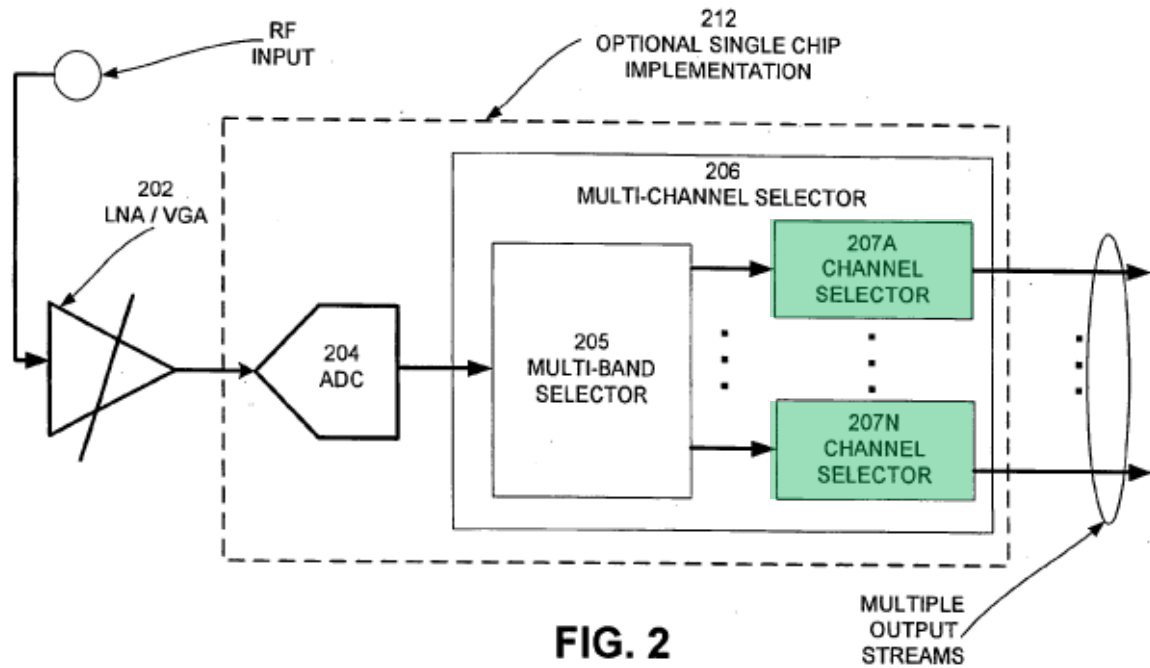


FIG. 3

Ex. 1001, Fig. 3 (annotated)

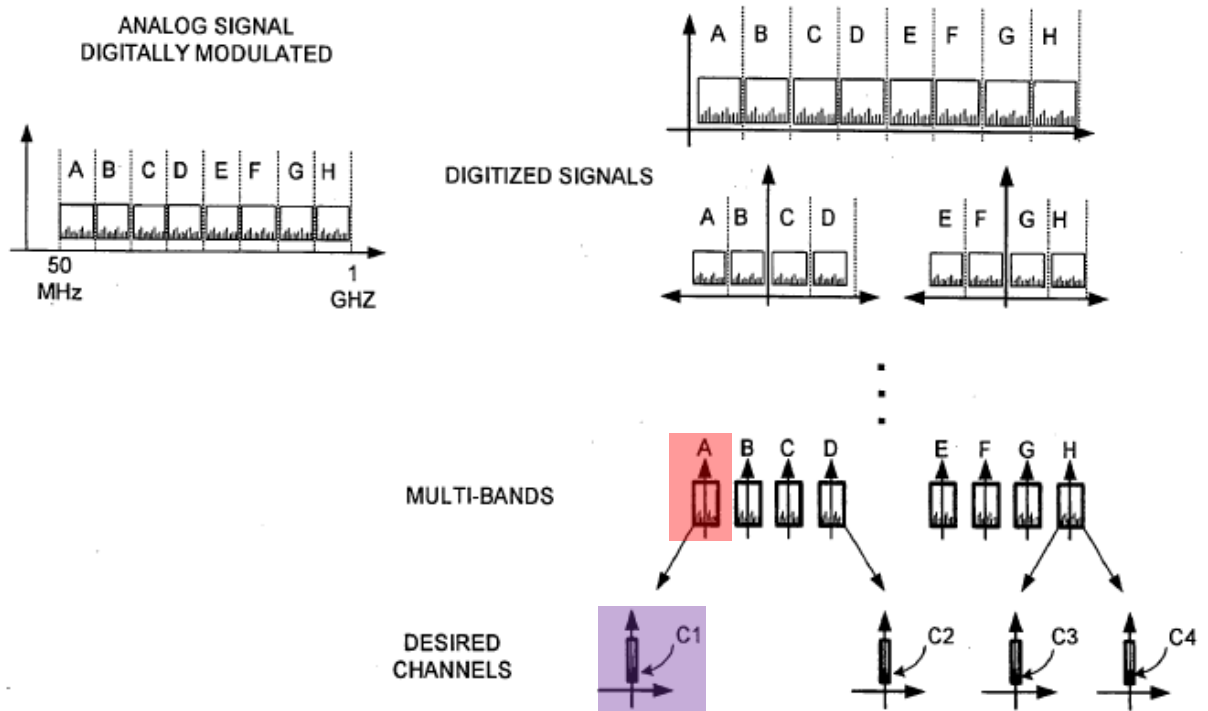
Ex. 1001, 6:27-35, Fig. 3; Ex. 1002, ¶¶ 212-213. Konstantinos' Figure 2 similarly shows that its multi-channel selector 206 includes channel selectors 207A-N that are each configured to select a particular channel:



Ex. 1010, Fig. 2 (annotated)

Ex. 1010, [0045]-[0048], [0062], [0105], Fig. 2; Ex. 1002, ¶ 214. Konstantinos' Figure 3 illustrates how the desired sub-bands (A-H, **red**), and channels (C1-C4, **purple**) are also identified by their bandwidths (their horizontal width in Figure 3) and center frequencies (the vertical arrows in the center of their bandwidths). Ex. 1010, Fig. 3; Ex. 1002, ¶ 215.

FIG. 3



Ex. 1010, Fig. 3 (annotated)

When the channel selectors 207A-N are configured to select desired channels C1-C4, they are configured with the center frequency of those desired channels – this is how they are identified in both Konstantinos and the '826 Patent. Ex. 1010, Fig. 3, [0045]-[0048], [0062], [0105]; Ex. 1002, ¶ 216.

Accordingly, claim 10 is rendered obvious by Kamieniecki-Konstantinos. Ex. 1002, ¶ 217.

12. Independent Claim 10

Claim 10 appears to be a system claim counterpart to method claim 1, and its various elements are mapped below. Ex. 1002, ¶ 218.

a. [10A]: “A system comprising:”

The preamble is not limiting, but the claimed elements are shown below. Ex. 1002, ¶ 219.

b. [10B]: “a receiver configured to be coupled to a television and data service provider headend via a hybrid fiber coaxial (HFC) network, the receiver comprising:”

The “receiver” reads on Kamieniecki’s set-top box 110, performing as discussed above regarding limitation [1B]. Ex. 1002, ¶¶ 220-221; Section VI.A.2.b, *supra*.

c. [10C]: “front-end circuitry operable to: receive a signal that carries a plurality of channels, wherein said channels comprise one or both of television channels and data channels; and digitize said received signal to generate a digitized signal;”

The “receive” and “digitize” limitations are shown as discussed above regarding limitations [1C] and [1D], and the “front-end circuitry” reads on Konstantinos’ LNA/VGA 202 and ADC 204, which would perform those operations when combined with the Kamieniecki STB. Ex. 1002, ¶¶ 222-223; Ex. 1010, [0043], [0116], Fig. 2; Sections VI.A.2.c-d, *supra*.

- d. [10D]: “channelizer circuitry operable to: select a first portion of said digitized signal; and select a second portion of said digitized signal;”**

The “select” limitation is shown as discussed above regarding limitation [1E], and the “channelizer circuitry” reads on Konstantinos’ multi-channel selector 206, which performs the recited operations. Ex. 1002, ¶¶ 224-225; Section VI.A.2.e, *supra*.

- e. [10E]: “processing circuitry operable to process said selected second portion of said digitized signal to recover information carried in said plurality of channels”**

The “process” limitation is shown as discussed above regarding limitation [1F], and the “processing circuitry” reads on Kamieniecki’s decoders, Konstantinos’ channel and source decoders, or Konstantinos’ IEP, which perform the recited operations as discussed above regarding limitation [1F]. Ex. 1002, ¶¶ 226-227; Section VI.A.2.f, *supra*.

- f. [10F]: “monitoring circuitry operable to: analyze said selected first portion of said digitized signal to measure a characteristic of said received signal; and control the transmission of network management messages back to said headend based on said measured characteristic of said received signal, wherein said measured characteristic is different than said network management messages.”**

The “analyze” limitation is shown as discussed above regarding Limitation [1G], and the “control transmission” step is as discussed above regarding Limitation [1H]. The “monitoring circuitry” reads on Kamieniecki’s monitor 116 and controller

118, which perform those operations. Ex. 1009, [0006]-[0008], [0014]-[0016], [0024]; Ex. 1002, ¶¶ 228-229; Sections VI.A.2.g-h, *supra*.

13. Dependent Claim 11

- a. “The system of claim 10, wherein said network management messages indicate whether a parameter is outside of acceptable bounds.”**

The limitations of claim 11 are shown as discussed above regarding claim 2. Ex. 1002, ¶ 230; Section VI.A.3, *supra*.

14. Dependent Claim 12

- a. “The system of claim 11, wherein said parameter is a modulation parameter of said received signal.”**

The limitations of claim 12 are shown as discussed above regarding claim 3. Ex. 1002, ¶ 231; Section VI.A.4, *supra*.

15. Dependent Claim 13

- a. “The system of claim 11, wherein said parameter is a transmit power of said received signal.”**

The limitations of claim 13 are shown as discussed above regarding claim 4. Ex. 1002, ¶ 232; Section VI.A.5, *supra*.

16. Dependent Claim 14

- a. “The system of claim 11, wherein said parameter is a frequency offset of said received signal.”**

The limitations of claim 14 are shown as discussed above regarding claim 5. Ex. 1002, ¶ 233; Section VI.A.6, *supra*.

17. Dependent Claim 15

- a. “The method of claim 1, wherein said characteristic is signal power vs. frequency.”**

This claim is a duplicate of claim 6, and is shown as discussed above regarding claim 6. Ex. 1002, ¶ 234; Section VI.A.7, *supra*.

18. Dependent Claim 16

- a. “The method of claim 1, wherein said characteristics is signal phase vs. frequency.”**

This claim is a duplicate of claim 7, and is shown as discussed above regarding claim 7. Ex. 1002, ¶ 235; Section VI.A.8, *supra*.

19. Dependent Claim 17

- a. “The system of claim 10, wherein said characteristic is one of: signal-to-noise ratio, peak-to-average ratio, noise levels, bit error rate, and symbol error rate.”**

The limitations of claim 17 are shown as discussed above regarding claim 8. Ex. 1002, ¶ 236; Section VI.A.9, *supra*.

20. Dependent Claim 18

- a. **“The system of claim 10, comprising configuring, by said monitoring circuitry during operation of said one or more circuits, a bandwidth and/or center frequency of said selected first portion of said digitized signal.”⁵**

The limitations of claim 18 are shown as discussed above regarding claim 9.

Ex. 1002, ¶ 237; Section VI.A.10, *supra*.

B. Grounds E-F: Claims 1-18 are Rendered Obvious by Renken and Claims 5 and 14 are Rendered Obvious by Renken in View of Aggarwal

As set forth below, claims 1-18 would have been obvious to a POSITA in view of Renken and claims 5 and 14 would have further been obvious to a POSITA in view of Renken combined with Aggarwal. Ex. 1002, ¶¶ 54-63, 238-332. Citations below include citations to Renken (Ex. 1011) and the Renken Provisional (Ex. 1012, which is incorporated by reference into Renken), although as noted above, the '826 Patent claims are not entitled to their earliest claimed priority, so the Renken Provisional priority date is not needed in order for Renken to qualify as prior art.

⁵ Petitioner does not concede that this limitation is definite or waive any argument that it is an improper hybrid claim.

1. Independent Claim 1

a. [1A]: “A method comprising:”

While the preamble [1A] is not limiting, Renken teaches the claimed method, as discussed below. Ex. 1002, ¶¶ 239-240.

b. [1B] “performing by one or more circuits of a receiver coupled to a television and data service provider headend via a hybrid fiber coaxial (HFC) network:”

Renken describes a measurement-capable cable modem (MCCM) (“receiver”) receiving DOCSIS (i.e., data) and CATV (i.e., television) signals from a headend (“a television and data service provider headend”) via a HFC network, and operating under control of a processor executing a measurement program. Ex. 1011, Abstract, 7:42-8:12, 15:21-26, 16:32-36, 18:38-42, 20:31-45, Figs. 1-2; Ex. 1012, pp. 3-8, 14-15, Fig. 1; Ex. 1002, ¶¶ 241-243, 245, 247, 250.

The Renken Provisional discusses the cable modem, DOCSIS, CATV, and headend as discussed above, and discusses a “cable plant,” but does not explicitly say that the cable plant is HFC. Ex. 1012, pp. 3-8, 14-15, Fig. 1; Ex. 1002, ¶ 244. However, a POSITA would have known that cable plants offering DOCSIS and CATV services often employed HFC networks, and it would have been obvious to apply the Renken Provisional’s teachings to an HFC network. Ex. 1002, ¶¶ 244, 246, 248-250.

Accordingly, Renken shows limitation [1B]. Ex. 1002, ¶ 251.

- c. [1C] receiving, via said HFC network, a signal that carries a plurality of channels, wherein said channels comprise one or both of television channels and data channels;**

As discussed above in regard to limitation [1B], Renken's MCCM receives, via an HFC network, "DOCSIS and non-DOCSIS digital and analog TV channels." Section VI.B.1.b, *supra*; Ex. 1011, Abstract, 7:42-8:34, 9:41-60, 10:56-11:18, Fig. 2; Ex. 1012, pp. 3-4, 6-8, 14-15; Ex. 1002, ¶¶ 252-253. These channels appear as the "RF Input" in Renken Figure 3 and Renken Provisional Figure 2. Ex. 1011, Fig. 3; Ex. 1012, Fig. 2; Ex. 1002, ¶ 253.

Accordingly, Renken shows limitation [1C]. Ex. 1002, ¶ 254.

- d. [1D] "digitizing said received signal to generate a digitized signal;"**

Renken describes analog-to-digital converter (ADC) 25 (red), which is part of the downstream receiver circuit of the MCCM. Ex. 1011, 11:39-44, Fig. 3; Ex. 1012, pp. 6-7, Fig. 2; Ex. 1002, ¶¶ 255-256.

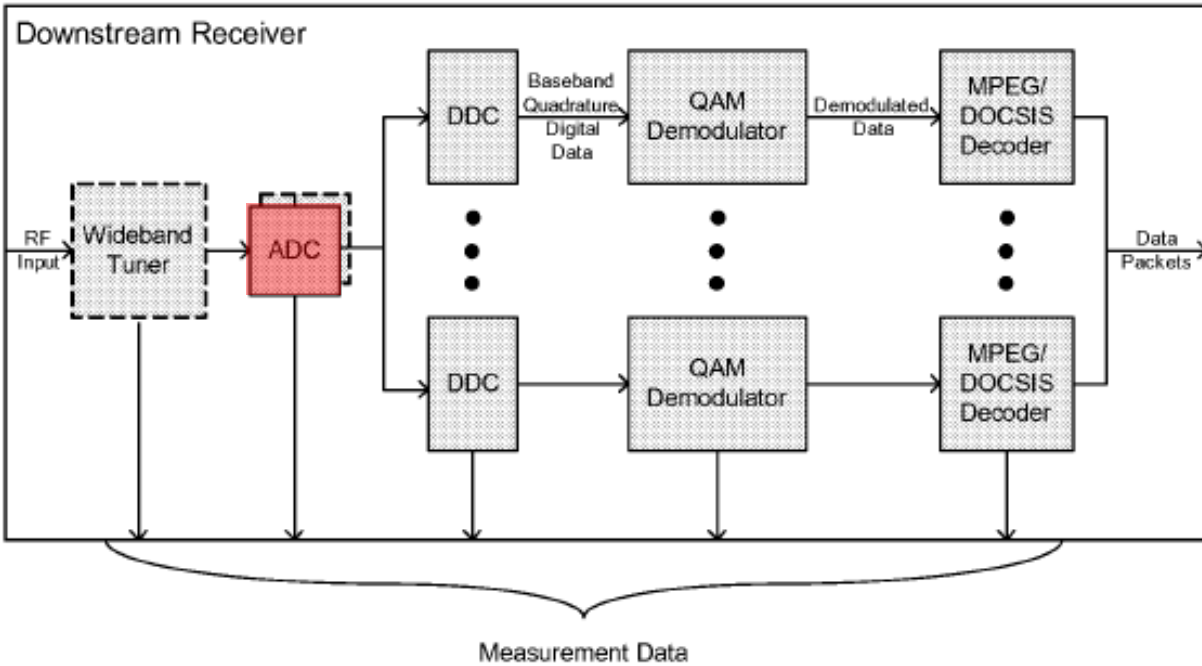


Fig. 2

Ex. 1012, Fig. 2 (annotated)

The ADC converts the RF input (“received signal”) into digitized data. Ex. 1011, 7:42-64, 11:39-40, Figs. 1, 3; Ex. 1012, pp. 6-7, Fig. 2; Ex. 1002, ¶ 257.

Therefore, Renken discloses limitation [1D]. Ex. 1002, ¶ 258.

- e. **[1E]: “selecting a first portion of said digitized signal; selecting a second portion of said digitized signal;”**

Renken describes a number of parallel digital down converters (DDC) (green) in the MCCM. Ex. 1011, Fig. 3; Ex. 1012, p. 7, Fig. 2; Ex. 1002, ¶¶ 259-260.

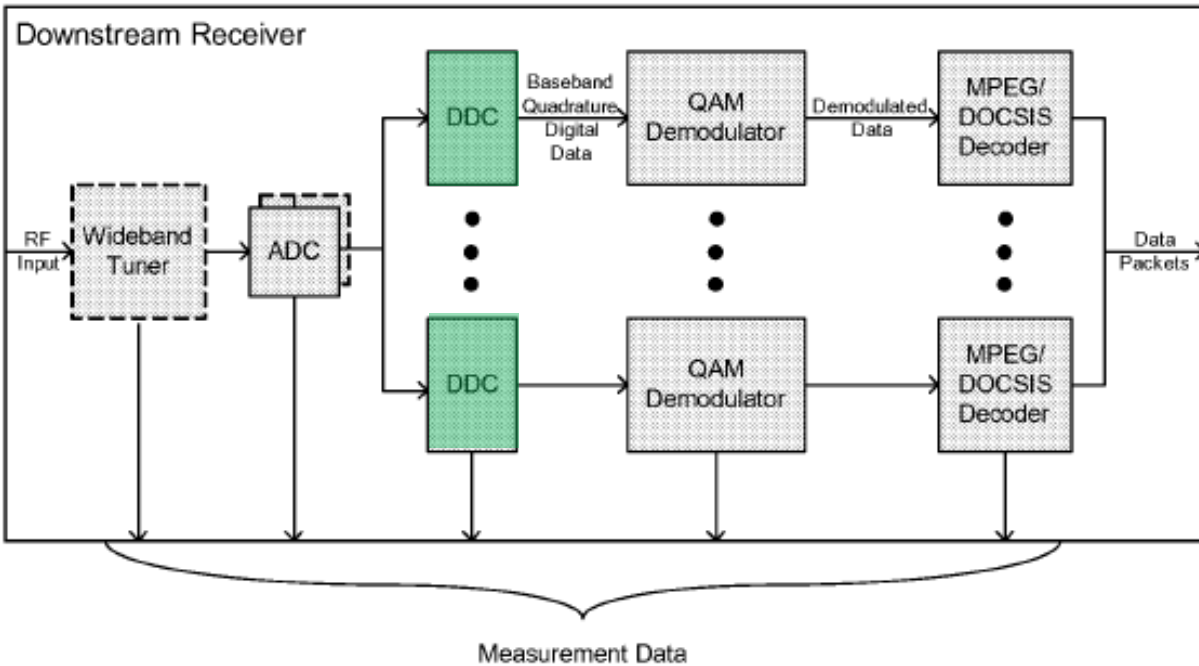


Fig. 2

Ex. 1012, Fig. 2 (annotated)

Each DDC filters, or selects, a downstream channel for subsequent processing. Ex. 1011, 12:22-24; Ex. 1012, p. 7; Ex. 1002, ¶ 261. The MCCM determines which DDC to use for channels/signals to be monitored (“selecting a first portion of said digitized signal”) and which DDC to use for channels to decode for viewing by a subscriber (“selecting a second portion of said digitized signal”) using the MPEG/DOCSIS Decoder. Ex. 1011, 4:34-44, 4:60-67, 10:5-48, 16:32-36, 20:36-45; Ex. 1012, pp. 3-4, 6-8, Fig. 2; Ex. 1002, ¶ 261. A first DDC may be idle, and may select a channel to be measured, while a second DDC may be busy, and may select a channel that is needed (e.g., a television channel to be viewed by a user). Ex. 1002, ¶ 261.

Therefore, Renken discloses limitation [1E]. Ex. 1002, ¶ 262.

- f. [1F] “processing said selected second portion of said digitized signal to recover information carried in said plurality of channels;”

Renken describes MPEG/DOCSIS decoders (purple) in the MCCM. Ex. 1011, 11:19-22, 13:6-8, Fig. 3; Ex. 1012, pp. 6-8, Fig. 2; Ex. 1002, ¶¶ 263-265.

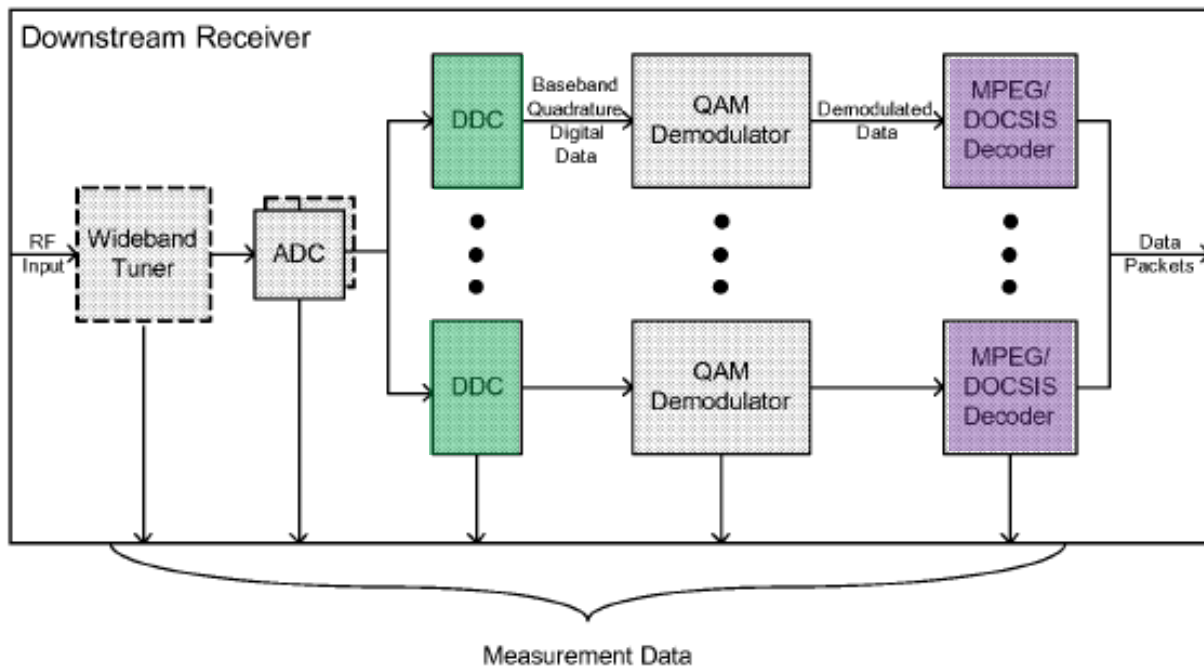


Fig. 2

Ex. 1012, Fig. 2 (annotated)

As their name implies, the MPEG/DOCSIS decoders decode data from the digital channels (“recover information carried in said plurality of channels”). Ex. 1011, 13:6-21; Ex. 1012, pp. 7-8; Ex. 1002, ¶ 266. Renken notes that such decoders were known in the art, while the Renken Provisional refers to them decoding data -

a POSITA would have understood that their purpose is to decode, or recover, MPEG TV channels or DOCSIS data from the selected channels. *Id.*

Accordingly, limitation [1F] is shown by Renken. Ex. 1002, ¶ 267.

g. [1G] “analyzing said selected first portion of said digitized signal to measure a characteristic of said received signal; and”

Renken describes an MCCM processor executing a measurement program to obtain signal measurements. Ex. 1011, 10:15-31; Ex. 1012, pp. 5-6; Ex. 1002, ¶¶ 268-269. For example, the measurement program can obtain measurements using the ADC, and can analyze data from the ADC to determine characteristics, such as Bit Error Rate (BER), Signal-to-Noise Ratio (SNR), and Carrier-to-Noise Ratio (CNR). Ex. 1011, 3:11-20, 10:15-31, 11:39-61, 13:6-15, 16:17-17:17; Ex. 1012, pp. 5-7, 14; Ex. 1002, ¶¶ 269-271. As another example, the program analyzes data from the MPEG/DOCSIS Decoder to determine characteristics such as Bit Error Rate. Ex. 1011, 13:8-21; Ex. 1012, pp. 7-8, 14; Ex. 1002, ¶ 269. The processor may also take signal measurements using other components, including the DDC 22 and QAM Demodulator 23. Ex. 1011, 12:6-13:38; Ex. 1012, pp. 3-8, 13-15; Ex. 1002, ¶ 269.

Accordingly, Renken shows limitation [1G]. Ex. 1002, ¶ 272.

- h. [1H] “controlling the transmission of network management messages back to said headend based on said measured characteristic of said received signal, wherein said measured characteristic is different than said network management messages.”**

Renken discloses that based on its measurements, the MCCM will send results to the central management controller (CMC). Ex. 1011, 8:45-50, 9:15-18, 10:45-48, 18:46-52; Ex. 1012, pp. 3-4, 10, 13, 15; Ex. 1002, ¶¶ 273-274. Renken states that the CMC may be at the headend. Ex. 1011, Abstract. The Renken Provisional also states that results are sent to the CMC, but does not explicitly say that the CMC is located at the headend. Ex. 1012, pp. 10, 13. A POSITA would have understood that upstream transmissions from a cable modem arrive at the headend from cable modems in a cable network, so it would at least be obvious that the results are sent to the headend. Further, the headend is the most logical place to send the results. This was recognized by the Renken Provisional, which in describing a prior art patent, points out that the prior art patent failed to claim sending the results anywhere other than the headend – meaning that the prior art sent it to the headend, and that Renken could not think of where else the results would be sent. Ex. 1012, pp. 4 (“Monitoring using the CPE but sending the results somewhere other than the head end (where, I don’t know ...)”), 9, 13, 15; Ex. 1002, ¶¶ 274-276.

At least some of these results would be “network management messages” that are transmitted based on a measured characteristic that is different from the network

management message. For example, Renken describes that the MCCM's measurement plan could include error thresholds, and it would have been obvious to a POSITA that the MCCM would use those thresholds to detect, based on an underlying measurement, that an error has occurred in a channel, and to send a message to the CMC indicating the error. Ex. 1011, 22:67-23:4; Ex. 1002, ¶ 277.

Renken discloses the CMC analyzing measurement results and generating error reports or alarms if measurement results fall outside of acceptable limits, and a POSITA would have considered it obvious for the MCCM to use the error threshold in the same way. Ex. 1011, 22:22-39, 23:29-33; Ex. 1012, pp. 4, 12-13; Ex. 1002, ¶ 278. The Renken Provisional also discloses that the MCCM could detect that there is a problem in a channel, and a POSITA would have found it obvious for the MCCM to detect this problem by determining that a measurement result is outside of an acceptable limit, such as the error thresholds in Renken, and to send corresponding error reports or alarms ("network management messages") to the CMC. Ex. 1012, p. 15; Ex. 1002, ¶ 279. A POSITA further would have found it obvious that such error reports or alarms ("network management messages") could just as easily be generated at the MCCM and would also need to be sent promptly ("controlling the transmission of network management messages back to said headend based on said measured characteristic of said received signal") in order to be effective. Ex. 1002, ¶ 280.

Therefore, Renken renders claim 1 obvious. Ex. 1002, ¶ 281.

2. Dependent Claim 2

- a. “The method of claim 1, wherein said network management messages indicate whether a parameter is outside of acceptable bounds.”**

As discussed above in limitation [1H], Renken describes detecting and reporting problems to the CMC based on measurement results at its location. Section VI.B.1.h, *supra*; Ex. 1011, 22:28-39, 22:67-23:4; Ex. 1012, p. 15; Ex. 1002, ¶¶ 282-283. A POSITA would have understood that making a determination that a problem exists based on a measurement result would require determining that the measurement result is abnormal (“outside of acceptable bounds”) and that reporting the problem to the CMC would obviously include identifying the measurement result as abnormal. Ex. 1002, ¶ 283.

Accordingly, Renken renders claim 2 obvious. Ex. 1002, ¶ 284.

3. Dependent Claim 3

- a. “The method of claim 2, wherein said parameter is a modulation parameter of said received signal.”**

Renken’s MCCM measures modulation error ratio (MER) (“modulation parameter”) and, as discussed above in limitation [1H] and claim 2, a POSITA would have recognized that MER is a measurement result that the MCCM could determine is abnormal (e.g., by being too high) and thus that a problem exists to be reported to

the CMC. Sections VI.B.1.h, VI.B.2, *supra*; Ex. 1011, 6:40, 12:4, 12:55-59, 17:16; Ex. 1012, pp. 4, 7, 14; Ex. 1002, ¶¶ 285-286.

Accordingly, Renken renders claim 3 obvious. Ex. 1002, ¶ 287.

4. Dependent Claim 4

a. “The method of claim 2, wherein said parameter is a transmit power of said received signal.”

Renken describes the MCCM measuring channel power and level of the received digital signal. Ex. 1011, 19:21-20:51; Ex. 1012, pp. 3-4, 7, 14; Ex. 1002, ¶¶ 288-290. A POSITA would have understood that channel level is indicative of the power level of the received signal. Ex. 1011, 19:21-24; Ex. 1002, ¶ 290. As discussed above in limitation [1H] and claim 2, a POSITA would have recognized that measurement of the channel level of the received signal as being too low is a known symptom of the transmit power at the transmitter of the signal could be outside of acceptable bounds - a result that the MCCM would determine is abnormal and thus that a problem exists to be reported to the CMC. Sections VI.b.1.h, VI.b.2, *supra*; Ex. 1002, ¶ 290.

Accordingly, Renken renders claim 4 obvious. Ex. 1002, ¶ 291.

5. Dependent Claim 5

a. “The method of claim 2, wherein said parameter is a frequency offset of said received signal.”

A POSITA would have found it obvious that in receiving and processing the signal, Renken would determine the frequency offset. Ex. 1011, 10:56-12:52; Ex. 1012, pp. 5-7; Ex. 1002, ¶¶ 292-294.

To the extent it is determined that Renken does not disclose said parameter is frequency offset, it is disclosed by Aggarwal. Aggarwal describes a system where a television receiver may measure whether the frequency offset is within an acceptable range in order to determine if a signal is available for reception. Ex. 1025, 2:32-47, 3:6-14, 4:53-5:14, 9:33-10:41; Ex. 1002, ¶ 295.

A POSITA would have been motivated to apply Aggarwal’s teaching of monitoring frequency offset to the system of Renken because it would improve the ability of Renken to monitor signal quality and diagnose problems with the cable plant. Ex. 1011, 4:44-5:21; Ex. 1012, pp. 3-4, 15; Ex. 1002, ¶ 296. A POSITA would have supplemented Renken’s monitoring capabilities with Aggarwal’s monitoring of frequency offset because it would provide enhanced capabilities. Ex. 1002, ¶ 296.

Combining Aggarwal with Renken would be merely using known techniques (monitoring frequency offset) to improve similar devices (devices with signal quality monitoring capability) to yield a predictable result (a device capable of monitoring

additional signal quality parameters). Ex. 1002, ¶ 297. A POSITA would have had the skill to implement Aggarwal's teachings in the system of Renken because implementing monitoring of additional signal quality characteristics (Aggarwal's frequency offset monitoring) would merely require similar programming of Renken's MCCM processor and measurement program to do what it already does – gather measurements. Ex. 1002, ¶ 297. A POSITA would thus have been able to implement Aggarwal's monitoring into Renken's MCCM, and without undue experimentation. Ex. 1002, ¶ 297.

As discussed above in limitation [1H] and claim 2, a POSITA would have recognized that measurement of the frequency offset as being outside of acceptable bounds is a result that the MCCM would determine indicates a problem exists to be reported to the CMC. Ex. 1002, ¶ 298.

Accordingly, Renken and Renken-Aggarwal render obvious the limitations of claim 5. Ex. 1002, ¶ 298.

6. Dependent Claim 6

a. “The method of claim 1, wherein said characteristic is signal power vs. frequency.”

Renken describes that its measurements include in-channel frequency response which a POSITA would have recognized as a measurement of signal power vs. frequency. Ex. 1011, 12:53-58; Ex. 1012, p. 7; Ex. 1002, ¶¶ 299-300. Also, as discussed above with respect to claim 4, Renken describes the MCCM measuring

channel level (“signal power”) and those measurements are made on a channel-by-channel basis and a POSITA would have understood each channel to have its own frequency. Ex. 1011, 19:21-20:51; Ex. 1012, pp. 3-4, 7, 14; Ex. 1002, ¶ 301. As discussed above in limitation [1H] and claim 2, a POSITA would have recognized that measurement of the signal power as being outside of acceptable bounds within a channel or for a channel (“frequency”) is a result that the MCCM would determine indicates a problem exists to be reported to the CMC. Ex. 1002, ¶ 301.

Accordingly, Renken renders claim 6 obvious. Ex. 1002, ¶ 302.

7. Dependent Claim 7

a. “The method of claim 1, wherein said characteristics is signal phase vs. frequency.”

As explained in dependent claim 6, Renken measures frequency response. Ex. 1011, 12:53-58; Ex. 1012, p. 7; Ex. 1002, ¶¶ 303-304. A POSITA understands that frequency response indicates both the magnitude and phase of a signal vs. frequency. Ex. 1002, ¶ 304. Renken also discloses that its measurements can include MER, which a POSITA would understand indicates phase noise, and the MER for different channels having different frequencies would be another example of signal phase v. frequency. Ex. 1011, 12:1-5, 17:8-25; Ex. 1012, pp. 4, 7, 14; Ex. 1002, ¶ 304.

As discussed above in limitation [1H] and claim 2, a POSITA would have recognized that measurement of the signal phase as being outside of acceptable

bounds for a channel (“frequency”) is a result that the MCCM would determine indicates a problem exists to be reported to the CMC. Ex. 1002, ¶ 305.

Accordingly, Renken renders claim 7 obvious. Ex. 1002, ¶ 306.

8. Dependent Claim 8

- a. “The method of claim 1, wherein said characteristic is one of: signal-to-noise ratio, peak-to-average ratio, noise levels, bit error rate, and symbol error rate.”**

Renken describes the MCCM measuring Bit Error Rate (BER) and Signal-to-Noise ratio (SNR) of the digital signal. Ex. 1011, 3:11-20, 13:6-15, 16:17-17:17; Ex. 1012, pp. 4, 7, 14; Ex. 1002, ¶¶ 307-308. As discussed above in limitation [1H], a POSITA would have recognized that measurement of a high BER or a low SNR is a result that the MCCM would determine indicates a problem to be reported to the CMC. Ex. 1002, ¶ 308.

Accordingly, Renken renders claim 8 obvious. Ex. 1002, ¶ 309.

9. Dependent Claim 9

- a. “The method of claim 1, configuring, by said one or more circuits, a bandwidth and/or center frequency of said selected first portion of said digitized signal.”**

As discussed in the prior discussion of claim 9, this language simply describes selecting a channel by selecting a center frequency and/or bandwidth, as described in the ’826 Patent. Section VI.A.10, *supra*. Similarly, Renken also discusses selecting a channel by specifying its center frequency. Ex. 1011, 12:22-34, 13:48-57, 14:59-64, 18:18-38, 19:24-29; Ex. 1012, pp. 6-7; Ex. 1002, ¶¶ 310-311.

Accordingly, Renken renders claim 9 obvious. Ex. 1002, ¶ 312.

10. Independent Claim 10

Claim 10 appears to be a system claim counterpart to method claim 1, and its various elements are mapped below. Ex. 1002, ¶ 313.

a. [10A]: “A system comprising:”

The preamble is not limiting, but the claimed elements are shown below. Ex. 1002, ¶ 314.

b. [10B]: “a receiver configured to be coupled to a television and data service provider headend via a hybrid fiber coaxial (HFC) network, the receiver comprising:”

The “receiver” reads on the Renken MCCM 100 and its downstream receiver circuit 20, performing as discussed above regarding limitation [1B]. Ex. 1002, ¶¶ 315-316; Section VI.B.1.b, *supra*.

c. [10C]: “front-end circuitry operable to: receive a signal that carries a plurality of channels, wherein said channels comprise one or both of television channels and data channels; and digitize said received signal to generate a digitized signal;”

The “receive” and “digitize” limitations are shown as discussed above regarding limitations [1C] and [1D], and the “front-end circuitry” reads on the wideband tuner 26 and ADC 25, configured to perform those operations. Ex. 1002, ¶¶ 317-318; Sections VI.B.1.c-d, *supra*.

- d. [10D]: “channelizer circuitry operable to: select a first portion of said digitized signal; and select a second portion of said digitized signal;”**

The “select” limitation is shown as discussed above regarding limitation [1E], and the “channelizer circuitry” reads on the DDC 22, configured to perform those operations. Ex. 1002, ¶¶ 319-320; Section VI.B.1.e, *supra*.

- e. [10E]: “processing circuitry operable to process said selected second portion of said digitized signal to recover information carried in said plurality of channels”**

The “process” limitation is shown as discussed above regarding limitation [1F], and the “processing circuitry” reads on the MPEG/DOCSIS decoder 24, as discussed above regarding limitation [1F]. Ex. 1002, ¶¶ 321-322; Section VI.B.1.f, *supra*.

- f. [10F]: “monitoring circuitry operable to: analyze said selected first portion of said digitized signal to measure a characteristic of said received signal; and control the transmission of network management messages back to said headend based on said measured characteristic of said received signal, wherein said measured characteristic is different than said network management messages.”**

The “analyze” limitation is shown as discussed above regarding limitation [1G], and the “control transmission” limitation is shown as discussed above regarding limitation [1H]. The “monitoring circuitry” reads on the processor, which executes the measurement program to cause the MCCM to perform the operations

discussed above. Ex. 1011, 9:61-10:48; Ex. 1012, pp. 5-6; Ex. 1002, ¶¶ 323-324; Sections VI.B.1.g-h, *supra*.

11. Dependent Claim 11

- a. “The system of claim 10, wherein said network management messages indicate whether a parameter is outside of acceptable bounds.”**

The claim 11 limitation is shown as discussed above regarding claim 2. Ex. 1002, ¶ 325; Section VI.B.2, *supra*.

12. Dependent Claim 12

- a. “The system of claim 11, wherein said parameter is a modulation parameter of said received signal.”**

The claim 12 limitation is shown as discussed above regarding claim 3. Ex. 1002, ¶ 326; Section VI.B.3, *supra*.

13. Dependent Claim 13

- a. “The system of claim 11, wherein said parameter is a transmit power of said received signal.”**

The claim 13 limitation is shown as discussed above regarding claim 4. Ex. 1002, ¶ 327; Section VI.B.4, *supra*.

14. Dependent Claim 14

- a. “The system of claim 11, wherein said parameter is a frequency offset of said received signal.”**

The claim 14 limitation is shown as discussed above regarding claim 5. Ex. 1002, ¶ 328; Section VI.B.5, *supra*.

15. Dependent Claim 15

- a. “The method of claim 1, wherein said characteristic is signal power vs. frequency.”**

This claim is a duplicate of claim 6, and is shown as discussed above regarding claim 6. Ex. 1002, ¶ 329; Section VI.B.6, *supra*.

16. Dependent Claim 16

- a. “The method of claim 1, wherein said characteristics is signal phase vs. frequency.”**

This claim is a duplicate of claim 7, and is shown as discussed above regarding claim 7. Ex. 1002, ¶ 330; Section VI.B.7, *supra*.

17. Dependent Claim 17

- a. “The system of claim 10, wherein said characteristic is one of: signal-to-noise ratio, peak-to-average ratio, noise levels, bit error rate, and symbol error rate.”**

The claim 17 limitation is shown as discussed above regarding claim 8. Ex. 1002, ¶ 331; Section VI.B.8, *supra*.

18. Dependent Claim 18

- a. “The system of claim 10, comprising configuring, by said monitoring circuitry during operation of said one or more circuits, a bandwidth and/or center frequency of said selected first portion of said digitized signal.”**

The claim 18 limitation is shown as discussed above regarding claim 9. Ex. 1002, ¶ 332; Section VI.B.9, *supra*.

VII. GROUNDS FOR STANDING & FEE PAYMENT

Petitioner hereby certifies that the '826 Patent is available for, and Petitioner is not barred or estopped from requesting, *inter partes* review challenging claims 1-18.

Pursuant to 37 C.F.R. § 42.103, the undersigned authorizes the charge of any required fees to Deposit Account No. 19-0733.

VIII. CONCLUSION

Inter partes review should be instituted and claims 1-18 canceled.

Dated: February 15, 2024

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CERTIFICATION UNDER 37 CFR § 42.24(d)

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for Inter Partes Review totals 13,964, which is less than the 14,000 allowed under 37 CFR § 42.24(a)(1)(i). This total includes 13,964 words as counted by the Word Count feature of Microsoft Word and 0 words used in annotations.

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

BANNER & WITCOFF, LTD

Dated: February 15, 2024

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.105, I hereby certify that I caused a true and correct copy of this Petition for *Inter Partes* Review in connection with U.S. Patent No. 9,825,826 and supporting evidence to be served via FedEx Priority Overnight on February 15, 2024, on the following:

McAndrews, Held & Malloy, Ltd
500 West Madison Street
Suite 3400
Chicago, IL 60661

Dated: February 15, 2024

By: /Frederic M. Meeker/

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CLAIM LISTING APPENDIX

U.S. Pat. No. 9,825,826

Designation	Claim Language
Claim 1	
[1A]	1. A method comprising:
[1B]	performing by one or more circuits of a receiver coupled to a television and data service provider headend via a hybrid fiber coaxial (HFC) network:
[1C]	receiving, via said HFC network, a signal that carries a plurality of channels, wherein said channels comprise one or both of television channels and data channels;
[1D]	digitizing said received signal to generate a digitized signal;
[1E]	selecting a first portion of said digitized signal; selecting a second portion of said digitized signal;
[1F]	processing said selected second portion of said digitized signal to recover information carried in said plurality of channels;
[1G]	analyzing said selected first portion of said digitized signal to measure a characteristic of said received signal; and
[1H]	controlling the transmission of network management messages back to said headend based on said measured characteristic of said received signal, wherein said measured characteristic is different than said network management messages.
Claim 2	
2	2. The method of claim 1, wherein said network management messages indicate whether a parameter is outside of acceptable bounds.
Claim 3	
3	3. The method of claim 2, wherein said parameter is a modulation parameter of said received signal.
Claim 4	
4	4. The method of claim 2, wherein said parameter is a transmit power of said received signal.
Claim 5	
5	5. The method of claim 2, wherein said parameter is a frequency offset of said received signal.

Designation	Claim Language
Claim 6	
6	6. The method of claim 1, wherein said characteristic is signal power vs. frequency.
Claim 7	
7	7. The method of claim 1, wherein said characteristics is signal phase vs. frequency.
Claim 8	
8	8. The method of claim 1, wherein said characteristic is one of: signal-to-noise ratio, peak-to-average ratio, noise levels, bit error rate, and symbol error rate.
Claim 9	
9	9. The method of claim 1, configuring, by said one or more circuits, a bandwidth and/or center frequency of said selected first portion of said digitized signal.
Claim 10	
[10A]	10. A system comprising:
[10B]	a receiver configured to be coupled to a television and data service provider headend via a hybrid fiber coaxial (HFC) network, the receiver comprising:
[10C]	front-end circuitry operable to: receive a signal that carries a plurality of channels, wherein said channels comprise one or both of television channels and data channels; and digitize said received signal to generate a digitized signal;
[10D]	channelizer circuitry operable to: select a first portion of said digitized signal; and select a second portion of said digitized signal;
[10E]	processing circuitry operable to process said selected second portion of said digitized signal to recover information carried in said plurality of channels;
[10F]	monitoring circuitry operable to: analyze said selected first portion of said digitized signal to measure a characteristic of said received signal; and control the transmission of network management messages back to said headend based on said measured characteristic of said received signal, wherein said measured

Designation	Claim Language
	characteristic is different than said network management messages.
Claim 11	
11	11. The system of claim 10, wherein said network management messages indicate whether a parameter is outside of acceptable bounds.
Claim 12	
12	12. The system of claim 11, wherein said parameter is a modulation parameter of said received signal.
Claim 13	
13	13. The system of claim 11, wherein said parameter is a transmit power of said received signal.
Claim 14	
14	14. The system of claim 11, wherein said parameter is a frequency offset of said received signal.
Claim 15	
15	15. The method of claim 1, wherein said characteristic is signal power vs. frequency.
Claim 16	
16	16. The method of claim 1, wherein said characteristics is signal phase vs. frequency.
Claim 17	
17	17. The system of claim 10, wherein said characteristic is one of: signal-to-noise ratio, peak-to-average ratio, noise levels, bit error rate, and symbol error rate.
Claim 18	
18	18. The system of claim 10, comprising configuring, by said monitoring circuitry during operation of said one or more circuits, a bandwidth and/or center frequency of said selected first portion of said digitized signal.