

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. 8,792,008

Filing Date: September 10, 2012

Issue Date: July 29, 2014

Title: METHOD AND APPARATUS FOR SPECTRUM MONITORING

---

*Inter Partes* Review No.: IPR2024-00441

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

## TABLE OF CONTENTS

|                                                                                                                                                                                             |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| MANDATORY NOTICES.....                                                                                                                                                                      | 6  |
| I. INTRODUCTION .....                                                                                                                                                                       | 9  |
| II. SUMMARY OF ARGUMENT.....                                                                                                                                                                | 9  |
| III. OVERVIEW OF THE '008 PATENT .....                                                                                                                                                      | 10 |
| A. Brief Description .....                                                                                                                                                                  | 10 |
| B. Prosecution History .....                                                                                                                                                                | 12 |
| C. Earliest Priority Date for the Claims .....                                                                                                                                              | 13 |
| IV. OVERVIEW OF PRIOR ART .....                                                                                                                                                             | 13 |
| A. Kamieniecki.....                                                                                                                                                                         | 13 |
| B. Konstantinos.....                                                                                                                                                                        | 15 |
| C. Renken.....                                                                                                                                                                              | 17 |
| 1. Renken is Entitled to a Priority Date of Feb. 18, 2011.....                                                                                                                              | 20 |
| D. Yu .....                                                                                                                                                                                 | 23 |
| E. Cholas .....                                                                                                                                                                             | 24 |
| V. IDENTIFICATION OF CHALLENGE PURSUANT TO 37 C.F.R.<br>§ 42.104(b).....                                                                                                                    | 24 |
| A. Claims for Which Review is Requested and Grounds on Which<br>Challenge Is Based .....                                                                                                    | 24 |
| B. 314(a) Discretion Does Not Apply.....                                                                                                                                                    | 25 |
| 1. <i>Fintiv</i> Discretionary Denial Is Unwarranted.....                                                                                                                                   | 25 |
| 2. <i>General Plastic</i> Discretionary Denial Is Unwarranted.....                                                                                                                          | 27 |
| C. 325(d) Discretion Does Not Apply .....                                                                                                                                                   | 30 |
| D. Level of Ordinary Skill .....                                                                                                                                                            | 30 |
| E. Claim Construction.....                                                                                                                                                                  | 30 |
| VI. SPECIFIC GROUNDS FOR UNPATENTABILITY.....                                                                                                                                               | 32 |
| A. Grounds A-C: Claims 1-18 are Rendered Obvious by Kamieniecki<br>in View of Konstantinos, Claims 7-8 and 15-16 are Rendered<br>Obvious by Kamieniecki in View of Konstantinos and Yu, and |    |

|                                                                                                                                                       |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Claims 9 and 17 are Rendered Obvious by Kamieniecki in view of Konstantinos and Cholas.....                                                           | 32 |
| 1. Overview of the Combination.....                                                                                                                   | 32 |
| 2. Independent Claim 1 .....                                                                                                                          | 36 |
| 3. Dependent Claim 2.....                                                                                                                             | 44 |
| 4. Independent Claim 3 .....                                                                                                                          | 46 |
| 5. Dependent Claim 4.....                                                                                                                             | 47 |
| 6. Dependent Claim 5.....                                                                                                                             | 47 |
| 7. Dependent Claim 6.....                                                                                                                             | 49 |
| 8. Dependent Claim 7.....                                                                                                                             | 50 |
| 9. Dependent Claim 8.....                                                                                                                             | 51 |
| 10. Dependent Claim 9.....                                                                                                                            | 52 |
| 11. Dependent Claim 10 .....                                                                                                                          | 53 |
| 12. Independent Claim 11 .....                                                                                                                        | 56 |
| 13. Dependent Claim 12 .....                                                                                                                          | 58 |
| 14. Dependent Claim 13 .....                                                                                                                          | 59 |
| 15. Dependent Claim 14 .....                                                                                                                          | 59 |
| 16. Dependent Claim 15 .....                                                                                                                          | 59 |
| 17. Dependent Claim 16 .....                                                                                                                          | 59 |
| 18. Dependent Claim 17 .....                                                                                                                          | 60 |
| 19. Dependent Claim 18 .....                                                                                                                          | 60 |
| B. Grounds D-E: Claims 1-6, 9-14, and 17-18 are Rendered Obvious by Renken, and Claims 9 and 17 are Rendered Obvious by Renken in view of Cholas..... | 60 |
| 1. Independent Claim 1 .....                                                                                                                          | 60 |
| 2. Dependent Claim 2.....                                                                                                                             | 67 |
| 3. Independent Claim 3 .....                                                                                                                          | 69 |
| 4. Dependent Claim 4.....                                                                                                                             | 70 |
| 5. Dependent Claim 5.....                                                                                                                             | 71 |
| 6. Dependent Claim 6.....                                                                                                                             | 71 |

|       |                                             |    |
|-------|---------------------------------------------|----|
| 7.    | Dependent Claim 9.....                      | 72 |
| 8.    | Dependent Claim 10 .....                    | 73 |
| 9.    | Independent Claim 11 .....                  | 74 |
| 10.   | Dependent Claim 12 .....                    | 76 |
| 11.   | Dependent Claim 13 .....                    | 76 |
| 12.   | Dependent Claim 14 .....                    | 76 |
| 13.   | Dependent Claim 17 .....                    | 76 |
| 14.   | Dependent Claim 18 .....                    | 77 |
| VII.  | GROUNDS FOR STANDING & FEE PAYMENT .....    | 77 |
| VIII. | CONCLUSION.....                             | 77 |
|       | CERTIFICATION UNDER 37 CFR § 42.24(d) ..... | 78 |
|       | CERTIFICATE OF SERVICE .....                | 79 |
|       | CLAIM LISTING APPENDIX .....                | 80 |

## EXHIBITS

|                |                                                                                                                                                          |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ex. 1001:      | U.S. Patent No. 8,792,008 (“the ’008 patent”)                                                                                                            |
| Ex. 1002:      | Expert Declaration of David B. Lett                                                                                                                      |
| Ex. 1003:      | Curriculum Vitae of David B. Lett                                                                                                                        |
| Ex. 1004:      | Certified Prosecution History of the ’008 patent                                                                                                         |
| Ex. 1005:      | Certified Copy of U.S. Provisional Application No. 61/532,098 (“’008 Provisional”)                                                                       |
| Ex. 1006-1008: | 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:      | 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:      | U.S. Pub. No. 2010/0303181 (“Yu”)                                                                                                                        |
| Ex. 1017:      | U.S. Pub. No. 2008/0313691 (“Cholas”)                                                                                                                    |
| Ex. 1018-1019: | 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. 1021-1023: | Reserved                                                                                                                                                 |
| Ex. 1024:      | U.S. Pub. No. 2008/0089402 (“Massey”)                                                                                                                    |
| Ex. 1025:      | Reserved                                                                                                                                                 |

- Ex. 1026: Excerpts of W. Ciciora, J. Farmer, D. Large, and M. Adams, “Modern Cable Television Technology Video, Voice, and Data Communications” (2<sup>nd</sup> 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. 8,792,008 (“the ’008 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 ’008 patent, along with related U.S. Patent No. 9,825,826 (“the ’826 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 ’008 and ’826 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 '008 and '826 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.*, No. 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 '008 patent claims priority to U.S. Provisional App. No. 61/532,098, filed September 8, 2011.

The '008 patent was the subject of a prior *inter partes* review in *DISH Network Corp. et al. v. Entropic Communications, LLC*, IPR2023-00393 (PTAB February 6,

2023). This prior *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 '826 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.

| <b><u>Lead Counsel</u></b>                                                                                                         | <b><u>Back-Up Counsel</u></b>                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Frederic M. Meeker (Reg. No. 35,282)<br>fmeeker@bannerwitcoff.com                                                                  | Paul T. Qualey (Reg. No. 45,027)<br>pqualey@bannerwitcoff.com                                                                      |
| BANNER & WITCOFF, LTD.<br>1100 13th Street, NW<br>Suite 1200<br>Washington, DC 20005<br>Tel: (202) 824-3000<br>Fax: (202) 824-3001 | Steve S. Chang (Reg. No. 42,402)<br>schang@bannerwitcoff.com                                                                       |
|                                                                                                                                    | BANNER & WITCOFF, LTD.<br>1100 13th Street, NW<br>Suite 1200<br>Washington, DC 20005<br>Tel: (202) 824-3000<br>Fax: (202) 824-3001 |

Please address all correspondence to counsel at this address shown above. Petitioner consents to electronic service by email at the following address and the above emails: [ComcastIPRService@bannerwitcoff.com](mailto:ComcastIPRService@bannerwitcoff.com).

## **I. INTRODUCTION**

Comcast Cable Communications, LLC (“Petitioner”) petitions for *inter partes* review and cancellation of claims 1-18 of U.S. Patent No. 8,792,008 (“the ’008 patent”) (Ex. 1001).

## **II. SUMMARY OF ARGUMENT**

The ’008 patent generally addresses television network quality, and claims systems for monitoring characteristics of a received digitized television signal, and for reporting those characteristics to a source of the signal so that quality can be monitored and adjustments can be made. A first portion of the signal may be output to a signal monitor so that the characteristics may be determined, and a second portion may be output to a data processor so that television channel content may be recovered for display.

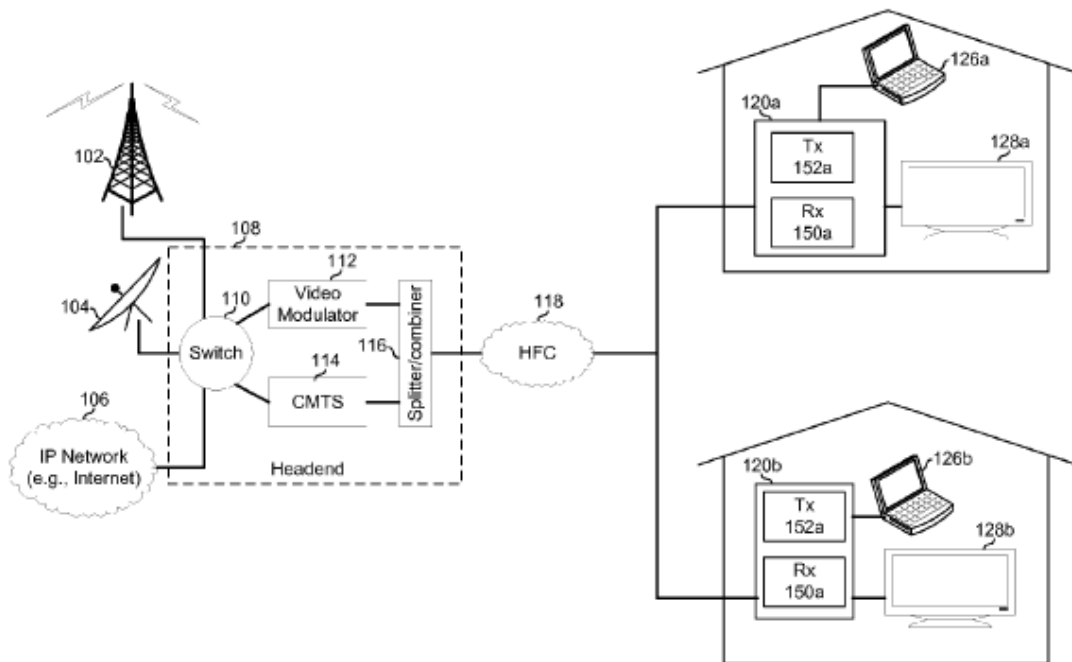
As set forth below, the prior art recognized both the problem and the solution offered in the ’008 patent – prior art television systems already recognized the need for monitoring the quality of television signals that their customers receive, and already described systems that would allow customer devices, such as television set-top boxes and cable modems, to measure and report on various signal quality metrics while simultaneously receiving multiple channels. The prior art even already developed *improved* digital multi-channel receivers to support even greater numbers of simultaneous channels. The ’008 patent claims combinations of known features

in predictable ways that were already known in the art, to address problems that had already been solved before the '008 patent was sought. Claims 1-18 of the '008 patent are unpatentable and should be canceled.

### III. OVERVIEW OF THE '008 PATENT

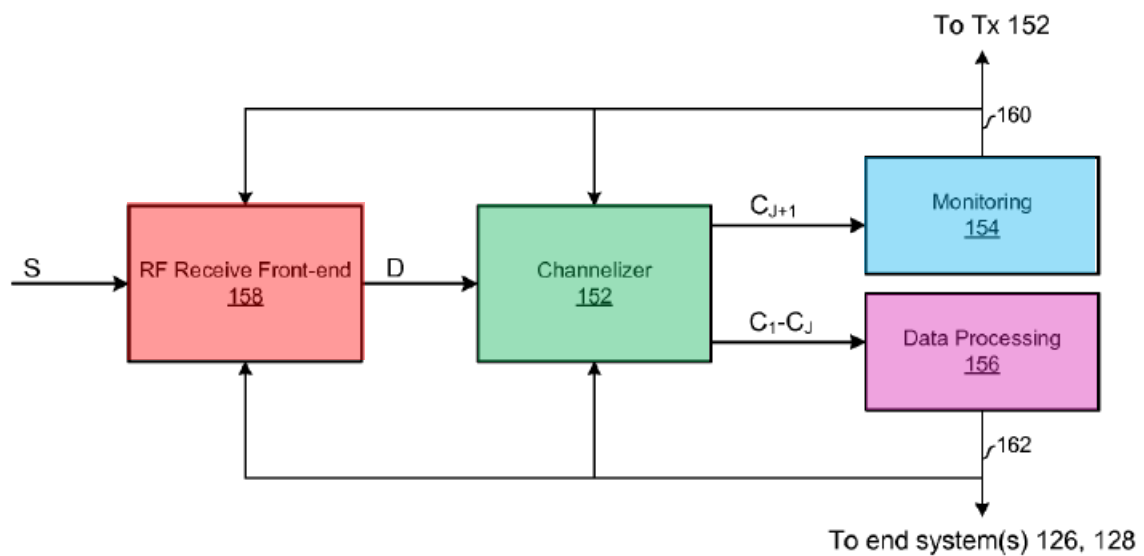
#### A. Brief Description

The '008 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, 2:34-59, 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 resulting digitized signal D is provided to a channelizer 152<sup>1</sup> (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, 3:11-44, Fig. 1B; Ex. 1002, ¶ 33.



**Ex. 1001, Fig. 1B (annotated)**

The monitoring module 154 (blue) determines signal characteristics, such as Signal to Noise Ratio (SNR), of the band it receives, and may send the

---

<sup>1</sup> The '008 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).

characteristics, and/or an indication of whether a communication parameter of a channel is outside of acceptable bounds, to the headend. Ex. 1001, 3:45-60; Ex. 1002, ¶ 34.

The data processing module 156 (purple) processes the bands it receives to recover data on the television channel(s) therein, and outputs corresponding data (e.g., MPEG and/or IP packets) to end systems 126 via an interface, such as HDMI (High Definition Multimedia Interface) and/or Ethernet. Ex. 1001, 3:61-4:6, Fig. 1B; Ex. 1002, ¶ 35.

#### **B. Prosecution History**

U.S. Application No. 13/607,916, which led to the '008 patent, was filed on September 10, 2012. Ex. 1004, pp. 1-43. This application claimed priority to U.S. Provisional Application No. 61/532,098. Ex. 1004, pp. 2-34, 44; Ex. 1002, ¶ 36.

In an Office Action dated January 16, 2014, various claims were rejected in view of prior art and indefiniteness issues, but several dependent claims were indicated to be allowable if rewritten in independent form. Ex. 1004, pp. 62-70; Ex. 1002, ¶ 37.

In response, the Applicant amended the independent claims to address the indefiniteness issues, and to add the requirement that the determined characteristic is reported to a source of the received signal, reciting language from allowable dependent claims 5 and 14. Ex. 1004, pp. 79-85; Ex. 1002, ¶ 38.

The application was allowed, with the Applicant making an after-allowance amendment to make minor corrections to claims 1-2. Ex. 1004, pp. 88-92, 101-107. The '008 patent issued on July 29, 2014. Ex. 1001, cover; Ex. 1002, ¶ 39.

### **C. Earliest Priority Date for the Claims**

The earliest possible priority date for the claims of the '008 patent is September 8, 2011, the filing date of U.S. Provisional Application No. 61/532,098. Ex. 1001, cover; Ex. 1002, ¶ 48. Each of the references relied on herein is prior art to that 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 '008 patent.

## **IV. OVERVIEW OF PRIOR ART**

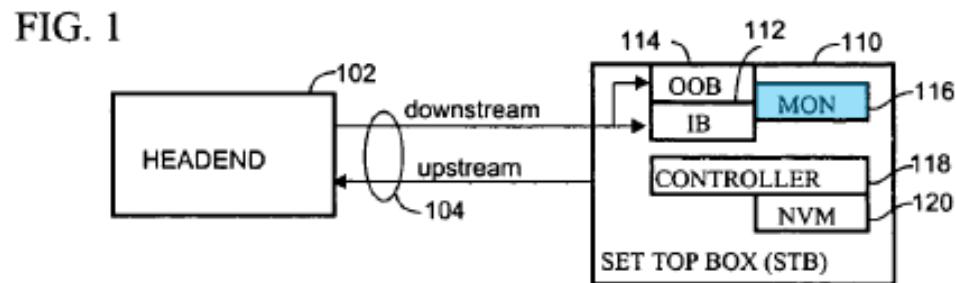
### **A. Kamieniecki**

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 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, ¶¶ 59-60.

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, ¶¶ 60-61. 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]; Ex. 1002, ¶ 62. 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, ¶¶ 63-64. The IB tuner 112 and OOB tuner 114 allow STB 110 to receive OOB communications simultaneously with IB communications. Ex. 1009, [0013]; Ex. 1002, ¶ 64.

The monitor 116 (**blue**) generates signal quality information regarding the IB and/or OOB channels. Ex. 1009, [0014]. 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]-[0022]; Ex. 1002, ¶¶ 65, 70. The Kamieniecki monitoring

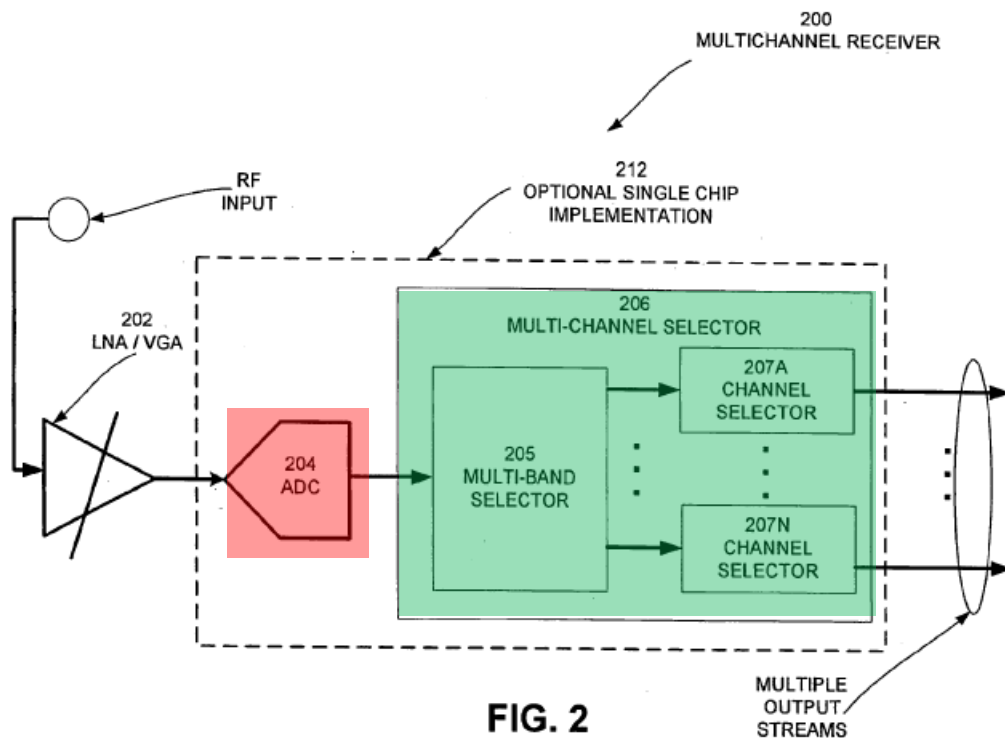
algorithm performs its monitoring at periodic intervals, going to “sleep” between monitoring events. Ex. 1009, [0008], [0015]; Ex. 1002, ¶ 66. When it is time to monitor its channels, STB 110 sequentially tunes to each channel in its channel map, collecting channel statistics for each channel. Ex. 1009, [0008], [0015], Fig. 2; Ex. 1002, ¶ 66. 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, ¶ 67.

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, ¶¶ 68-69.

## **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).

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, ¶¶ 72-74. 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, ¶¶ 75-76. 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. “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, ¶¶ 76-80. As an example, Konstantinos’

multi-channel decoder may process and deliver 16 TV streams simultaneously. Ex. 1010, [0106], [0119]; Ex. 1002, ¶ 76.

### 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, [0001]. Renken is prior art under 35 U.S.C. § 102(e) as explained below.

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. 3<sup>2</sup>; Ex. 1002, ¶¶ 83-84. 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:

---

<sup>2</sup> Citations to the Renken Provisional use the superimposed exhibit page numbers, and not the original numbers appearing at the bottom of some pages.

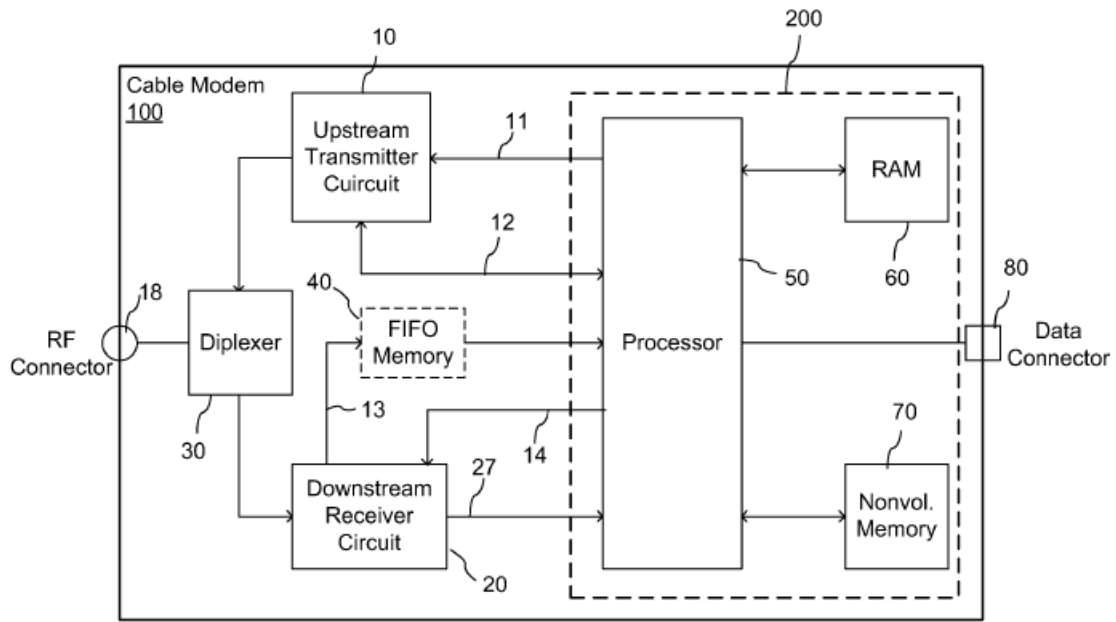


Fig. 2

### Ex. 1011, Fig. 2

Ex. 1011, 9:19-10:11, Fig. 2; Ex. 1012, pp. 5-6; Ex. 1002, ¶¶ 85-87. An embodiment of the downstream receiver circuit 20 is shown in greater detail in Figure 3:

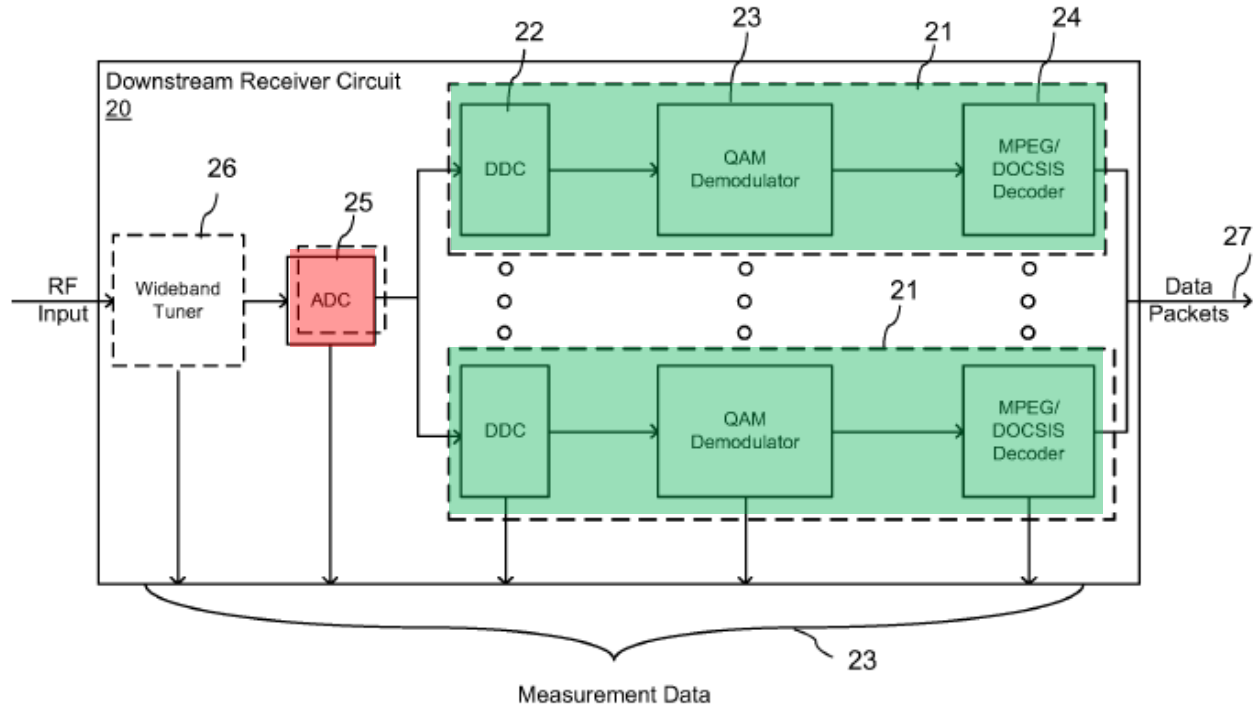


Fig. 3

**Ex. 1011, Fig. 3 (annotated)**

Ex. 1011, 10:56-57, Fig. 3; Ex. 1012, p. 6; Ex. 1002, ¶ 88.

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 downconverter 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; Ex. 1002, ¶89. 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; Ex. 1012, p. 6; Ex. 1002, ¶¶ 84, 89.

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, ¶ 90. The MCCM 100 may obtain, from its various components, various types of measurement data, such as spectrum-style measurements, signal level, carrier-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, ¶ 90.

### **1. Renken is Entitled to a Priority Date of Feb. 18, 2011**

As shown below, the Renken Provisional provides written description support for at least claims 1 and 10 of Renken. Ex. 1002, ¶¶ 91-107. 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 '008 patent is entitled to claim priority to the '008 Provisional. *Dynamic Drinkware, LLC v. National Graphics, Inc.*, 800 F.3d 1375, 1381 (Fed. Cir. 2015).

| <b>Renken – Claims 1 and 10</b>                                                                                                                                                                                                                                                                                                         | <b>Renken Provisional Support</b>                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. A measurement-capable cable modem (MCCM) comprising:                                                                                                                                                                                                                                                                                 | Ex. 1012, pp. 3-9, 13-14, Figs. 1-2 (pp. 5-6)                                                                                                                                            |
| a cable port for connecting to a cable network;                                                                                                                                                                                                                                                                                         | Ex. 1012, pp. 3-6, 9, 13-14, Fig. 1 (p. 5) (RF Connector)                                                                                                                                |
| 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)                                                                                                                                        |
| 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)                                                                                                                                  |
| 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)                                                                                                                    |
| 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 between the cable network and the CPE, while leaving at least another one of the | 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 for the subscriber) |

| Renken – Claims 1 and 10                                                                                                                                                                                                         | Renken Provisional Support                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| 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; |                                                                                                                        |
| 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/or, the Processor executing the measurement program) |
| 10. A method for monitoring a cable network comprising a network node,                                                                                                                                                           | Ex. 1012, pp. 3-8, 5, 9, 13-15 (cable plant and location of CMTS)                                                      |
| 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)                                                                                  |
| 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)                                                                            |
| 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”)                                                        |
| wherein the CM comprises a plurality of receivers for receiving downstream data communication signals from the CMTS over                                                                                                         | <i>See</i> discussion of “transmitters” and “receivers” in claim 1 above                                               |

| Renken – Claims 1 and 10                                                                                                                                                                                                                                                                                                     | Renken Provisional Support                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 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:                                                                                                                                  |                                                                                         |
| 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; | <i>See</i> discussion of “tunably allocating” in claim 1 above                          |
| 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 ...”) |

#### **D. Yu**

Yu (Ex. 1016) is a U.S. Published Application that was published on December 2, 2010, and is prior art pursuant to at least pre-AIA 35 U.S.C. § 102(a) and (e).

Yu describes a scalable satellite receiver system that replaces analog tuners with a digital system. Ex. 1016, [0007]-[0013], [0039]-[0043], [0058]. Yu’s system

includes a satellite antenna, a low-noise block converter, a downconverter, and a digital demodulator which operate to receive analog satellite signals and process them into digital channels that can be output to a television. Ex. 1016, [0007]-[0013], [0039]-[0043]; Ex. 1002, ¶¶ 109-110.

#### **E. Cholas**

Cholas (Ex. 1017) is a U.S. Published Application that was published on December 18, 2008, and is prior art pursuant to pre-AIA 35 U.S.C. § 102(b).

Cholas describes a premises gateway that unifies functions typically distributed across multiple devices in a content-based network, and provides them in a physically integrated premises gateway to reduce redundancy and cost. Ex. 1017, Abstract, [0020]-[0022]. In one example, Cholas shows using an integrated premises gateway 200 to replace a STB 208 (that provides video to television) and cable modem 212 (that provides data to a router). Ex. 1017, Figs. 2a-b, [0136]-[0140].

### **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<br>and Yu     | § 103 | 7-8, 15-16           |
| C      | Kamieniecki in view of Konstantinos<br>and Cholas | § 103 | 9, 17                |
| D      | Renken                                            | § 103 | 1-6, 9-14, and 17-18 |
| E      | Renken in view of Cholas                          | § 103 | 9, 17                |

None of the prior art listed in the table above was before the examiner during prosecution of the '008 patent. Ex. 1001, cover; Ex. 1002, ¶¶ 58, 71, 81, 108.

**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 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 '008 Patent while only claims 1-6, 9, and 10 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.

## **2. General Plastic Discretionary Denial Is Unwarranted**

The fact that an unrelated party, Dish Network L.L.C., (“Dish”), filed a petition challenging the ’008 patent on February 6, 2023 does not warrant a discretionary denial of this petition.

### **Factor One (whether the same petitioner previously filed a petition directed to the same claims of the same patent)**

Factor one favors institution. Petitioner Comcast and the prior petitioner Dish have no significant relationship to each other. They are unrelated competitor companies sued separately for alleged patent infringement based on their respective products/services. Further, counsel can (and does) represent that Comcast and Dish have not cooperated in any way in preparing their IPR petitions (and Dish’s petition was filed before Patent Owner filed suit against Petitioner). Thus, these parties have no relationship in their requested IPRs.

In these (and other) respects, the facts here align closely with those of *Google LLC v. Uniloc 2017 LLC*, IPR2020-00396, Paper 11 at 9 (PTAB August 3, 2020). (petitioners “have no relationship and offer competing products”; no cooperation in preparing the petitions). *Valve Corp. v. Elec. Scripting Prods., Inc.*, IPR2019-00062, Paper 11 at 9-10 (PTAB April 2, 2019) (precedential) is clearly distinguishable. There, the Board discretionarily denied a second petition filed against a patent by another petitioner largely because of the significant relationship found to exist between the different petitioners (HTC and Valve). They were not simply co-

defendants in litigation. They were accused of infringing the same patent based on “HTC’s ... devices that incorporate technology licensed from Valve.” *Id.*

**Factor Two (knowledge of prior art asserted in second petition at the time first petition was filed)**

Factor two favors institution. As noted above, Dish’s petition was filed before Patent Owner filed suit against Petitioner and counsel can (and does) represent that the primary references relied on herein had not yet been identified in Petitioner’s invalidity analysis.

**Factor Three (timing in relation to preliminary response and institution decision in first IPR)**

Factor three is neutral. Although a preliminary response was filed in Dish’s IPR before the present Petition was filed, Dish’s IPR was dismissed pursuant to settlement before an institution decision. Furthermore, the present Petition relies on different art than Dish’s petition so the preliminary response is of little use as a “roadmap” in preparing this Petition.

**Factor Four (elapsed time between when the petitioner learned of the prior art asserted in the second petition and the time of its filing)**

Factor four is neutral. Upon Patent Owner filing suit, Comcast undertook to diligently investigate the allegations, including the invalidity of the patents asserted. Patent invalidity searches and studies were undertaken, with the references relied upon herein ultimately being identified as material prior art.

Petitioner submits that the time taken to investigate invalidity, identify IPR challenge grounds and prepare this petition for filing was reasonable in the circumstances, including the large number of patents asserted against Petitioner by Patent Owner (twenty in two different lawsuits). The situation here is a direct result of Patent Owner's litigation activity.

**Factor Five (explanation of the time elapsed between the filing of the multiple petitions directed to the same claims of the same patent)**

Factor five does not warrant denial. Although it has been more than a year since Dish's petition was filed, Dish's petition was filed before Patent Owner filed suit against Petitioner and the time taken to prepare this petition was reasonable in view of the number of patents asserted against Petitioner by Patent Owner.

**Factors Six (Board's finite resources) and Seven (statutory time frame for Board to issue a final determination)**

Factors six and seven favor institution. As in *Google*, the filing of two petitions by different petitioners here is the direct result of Patent Owner's litigation activity. And the Board should be "mindful of potential prejudice to a second or subsequent petitioner if institution of review based on the second petition is denied and the proceeding involving the first petitioner is terminated." *Google* at 16. The potential prejudice to Petitioner from a denial is even greater here, given that Dish's petition was voluntarily dismissed prior to 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, ¶¶ 40-42.

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, ¶ 43.

In the *Entropic v. Charter* case, the District Court entered an Order on June 26, 2023, providing constructions for certain disputed claim terms from the '008 patent, as set forth below. Ex. 1020, pp. 30-36, 61-64; Ex. 1002, ¶ 47.

- In claim 1, the phrase “operable to” was construed to mean “configured to,” as this was agreed to by the parties. Ex. 1020, p. 30.
- In claim 1, the phrase “digitize a received signal spanning an entire television spectrum comprising a plurality of television channels” was construed as having its plain meaning, rejecting Charter’s argument that the “received signal” must contain only television channels. Ex. 1020, pp. 30-33.
- In claim 1, the terms “signal monitor,” “data processor,” and “channelizer” were construed to have their plain meaning, rejecting an argument that these must be three separate pieces of hardware. Ex. 1020, pp. 34-36.

Petitioner does not contend that the claims include any means-plus-function limitations, but identifies the following claim elements, and their corresponding structures, in case the Board finds them to be means-plus-function elements. Ex. 1002, ¶¶ 44-46.

**“one or more circuits that are operable to”**

To the extent the Board finds this claim 11 limitation to be a means-plus-function term, the claim recites numerous functions - the “receive,” “digitize,” “select”, and “concurrently output” steps, which each should be given their ordinary meaning. The corresponding structure for performing those functions is physical electronic (hardware) components and associated software/firmware that carries out the recited functions. Ex. 1001, 2:21-25, 2:30-33, 2:57-4:6, 4:16-7:2, Figs. 1B-1C; Ex. 1002, ¶ 46.

**VI. SPECIFIC GROUNDS FOR UNPATENTABILITY**

**A. Grounds A-C: Claims 1-18 are Rendered Obvious by Kamieniecki in View of Konstantinos, Claims 7-8 and 15-16 are Rendered Obvious by Kamieniecki in View of Konstantinos and Yu, and Claims 9 and 17 are Rendered Obvious by Kamieniecki in view of Konstantinos and Cholas**

As set forth below, claims 1-18 would have been obvious to a POSITA in view of Kamieniecki combined with Konstantinos, claims 7-8 and 15-16 would have further been obvious to a POSITA in view of Kamieniecki combined with Konstantinos and Yu, and claims 9 and 17 would have been obvious to a POSITA in view of Kamieniecki combined with Konstantinos and Cholas. Ex. 1002, ¶¶ 49-80, 108-190.

**1. Overview of the 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, and specifically taught by Konstantinos. Ex. 1002, ¶¶ 112-115. Konstantinos describes how existing television receivers receive a single channel through a single tuner, that the evolving market for data and programming services will demand the capability of multi-channel tuning, and that the conventional approach of using multiple single-channel tuners in parallel becomes impractical as the number of simultaneously required channels increases beyond two. Ex. 1010, [0001], [0006], [0008], [0011], [0016]. Konstantinos further describes that the DOCSIS 3.0 standard, released in August 2006, 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 50-1000MHz. Ex. 1010, [0011]. Konstantinos offers the solution of a single IC (integrated circuit) receiver able to provide improved multi-channel functionality. Ex. 1010, [0016]-[0017]; Ex. 1002, ¶ 115.

A POSITA would recognize that Konstantinos suggests an improvement to systems like that of Kamieniecki. Ex. 1002, ¶ 116. 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 the Kamieniecki IB and OOB tuners would offer savings in terms of cost and component complexity while providing improved multi-channel capability. Ex. 1002, ¶ 116.

A POSITA would have been motivated to apply Konstantinos' teaching of a multi-channel receiver to the monitoring STB of Kamieniecki in order to enable simultaneous tuning and monitoring 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, ¶ 125. This would also provide the viewer with faster channel switching. Ex. 1002, ¶ 125. A POSITA would have understood that the IB and OOB tuners of Kamieniecki could be replaced beneficially by Konstantinos' multi-channel receiver providing enhanced capabilities as well as reducing cost and complexity through a single chip solution. Ex. 1010, [0016], [0044]; Ex. 1002, ¶ 126.

Combining Konstantinos with Kamieniecki also would be merely using known techniques (a single chip 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, ¶ 127. A POSITA would have had the skill to implement Konstantinos' teachings in the system of 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 chip and the POSITA would be familiar with the design of RF receivers. A POSITA would thus have been able to implement Konstantinos' multi-channel receiver into Kamieniecki's STB with an expectation of success. Ex. 1002, ¶ 127.

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, ¶ 117. 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, ¶¶ 116-117.

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

## 2. Independent Claim 1

### a. [1A]: “A system comprising:”

While the preamble [1A]<sup>3</sup> is not limiting, Kamieniecki-Konstantinos teaches the claimed system, as discussed below. Ex. 1002, ¶¶ 118-119.

### b. [1B] “an analog-to-digital converter operable to digitize a received signal spanning an entire television spectrum comprising a plurality of television channels, said digitization resulting in a digitized signal;”

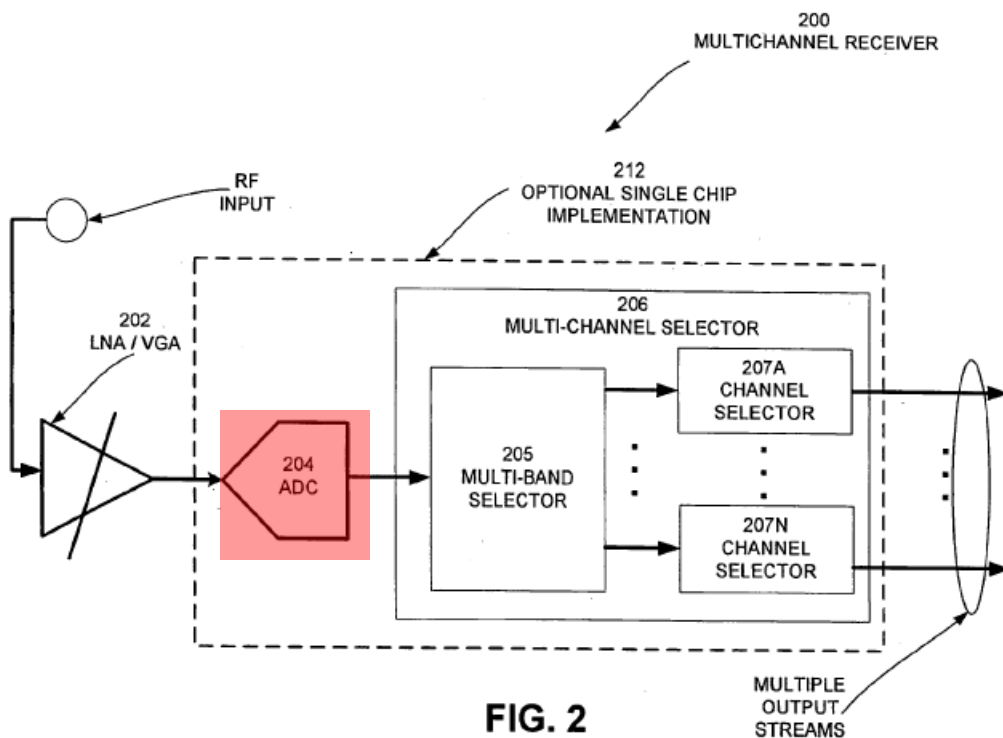
Kamieniecki describes headend 102 transmitting a plurality of IB channels and one or more OOB channels (together “a received signal spanning an entire television spectrum”) that are received by STB 110. Ex. 1109, [0013], Fig. 1. The IB channels (claimed “a plurality of television channels”) include audio and video content of television programs for display at the STB. Ex. 1009, [0002]-[0004], [0013]-[0014], Ex. 1002, ¶¶ 120-121.

The “analog-to-digital converter” that digitizes a received signal spanning an entire television spectrum to result in a digitized signal is taught by Konstantinos’ receiver in the proposed combination. Specifically, Konstantinos describes an analog-to-digital converter 204 (**red**), which is part of the Konstantinos multi-

---

<sup>3</sup> The limitations of the claims appear and are labelled in the Claims Listing Appendix.

channel receiver 200 shown in Figure 2 below. Ex. 1010, [0042]-[0046], [0114]-[0116], Figs. 2, 9; Ex. 1002, ¶ 122.



**Ex. 1010, Fig. 2 (annotated)**

The RF input received by Konstantinos’ multi-channel receiver 200 is supplied to a low-noise amplifier and variable gain amplifier (LNA/VGA) 202 before being digitized “in its entirety with an ADC 204.” Ex. 1010, [0043], Fig. 2. Konstantinos states that this RF input may be a cable TV signal including multiple channels bundled together between 50-1000 MHz, and that 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]. The frequency range of cable TV channels (50-1000 MHz) digitized by Konstantinos' ADC spans virtually the same frequency range of the cable TV signals discussed in the '008 patent. Ex. 1001, 4:11-13 (cable TV signals range between 55MHz and 1002MHz). Thus, the ADC 204 described by Konstantinos is an analog-to-digital converter operable to digitize a received signal spanning an entire television spectrum comprising a plurality of television channels. Ex. 1002, ¶ 123.

In the Kamieniecki-Konstantinos combination, the IB and OOB channels of Kamieniecki would be the RF Input that is received by the Konstantinos multi-channel receiver 200. The digitization of the IB and OOB channels of Kamieniecki by the ADC 204 results in a multi-channel digital signal ("digitized signal") that is a digitized equivalent of the input RF signal. Ex. 1010, [0043], [0048]-[0049], [0116]; Ex. 1002, ¶ 124. Therefore, Kamieniecki-Konstantinos discloses limitation [1B]. Ex. 1002, ¶ 128.

**c. [1C]: "a signal monitor operable to: analyze said digitized signal to determine a characteristic of said digitized signal; and report said determined characteristic to a source of said received signal;"**

Kamieniecki describes a monitor 116 (claimed "signal monitor"), which monitors signal quality of the channels it receives. Ex. 1009, [0004], [0006]-[0007], [0014]-[0016], [0024]; Ex. 1002, ¶ 130. Monitor 116 analyzes the signal it receives from the IB and/or OOB tuners and determines signal quality information

(“determine a characteristic of said digitized signal”) such as “error count, signal level estimates, etc.” Ex. 1009, [0007], [0014], [0022]; Ex. 1002, ¶¶ 129-130. In the proposed combination, the monitor 116 would receive a selected IB and/or OOB channel as a digital output stream from the Konstantinos receiver 200. Ex. 1002, ¶ 131.

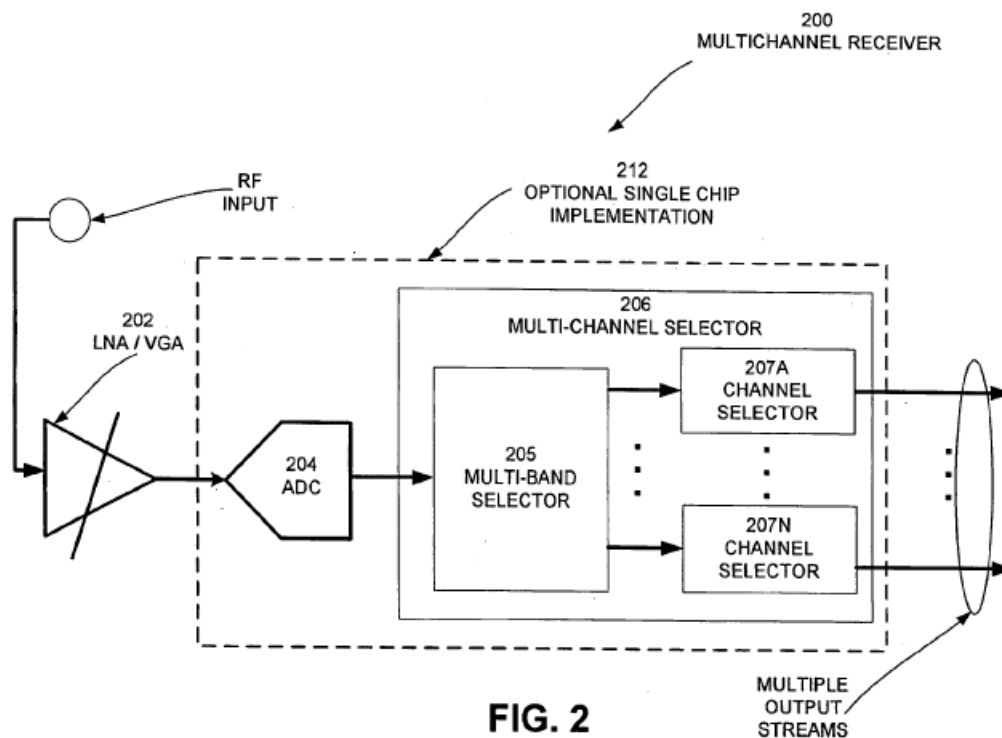


**FIG. 2**

**Ex. 1010, Fig. 2**

Kamieniecki further discloses that STB 110 will report signal quality information (claimed “determined characteristic”) to the headend 102 (“source of said received signal”). Ex. 1009, [0014] (claimed “the information about signal

quality can be transmitted by the STB to the headend ...”), *see also* [0008], [0016]-[0017], [0024], Fig. 1; Ex. 1002, ¶ 132.

Therefore, Kamieniecki-Konstantinos discloses limitation [1C]. Ex. 1002, ¶ 133.

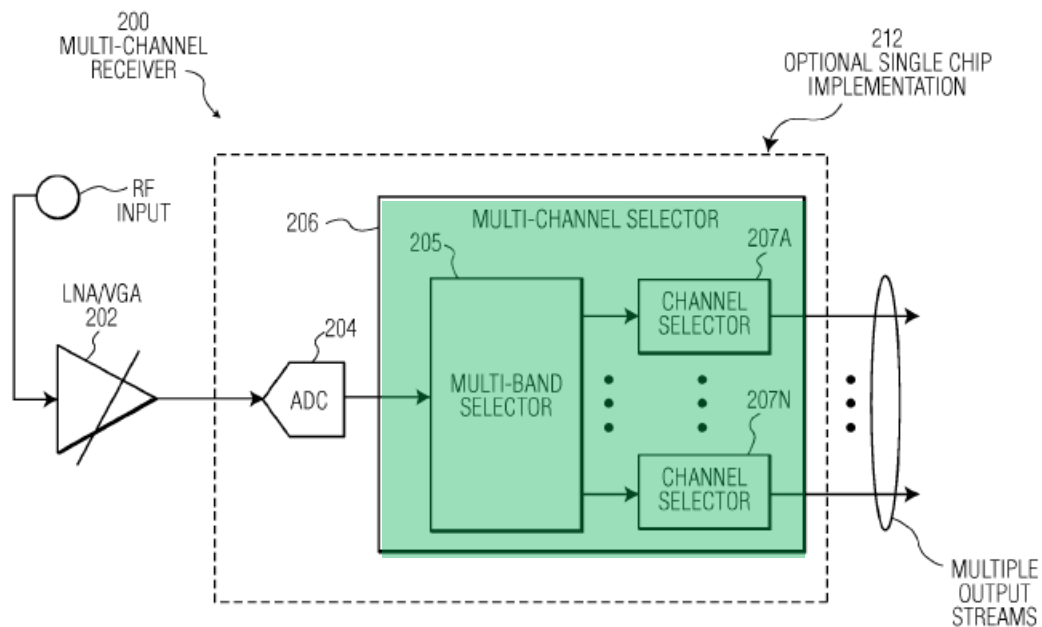
**d. [1D]: “a data processor operable to process a television channel to recover content carried on the television channel; and”**

Television channels need to be processed so that their content can be recovered and viewed. Ex. 1002, ¶ 135. Kamieniecki describes that the IB channels include MPEG-2 transport streams which contain content of the television channel. Ex. 1009, [0004]; Ex. 1002, ¶¶ 136. Kamieniecki’s STB 110 would obviously have a decoder to decode the MPEG-2 stream (“recover content carried on the television channel”) in order for the subscriber to view the content. Ex. 1009, [0013]; Ex. 1002, ¶¶ 135-136. Konstantinos also describes channel and source decoders that are used to decode a TV channel, such as an MPEG stream, and recover its content for viewing by a user. Ex. 1010, [0030], [0042], [0106]-[0107], [0117]-[0119]; Ex. 1002, ¶¶ 135-136. A POSITA would have known that such decoders would be data processors or would be implemented using data processors. Ex. 1002, ¶ 136.

Therefore, Kamieniecki-Konstantinos discloses limitation [1D]. Ex. 1002, ¶ 137.

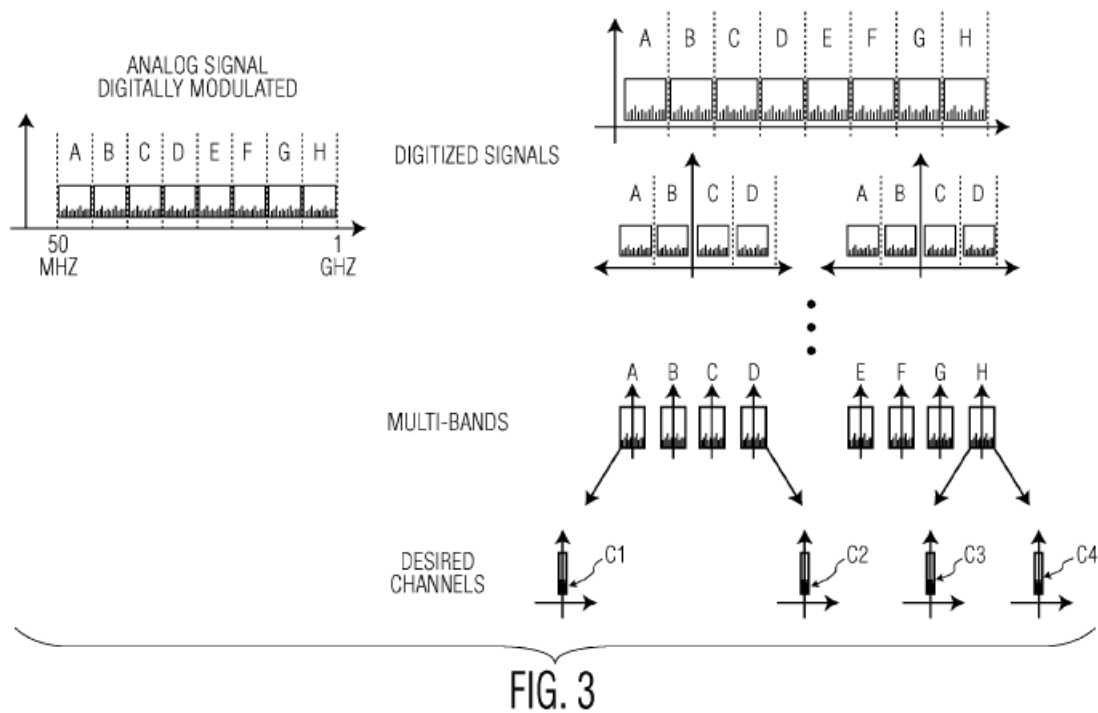
- e. [1E]: “a channelizer operable to: select a first portion of said digitized signal; select a second portion of said digitized signal; and concurrently output said first portion of said digitized signal to said signal monitor and said second portion of said digitized signal to said data processor.”

Konstantinos describes a Multi-Channel Selector 206 (green) (claimed “a channelizer”), which includes a Multi-Band Selector 205 and multiple Channel Selectors 207A-N, which select channels from the digitized broadband input signal, and output them concurrently, as illustrated in Figure 2. Ex. 1010, [0043]-[0046], [0117], Fig. 2; Ex. 1002, ¶¶ 138-139.



**Ex. 1010, Fig. 2 (annotated)**

Konstantinos’ Figure 3 (below) illustrates how the incoming analog signals, from 50MHz to 1GHz, are received and digitized, and then desired channels are selected for output. Ex. 1010, [0047]-[0051], Fig. 3; Ex. 1002, ¶¶ 140-142.



**Ex. 1010, Fig. 3**

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, ¶¶ 140-143. 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 (claimed “select a first portion of said digitized signal; select a second portion of said digitized signal”). Ex. 1010, [0117]-[0118]. Konstantinos gives an example in which sixteen (16) channel selectors are used so that 16 TV streams are processed

simultaneously. Ex. 1010, [0046], [0106]. From this, it would have been obvious to a POSITA that any number of channel selectors 207A-N may be implemented to output as many channels simultaneously as is desired (claimed “concurrently output ...” first and second portions). Ex. 1002, ¶¶ 143-145.

Kamieniecki monitors some or all channels in the channel map, and does so by waiting for an idle time and then selecting and monitoring the channels one at a time. Ex. 1009, [0008], [0015], [0017]. This is due to: 1) the fact that Kamieniecki’s STB only had a single IB tuner, and 2) Kamieniecki wished to do its monitoring without disturbing user experience. Ex. 1009, [0013], [0017]; Ex. 1002, ¶ 145.

Once Kamieniecki is updated 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. Ex. 1002, ¶ 145. Indeed, network errors can occur at any time of day, and a POSITA would have wanted to be able to make measurements at any time of day or upon request – not just during the STB 110’s idle periods. *Id.* 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 “concurrently output” via parallel Channel Selectors 207A-N to the Kamieniecki monitor 116 and to the decoders discussed above in limitation [1D]. *Id.*, ¶ 146; Sections VI.A.2.c-d, *supra*.

A POSITA would have recognized that as a result of replacing Kamieniecki's IB and OOB tuners with Konstantinos' multi-channel receiver, the channel(s) to be monitored ("first portion of said digitized signal") would be output to Kamieniecki's monitor 116 in order for signal quality monitoring to take place and the signal quality information to be sent to the headend, as taught by Kamieniecki. Ex. 1002, ¶¶ 145-146. 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. 1002, ¶ 146. Thus, the channel to be watched as normal (claimed "second portion of said digitized signal") would be output to Konstantinos' "channel and source decoders" for decoding into video and audio as discussed above while the monitored channel (claimed "first portion ...") is concurrently sent to monitor 116. Section VI.A.2.d, *supra.*; Ex. 1010, [0106]; Ex. 1002, ¶ 146.

Therefore, Kamieniecki-Konstantinos discloses limitation [1E], and claim 1 is obvious in view of Kamieniecki-Konstantinos. Ex. 1002, ¶ 147.

### **3. Dependent Claim 2**

#### **a. "The system of claim 1, wherein said first portion of said digitized signal spans said entire television spectrum."**

Kamieniecki discloses a desire to monitor all channels. Ex. 1009, [0008], [0013] ("The STB maintains a channel map which is a listing of all of the

channels.”), [0015] (“This provides coverage and health check for all of the channels.”), [0017]. Kamieniecki’s example algorithm monitors all channels when it is time for monitoring but does so one at a time, due to its single IB tuner. *Id.*, [0015], [0022], Fig. 2; Ex. 1002, ¶¶ 148-149.

As discussed above, the addition of the Konstantinos multi-channel receiver would allow channels to be submitted concurrently to both the monitor 116 for monitoring and to a channel decoder for decoding and presentation to a user. Section VI.A.2.e; Ex. 1002, ¶ 149. A POSITA would have recognized the benefit of monitoring all of the channels (i.e., the entire television spectrum) at the same time so as to more quickly become aware of any issues with signal quality and to make use of the multi-channel tuning capabilities Konstantinos provides, rather than having to wait for the IB tuner to be idle. *Id.* Accordingly, a POSITA would have known to implement sufficient channel selectors to allow for simultaneous monitoring of all channels in the received signal. *Id.*, ¶ 150. This is particularly true since Kamieniecki’s STB already has IB and OOB tuners that allow it to receive multiple channels simultaneously. Ex. 1009, [0013], Fig. 1.

Accordingly, claim 2 is rendered obvious by Kamieniecki-Konstantinos. Ex. 1002, ¶ 151.

#### 4. Independent Claim 3

**a. [3A]: “A method comprising: performing by one or more circuits:”**

Limitation [3A] is shown for the same reasons discussed above regarding limitation [1A]. Section VI.A.2.a, *supra*; Ex. 1002, ¶ 152.

**b. [3B]: “receiving a signal having a bandwidth that spans from a first frequency,  $F_{lo}$ , to a second frequency,  $F_{hi}$ , wherein said signal carries a plurality of channels”**

Limitation [3B] is shown as discussed above regarding limitation [1B]. The claim does not specify values for the frequencies  $F_{lo}$  and  $F_{hi}$ , and the specification of the '008 patent states that the example it gives ( $F_{lo} \approx 55\text{MHz}$ ,  $F_{hi} \approx 1002\text{MHz}$ ) is merely for illustration and is “not intended to be limiting.” Ex. 1001, 4:11-15. Accordingly, the claimed  $F_{lo}$  and  $F_{hi}$  equally apply to the 50Hz and 1000MHz frequencies described in Konstantinos, as discussed above regarding limitation [1B]. Section VI.A.2.b, *supra*; Ex. 1002, ¶¶ 153-154.

**c. [3C]: “digitizing said received signal from  $F_{lo}$  to  $F_{hi}$  to generate a digitized signal;”**

Limitation [3C] is shown as discussed above regarding limitation [1B], in view of the discussion of limitation [3B]. Section VI.A.2.b, *supra*; Ex. 1002, ¶ 155.

**d. [3D]: “selecting a first portion of said digitized signal; selecting a second portion of said digitized signal; and concurrently outputting said selected first portion and said selected second portion;”**

Limitation [3D] is shown as discussed above regarding limitation [1E]. Section VI.A.2.e, *supra*; Ex. 1002, ¶ 156.

- e. [3E]: “wherein: said selected second portion is output to a signal analyzer which analyzes said selected first portion to determine one or more characteristics of the received signal, and which reports said determined one or more characteristics to a source of said received signal”

Limitation [3E] is shown as discussed above regarding limitations [1C] and [1E]. Sections VI.A.2.c, VI.A.2.e, *supra*; Ex. 1002, ¶ 157.

- f. [3F]: “and said selected second portion is output to a data processor for recovery of data carried on one or more of said plurality of channels.”

Limitation [3F] is shown as discussed above regarding limitations [1D] and [1E]. Accordingly, claim 3 is rendered obvious by Kamieniecki-Konstantinos. Sections VI.A.2.d-e, *supra*; Ex. 1002, ¶ 158.

## **5. Dependent Claim 4**

- a. “The method of claim 3, wherein said first portion comprises all of said received signal from  $F_{lo}$  to  $F_{hi}$ .”

The limitations of claim 4 are shown as discussed above regarding claim 2 and limitation [3B]. Accordingly, claim 4 is rendered obvious by Kamieniecki-Konstantinos. Sections VI.A.3, VI.A.4.b, *supra*; Ex. 1002, ¶ 159.

## **6. Dependent Claim 5**

- a. “The method of claim 3, wherein said one or more characteristics is one of: signal power vs. frequency, phase vs. frequency, signal-to-noise ratio, peak-to-average ratio, noise levels, bit error rate, and symbol error rate.”

Kamieniecki’s monitor 116 monitors various signal quality characteristics. Monitor 116 monitors “signal level” for a channel (i.e., frequency), and a POSITA

would have understood that this “level” refers to, or at least includes, the signal’s power, and this is an example of “signal power vs. frequency.” Ex. 1009, [0007], [0014]-[0015], [0018]-[0020]; Ex. 1002, ¶ 160. Kamieniecki also discloses that its monitor 116 can monitor for the “absence/presence” of a particular channel. Ex. 1009, [0014], [0022]. A POSITA would have known that in order for a channel to be present, its signal power needs to be strong enough to be detected and thus is another example of “signal power vs. frequency,” as it would indicate which channel(s) were strong enough to be detected (or too weak to be detected). Ex. 1002, ¶ 161. Kamieniecki further discloses monitoring error count which a POSITA would have understood to include bit error rate and/or symbol error rate. Ex. 1009, [0007], [0014]-[0015]; Ex. 1002, ¶ 162.

Konstantinos also discloses monitoring various signal characteristics using an information extraction processor, including bit-error-rate and signal-to-noise ratio and expressly provides the motivation for doing so: “this information can directly be used in various ways to improve the reception quality.” Ex. 1010, [0109]. 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. 1002, ¶ 162. A POSITA would also have recognized that each of these are common ways of measuring signal quality and that adding those to Kamieniecki’s monitor 116 would merely involve making a simple substitution of one known element (the measured characteristics identified

in Kamieniecki monitor 116) for another (the SNR and BER of Konstantinos), or using characteristics from both references together, to yield predictable results (evaluating signal quality), and since POSITA would have known that a signal's quality can be evaluated using any of a large number of known signal characteristics without undue experimentation. *Id.*

Accordingly, claim 5 is rendered obvious by Kamieniecki-Konstantinos. Ex. 1002, ¶ 163.

## **7. Dependent Claim 6**

- a. “The method of claim 3 wherein: said received signal is a cable television signal; and said plurality of channels comprises a plurality of television channels.”**

Kamieniecki states that it is for monitoring quality of signals on a cable television network or the like, and describes television programming as an example of the services that its cable service operator provides on its transmitted channels. Ex. 1009, [0001], [0013]. Konstantinos also describes its multi-channel receiver 200 as receiving cable television channels. Ex. 1010, [0043] (“A composite broadband RF input signal (e.g., a cable TV signal consisting of multiple channels bundled together between 50-1000MHz) ...”); Ex. 1002, ¶ 164.

Accordingly, claim 6 is rendered obvious by Kamieniecki-Konstantinos. Ex. 1002, ¶¶ 164-165.

## 8. Dependent Claim 7

- a. **“The method of claim 3, wherein: said received signal is a satellite television signal output by a low noise block downconverter; and said plurality of channels comprises a plurality of television channels.”**

Kamieniecki states that it is for monitoring quality of signals on a cable television network “or the like,” and a POSITA would have considered satellite television systems to be an example of what Kamieniecki meant by “or the like.” Ex. 1009, [0001]; Ex. 1002, ¶ 166. The signal degradation problem described in Kamieniecki and addressed by its monitor 116 would have existed for other forms of delivery just as well. Ex. 1002, ¶ 166. Satellite television service was a well-known alternative to cable television service before the priority date of the '008 patent, and satellite transmissions, like all transmissions, can suffer signal degradation. *Id.* Accordingly, a POSITA would have considered it obvious to modify the Kamieniecki-Konstantinos combination such that the downstream signals arrive via satellite instead of cable. Ex. 1002, ¶167. Doing so would have been the use of a known technique (the Kamieniecki-Konstantinos monitoring of signal quality) to improve similar technologies (satellite) in the same way. Ex. 1002, ¶ 167. A POSITA would further have known that a low noise block converter is a common part of a satellite system. *Id.*

To the extent Kamieniecki-Konstantinos does not suggest using its system with a satellite television signal, that teaching is provided by Yu. Yu recognized

that satellite television subscribers wished to view and record multiple programs simultaneously, and offered a multi-channel satellite receiver (with low-noise block converter). Ex. 1016, [0005], [0007]-[0013], [0039]-[0043], [0058]; Ex. 1002, ¶ 168.

A POSITA would have been motivated to apply the monitoring system of Kamieniecki-Konstantinos to a satellite television system because satellite was a well-known alternative to cable, and because the substitution would have provided the predictable result of monitoring signal quality for satellite television users, and would not have required undue experimentation since satellite and cable signal components were both well known. Ex. 1009, [0006]-[0007]; Ex. 1002, ¶¶ 169-170. With regard to reporting back signal quality measurements, Kamieniecki describes that a telephone modem may be used if a cable return path is not available. Ex. 1009, [0027]; Ex. 1002, ¶ 171.

Accordingly, claim 7 is rendered obvious by Kamieniecki-Konstantinos and Kamieniecki-Konstantinos-Yu. Ex. 1002, ¶ 172.

## **9. Dependent Claim 8**

- a. “The method of claim 7, wherein said one or more circuits reside in a customer premises satellite reception assembly.”**

As discussed above in regard to claim 7, Kamieniecki-Konstantinos and Kamieniecki-Konstantinos-Yu could be used with satellite television signals, and since Kamieniecki discloses that its components reside in STB 110, a POSITA

would have known that such equipment would be housed in customer premises satellite reception assembly if the system were used for satellite television. Section.VI.A.8, *supra*; Ex. 1002, ¶ 173.

Accordingly, claim 8 is rendered obvious by Kamieniecki-Konstantinos and Kamieniecki-Konstantinos-Yu. Ex. 1002, ¶ 174.

#### **10. Dependent Claim 9**

##### **a. “The method of claim 3, wherein said one or more circuits reside in a customer premises gateway.”**

Kamieniecki describes its components as being included in a set-top box 110. Ex. 1009, [0013]-[0014], Fig. 1. The '008 patent similarly states that its front-end 158, channelizer 152, data processing module 156, and/or monitoring module 154 may reside in a set-top box. Ex. 1001, Fig. 1C, 4:19-21. The '008 patent also refers to the terms “set-top box” and “gateway” interchangeably. Ex. 1001, 5:37 (“... satellite gateway/set-top box ...”). Accordingly, the claimed “customer premises gateway” would be understood by a POSITA to encompass set-top boxes like that in Kamieniecki. Ex. 1002, ¶ 175.

To the extent Patent Owner argues that Kamieniecki-Konstantinos does not suggest placement in a “customer premises gateway,” that placement would have been obvious to a POSITA in view of Cholas. Ex. 1002, ¶ 175. Cholas expressly teaches placing STB components into a premises services gateway 200 that consolidates STB functionality with other kinds of devices, such as a cable modem.

Ex. 1017, Abstract, [0006], [0020]-[0022], [0024]-[0035], [0038], [0053]-[0054], [0105], [0109], [0134]-[0140], [0199]-[0202], Figs. 2a-2b, 3, 12-14; Ex. 1002, ¶ 175. This suggests to a POSITA to place STB components into a premises gateway, and a POSITA would have had the skill to follow this suggestion and place the Kamienieck-Konstantinos STB into a premises gateway without undue experimentation. Ex. 1002, ¶ 175. Also, the Kamieniecki STB, like the '008 patent's gateway, is located at an interface between an external network and devices within a customer's premises, and a POSITA would have considered it obvious to consolidate the STB with other devices where signals enter the premises, as shown in Cholas, to reduce cost and redundancy. Ex. 1009, [0002], [0004], [0013]-[0014]; Ex. 1010, [0001]-[0003], [0011], [0046], [0106], [0114], [0121], Fig. 9; Ex. 1002, ¶ 175.

Accordingly, claim 9 is rendered obvious by Kamieniecki-Konstantinos and by Kamieniecki-Konstantinos-Cholas. Ex. 1002, ¶ 175.

## **11. Dependent Claim 10**

- a. “The method of claim 3, wherein a bandwidth and/or center frequency of said selected first portion is configurable during operation of said one or more circuits.”**

The '008 patent describes the “center frequency” and “bandwidth” while configuring its band selectors 302 (**green**) – they are told the center frequency ( $k$ ) and bandwidth ( $\Delta$ ) of the band they are to select, and this is illustrated in Figure 3:

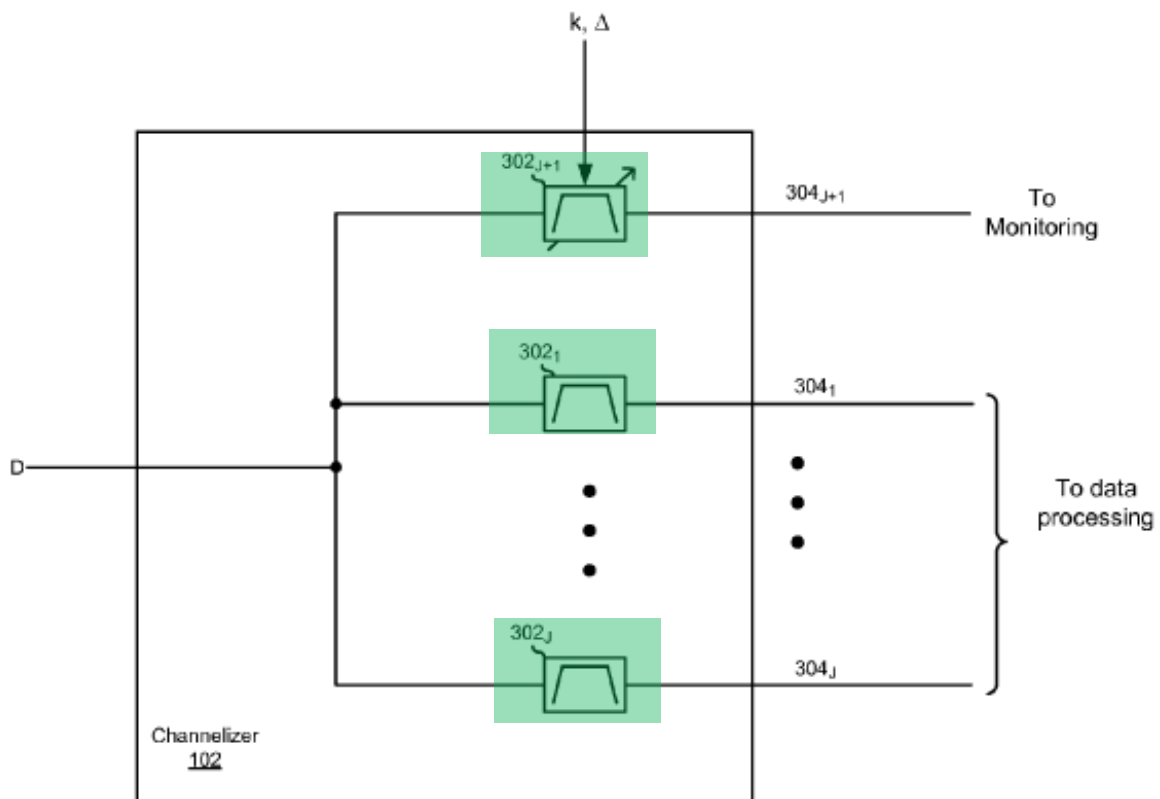
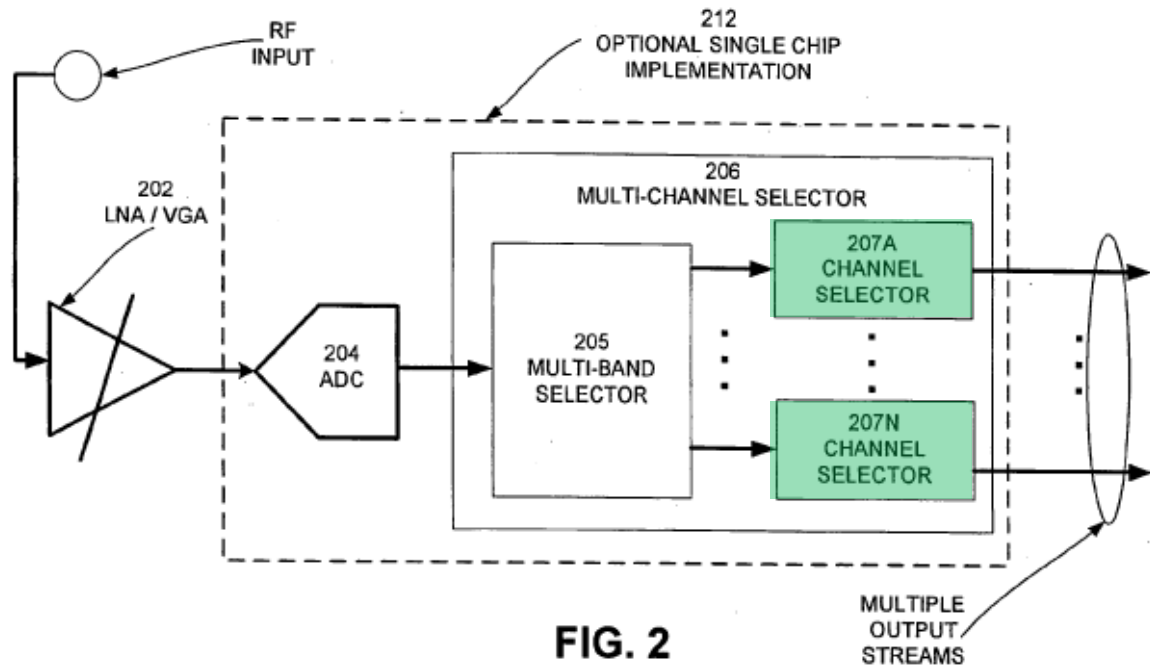


FIG. 3

**Ex. 1001, Fig. 3 (annotated)**

Ex. 1001, 6:10-17, Fig. 3; Ex. 1002, ¶176. Konstantinos Figure 2 similarly shows that its multi-channel selector 206 also includes channel selectors 207A-N that are each configured to select a particular channel:

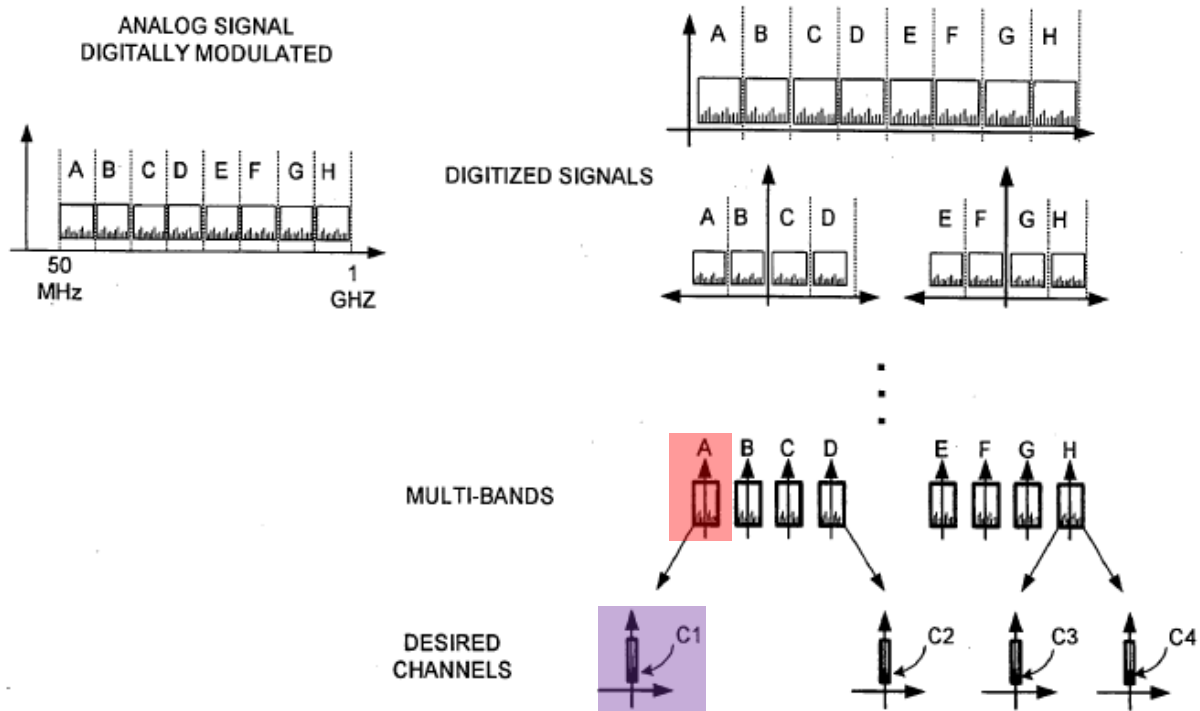


**Ex. 1010, Fig. 2 (annotated)**

Ex. 1010, [0045-46], [0048], [0062], [0105], Fig. 2; Ex. 1002, ¶ 177. 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):

**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 '008 patent. Ex. 1010, [0045]-[0046], [0048], [0062], [0105], Fig. 3; Ex. 1002, ¶¶ 176-177.

Accordingly, claim 10 is rendered obvious by Kamieniecki-Konstantinos. Ex. 1002, ¶ 177.

## **12. Independent Claim 11**

Claim 11 is a system claim counterpart to method claim 3. Section VI.A.4, *supra*. Accordingly, its various steps below are mapped to corresponding steps in

claim 3. To the extent the “one or more circuits” is considered a means-plus-function element, the corresponding structure from the ’008 patent is the physical electronic hardware components and associated software/firmware that carries out the recited function, as discussed above in Section V.E.1, *supra*. In Kamieniecki-Konstantinos, the equivalent corresponding structure is the hardware and/or software components that perform the various steps discussed below, as well as the Kamieniecki controller 118 and the program it executes (which may include the Konstantinos hardware and software program that controls the Konstantinos multi-channel receiver 200). Ex. 1009, [0015]; Ex. 1002, ¶ 178.

**a. [11A]: “A system comprising: one or more circuits that are operable to:”**

Limitation [11A] is shown as discussed above regarding limitation [3A] and the limitations in claim 1. Ex. 1002, ¶ 178; Sections VI.A.4.a, VI.A.2, *supra*.

**b. [11B]: “receive a signal having a bandwidth that spans from a first frequency,  $F_{lo}$ , to a second frequency,  $F_{hi}$ , wherein said signal carries a plurality of channels;”**

Limitation [11B] is shown as discussed above regarding limitations [1B] and [3B]. Ex. 1002Id., ¶ 179; Sections VI.A.2.b, VI.A.4.b, *supra*.

**c. [11C]: “digitize said received signal from  $F_{lo}$  to  $F_{hi}$  to generate a digitized signal;”**

Limitation [11C] is shown as discussed above regarding limitations [1B], [3B], and [3C]. Ex. 1002, ¶ 180; Sections VI.A.2.b, VI.A.4.c, *supra*.

- d. [11D]: “select a first portion of said digitized signal; select a second portion of said digitized signal; concurrently output said selected first portion and said selected second portion,”**

Limitation [11D] is shown as discussed above regarding limitations [1E] and [3D]. Ex. 1002, ¶ 181; Sections VI.A.2.e, VI.A.4.d, *supra*.

- e. [11E]: “wherein: said selected first portion is output to a signal analyzer that is operable to analyze said first portion to determine one or more characteristics of said first portion, and that is operable to report said determined one or more characteristics to a source of said received signal;”**

Limitation [11E] is shown as discussed above regarding limitations [1C], [1E], and [3E]. Ex. 1002, ¶ 182; Sections VI.A.2.c, VI.A.2.e, VI.A.4.e, *supra*.

- f. [11F]: “and said selected second portion is output to a data processor for recovery of data carried on one or more of said plurality of channels.”**

Limitation [11F] is shown as discussed above regarding limitations [1D], [1E], and [3F]. Ex. 1002, ¶ 183; Sections VI.A.2.d-e, VI.A.4.f, *supra*.

### **13. Dependent Claim 12**

- a. “The system of claim 11, wherein said first portion comprises all of said received signal from  $F_{lo}$  to  $F_{hi}$ .”**

The limitations of claim 12 are shown as discussed above regarding claims 4 and 2, and limitation [3B]. Ex. 1002, ¶ 184; Sections VI.A.5, VI.A.3, VI.A.4.b, *supra*.

#### **14. Dependent Claim 13**

- a. “The system of claim 11, wherein said one or more characteristics is one of: signal power vs. frequency, phase vs. frequency, signal-to-noise ratio, peak-to-average ratio, noise levels, bit error rate, and symbol error rate.”**

The limitations of claim 13 are shown as discussed above regarding claim 5.

Ex. 1002, ¶ 185; Section VI.A.6, *supra*.

#### **15. Dependent Claim 14**

- a. “The system of claim 11, wherein: said received signal is a cable television signal; and said plurality of channels comprises a plurality of television channels.”**

The limitations of claim 14 are shown as discussed above regarding claim 6.

Ex. 1002, ¶ 186; Section VI.A.7, *supra*.

#### **16. Dependent Claim 15**

- a. “The system of claim 11, wherein: said received signal is a satellite television signal output by a low noise block downconverter; and said plurality of channels comprises a plurality of television channels.”**

The limitations of claim 15 are shown as discussed above regarding claim 7.

Ex. 1002, ¶ 187; Section VI.A.8, *supra*.

#### **17. Dependent Claim 16**

- a. “The system of claim 15, wherein said one or more circuits reside in a customer premises satellite reception assembly.”**

The limitations of claim 16 are shown as discussed above regarding claim 8.

Ex. 1002, ¶ 188; Section VI.A.9, *supra*.

## **18. Dependent Claim 17**

- a. “The system of claim 11, wherein said one or more circuits reside in a customer premises gateway.”**

The limitations of claim 17 are shown as discussed above regarding claim 9.

Ex. 1002, ¶ 189; Section VI.A.10, *supra*.

## **19. Dependent Claim 18**

- a. “The system of claim 11, wherein a bandwidth and/or center frequency of said selected first portion is configurable during operation of said one or more circuits.”**

The limitations of claim 18 are shown as discussed above regarding claim 10.

Ex. 1002, ¶ 190; Section VI.A.11, *supra*.

## **B. Grounds D-E: Claims 1-6, 9-14, and 17-18 are Rendered Obvious by Renken, and Claims 9 and 17 are Rendered Obvious by Renken in view of Cholas**

As set forth below, claims 1-6, 9-14, and 17-18 would have been obvious to a POSITA in view of Renken, and claims 9 and 17 would have been obvious to a POSITA in view of Renken combined with Cholas. Ex. 1002, ¶¶ 49-57, 81-107, 191-252.

## **1. Independent Claim 1**

- a. [1A]: “A system comprising:”**

While the preamble [1A] is not limiting, Renken teaches the claimed system as explained below. *Id.*, ¶ 193.

- b. [1B] “an analog-to-digital converter operable to digitize a received signal spanning an entire television spectrum comprising a plurality of television channels, said digitization resulting in a digitized signal;”

Renken describes an analog-to-digital converter (ADC) 25 (red), which is part of the downstream receiver circuit of a measurement-capable cable modem (MCCM). Ex. 1011, 11:39-44, Fig. 3; Ex. 1012, pp. 5-6, Fig. 2 (p. 6); Ex. 1002, ¶¶ 194-195.

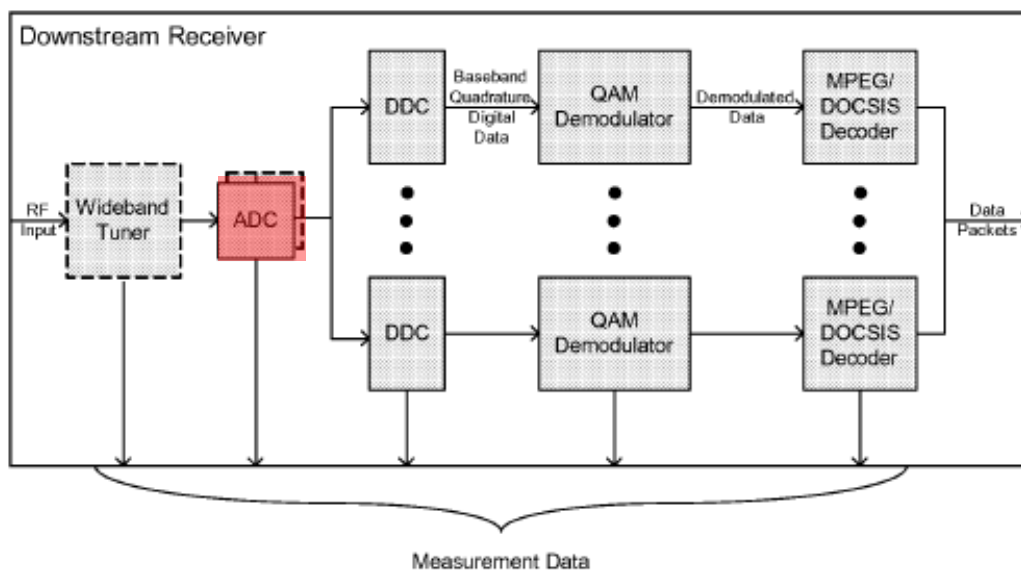


Fig. 2

**Ex. 1012, Fig. 2 (annotated)**

RF input (claimed “received signal”) is received by a wideband tuner and converted to intermediate frequency (IF) signals, which the ADC converts into digitized form (claimed “digitized signal”). Ex. 1011, 11:28-40, Fig. 3; Ex. 1012, pp. 6-7, Fig. 2; Ex. 1002, ¶ 196.

Renken describes that the wideband tuner has a bandwidth as wide as 1 GHz, receiving an input from the diplexer cutoff frequency to approximately 1 GHz, and this coincides with the 1GHz (55MHz to 1002 MHz) cable TV frequency range in the '008 patent. Ex. 1011, 11:30-34; Ex. 1012, p. 6; Ex. 1001, 4:11-14. Renken also states that the output of the ADC “typically covers the entire downstream frequency span of the wideband tuner.” Ex. 1011, 12:30-32; Ex. 1012, p. 7; Ex. 1002, ¶¶ 197-198.

Renken’s RF input includes a plurality of television channels as Renken describes measuring signals for TV channels, as well as data channels, in a cable television (CATV) network. Ex. 1011, Abstract, 7:42-61, 11:52-56, 15:21-26, 18:38-42, 20:31-45; Ex. 1012, pp. 3, 6, 14. Further, Renken’s inclusion of the MPEG/DOCSIS Decoder shows that TV and data channels are included – MPEG is a standard used for encoding video (e.g., television channels), while DOCSIS is a standard used for encoding data channels (e.g., the Internet). Ex. 1011, 11:19-25, 17:35-41; Ex. 1012, pp. 6-8, 14, Fig. 2; Ex. 1002, ¶ 199.

Therefore, Renken discloses and renders obvious limitation [1B]. Ex. 1002, ¶ 200.

**c. [1C]: “a signal monitor operable to: analyze said digitized signal to determine a characteristic of said digitized signal; and report said determined characteristic to a source of said received signal;”**

Renken describes an MCCM processor (claimed “signal monitor”) executing a measurement program to obtain signal measurements. Ex. 1011, 10:15-31; Fig. 2; Ex. 1012, pp. 5-6, Fig. 1 (p. 5); Ex. 1002, ¶ 202. For example, the measurement program can obtain spectrum-style measurements using the ADC, and can analyze data from various components to determine characteristics such as Bit Error Rate (BER), Signal-to-Noise Ratio (SNR), Modulation Error Ratio (MER) and Carrier-to-Noise Ratio (CNR). Ex. 1011, 3:11-20, 11:39-12:5, 13:6-15, 16:17-17:17; Ex. 1012, pp. 3-7, 14; Ex. 1002, ¶¶ 201-202. For example, the measurement program analyzes data from the MPEG/DOCSIS Decoder to determine characteristics such as BER. Ex. 1011, 13:8-21; Ex. 1012, pp. 7-8, 14; Ex. 1002, ¶ 202. The processor may also take signal measurements using other components, including the DDC and QAM Demodulator. Ex. 1011, 12:6-13:38; Ex. 1012, pp. 3-8, 13-15; Ex. 1002, ¶ 202.

The '008 patent refers to the cable headend as the source of the received signal, and describes sending measured characteristics to the headend. Ex. 1001, 3:51-57. Similarly, Renken discloses that the MCCM sends its measurement results to the CMC (Central Measurement Controller), which Renken states may be at the headend. Ex. 1011, Abstract, 9:15-18, 18:11-17, Fig. 8 (Step 540); Ex. 1002, ¶ 205.

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, so it would at least be obvious that the results are sent to the headend. Ex. 1002, ¶ 205. 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, p. 4 (“Monitoring using the CPE but sending the results somewhere other than the head end (where, I don’t know ...)”); Ex. 1002, ¶¶ 205-206.

A POSITA would have at least considered it obvious to place the CMC at the headend, since the CMC coordinates measurements across a plurality of MCCMs. Ex. 1012, pp. 4, 12-15; Ex. 1002, ¶ 207.

Therefore, Renken discloses and renders obvious limitation [1C]. Ex. 1002, ¶ 208.

**d. [1D]: “a data processor operable to process a television channel to recover content carried on the television channel; and”**

The '008 patent lists “decoding” as one function of its data processing module 156. Ex. 1001, 3:64-66. Similarly, Renken describes a MPEG/DOCSIS Decoder (**purple**) (claimed “data processor”), which is found in each of the Receivers in

MCCM. Ex. 1011, 11:19-22, 13:6-8, Fig. 3; Ex. 1012, pp. 6-8, Fig. 2; Ex. 1002, ¶¶ 209-211.

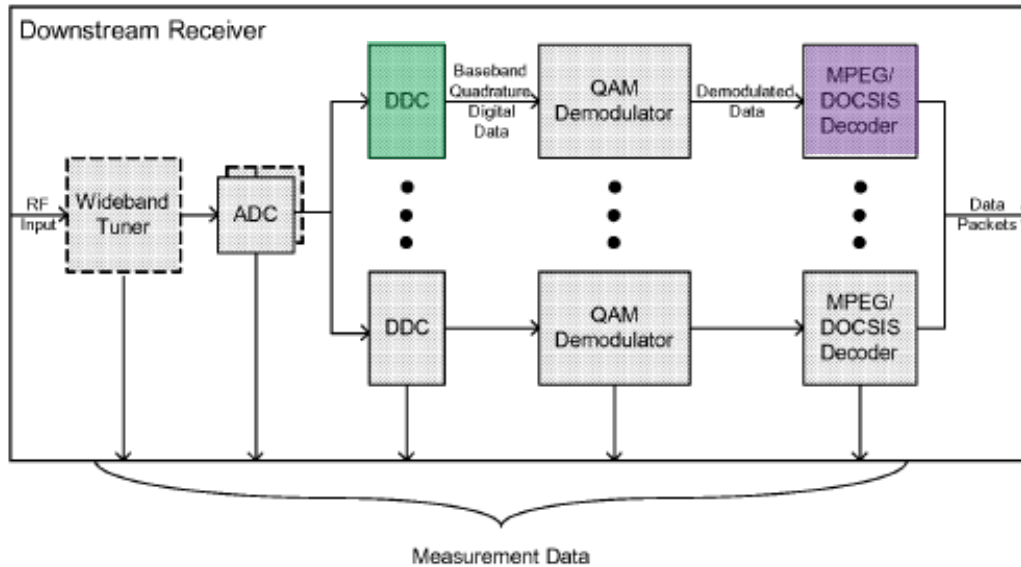


Fig. 2

**Ex. 1012, Fig. 2 (annotated)**

Renken states that the decoding function of its MPEG/DOCSIS Decoder is already known in the art, and does not expressly state that the MPEG/DOCSIS Decoder processes a television channel to recover its content. Ex. 1011, 13:6-21; Ex. 1012, pp. 7-8. A POSITA would have known that MPEG decoders are used for recovering video content from television channels, and this is what the MPEG/DOCSIS Decoder would have done with a television channel stream that is selected by its corresponding digital down converter (DDC) (green). Ex. 1002, ¶ 212.

Additionally, the Renken QAM demodulator can also be considered as the claimed “data processor.” The role of a demodulator is to recover data that was modulated onto the channel’s carrier. *Id.*

Therefore, Renken discloses limitation [1D]. *Id.*, ¶ 213.

- e. [1E]: “a channelizer operable to: select a first portion of said digitized signal; select a second portion of said digitized signal; and concurrently output said first portion of said digitized signal to said signal monitor and said second portion of said digitized signal to said data processor.”

Renken describes a number of parallel digital down converters (DDC) (green) (claimed “channelizer”), each responsible for filtering out, or selecting, a particular downstream channel, and which collectively output (claimed “concurrently output”) the selected channels:

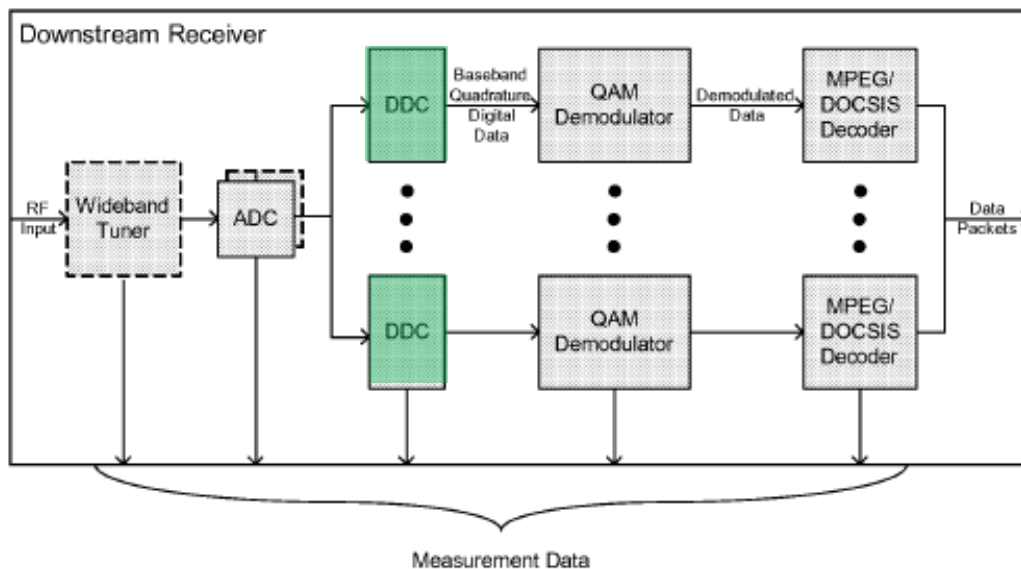


Fig. 2

Ex. 1012, Fig. 2 (annotated)

Ex. 1011, 12:22-24, Fig. 3; Ex. 1012, pp. 6-7, Fig. 2; Ex. 1002, ¶¶ 214-215. The MCCM 100 determines which DDC (and its associated QAM demodulator and MPEG/DOCSIS decoder) to use for channels/signals to be monitored (claimed “a first portion of said digitized signal”) and which to use for channels to decode for viewing by a subscriber (claimed “a second portion of said digitized signal”) using the MPEG/DOCSIS Decoder. Ex. 1011, 4:33-44, 4:60-67, 10:5-48, 16:32-36, 20:36-45; Ex. 1012, pp. 3, 9, 13; Ex. 1002, ¶ 216. In operation, a first DDC may select a channel that the processor (monitor) desired to be measured and either the DDC or other downstream components (e.g., QAM Demodulator or MPEG/DOCSIS Decoder) send data to the monitor as directed by the measurement program, while a second DDC may concurrently select a channel (e.g., a television channel) to be decoded by MPEG/DOCSIS Decoder for viewing. Ex. 1002, ¶ 216.

Therefore, Renken discloses limitation [1E], and claim 1 is invalid as obvious in view of Renken. *Id.*, ¶ 217.

## **2. Dependent Claim 2**

### **a. “The system of claim 1, wherein said first portion of said digitized signal spans said entire television spectrum.”**

Renken discloses a measurement plan specifying channels to be tested; that different cable modems may have different measurement capabilities; and that future versions of the DOCSIS standard will necessitate greater numbers of receivers 21. Ex. 1011, 10:59-67, 20:36-45, 23:52-54. A POSITA would have wanted to be able

to monitor all channels so that a failed channel can be detected and repaired quickly to minimize customer complaint. Ex. 1002, ¶¶ 218-219. It would at least have been obvious to a POSITA that, with sufficient receivers, every available channel in a television spectrum could be monitored at one time. *Id.*, ¶ 219.

The Renken Provisional, incorporated by reference in Renken, states that its CMC may monitor measurement results “from across the entire downstream spectrum at any or all subscriber locations equipped with MCCMs.” Ex. 1012, p. 4; Ex. 1011, 1:7-10. This shows that in at least one embodiment, an “entire television spectrum” would be the “first portion” monitored by a MCCM 100. Ex. 1002, ¶ 220.

As described by Renken, downstream channels can be from 50 MHz to 1002 MHz. Ex. 1011, 2:12-16. As explained above in [1B], the entire spectrum is digitized by the ADC. Section VI.B.1.b, *supra*. Then, each DDC can select a particular downstream channel from the entire spectrum. Ex. 1011, 12:22-24. As described in [1E], the output from each DDC can be used for signal monitoring and/or data processing (data/television). Section VI.B.1.e, *supra*. Thus, any (or all) channels spanning the entire television spectrum 54-1000 MHz can be used for signal monitoring (“first portion of said digitized signal”). Ex. 1002, ¶ 221.

Accordingly, claim 2 is rendered obvious in view of Renken. *Id.*, ¶ 222.

### 3. Independent Claim 3

#### a. [3A]: “A method comprising: performing by one or more circuits:”

Limitation [3A] is shown as discussed above regarding limitation [1A]. Ex. 1002, ¶ 223; Section VI.B.1.a, *supra*.

#### b. [3B]: “receiving a signal having a bandwidth that spans from a first frequency, $F_{lo}$ , to a second frequency, $F_{hi}$ , wherein said signal carries a plurality of channels”

Limitation [3B] is shown for the same reasons discussed above regarding limitation [1B]. Section VI.B.1.b, *supra*. The claim does not specify values for the frequencies  $F_{lo}$  and  $F_{hi}$ , and the specification of the '008 patent states that the example it gives ( $F_{lo} \approx 55\text{MHz}$ ) is merely for illustration and is “not intended to be limiting.” Ex. 1001, 4:11-15. Accordingly, the claimed  $F_{lo}$  and  $F_{hi}$  equally apply to the upper and lower bounds of the 1 GHz range of Renken’s RF input. Ex. 1011, 11:30-34; Ex. 1012, p. 6; Ex. 1002, ¶¶ 224-225.

#### c. [3C]: “digitizing said received signal from $F_{lo}$ to $F_{hi}$ to generate a digitized signal;”

Limitation [3C] is shown as discussed above regarding limitation [1B], in view of the discussion of limitation [3B]. Ex. 1002, ¶ 226; Sections VI.B.1.b, VI.B.3.b, *supra*.

- d. [3D]: “selecting a first portion of said digitized signal; selecting a second portion of said digitized signal; and concurrently outputting said selected first portion and said selected second portion;”**

Limitation [3D] is shown as discussed above regarding limitation [1E]. Ex.

1002, ¶ 227; Section VI.B.1.e, *supra*.

- e. [3E]: “wherein said selected second portion is output to a signal analyzer which analyzes said selected first portion to determine one or more characteristics of the received signal, and which reports said determined one or more characteristics to a source of said received signal”**

Limitation [3E] is shown as discussed above regarding limitations [1C] and

[1E]. Ex. 1002, ¶ 228; Sections VI.B.1.c, VI.B.1.e, *supra*.

- f. [3F]: “and said selected second portion is output to a data processor for recovery of data carried on one or more of said plurality of channels.”**

Limitation [3F] is shown as discussed above regarding limitations [1D] and

[1E]. Accordingly, claim 3 is rendered obvious in view of Renken. Ex. 1002, ¶ 229;

Section VI.B.1.d-e, *supra*.

#### **4. Dependent Claim 4**

- a. “The method of claim 3, wherein said first portion comprises all of said received signal from  $F_{lo}$  to  $F_{hi}$ .”**

The limitations of claim 4 are shown as discussed above regarding claim 2 and limitation [3B]. Accordingly, claim 4 is rendered obvious in view of Renken.

Ex. 1002, ¶ 230; Sections VI.B.2, VI.B.3.b, *supra*.

## 5. Dependent Claim 5

- a. **“The method of claim 3, wherein said one or more characteristics is one of: signal power vs. frequency, phase vs. frequency, signal-to-noise ratio, peak-to-average ratio, noise levels, bit error rate, and symbol error rate.”**

Renken lists a variety of measurement capabilities of its modem, including “carrier level,” and uses “level” interchangeably with “power.” Ex. 1011, 17:11-17, 19:21-24. The Renken Provisional also lists signal level measurements including “digital channel level” which a POSITA would have understood to have referred to signal power. Ex. 1012, pp. 3-4, 7, 14; Ex. 1002, ¶ 231. Accordingly, Renken’s level measurement for a channel would be a “signal power vs. frequency.” Ex. 1002, ¶ 231.

Renken also lists Carrier-to-Noise ratio (CNR) and Bit Error Rate (BER). Ex. 1011, 11:39-66, 13:6-15, 16:43-17:20; Ex. 1012, pp. 3-4, 7, 14; Ex. 1002, ¶ 232. Accordingly, claim 5 is rendered obvious in view of Renken. Ex. 1002, ¶ 233.

## 6. Dependent Claim 6

- a. **“The method of claim 3 wherein: said received signal is a cable television signal; and said plurality of channels comprises a plurality of television channels.”**

Renken discloses “television channels” as discussed above regarding limitation [1B]. Section VI.B.1.b, *supra*. As for the RF input being a “cable television signal,” Renken describes its downstream channels as being delivered via a “cable plant” of a “CATV network” (cable television network). Ex. 1011, 7:7-11,

7:43-61; Ex. 1012, p. 3; Ex. 1002, ¶ 234. Accordingly, claim 6 is rendered obvious in view of Renken. Ex. 1002, ¶ 235.

## **7. Dependent Claim 9**

### **a. “The method of claim 3, wherein said one or more circuits reside in a customer premises gateway.”**

Renken describes a measurement capable cable modem (claimed “customer premises gateway”) which a POSITA would understand is located at a subscriber’s premises in order to connect the subscriber to the cable television system. Ex. 1011, 4:21-44, Figs. 1-2; Ex. 1012, pp. 5-6, Fig. 1; Ex. 1002, ¶¶ 236-237. Indeed, the ’008 patent describes modulation and demodulation functions of its gateway, consistent with the Renken modem. Ex. 1001, 2:62-65, 3:57-60, 4:59-62; Ex. 1002, ¶ 237.

To the extent Patent Owner argues that Renken does not suggest placement in a “customer premises gateway,” that placement would have been obvious to a POSITA in view of Cholas. Ex. 1002, ¶ 237. Cholas expressly teaches placing cable modem components into a premises services gateway 200 that consolidates cable modem functionality with other kinds of devices, such as a STB. Ex. 1017, Abstract, [0006], [0020]-[0022], [0024]-[0035], [0038], [0053]-[0054], [0105], [0109], [0134]-[0140], [0199]-[0202], Figs. 2a-2b, 3, 12-14; Ex. 1002, ¶ 237. This suggests to a POSITA to place cable modem components into a premises gateway, and a POSITA would have had the skill to follow this suggestion and place the Renken MCCM into a premises gateway without undue experimentation. Ex. 1002, ¶ 237.

Also, the Renken MCCM, like the '008 patent's gateway, is located at an interface between an external network and devices within a customer's premises, and a POSITA would have considered it obvious to consolidate the MCCM with other devices where signals enter the premises, as shown in Cholas, to reduce cost and redundancy. Ex. 1011, 7:42-67, 13:6-8, Fig. 3; Ex. 1012, pp. 3-7, Fig. 2 (p. 6); Ex. 1002, ¶ 237.

Accordingly, claim 9 is rendered obvious in view of Renken and Renken-Cholas. Ex. 1002, ¶ 237.

## **8. Dependent Claim 10**

- a. "The method of claim 3, wherein a bandwidth and/or center frequency of said selected first portion is configurable during operation of said one or more circuits."**

As discussed in Section VI.A.11.a above, the '008 patent uses the configuration of the "center frequency" and "bandwidth" simply to refer to how desired bands (C) are identified for the channelizer to select. Ex. 1001, 6:10-14; Ex. 1002, ¶¶ 176, 238. Renken similarly selects a desired channel by specifying its center frequency. Ex. 1011, 12:22-24, 13:48-57, 14:59-64, 18:22-38, 19:24-29; Ex. 1012, pp. 6-7; Ex. 1002, ¶¶ 238-240.

Accordingly, claim 10 is rendered obvious in view of Renken. Ex. 1002, ¶ 241.

## 9. Independent Claim 11

Claim 11 is a system claim counterpart to method claim 3. Accordingly, its various steps below are mapped to corresponding steps in claim 3. To the extent the “one or more circuits” is considered a means-plus-function element, the corresponding structure from the '008 patent is the physical electronic hardware components and associated software/firmware that carries out the recited function, as discussed above in Section V.E.1, *supra*. In Renken, the equivalent corresponding structure is the hardware and/or software components that perform the various steps discussed below. The Renken processor 50 controls the MCCM by executing CM and measurement programs stored in non-volatile memory 70. Ex. 1011, 10:11-31; Ex. 1012, pp. 5-6; Ex. 1002, ¶ 242.

**a. [11A]: “A system comprising: one or more circuits that are operable to:”**

Limitation [11A] is shown for the same reasons discussed above regarding limitations [3A] and [1A]. Ex. 1002, ¶ 242; Sections VI.B.3.a, VI.B.1.a, *supra*.

**b. [11B]: “receive a signal having a bandwidth that spans from a first frequency,  $F_{lo}$ , to a second frequency,  $F_{hi}$ , wherein said signal carries a plurality of channels;”**

Limitation [11B] is shown for the same reasons discussed above regarding limitations [3B] and [1B]. Ex. 1002, ¶ 243; Sections VI.B.3.b, VI.B.1.b *supra*.

- c. [11C]: “digitize said received signal from  $F_{lo}$  to  $F_{hi}$  to generate a digitized signal;”**

Limitation [11C] is shown for the same reasons discussed above regarding limitations [3C], [3B], and [1B]. Ex. 1002, ¶ 244; Sections VI.B.3.b-c, VI.B.1.b, *supra*.

- d. [11D]: “select a first portion of said digitized signal; select a second portion of said digitized signal; concurrently output said selected first portion and said selected second portion,”**

Limitation [11D] is shown for the same reasons discussed above regarding limitations [3D] and [1E]. Ex. 1002, ¶ 245; Sections VI.B.3.d, VI.B.1.e, *supra*.

- e. [11E]: “wherein: said selected first portion is output to a signal analyzer that is operable to analyze said first portion to determine one or more characteristics of said first portion, and that is operable to report said determined one or more characteristics to a source of said received signal;”**

Limitation [11E] is shown for the same reasons discussed above regarding limitation [3E], [1C], and [1E]. Ex. 1002, ¶ 246; Section VI.B.3.e, VI.B.1.c, VI.B.1.e, *supra*.

- f. [11F]: “and said selected second portion is output to a data processor for recovery of data carried on one or more of said plurality of channels.”**

Limitation [11F] is shown for the same reasons discussed above regarding limitation [3F], [1D], and [1E]. Ex. 1002, ¶ 247; Sections VI.B.3.f, VI.B.1.d-e, *supra*.

## **10. Dependent Claim 12**

- a. “The system of claim 11, wherein said first portion comprises all of said received signal from  $F_{lo}$  to  $F_{hi}$ .”**

The limitations of claim 12 are shown for the same reasons discussed above regarding claims 4 and 2, and limitation [3B]. Ex. 1002, ¶ 248; Sections VI.B.4, VI.B.2, VI.b.3.b, *supra*.

## **11. Dependent Claim 13**

- a. “The system of claim 11, wherein said one or more characteristics is one of: signal power vs. frequency, phase vs. frequency, signal-to-noise ratio, peak-to-average ratio, noise levels, bit error rate, and symbol error rate.”**

The limitations of claim 13 are shown for the same reasons discussed above regarding claim 5. Ex. 1002, ¶ 249; Section VI.B.5, *supra*.

## **12. Dependent Claim 14**

- a. “The system of claim 11, wherein: said received signal is a cable television signal; and said plurality of channels comprises a plurality of television channels.”**

The limitations of claim 14 are shown for the same reasons discussed above regarding claim 6 and limitation [1B]. Ex. 1002, ¶ 250; Sections VI.B.6, VI.B.1.b, *supra*.

## **13. Dependent Claim 17**

- a. “The system of claim 11, wherein said one or more circuits reside in a customer premises gateway.”**

The limitations of claim 17 are shown for the same reasons discussed above regarding claim 9. Ex. 1002, ¶ 251; Section VI.B.7, *supra*.

#### **14. Dependent Claim 18**

- a. **“The system of claim 11, wherein a bandwidth and/or center frequency of said selected first portion is configurable during operation of said one or more circuits.”**

The limitations of claim 18 are shown for the same reasons discussed above regarding claim 10, and in view of the discussion of the '008 patent in Section VI.A.11.a. Ex. 1002, ¶ 252; Sections VI.B.8, VI.A.11.a, *supra*.

#### **VII. GROUNDS FOR STANDING & FEE PAYMENT**

Petitioner hereby certifies that the '008 patent is available for, and Petitioner is not barred or estopped from requesting, *inter partes* review challenging claims 1-20.

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 16, 2024

By: /Frederic M. Meeker/

Frederic M. Meeker  
Reg. No. 35,282  
Banner & Witcoff, Ltd.  
1100 13th Street, NW  
Suite 1200  
Washington, DC 20005  
(202) 824-3000  
fmeeker@bannerwitcoff.com

## **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 12,916, which is less than the 14,000 allowed under 37 CFR § 42.24(a)(1)(i). This total includes 12,916 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 16, 2024

By: /Frederic M. Meeker/

Frederic M. Meeker  
Reg. No. 35,282  
Banner & Witcoff, Ltd.  
1100 13th Street, NW  
Suite 1200  
Washington, DC 20005  
(202) 824-3000  
fmeeker@bannerwitcoff.com

## 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. 8,792,008 and supporting evidence to be served via FedEx Priority Overnight on February 16, 2024, on the following:

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

Dated: February 16, 2024

By: /Frederic M. Meeker/

Frederic M. Meeker  
Reg. No. 35,282

## CLAIM LISTING APPENDIX

U.S. Pat. No. 8,792,008

| Designation | Claim Language                                                                                                                                                                                                                                                                                    |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Claim 1     |                                                                                                                                                                                                                                                                                                   |
| [1A]        | 1. A system comprising:                                                                                                                                                                                                                                                                           |
| [1B]        | an analog-to-digital converter operable to digitize a received signal spanning an entire television spectrum comprising a plurality of television channels, said digitization resulting in a digitized signal;                                                                                    |
| [1C]        | a signal monitor operable to: analyze said digitized signal to determine a characteristic of said digitized signal; and report said determined characteristic to a source of said received signal;                                                                                                |
| [1D]        | a data processor operable to process a television channel to recover content carried on the television channel; and                                                                                                                                                                               |
| [1E]        | a channelizer operable to: select a first portion of said digitized signal; select a second portion of said digitized signal; and concurrently output said first portion of said digitized signal to said signal monitor and said second portion of said digitized signal to said data processor. |
| Claim 2     |                                                                                                                                                                                                                                                                                                   |
| 2           | 2. The system of claim 1, wherein said first portion of said digitized signal spans said entire television spectrum.                                                                                                                                                                              |
| Claim 3     |                                                                                                                                                                                                                                                                                                   |
| [3A]        | 3. A method comprising: performing by one or more circuits:                                                                                                                                                                                                                                       |
| [3B]        | receiving a signal having a bandwidth that spans from a first frequency, $F_{lo}$ , to a second frequency, $F_{hi}$ , wherein said signal carries a plurality of channels;                                                                                                                        |
| [3C]        | digitizing said received signal from $F_{lo}$ to $F_{hi}$ to generate a digitized signal;                                                                                                                                                                                                         |
| [3D]        | selecting a first portion of said digitized signal; selecting a second portion of said digitized signal; and concurrently outputting said selected first portion and said selected second portion;                                                                                                |
| [3E]        | wherein said selected second portion is output to a signal analyzer which analyzes said selected first portion to determine one or more characteristics of the received signal, and which                                                                                                         |

| Designation | Claim Language                                                                                                                                                                                                                    |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | reports said determined one or more characteristics to a source of said received signal; and                                                                                                                                      |
| [3F]        | and said selected second portion is output to a data processor for recovery of data carried on one or more of said plurality of channels.                                                                                         |
| Claim 4     |                                                                                                                                                                                                                                   |
| 4           | 4. The method of claim 3, wherein said first portion comprises all of said received signal from $F_{lo}$ to $F_{hi}$ .                                                                                                            |
| Claim 5     |                                                                                                                                                                                                                                   |
| 5           | 5. The method of claim 3, wherein said one or more characteristics is one of: signal power vs. frequency, phase vs. frequency, signal-to-noise ratio, peak-to-average ratio, noise levels, bit error rate, and symbol error rate. |
| Claim 6     |                                                                                                                                                                                                                                   |
| 6           | 6. The method of claim 3 wherein: said received signal is a cable television signal; and said plurality of channels comprises a plurality of television channels.                                                                 |
| Claim 7     |                                                                                                                                                                                                                                   |
| 7           | 7. The method of claim 3, wherein: said received signal is a satellite television signal output by a low noise block downconverter; and said plurality of channels comprises a plurality of television channels.                  |
| Claim 8     |                                                                                                                                                                                                                                   |
| 8           | 8. The method of claim 7, wherein said one or more circuits reside in a customer premises satellite reception assembly.                                                                                                           |
| Claim 9     |                                                                                                                                                                                                                                   |
| 9           | 9. The method of claim 3, wherein said one or more circuits reside in a customer premises gateway                                                                                                                                 |
| Claim 10    |                                                                                                                                                                                                                                   |
| 10          | 10. The method of claim 3, wherein a bandwidth and/or center frequency of said selected first portion is configurable during operation of said one or more circuits.                                                              |
| Claim 11    |                                                                                                                                                                                                                                   |
| [11A]       | 11. A system comprising: one or more circuits that are operable to:                                                                                                                                                               |
| [11B]       | receive a signal having a bandwidth that spans from a first frequency, $F_{lo}$ , to a second frequency, $F_{hi}$ , wherein said signal carries a plurality of channels;                                                          |

| Designation | Claim Language                                                                                                                                                                                                                                                                                     |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [11C]       | digitize said received signal from $F_{lo}$ to $F_{hi}$ to generate a digitized signal;                                                                                                                                                                                                            |
| [11D]       | select a first portion of said digitized signal; select a second portion of said digitized signal; concurrently output said selected first portion and said selected second portion,                                                                                                               |
| [11E]       | wherein: said selected first portion is output to a signal analyzer that is operable to analyze said first portion to determine one or more characteristics of said first portion, and that is operable to report said determined one or more characteristics to a source of said received signal; |
| [11F]       | and said selected second portion is output to a data processor for recovery of data carried on one or more of said plurality of channels.                                                                                                                                                          |
| Claim 12    |                                                                                                                                                                                                                                                                                                    |
| 12          | 12. The system of claim 11, wherein said first portion comprises all of said received signal from $F_{lo}$ to $F_{hi}$ .                                                                                                                                                                           |
| Claim 13    |                                                                                                                                                                                                                                                                                                    |
| 13          | 13. The system of claim 11, wherein said one or more characteristics is one of: signal power vs. frequency, phase vs. frequency, signal-to-noise ratio, peak-to-average ratio, noise levels, bit error rate, and symbol error rate.                                                                |
| Claim 14    |                                                                                                                                                                                                                                                                                                    |
| 14          | 14. The system of claim 11, wherein: said received signal is a cable television signal; and said plurality of channels comprises a plurality of television channels.                                                                                                                               |
| Claim 15    |                                                                                                                                                                                                                                                                                                    |
| 15          | 15. The system of claim 11, wherein: said received signal is a satellite television signal output by a low noise block downconverter; and said plurality of channels comprises a plurality of television channels.                                                                                 |
| Claim 16    |                                                                                                                                                                                                                                                                                                    |
| 16          | 16. The system of claim 15, wherein said one or more circuits reside in a customer premises satellite reception assembly.                                                                                                                                                                          |
| Claim 17    |                                                                                                                                                                                                                                                                                                    |
| 17          | 17. The system of claim 11, wherein said one or more circuits reside in a customer premises gateway.                                                                                                                                                                                               |
| Claim 18    |                                                                                                                                                                                                                                                                                                    |

| Designation | Claim Language                                                                                                                                                        |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18          | 18. The system of claim 11, wherein a bandwidth and/or center frequency of said selected first portion is configurable during operation of said one or more circuits. |