

**Comcast Cable Communications LLC, v.  
Entropic Communications, LLC  
Case No.: IPR2024-00442  
U.S. Patent No. 9,825,826**

**Patent Owner Demonstrative Slides**

**May 15, 2025  
1:00 P.M. Eastern**

**Demonstrative Only - Not Evidence**

# Overview of the '826 Patent

## (12) United States Patent Gallagher et al.

(10) Patent No.: US 9,825,826 B2  
(45) Date of Patent: \*Nov. 21, 2017

### (54) METHOD AND APPARATUS FOR SPECTRUM MONITORING

(71) Applicant: MaxLinear, Inc., Carlsbad, CA (US)

(72) Inventors: Timothy Gallagher, Encinitas, CA (US); Patrick Tierney, Solana Beach, CA (US); Jun Huang, San Diego, CA (US)

(73) Assignee: Maxlinear, Inc., Carlsbad, CA (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.  
This patent is subject to a terminal disclaimer.

(21) Appl. No.: 14/948,947

(22) Filed: Nov. 23, 2015

(65) Prior Publication Data  
US 2016/0087865 A1 Mar. 24, 2016

### Related U.S. Application Data

(63) Continuation of application No. 14/341,880, filed on Jul. 28, 2014, now Pat. No. 9,203,653, which is a continuation of application No. 13/607,916, filed on Sep. 10, 2012, now Pat. No. 8,792,008.

(60) Provisional application No. 61/532,098, filed on Sep. 8, 2011.

(51) Int. Cl.  
H04N 17/00 (2006.01)  
H04L 12/26 (2006.01)  
H04L 12/66 (2006.01)  
H04B 17/309 (2015.01)

(52) U.S. Cl.  
CPC ..... H04L 43/08 (2013.01); H04B 17/309 (2015.01); H04L 12/66 (2013.01); H04N 17/00 (2013.01)

(58) Field of Classification Search  
CPC ..... H04N 17/00  
USPC ..... 348/192, 193, 180  
See application file for complete search history.

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7,418,240 B2 \* 8/2008 Hsu ..... H04L 1/0003 370/252

(Continued)

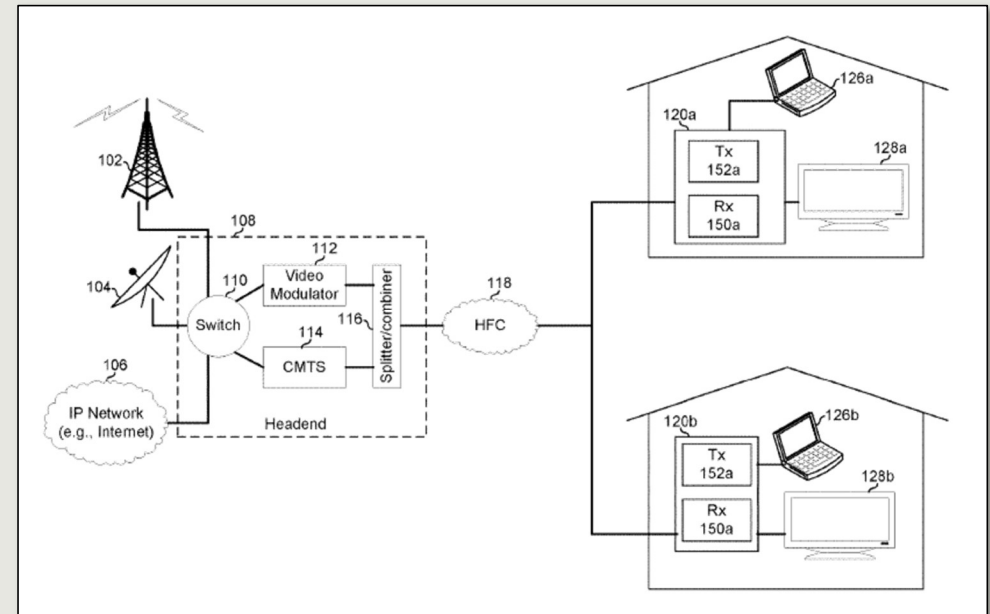
Primary Examiner — Paulos M Natnael

(74) Attorney, Agent, or Firm — McAndrews, Held & Malloy, Ltd.

### (57) ABSTRACT

A receiver is configured to be coupled to a television and data service provider headend via a hybrid fiber coaxial (HFC) network. The receiver comprises front-end circuitry operable to receive a signal that carries a plurality of television and/or data channels, and digitize the received signal to generate a digitized signal. The receiver comprises channelizer circuitry operable to select a first portion of the digitized signal, and select a second portion of the digitized signal. The receiver comprises processing circuitry operable to process the selected second portion of the digitized signal to recover information carried in the plurality of channels. The receiver comprises monitoring circuitry operable to analyze the selected first portion of the digitized signal to measure a characteristic of the received signal; and control the transmission of network management messages back to the headend based on the measured characteristic of the received signal.

18 Claims, 7 Drawing Sheets



Ex. 1001; Fig. 1A; POR, 4-8

Ex. 1001; Cover; POR, 4-7

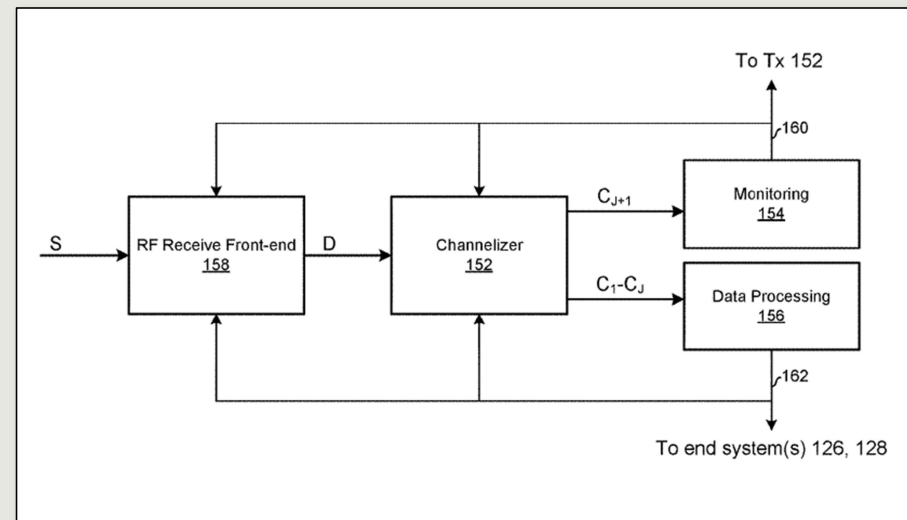
## Overview of the '826 Patent

- The '826 Patent describes systems and methods for spectrum monitoring of a network-based service, such as cable or satellite television, using equipment located at the customer's premises

### (57) **ABSTRACT**

A receiver is configured to be coupled to a television and data service provider headend via a hybrid fiber coaxial (HFC) network. The receiver comprises front-end circuitry operable to receive a signal that carries a plurality of television and/or data channels, and digitize the received signal to generate a digitized signal. The receiver comprises channelizer circuitry operable to select a first portion of the digitized signal, and select a second portion of the digitized signal. The receiver comprises processing circuitry operable to process the selected second portion of the digitized signal to recover information carried in the plurality of channels. The receiver comprises monitoring circuitry operable to analyze the selected first portion of the digitized signal to measure a characteristic of the received signal; and control the transmission of network management messages back to the headend based on the measured characteristic of the received signal.

*Ex. 1001, Abstract; POR, 8-9*



*Ex. 1001, Fig. 1B; POR, 8-9*

## Overview of the '826 Patent

1. A method comprising:  
performing by one or more circuits of a receiver coupled to a television and data service provider headend via a hybrid fiber coaxial (HFC) network:  
receiving, via said HFC network, a signal that carries a plurality of channels, wherein said channels comprise one or both of television channels and data channels;  
digitizing said received signal to generate a digitized signal;  
selecting a first portion of said digitized signal;  
selecting a second portion of said digitized signal;  
processing said selected second portion of said digitized signal to recover information carried in said plurality of channels;  
analyzing said selected first portion of said digitized signal to measure a characteristic of said received signal; and  
controlling the transmission of network management messages back to said headend based on said measured characteristic of said received signal, wherein said measured characteristic is different than said network management messages.

*Ex. 1001, cl. 1; POR 10-11*

10. A system comprising:  
a receiver configured to be coupled to a television and data service provider headend via a hybrid fiber coaxial (HFC) network, the receiver comprising:  
front-end circuitry operable to:  
receive a signal that carries a plurality of channels, wherein said channels comprise one or both of television channels and data channels; and  
digitize said received signal to generate a digitized signal;  
channelizer circuitry operable to:  
select a first portion of said digitized signal; and  
select a second portion of said digitized signal;  
processing circuitry operable to process said selected second portion of said digitized signal to recover information carried in said plurality of channels;  
monitoring circuitry operable to:  
analyze said selected first portion of said digitized signal to measure a characteristic of said received signal; and  
control the transmission of network management messages back to said headend based on said measured characteristic of said received signal, wherein said measured characteristic is different than said network management messages.

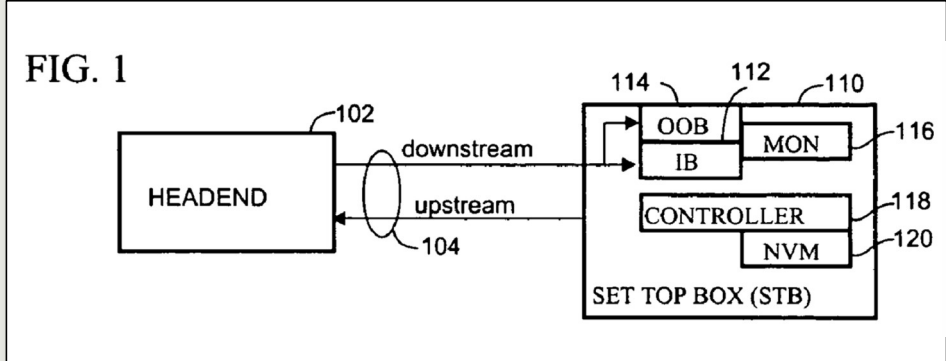
*Ex. 1001, cl. 10; POR 10-11*

Demonstrative Only - Not Evidence PO-4

# Overview of Kamieniecki (Grounds A-D)

|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                          |                                     |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------|
| (19) | <b>United States</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                          |                                     |
| (12) | <b>Patent Application Publication</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                          |                                     |
|      | <b>Kamieniecki</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (10) Pub. No.: <b>US 2005/0114879 A1</b> | (43) Pub. Date: <b>May 26, 2005</b> |
| (54) | <b>MONITORING SIGNAL QUALITY ON A CABLE NETWORK</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                          |                                     |
| (52) | U.S. CL. .... 725/15; 725/9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                          |                                     |
| (75) | Inventor: <b>John Kamieniecki</b> , Lafayette Hill, PA (US)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                          |                                     |
| (57) | <b>ABSTRACT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                          |                                     |
|      | Information related to signal quality on the downstream and upstream paths (104) in a cable network may be monitored (116, 208) at selected ones of a plurality of set-top boxes (110) and sent by the set-top box to the headend (102) as it is collected, or when the set-top box is polled by the headend. The information may be collected with the set-top box is in an idle state (204), by the set-top box tuning through the channels in the channel map (206) and by applying a time stamp to the information (208). Ping messages may be transmitted from the set-top box to the headend and back to the set-top box. Methods and apparatus are disclosed. |                                          |                                     |
| (73) | Assignee: <b>General Instrument Corporation</b> , Horsham, PA (US)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                          |                                     |
| (21) | Appl. No.: <b>10/718,074</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                          |                                     |
| (22) | Filed: <b>Nov. 20, 2003</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                          |                                     |
|      | <b>Publication Classification</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                          |                                     |
| (51) | Int. Cl. <sup>7</sup> ..... <b>H04N 7/16; H04H 9/00</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                          |                                     |

Ex. 1009, Cover; POR 13-14



Ex. 1009, Fig. 1; POR 14

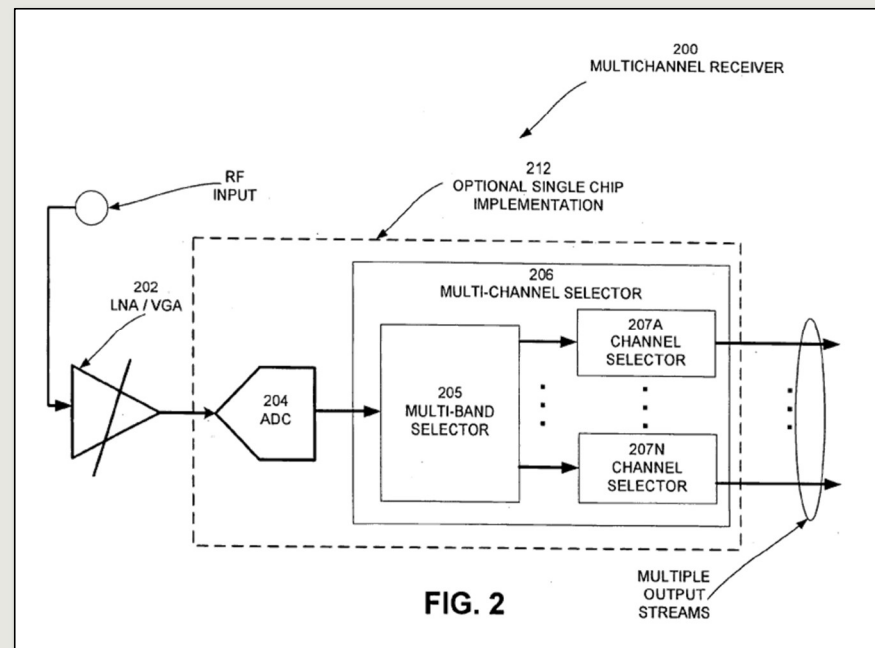
[0014] The STB 110 comprises an in-band (IB) tuner 112 for receiving first signals from the cable operator, an out-of-band (OOB) tuner 114 for receiving second signals from the cable operator, a monitor (MON) 116 for generating information related to signal quality on the channels (either or both IB and OOB), a controller (CONTROLLER) 118 for controlling the overall operation of the STB, and non-volatile memory (NVM) 120 for storing information, par-

Ex. 1009, [0014]-[0015]; POR 13-14

## Overview of Konstantinos (Grounds A-D)

|                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (19) <b>United States</b>                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| (12) <b>Patent Application Publication</b>                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Konstantinos et al.</b>                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| (10) <b>Pub. No.: US 2010/0120386 A1</b>                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| (43) <b>Pub. Date: May 13, 2010</b>                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <hr/>                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| (54) <b>MULTI-CHANNEL RECEIVER ARCHITECTURE AND RECEPTION METHOD</b>                                                                                                   | <b>Publication Classification</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| (76) Inventors: <b>Doris Konstantinos</b> , Amsterdam (NL); <b>Erwin Janssen</b> , Veldhoven (NL)                                                                      | (51) <b>Int. Cl.</b><br><b>H04B 1/18</b> (2006.01)<br><b>H04N 5/50</b> (2006.01)                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Correspondence Address:<br><b>NXP, B.V.</b><br><b>NXP INTELLECTUAL PROPERTY &amp; LICENSING</b><br><b>M/S41-SJ, 1109 MCKAY DRIVE</b><br><b>SAN JOSE, CA 95131 (US)</b> | (52) <b>U.S. Cl.</b> ..... <b>455/180.1; 348/731</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| (21) Appl. No.: <b>12/269,302</b>                                                                                                                                      | (57) <b>ABSTRACT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| (22) Filed: <b>Nov. 12, 2008</b>                                                                                                                                       | A multi-channel receiver comprising an ADC and a multi-band, multi-channel selector. The ADC converts a broadband multi-channel signal into a digital signal. The digital signal is then broken into sub-bands each containing a plurality of channels. A channel selector selects desired channels from the appropriate sub-band. The multi-channel receiver may deliver simultaneous channels equal to the number of channel selectors that have been implemented. The multi-channel receiver may be implemented on a single integrated circuit. |

Ex. 1010, Cover; POR 14-16



Ex. 1010, Fig. 2; POR 14-16

# Overview of Renken (Grounds E-F)

## (12) United States Patent Renken et al.

(10) Patent No.: **US 8,649,421 B2**  
(45) Date of Patent: **Feb. 11, 2014**

### (54) CABLE MODEM FOR NETWORK MEASUREMENTS

(75) Inventors: **Thomas Renken**, Indianapolis, IN (US);  
**Gregory W. Massey**, Greenfield, IN (US)

(73) Assignee: **JDS Uniphase Corporation**, Milpitas, CA (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 37 days.

(21) Appl. No.: **13/399,797**

(22) Filed: **Feb. 17, 2012**

### (65) Prior Publication Data

US 2012/0213259 A1 Aug. 23, 2012

### Related U.S. Application Data

(60) Provisional application No. 61/444,611, filed on Feb. 18, 2011.

(51) Int. Cl. **H04L 5/16** (2006.01)  
**H04L 1/02** (2006.01)

(52) U.S. Cl. **USPC** ..... **375/222; 375/347**

(58) Field of Classification Search  
USPC ..... 375/222, 347, 349; 370/241.1, 250, 370/468; 709/224, 236; 715/43, 44, 107, 715/112, 113, 227

See application file for complete search history.

### (56) References Cited

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7,792,183 B2 9/2010 Massey et al. .... 375/227

(Continued)

### OTHER PUBLICATIONS

White Paper: Full-Band Capture Cable Digital Tuning, Broadcom Corporation, Jun. 2011 (3128-WP100.pdf).

(Continued)

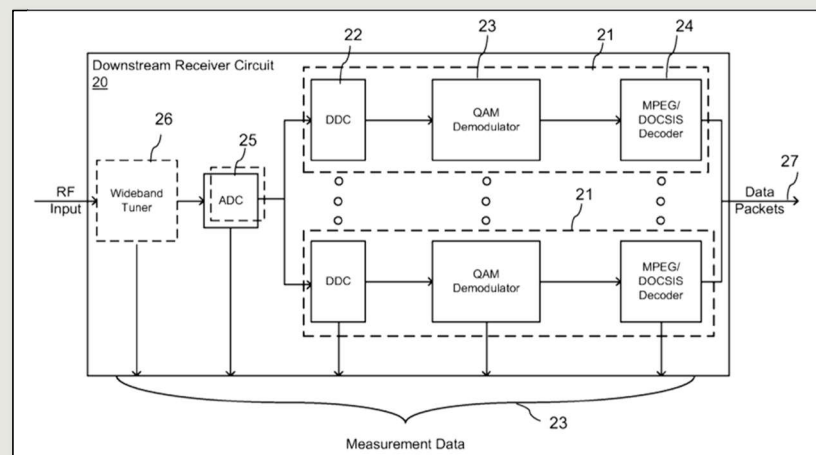
Primary Examiner — Khai Tran

(74) Attorney, Agent, or Firm — Matthew A. Pequinot; Pequinot + Myers LLC

### (57) ABSTRACT

The invention relates to measurement-capable cable modems for cable networks. Idle receivers and transmitters of a cable modem are used to perform upstream and downstream measurements on DOCSIS and non-DOCSIS digital and analog TV channels without disrupting customer services. A currently idle receiver is tuned to a target downstream channel under directions of a modem measurement controller, and is queried by the measurement controller to perform a measurement as specified by a measurement plan. A currently idle transmitter is tuned to a target upstream channel to transmit a test signal that is received by an upstream measurement system. Measurements are communicated to a central measurement controller, for example located at the headend, which collects measurements from a plurality of cable modems and the upstream measurement system. The resulting monitoring system performs cable network wide monitoring using existing cable modems without requiring additional monitoring devices.

19 Claims, 17 Drawing Sheets



Ex. 1011, Fig. 3; POR, 43

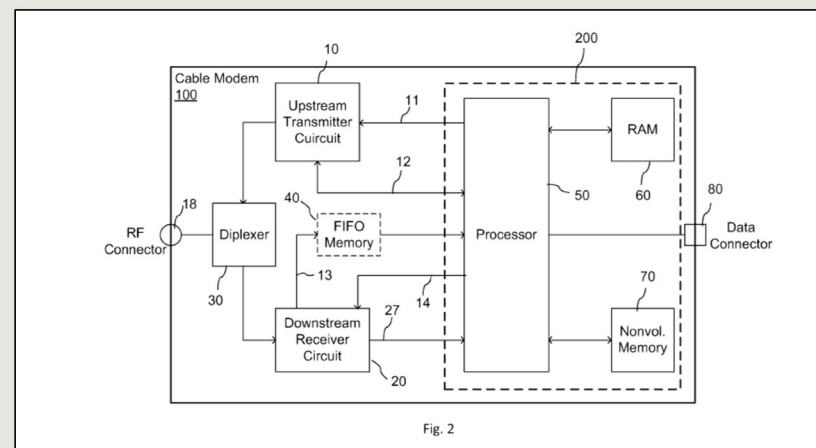


Fig. 2

Ex. 1011, Fig. 2; POR, 43

Demonstrative Only - Not Evidence PO-7

**Grounds A-D: Petitioner's Expert Failed to Explain How the  
Combination Works**

Demonstrative Only - Not Evidence PO-8

## The Proposed Combination Fails to Render Obvious Every Claim Element

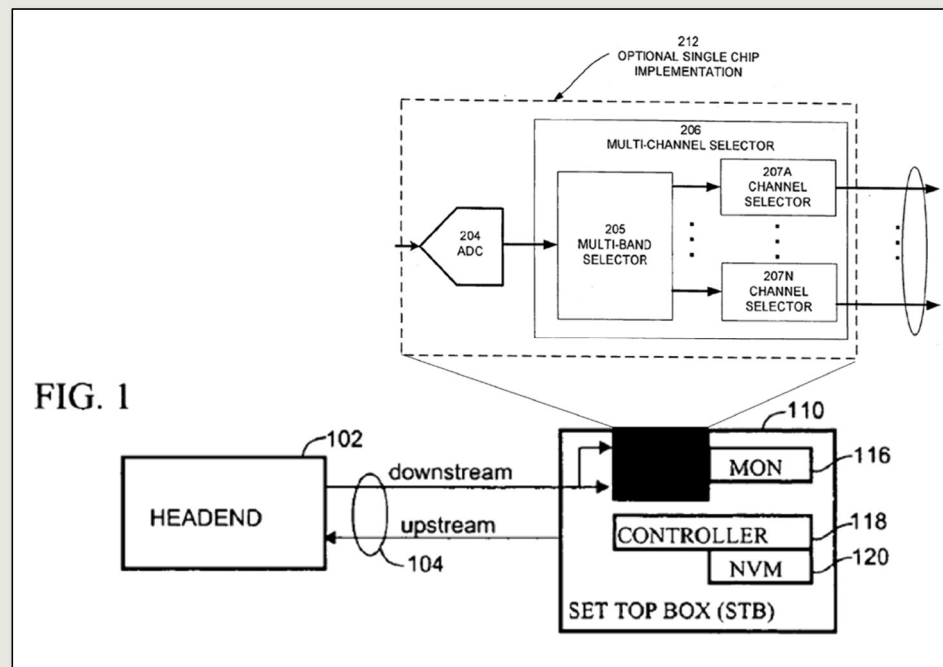
1. A method comprising:  
performing by one or more circuits of a receiver coupled to a television and data service provider headend via a hybrid fiber coaxial (HFC) network:  
receiving, via said HFC network, a signal that carries a plurality of channels, wherein said channels comprise one or both of television channels and data channels;  
digitizing said received signal to generate a digitized signal;  
selecting a first portion of said digitized signal;  
selecting a second portion of said digitized signal;  
processing said selected second portion of said digitized signal to recover information carried in said plurality of channels;  
analyzing said selected first portion of said digitized signal to measure a characteristic of said received signal; and  
controlling the transmission of network management messages back to said headend based on said measured characteristic of said received signal, wherein said measured characteristic is different than said network management messages.

*Ex. 1001, cl. 1*

Demonstrative Only - Not Evidence PO-9

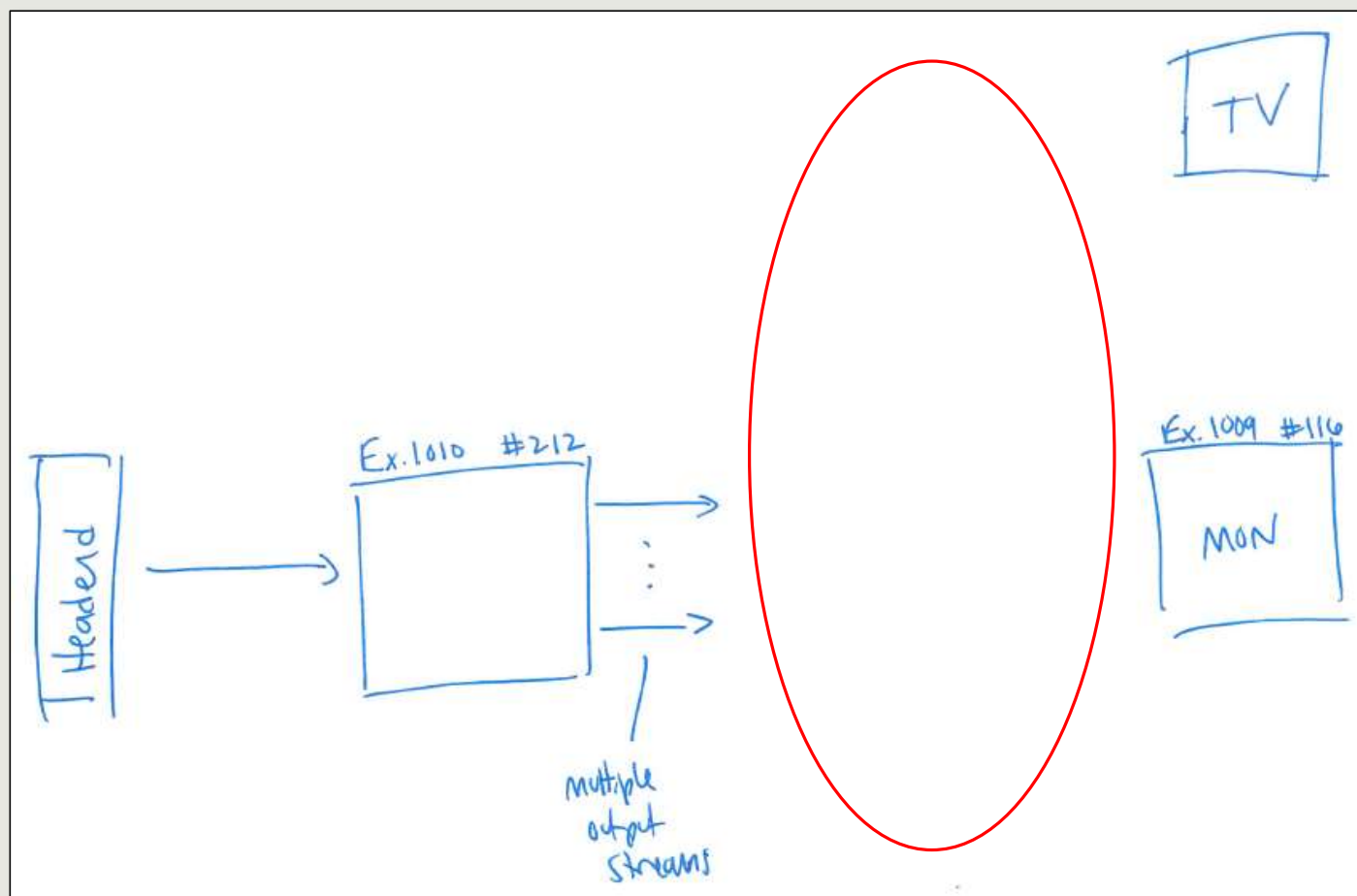
## Petitioner Proposes a Physical Substitution

- The proposed combination “***replaces*** the IB and OOB tuners in *Kamieniecki’s* STB with *Konstantinos’* multi-channel receiver” (Petition, 27)



*Ex. 1009, Fig. 1 & Ex. 1010, Fig. 2 (modified); POR, 17*

## Petitioner's Expert Failed to Explain How the Proposed Combination Would Function



Ex. 2012 (annotated in red)

Demonstrative Only - Not Evidence PO-11

## Petitioner's Expert Failed to Explain How the Proposed Combination Would Function

- Petitioner's expert provided no opinions as to how the decoder would be arranged in relation to the multi-channel receiver to allow for the processing of the second portion

Q. To be clear, I am asking you to depict what you have described in your declarations as your opinions in this case.

If you believe that you haven't given such opinions, please state so and I will withdraw.

A. So I did not, I don't think, in my declaration lay out a block diagram for the system. Instead, I think what I did was, as in Paragraph 163 of the '826 describes, it says that: "After an MPEG stream is received, it will need to be decoded to recover the video and audio so it can be displayed for a user."

I didn't draw a diagram of where is the MPEG decoder, I don't think, and so I believe this might be a new opinion that I would like to not do on the fly. I would like to think about it and make sure it is accurate.

Q. So it's your testimony that it's a new opinion where the decoder would be positioned in relation to the multi-channel

receiver, the monitor and the TV?

MR. QUALEY: Objection to form.

THE WITNESS: Perhaps I missed it, but did I point out where the decoder was positioned in relation to the multi-channel receiver and the monitor and the TV in my declaration?

BY MR. GALLUZZO:

Q. No, I don't think you did.

A. So it sounds like it would be a new opinion for me to draw that diagram.

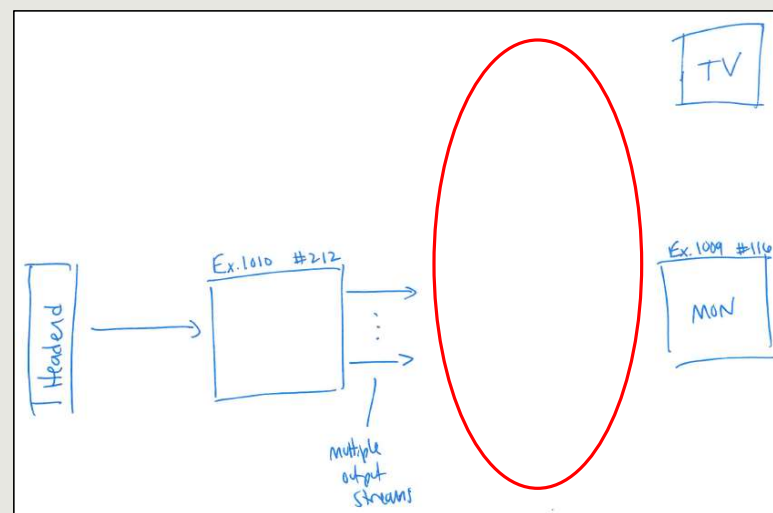
Q. So you haven't provided any opinions in this case about where the decoder would be --

MR. QUALEY: Objection to form.

BY MR. GALLUZZO:

Q. -- is that right?

A. I don't remember.



Ex. 2012 (annotated in red)

Ex. 2014, 170:2-171:18; POR, 40

## Petitioner's Expert Failed to Explain How the Proposed Combination Would Function

Q. And I think your declaration is hopelessly ambiguous on this point and my attempt is to try to figure out visually what you are trying to get across and give you an opportunity to show me because I am failing to understand.

So here is my question: Are you able to fill in Exhibit 2012 at a high level to depict how the multiple output streams from Konstantinos's multi-channel receiver can go to both the monitor and/or the TV?

THE WITNESS: I believe it would be a new opinion for me to draw this block diagram

and I am not comfortable with it at this time, because I need to think about all the details that are required to draw that block diagram.

BY MR. GALLUZZO:

Q. You haven't already thought about all those details that are required?

A. I haven't drawn a schematic diagram.

Q. You say you need time to think about all the details that are required to draw that block diagram.

You agree with me that you have not yet already thought about all those details?

MR. QUALEY: Objection to form.

THE WITNESS: No. I need more time to think about those details in order to complete this drawing.

*Ex. 2014, 175:21-176:16; POR 20-22*

So would that person of skill in the art take the decoders from the Konstantinos disclosure or would it take the decoders from what you say would be obvious in the Kamieniecki disclosure?

A. It could be either. It is just obvious that we need multiple decoders and --

and Kamieniecki doesn't go into much detail about MPEG decoding, right, so one would, you know, he could -- he just knows that you have to have multiple MPEG decoders if you are going to output and view multiple channels and so, you know, more details of that could be rendered from Konstantinos and/or Ota or perhaps a million other references.

*Ex. 2014, 159:6-20; POR 20-22*

Q. If we go back to Konstantinos and look at that multi-channel receiver, there are channel selectors A through N.

In your proposed combination, what is that number N?

A. I didn't give a number, I don't think in my declaration.

Q. I didn't see one either, which is why I am asking.

So in your opinion, in your combination that you believe renders the asserted claims obvious, what is that number N?

A. I don't know. I would need to think about that.

*Ex. 2014, 150:7-20; POR 20-22*

Demonstrative Only - Not Evidence PO-13

## “Ordinary Creativity” is Not a Gap-Filler

- Petitioner proposes a less-experienced POSITA

44. I understand that obviousness is determined from the vantage point of a person of ordinary skill in the relevant art at the time of the alleged invention (“POSITA”). The ’826 Patent is directed to monitoring signal quality in a television receiver, and I agree that this represents the relevant field of art. *See* Ex. 1001, Abstract. I understand that a person of ordinary skill in the art is one who is presumed to be aware of all pertinent art, thinks along conventional wisdom in the art, and is a person of ordinary creativity.

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

*Ex. 1002, ¶¶ 44-45; POR, 18*

46. Unless otherwise noted, my statements in this declaration regarding what a POSITA would have known, understood, appreciated, considered obvious, been motivated to do, etc., regarding prior art refer to what the POSITA would have known before the earliest claimed priority date of the ’826 Patent (which, as I discuss above, is September 8, 2011).

*Ex. 1002, ¶ 46; POR, 18*

Demonstrative Only - Not Evidence PO-14

**Grounds A-D: *Kamieniecki* and *Konstantinos* Receive Differently  
Formatted Input Signals**

Demonstrative Only - Not Evidence PO-15

## *Kamieniecki and Konstantinos receive differently formatted RF signals*

- The proposed combination receives a signal with IB and OOB channels
- PO's expert identified two OOB standards (SCTE 55-1 and 55-2), both with channel bandwidths between 1-2 MHz

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

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

*Petition, 31*

58. Two industry standards were established for the OOB channels: (1) SCTE 55-1, originally developed by General Instrument, and (2) SCTE 55-2, originally developed by Scientific Atlanta. Ex. 1026, p. 415. For downstream OOB channels, these would occupy the 70-130 MHz frequencies, but for channel spacing, SCTE 55-1 used 1.8 MHz channel spacing; whereas, SCTE 55-2 used 1 or 2 MHz. *Id.* For downstream IB channels, a separate standard established that the channel spacing in North America is 6 MHz. Ex. 1002, ¶ 57.

*Ex. 2013, ¶ 58*

Demonstrative Only - Not Evidence PO-16

## *Kamieniecki and Konstantinos receive differently formatted RF signals*

- Konstantinos receives a DOCSIS signal, which has channels with only 6 MHz bandwidth

95. I disagree with Mr. Lett that the RF signals are the same between the two references because, although both Kamieniecki and Konstantinos teach an RF signal, the signals are formatted according to different protocols and use different modulations. Because the Petition relies on Kamieniecki to disclose the claimed “a signal that carries a plurality of channels, wherein said channels comprise one or both of television channels and data channels” (Petition, 31), the proposed combination would receive a signal that included both IB and OOB channels. As discussed above, this means that there would be a mixture of channel bandwidths and the OOB channel would be modulated using QPSK modulation. *See supra* ¶¶ 56-61. Konstantinos, however, is not designed to handle different bandwidth because it receives a signal with only channel bandwidths of 6 MHz and modulated using QAM in accordance with the DOCSIS protocol. *Supra* ¶ 61.

*Ex. 2013, ¶ 95; POR 23-24*

[0011] In August of 2006, Cable Labs, Inc. issued “Data Over Cable Service Interface Specification (DOCSIS) 3.0.” DOCSIS 3.0 data reception and channel binding, both of which require the simultaneous reception of at least 4 channels placed not further than 60 MHz apart from each other. The block tuner described above enables DOCSIS 3.0, but does not enable unrestricted multi-channel functionality. For example, the simultaneously received number of channels is small and there is no freedom from a user’s perspective to select (or combine together for faster data reception) many/any channels freely out of the full cable TV band. The latter usually consist of up to 100 channels between 50-1000 MHz. The resulting situation is that separate receivers are required to receive both TV and DOCSIS (data) channels without the reception of one restricting the basic functionality of the other. Several implementation limitations appear as well. For example, for a 4-channel system the tuner IC needs to output four clean analog baseband output signals to the decoder IC. The block receiver approach is clearly not the best for interference reasons.

*Ex. 1010, ¶ [0011]*

Demonstrative Only - Not Evidence PO-17

## Kamieniecki and Konstantinos receive differently formatted RF signals

- These differences would render Kamieniecki's STB unfit to report signal quality information

[0014] The STB 110 comprises an in-band (IB) tuner 112 for receiving first signals from the cable operator, an out-of-band (OOB) tuner 114 for receiving second signals from the cable operator, a monitor (MON) 116 for generating information related to signal quality on the channels (either or both IB and OOB), a controller (CONTROLLER) 118 for controlling the overall operation of the STB, and non-volatile memory (NVM) 120 for storing information, particularly that information relating to signal quality which is gathered by the monitor (MON) 116. This signal quality information can include information about channel absence/presence, error count and signal level estimates. As described below, the information about signal quality can be transmitted by the STB to the headend either as it is collected, or when the STB is polled by the headend. The transmitter (e.g., modem) and other details of the STB, which are well known to those skilled in the art, are omitted for illustrative clarity.

Ex. 1009, ¶ 0014; POR 33-34

123. To the extent Petitioner argues that Kamieniecki uses SCTE 55-2 instead of SCTE 55-1, those are the only two options, after all, removing the OOB tuner would also render this reporting mechanism inoperable. As described above, SCTE 55-2 assigns each set-top box a specific time when it is able to transmit information to the headend. *Supra*, ¶ 60. For the set-top box to know when to transmit, it must receive via the OOB channel a "SL-ESF START" message. *Id.* Thus, by removing the OOB tuner, the set-top box would be unable to determine its timeslot. If the set-top box were to report outside its timeslot, it would interfere with other set-top box transmissions, eventually causing the headend to drop messages. Thus, without the OOB tuner, the proposed combination would effectively be unable to report information to the headend unless Konstantinos's multi-channel receiver was redesigned to process an OOB channel. Mr. Lett and the Petition fail provide any reason to modify Konstantinos's multi-channel receiver in this way, let alone discuss that a POSITA would be motivated to do so or how a POSITA would do so. Therefore, it is my opinion that removing the OOB tuner would render Kamieniecki's set-top box inoperable for its intended purpose.

Ex. 2013, ¶ 123; POR 34-35

Demonstrative Only - Not Evidence PO-18

**Grounds A-D: The Proposed Combination Would Unnecessarily  
Increase Cost and Complexity**

Demonstrative Only - Not Evidence PO-19

## Kamieniecki's Single-Tuner Design is Sufficient for Its Intended Application

Q Is Kamieniecki an impractical design?

A What do you mean?

Q Well, is it a practical design or an impractical design?

A I mean I'm not sure what you mean by practical or impractical in this case.

Q You have no understanding what that word means?

A I mean I think -- I mean it would be obvious to a POSITA on how to implement the design as taught by Kamieniecki.

Q And is that design a practical one that could be used in the real world?

A Sure.

Q So it's not an impractical design?

A That's fair.

Q Is having a single channel tuner in a set-top box an impractical design?

A No.

*Ex. 2021, 10:6-24*

Q And in 2011, single channel tuners were still being sold to customers?

A Well, yes. So we had, and vendors like the company I work for, we had low-end models, you know. Some didn't have a return path. They're like basic set-top boxes. And then all the way up to DVRs with multiple tuners, as well as, you know, IPTV boxes that receive channels through DOCSIS.

There was a lot of different types of set-top boxes being sold, depending on what the customer wanted, right.

So, for example, like Comcast would have very, let's call them, low-feature customers that were just interested in, you know, watching one channel at a time and going channel up, channel down, that kind of thing.

*Ex. 2021, 12:16-13:6*

Demonstrative Only - Not Evidence PO-20

## The Proposed Combination Unnecessarily Increases Complexity

- The high-speed ADC would require additional power supplies and shielding to function properly

105. Beginning with complexity, Mr. Lett's opinion that using a single integrated circuit (IC) would reduce complexity ignores the extensive alterations to Kamieniecki that would be needed to accommodate Konstantinos's multi-channel receiver. As described above, a POSITA would have to add additional power supplies, shielding, and reprogram the channel selectors so that the proposed combination would function. *Supra*, ¶¶ 90-97. Thus, by forcing complex digital signal processing in the form of Konstantinos's multi-channel receiver into Kamieniecki's basic set-top box (*supra*, ¶¶ 80-87), the proposed combination increases complexity.

*Ex. 2013*, ¶ 105; *POR* 26-27

Demonstrative Only - Not Evidence PO-21

## The Proposed Combination Unnecessarily Increases Complexity

- Petition's POSITA lacked the knowledge and experience to integrate the complex functionality such as high speed analog to digital conversion into *Kamieniecki's* STB

99. While at S-A, I directly oversaw an extensive redesign of certain S-A products that replaced can tuners—which were used in the Explorer 4200—with a silicon tuner—which was used in Explorer 8300. This changeover from can tuners to silicon tuners required years of effort by a large team of individuals with a range of education and experience levels. As Mr. Lett testified and I experienced while working at S-A, design teams often included individuals with Ph.D.'s or master's degrees and extensive experience. Ex. 2014, 33:1-12, 34:21-35:1, 35:5-11. Yet, despite the number of individuals and the advance degrees held by team members, it still took 5-6 full-time RF engineers, most with over 20 years of experience, to design and develop a new set-top box with silicon tuners.

Ex. 2013, ¶ 99; POR 19-20

100. The proposed replacement of Kamieniecki's IB and OOB tuners with Konstantinos's multi-channel receiver chip is more difficult than replacing conventional tuners with a silicon tuner like we did at S-A. This is true because the proposed replacement requires integrating an entirely new component into Kamieniecki—a high speed ADC—that necessitates extensive changes to components throughout the set-top box as described above. These changes are so extensive, especially redesigning the set-top box to provide the necessary power, that I would give this task to individuals with advanced degrees or with many more years of experience. I would do this because designing the power distribution for an ADC requires very specialized knowledge—regarding design consideration such as sampling rate, data transfer, thermal load on the ADC (i.e. are the components getting so hot that the circuit board will melt)—that I would not expect a less experienced team member, like the Petition's POSITA, to have.

Ex. 2013, ¶ 100; POR 19-20

Demonstrative Only - Not Evidence PO-22

## The Proposed Combination Unnecessarily Increases Complexity

- Petitioner's expert did not know how to resolve these complexities

Q In 2011, did an ADC digitizing only a six megahertz channel require less power than an ADC digitizing a one gigahertz spectrum?

A There's a lot of other factors, like, again -- it may or may not, depending on what you're comparing. Comparing what to what?

Q From your experience in 2011, can you think of a single ADC that could digitize an entire one gigahertz spectrum that required less power than an ADC that could only digitize a single six megahertz channel?

A So I'm going to look at Konstantinos to answer your question.

(Pause.)

A I'm sorry, perhaps I was thinking about something else. Can you repeat that question?

MR. GALLUZZO: Ms. Robinson, would you mind repeating it back. I have since forgotten.

(The record was read by the reporter as follows: "From your experience in 2011, can

you think of a single ADC that could digitize an entire one gigahertz spectrum that required less power than an ADC that could only digitize a single six megahertz channel?")

(Pause.)

A So Konstantinos addressed the power requirements of such a multichannel tuner by disclosing the interleaved architecture for its ADC, and that's in Paragraphs 59 through 61 of Konstantinos.

So he recognized that traditional ways of implementing such an ADC could be greatly improved when power requirements by the interleaved sampling and digitization architecture that he discloses.

Q Thank you. Are you able to answer the question that I asked?

A I don't know the answer.

Ex. 2021, 43:5-44:17

## The Proposed Combination Unnecessarily Increases Costs

- The redesign of *Kamieniecki's* single-tuner STB would have a steep initial design cost

107. First, Mr. Lett's opinions ignore the steep initial cost associated with designing and developing the set-top box given the number of individuals and time it takes to develop a new set-top box. As described above and as Mr. Lett testified at his deposition, it typically would take at least 100 individuals approximately six to twelve months to develop a new set-top box. Ex. 2014, 25:8-19, 30:15-19, 31:11-14. Thus, the cost to simply design the proposed combination and ensure that it would function properly would be significant based on the time and number of individuals involved.

Ex. 2013, ¶¶ 106-107; POR 27

Q. Sitting here today, can you remember the amount of time it took to develop any one particular set-top box for any of your projects prior to 2011?

A. I mean, in a range of maybe six months to a year from first silicon was kind of the, in general, you know, I could be off a little bit on that, but that's kind of the range of time that it took from -- let's call it first silicon, meaning the chip sets are available to release the product for production.

###

Q. Fair to say that a development project for a set-top box in 2009, 2010, 2011, would have hundreds of people or a hundred people?

A. At least a hundred, yes.

Ex. 2014, 25:8-19, 30:15-19; POR 27

Demonstrative Only - Not Evidence PO-24

## The Proposed Combination Unnecessarily Increases Costs

- Multi-channel functionality would be unnecessary for *Kamieniecki's* STB

108. Second, the proposed combination would make Kamieniecki more expensive than necessary for its intended applications. As described above, the cable TV industry is extremely price sensitive to the point that pennies matter. *Supra*, ¶¶ 75-79. Therefore, to keep costs down, a set-top box would be designed to only include the functionality needed for its intended applications. *Id.* A POSITA would recognize that Kamieniecki, with its single IB tuner, would be considered a “basic” STB designed intended for applications that only require a single channel to be selected at a time. In contrast, Konstantinos’s multi-channel receiver was designed to select multiple channels. *See* Ex. 1010, ¶ [0011]. This type of functionality would be integrated into more advanced STBs that were intended to allow simultaneous viewing or recording of different channels, such as a DVR set-top box that could display one channel while recording others simultaneously. An example is the Explorer 8300 that my group designed.

*Ex. 2013, ¶ 108; POR 27-28*

109. Thus, by incorporating additional functionality into Kamieniecki’s basic set-top box, the proposed combination would result in a more expensive set-top box than what was needed. By way of an analogy, replacing the IB and OOB tuners with Konstantinos’s multi-channel receiver would be like replacing the engine of a Honda Accord with the engine from a Formula 1 race car. The Formula 1 engine would achieve a similar result as the engine of the Honda Accord—it would propel the car—but the Formula 1 engine would be overengineered and imbue the Honda Accord with capabilities that it was never designed for. In an industry where pennies matter, it is my opinion that the added costs, even a minor increase in cost, would weigh strongly against a motivation to make the proposed substitution of elements.

*Ex. 2013, ¶ 109; POR 27-28*

Demonstrative Only - Not Evidence PO-25

## The Proposed Combination Unnecessarily Increases Costs

- Petitioner's expert agreed it would not make sense to add unnecessary features

Q And it wouldn't make sense to put it in there because it would cost more than the feature set needed?

A I think that's accurate, yes. In the very low end -- let's make it as cheap as we can possibly make it kind of box.

*Ex. 2021, 22:11-16*

Demonstrative Only - Not Evidence PO-26

**Combining *Konstantinos* and *Kamieniecki* in the Manner Proposed  
Would Fundamentally Alter Both References**

Demonstrative Only - Not Evidence PO-27

## Kamieniecki Waits for Idle Before Gathering Signal Quality Information

- Both experts agree that Kamieniecki waits for the STB to be idle before monitoring

112. Beginning with Kamieniecki, its principle of operation for conducting signal analysis is waiting until the STB 110 is “off” or idle. Ex. 1009, ¶¶ [0826], [0015], [0017], [0018], Fig. 2. Although the Board found that Kamieniecki “does not *require* collection of information only during idle times” (Paper 8, 17), the Board took this position because of Kamieniecki’s disclosure that it “may” wait for idle, which is generally non-limiting language. However, both Mr. Lett and I agree that the Board’s initial reasoning was not correct because a POSITA would *not* understand this to be non-limiting language for the many reasons that follow.

Ex. 2013, ¶ 112

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

Ex. 1002, ¶ 159

Demonstrative Only - Not Evidence PO-28

## ***Kamieniecki* Waits for Idle Before Gathering Signal Quality Information**

- Petitioner proposes disregarding this principle of operation

As combined with Konstantinos' multi-channel receiver, a POSITA would have recognized that Kamieniecki's measurements can be made without waiting for an idle time, and can be done in parallel without disturbing users, and that this would have been advantageous since network errors are not limited to user idle times, and it would have been desirable to monitor signal quality at times of heavy network use as well. Ex. 1002, ¶ 159.

*Petition, 36*

Demonstrative Only - Not Evidence PO-29

## Kamieniecki Waits for Idle Before Gathering Signal Quality Information

- *Renken* waits for idle, therefore, it does not automatically follow that multi-channel tuning leads to real-time monitoring

In accordance with another aspect of this invention, there is provided a method for monitoring a cable network using idle receivers and/or transmitters of a plurality of measurement capable cable modems disposed at customer premises at different locations in the cable network for providing customer services.

*Ex. 1011, 4:45-50; POR, 31*

96. Renken describes that 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. 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. Similarly, the

*Ex. 1002, ¶¶ 96; POR, 31*

3 A. Well, a POSITA would understand that  
4 you -- it might be desirable to use all of the  
5 -- all of the -- what do you call it?  
6 Q. Downstream receivers.  
7 A. Thank you. All the downstream  
8 receivers for watching video at a particular  
9 time. So, you know, it doesn't say  
10 specifically how many of these are in here, how  
11 many of the downstream receivers, 21 receivers,  
12 21, are in a particular implementation, so, you  
13 know, if it was two, for example, or three, for  
14 example, or four, you know, somebody -- a user  
15 might want to watch two, three or four channels  
16 at any particular time, whereas if you had like  
17 50 of them, right, it's likely that you would  
18 have a downstream receiver idle pretty much all  
19 the time. No desire to use all 50 for watching  
20 content.

*Ex. 1014, 147:3-20; POR, 31*

Demonstrative Only - Not Evidence PO-30

## Fundamental Changes to *Konstantinos's* architecture

- Real-time monitoring would require a change to *Konstantinos's* 1:1 ratio between channel selectors and decoders

117. The proposed combination would also require fundamental changes to *Konstantinos's* architecture. *Konstantinos* discloses for N number of channel selectors that there would be N number of decoders, thus a 1:1 ratio between channel selectors and decoders. See, e.g., Ex. 1010, ¶ [0046]. Because of this 1:1 ratio, a POSITA would need to change the architecture of *Konstantinos* so that an output of the multi-channel receiver goes to Kamieniecki's monitor and not to a decoder. Because Mr. Lett and the Petition fail to address this, it is not clear how the combination is capable of the claimed concurrent output. I can think of only two modifications to *Konstantinos* that would allow for a channel selector to output to Kamieniecki's monitor: (1) remove a channel decoder and replace it with Kamieniecki's monitor (N-1 number of decoders); or (2) add an additional channel selector that provides a selected channel to the Kamieniecki's monitor (N+1 number of channel selectors). A POSITA would not be motivated to make either modification.

Ex. 2013, ¶¶ 117-19

[0046] The channel selectors 207 realize a fine channel selection. Each sub-block 207A-N receives any of the L sub-bands, selects one channel only and delivers it at the output. The number of channel selectors determines the number of simultaneously received TV channels at the output. For example, using 16 channel selectors permits 16 channels contained in the original TV band to be received simultaneously.

Ex. 1010, ¶ 0046; POR 32

Demonstrative Only - Not Evidence PO-31

**Grounds A-D: The Proposed Combination Fails to Render Obvious  
Every Claim Element**

Demonstrative Only - Not Evidence PO-32

## The Proposed Combination Fails to Render Obvious Every Claim Element

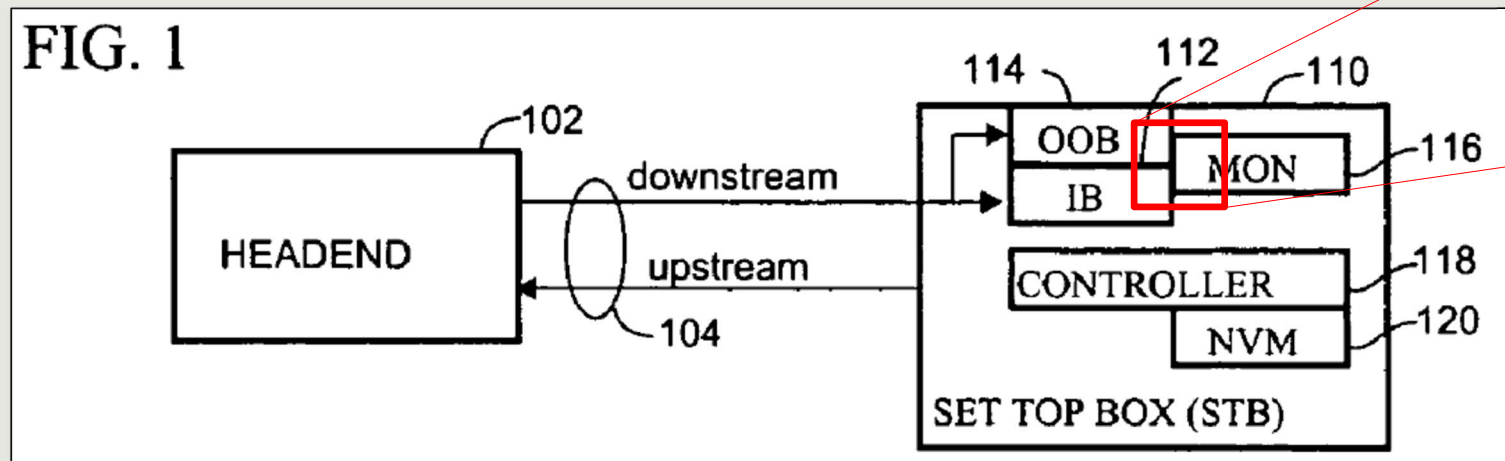
1. A method comprising:  
performing by one or more circuits of a receiver coupled to a television and data service provider headend via a hybrid fiber coaxial (HFC) network:  
receiving, via said HFC network, a signal that carries a plurality of channels, wherein said channels comprise one or both of television channels and data channels;  
digitizing said received signal to generate a digitized signal;  
selecting a first portion of said digitized signal;  
selecting a second portion of said digitized signal;  
processing said selected second portion of said digitized signal to recover information carried in said plurality of channels;  
analyzing said selected first portion of said digitized signal to measure a characteristic of said received signal; and  
controlling the transmission of network management messages back to said headend based on said measured characteristic of said received signal, wherein said measured characteristic is different than said network management messages.

*Ex. 1001, cl. 1*

Demonstrative Only - Not Evidence PO-33

## Kamieniecki's Monitor Does Not Analyze a Digitized Signal

- Both experts agree that *Kamieniecki's* STB, and the proposed combination, receive an **analog** carrier signal that carries digital information (Ex. 2014, 57:3-13; Ex. 2013, ¶¶ 126-28)
- The parties disagree what components exist between the IB/OOB tuners and the MON



Ex. 1009, Fig. 1 (annotated)

Demonstrative Only - Not Evidence PO-34

## Kamieniecki's Monitor Does Not Analyze a Digitized Signal

- If IB/OOB tuners output directly to MON, then the MON is designed to analyze an analog signal because the IB/OOB tuners do not convert the selected portion to the digital domain

128. Next, these analog carrier signals are received by the IB and OOB tuners. Ex. 1009, ¶ [0014]. The tuner then selects a single 6-MHz analog signal (or, in the case of OOB, a single 1.8-MHz/1-2MHz analog signal) and passes it on for further processing. At his deposition, Mr. Lett discussed a distinction between “analog” and “digital” tuners. Ex. 2014, 68:3-9. I understand that Mr. Lett went on to provide examples of analog and digital tuners. Ex. 2014, 104:14-19, 105:5-8.

*Ex. 2014, ¶ 128; POR, 37*

Demonstrative Only - Not Evidence PO-35

## Kamieniecki's Monitor Does Not Analyze a Digitized Signal

- Mr. Lett's first example of a digital tuner is a tuner that outputs 1's and 0's

Do you agree that the first one, one of those potential definitions that you could have used, what you could have thought in your head as you said digital tuner, is a tuner that receives a signal and outputs 1s and 0s?

A. Yes.

*Ex. 2014, 104:14-19; POR, 37*

129. The first example Mr. Lett provided is a tuner that outputs 1's and 0's. Under this example, Mr. Lett appears to be asserting that the IB and OOB tuners would also include the decoder, which is responsible for extracting the digital content (i.e., the 1's and 0's) from the analog carrier signal. Stated differently, only the decoder can meaningfully process the 1's and 0's. Thus, in the first example, the tuner still selects and outputs an analog carrier signal, it just would output the selected channel to the decoder to extract the 1's and 0's. To the extent Mr. Lett is opining that the digital content would be output to Kamieniecki's monitor, this would not be the "digitized signal" recited in the challenged claims because the plain language of the state that the digitized signal is a result of digitizing the received signal (i.e., the analog carrier signal from the headend), not the digital content carried thereon.

*Ex. 2014, ¶ 129; POR, 37*

Demonstrative Only - Not Evidence PO-36

## Kamieniecki's Monitor Does Not Analyze a Digitized Signal

- Mr. Lett's second example of a digital tuner is a tuner with "digital circuitry"

22 A. As I answered a few minutes ago, it  
1 could be a tuner that is meant to tune analog  
2 channels and uses digital circuitry for  
3 processing those analog channels. And has a  
4 D-to-A converter that converts it back to  
5 analog on the output.

6 Q. Meaning, it would have an  
7 analog-to-digital converter on the front end,  
8 do some processing and revert back to analog?

9 A. Correct.

*Ex. 2014, 102:22-103:19; POR, 38*

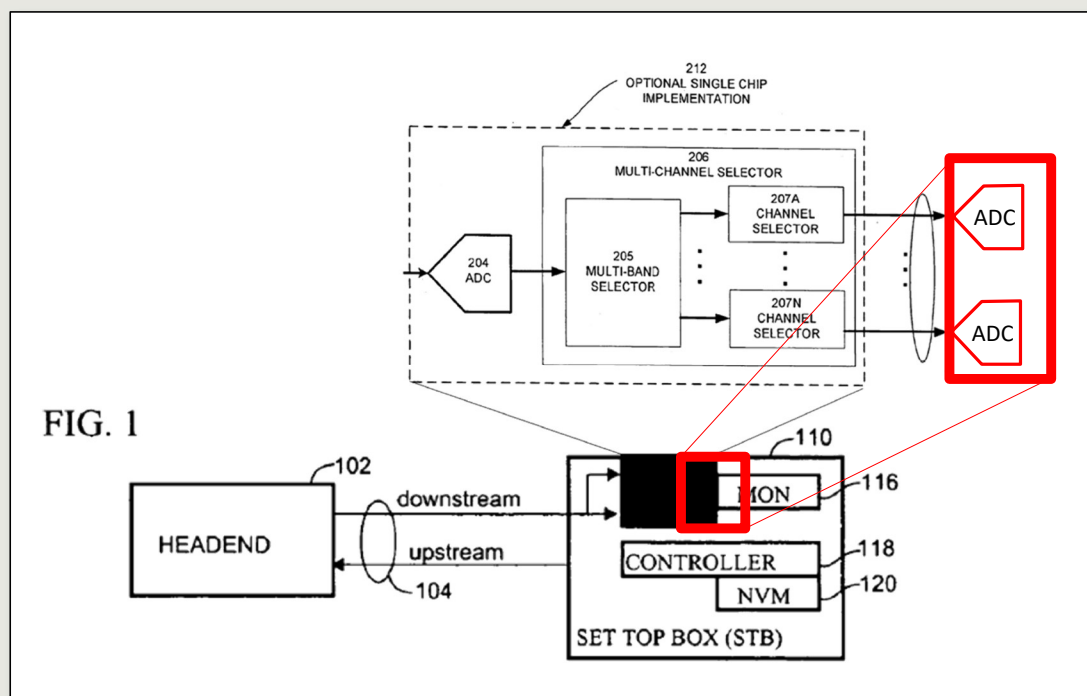
130. The second example is "a tuner that receives a signal and has circuitry that performs digital signal processing." Ex. 2014, 105:5-8. When asked to clarify, Mr. Lett stated this digital tuner "could be a tuner that is meant to tune analog channels and uses digital circuitry for processing those analog channels. And has a D[igital]-to-A[nalog] converter that converts it back to analog on the output." Ex. 2014, 103:1-5. Based on this example, this "digital" tuner would still select a portion of an analog channel and once selected would digitize this signal, perform signal processing in the digital domain, and then converter it back to analog. Ultimately, Kamieniecki's single tuners—both IB and OOB—output an analog signal.

*Ex. 2014, ¶ 130; POR, 38*

Demonstrative Only - Not Evidence PO-37

## Kamieniecki's Monitor Does Not Analyze a Digitized Signal

- If Petitioner is correct that an ADC is between the IB/OOB tuners and the MON, then the combination does not make sense



Ex. 1009, Fig. 1 & Ex. 1010, Fig. 2 (modified)

## Kamieniecki's Monitor Does Not Analyze a Digitized Signal

- Petitioner's expert relies on a cherry-picked document about the Explorer 4200 after testifying he did not recall the specifics about any particular STB

Q. What is the 2100?

A. Boy, I am going back in my memory archives here.

Actually, it was 2010, right, or -- it was 2010 series? I can't remember.

Q. My understanding is it was the 2100 series but if you remember it as the 2010 series, we can go with that.

A. You know, it's been so long ago. For me to testify as to the features and functionalities for a specific model, I just -- I'm sorry. I just don't feel comfortable with that on the record.

I, of course, know in general about all the set-top boxes and have memories of some of the functionalities, but to answer your question, I would really like to be totally accurate and I probably would need to think about it and perhaps reference some documents to refresh my memory.

*Ex.2014, 21:6-22:3*

Q The Explorer 4200 had a DOCSIS modem in it; is that right?

A That's right.

Q And that modem was for out-of-band signaling?

A It was for DOCSIS functionalities. Two-way -- DOCSIS has an upstream and downstream. So it has two-way functionality.

Q I guess my point is, that DOCSIS modem wasn't for receipt of television video channels, correct?

A It can be, and it was used for video channels.

Q In the 4200?

A I don't remember in the 4200, if that was true or not. It might have been. I just don't recall.

Q Understanding that DOCSIS could be used generally for receiving television channels, you have no reason to believe that it was for the 4200, correct?

A I have no reason to recall, but, I mean -- scratch that.

I do not recall.

*Ex.2021, 24:16-25:14*

Demonstrative Only - Not Evidence PO-39

## Petition Failed to Identify Where the Prior Art Renders Obvious Processing the Second Portion

- Petitioner's expert provided no opinions as to how the decoder would be arranged in relation to the multi-channel receiver to allow for the processing of the second portion

Q. To be clear, I am asking you to depict what you have described in your declarations as your opinions in this case.

If you believe that you haven't given such opinions, please state so and I will withdraw.

A. So I did not, I don't think, in my declaration lay out a block diagram for the system. Instead, I think what I did was, as in Paragraph 163 of the '826 describes, it says that: "After an MPEG stream is received, it will need to be decoded to recover the video and audio so it can be displayed for a user."

I didn't draw a diagram of where is the MPEG decoder, I don't think, and so I believe this might be a new opinion that I would like to not do on the fly. I would like to think about it and make sure it is accurate.

Q. So it's your testimony that it's a new opinion where the decoder would be positioned in relation to the multi-channel

receiver, the monitor and the TV?

MR. QUALEY: Objection to form.

THE WITNESS: Perhaps I missed it, but did I point out where the decoder was positioned in relation to the multi-channel receiver and the monitor and the TV in my declaration?

BY MR. GALLUZZO:

Q. No, I don't think you did.

A. So it sounds like it would be a new opinion for me to draw that diagram.

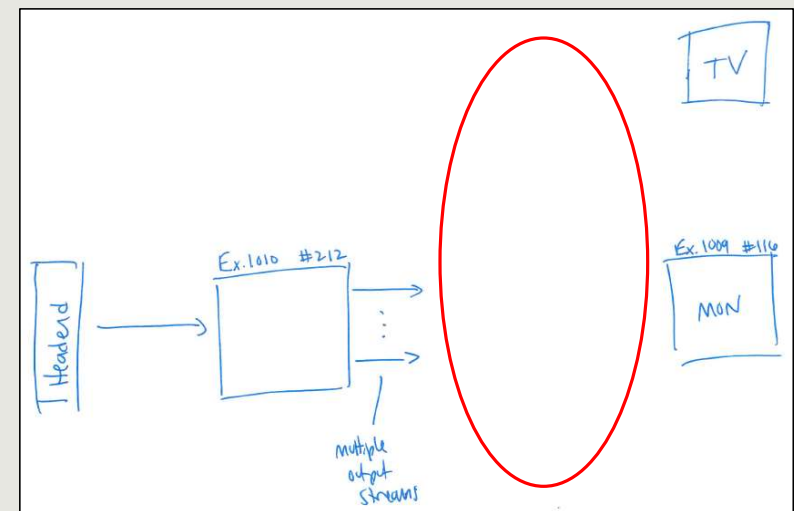
Q. So you haven't provided any opinions in this case about where the decoder would be --

MR. QUALEY: Objection to form.

BY MR. GALLUZZO:

Q. -- is that right?

A. I don't remember.



Ex. 2012 (annotated in red)

Ex. 2014, 170:2-171:18; POR, 40

**Petitioner Fails to Identify Where the Prior Art Renders Obvious  
Claims 6 and 15**

Demonstrative Only - Not Evidence PO-41

## Kamieniecki's Monitor Has Not Been Shown to Measure Signal Power vs. Frequency

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

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

*Ex. 1001, cls. 6, 15; POR, 42*

We do not agree that reporting “channel presence/absence” or “signal level estimates” to the headend is equivalent to reporting “signal power vs. frequency.” Although “channel presence/absence” may reflect whether signal level is “outside of acceptable bounds” it is not per se “signal power vs. frequency.” Petitioner does not show a reasonable likelihood that claims 6 and 15 would have been obvious.

*Paper 8, 34; POR, 42*

Demonstrative Only - Not Evidence PO-42

**Grounds E-F: The Petition Proposes Alterations of *Renken* that  
Contradict *Renken's* disclosure**

Demonstrative Only - Not Evidence PO-43

## The Proposed Combination Fails to Render Obvious Every Claim Element

1. A method comprising:  
performing by one or more circuits of a receiver coupled to a television and data service provider headend via a hybrid fiber coaxial (HFC) network:  
receiving, via said HFC network, a signal that carries a plurality of channels, wherein said channels comprise one or both of television channels and data channels;  
digitizing said received signal to generate a digitized signal;  
selecting a first portion of said digitized signal;  
selecting a second portion of said digitized signal;  
processing said selected second portion of said digitized signal to recover information carried in said plurality of channels;  
analyzing said selected first portion of said digitized signal to measure a characteristic of said received signal; and  
controlling the transmission of network management messages back to said headend based on said measured characteristic of said received signal, wherein said measured characteristic is different than said network management messages.

*Ex. 1001, cl. 1*

Demonstrative Only - Not Evidence PO-44

## The Proposed Modification is Contrary to the Roles the CMC and MCCM Perform in Renken

135. Renken discloses that the CMC is a measurement controller that collects, evaluates, and stores measurement results from multiple MCCMs for the purpose of remotely performing automated end-of-line diagnostics. Ex. 1011, 8:35-50. The CMC is further divided into subcomponents, among which, is the subcomponent responsible for generating error reports or alarms—the “data analysis and processing module” (“DAAP”). Ex. 1011, 22:22-39. The DAAP supports end-of-line diagnostics by coordinating, comparing, processing, and analyzing measurement results from multiple MCCMs. Ex. 1011, 22:22-23. For example, the DAAP “may also look for abnormally high or low signals at an individual MCCM 100 compared to all other MCCMs in the system or to pre-defined thresholds or limits.” Ex. 1011, 22:32-34. If the DAAP determines a measurement is outside parameters established by the network operator, it generates an error report or alarm. Ex. 1011, 22:36-39.

Ex. 2013, ¶ 135; POR, 46-47

- Without a centralized system, error reports and alarms could not be generated

the UMS 9. It may also look for abnormally high or low signals at an individual MCCM 100 compared to all other MCCMs in the system or to pre-defined thresholds or limits. It may look for unexpected carrier level or frequency response changes. Based on the rules and limits configured by the user and stored in the Limits and Rules Database 765, it may generate error reports or alarms when a measurement falls outside of the acceptable limits.

Ex. 1011, 22:32-39; POR 47

Demonstrative Only - Not Evidence PO-45

## The Proposed Modification is Contrary to *Renken's* Measurement Plan

138. I also understand that Mr. Lett identified Renken's disclosure of "error thresholds" as further support for his opinions concerning the claimed network management messages. Ex. 1002, ¶ 277 ("Renken describes that the MCCM's measurement plan could include error thresholds, and it would have been obvious to a POSITA that the MCCM would use those thresholds to detect, based on an underlying measurement, that an error has occurred in a channel, and to send a message to the CMC indicating the error.") (citing Ex. 1011, 22:67-23:4). After reviewing the cited portion of Renken, I disagree that this discloses sending an error report or anything other than the measured characteristic to the CMC.

*Ex. 2013, ¶ 138; POR, 46*

139. The cited portion of Renken states: "By way of example, the measurement plan may include one or more of the following: measurement identifiers for each measurement to be performed, a channel plan specifying channels to be tested, intervals at which the measurements are to be repeated, and error thresholds." Ex. 1011, 22:67-23:4. From this, Renken's disclosure of "error thresholds" relates to the "measurement plan." According to Renken, the measurement plan is what Renken's network uses to identify when an idle receiver/transmitter should perform a requested measurement and report the results. Ex. 1011, 23:5-9, 18:7-11; *see also id.*, 18:46-52, 20:36-41. Thus, I understand that if the error threshold is exceeded, the MCCM would identify and utilize an idle receiver/transmitter to measure and report whatever is requested in accordance with the measurement plan.

*Ex. 2013, ¶ 139; POR, 46*

Demonstrative Only - Not Evidence PO-46

## The Proposed Modification is Antithetical to *Renken's* Centralized Monitoring

140. Finally, it is my opinion that there would be no motivation to have the MCCMs transmit error reports or alarms based on exceeding an error threshold because this would contradict Renken's centralized model for network monitoring. As described above, Renken discloses that the role of the CMC and the DAAP is to monitor the network using measurements from MCCMs located throughout the network. Because MCCMs report to a centralized location, it is my opinion that Renken discloses a centralized method of networking monitoring. If the proposed modification of Renken was made, network errors would be identified at the edge of the network—i.e., at an MCCM. Because these MCCMs are distributed throughout the network, this would be more a distributed model of network monitoring and would be antithetical to Renken's centralized model.

*Ex. 2013, ¶ 140; POR, 48-49*

Demonstrative Only - Not Evidence PO-47

