

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMCAST CABLE COMMUNICATIONS, LLC,
Petitioner,

v.

ENTROPIC COMMUNICATIONS, LLC,
Patent Owner.

Case IPR2024-00442
Patent 9,825,826

**PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE UNDER
37 C.F.R. §42.23**

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EXHIBITS

Previously Submitted:

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

- Ex. 1024: U.S. Pub. No. 2008/0089402 (“Massey”)
- Ex. 1025: U.S. Patent No. 7,573,531 (“Aggarwal”)
- Ex. 1026: Excerpts of W. Ciciora, J. Farmer, D. Large, and M. Adams, “Modern Cable Television Technology Video, Voice, and Data Communications” (2nd ed. 2004) (“Ciciora”)
- Ex. 1027: U.S. Patent No. 7,340,230 (“Khoini-Poorfard”)
- Ex. 1028: U.S. Pub. No. 2003/0217362 (“Summers”)
- Ex. 1029: U.S. Pub. No. 2006/0256799 (“Eng”)

Filed Herewith:

- Ex. 1031: “Scientific-Atlanta Launches Explorer 4200 Set-Top,” August 7, 2002, www.tvtechnology.com/equipment/scientificatlanta-launches-explorer-4200-settop
- Ex. 1032: Expert Reply Declaration of Mr. David Lett
- Ex. 1033: Deposition Transcript of Dr. Samuel Russ

Served (Not Filed):

- Ex. 1030: Expert Declaration of Sylvia Hall-Ellis, Ph.D.

I. INTRODUCTION

Comcast Cable Communications, LLC (“Petitioner”) petitions for *inter partes* review and cancellation of claims 1-18 of U.S. Patent No. 9,825,826 (“the ’826 patent”) (Ex. 1001).

II. ARGUMENT

A. THERE IS A STRONG MOTIVATION TO COMBINE KAMIENIECKI AND KONSTANTINOS

Patent Owner (“PO”) argues a lack of motivation to combine by ignoring the express motivation offered in Konstantinos, raising technical concerns that Konstantinos already addressed, and requiring explanation of technical detail by the prior art that exceeds that of the ’826 patent.

1. A REASONABLE EXPECTATION OF SUCCESS EXISTS

PO admits that Kamieniecki’s STB is a “single-channel” STB that has separate in-band (IB) and out-of-band (OOB) tuners. POR 13-14, 29. PO does not dispute that Konstantinos, filed five years after Kamieniecki, expressly stated that the evolving market was demanding multi-channel tuning; that multi-channel tuning using multiple single-channel tuners in parallel was impractical; and that instead Konstantinos’ digital multi-channel receiver should be used. POR 25-29; Pet. 27-30.

PO does not refute Konstantinos’ express teaching to improve single-tuner systems like that of Kamieniecki, but instead argues a POSITA would not have been

smart enough to do what Konstantinos suggests. POR 18-25. PO argues the combination would have required individuals with more advanced degrees, raising technical issues that PO suggests would be too complex for a mere POSITA (POR 18-19) but in doing so PO relies on its expert, Dr. Samuel Russ, whose STB experience ended several years before the relevant priority date of the '826 patent. Ex. 1033, 30:14-31:9. PO also ignores that these technical issues are already addressed in Konstantinos and that a POSITA has ordinary creativity. *Facebook, Inc. v. Windy City Innovations, LLC*, 973 F.3d 1321, 1343 (Fed. Cir. 2020) (“the fact that it would take some creativity to carry out the combination does not defeat a finding of obviousness.”).

PO asserts that sampling rate and power issues associated with Konstantinos’ ADC would have been too complex, and would have required a “complete redesign” of Kamieniecki’s STB. POR 19. To the contrary, Konstantinos states that its multi-channel receiver *improves* on power and interference issues that would occur under conventional approaches. Ex. 1010, [0012]-[0013] (using conventional approach for multi-channel tuning means high sampling and data rates, creating power and interference issues). Konstantinos describes that its hierarchical approach (illustrated in Figure 3) *reduces* the necessary sampling rate, and that “[this] reduction in sampling rate has a significant impact in the improvement of power efficient [sic] similarly to the case of the mentioned ADC.” Ex. 1010, [0102].

Konstantinos also states that its digitization of all TV channels, and portioning into sub-bands, “reduces the signal rates substantially, with overall benefits in power consumption, reduced interference, etc.”. Ex. 1010, [0104]. Konstantinos further states that “[b]y replicating the fine selector, one can realize a multiplicity of digital tuners very efficiently,” and that its fine selectors can be implemented using “*conventional* digital selection methods.” Ex. 1010, [0105] (emphasis added). Rather than being “too complex,” PO’s technical issues are already addressed by Konstantinos. Additionally, power supplies were commercially available components, and shielding for interference was just a piece of grounded metal – modifications easily solved by the POSITA. Ex. 1032, ¶¶ 8-9.

Furthermore, Konstantinos addresses PO’s technical issues using the same approach as the ’826 patent. Konstantinos discloses several types of “time-interleaved” ADCs. Ex. 1010, [0022]-[0023], [0056]-[0061]; Ex. 1032, ¶¶ 8. The ’826 patent does similarly, via incorporation by reference of a time-interleaved ADC from an earlier application. Ex. 1001, 6:2-6. A POSITA would not have been deterred by PO’s technical issues. Ex. 1032, ¶¶ 8-9.

PO resorts to misleading arguments from the deposition of Petitioner’s expert, Mr. Lett. PO focuses on the fact that Mr. Lett was reluctant to draw pictures on-the-fly for PO’s counsel. POR 22-23. Mr. Lett’s refusal to play along with PO’s counsel in creating a circuit diagram does not change the fact that Konstantinos expressly

teaches modernizing STBs by upgrading their tuner(s) to use a digital multichannel receiver.

PO misleadingly argues Mr. Lett *could not* identify how many channel selectors would be in the combination. POR 21. Konstantinos discloses Channel Selectors 207A-N, and Mr. Lett simply did not limit “N” to any particular number. Ex. 2014, 150:7-13; Ex. 1010, Fig. 2. In his declaration, Mr. Lett noted Konstantinos’ nonlimiting examples that simultaneously provided sixteen channels. Ex. 1002, ¶ 85; Ex. 1010, [0046], [0106]; Pet. 35-36.

PO alleges that he was unable to identify which reference he was relying on for the decoders showing the claimed “data processor.” POR 21. Actually, Mr. Lett testified that it could be either. Ex. 2014, 159:6-11. As explained in his declaration, both Kamieniecki and Konstantinos refer to MPEG streams as example television streams, and an MPEG decoder would have been necessary to decode such a stream. Ex. 1002, ¶ 163; Pet. 37.

PO argues that Mr. Lett was unable to explain how the decoders would have been arranged. POR 21-22. But he explained, consistent with his declaration, that the decoders “would be after the multi-channel receiver so that you could decode and display the channel selected with the channel selector 207 A through N.” Ex. 2014, 161:1-8, 170:2-19; Ex. 1002, ¶ 163. Pressed further, he explained that an MPEG decoder could be in the path between the Konstantinos multi-channel

receiver and the Kamieniecki monitor, but it would depend on the kind of desired monitoring. Ex. 2014, 166:4-167:9.

Kamieniecki's Figure 1 intentionally omits STB details that are well-known, and Mr. Lett explained in his declaration that MPEG decoders were well-known and necessary for decoding the MPEG streams that Kamieniecki and Konstantinos both describe receiving. Ex. 1009, Fig. 1, [0014] ("... other details of the STB, which are well known to those skilled in the art, are omitted for illustrative clarity."); Ex. 1002, ¶ 163; Pet. 37. PO's expert agrees that a decoder would have to be present for a STB to output an MPEG stream for viewing. Ex. 1033, 33:2-7. Mr. Lett declining to draw PO a diagram does not change these facts. Also, "[i]t is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements." *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012); *see also Facebook, Inc.*, 973 F.3d at 1343 ("[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.").

PO argues that the references are incompatible purportedly because Kamieniecki uses an OOB signal with a bandwidth of 1-2MHz and Konstantinos requires a 6 MHz bandwidth DOCSIS signal. POR 23-24. But Kamieniecki does not limit its OOB to any standard, and Konstantinos does not limit its data to DOCSIS implementations – it references receiving DOCSIS and DVB-C signals as

examples. Ex. 1032, ¶ 10; Ex. 1010, [0114]. Furthermore, each time Konstantinos references a 6 MHz channel, it is as an example. Ex. 1010, [0013], [0051], [0104].

2. MOTIVATION TO COMBINE EXISTS

PO excerpts words from the Petition out of context, arguing that a POSITA would not be motivated to combine Kamieniecki and Konstantinos because DOCSIS 3.0 did not *require* simultaneous *monitoring* of multiple channels. POR 25-26. Those words addressed a motivation for the *combination* – (i.e., updating Kamieniecki’s STB to have Konstantinos’ multi-channel receiver), not a requirement of DOCSIS. Konstantinos expressly states the “evolving market” demands multi-channel tuning, and needs “unrestricted multi-channel functionality” — DOCSIS 3.0 was simply an example of this evolving market (DOCSIS 3.0 requires simultaneous reception of at least 4 channels). Ex. 1010, [0001], [0011]; Pet. 27-28. Kamieniecki desires to monitor all channels – it just monitors them one at a time (and during idle periods) because it only has one IB tuner. Pet. 36-37. If Kamieniecki’s STB is upgraded with Konstantinos’ multi-channel receiver, it would be able to monitor at any time (instead of waiting for idle), and could do so in parallel without disturbing users, all of which would have been desirable to a POSITA since transmission errors can occur at any time. *Id.* Konstantinos supports this unrestricted multi-channel functionality, as it states that its channel selectors allow

“any combination of the available channels of the original composite signal” to be selected. Ex. 1010, [0105]; Pet. 32-33, 35-36.

PO asserts that Konstantinos’ modification would be too expensive and complex. POR, 26-27. Regarding complexity, PO raises concerns about power and shielding (for interference). *Id.* But as noted above, Konstantinos already addresses these issues. Ex. 1010, [0102]-[0104].

Regarding costs, PO argues that the Konstantinos multi-channel receiver would be an expensive feature reserved for “advanced” STBs, and that Kamieniecki’s STB was a “basic” STB that would not have justified that expense. POR 27-28. PO’s analysis fails for several reasons. First, cost does not refute other reasons for obviousness. *See, e.g., Grit Energy Solutions, LLC v. Oren Tech., LLC*, 957 F.3d 1309, 1323-24 (Fed. Cir. 2020) (expense alone is insufficient to reject a motivation to combine). PO does not dispute that Konstantinos’ receiver would *improve* Kamieniecki’s STB by allowing it to monitor for errors at any time, as opposed to only during idle periods, and that it would allow for faster channel switching. POR 25-29; Pet. 27-30, 36-37; Ex. 1010, [0001], [0016]. PO also does not compare the cost of the proposed modification with the cost of an alternative to address the market demand for multi-channel functionality recognized in Konstantinos. POR 25-29. PO essentially argues that it would be cheaper to ignore that market demand.

Second, even if cost factors were the most important, PO's argument fails. PO asserts that "if a cheaper, basic STB can meet the needs of the consumer, there would be little motivation to add more functionality." POR 28. Konstantinos expressly says that the evolving market needed multi-channel functionality ("[w]hat is needed, therefore, is a single IC receiver able to provide unrestricted multi-channel functionality") and that it would be required for DOCSIS 3.0. Ex. 1010, [0016], [0001], [0011]. PO's expert admits that there was a strong market demand for "advanced" STBs – to the tune of *millions* per year - long before the '826 patent was even filed. Ex. 2013, ¶¶ 108, 70. PO's expert also testified that it was important to meet customer demands in order to sell STBs, and that dealing with rising costs was part of the challenge. Ex. 1033, 27:6-29:7. He also testified that a STB manufacturer would have multiple STB models, with different features, available for sale at a given time. Ex. 1033, 29:8-23. Different customers have different demands, and a POSITA would have known that even if some customers were happy with a "basic" STB, others would have wanted the "advanced" STB as Konstantinos teaches. Ex. 1032, ¶¶ 5-6.

Third, PO ignores the fact that Konstantinos also addresses cost. Konstantinos explains that its receiver can be implemented efficiently, even using conventional methods for its fine tuning, giving an example that selected sixteen TV streams simultaneously. Ex. 1010, [0102] (efficiency of hierarchical approach), [0105]

(“conventional digital selection methods” can be used for fine selection, and “[b]y replicating the fine selector, one can realize a multiplicity of digital tuners very efficiently”), [0106] (16 streams); Pet. 35-36.

PO concludes with a car engine analogy. POR 28. Continuing that analogy, if the prior art acknowledges that Hondas are insufficient to meet the evolving market’s demand for higher performance, and the prior art explains how to upgrade a Honda to provide that higher performance, then that upgrade should be considered obvious. Even if some drivers would still be happy with their Hondas, and even if upgrading would come at a cost, that does not change the fact that the upgrade was taught, and that the modification was both desirable and known.

3. MODIFICATION WOULD NOT FUNDAMENTALLY ALTER THE REFERENCES OR MAKE THEM INOPERABLE

PO spins Kamieniecki’s disadvantage (only monitoring when idle so as not to disturb the viewing experience) as a “fundamental principle of operation.” POR 29-30. In fact, Kamieniecki’s “fundamental principle of operation” is using a STB to monitor signal quality for subscribers. Ex. 1009, [0001], [0006]. Waiting for idle is a *limitation* imposed by the fact that it wished to avoid disturbing users, and only has one IB tuner and thus can only receive one channel at a time. Pet. 36. PO does not dispute that errors can occur at any time of day, or that a POSITA would have wanted to quickly detect errors rather than wait for an idle period. POR 30-31; Pet.

36-37. The Konstantinos receiver improves Kamieniecki's ability to monitor, and addresses the "evolving market" that Konstantinos describes.

PO argues that Kamieniecki's IB and OOB tuners already had the ability to simultaneously tune multiple channels, so its "deliberate choice" to wait for idle means it would not want the ability of the Konstantinos receiver. POR 30-31. This is misleading – even PO's expert agrees Kamieniecki's STB has only one IB tuner and one OOB tuner, each able to tune only one of its respective type of channel at a time. Ex. 2013, ¶ 84. Television channels for viewing are carried on IB channels, while data is carried on OOB channels, so the waiting for the IB tuner to be idle is a necessary evil for monitoring television channels – not some unstated aversion to simultaneous tuning. Ex. 1009, [0004], [0013]; Pet. 36; Ex. 2013, ¶ 57.

PO falsely alleges that Mr. Lett asserted that a POSITA would "modify the number of channel selectors in Konstantinos's multi-channel receiver to provide a *dedicated* signal monitoring pathway," and that this would mean either removing a Konstantinos decoder (N-1) or adding an extra one (N+1) because Konstantinos allegedly has a "1:1 ratio" between N channel selectors and decoders. POR 32-33 (emphasis added). Nothing in the claims or Petition requires a dedicated monitoring pathway. PO relies on deposition testimony in which Mr. Lett merely said it was possible. Ex. 2014, 139:14-19. Shortly thereafter, Mr. Lett acknowledges he did not say a channel selector would be dedicated. Ex. 2014, 140:14-18. PO is also

wrong about the 1:1 ratio – Konstantinos does not limit the value of N, and does not require that every selected channel is decoded. See, e.g., Ex. 1010, [0043] (selected channel “may” be further processed by a decoder). A POSITA would understand that any number of N channel selectors may be implemented, and that it would be obvious to have enough so viewing and monitoring can both occur. Pet. 33-37; Ex. 1002, ¶¶154-160; Ex. 1032, ¶7.

PO then argues that the combination would render Kamieniecki “inoperable,” based on an incorrect assumption that the modification would lose all functionality of the OOB channel due to “removal of the OOB tuner.” POR 33-35. The combination does not lose this OOB functionality – it simply uses the Konstantinos receiver to receive the OOB data previously received by Kamieniecki’s OOB tuner. Pet. 28-30.

PO suggests, without explanation, that it would be a “redesign” to use a Konstantinos receiver to receive an OOB channel. POR 34. Konstantinos addresses reception of *both* TV and data channels, and broadly says its channel selectors can select “any combination of the available channels” in the 50-1000MHz range. Ex. 1010, [0001], [0011] (describes conventional approach in which “separate receivers are required to receive both TV and DOCSIS (data) channels ...”), [0043], [0104]-[0105].

B. KAMIENIECKI AND KONSTANTINOS RENDER THE CLAIMS OBVIOUS

1. THE COMBINATION SHOWS “ANALYZING SAID SELECTED FIRST PORTION OF SAID DIGITIZED SIGNAL”

PO rehashes its argument that despite Kamieniecki’s discussion of digital cable systems, and its clear statements that a basic STB can receive analog or digital transmissions, and can receive digital video, Kamieniecki’s STB is nevertheless unable to monitor digital signals, and can only monitor analog ones. POR 36-37; Ex. 1009, [0002], [0004]. PO’s argument fails for multiple reasons.

PO’s argument relies on an incomplete characterization of digital transmissions. PO argues that the “digital transmissions” in Kamieniecki are actually analog, citing passages from Mr. Lett’s deposition, and PO’s expert (Mr. Russ) says that there’s no such thing as a digital carrier signal. POR 36-38; Ex. 2013, ¶ 127. But while the received *carrier* signals are analog, they carry digital information that is recovered by the STB – it does not stay analog forever. Kamieniecki states that even a basic STB receives digital information, such as MPEG-2 transport streams. Ex. 1009, [0004]. Even the Explorer 4200, which PO’s expert characterized as a “basic” STB and was released in 2002 (years before the 2011 priority date of the ’826 patent), had Internet connectivity and a DOCSIS modem. Ex. 2013, ¶ 77 (Explorer 4200 is basic); Ex. 1033, 51:7-12, 53:5-12, 54:6-56:5; Ex. 1032, ¶ 6.

PO limits Kamieniecki's monitoring to analog by arguing Kamieniecki's STB lacks an ADC to convert analog carrier signals to digital, and that "[t]he IB and OOB tuners do not convert the selected portion of the analog carrier signal to the digital domain." POR 36-37. But PO's expert does not say that Kamieniecki's STB lacks an ADC — he instead admits that ADCs are a "typical component in a cable set-top box," and testified that "[t]here would have to be analog to digital conversion in there somewhere" if a STB is to output an MPEG stream for viewing. Ex. 2013, ¶ 62; Ex. 1033, 32:12-34:21. Kamieniecki specifically refers to MPEG. Ex. 1009, [0004]. A POSITA would understand that Kamieniecki's STB includes an ADC. Ex. 1032, ¶ 18. PO's expert states that the IB/OOB tuners output an analog signal for "further processing," but he does not explain what happens next. Ex. 2013, ¶ 128. A POSITA would understand that this "further processing" would include the ADC, and would not have limited Kamieniecki's monitoring to only analog signals. Ex. 1032, ¶ 18.

Furthermore, PO errs by attacking Kamieniecki alone, instead of the combination. *Bradium Techs., LLC v. Iancu*, 923 F.3d 1032, 1050 (Fed. Cir. 2019) (obviousness combinations "cannot be overcome 'by attacking references individually.'"). Konstantinos discloses an "information extraction processor" that analyzes the signal "captured by the ADC" (i.e., the digitized signal) to make

measurements such as bit-error-rate. Ex. 1010, [0109]. A POSITA would have found it obvious to include such measurements in Kamieniecki's monitor. Pet. 49.

2. “PROCESSING ... TO RECOVER INFORMATION”

PO alleges that the combination fails to show “processing said selected second portion of said digitized signal to recover information carried in said plurality of channels,” but PO does not actually allege that the references do not recover information from the portions of the digitized signals. POR 39-42. For example, the Konstantinos multi-channel receiver would be useless if it could not recover information from its selected channels, and the Kamieniecki STB would similarly be useless if it could not recover the TV channels that a user wants to watch. PO even admits that Konstantinos discloses multiple embodiments of decoders for recovering content. POR 41.

PO instead resorts to demanding structural details of a physical combination even though that is not required to show obviousness. *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012) (“It is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements.”). PO first argues that the Petition failed to explain “how” the Konstantinos receiver is connected in the Kamieniecki STB, raising the various arguments regarding expectation of success in Section V.A.2 of the POR and debunked in the Section II.A.1 above.

PO then asserts that the Petition failed “to identify what reference it is relying on for disclosing the location of the decoders.” POR 40. But the Petition identified several examples from Konstantinos - the channel and source decoders, and the “information extraction digital signal processor (IEP).” Pet. 37-38.

PO then asserts that “Mr. Lett did not know what reference in his combination taught the decoders or their location.” POR 40. As explained above, Mr. Lett’s testimony was that either of the references showed this feature, and his declaration explained that both references discussed receiving MPEG TV streams, which requires a decoder to recover the audio and video. Ex. 2014, 158:21-161:10; Ex. 1002, ¶¶ 163-166.

PO criticizes Kamieniecki for not expressly disclosing its decoder, despite the fact that Kamieniecki acknowledges it omits well-known STB details, and the fact that PO’s expert admits that the decoder is a “typical” component in a cable STB. POR 40; Ex. 1009, [0014]; Ex. 2013, ¶ 74. The Petition explained that TV channels need to be processed so their content can be recovered, and that it would be necessary for the Kamieniecki STB to have such a decoder since it is required for processing the MPEG-2 stream that Kamieniecki discloses as PO’s expert admits. Pet. 37; Ex. 1033, 33:2-7.

The decoder was simply a well-known detail omitted from the Kamieniecki figure, and PO’s argument that it is not obvious *where* the decoder would be located

is merely demanding that well-known detail. Nothing in the claim requires that level of detail, as the claim merely recites that the various steps are performed by “one or more circuits of a receiver.” Ex. 1001, cl 1[B]. Furthermore, an obviousness inquiry does not require actual physical substitution of elements, so PO’s demand for a diagram is irrelevant. *In re Mouttet*, 686 F.3d at 1332; *see also Facebook, Inc. v. Windy City Innovations, LLC*, 973 F.3d at 1343 (Fed. Cir. 2020) (“[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.”) (internal citations omitted).

PO also admits that Konstantinos shows both single-channel and multi-channel decoders, but complains that the Petition did not explain which of those would be implemented in Kamieniecki’s STB. POR 41. The reference teaches both. Obviousness does not require a physical substitution, and even if it did, PO’s own admission establishes that the reference provides multiple embodiments that each render obvious what is claimed.

PO further asserts that the Petition provided no motivation for why a POSITA would incorporate Konstantinos’s decoders into Kamieniecki’s STB, and that doing so would be superfluous because the Kamieniecki’s STB already has decoders. POR 41. Konstantinos rebuts PO’s assertion. As explained in the Petition, Konstantinos expressly teaches that the evolving market was demanding the capability of multi-

channel tuning, and that the single-channel tuner approach used in existing television receivers becomes impractical in the face of this evolving market. Pet. 27-30. That both references use a decoder does not detract from this.

C. DEPENDENT CLAIMS 6 AND 15 ARE ALSO OBVIOUS

PO addresses claims 6 and 15 by simply referring to the Board's Institution Decision. POR 42. However, Petitioner respectfully submits that these claim features are shown by the references.

First, in claims 6 and 15, which both depend from claim 1, the "characteristic" is not what is transmitted to the headend. The "network management messages" are transmitted to the headend, and those messages need only be "different than," (albeit their transmission is controlled "based on") the measured "characteristic." Ex. 1001, cl. 6, 15. There is no requirement in the claims that the measured characteristic itself be transmitted to the headend (although there is no prohibition against the measured characteristic being sent along with the "network management message").¹ Claims 6 and 15 recite that this measured "characteristic" is "signal

¹ Although not addressed in the POR, Petitioner respectfully suggests that the ID's analysis of claims 3 and 12, 5 and 14, 7 and 16, and 8 and 17 mistakenly assumes that the claims require the measured characteristic/parameter be transmitted to the headend. ID, 33-36, 40.

power vs. frequency.” As explained in the Petition, Kamieniecki describes tuning to each of its monitored channels (i.e., frequencies) and measuring the respective signal level (i.e., signal power). Ex. 1009, [0015], [0022], Fig. 2; Pet. 46-47. Thus, Kamieniecki is measuring signal power v. frequency when it measures signal power for each frequency. The “channel presence/absence” that Kamieniecki reports to the headend is based on this measured characteristic (e.g., channel is absent if its signal power is too low), while also being different from that characteristic. Pet. 47.

D. RENKEN AT LEAST RENDERS OBVIOUS THE “NETWORK MANAGEMENT MESSAGES”²

PO’s sole argument against Renken is that it purportedly does not teach “network management messages” and that modifying it to do so would be contrary to the central management purpose of Renken. POR 44-49. PO is incorrect.

1. RENKEN EXPRESSLY DISCLOSES THE MCCM DETECTING PROBLEMS, NOT MERELY TAKING MEASUREMENTS

Contrary to PO’s arguments, Renken’s MCCM does more than merely report measurement results. POR 46. The Renken Provisional expressly discloses that the

² POR seems to include a typographical error as the heading refers to “concurrently output” instead of “network management messages”.

MCCM can evaluate measurement results on its own to determine if a problem exists at its location or elsewhere in the network.

The Renken Provisional (incorporated by reference into the Renken Patent) states that the “MCCM could detect that given the measurement results at its location, that a neighbor on the network without an MCCM might have a problem that needs to be investigated.” Ex. 1012, p. 15. This statement expressly shows that the MCCM itself may detect a problem based on its measurement results. If the MCCM detects such a problem, it would be obvious to notify the headend about it, since Renken desires that the problem “be addressed before the customer complains about it.” Ex. 1012, p. 15; Pet. 66. The Renken Provisional also states that the “MCCM could detect that there is a problem with a non-DOCSIS channel within the customer premise,” again showing that the MCCM is evaluating the measurement results, not merely transmitting them to the CMC for evaluation. *Id.* A message saying “my neighbor might have a problem” would qualify as a “network management message,” as it would be different from the measurement and would be sent based on the measurement. Even if the message merely says “the signal power on channel X is too low,” that too would be different from the actual signal power level, and would be sent based on that power level (although the claim does not prohibit the power level from also being sent). Ex. 1012, p. 15. Neither PO nor its expert address these teachings from the Renken Provisional, even though they

were cited and discussed in the Petition and Petitioner’s expert declaration. Pet. 66, Ex. 1002, ¶ 279. These teachings from the Renken Provisional at least render obvious the “network management message.”

Furthermore, Renken discloses that the MCCM is provided with an “error threshold” as part of its measurement plan. Ex. 1011, 22:60-23:4; Pet. 66. This is consistent with the Renken Provisional’s disclosure of the MCCM detecting problems based on its measurements. PO argues that the “error threshold” would not be used to determine that an error has occurred, and instead would merely be used to “trigger” the MCCM to report a measured characteristic. POR 47. But Renken refers to it as an “error” threshold, not a “reporting” threshold, and as explained above, the Renken Provisional teaches that the MCCM can detect problems (i.e., errors) on its own without relying on the CMC. Because the Renken MCCM has the ability to detect problems/errors, it would be obvious to a POSITA for the MCCM to use the error threshold to determine when an error has occurred, and send a corresponding alert. Pet. 66; Ex. 1002, ¶ 277.

2. RENKEN IS NOT LIMITED TO CENTRALIZED GENERATION OF ERROR REPORTS AND ALARMS

Renken discloses error reports and alarms sent by the CMC, but it is not contrary to Renken’s disclosure for at least some error reports and alarms to be sent by the MCCM. PO argues that it would be contrary to the roles of the CMC and

MCCM if the MCCM were to send an alarm, as the CMC collects measurements from various MCCMs. POR 46-47. Petitioner has not suggested that all alarms and error reports would come from the MCCM instead of CMC, and Petitioner has not suggested that the MCCM would only send error reports and alarms. Petitioner merely asserts that in view of the teachings in Renken, a POSITA would have considered it obvious that the MCCM would send an error report, alarm, or some other message that indicates that an error threshold has been crossed. Pet. 65-66. As discussed above, the Renken MCCM has the ability to detect errors at its location, and can determine if a neighbor is likely to have an error. A POSITA would understand that in case of such an error, there is a need to notify the headend promptly. Pet. 66.

PO further argues that if the MCCM sent error reports and alarms, the CMC would not be able to do so because it could not compare measurements across all monitored MCCMs. But nothing in Renken (or the '826 claims) prohibits sending measurement results *along with* the error reports (i.e., network management messages) from the MCCM (e.g., “my neighbor might have a problem, and here’s why”). The CMC is still able to collect and compare measurements between MCCMs.

PO finally argues that the Petition only showed that it was possible for the MCCM to send an error report or alarm. POR 48-49. But the Petition explained

that in the case of an error, there would be a need to send the alarm promptly for it to be effective. Pet. 66. If signal power is below an error threshold, then a POSITA would consider it obvious to raise the alarm promptly so the problem can be resolved quickly. *Id.* If the MCCM merely reported its signal level, waiting for the CMC at the headend to analyze the measurement and realize there is a problem, that would simply delay resolution of the error. And if the headend would like to know the actual measurement, this is not prevented by the MCCM also sending an alarm, or including some information with the measurement to indicate that this is not just an ordinary measurement report, but is rather indicative of a problem. Any additional information in that regard (e.g., marking a measurement urgent) would qualify as a “network management message,” as it would be “different than” the measurement and also sent “based on” that measurement.

III. CONCLUSION

Claims 1-18 should be canceled.

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CERTIFICATION UNDER 37 CFR § 42.24(d)

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petitioner's Reply to Patent Owner's Response Under 37 C.F.R. §42.23 totals 4,996 words, which is less than the 5,600 allowed under 37 CFR § 42.24(c)(1). This total was counted by the Word Count feature of Microsoft Word.

Pursuant to 37 C.F.R. § 42.24(c), this count does not include the table of contents, the table of authorities, listing of facts that are admitted, denied, or cannot be admitted or denied, the certificate of service, this certification of word count, the claims listing appendix, or appendix of exhibits.

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §42.6(e)(4), the undersigned hereby certifies that the foregoing PETITIONER’S REPLY TO PATENT OWNER’S RESPONSE UNDER 37 C.F.R. §42.23 was served electronically via e-mail on the following counsel of record for Patent Owner:

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CLAIM LISTING APPENDIX

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

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

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

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