

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 IPR2024-00441
Patent 8,792,008

**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. 8,792,008 (“the ’008 patent”)
Ex. 1002:	Expert Declaration of David B. Lett
Ex. 1003:	Curriculum Vitae of David B. Lett
Ex. 1004:	Certified Prosecution History of the ’008 patent
Ex. 1005:	Certified Copy of U.S. Provisional Application No. 61/532,098 (“’008 Provisional”)
Ex. 1006-1008:	Reserved
Ex. 1009:	U.S. Pub. No. 2005/0114879 (“Kamieniecki”)
Ex. 1010:	U.S. Pub. No. 2010/0120386 (“Konstantinos”)
Ex. 1011:	U.S. Patent No. 8,649,421 (“Renken”)
Ex. 1012:	U.S. Provisional Application No. 61/444,611 (“Renken Provisional”)
Ex. 1013-1014:	Reserved
Ex. 1015:	U.S. Pub. No. 2004/0181813 (“Ota”)
Ex. 1016:	U.S. Pub. No. 2010/0303181 (“Yu”)
Ex. 1017:	U.S. Pub. No. 2008/0313691 (“Cholas”)
Ex. 1018-1019:	Reserved
Ex. 1020:	Claim Construction Memorandum Opinion and Order dated June 26, 2023, <i>Entropic Comms., LLC v. Charter Comms., Inc.</i> , 2:22-CV-00125-JRG (E.D. Tex.)
Ex. 1021-1023:	Reserved
Ex. 1024:	U.S. Pub. No. 2008/0089402 (“Massey”)
Ex. 1025:	Reserved

- Ex. 1026: Excerpts of W. Ciciora, J. Farmer, D. Large, and M. Adams, “Modern Cable Television Technology Video, Voice, and Data Communications” (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

Patent Owner's Response (POR) argues references individually, argues unclaimed features, disregards teachings of the references, and misapplies *Dynamic Drinkware, LLC v. National Graphics, Inc.*, 800 F.3d 1375 (Fed. Cir. 2015). Comcast Cable Communications, LLC ("Petitioner") submits that the POR fails to refute that the claims of U.S. Patent No. 8,792,008 ("the '008 patent") (Ex. 1001) were obvious to a person of ordinary skill in the art (POSITA).

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 motivation offered in Konstantinos, raising technical concerns that Konstantinos already addressed, and demanding the prior art show technical details not found in the '008 patent.

1. A REASONABLE EXPECTATION OF SUCCESS EXISTS

PO admits Kamieniecki's STB is a "single-channel" STB that has separate in-band (IB) and out-of-band (OOB) tuners. POR 14-15, 29. PO does not dispute that Konstantinos, filed five years after Kamieniecki, stated that the evolving market demanded multi-channel tuning; that multi-channel tuning using multiple single-channel tuners in parallel was impractical; and that Konstantinos' digital multi-channel receiver should be used instead. POR 19-25; Pet. 32-35.

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 19-26. PO argues the combination would have required individuals with advanced degrees, raising technical issues that would be too complex for a mere POSITA (POR 20), but in doing so PO relies on an expert, Dr. Samuel Russ, whose STB experience ended several years before the priority date of the '008 patent. Ex. 1033, 30:14-31:9. PO also ignores that these 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 20-21. 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, ¶¶ 10-11.

Furthermore, Konstantinos addresses PO’s technical issues using the same approach as the ’008 patent. Konstantinos discloses several types of “time-interleaved” ADCs. Ex. 1010, [0022]-[0023], [0056]-[0061]; Ex. 1032, ¶¶ 10-11. The ’008 patent does similarly, via incorporation by reference of a time-interleaved ADC from an earlier application. Ex. 1001, 5:48-57. A POSITA would not have been deterred by PO’s technical issues. Ex. 1032, ¶¶ 10-11.

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 23-24. 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 22. 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, ¶ 79; Ex. 1010, [0046], [0106]; Pet. 42-43.

PO alleges that he was unable to identify which reference he was relying on for the decoders showing the claimed “data processor.” POR 22. Actually, he 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, ¶ 135; Pet. 40.

PO argues that Mr. Lett was unable to explain how the decoders would have been arranged. POR 23-24. 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, ¶ 135. 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 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, ¶ 135; Pet. 40. 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 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, 103 USPQ2d 1219, 1226 (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 25. 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 27. 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 “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. 33-34. 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. 43-45. Upgrading Kamieniecki’s STB with Konstantinos’ multi-channel receiver allows it to monitor at any time (instead of waiting for idle), and in parallel without disturbing users, all of which would have been desirable to a POSITA since errors can occur at any time. *Id.* Konstantinos supports unrestricted multi-channel functionality, stating that its channel selectors

allow selection of “any combination of the available channels of the original composite signal.” Ex. 1010, [0105]; Pet. 37, 42-43.

PO asserts that Konstantinos’ modification would be too expensive and complex. POR, 28. 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 reserved for “advanced” STBs, and that Kamieniecki’s STB was merely a “basic” STB. POR 28-30. 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 28-30; Pet. 33-35, 43-45; Ex. 1010, [0001], [0016]. PO also does not compare the cost of the proposed modification with the cost of any alternative to address the market demand for multi-channel functionality recognized in Konstantinos. POR 28-30. PO essentially argues it would be cheaper to ignore that market demand.

Second, costs are just a part of meeting customer demands. 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 29. 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 ’008 patent was filed. Ex. 2013, ¶¶ 108, 70. PO’s expert 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 knew that even if some customers were happy with a “basic” STB, others would have wanted the “advanced” STB. Ex. 1032, ¶¶ 5-6.

Third, PO ignores the fact that Konstantinos 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. 42.

Continuing PO’s car analogy (POR, 30), 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 desirable.

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, 30-31. 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. 43. 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 31-32; Pet. 43-45. 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 could simultaneously tune multiple channels, so its "deliberate choice" to wait for idle means it would not want Konstantinos' multichannel receiver. POR 32-33. 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, so waiting for the IB tuner to be idle was a necessary evil for monitoring television channels – not some unstated aversion to simultaneous tuning. Ex. 1009, [0004], [0013]; Pet. 43; Ex. 2013, ¶ 57.

PO falsely alleges that Mr. Lett asserted that a POSITA would "modify the number of channel selectors in Konstantinos' multi-channel receiver to provide a *dedicated* signal monitoring pathway," meaning the combination would either remove a Konstantinos decoder (N-1) for monitoring or add one (N+1) because Konstantinos allegedly has a "1:1 ratio" between N channel selectors and decoders. POR 33-34 (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 for viewing and monitoring. Pet. 41-44; Ex. 1002, ¶¶143-146; Ex. 1032, ¶7.

PO 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 34-36. The combination does not lose OOB functionality – it simply uses the Konstantinos receiver to receive the OOB data previously received by Kamieniecki’s OOB tuner. Pet. 34-36.

PO suggests, without explanation, that it would be a “redesign” to use a Konstantinos receiver to process an OOB channel. POR 36. Konstantinos addresses *both* TV and data channels, and that 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], [0104-105].

B. KAMIENIECKI AND KONSTANTINOS RENDER THE CLAIMS OBVIOUS

1. THE COMBINATION SHOWS “ANALYZE 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 37-38; 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 38-40; 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]. The Explorer 4200, which PO’s expert characterized as a “basic” STB that was released in 2002 (years before the 2011 priority date of the ’008 patent), had Internet connectivity and a DOCSIS modem. Ex. 2013, ¶ 77 (Explorer 4200 is basic); Ex. 1033, 51:7-11 (released in

2002), 53:5-12 (internet), 54:6-56:5 (DOCSIS tuner/modem capabilities); Ex. 1032, ¶6.

PO limits Kamieniecki's monitoring to analog by arguing Kamieniecki's STB lacks an analog-to-digital converter (ADC), and that "[t]he IB and OOB tuners do not convert the selected portion of the analog carrier signal to the digital domain." POR 38-39. 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, ¶ 25.

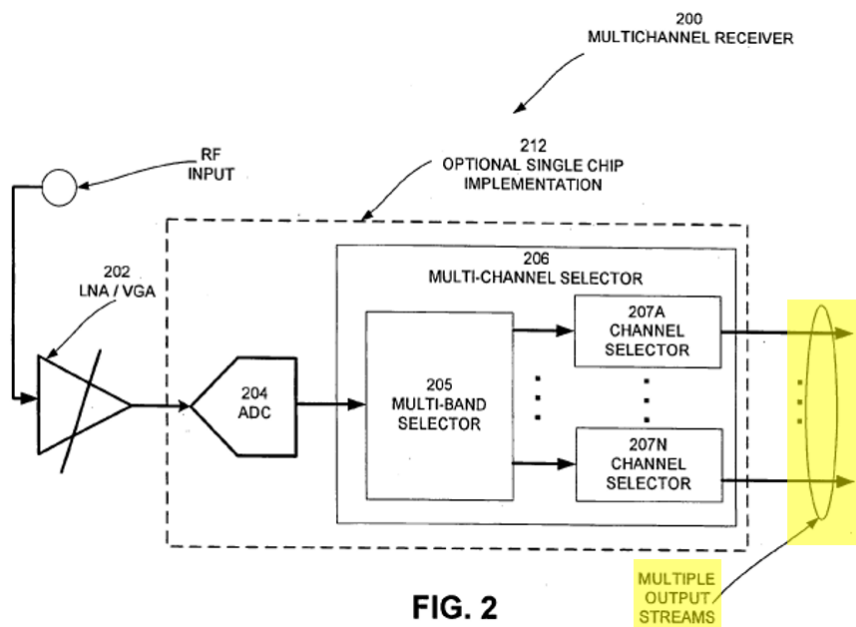
Furthermore, PO attacks Kamieniecki alone, instead of the combination. *Bradium Tech., LLC v. Iancu*, 923 F.3d 1032, 1050 (Fed. Cir. 2019) (obviousness combinations "cannot be overcome by 'attacking references individually.'"). Konstantinos discloses an "information extraction processor" that analyzes 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. 48-49.

2. THE COMBINATION SHOWS “CONCURRENTLY OUTPUT”

PO argues that Kamieniecki fails to show concurrent output of portions of a digitized signal (this is shown in Konstantinos), and argues that Konstantinos fails to show signal monitoring (this is shown in Kamieniecki). POR 41-43. PO again errs by attacking the references individually, instead of considering the combination. *See Bradium Tech, LLC*, 923 F.3d 1032, *supra*.

The Konstantinos multichannel receiver concurrently outputs “multiple output streams” - as many simultaneous channels as there are channel selectors 207A-N:



Pet. 41-44. These outputs can go anywhere they are desired, and when used with Kamieniecki, one can be monitored while another can be watched by a viewer – allowing the monitoring of all channels without disturbing users (both goals of Kamieniecki). *Id.*

PO argues that Kamieniecki waits for idle to avoid disturbing users, but ignores the fact that the combination also does not disturb users. Pet. 33-35, 41-44. PO ignores the advantages of the combination – it allows monitoring at any time since errors could occur at any time, it meets the evolving market demand for multi-channel tuning, it allows for faster channel switching, and its single chip solution reduces cost and complexity. *Id.*

PO's second argument rehashes its motivation arguments, addressed above. Contrary to PO's arguments, a POSITA would have found the “concurrently output” limitation obvious in view of the combination.

C. DEPENDENT CLAIMS 9 AND 17 ARE ALSO OBVIOUS

These claims recite that “said one or more circuits reside in a customer premises gateway,” and the Petition showed this in two ways. First, Kamieniecki shows a STB, and the claimed “customer premises gateway” is broad enough (and PO does not dispute this) to encompass a STB, since the '008 patent uses the term to refer to a STB. Ex. 1001, 5:37; Pet. 52; POR 45-47. Second, Cholas used the

term “premises gateway” to refer to a device combining a STB with a cable modem, so it would have been obvious that the STB of Kamieniecki-Konstantinos would be similarly combined into such a gateway. Pet. 52-53.

PO’s argument about the second approach also fails because Kamieniecki’s STB includes a cable modem. POR 47; Ex. 1009, [0002], [0014], [0027]. Cholas uses “premises gateway” to refer to a STB having cable modem functionality. Pet. 52-53; Ex. 1017 (entitled “Premises Gateway Apparatus ...”). No further physical combination is even necessary – Cholas shows that Kamieniecki’s STB, with cable modem, would be known as a “premises gateway.”

PO’s argument fixates on how the STB would be physically combined with a cable modem, asking questions about where the “monitor” would be and how the components would be placed. POR 45-46. The details of how an STB and cable modem can be integrated into a “premises gateway” are described in Cholas, and the Petition explains this consolidation. Pet. 52-53. Further, the test for obviousness is not whether the prior art is physically combinable but whether the teachings as a whole render the claims obvious. *Uber Tech., Inc. v. X One, Inc.*, 957 F.3d 1334, 1341 (Fed. Cir. 2020) (internal citations omitted).

D. RENKEN

1. RENKEN IS PRIOR ART

In trying to disqualify Renken, PO misapplies the *Dynamic Drinkware* analysis by failing to compare the claims of the *reference patent* (the Renken patent) with the disclosure of Renken’s provisional application. POR 49-52. *Dynamic Drinkware* requires that in order for a reference patent to qualify, under Pre-AIA 35 U.S.C. §102(e), as prior art as of the date of its provisional, there must be at least one claim *in the reference patent* that is supported by *its* provisional. *Dynamic Drinkware, LLC*, 800 F.3d at 1381-1382. The Petition demonstrated that claims 1 and 10 of the reference patent – the Renken patent – are supported by its provisional. Pet. 20-23. PO identifies this as a “first condition” under *Dynamic Drinkware*, and offers nothing to refute Petitioner’s showing. POR 49-52. Thus, Renken is 102(e) prior art with regard to everything disclosed in its provisional¹.

PO instead argues that the Renken provisional fails to disclose something claimed in the ’008 patent: sending results to a “source of the received signal” (shown by the CMC being located at the headend). POR 50-51. But setting aside the fact that the Renken provisional teaches sending the results to the headend (Pet.

¹ Renken’s provisional is incorporated by reference into Renken. Ex. 1011, 1:7-10.

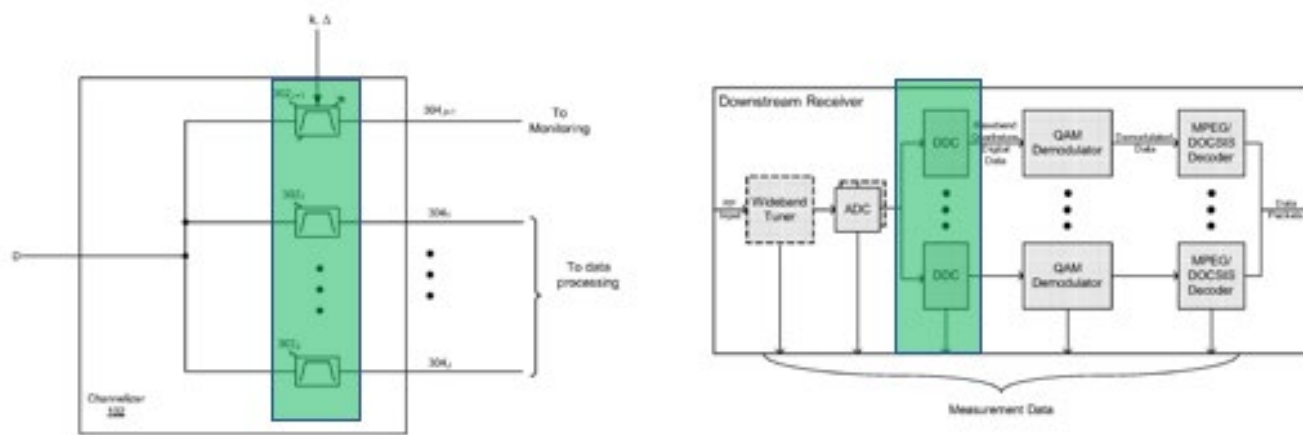
64), PO's analysis is irrelevant to determining whether Renken *qualifies* as prior art, since no claim of the Renken patent requires this feature.

Instead, this argument relates to what PO characterizes as a “second condition” from *Dynamic Drinkware* – whether the provisional provides “sufficient support for the *subject matter relied upon for prior art purposes* in the reference patent or published patent application.” POR 49-50 (emphasis added). This second condition focuses on whether the reference discloses features in the challenged claims. In *Dynamic Drinkware*, the invalidity ground was anticipation, which required that all elements of the challenged claim had to be disclosed, explicitly or inherently, by the reference patent and its provisional. 800 F.3d at 1377. But the issue here is obviousness, not anticipation. Even if the Renken provisional is found to not expressly or inherently disclose that the CMC is located at the headend, it is still prior art under *Dynamic Drinkware*, and still at least renders this limitation obvious. Pet. 64.

2. RENKEN RENDERS OBVIOUS THE “CONCURRENTLY OUTPUT” CLAIM LIMITATION

PO relies on unclaimed structural limitations, arguing that “[t]he process of a controller directing a receiver to create data for analysis is unlike the claimed invention, which passes a portion of the digitized signal itself to the signal monitor where it is then analyzed.” POR 59. Nothing in the claim prevents the “signal monitor” from having a controller using other circuits to gather various types of

measurement data. Similarly, PO argues that the Petition did not identify a “single component” that performs the channelizer function of concurrently outputting the “first portion” and the “second portion.” POR 60. The claim recites no “single component” limitation on the “channelizer,” and the ’008 patent shows channelizer 102 having multiple parallel components, just like Renken. Ex. 1001, 5:66-6:17.



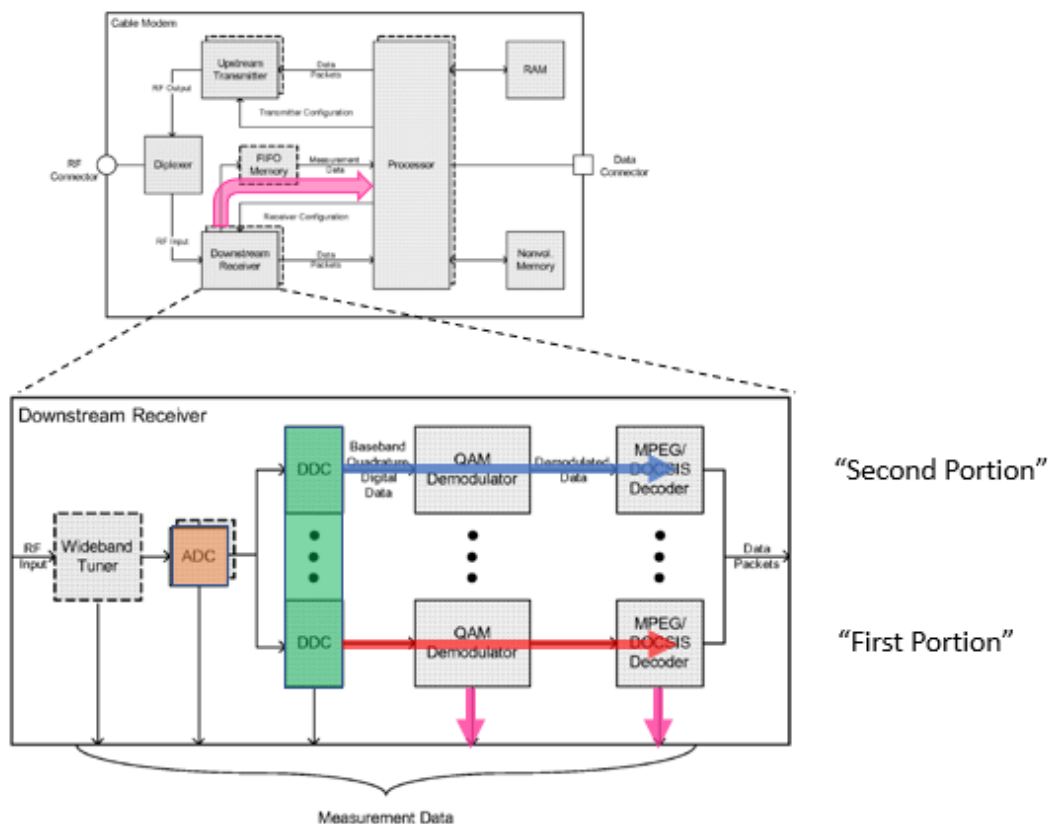
Ex. 1001, Fig. 3 (left, annotated) and Ex. 1012, Fig. 2 (right, annotated)

PO isolates a snippet from the Petition to limit the claimed “signal monitor” to only Renken’s MCCM processor, and argues about whether the processor alone can meet requirements of the claims, such as whether it has a pathway for receiving a digitized channel. POR 53-54. But the Petition explained that the monitoring is done not just by the MCCM processor alone – it is in conjunction with other elements, such as the QAM Demodulator and the MPEG Decoder, which receive digitized channels, perform measurements, and report measurement data to the MCCM processor. Ex. 1012, pp. 7-8; Pet. 63. The ’008 patent claims do not limit

the “signal monitor” to a single component, and do not prohibit it from having sub-components.

PO references the Institution Decision, which stated that “we are not persuaded that Renken discloses concurrently outputting a first portion of the channels to a signal monitor (i.e., processor 50) and a second portion of the channels to a data processor (i.e., decoder 24).” POR 54; ID 36-37. The ID found PO’s red line persuasive, but that red line misleadingly assumes the MCCM processor 50, and only that processor 50, is the alleged “signal monitor.” As discussed above, signal monitoring is done by the processor and other components such as the QAM Demodulator and MPEG Decoder.

The claim recites a “channelizer” that “concurrently outputs” a first portion of said digital signal to said signal monitor and said second portion of said digitized signal to said data processor. As shown below, the Renken Digital Down Converters (DDC) (**green**) receive the digitized signal from the ADC (**orange**) and concurrently output one channel for viewing (**blue line**) and another channel for monitoring (**red line**):



Ex. 1012, Figs. 1-2 (annotated)

Pet. 61-62 (ADC); 63 (signal monitor); 66-67 (channelizer); see also Pet. 19-20. Renken’s processor executes a measurement program and receives measurement data (pink) from various components of the MCCM. Pet. 63. PO does not dispute that the Renken DDC outputs a selected channel to the QAM Demodulator and MPEG/DOCSIS Decoder, and admits that these elements generate data for analysis by the processor. POR 59. PO’s expert agrees that the DDCs output their respective channels at the same time. Ex. 1033, 65:3-23.

PO alleges confusion over the Petition’s use of the terms “channels,” “signals,” and “data,” in describing the “first portion,” listing three possibilities in

summary. POR 55-56. These terms are simply the ones used by Renken to describe the output of its DDC – the DDC outputs “a particular downstream channel,” which it also describes as being a “signal” in one example, and also outputs measurement data. Ex. 1011, 12:22-52. Just as recited in the ’008 patent claim 1, Renken’s ADC digitizes the entire downstream frequency range of the tuner; multiple DDCs in parallel select various desired channels from the ADC’s digitized output; and those selected channels are output to corresponding QAM Demodulators and MPEG Decoders – one such output may be used for viewing a selected channel, while another output may be used for monitoring a selected channel. Pet. 61-67. The MCCM processor, together with the QAM Demodulator and MPEG/DOCSIS Decoder, performs the measurement process, and it is undisputed that channels are output to the QAM Demodulator and MPEG/DOCSIS Decoder. Pet. 63-64, 67.

PO argues that any single Renken receiver² cannot process and measure a signal *at the same time*. POR 60. This is not required in claim 1. However, Renken shows parallel sets of DDC/QAM Demodulator/MPEG/DOCSIS Decoders that

² Renken uses the term “receiver” in multiple ways. Figure 3 shows a “receiver circuit” 20, which itself includes multiple parallel “receivers” 21 each comprising a DDC 22, QAM Demodulator 23, and MPEG/DOCSIS Decoder 24. Ex. 1011, 5:40-41, 10:56-67. PO’s statement appears to confuse the two.

clearly operate at the same time, and any number of these can be implemented. Ex. 1011, Fig. 3. PO assumes that if a receiver 21 needed to be idle in order to monitor a channel, then that channel could not also have been viewed, but this inexplicably assumes that two of the Renken receivers 21 couldn't have selected the same channel from the ADC's output, one for monitoring and one for viewing. POR 60.

E. PATENT OWNER'S WEAK SECONDARY CONSIDERATIONS

PO argues that MaxLinear invented using "Full-Spectrum Capture" (also known as "Full Band Capture" to the rest of the industry) for remote monitoring, and thus all industry praise for such remote monitoring shows non-obviousness of the '008 patent. POR 62-65. In fact, PO's secondary considerations evidence shows that remote monitoring and Full Band Capture were already known to the industry, and that it was other developments, not the claimed invention of the '008 patent, that resulted in the expansion and subsequent praise of remote monitoring. *See, e.g., Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019) (patentee bears the burden of showing that a nexus exists between the claims and the commercially successful product.); *Ethicon Endo-Surgery, Inc. v. Covidien LP*, 812 F.3d 1023, 1034 (Fed. Cir. 2016) (commercial success due to a feature known in the prior art is not pertinent).

As explained in Ex. 2009, "[t]he concept of gaining plant health insight by remotely interrogating the CPE [i.e., STB] and the CMTS is not new; the earliest

polling examples even pre-date DOCSIS implementations.” Ex. 2009, p. 3. The exhibit further describes that remote monitoring has been “evolving over the past decade or two” and lists several factors that led to increased interest in remote monitoring. None are attributed to MaxLinear or the ’008 patent’s invention. *Id.*, p. 4. Most significantly, Ex. 2009 explains that the industry was exploring upstream pre-equalization technology for remote monitoring in 2008 and 2009, and that at about the same time, the “disruptive technology” of Full-Band Capture “resonated instantly across the industry which had been seeking an affordable method of deploying remotely-accessible field probes.” *Id.*, pp. 4-5. It further describes that the CPE/STB “could now fulfill a significant portion of the remote field probe role very cost-effectively,” “be deployed with virtually no incremental cost impact beyond existing CPE deployment costs,” and “be done in a manner unobtrusive to subscribers service.” *Id.* This “instant resonance,” and stated advantages, actually suggests that the use of Full-Band Capture for remote monitoring was obvious.

Other papers submitted by PO tout the importance of Full-Band Capture for remote monitoring. Ex. 2015, p. 2 (“Technological advances in full band RF capture (FBC) create an opportune time for the development and presentation of intraday spectrum analytics. FBC is a breakthrough technology . . . ”); Ex. 2007, pp. 17-18 (“FBC enabled operators to have spectrum analysis capabilities wherever modern

DOCSIS 3.0 CMs have been deployed.”); Ex. 2020, p. 5 (“That in-home spectrum analyzer capability is known as full band capture (FBC)”).

Broadcom produced a white paper on Full-Band Capture months before the ’008 patent’s provisional was filed. Ex. 2006. This full-band digitization was disclosed by the ADC in Konstantinos’ receiver. Ex. 1010, [0043]. It is Full-Band Capture, not the ’008 patent’s invention, that was praised.

PO’s evidence does not praise MaxLinear (setting aside MaxLinear’s own self-serving press releases). Exhibit 2007 refers to others as the “industry leaders” who leveraged full band capture. Ex. 2007, p. 17 (“Industry leaders such as Broadcom leverage CPE spectrum capture or full band capture ...”). In a footnote, this document credits MaxLinear only with calling this feature by a different name from what the rest of the industry uses. Ex. 2007, p. 17, fn.1. Ex. 2009 lists a Broadcom author and does not mention MaxLinear or use MaxLinear’s name for the technology. Ex. 2015 also does not mention MaxLinear. Ex. 2020 lists nearly a dozen authors, including several from Broadcom, CableLabs, and Comcast, but none from MaxLinear and with no mention of MaxLinear.

PO attempts to tie the evidence to its purported invention (POR 65-67) by paraphrasing its claim while omitting limitations that were necessary for allowance. The nexus for secondary considerations requires, at a minimum, that the successful product embody the ‘unique characteristics’ of the claim. *Fox Factory, Inc.* F.3d at

1373-1374. (presumptive nexus exists if product is “coextensive” with claim, and otherwise nexus requires that the commercial success is “direct result of the unique characteristics of the claimed invention.”). Claim 1 (the only one substantively addressed) requires that the signal monitor “report said determined characteristic *to a source of said received signal*,” but PO’s discussion does not explain where the praised “Remote Spectrum Monitoring” included that feature. POR 65. This omission is significant because that language was added to secure allowance. Ex. 1004, pp. 63, 69, 80, 84. The destination of the report was the only “unique characteristic” in the claim, and PO fails to show any industry praise that was the direct result of that feature. Instead, PO focuses on industry praise for features that were already rejected by the examiner as being in the prior art.

PO’s evidence does not support the story it hopes to tell, and actually tells a different story – that the industry praise resulted from features that were prior art to the ’008 patent. PO’s purported secondary considerations cannot outweigh the fact that Konstantinos expressly teaches the multi-channel receiver improvement to a single-channel STB like Kamieniecki, and cannot outweigh the fact that Renken also discloses the claimed features.

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 5,520 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. 8,792,008

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

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

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

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