

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMCAST CABLE COMMUNICATIONS, LLC,
Petitioner,

v.

ENTROPIC COMMUNICATIONS, LLC,
Patent Owner.

IPR2024-00436
Patent 11,381,866 B2

Before LYNNE H. BROWNE, MICHELLE N. WORMMEESTER, and
FREDERICK C. LANEY, *Administrative Patent Judges*.

BROWNE, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. *Background*

Comcast Cable Communications, LLC (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting institution of an *inter partes* review of claims 1–82 of U.S. Patent No. 11,381,666 B2 (Ex. 1101, “the ’866 Patent”). The ’866 Patent is also the subject of two other petitions for *inter partes* review (IPR2024-00435 and IPR2024-00437) challenging the same claims as challenged in the instant petition and filed by Petitioner on the same day. Pet. vii.

Entropic Communications, LLC (“Patent Owner”) filed a Preliminary Response. Paper 10 (“Prelim. Resp.”). Patent Owner’s Preliminary Response does not address the merits of Petitioner’s challenges. Instead, Patent Owner contends that the Board should exercise its discretion to deny all three petitions challenging the ’866 patent. *See* Prelim. Resp. 4–30. Alternatively, Patent Owner contends that the Board should exercise its discretion to deny two of the three parallel petitions Petitioner has filed. *See id.* at 4, 30–48.

We have authority to determine whether to institute review under 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a). For the reasons provided below, we are persuaded, based on the record before us, to exercise our discretion to deny institution in this proceeding based on Petitioner’s parallel petition in IPR2024-00435.

B. *Real Parties in Interest*

Petitioner identifies “Comcast Corporation, Comcast Cable Communications, LLC, and Comcast Cable Communications Management, LLC, as the real parties-in-interest in this proceeding.” Pet. viii. Patent Owner identifies itself as the only real party in interest. Paper 4, 1.

C. *Related Matters*

The parties indicate that the '866 patent has been asserted in *Entropic Communications, LLC v. Comcast Corporation*, No. 2:23-cv-01050 (C.D. Cal. filed Feb. 10, 2023), *Entropic Communications, LLC v. Cox Communications, Inc.*, No. 2-23-cv-01049 (C.D. Cal. filed Feb. 10, 2023), and *Entropic Communications, LLC v. Charter Communications, Inc.*, No. 2:22-cv-00052-JRG (E.D. Tex. filed April 27, 2022). Pet viii–ix; Paper 4, 1. Patent Owner adds that U.S. Patent Nos. 8,223,775, 8,284,690, 8,792,008, 9,210,362, 9,825,826, 9,866,438, 10,135,682, 11,399,206, and 11,785,275 are also asserted by Patent Owner in these matters. Paper 4, 3. Patent Owner further indicates that the '866 patent is involved in *Comcast Corporation v. Entropic Communications, LLC*, IPR2024–00435 and *Comcast Corporation v. Entropic Communications, LLC*, IPR2024-00437. Paper 4, 1.

The parties identify as related to the '866 Patent U.S. Application No. 17/217,244 and U.S. Patent Nos. 8,526,898, 9,100,622, 9,210,363, 9,819,992, 10,313,733, and 10,972,781. Pet. ix; Paper 4, 2–3. Patent Owner further identifies U.S. Application Nos. 90/019,255, 14/521,347, 15/582,793, 16/740,524, 17/975,948, and 18/461,104, and U.S. Patent Nos. 8,892,225, 9,210,362, 9,942,598, 11,399,206, 11,490,152, 11,516,535, and 11,785,275. Paper 4, 2–3.

Petitioner notes that “[t]he '866 patent is part of a family that includes thirteen additional patents or applications that purport to claim priority, via a chain of continuation applications, from App. No. 12/762,900,” and indicates that “[a] family tree is included as Ex. 1127.” Pet. viii.

Patent Owner states that Petitioner has requested *inter partes* review of the following related patents:

- U.S. Patent No. 7,295,518 (IPR2024-00431);
- U.S. Patent No. 7,889,759 (IPR2024-00452);
- U.S. Patent No. 8,223,775 (IPR2024-00446);
- U.S. Patent No. 8,284,690 (IPR2024-00430);
- U.S. Patent No. 8,792,008 (IPR2024-00441);
- U.S. Patent No. 9,210,362 (IPR2024-00432, IPR2024-00433, and IPR2024-00434);
- U.S. Patent No. 9,825,826 (IPR2024-00442);
- U.S. Patent No. 10,135,682 (IPR2024-00444 and IPR2024-00445);
and
- U.S. Patent No. 11,399,206 (IPR2024-00438, IPR2024-00439, and IPR2024-00440).

Paper 4, 3–4.

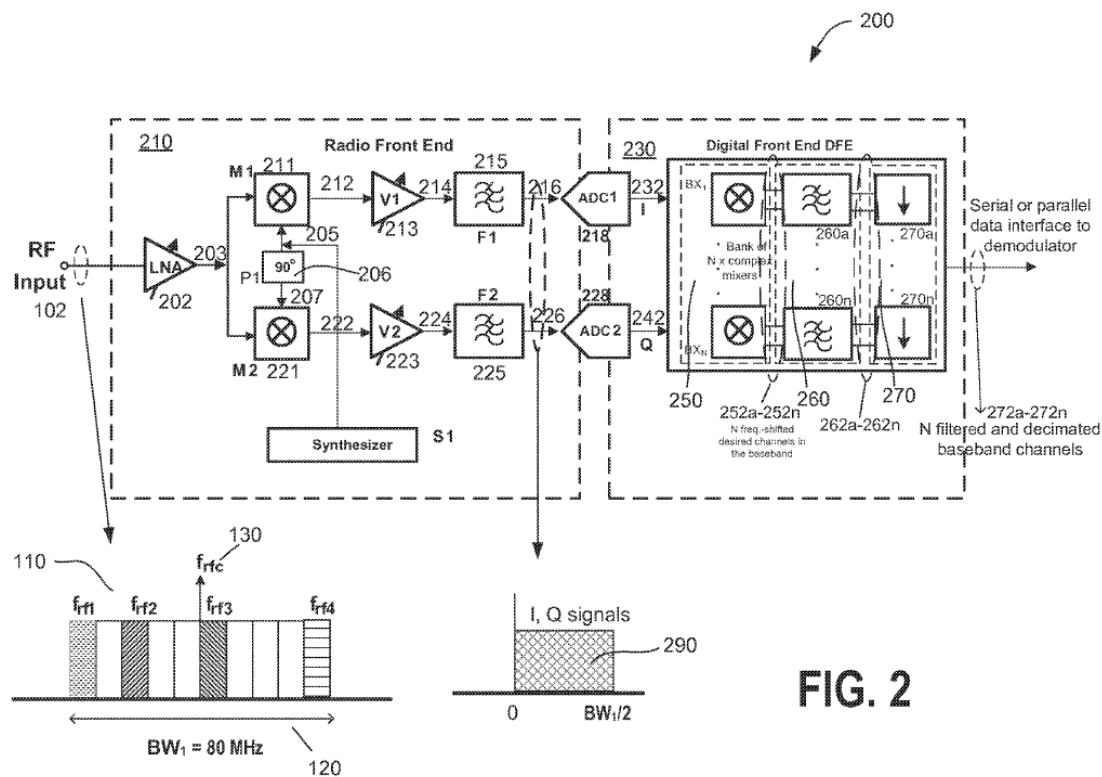
D. The '866 Patent

The '866 patent, for a “cable television device” relates to “wideband receiver systems and methods having a wideband receiver that is capable of receiving multiple radio frequency channels located in a broad radio frequency spectrum.” Ex. 1101, code (54), 1:26–29.

The '866 patent states that “[r]eceivers used to down-convert and selectively filter TV channels are referred to as tuners, and tuners designed to concurrently receive several TV channels are referred to as wideband tuners.” Ex. 1101, 1:35–38. The '866 patent notes that “[i]n certain applications such as DVR and picture-in-picture, the receiver system may have to concurrently receive several desired channels that may or may not be contiguous,” and that “[t]he wideband receiver requirement poses a trade-off to the system to limit either the dynamic range of the wideband tuner or reduce the bandwidth covered by the tuner so that fewer channels may be

received and processed by the demodulator.” *Id.* at 1:49–56. According to the ’866 patent, a wide bandwidth receiver may involve “very expensive digital processing circuitry such as very high-speed analog to digital conversion and high-speed processor in the demodulator.” *Id.* at 2:34–37. The ’866 patent states that “[i]t is desirable to have wideband receiver systems that can increase the dynamic range without requiring expensive data conversion, filtering and channel selection at the demodulator.” *Id.* at 2:38–41.

Figure 2, reproduced below, shows “a schematic block diagram of a wideband receiver system 200.” Ex. 1101, 4:35–36.



As shown in Figure 2, “[w]ideband receiver system 200 includes a radio front end 210 and a digital front end 230.” Ex. 1101, 4:37–38. The ’866 patent states that “[r]adio front end 210 may be a single very wide-band tuner receiver that captures the desired swath of channels located in

noncontiguous portions of the spectrum having a frequency bandwidth BW1 120.” *Id.* at 4:38–42. The ’866 patent indicates that each of mixers 211 and 221 “multiplies (mixes) an amplified RF signal 203 with a respective first oscillator frequency signal 205 and a second oscillator frequency signal 207 to generate an in-phase signal 212 and a quadrature signal 222 that have a phase shift of 90° degree between them.” *Id.* at 4:61–66. The ’866 patent indicates further that “[i]n-phase signal 212 and quadrature signal 222 are further amplified and filtered by respective amplifiers V1 213, V2 223 and filters F1 215, F2 225 to generate a filtered in-phase signal 216 and a filtered quadrature signal 226.” *Id.* at 5:17–20. The ’866 patent states that “ADC1 218 generates a digital signal I 232 that is a digital representation of the analog filtered signal 216; ADC2 228 generates a digital signal Q 242 that is a digital representation of the analog filtered signal 226.” *Id.* at 5:48–51.

In addition, the ’866 patent states that “[d]igital signals I 232 and Q 242 are . . . applied to a bank of N complex mixers 250,” and “[e]ach of the N complex mixers 250 receives the digital signals I 232 and Q 242 from ADCs 218 and 228 to extract a different one of the desired channels and frequency-shifts the extracted signals to the baseband frequency.” Ex. 1101, 5:51–53, 6:3–6. The ’866 patent states further that “[e]ach of the frequency shifted desired channels 252 is filtered by an associated filter module (identified as 260a to 260n).” *Id.* at 6:6–8. The ’866 patent states that in an embodiment, “each of the filtered signals 260a to 260n may be sent directly to an associated demodulator (identified as 270a to 270n) for extracting the original information transmitted in the associated desired channel,” and that in another embodiment, “each of the filtered signals 262a to 262n is further decimated before providing to a demodulator.” *Id.* at 6:8–14. The ’866

patent further states that “baseband channels . . . sent as a serial or parallel digital data stream to a demodulator using a serial or parallel data interface according to commonly known methods.” *Id.* at 7:10–13.

E. Challenged Claims

Petitioner challenges claims 1–82 of the ’866 patent. Pet. 1–78. Of the challenged claims, claims 1, 14, 27, 41, 55, and 69 are independent. Independent claim 1 is illustrative of the challenged claims and is reproduced below with Petitioner’s labeling of the limitations for ease of reference.

1. [1A] A cable television (TV) device comprising:
[1B] a wideband analog-to-digital converter (ADC) configured to digitize a contiguous band of frequencies in an input signal, wherein the contiguous band of frequencies comprises a plurality of desired channels and a plurality of undesired channels; and
[1C] a digital frontend (DFE) coupled to the wideband ADC, wherein the DFE is configured to concurrently select and provide each of the plurality of desired channels, via a serial interface, without providing any of the plurality of undesired channels.

Ex. 1101, 12:15–25.

F. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability (Pet. 14–15):

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
27–33, 37, 40–47, 51, 54	103	Cholas, ¹ Petrovic ²
28, 42	103	Cholas, Petrovic, Burris ³
32, 33, 46, 47	103	Cholas, Petrovic, Maalej ⁴
1–9, 11, 13–22, 24, 26, 34–36, 48–50	103	Cholas, Petrovic, Rabaey ⁵
2, 15	103	Cholas, Petrovic, Rabaey, Burris
6–8, 19–21, 34, 48	103	Cholas, Petrovic, Rabaey, Maalej
38, 39, 52, 53, 55–61, 65–75, 79–82	103	Cholas, Petrovic, Lee ⁶
56, 70	103	Cholas, Petrovic, Lee, Burris
60, 61, 74, 75	103	Cholas, Petrovic, Lee, Maalej
62, 76	103	Cholas, Petrovic, Lee, Maalej, Rabaey
10, 12, 23, 25, 63, 64, 77, 78	103	Cholas, Petrovic, Lee, Rabaey
27–33, 37, 40–47, 51, 54	103	Cholas, Petrovic, Takahiko ⁷
28, 42	103	Cholas, Petrovic, Takahiko, Burris
32, 33, 46, 47	103	Cholas, Petrovic, Takahiko, Maalej
1–8, 9, 11, 13–22, 24, 26, 35, 36, 49, 50	103	Cholas, Petrovic, Takahiko, Rabaey
2, 15	103	Cholas, Petrovic, Takahiko, Rabaey, Burris
6–8, 19–21, 34, 48	103	Cholas, Petrovic, Takahiko, Rabaey, Maalej
38, 39, 52, 53, 55–61, 65–75, 79–82	103	Cholas, Petrovic, Takahiko, Lee
56, 70	103	Cholas, Petrovic, Takahiko, Lee, Burris
60, 61, 74, 75	103	Cholas, Petrovic, Takahiko, Lee, Maalej
62, 76	103	Cholas, Petrovic, Takahiko, Lee, Maalej, Rabaey
10, 12, 23, 25, 63, 64, 77, 78	103	Cholas, Petrovic, Takahiko, Lee, Rabaey

II. DISCRETIONARY DENIAL

Patent Owner contends that the Board should “exercise its discretion to deny institution of all three of Comcast’s parallel petitions challenging the ’866 patent.” Prelim. Resp. 4. Barring that, Patent Owner contends that the Board “should, at most, consider only one of the three.” *Id.* For the reasons that follow, we agree and therefore exercise our discretion under 35 U.S.C. § 314 to deny institution.⁸

This is the second of three petitions filed concurrently by Petitioner challenging claims 1–82 of the ’866 patent. Consistent with the Board’s practice for handling parallel petitions, Petitioner filed a Petition Ranking (Paper 3, “Notice”). See Patent Trial and Appeal Board Consolidated Trial Practice Guide 59–60 (November 2019) (“Practice Guide”).⁹ In the Notice, of the three petitions challenging the ’866 patent, Petitioner ranks this Petition second and the petition in IPR2024-00435 first. Notice 1. In our separate decision in IPR2024-00435, entered concurrently with this decision,

¹ U.S. Patent Publication No. 2010/0020794 A1, published January 28, 2010 (Ex. 1158) (“Cholas”).

² U.S. Patent Publication No. 2009/0290659 A1, published November 26, 2009 (Ex. 1108) (“Petrovic”).

³ U.S. Patent Publication No. 2007/0232088 A1, published October 4, 2007 (Ex. 1159) (“Burris”).

⁴ U.S. Patent No. 6,160,443, issued December 12, 2000 (Ex. 1160) (“Maalej”).

⁵ Excerpts of Jan M Rabaey, “Digital Integrated Circuits: A Design Perspective” (Pearson, 2nd ed. 2002) (Ex. 1116) (“Rabaey”).

⁶ U.S. Patent Publication No. 2008/0039036 A1, published February 14, 2008 (Ex. 1153) (“Lee”).

⁷ U.S. Patent Publication No. 2006/0256216 A1, published November 16, 2006 (Ex. 1161) (“Takahiko”).

⁸ We have discretion to deny this parallel petition under 35 U.S.C. § 314(a).

⁹ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

we institute *inter partes* review of claims 1–82 of the ’866 patent on all grounds stated in the Petition. IPR2024-00435, Paper 13.

In support of its decision to file three separate petitions challenging the same claims, Petitioner makes two arguments. Notice 1–3. First, Petitioner asserts that because “[c]ertain of the primary references relied on in the petitions qualify as prior art under 35 U.S.C. § 102(e), including claiming the benefit of provisional filings,” it is “possible that the Patent Owner could attempt to antedate these references and/or remove them as prior art.” Notice 1. Second, Petitioner asserts that “[e]ach of the primary references describes receivers that are strikingly similar to the receiver disclosed in the ’866 Patent, yet each reference has different strengths with respect to various different claims.” *Id.* at 2. We do not find these arguments persuasive.

Our Practice Guide provides guidance on handling situations involving multiple petitions by a single petitioner challenging the same patent claims:

Based on the Board’s experience, *one petition should be sufficient* to challenge the claims of a patent in most situations. . . . In addition, *multiple petitions by a petitioner are not necessary in the vast majority of cases*. To date, a substantial majority of patents have been challenged with a single petition.

Practice Guide 59 (emphasis added). The Practice Guide provides examples of “circumstances in which more than one petition may be necessary.” *Id.* None of these examples are pertinent here. For example, a second petition might be justified “when the patent owner has asserted a large number of claims in litigation or when there is a dispute about priority date requiring arguments under multiple prior art references.” Petitioner does not argue

that the number of claims in the parallel litigation is “large.” And while Petitioner does argue that the prior art relied upon might be antedated, Patent Owner responds by stipulating “that if the Board were to institute only Comcast’s second ranked petition (IPR2024-00436), and deny IPR2024-00435 and IPR2024-0437 as improper parallel petitions, then, in the IPR2024-00436 proceeding, Patent Owner will not challenge the status of Petrovic and Cholas as prior art.”¹⁰ Prelim. Resp. 41.

Petitioner’s remaining argument is no more persuasive. Responding to Petitioner’s argument that different prior art has different strengths with respect to different claims, Patent Owner points out that Petitioner “provides no explanation as to why the first ranked petition is not sufficient or why, if Petrovic is stronger for means-plus-function limitations, it could not have included Petrovic in the first ranked petition for the disclosure of means-plus-function limitations.” Prelim. Resp. 44. We agree. As our Practice Guide cautions, “[t]wo or more petitions filed against the same patent at or about the same time . . . may place a substantial and unnecessary burden on the Board and the patent owner and could raise fairness, timing, and efficiency concerns.” Practice Guide 59. This is especially concerning here, where the instituted trial in IPR2024-00435 will involve four references and eight grounds. Adding an additional twenty-two grounds and seven references from this Petition to the mix would create an “unnecessary burden.”

¹⁰ The second petition being the only concurrently filed petition relying on references that Patent Owner could potentially swear behind. *See* Prelim. Resp. 39–40; *see also* Notice 1–2 (identifying Petrovic and Cholas as “102(e) prior art.”).

In sum, in the words of our Practice Guide, Petitioner fails to show “why the Board should exercise its discretion to institute additional petitions if it identifies one petition that satisfies petitioner’s burden under 35 U.S.C. § 314(a).” Practice Guide 60.

III. CONCLUSION

For the foregoing reasons, we are not persuaded that the facts presented by Petitioner justify a second petition challenging the same claims of the ’866 patent as the petition in IPR2024-00435. We therefore exercise our discretion under 35 U.S.C. § 314(a) to deny institution of *inter partes* review.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), the Petition is denied and *inter partes* review of claims 1–82 of the ’866 patent is not instituted on the grounds asserted in the instant Petition.

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FOR PETITIONER:

Frederic Meeker
Michael Cuvillo
Harry Porter
Paul Qualey
Joshua Davenport
BANNER & WITCOFF, LTD.
fmeeker@bannerwitcoff.com
mcuvillo@bannerwitcoff.com
wporter@bannerwitcoff.com
pqualey@bannerwitcoff.com
jdavenport@bannerwitcoff.com

FOR PATENT OWNER:

Jason Engel
Erik Halverson
Kyle Kantarek
Nolan Hubbard
K&L GATES LLP
jason.engel.ptab@klgates.com
erik.halverson@klgates.com
kyle.kantarek@kirkland.com
nolan.hubbard@klgates.com

Kenneth J. Weatherwax
Parham Hendifar
LOWENSTEIN & WEATHERWAX LLP
weatherwax@lowensteinweatherwax.com
hendifar@lowensteinweatherwax.com