

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMCAST CABLE COMMUNICATIONS, LLC,
Petitioner,

v.

ENTROPIC COMMUNICATIONS, LLC.,
Patent Owner.

IPR2024-00434
9,210,362 B2

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

LANEY, *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.”), seeking *inter partes* review of claims 1–20 (the “challenged claims”) of U.S. Patent No. 9,210,362 B2 (Ex. 1201, “the ’362 patent”). *See* Pet. 1. The ’362 patent is also the subject of two other petitions for *inter partes* review (IPR2024-00432 and IPR2024-00433) challenging the same claims as challenged in the instant petition and filed by Petitioner on the same day. Pet. i.

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 ’362 patent. *See* Prelim. Resp. 5–30. Alternatively, Patent Owner contends that the Board should exercise its discretion to deny two of the three parallel petitions that 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 IPR2024-00432.

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. i. Patent Owner identifies itself as the real party-in-interest. Paper 4, 1.

C. Related Matters

The parties indicate that the '362 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, 9,825,826, 9,866,438, 10,135,682, 11,381,866, 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 '362 patent is involved in *Comcast Corporation v. Entropic Communications, LLC*, IPR2024–00432 and *Comcast Corporation v. Entropic Communications, LLC*, IPR2024-00434. *Id.* at 1.

Petitioner identifies U.S. Application Nos. 13/962,871 and 12/762,900, as well as, Provisional Application No. 61/170,526, as being related applications. Pet. ii. Additionally, Petitioner identifies U.S. Patent Nos. 9,100,622 and 8,526,898 as being related. *Id.* Patent Owner further identifies U.S. Application Nos. 90/019,255, 14/521,347, 15/582,793, 16/740,524, 17/217,244, 17/975,948, and 18/461,104, and U.S. Patent Nos. 8,892,225, 9,210,363, 9,819,992, 9,942,598, 10,313,733, 10,972,781, 11,381,866, 11,399,206, 11,490,152, 11,516,535, and 11,785,275. Paper 4, 2–3.

Petitioner further notes that “[t]he ’362 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. 1227.” Pet. ii.

Patent Owner further notes that Petitioner has requested *inter partes* review of the following 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. 9,825,826 (IPR2024-00442); U.S. Patent No. 10,135,682 (IPR2024-00444 and IPR2024-00445); U.S. Patent. No. 11,381,866 (IPR2024-00435, IPR2024-00436, and IPR2024-00437), and U.S. Patent No. 11,399,206 (IPR2024-00438, IPR2024-00439, and IPR2024-00440). Paper 4, 3–4.

D. The ’362 Patent (Ex. 1201)

The ’362 patent, titled “Wideband Tuner Architecture,” 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. 1201, code (54), 1:15–18.

The ’362 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. 1201, 1:24–27. The ’362 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 1:38–45. According to the ’362 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 2:20–23. The ’362 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 2:24–27.

Figure 2, reproduced below, shows “a schematic block diagram of a wideband receiver system 200.” Ex. 1201, 4:16–17.

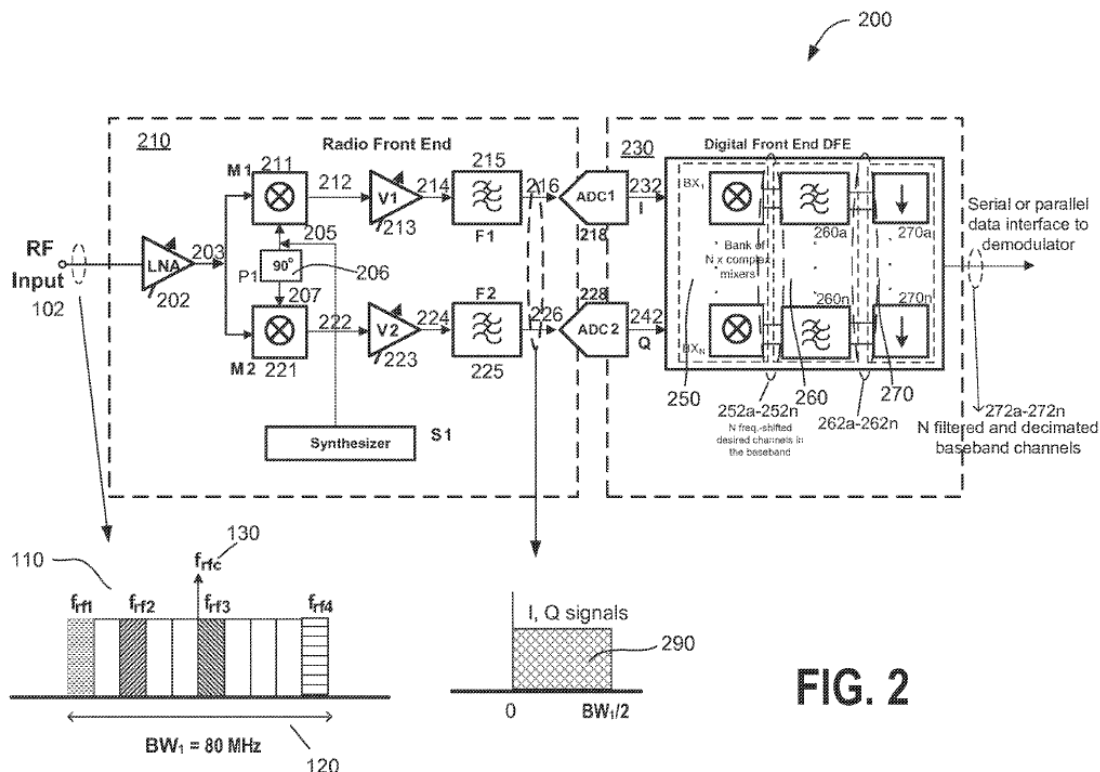


FIG. 2

As shown in Figure 2, “[w]ideband receiver system 200 includes a radio front end 210 and a digital front end 230.” Ex. 1201, 4:18–19. The

'362 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 non-contiguous portions of the spectrum having a frequency bandwidth BW1 120." *Id.* at 4:19–22. The '362 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 4:41–46. The '362 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 4:64–67. The '362 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 5:28–31.

In addition, the '362 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. 1201, 5:31–32, 5:49–52. The '362 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 5:52–54. The '362 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 5:55–60. The ’362 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 6:55–58.

E. Challenged Claims

Petitioner challenges claims 1–20 of the ’362 patent. Pet. 1. Of the challenged claims, claims 1 and 11 are independent. Petitioner contends that claim 11 “is a method claim directed to substantially identical subject matter as [claim] 1.” *Id.* at 47 (citing Ex. 1202 ¶¶ 153–163). Independent claim 1 is reproduced below with Petitioner’s labeling of the limitations for ease of reference.

1. [1A] A wideband receiver system comprising:

[1B] a mixer module configured to downconvert a plurality of frequencies that comprises a plurality of desired television channels and a plurality of undesired television channels;

[1C] a wideband analog-to-digital converter (ADC) module configured to digitize said plurality of frequencies comprising said plurality of desired television channels and said plurality of undesired television channels;

[1D] digital circuitry configured to:
select said plurality of desired television channels from said digitized plurality of frequencies; and output said selected plurality of television channels to a demodulator as a digital datastream.

Ex. 1201, 11:52–65.

F. The Alleged Grounds of Unpatentability

Petitioner asserts the following unpatentability grounds (Pet. 20–21):

Claim(s) Challenged	35 U.S.C. §¹	Reference(s)/Basis
1, 4–6, 11, 14–16	103(a)	Pugel ² , Crols ³
2, 3, 12, 13	103(a)	Pugel, Crols, Chandraksan ⁴
7, 17	103(a)	Pugel, Crols, Karabinis ⁵
8–10, 18–20	103(a)	Pugel, Crols, Jensen '170 ⁶

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 ’362 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

¹ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 103. Because the challenged claims of the ’362 patent have an effective filing date before the effective date of the applicable AIA amendment, we refer to the pre-AIA version of 35 U.S.C. § 103.

² International Publication No. WO 2007/145637 A1, published December 21, 2007 (Ex. 1224) (“Pugel”).

³ J. Crols and M. S. J. Steyaert, “Low-IF topologies for high-performance analog front ends of fully integrated receivers,” *IEEE Transactions on Circuits and Systems II: Analog and Digital Signal Processing*, vol. 45, no. 3, pp. 269–282, March 1998 (Ex. 1225) (“Crols”).

⁴ A. P. Chandrakasan, “Ultra low power digital signal processing,” *Proceedings of 9th International Conference on VLSI Design*, Bangalore, India, 1996, pp. 352–357 (Ex. 1217) (“Chandrakasan”).

⁵ U.S. Patent Publication No. 2006/0233147 A1, published October 19, 2006 (Ex. 1220) (“Karabinis”).

⁶ U.S. Patent Publication No. 2006/0029170 A1, published February 9, 2006 (Ex. 1230) (“Jensen ’170”).

that follow, we agree and therefore exercise our discretion under 35 U.S.C. § 314 to deny institution.⁷

This is the third of three petitions filed concurrently by Petitioner challenging claims 1–20 of the ’362 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”).⁸ In the Notice, of the three petitions challenging the ’362 patent, Petitioner ranks this Petition third and the petition in IPR2024-00432 first. Notice 1. In our separate decision in IPR2024-00432, entered concurrently with this decision, we institute *inter partes* review of claims 1–20 of the ’362 patent on all grounds stated in the Petition. IPR2024-00432, 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.” *Id.* at 1. Second, Petitioner asserts that “[e]ach of the primary references describes receivers that are strikingly similar to the receiver disclosed in the ’362 Patent, yet each reference has different strengths with respect to various different claims.” *Id.* at 2. We do not find these arguments persuasive.

⁷ We have discretion to deny this parallel petition under 35 U.S.C. § 314(a).

⁸ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

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 on might be antedated, “Patent Owner stipulates that if the Board were to institute only Comcast’s second ranked petition (IPR2024-00433), and deny IPR2024-00432 and IPR2024-0434 as improper parallel petitions, then, in the IPR2024-00433 proceeding, Patent Owner will not challenge the status of Petrovic and Eidson as prior art.” 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 “fails to show why any difference between the primary references would justify instituting more than one petition.” Prelim. Resp. 43. 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 IPR2024-00432 will involve five references and eight grounds. Adding an additional four grounds and three references from this Petition to the mix would create an “unnecessary burden.”

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 ’362 patent as the petition in IPR2024-00432. We therefore exercise our discretion under 35 U.S.C. § 314(a) to deny institution of *inter partes* review.

IV. ORDER

Accordingly, it is:

ORDERED that, pursuant to 35 U.S.C. § 314(a), the Petition is denied and *inter partes* review of claims 1–20 of the ’362 patent is not instituted on the grounds asserted in the instant Petition.

IPR2024-00434

9,210,362 B2

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@klgates.com

nolan.hubbard@klgates.com

Kenneth Weatherwax

Parham Hendifar

LOWENSTEIN & WEATHERWAX LLP

weatherwax@lowensteinweatherwax.com

hendifar@lowensteinweatherwax.com