

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ZTE CORPORATION, ZTE (USA), INC., and ZTE (TX), INC.,
Petitioner,

v.

WSOU INVESTMENTS, LLC
d/b/a BRAZOS LICENSING AND DEVELOPMENT,
Patent Owner.

IPR2021-00697
Patent 9,294,060 B2

Before ROBERT J. WEINSCHENK, JOHN A. HUDALLA, and
JOHN D. HAMANN, *Administrative Patent Judges*.

WEINSCHENK, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background and Summary*

ZTE Corporation, ZTE (USA), Inc., and ZTE (TX), Inc. (collectively, “Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1–18 (“the challenged claims”) of U.S. Patent No. 9,294,060 B2 (Ex. 1001, “the ’060 patent”). WSOU Investments, LLC d/b/a Brazos Licensing and Development (“Patent Owner”) filed a Preliminary Response (Paper 6, “Prelim. Resp.”) to the Petition. With our authorization, Petitioner filed a Reply (Paper 7) to the Preliminary Response, and Patent Owner filed a Sur-reply (Paper 8) to the Reply.

An *inter partes* review may not be instituted unless “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). We determine that Petitioner does not demonstrate a reasonable likelihood of prevailing in showing that at least one of the challenged claims of the ’060 patent is unpatentable. Accordingly, the Petition is denied, and no trial is instituted.

B. *Real Parties in Interest*

The parties identify themselves as the only real parties in interest. Pet. 74; Paper 3, 1–2.

C. *Related Matters*

The parties indicate that the ’060 patent is the subject of the following district court case: *WSOU Investments, LLC v. ZTE Corporation*, No. 6:20-cv-00493 (W.D. Tex.). Pet. 1 n.1; Paper 3, 2. Petitioner indicates that the ’060 patent also is the subject of the following district court case: *ZTE*

(USA), Inc. v. WSOU Investments, LLC, No. 3:21-cv-02128 (N.D. Tex.).
Paper 9, 1.

D. The '060 Patent

The '060 patent relates to “an apparatus and method for extending the bandwidth of an audio signal.” Ex. 1001, 1:6–8. The '060 patent explains that “in some instances it may be desirable to perceive [a] decoded audio signal at a higher bandwidth than the bandwidth at which the audio signal was originally encoded.” *Id.* at 1:18–21. For example, in “the Global System for Mobile Communications (GSM), the speech signal may be limited to a bandwidth of less than 4 kHz,” but “naturally occurring speech may contain significant frequency components up to 10 kHz.” *Id.* at 1:28–33. According to the '060 patent, “existing methods of artificial bandwidth extension can suffer from poor quality and inefficiency” and “may result in a degradation to the overall perceived naturalness of the extended audio signal.” *Id.* at 1:52–53, 2:6–9.

The '060 patent “aim[s] to address the above problem.” *Id.* at 2:11. Specifically, the '060 patent describes an artificial bandwidth extender that 1) generates an excitation signal from an audio signal; 2) extracts a feature vector from the audio signal; 3) determines at least one spectral shape parameter from the feature vector; and 4) generates a sub band signal by filtering the excitation signal through a filter bank and weighting the filtered excitation signal with the spectral shape parameter. *Id.* at 2:12–26.

E. Illustrative Claim

Of the challenged claims, claims 1 and 10 are independent. Claim 1 is reproduced below.

1. A method comprising:

generating an excitation signal from an audio signal,
wherein the audio signal comprises a plurality of frequency
components;

extracting a feature vector from the audio signal, wherein
the feature vector comprises at least one frequency domain
component feature and at least one time domain component
feature;

determining at least one spectral shape parameter from
the feature vector, wherein the at least one spectral shape
parameter corresponds to a sub band signal comprising
frequency components which belong to a further plurality of
frequency components; and

generating the sub band signal by filtering the excitation
signal through a filter bank and weighting the filtered excitation
signal with the at least one spectral shape parameter,

wherein the spectral shape parameter is a sub band
energy level value and the sub band energy level value is
attenuated when the power of the audio signal approaches an
estimate of the level of noise in the audio signal.

Ex. 1001, 29:2–22.

F. Evidence

Petitioner submits the following evidence:

Evidence	Exhibit No.
Declaration of Nir Regev (“Regev Declaration”)	1003
Nilsson, US 7,359,854 B2, issued Apr. 15, 2008 (“Nilsson”)	1005
Iser, US 8,160,889 B2, issued Apr. 17, 2012 (“Iser”)	1006
Vos, US 2006/0282262 A1, published Dec. 14, 2006 (“Vos”)	1007
Juho Kontio, <i>Neural Network-Based Artificial Bandwidth Expansion of Speech</i> , IEEE Transactions on Audio, Speech, and Language Processing, Vol. 15, No. 3 (Mar. 2007) (“Kontio”)	1008
European Telecommunications Standards Institute, ETSI ES 201 108 V1.1.3 (2003) (“ETSI 201.108”)	1009

G. Asserted Grounds

Petitioner asserts that the challenged claims are unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1, 9, 10, 18	103	Nilsson, Iser
4, 5, 13, 14	103	Nilsson, Iser, ETSI 201.108
2, 3, 7, 11, 12, 16	103	Nilsson, Iser, Vos
6, 8, 15, 17	103	Nilsson, Iser, Kontio

II. ANALYSIS

A. Level of Ordinary Skill in the Art

Petitioner argues that a person of ordinary skill in the art would have had “a bachelor’s degree in electrical engineering, computer engineering, or a related engineering discipline and two or more years of industry experience in the field of signal processing, or equivalent experience, education, or both” and also would have had “knowledge or familiarity with signal processing.” Pet. 19 (citing Ex. 1004). Petitioner’s description of the level of ordinary skill in the art is supported by the testimony of Petitioner’s declarant, Nir Regev. Ex. 1003 ¶ 30. Patent Owner does not propose a description of the level of ordinary skill in the art or dispute Petitioner’s description. Prelim. Resp. 24–25. Thus, we adopt Petitioner’s description for purposes of this Decision.

B. Claim Construction

In an *inter partes* review proceeding, a claim of a patent is construed using the same standard used in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of the claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b). Petitioner does not propose an express construction for any

claim terms. Pet. 19. Patent Owner argues that the term “filter bank” should be construed to include “one or more high pass filter[s] and/or one or more low pass filter[s] which results in filtering/removal of certain frequencies based on various parameters of the filter.” Prelim. Resp. 29. We determine that no claim terms require express construction for purposes of this Decision. *See* Sections II.C–II.D.

C. Obviousness of Claims 1, 9, 10, and 18 over Nilsson and Iser

Petitioner argues that claims 1, 9, 10, and 18 would have been obvious over Nilsson and Iser. Pet. 22–45. For the reasons discussed below, Petitioner does not demonstrate a reasonable likelihood of prevailing in showing that claims 1, 9, 10, and 18 would have been obvious over Nilsson and Iser.

1. Independent Claims 1 and 10

Claim 1 recites “generating the sub band signal by filtering the excitation signal through a filter bank.” Ex. 1001, 29:15–16. Claim 10 similarly recites “generate the sub band signal by filtering the excitation signal through a filter bank.” *Id.* at 30:27–28. Petitioner argues that Nilsson teaches “generating the high band signal by filtering the wide-band excitation spectrum EWB through the wide-band filter 106.” Pet. 33–34 (citing Ex. 1005, 11:21–25, Fig. 5) (emphasis omitted). Petitioner also argues that “filtering an excitation signal with a filter bank is well-known in the art.” *Id.* at 34 (citing Ex. 1007). According to Petitioner, “the wide-band filter 106 of Nilsson can be implemented as a filter bank,” and, thus, “corresponds to the claimed filter bank.” *Id.* at 34 (citing Ex. 1003 ¶ 109) (emphasis omitted).

Patent Owner contends that Petitioner’s “mere conclusory statement that ‘the wide-band filter 106 *can be* implemented as a filter bank’ . . . is wholly unsupported by any evidence or explanation, and is in fact an admission that Nilsson does not disclose the claimed filter bank.” Prelim. Resp. 30 (citing Pet. 34). Patent Owner also contends that “Petitioner’s declarant’s testimony merely parrots the deficient and conclusory statements of the Petition . . . , and therefore that testimony should be given no weight.” *Id.* at 30–31 (citing Pet. 33–34; Ex. 1003 ¶¶ 106–109).

On this record, Petitioner does not show sufficiently that Nilsson teaches a filter bank. As discussed above, Petitioner asserts that Nilsson teaches a wide-band filter. Pet. 33–34 (citing Ex. 1005, 11:21–25, Fig. 5). Petitioner, though, does not identify any portion of Nilsson that indicates the wide-band filter is a filter bank. *See id.* Petitioner instead asserts that filter banks were “well-known in the art” and that Nilsson’s wide-band filter “*can be implemented* as a filter bank.” *Id.* at 34 (citing Ex. 1003 ¶ 109) (emphasis added). But “obviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention.” *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015). Here, even if Petitioner is correct that a person of ordinary skill in the art *could have* implemented Nilsson’s wide-band filter as a filter bank, Petitioner does not explain why a person of ordinary skill in the art *would have* done so. *See* Pet. 33–34; Ex. 1003 ¶¶ 108–109. Petitioner’s mere statement that Nilsson’s wide-band filter “corresponds” to a filter bank does not explain why a person of ordinary skill in the art would have implemented Nilsson’s wide-

band filter as a filter bank or otherwise understood it to be a filter bank. *See* Pet. 34; Ex. 1003 ¶ 109.

As a result, Petitioner does not demonstrate a reasonable likelihood of prevailing in showing that claims 1 and 10 would have been obvious over Nilsson and Iser.

2. Dependent Claims 9 and 18

Claims 9 and 18 depend from claims 1 and 10, respectively. Petitioner's arguments and evidence regarding these dependent claims do not compensate for the deficiencies discussed above for claims 1 and 10. *See* Pet. 43–45. Thus, Petitioner does not demonstrate a reasonable likelihood of prevailing in showing that claims 9 and 18 would have been obvious over Nilsson and Iser.

3. Summary

For the foregoing reasons, Petitioner does not demonstrate a reasonable likelihood of prevailing in showing that claims 1, 9, 10, and 18 would have been obvious over Nilsson and Iser.

D. Other Asserted Grounds

Petitioner argues that 1) claims 4, 5, 13, and 14 would have been obvious over Nilsson, Iser, and ETSI 201.108; 2) claims 2, 3, 7, 11, 12, and 16 would have been obvious over Nilsson, Iser, and Vos; and 3) claims 6, 8, 15, and 17 would have been obvious over Nilsson, Iser, and Kontio. Pet. 45–69. Petitioner's arguments and evidence regarding these asserted grounds do not compensate for the deficiencies discussed above for the asserted ground based on Nilsson and Iser. *See id.* Thus, for the same reasons discussed above for the asserted ground based on Nilsson and Iser,

Petitioner does not demonstrate a reasonable likelihood of prevailing on the other asserted grounds.

III. CONCLUSION

Petitioner does not demonstrate a reasonable likelihood of prevailing in showing that at least one of the challenged claims of the '060 patent is unpatentable.

IV. ORDER

It is hereby

ORDERED that the Petition is denied, and no trial is instituted.

IPR2021-00697
Patent 9,294,060 B2

PETITIONER:

Lionel Lavenue
Cory Bell
Bradford C. Schulz
Mingji Jin
R. Maxwell Mauldin
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, LLP
lionel.lavenue@finnegan.com
cory.bell@finnegan.com
bradford.schulz@finnegan.com
mingji.jin@finnegan.com
r.maxwell.mauldin@finnegan.com

PATENT OWNER:

Ryan Loveless
Jeffrey A. Stephens
Brett Mangrum
James Etheridge
Brian Koide
Jeffrey Huang
ETHERIDGE LAW GROUP
ryan@etheridgelaw.com
jstephens@etheridgelaw.com
brett@etheridgelaw.com
ipteam@etheridgelaw.com
brian@etheridgelaw.com
jeff@etheridgelaw.com