
Nos. 22-2220, 22-2250

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

ZYXEL COMMUNICATIONS CORP.,
Appellant, Cross-Appellee

v.

UNM RAINFOREST INNOVATIONS,
Appellee, Cross-Appellant

Appeals from the United States Patent and Trademark Office, Patent Trial and
Appeal Board, *Inter Partes* Review Nos. IPR2021-00375 and IPR2021-00734
U.S. PATENT 8,265,096

**CORRECTED CROSS-APPELLANT'S REPLY IN SUPPORT OF
COMBINED PETITION FOR REHEARING *EN BANC*
AND PANEL REHEARING**

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**UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT**

CERTIFICATE OF INTEREST

Case Number 22-2220, 22-2250

Short Case Caption ZyXEL Communications Corp. v. UNM Rainforest Innovations

Filing Party/Entity UNM Rainforest Innovations

Instructions:

1. Complete each section of the form and select none or N/A if appropriate.
2. Please enter only one item per box; attach additional pages as needed, and check the box to indicate such pages are attached.
3. In answering Sections 2 and 3, be specific as to which represented entities the answers apply; lack of specificity may result in non-compliance.
4. Please do not duplicate entries within Section 5.
5. Counsel must file an amended Certificate of Interest within seven days after any information on this form changes. Fed. Cir. R. 47.4(c).

I certify the following information and any attached sheets are accurate and complete to the best of my knowledge.

Date: 03/17/2023

Signature: /s/ Jay P. Kesan

Name: Jay P. Kesan

<p align="center">1. Represented Entities. Fed. Cir. R. 47.4(a)(1).</p>	<p align="center">2. Real Party in Interest. Fed. Cir. R. 47.4(a)(2).</p>	<p align="center">3. Parent Corporations and Stockholders. Fed. Cir. R. 47.4(a)(3).</p>
<p>Provide the full names of all entities represented by undersigned counsel in this case.</p>	<p>Provide the full names of all real parties in interest for the entities. Do not list the real parties if they are the same as the entities.</p> <p><input type="checkbox"/> None/Not Applicable</p>	<p>Provide the full names of all parent corporations for the entities and all publicly held companies that own 10% or more stock in the entities.</p> <p><input type="checkbox"/> None/Not Applicable</p>
UNM Rainforest Innovations	The Univ of New Mexico	The Univ of New Mexico

Additional pages attached

4. Legal Representatives. List all law firms, partners, and associates that (a) appeared for the entities in the originating court or agency or (b) are expected to appear in this court for the entities. Do not include those who have already entered an appearance in this court. Fed. Cir. R. 47.4(a)(4).

None/Not Applicable Additional pages attached

Alfonso Chan, Shore Chan LLP, 901 Main St., Suite 3300, Dallas, TX 75202		

5. Related Cases. Other than the originating case(s) for this case, are there related or prior cases that meet the criteria under Fed. Cir. R. 47.5(a)?

Yes (file separate notice; see below) No N/A (amicus/movant)

If yes, concurrently file a separate Notice of Related Case Information that complies with Fed. Cir. R. 47.5(b). **Please do not duplicate information.** This separate Notice must only be filed with the first Certificate of Interest or, subsequently, if information changes during the pendency of the appeal. Fed. Cir. R. 47.5(b).

6. Organizational Victims and Bankruptcy Cases. Provide any information required under Fed. R. App. P. 26.1(b) (organizational victims in criminal cases) and 26.1(c) (bankruptcy case debtors and trustees). Fed. Cir. R. 47.4(a)(6).

None/Not Applicable Additional pages attached

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TABLE OF ABBREVIATIONS

Parties

Petitioner, Appellant, Cross-Appellee	ZyXEL Communications Corp.
Patent Owner, Appellee, Cross-Appellant	UNM Rainforest Innovations

Citations

Appx__	Joint Appendix at page(s)__
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Terms

'096 Patent	U.S. Patent No. 8,265,096
<i>Talukdar</i>	U.S. Pub. No. 2009/0067377 A1 (EX1012)
<i>Li</i>	U.S. Pub. No. 2007/0155387 A1 (EX1016)
<i>Nystrom</i>	U.S. Pub. No. 2007/0104174 A1 (EX1017)
PTAB, Board	Patent Trial and Appeal Board
IPR	<i>Inter Partes Review</i>
POSITA	Person of Ordinary Skill In The Art

I. CROSS-APPELLANT'S REPLY

A. The Panel Opinion Misapprehended the Relevant Construction

ZyXEL admits that claims 1 and 8 are distinguished only by element (c), “shorter symbol period[s]” versus “denser pilot symbols.” Dkt. 69 at 5. Regardless, ZyXEL trivializes the Panel’s conflation of “symbol period” and “symbol density” as “simply a transition sentence.” Dkt. 69 at 4. ZyXEL ignores that the Panel thereby entirely vitiated the sole difference between claims 1 and 8.

ZyXEL also ignores that its own stipulated construction of “pilot symbols that are denser than” is “more pilot symbols per unit time than, wherein a unit time is the *symbol period* of the first communication system.” Appx17–18; *see* Dkt. 69 at 6. The “symbol period” thus impacts the time period over which “pilot symbol density” is measured. Applying the “symbol period” (amount of time between transmission of pilot symbols) to the “pilot symbol density” (the number of pilot symbols transmitted during a particular time period **where the symbol period is the unit of time**) nonsensically results in the pilot symbol density always being exactly 1.

ZyXEL admits that “no construction dispute was before this Court.” Dkt. 69 at 6. This Court’s informal construction of “symbol period” and “pilot symbol density” erroneously conflates these terms and thus equivocates claims 1 and 8. ZyXEL’s red herring argument that “UNMRI does not dispute any of the Court’s

relevant analysis” of the prior art references (Dkt 69 at 14) completely ignores the remaining points in UNMRI’s rehearing petition.

B. The Panel Opinion Considered Waived Arguments

ZyXEL argues that “the Court found that *Nystrom* teaches the use of higher pilot density for higher mobility” and relies on the Panel Opinion statement that “*Nystrom* discloses that it is beneficial to use denser pilot symbol patterns for higher Doppler conditions, conditions common to high mobility users.” Dkt. 69 at 8 (*citing* Dkt. 62 at 19). But this statement by the Panel is immediately preceded by the acknowledgement that *Nystrom* **does not** explicitly teach “that denser pilot symbols counteract the effect of high Doppler shifts or improve channel estimation.” Dkt. 62 at 19; *see also* Appx57–Appx58 (Petitioner’s citations to *Nystrom* “do not disclose that denser pilot symbols counteract the effects of Doppler shift and fading experienced by faster-moving remote units; and (2) enhance or improve a faster moving unit’s ability to perform channel estimation.”).

The missing link between these two statements—*Nystrom*’s actual disclosure and the Panel’s conclusion therefrom—is the knowledge of a POSITA, which the Panel explicitly incorporated. Dkt. 62 at 19 (“Dr. Roy testified that a POSA would have been motivated to combine *Nystrom* and *Talukdar* and cited to these portions of *Nystrom* for support.”); *id.* at 20 (“Dr. Vojcic does not state or opine that a POSA

would not recognize the benefits of using higher pilot symbol densities for faster mobile users who experience high Doppler conditions.”). The Panel Opinion thus explicitly relied on the alleged knowledge of a POSITA that “denser pilot symbols counteract the effect of high Doppler shifts or improve channel estimation” to provide the motivation to combine *Talukdar* and *Nystrom*. *Id.* at 19.

But this is precisely the argument that the Board found ZyXEL had forfeited by not including it in its petition, and ZyXEL does not dispute this. Appx60; *see also* Appx63. The Board’s finding of waiver was thus supported by substantial evidence. Appx64. ZyXEL’s response also does not distinguish binding precedent that a petitioner’s arguments must be raised fully in the petition. *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359 (Fed. Cir. 2016).

C. The Panel Opinion Misapprehended Dr. Vojcic’s Claim 8 Opinion

ZyXEL admits that *Nystrom* does not teach—and that “the Court did not rely on any teaching of *Nystrom* . . . that the second communication system would have denser pilot symbols than the first communication system.” Dkt. 69 at 10. Instead, according to ZyXEL, it is simply “undisputed that *Talukdar* taught using the second communication system (802.16(m)) for faster moving units.” However, the supporting citation (Dkt. 62 at 15–16) relates only to the combination of *Talukdar* and *Li* in the context of claim 1, and states only that “faster mobile users would be

using the second communication system in *Talukdar* (the 802.16(m) system).” But *Talukdar* discloses only that the second communication system section *could have* a *different* pilot structure—but does not specifically disclose a *denser* structure. Appx2132, ¶29 (“the structures of the 802.16(m) region (sub-channel and pilot structures) can be different from those of the 802.16(e) regions” (emphasis added)); *see also* Appx2137, ¶31 (“The m-DL and m-UL regions in these frames may have different sub-channel/pilot structures than the legacy systems” (emphasis added)). The panel misapprehended this testimony by Dr. Vojcic as well as his testimony that *Nystrom* does not cure this deficiency. Appx3026-3027, ¶92 (*citing* Appx3027, Fig. 1) (*Nystrom* discloses four different combinations of Doppler and delay spread, but does not disclose anything about the relative density of pilots between the first and second communications systems); *see also* Appx3027, ¶92 (“there is no basis to suggest that the density of pilots in the second segment would be higher than in the first segment” as claimed) (emphasis added). This testimony constitutes substantial evidence supporting the FWD.

D. The Panel Opinion Misapprehended The Complex Redesign

ZyXEL responds without support that “no physical combination of the [*Talukdar* and *Nystrom*] systems is required.” To the contrary, a necessary undue redesign mitigates both, motivation to combine and expectation of success. *Apple*

Inc. v. UUSI, LLC, 2023 U.S. App. LEXIS 9924, *10 (Fed. Cir. Apr. 25, 2023) (“The Board agreed . . . that the required [‘unduly complex’] redesign mitigated both a motivation to combine and a reasonable expectation of success.”). This Court thus rejected the very “physical combination” argument (Dkt. 69 at 11) ZyXEL makes here. *Id.* (rejecting Apple’s “improper bodily-incorporation theory” and finding that because of the unduly complex redesign, “a POSITA would not have been motivated to make that combination or had a reasonable expectation [of success].”).

Here, expert testimony of the required complex redesign is an alternative ground for affirmance of the Board’s decision. Appx3029-3030, ¶95 (*Nystrom*’s measurements and scheduling methods are on a per user basis depending on the measured radio conditions, while *Talukdar*’s frame structure is based on a per system basis without any facilities for adaptive real-time pilot structure measurements and flexible scheduling as in *Nystrom*) (emphasis added); *see also* Appx3030-3031, ¶96 (modifying the fixed pilot structure of *Talukdar* with *Nystrom*’s dynamic pilot structure “would require a very comprehensive study that would take into account multiple criteria” (exemplary list of criteria omitted)). It was therefore error under this Court’s precedent to dismiss evidence that—absent a complex redesign—*Nystrom*’s disclosure is incompatible with *Talukdar*.

E. The Panel Overlooked The Effect Of Remand On Amendments.

ZyXEL counterintuitively argues that “it is impossible for a patent owner to ‘detrimentally’ rely” on an institution decision [or a preliminary guidance]. Dkt. 69 at 12. This Court’s agreement with that sentiment would have dire consequences for patent owners and the PTAB. Patent Owners will conditionally amend all claims—even those the Board would not have instituted—as claim 8 here. This would drastically increase the burden on the Board even in regard to claims which the Board found unlikely to be unpatentable.

Further, ZyXEL is completely silent on the issue of fairness, and ignores this Court’s precedent in *In re IPR Licensing, Inc.*, 942 F.3d 1363, 1368-1369 (Fed. Cir. 2019) holding that “the Board must base its decision on arguments that were advanced by a party, and to which the opposing party was given a chance to respond.” Because ZyXEL never raised *Nystrom* in this context below (*see* Appx883–905; Appx1115–1144), UNMRI never had the opportunity to address *Nystrom* in the context of claim 8 or the amended claims. This is improper.

If the Court remands, Patent Owner is entitled to address the new prior art combination in its amendments to claims 44–47, 49, and 50, and original claim 8.

II. CONCLUSION

For these reasons, panel rehearing or rehearing *en banc* is appropriate to address points of fact and law overlooked or misapprehended by the Panel Opinion.

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24, the undersigned certifies that the foregoing document contains no more than 1359 words pursuant to Fed. R. App. P. 28.1(e)(2)(B)(i), excluding any items listed as exempted under Fed. R. App. P. 5(c), Fed. R. App. P. 21(d), Fed. R. App. P. 27(d)(2), Fed. R. App. P. 32(f), or Fed. Cir. R. 32(b)(2). Appellee/Cross Appellant has relied on the word count feature of the word processing software used to create this paper in making this certification.

Dated: September 27, 2024

/s/ Jay P. Kesan
Jay P. Kesan