
**United States Court of Appeals
for the Federal Circuit**

UNM RAINFOREST INNOVATIONS,
Appellant

v.

ZYXEL COMMUNICATIONS CORP.,
Appellee

2023-1296

**Appeal from the United States Patent and Trademark Office,
Patent Trial and Appeal Board Inter Parties Review
Nos. IPR2021-00377 and IPR2021-00739**

**APPELLANT'S COMBINED PETITION FOR REHEARING *EN BANC*
AND PANEL REHEARING**

Cecil E. Key
Jay P. Kesan
**DiMuroGinsberg, PC-
DGKeyIP Group**
1750 Tysons Blvd., Suite 1500
Tysons Corner, VA 22102
Phone: (217) 377-9905

Michael W. Shore
The Shore Firm LLP
901 Main St., Suite 3300
Dallas, TX 75202
Phone: (214) 593-9110

FORM 9. Certificate of Interest

Form 9 (p. 1)
March 2023**UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT****CERTIFICATE OF INTEREST****Case Number** 23-1296**Short Case Caption** UNM Rainforest Innovations v. ZyXEL Communications Corp.**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: 03/22/2023Signature: /s/ Jay P. KesanName: Jay P. Kesan

FORM 9. Certificate of Interest

Form 9 (p. 2)
March 2023

1. Represented Entities. Fed. Cir. R. 47.4(a)(1).	2. Real Party in Interest. Fed. Cir. R. 47.4(a)(2).	3. Parent Corporations and Stockholders. Fed. Cir. R. 47.4(a)(3).
Provide the full names of all entities represented by undersigned counsel in this case.	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. <input type="checkbox"/> None/Not Applicable	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. <input type="checkbox"/> None/Not Applicable
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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**STATEMENT OF COUNSEL PURSUANT TO
FEDERAL CIRCUIT RULE 35(b)**

The Panel's Rule 36 affirmance conflicts with decisions of this Court, including *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*). Based on my professional judgement, I believe rehearing is necessary to secure and maintain uniformity of this Court's decisions. The rehearing would address the following questions:

1. Whether the Panel erred in applying its own guidance, as provided in *Phillips*, in reviewing the PTAB's claim construction.
2. Whether the Panel erred in upholding the PTAB's claim construction, and more particularly, erring in not considering the totality of the specification in its review of the PTAB's claim construction.

Based on my professional judgement, I believe the Panel's decision is contrary to the following regulations and decisions of this Court:

- *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*) (a POSITA is deemed to read a claim term not only in the context of the particular claim in which it appears, but in the context of the entire patent, including the specification); and
- *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1324 (Fed. Cir. 2002) (the words used in the claims are interpreted in light of the intrinsic evidence of record, including the written description, the drawings, and the prosecution history).

Dated: June 12, 2024

/s/ Cecil E. Key
Cecil E. Key
ATTORNEY OF RECORD
FOR APPELLANT

I. INTRODUCTION

This Petition addresses a Final Decision of the PTAB in IPR2021-00377 and IPR2021-00739, and a subsequent Appeal to this Court.

This Court's decision will determine whether the PTAB's claim construction of the claims of the '204 Patent comply with the *Phillips* standard.

In *Phillips*, this Court stated that “[p]roperly viewed, the ‘ordinary meaning’ of a claim term is its meaning to the ordinary artisan reading the entire patent.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1321 (Fed. Cir. 2005) (*en banc*).

Despite the established rules of claim interpretation issued by this Court in *Phillips* and in other decisions, the PTAB applied a claim interpretation process that clearly violated this Court's claim interpretation guidance. The PTAB did not consider how a POSITA would interpret the claim terms “after reading the entire patent” as required by *Phillips*. Rather, the PTAB focused its claim interpretation process on one short phrase, deliberately interpreted out of its proper sequence and without reference to the entirety of the '204 Patent. The PTAB accepted Petitioner ZyXEL Communication Corp.'s tortured reading when the weight of the intrinsic evidence of the '204 Patent itself requires reversal.

Armed with a faulty claim interpretation, the PTAB proceeded to find the challenged claims invalid when, following a proper claim interpretation under *Phillips*, the challenged claims would have been found not invalid. More

specifically, the PTAB in departing from the *Phillips* standard wrongfully interpreted the term “quantization” as used in the ‘204 Patent as being a form of compression, when the patent as a whole treats quantization and compression as mutually exclusive operations. This misguided interpretation, which was influenced by the Appellee’s distorted interpretation of the asserted prior art, was ultimately the basis for the PTAB’s determination that the claims of the ‘204 Patent were not patentable. No written, reasoned opinion from this Panel supports the PTAB’s finding of invalidity. The absence of such a written opinion masks and risks validating Appellee’s subterfuge that helped lead the PTAB astray. The PTAB’s violations of this Court’s rules of claim construction prevented this Panel from issuing a proper written opinion, rather than a summary Rule 36 affirmance.

II. POINTS OF LAW OR FACT OVERLOOKED OR MISAPPREHENDED BY THE PANEL

A. The PTAB’s Claim Construction Did Not Conform to the *Phillips* Framework

Claim construction following the *Phillips* framework requires interpreting patent claims based on “the ordinary and customary meaning of the terms,” as understood by a person of ordinary skill in the art (POSITA) at the time of the invention. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (*en banc*); *see also* 37 C.F.R. § 42.100. “The words used in the claims are interpreted in light of the intrinsic evidence of record, including the written description, the

drawings, and the prosecution history[.]” *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1324 (Fed. Cir. 2002) (citation omitted). A POSITA “is deemed to read [a] claim term not only in the context of the particular claim in which [it] appears, but in the context of the entire patent, including the specification.” *Phillips*, 415 F.3d at 1313. Moreover, “the specification ‘acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication.’” *Id.*, at 1322 (quoting *Inleto Access, Inc. v. Echostar Satellite Corp.*, 383 F.3d 1295, 1300 (Fed. Cir. 2004) (‘Even when guidance is not provided in explicit definitional format, the specification may define claim terms by implication such that the meaning may be found in or ascertained by a reading of the patent documents.’(emphasis added))). Finally, *Phillips* explains that “the ‘ordinary meaning’ of a claim term is its meaning to the ordinary artisan after reading the entire patent.” *Phillips*, 415 F.3d at 1321 (emphasis added).

Only when intrinsic evidence alone cannot support a proper claim construction are courts allowed to turn to extrinsic evidence. *Phillips*, 415 F.3d at 1319. While courts also may “consider extrinsic evidence in claim construction, ‘such evidence is generally of less significance than the intrinsic record.’” *Allergan Sales, LLC v. Sandoz, Inc.*, 935 F.3d 1730, 1373 (Fed, Cir. 2019).

This Court has held that courts “still give primacy to intrinsic evidence, and [] resort to extrinsic evidence to construe claims only if it is consistent with the

intrinsic evidence.” *Seabed Geosolutions (US) Inc. v. Magseis FF LLC*, 8 F.4th 1285, 1287 (Fed. Cir. 2021) (citation omitted). Extrinsic evidence should not be used to contradict or change the meaning of claims as defined by the intrinsic record. *Genuine Enabling Technology LLC v. Nintendo Co., Ltd.*, 29 F.4th 1365, 1373 (2022).

The claims themselves are highly instructive in interpreting claim terms. *Phillips*, 415 F.3d at 1314. Generally, claim terms are presumed to be used the same way throughout the patent. *Id.* “[T]he presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.” *Phillips*, 415 F.3d 1315.

Despite the long line of claim interpretation guidance issued by this Court, the PTAB applied a claim interpretation process that clearly was at odds with that record. In particular, the PTAB did not consider how a POSITA would have interpreted the claim terms “after reading the entire patent.” Rather, the PTAB focused its claim interpretation process on one short phrase appearing in the ’204 Patent, and the PTAB further accepted Appellee ZyXEL’s reading of this phrase, when the weight of the intrinsic evidence of the patent itself clearly requires an *opposite* interpretation.

B. Claim Construction in Accordance with the *Phillips* Framework

This Court should adopt the claim constructions proposed in Appellant's Opening Brief for "compression" and "quantization." These proposed constructions are, in fact, the "plain and ordinary" meaning for compression and quantization in light of the specification, considered in its entirety, including all the claims.

1. The PTAB's Claim Construction Does Not Account for the '204 Patent's Entire Disclosure.

The PTAB declined to provide any constructions and instead relied on a supposed "plain reading," which is based on a very limited portion of the '204 Patent. Appx15-30. The PTAB asserted that,

[A] plain reading [of the specification at 4:11-19] ... in the context of the '204 Patent's description of an estimated CSI, demonstrates that the quantization of information regarding time delays and phases of the selected channel taps is a compression of one portion of the estimated CSI, and the generation of a plurality of parameters to represent information regarding magnitudes of the selected channel taps is a further (i.e., additional) compression of another portion of the estimated CSI.

Appx18.

This supposed "plain reading" by the PTAB is not based on a reading of the '204 Patent in its entirety as required by *Phillips* and thus should be rejected by this Court. Moreover, the passage from the '204 Patent cited by the PTAB includes the phrase "The mobile station 104 may quantize information regarding time delays and phases . . . [and] may further compress the estimated CSI to generate a plurality of

parameters to represent magnitudes of the selected channel taps.” Appx18; Appx 160. The PTAB took this passage to mean that “quantizing is a form of compression.” Appx30. The totality of the ’204 Patent shows the PTAB’s “understanding” is *wrong*. Yet, the PTAB proceeded with this misunderstanding to interpret the terms “quantizing” and “compressing,” as noted above. Appx18.

Contributing to the PTAB’s improper claim construction process was the PTAB’s acceptance, without any support from the ’204 Patent itself, of Appellee ZyXEL’s assertion that “quantization” was a form of “compression.” In other words, the PTAB concluded that quantization and compression were not mutually exclusive. However, the ’204 Patent does not disclose quantization as a form of compression. In fact, the exact opposite is true.

2. Compression and Quantization, in the ’204 Patent, Are Mutually Exclusive

The totality of the ’204 Patent makes clear that the claim terms “quantization” and “compression” are intended to be and are in fact mutually exclusive.

First, the ’204 Patent discloses example compression methods, each of which require determining “parameters” indicative of the channel tap magnitudes. *See* Appx144-150, ’204 Patent, Figures. 3A – 6. The determination of the parameters is, in fact, the compression comprehended by the ’204 Patent. Considering Figures 3A and 3B, the ’204 Patent teaches that determining the slope and y-intercept of a line constructed, using a least squares fit (*see* Figure 3B), across a plurality of

channel tap magnitudes would (1) represent those magnitudes, albeit with some loss, (2) would allow reconstruction of each of the magnitudes, even with some loss, and (3) would achieve a significant compression of the set of data constituting the channel taps. Thus, the set of channel taps, as a data set, are compressed. In other words, the data set is compressed. Once the “parameters” are determined, they are individually quantized (in the example of Figure 3B, the slope value is quantized and the y-intercept value is quantized), and the quantized parameters are sent to the base station. This distinction between “compression” on the one hand, and “quantization” on the other is clearly taught by a reading of the ’204 Patent in its entirety, which *Phillips* requires, and which the PTAB did not do. Instead, the PTAB conflated compression as it would have been understood by a POSITA reading the ’204 Patent in its entirety, and not just a short passage from column 4 of the specification (which from the record, is all the PTAB did), with “quantization” as it also would have been interpreted by the same POSITA reading the ’204 Patent in its entirety.

Second, the ’204 Patent provides no disclosure of compressing certain channel state information (CSI), specifically, time delays and phases, but does explicitly disclose quantizing the time delays and phases. Appx160 (’204 Patent, 4:12-13). Considering the carefully articulated sequence of steps to achieve improved transmission of CSI, namely (1) select channel taps that have a magnitude greater

than a threshold value, (2) “quantize information regarding time delays and phases of the selected channel taps,” and (3) “compress the estimated CSI by generating ... parameters to represent ... magnitudes of the selected channel taps” (Appx160, 4:9-17), logic dictates that the time delays and the phases must be transmitted without loss or with minimal loss; otherwise, the receiving base station will not be able to reconstruct the desired channel response. The logical approach, based on a reading of the entire ’204 Patent suggests that compressing channel tap magnitudes would not appreciably affect the fidelity of the reconstructed channel response. Accordingly, when the ’204 Patent discloses quantization, that term is not co-extensive with any form of compression. This simple logic leads to the conclusion that the ’204 Patent cannot be read as disclosing compressing the time delays and phases, which could result in losses that would adversely affect the reconstructed signal, but rather only quantizing the time delays and phases. As a result, the ’204 Patent should be read to disclose compressing and quantizing as two distinct and mutually exclusive operations, when processing the channel tap magnitudes.

Accordingly, a plain reading of the ’204 Patent, Appx160, 4:9-19, reveals that compressing the CSI means compressing the channel tap magnitudes but does not mean compressing the time delays and the phases.

3. The PTAB's Claim Constructions Render Dependent Claims Superfluous

Dependent claim 7 recites “the sending further comprises: quantizing the generated parameters before the sending.” Appx164. According to the PTAB, where the word “further” is used in the claim and the specification, “further” should mean “additional.” Appx18. However, the PTAB asserted that in claim 1, “the scope of ‘compressing the estimated CSI’ includes quantizing information regarding time delays and phases of the selected channel taps, generating a plurality of parameters to represent information regarding magnitudes of the selected channel taps, and quantizing the generated parameters.” Appx19 (emphasis added). Accepting the PTAB’s assertion would lead to claim 7 reciting a process already present in claim 1, namely “quantizing the generated parameters,” thereby rendering claim 7 superfluous.

C. The PTAB Incorrectly Concluded That Claims 1, 2, and 11–13 Are Not Patentable Over the Prior Art

Once the PTAB incorrectly construed the claim terms “compression” and “quantization,” stating that quantization is a form of compression, the PTAB moved on to find a prior art disclosure of vector quantization anticipated each of the challenged claims. Again, such a conclusion is based on an impermissible application of the *Phillips* framework.

Furthermore, if the terms “compression” and “quantization” are properly construed, the claimed compression would apply to a data set, as opposed to an individual channel tap.

The *Hui* reference (Appx1846-65) was applied for its alleged disclosure of compression. However, *Hui* explicitly teaches that the disclosed vector quantization is directed to improving the “resolution” of more significant channel taps at the expense of less significant channel taps so as to minimize distortion in the channel response for the total number of available bits.” Appx1857, 4:52-60. This feature of *Hui* is predicated on a “total bit budget.” Appx1860, 9:51-52. *Hui* allocates bits according to a total bit budget, and based on the record in this Appeal, *Hui* does not achieve compression by the “allocation of available bits” since all bits will be allocated. Rather, *Hui* assigns and distributes bits during quantization according to the significance of each of the channel taps. Thus, *Hui* would not anticipate a properly (*i.e.*, under the *Phillips* framework) construed claim of the ’204 Patent.

III. CONCLUSION

For the foregoing reasons, Panel rehearing, or rehearing *en banc*, is necessary and appropriate to address points of law overlooked or misapprehended by the Panel. The PTAB failed to construe the claims, and more particularly, failed to follow the *Phillips* framework, particularly with respect to the terms “quantization” and “compression.” The ’204 Patent, when considered in its entirety as *Phillips* explicitly

requires, clearly shows that “compression” and “quantization” are indeed mutually exclusive. Without properly construed claims, the PTAB could not provide any reasonable analysis of claim validity, in view of *Hui* or any other reference. Yet the PTAB proceeded to invalidate the challenged claims on the basis of improper claim construction.

Finally, given the egregious nature of the PTAB’s claim construction violations, a rational written opinion is necessary to spell out the PTAB’s errors, both for purposes of this case and for future adjudication by the PTAB and to avoid any suggestion that the PTAB’s allowing itself to be misled into legal error by the Appellee has been tacitly accepted.

Dated: June 12, 2024

Respectfully submitted,

/s/ Cecil E. Key

**DIMURO GINSBERG PC,
DG KEY IP GROUP**

Cecil E. Key

Jay P. Kesan

1750 Tysons Blvd., Suite 1500

Tysons Corner, VA 22102

Telephone: 703-289-5118

ckey@dimuro.com

jkesan@dimuro.com

THE SHORE FIRM LLP

Michael W. Shore

901 Main Street, Suite 3300

Dallas, Texas 75202

Telephone: 214-593-9110

mshore@shorefirm.com

FORM 19. Certificate of Compliance with Type-Volume Limitations

Form 19
July 2020**UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT****CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITATIONS****Case Number:** 23-1296**Short Case Caption:** UNM Rainforest Innovations v. ZyXel Communications Corp.

Instructions: When computing a word, line, or page count, you may exclude 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).

The foregoing filing complies with the relevant type-volume limitation of the Federal Rules of Appellate Procedure and Federal Circuit Rules because it meets one of the following:

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Date: 06/12/2024Signature: /s/ Cecil E. KeyName: Cecil E. Key