

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,

Petitioner,

v.

TOGAIL TECHNOLOGIES LTD.

Patent Owner.

Case IPR2023-00721

Patent 10,972,972

**PATENT OWNER'S PRELIMINARY RESPONSE
PURSUANT TO 37 C.F.R. § 42.107**

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I. Introduction

Petitioner Apple, Inc. (“Apple”) argues that Claims 1, 2, 9-12, 14, 15, 16, 23-26, and 28 of U.S. Patent No 10,972,972 (The “’972 Patent”) are obvious under 35 U.S.C. § 103 over a single reference, U.S. Patent Pub. No. 2020/0288479 to Xi *et al.* (“Xi”) (Ground 1) and that Claims 8, 13, 22, and 27 (which are dependent on claims 1 and 15) are obvious under 35 U.S.C. § 103 over Xi combined with U.S. Patent Pub. No. 2019/0261287 to Deenoo *et al.* (“Deenoo”) (Ground 2). Petitioner, however, has not established a likelihood of success on the merits. Specifically, Xi fails to disclose all of the limitations of at least the independent claims of the ’972 Patent. Petitioner further failed to explain why one skilled in the art would modify Xi to arrive at the invention claimed with respect to at least independent claims 1 and 15, and the claims dependent thereon. As such, the Board should deny institution of *inter partes* review of the ’972 Patent.

II. Legal standard – 35 U.S.C. § 103 Obviousness

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity ... the evidence that supports the grounds for the challenge to each claim”)). This

burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review). Furthermore, the petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). When alleging that claims of a patent are obviousness over a single prior art reference, Petitioner must explain why one skilled in the art would “modify that reference to arrive at the claimed invention.” *ARENDI SARL v. Apple Inc.*, 832 F. 3d 1355, 1361 (Fed. Cir. 2016) (citation omitted)).

III. Overview of U.S. Patent No 10,972,972 (The “’972 Patent”).

A. Background of the Technology

The ’972 Patent explains that “[w]ith the MIMO [(Multi Input Multi Output technology)], a number of antenna panels at the transceiver/receiver can bring extra degrees of freedom to increase data throughput...” (Ex. 1001, 1:25-30.) The lack of proper signaling mechanisms, however, generally results in reduced scheduling performance because the network “may not know the then current status of the antennas (e.g., how many and/or which of the antenna panels of the user device is turned on/off) at the UE ([user equipment]) side”. (*Id.*, 1:32-36.) The ’972 Patent proposes a solution to this problem. As the ’972 Summary explains “The processor

[of the user device] is configured to maintain a plurality of leading time values. The plurality of leading time values may indicate a plurality of leading time durations. The processor is further configured to receive an indicator for antenna panel status information from a base station (BS), and apply one of the plurality of leading time values to switch an antenna panel status of the plurality of antenna panels based on the indicator for antenna panel status information.” (*Id.* 1:47-55.) Thus, central to the invention is a plurality of leading time values that are used to switch the status of antenna panels. The ’972 Patent recognizes that different devices with different numbers and types of antenna panels may require different sets of leading time values. (*Id.*, 9:10-18.)

The ’972 Patent also explains that the leading time for a given antenna panel may vary depending on the status of the antenna panel, for example, whether the antenna panel is in power saving mode vs. normal power consumption mode. (*Id.*, 9:25-34.) That is, the leading time for an antenna panel in power saving mode may be greater than that for one in power consumption mode. (*Id.*, 9:35-46; 9:64-10:1.) The ’972 Patent proposes applying scheduling offset values that are more suitable for the given wireless device based on the leading time associated with the current status of that device. (*Id.*, 17:59-66.)

To this end, the ’972 Patent discloses wireless communication devices, which

are configured to maintain a plurality of leading time values, at least one for each of a plurality of antenna panels statuses. (*Id.*, 12:24-28.) The leading time values may include, for example, leading time values for power saving modes and normal power consumption modes. (*Id.*, 21:8-27.) In certain embodiments, the BS communicates to the wireless device a status indicator, which instructs the wireless device to switch the status of the antenna panels of the device, for example, from the current power mode to another mode, such as from the power saving mode to the normal power consumption mode, therewith causing the applicable leading time value associated with the status indicator to be applied. (*Id.*, 25:60-26:8.) The BS also communicates one or more scheduling offset values to the wireless communication device 100, which in one embodiment includes a K0 value for the DL channel and a K2 value for the UL channel. (*Id.*, 17:34-38.)

The wireless communication device then compares the applicable leading time value associated with the status indicator against the scheduling offset value received from the BS, and based on this comparison, the wireless device determines whether the scheduling offset value is invalid in relation to the applicable leading time value, e.g., when the scheduling offset is less than the applicable leading time value. (*Id.*, 17:38-42.) The ability for the device and/or the BS to realize the leading time values associated with the status of the specific antenna panels of the device

allows the system to apply a more suitable scheduling offset for that device's antenna panels, for example, rather than assuming a longer leading time applicable to all devices in the network. (*Id.*, 17:59-66.)

B. The Claims of the '972 Patent

The '972 Patent consists of 28 claims. Claims 1 and 15 are independent. Petitioner has challenged claims 1, 2, 8-16, and 22-28.

Claim 1 recites:

- [1.0] A wireless communication device comprising:
 - [1.1] a plurality of antenna panels;
 - [1.2] a processor coupled to the plurality of antenna panels and configured to:
 - [1.3] maintain a plurality of leading time values, the plurality of leading time values indicating a plurality of leading time durations;
 - [1.4] receive an indicator for antenna panel status information from a base station (BS);
 - [1.5] apply one of the plurality of leading time values to switch an antenna panel status of the plurality of antenna panels based on the indicator for antenna panel status information;
 - [1.6] receive a scheduling offset value from the BS, the scheduling offset value comprising at least one of a K0 parameter for a Downlink (DL) channel and a K2 parameter for an Uplink (UL) channel; and
 - [1.7] determine that the scheduling offset value is invalid., when a time duration indicated by the scheduling offset value is less than a leading time duration indicated by the applied leading time value.

(Ex. 1001, 31: 7-28.)

Claim 15 recites:

[15.0] A method performed by a wireless communication device for operating a plurality of antenna panels, the method comprising:

[15.1] maintaining a plurality of leading time values, the plurality of leading time values indicating a plurality of leading time durations;

[15.2] receiving an indicator for antenna panel status information from a base station (BS);

[15.3] applying one of the plurality of leading time values to switch an antenna panel status of the plurality of antenna panels based on the indicator for antenna panel status information;

[15.4] receiving a scheduling offset value from the BS, the scheduling offset value comprising at least one of a K0 parameter for a Downlink (DL) channel and a K2 parameter for an Uplink (UL) channel; and

[15.5] determining that the scheduling offset value is invalid, when a time duration indicated by the scheduling offset value is less than a leading time duration indicated by the applied leading time value.

(*Id.*, 32:65-33:17.)

C. Prosecution History of the '972 Patent

The '972 Patent application was filed on July 15, 2019, claiming priority to U.S. Provisional Patent Application No. 62/699,465, filed July 17, 2018. During prosecution, the patent examiner indicated that originally numbered claims 3-4, 7-10, 14-16, 19-20, 23-26, and 30-32 were allowable over the prior art of record. (Ex. 1002, 207.) Applicant amended independent claim 1 to include the elements of allowable claims 16 and independent claim 17 (issued claim 15) to include the elements of allowable claim 32. (*Id.*, 192.) (*Id.*) The '972 Patent was allowed soon thereafter. (*Id.*, 193, *et sec.*)

IV. Level of Ordinary Skill

For purposes of this preliminary response only, Patent Owner does not dispute the qualifications of a person having ordinary skill in the art proposed by the Petitioner. All references to a PHOSITA are made pursuant to that definition.

V. Institution Should Be Denied Because Petitioner Failed to Establish That the Claims of the '972 Patent are Obvious under 35 U.S.C. § 103.

A. Xi does not disclose [1.3] “a plurality of leading time values, the plurality of leading time values indicating a plurality of leading time durations”, as claims 1 and 15 require.

Claims 1 and 15 each recite that the wireless communication device *maintains* “*a plurality of leading time values*, the plurality of leading time values indicating a plurality of leading time durations” (Ex. 1001, 31:12-14, 33:1-3.) Petitioner argues that Xi teaches this limitation with reference to Xi’s “threshold K”, citing Xi (Ex.1005) [0088]-[0089] and Xi Provisional (Ex.1008) [0083]-[0084]. (Pet, 23-24.) Petitioner is mistaken.

First, the construction proposed by Petitioner for the term “*leading time values*” finds no support in the intrinsic evidence. Petitioner argues that “*leading time values*” refers to “the time required [] for a mobile station with at least one antenna panel to switch beams after receiving a beam switch command.” (Pet. at 24 (citing Ex.1001, 6:23-31; 8:65-9:2.) Petitioner, however, ignores the use of this term in the claims and throughout the specification. *DePuy Spine, Inc. v. Medtronic*

Sofamor Danek, Inc., 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–17 (Fed. Cir. 2005) (“In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.”) Moreover, even though Petitioner quotes the specification of the ’972 Patent for the alleged definition of this term, it does not explain the reason for departing from the clear teaching provided in the specification with respect to the meaning of this term beyond “beam switching” and, consequently, impermissibly excludes preferred embodiments. *See Epos Techs. Ltd. v. Pegasus Techs.*, 766 F.3d 1338, 1347 (Fed. Cir. 2014) (“A claim construction that excludes a preferred embodiment is rarely, if ever correct and would require highly persuasive evidentiary support.”) Finally, Petitioner’s construction conflicts with the express limitations of the claims, which require a “**plurality**” of antenna panels, not “at least one panel” per Petitioner’s proposed construction.

The claims at issue all expressly require that the device apply “one of the plurality of leading time values ***to switch an antenna panel status of the plurality of antenna panels based on the indicator for antenna panel status information.***” (Ex. 1001, 31:7-28.) The ***leading time values*** are not just time values relating to beam switching. For example, the specification describes the ***leading time values***

with respect to the time it takes to turn on a set of antenna panels. (*See id.*, 21:11:27 (“[T]he UE may apply a first leading time when the UE needs to turn on a first number of antenna panel(s), and apply a second leading time when the UE needs to turn on a second number of antenna panel (s)”).) As a second example, the specification includes an embodiment illustrated in Figure 23 that describes “leading time values” and “leading time durations” that are not in the context of beam switching. (*See id.*, Fig. 23, 29:25-39 (“[T]he wireless communication device may apply one of the plurality of leading time values to switch an antenna panel status of the plurality of antenna panels based on the received indicator for antenna panel status information.”).) Further, the “*indicator for antenna panel status*” consists of information instructing the wireless device to switch the status of the plurality of antenna panels, for example, for them to operate in normal power consumption mode. (*Id.*, *see also, id.*, 10:34-41.).

Indeed, based on the express language of the claims and consistent with the specification, the *leading time values* are not just time values relating to beam switching, but rather time values/durations specifically related to *switching the status of the plurality of antenna panels of the given wireless communication device*.

Even though Xi provides a laundry list of the items that the ***threshold K*** may represent, as patent references often do, these are only estimates of time durations and there is no indication in Xi that these estimates are specific to the plurality of antenna panels of the device. (Ex. 1005, [0084]-[0095].) Importantly, the estimates are not related to the value/duration for ***switching the status of the plurality of antenna panels of the device***. Consequently, Xi does not disclose maintaining ***a plurality*** of such leading time values/durations for the given device. The importance of maintaining more than one ***leading time value*** cannot be understated. For example, the '972 Patent specifically notes the possible disparities in the times it takes to turn on one number of panel(s) versus another number of panels. (*See id.*, 21:20-27 (“[T]he shorter leading time, 10 μ s, may be applied in the case that the UE does not need to further turn on an antenna panel in response to the indicator for antenna panel status, and the longer leading time, 3 ms, may be applied in the case that the UE needs to turn on one or more antenna panels to change the operation mode (e.g., to switch from the power saving mode to the normal power consumption mode).”).) By ***maintaining a plurality of leading time values/durations*** specifically relating to switching the status of the plurality of antennas, the claimed invention (i) allows the system to apply the appropriate leading time value/duration, based on the specific value/duration for switching the operating status of the antenna panels of

the device, to maximize efficiency; and (ii) avoids the shortcoming of relying on a single, worst-case leading time for all antenna status switching.

B. Xi does not disclose [1.5] apply/applying “one of the plurality of leading time values ...”, as claims 1 and 15 require.

Claims 1 and 15 each recite that the wireless communication device *applies* “*one of the plurality of leading time values to switch an antenna panel status of the plurality of antenna panels based on the indicator for antenna panel status information*” (Ex. 1001, 31:17-20, 33:6-9.) The wireless communication device must therefore select one of the plurality of leading time values, based on the antenna panel status indicator information from the BS. (*Id.*) Once selected, the device then applies the relevant leading time to switch the status of the plurality of antenna panels in accordance with the information received from the BS. This interpretation of this claim limitation is consistent with the disclosure provided in the specification, including:

... the UE may be configured with two different leading time values. One leading time value may be 10 μ s, and the other one may be 3 ms. As noted above, the *UE may apply a first leading time when the UE needs to turn on a first number of antenna panel(s), and apply a second leading time when the UE needs to turn on a second number of antenna panel(s)*.... Hence, in this example, the shorter leading time, 10 μ s, may be applied in the case that the UE does not need to further turn on an antenna panel in response to the indicator for antenna panel status, and the longer leading time, 3 ms, may be applied in the case that the UE needs to turn on one or more antenna panels to change

the operation mode (e.g., to switch from the power saving mode to the normal power consumption mode).

(*Id.*, 21:8-27.)

With respect to *the indicator for antenna panel status* from the BS, this consists of information that provides instructions for the wireless device to switch the operating status of the plurality of antenna panels. (*Id.*, (claim 1) 31:7-28; *see id.*, 10:34-41.) The *indicator for antenna panel status* may be a single- or multiple-bit (IE) set to indicate whether a particular status of the plurality of antenna panels should be enabled, for example, to switch to the antenna panels to normal power consumption mode. (*Id.*, 10:34-64.) The indicator, therefore, represents direct instructions from the BS to switch the operating status of the antenna panels.

Petitioner contends that Xi implicitly teaches this limitation, citing Xi (Ex.1005) at [0092]-[0094]; Xi Provisional (Ex.1008) [0087]-[0089]. (Pet, 28-29.) Petitioner argues that Xi “applies one of the values of the threshold K to determine whether to switch to the panel *implicitly* indicated by the beam indicator ...” (*Id.*, 28 (emphasis added).) Petitioner is incorrect. As discussed above, Xi’s threshold K may represent estimates of time durations, but there is no indication in Xi that these estimates are specific to the plurality of antenna panels of the device, and, consequently, are not the same as the claimed leading time value/duration for *switching the status of the plurality of antenna panels*. As such, Xi does not

disclose applying these specific variables as a basis for switching the device's antenna panels' operating status.

Xi also does not disclose using the “threshold K to determine whether to switch [the operating status of any] panel” as Petitioner suggests, let alone whether to switch the antenna panels' status based on *the indicator for antenna panel status* from the BS. Even if the TCI implies beam selection, this is not an indicator from the BS that instructs the device to switch the status of the plurality of antenna panels, as required by the claims. Moreover, even though Xi may acknowledge the existence of a myriad of different types of threshold Ks, Xi does not use any of threshold Ks as a basis for switching the status of *any of the antenna panels*. (Ex. 1005, [0084] (discussing the use of K as a basis for selecting a beam indicated in the QCL parameter, which is not the same as using threshold K as a basis for switching the operating status of the plurality of antenna panels, as required by the claims.); *see also, id.*, [0087]-[0090], [0094]-[0098].)

C. Petitioner has not explained how and why one skilled in the art would modify Xi to achieve the invention of claims 1 and 15.

Petitioner has taken an unorthodox approach in its effort to show that claims 1 and 15 are obvious over Xi. Petitioner repeatedly argues that each of the limitations are “obvious”, but never explains how the invention “as a whole is obvious”. 35 U.S.C. § 103 (“A patent for a claimed invention may not be obtained ... if the

differences between the claimed invention and the prior art are such that the claimed invention *as a whole* would have been obvious before the effective filing date of the claimed invention ...”).); MPEP 2141.02 (I) (“In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious.”) (citing *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983)); *see, e.g.*, Pet. at 22, 28, 32, 34 (alleging how Xi renders individual claim limitation obvious.))

The fundamental first step in any obviousness analysis is to identify the differences between the prior art and the claimed invention, but Petitioner made no effort to identify such differences, because Xi according to Petitioner teaches all of the limitations of claims 1 and 15. *Graham v. John Deere Co.*, 383 US 1, 17-18 (1966). Because Petitioner did not identify the differences between the claimed invention and the prior art, Petitioner has not shown why one skilled in the art would modify Xi in view of the deficiencies thereof “to arrive at the claimed invention.” *ARENDI SARL*, 832 F. 3d at 1361 (citing *Takeda Chem. Indus., Ltd. v. Alphapharm Pty, Ltd.*, 492 F.3d 1350, 1357 (Fed. Cir. 2007); *SIBIA Neurosciences, Inc. v. Cadus Pharm. Corp.*, 225 F.3d 1349, 1356 (Fed. Cir. 2000).

By failing to consider the claimed invention as a whole and to identify the differences between the claimed invention and the references of record, Petitioner failed to show that the claims at issue are obvious.

VI. CONCLUSION

For the foregoing reasons, Patent Owner respectfully requests denial of institution for at least the reasons stated in this preliminary response.

Respectfully submitted,

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Lead counsel for Patent Owner

Date: July 13, 2023

CERTIFICATE OF WORD COUNT (37 C.F.R. § 42.24(d))

The undersigned hereby certifies that the word count in this Patent Owner Preliminary Response is 3,496 words, as counted by the word-processing program Microsoft Word that was used to generate this Patent Owner Preliminary Response, where such word count excludes the table of contents, table of authorities, mandatory notices, certificate of service, appendix of exhibits, claim listing, and this certificate of word count. This Patent Owner Preliminary Response is in compliance with the 14,000-word limit set forth in 37 C.F.R. § 42.24(b)(1).

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CERTIFICATE OF SERVICE (37 C.F.R. § 42.6(e))

The undersigned hereby certifies that the above document was served on July 13, 2023, by filing this document through the Patent Trial and Appeal Case Tracking System as well as delivering a copy via electronic mail upon the following attorneys of record for the Petitioner:

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