NOTE: This disposition is nonprecedential.

# United States Court of Appeals for the Federal Circuit

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**HYTERA COMMUNICATIONS CO. LTD.,**
*Appellant*

**v.**

**MOTOROLA SOLUTIONS, INC.,**
*Appellee*

**ANDREI IANCU, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,**
*Intervenor*

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2019-2124

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Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2017-02183.

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Decided: January 19, 2021

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Before NEWMAN, LOURIE, and HUGHES, *Circuit Judges*.

LOURIE, *Circuit Judge*.

 Hytera Communications Co. Ltd. ("Hytera") appeals from the final written decision of the Patent Trial and Appeal Board ("Board") holding that claims 7 and 8 of U.S. Patent 8,279,991 (the "'991 patent") are not unpatentable. *Hytera Commc'ns Co. Ltd. v. Motorola Sols., Inc.*, No. IPR2017-02183, 2019 WL 2098197 (P.T.A.B. May 13, 2019) ("*Decision*").  For the following reasons, we *affirm*.

## BACKGROUND

Motorola Solutions, Inc. ("Motorola") owns the '991 patent, which is directed to a method for efficiently synchronizing to a desired timeslot in a time division multiple access ("TDMA") communication system.  We begin with a brief introduction to TDMA, as explained in the '991 patent and the prior art.

TDMA refers to a method of dividing a frequency band in a communications system into multiple channels.  In a TDMA system, a frequency band is divided into a series of recurring periods of time, which are called "frames."  The frames are further divided into multiple time intervals,

which are called "timeslots." Each timeslot reflects a brief
period of time during which a radio can transmit or receive
communications. By assigning timeslots, TDMA allows
multiple radios to share the same frequency channel. Fig-
ure 7 in the '991 patent provides an illustration of a TDMA
system with two timeslots in a frequency band.



*FIG. 7*
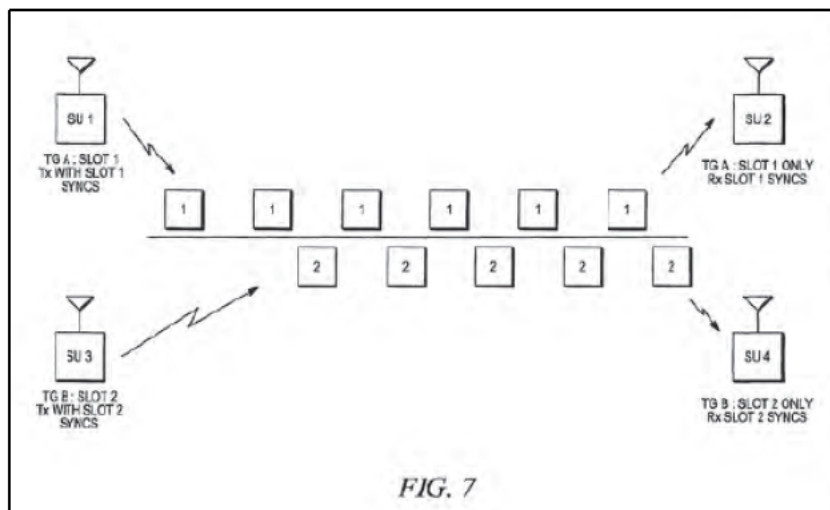
J.A. 44. As illustrated, two radios can simultaneously
transmit on the same frequency using different timeslots.

Before a radio can receive or transmit data on a TDMA
channel, it must ensure that it is synchronized with a
timeslot in the frame. '991 patent col. 1 ll. 38–41. As de-
scribed in the prior art, to achieve synchronization, a radio
tunes to a frequency, takes a sample of a transmitted sig-
nal, processes information from the signal, and compares it
to known information in order to identify a timeslot. *See,
e.g.*, J.A. 1642 col. 1 l. 31–col. 2 l. 9. Prior to the '991 patent,
a number of synchronization methods were known in the
art. For example, the ETSI-DMR standard[1] provides that

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[1]    "ETSI-DMR" refers to European Telecommunica-
tions Standard Institute—Digital Mobile Radio.

the signal information is a "TDMA Channel (TC) bit" that is transmitted between timeslots and "informs the receiving device whether the next timeslot to be received is timeslot 1 or timeslot 2." '991 patent col. 1 ll. 41–44. As another example, the ANSI/TIA 136 standard[2] utilizes synchronization patterns embedded in the signal during each timeslot to indicate the timeslot number. *See, e.g.*, J.A. 1642 col. 1 l. 31–col. 2. l. 9.

The '991 patent purports to disclose a novel synchronization method that overcomes inefficiencies in the prior art, including unreliable and time-consuming decoding of non-unique synchronization patterns as well as logjams created when each radio can only communicate on its assigned timeslot. *See* '991 patent col. 1 l. 56–col. 2 l. 24. To solve those inefficiencies, the '991 patent discloses methods that use mutually exclusive synchronization patterns that identify the timeslot and its source and/or payload type, and allow transmission in an alternate timeslot when the preferred timeslot is unavailable. *Id.* at col. 3 ll. 13–37, col. 3 l. 58–col. 4 l. 19, col. 5 ll. 24–30, col. 9 ll. 33–60. Thus, unlike in the ETSI-DMR or ANSI/TIA 136 standards, if a radio is ready to communicate but its assigned timeslot is busy, the radio can synchronize with a different timeslot and transmit. *See id.* at col. 9 l. 33–col. 10 l. 40.

Hytera filed a petition for *inter partes* review of claims 7 and 8 of the '991 patent, which recite:

> 7. In a time division multiple access (TDMA) system having a plurality of timeslots, a method comprises the steps of:
>> knowing a first set of synchronization patterns associated with a desired timeslot and a second set of synchronization patterns

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2   "ANSI/TIA" refers to American National Standards Institute/Telecommunications Industry Association.

> associated with each of the other timeslots in the TDMA system, wherein the first set of synchronization patterns is mutually exclusive from the second set of synchronization patterns, and each set comprising at least two different synchronization patterns as a function of at least one of a payload type and a source of the transmission;
>
> preparing to transmit a particular payload type in a timeslot;
>
> determining whether the timeslot is a current desired timeslot for the TDMA system;
>
> if the timeslot is the current desired timeslot, selecting a synchronization pattern selected from the first set of synchronization patterns based on the one of the particular payload type and a particular source of the transmission; otherwise selecting a synchronization pattern selected from the second set of synchronization patterns based on the one of the particular payload type and the particular source of the transmission; and
>
> transmitting a burst in the timeslot having embedded the synchronization pattern that was selected.
>
> 8.  The method of claim 7 wherein the current desired timeslot at a first time is different than the current desired timeslot at a second time.

'991 patent col. 17 ll. 36–63.  In three grounds in its petition, Hytera contended that claims 7 and 8 are unpatentable as obvious over: (1) U.S. Patent 5,761,211 ("Yamaguchi") in combination with the ETSI TS 102 361-1 v1.1.1 standard ("ETSI") and U.S. Patent 6,452,991 ("Zak"); (2) ETSI in combination with Zak; and (3) Yamaguchi in combination with U.S. Patent Pub. 2006/0013188 ("Wiatrowski") and Zak.  After instituting trial on all three grounds, the Board concluded in its final written decision

that Hytera failed to show by a preponderance of the evidence that claims 7 and 8 are unpatentable. *Decision*, 2019 WL 2098197, at *1. Hytera appealed and we have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

## DISCUSSION

We review the Board's legal determinations de novo, *In re Elsner*, 381 F.3d 1125, 1127 (Fed. Cir. 2004), but we review the Board's factual findings underlying those determinations for substantial evidence, *In re Gartside*, 203 F.3d 1305, 1316 (Fed. Cir. 2000). A finding is supported by substantial evidence if a reasonable mind might accept the evidence as adequate to support the finding. *Consol. Edison Co. v. NLRB*, 305 U.S. 197, 229 (1938). "If two 'inconsistent conclusions may reasonably be drawn from the evidence in record, the PTAB's decision to favor one conclusion over the other is the epitome of a decision that must be sustained upon review for substantial evidence.'" *Elbit Sys. of Am., LLC v. Thales Visionix, Inc.*, 881 F.3d 1354, 1356 (Fed. Cir. 2018) (quoting *In re Cree, Inc.*, 818 F.3d 694, 701 (Fed. Cir. 2016) (internal brackets omitted)).

Hytera raises four challenges on appeal. First, Hytera contends that the Board improperly imported an "alternate timeslot" limitation into claim 7. Second, Hytera contends that the Board acted contrary to precedent by requiring that the prior art teach both cases of a conditional claim limitation. Third, Hytera contends that the Board erred by requiring the claimed method steps to be performed in the order they are written. And fourth, Hytera contends that the Board mistakenly found evidence of copying as a secondary consideration of nonobviousness. We address Hytera's challenges in turn.

## I

Hytera's first challenge is based on the Board's interpretation of claim 7 as requiring "transmitting on an alternate timeslot." *See Decision*, 2019 WL 2098197, at *10.

Hytera argues that the Board expressly acknowledged that "the claims and specification do not explicitly refer to an alternate timeslot," *see id.*, yet the Board imported that requirement anyway. Hytera contends that the Board committed reversible error by importing that unclaimed limitation into claim 7.

We note that the Board's interpretation of the claim as including an "alternate timeslot" was based on Hytera's own contentions in its petition that Zak teaches transmitting on an alternate timeslot. *Id.* (citing Hytera's petition). The Board was not wrong to hold Hytera to the position it took in the petition; indeed, it would have been improper for the Board to allow Hytera to change its arguments in its reply brief. *See* 37 C.F.R. § 42.23(b) ("All arguments for the relief requested in a motion must be made in the motion. A reply may only respond to arguments raised in the corresponding opposition, patent owner preliminary response, or patent owner response."); *Intelligent Bio-Systems, Inc. v. Illumina Cambridge, Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016).

In any event, we agree with the Board's interpretation of the claim. While the term "alternate timeslot" may be inelegant due to that term's absence from the '991 patent, the plain language of the claim distinguishes between "a desired timeslot" versus "the other timeslots." '991 patent col. 17 ll. 39–41. The Board's choice of what to call one of those other timeslots was a matter of semantics, which is demonstrated by the Board's explicit explanation that "alternate timeslot" simply refers to "a timeslot that is not an assigned timeslot." *Decision*, 2019 WL 2098197, at *10. Regardless what such a timeslot is called, the claim plainly requires that it exist in the system.

We also find no error in the Board's determination that the claim requires "transmitting" in the alternate timeslot. Although Hytera argues that the prior art need not teach both conditions of the "selecting" limitation in order to

render the claim obvious—which is an argument that we address separately below—Hytera cannot dispute that the "transmitting" limitation of the claim requires transmitting in whichever timeslot is selected. If the alternate timeslot is selected, the claim expressly requires transmitting a burst in that selected timeslot. '991 patent col. 17 ll. 59–60. We therefore are not persuaded by Hytera's contention that the Board erroneously imported an "alternate timeslot" limitation into the claims.

## II

Hytera's second challenge focuses on the "selecting" limitation in claim 7. The "selecting" limitation is written in conditional language, with two alternative conditions and corresponding responses:

> *if* the timeslot is the current desired timeslot, selecting a synchronization pattern selected from the first set of synchronization patterns based on the one of the particular payload type and a particular source of the transmission; *otherwise* selecting a synchronization pattern selected from the second set of synchronization patterns based on the one of the particular payload type and the particular source of the transmission;

'991 patent col. 17 ll. 51–58 (emphases added). Hytera argues that, to render the claim obvious, the prior art need only teach one condition and its corresponding response. But that argument does not square with our precedent in *Lincoln Nat'l Life Ins. Co. v. Transamerica Life Ins. Co.*, 609 F.3d 1364 (Fed. Cir. 2010).

In *Lincoln*, step (e) in a method claim recited "periodically paying the scheduled payment to the owner for the period of benefit payments, *even if the account value is exhausted before all payments have been made.*" *Id.* at 1366. The patent owner argued that the "even if" clause was conditional and thus "need not be performed unless account

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exhaustion occurs." *Id.* at 1370.  We rejected that argument, and we held that:

> Lincoln was  required to prove that Transamerica's computerized system is configured to make payments regardless of account value, "even if the account value is exhausted before all payments have been made."  Because Transamerica's computerized system does not make a payment if an account is exhausted, the system does not make a guaranteed payment regardless of the account value.  Therefore, Lincoln failed to prove that Transamerica performs step (e).

*Id.* (internal citation omitted).  Like the claim at issue in *Lincoln*, the "selecting" step in claim 7 is not met unless the TDMA system is configured to perform each claimed responsive action in response to each corresponding claimed prerequisite condition.  Thus, the Board did not err by concluding that the prior art was required to teach both conditions of the "selecting" step.

Hytera cites only one precedential opinion in support of its argument about the conditional limitation.  Appellant Br. 29 (citing *Brown v. 3M*, 265 F.3d 1349, 1352–53 (Fed. Cir. 2001)).  But the claim in *Brown* is distinguishable from the conditional "selecting" limitation in claim 7 of the '991 patent.  In *Brown*, the claim required using one of three alternative formats for a date, and provided that any of the three would be sufficient to meet the limitation.  *Id.* Thus, the prior art anticipated the claim when it disclosed one of the three alternatives.  *Id.*  Here, in contrast, the claim specifies what action must occur in each scenario of the conditional limitation.

Hytera relies heavily on the Board's decision in *Ex Parte Schulhauser*, No. 2013-007847, 2016 WL 6277792 (P.T.A.B. Apr. 28, 2016).  Hytera cites *Schulhauser* for the proposition that when a conditional method claim has multiple possible paths, the prior art need only show one

possible path to render the claim unpatentable.  Hytera also cites nonprecedential opinions from this court regarding infringement when only one of two conditional cases recited in a claim is performed.  *See* Appellant Br. 43 (citing *Applera Corp. v. Illumina, Inc.*, 375 F. App'x 12, 21 (Fed. Cir. 2010) (nonprecedential); *Cybersettle, Inc. v. Nat'l Arbitration Forum, Inc.*, 243 F. App'x 603, 607 (Fed. Cir. 2007) (nonprecedential)).

Importantly, opinions from the Board are not binding on this court.  *See Noelle v. Lederman*, 355 F.3d 1343, 1350 (Fed. Cir. 2004).  Our nonprecedential opinions are also not binding.  *See* Fed. Cir. R. 32.1(d) ("The court may refer to a nonprecedential or unpublished disposition in an opinion or order and may look to a nonprecedential or unpublished disposition for guidance or persuasive reasoning but will not give one of its own nonprecedential dispositions the effect of binding precedent.").  To the extent any nonbinding precedent conflicts with our precedential opinion in *Lincoln*, we are bound by *Lincoln* as the controlling authority in this case.

In addition to being nonbinding, the cases Hytera cites are distinguishable from this case.  In *Cybersettle*, we stated that "[i]f the condition for performing a contingent step is not satisfied, the performance recited by the step need not be carried out in order for the claimed method to be performed." *Cybersettle*, 243 F. App'x at 607.  In the next two sentences, however, we stated:

> But Cybersettle does not argue that the two "receiving" steps are contingent on some unspecified condition, and the "receiving" steps of claim 1 contain no conditional language.

*Id.*  Our dictum in *Cybersettle* regarding claim steps contingent on unspecified conditions does not inform our interpretation of claim 7 in this case, which requires that a specific action be taken in response to each of two alternative specified conditions.

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In *Applera*, the claim at issue recited "repeating steps (a) and (b) until the sequence of nucleotides is determined," and the parties disputed whether that limitation required repeating the steps even if the condition was satisfied in the first cycle. *Applera*, 375 F. App'x at 21. Based on the nature of the claimed invention and the connotations of the term "repeating . . . until," we determined that "[t]here is no need for repetition once the sequence of the polynucleotide has been fully determined." *Id.* In essence, we determined that the claim implicitly required *not* repeating steps (a) and (b) after the condition had been satisfied, even if the condition was satisfied in the first cycle before any repetition had occurred. Again, that is significantly different from the case here, where claim 7 plainly recites the response that must occur in the case of each alternative condition.

The Board's decision in *Schulhauser* is closer to the situation we have in this case because it presented two alternative conditions and described a response to each. *See Schulhauser*, 2016 WL 6277792, at *3. The claim at issue recited, in pertinent part:

> collecting physiological data associated with the subject from the implantable device at preset time intervals, wherein the collected data includes real-time electrocardiac signal data, heart sound data, activity level data and tissue perfusion data;
>
> comparing the electrocardiac signal data with a threshold electrocardiac criteria for indicating a strong likelihood of a cardiac event;
>
> triggering an alarm state *if the electrocardiac signal data is not within the threshold electrocardiac criteria*;
>
> determining the current activity level of the subject from the activity level data *if the electrocardiac*

> *signal data is within the threshold electrocardiac criteria.*

*Id.* at *1 (emphasis added). The Board determined that the broadest reasonable interpretation of the claim "encompasses an instance in which the method ends when the alarm is triggered in response to the cardiac signal data not being within the threshold electrocardiac criteria, such that the step of 'determining the current activity level of the subject' and the remaining steps need not be reached." *Id.* at *4. Thus, the Board affirmed an examiner's rejection for obviousness based on prior art that showed only the "comparing" and "triggering" steps, even without any evidence in the prior art teaching the limitation directed to "determining the current activity level." *Id.* at *5.

We make no comment on whether *Schulhauser* was correctly decided by the Board, but we find that claim 7 of the '991 patent is distinguishable from the claim at issue in *Schulhauser*. In *Schulhauser*, nothing in the earlier steps of the claim suggested that the claimed method would be incomplete after the triggering step. Thus, each alternative condition could reasonably be construed as a standalone method claim, which was the basis for the Board's conclusion that "claim 1 as written covers at least two methods, one in which the prerequisite condition for the triggering step is met and one in which the prerequisite condition for the determining step is met." *Id.* at *4. In contrast, claim 7 of the '991 patent contains a clear indication that the method requires performance of the "selecting" step in response to each of the two alternative conditions. Specifically, the first step of claim 7 requires "knowing" at least two sets of mutually exclusive synchronization patterns. '991 patent col. 17 ll. 38–46. That "knowing" step would be largely unnecessary if the method could be performed by only "selecting a synchronization pattern selected from the first set of synchronization patterns" in response to the first condition when the timeslot is the current desired timeslot. *See id.* at col. 17 ll. 51–55.

The claim requires "knowing . . . a second set of synchronization patterns," *id.* at col. 17 ll. 38–41, precisely because it is essential that, under the second condition when the timeslot is *not* the current desired timeslot, the transmitting device must "select[] a synchronization pattern selected from the second set of synchronization patterns." *Id.* at col. 17 ll. 55–58. Therefore, whereas the Board construed the claim in *Schulhauser* as presenting two distinct methods depending on the prerequisite conditions, the Board here correctly determined claim 7 to be one method in which the response to either alternative condition in the "selecting" step must be performed.

Ultimately, our binding precedent in *Lincoln* supports the Board's conclusion that, in order to render claim 7 obvious, the prior art must teach each step of the claim, including the response to each condition in the "selecting" step. The nonbinding precedent that Hytera cites does not convince us otherwise. We therefore conclude that the Board did not commit reversible error with regard to the conditional "selecting" step.

## III

Hytera's third challenge focuses on the order of the claimed method. Hytera concedes that some of the steps of the method claim must be performed in order—*e.g.*, that the "transmitting" step must be performed last and that the "selecting" step must be performed after the "determining" step. *See* Appellant Br. 45 n.5. "Hytera only challenges the Board's finding that the 'preparing' step must come before the 'determining' step." *Id.* Hytera insists that the Board erred by relying on a figure in the '991 patent that does not cover claim 7, and by placing undue weight on antecedent basis.

Motorola responds that the Board correctly considered the antecedent basis in claim 7, which first recites "preparing to transmit a particular payload type in *a* timeslot," and then recites "determining whether *the* timeslot is a current

desired timeslot for the TDMA system." *See* '991 patent col. 17 ll. 47–50 (emphases added). Motorola further argues that the Board properly relied on Figure 5, which shows the same steps in the same order as claim 7 and depicts the "preparing" step before the "determining" and "selecting" steps.

We agree with Motorola. When "determining if the steps of a method claim that do not otherwise recite an order, must nonetheless be performed in the order in which they are written . . . [f]irst, we look to the claim language to determine if, as a matter of logic or grammar, they must be performed in the order written." *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1369 (Fed. Cir. 2003) (citing *Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1343 (Fed. Cir. 2001)). Here, in claim 7, each step of the method provides an antecedent basis for the steps that follow. That includes "a" timeslot in the "preparing" step, which grammatically provides antecedent basis for "the" timeslot in the "determining" step. Hytera argues that the antecedent basis is not meaningful because the "determining" step could have just as easily said "a" timeslot; on the contrary, the fact that the "determining step says "the" when it could have said "a" reinforces our conclusion that it is meant to come after the "preparing" step. Moreover, as a matter of logic, we reject Hytera's position that we should construe claim 7 as requiring four of its five steps to be performed in the order they are written, but we should disregard the antecedent basis in the "preparing" step and allow that one step to be performed out of order.

Because we conclude that the claim language demonstrates the order of the steps, we need not look further into the specification. *See Altiris*, 318 F.3d at 1369. Nevertheless, we note that the parties' dispute mainly concerns whether Figure 5—which clearly shows the "preparing" step before the "determining" step—is relevant to the order of claim 7. Tellingly, however, Hytera does not point to any figure or other part of the specification that discloses an

embodiment in which the "preparing" step is performed after the "determining" step.  Though we have repeatedly held that "it is . . . not enough that the only embodiments, or all of the embodiments, contain a particular limitation to limit a claim term beyond its ordinary meaning," *Aventis Pharma S.A. v. Hospira, Inc.*, 675 F.3d 1324, 1330 (Fed. Cir. 2012) (internal quotation marks omitted), here, the only embodiments are consistent with the plain meaning of the claim in the order that is written, and we thus decline to construe the claim as allowing deviation from that order. Therefore, based on the language of the claim, as supported by the embodiments in the specification, we hold that the Board did not err by requiring the claim steps to be performed in the order they are written.

## IV

We finally turn briefly to Hytera's challenge regarding secondary considerations.  Because we are unpersuaded by any of Hytera's first three challenges, we agree with the Board's conclusion that the prior art does not teach or suggest all of the limitations in claims 7 and 8.  We therefore need not address Hytera's assertions of error in the Board's consideration of copying as an objective indicium of nonobviousness.  *Hamilton Beach Brands, Inc. v. f'real Foods, LLC*, 908 F.3d 1328, 1343 (Fed. Cir. 2018).

## CONCLUSION

We have considered Hytera's remaining arguments but we find them unpersuasive.  Accordingly, the Board's final written decision is *affirmed.*

## AFFIRMED