

United States Court of Appeals for the Federal Circuit

HONEYWELL INTERNATIONAL INC., TELIT
CINTERION DEUTSCHLAND GMBH, FD
BA THALES DIS AIS DEUTSCHLAND GMBH, SIERRA
WIRELESS, ULC, FKA SIERRA WIRELESS, INC.,
Appellants

v.

3G LICENSING, S.A.,
Appellee

2023-1354, 2023-1384, 2023-1407

Appeals from the United States Patent and Trademark
Office, Patent Trial and Appeal Board in No. IPR2021-
00908.

Decided: January 2, 2025

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argued for all appellants. Appellant Honeywell
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Before DYK, CHEN, and STOLL, *Circuit Judges*.

Opinion for the court filed by *Circuit Judge* DYK.

Dissenting opinion filed by *Circuit Judge* STOLL.

DYK, *Circuit Judge*.

Appellants Honeywell International Inc., Telit Cinterion Deutschland GmbH, and Sierra Wireless, ULC (collectively, “Honeywell”) appeal the Patent Trial and Appeal Board’s (“Board”) final written decision in IPR2021-00908 declining to hold claims 1, 2, 4–7, 9–13, and 15–23 of U.S. Patent No. 7,319,718 (the “718 patent”) unpatentable as obvious. *See Honeywell Int’l, Inc. v. 3G Licensing S.A.*, No. IPR2021-00908, 2022 WL 16934074 (P.T.A.B. Nov. 14, 2022). We reverse.

BACKGROUND

I

In the field of telecommunications, computers and other electronic devices send information to one another over distance by transmitting and receiving signals. These signals are susceptible to degradation from random errors—typically caused by interference and noise—that can result in the recipient’s receiving a corrupted message. Error protection methods reduce the incidence of such transmission errors. One common error protection method is to encode the original message into a “codeword” and to then transmit that codeword instead of the original

message. That way, even if errors occur during transmission, the codeword should still contain enough information from the original message that the recipient can recover the original meaning.

The '718 patent is directed to a coding method for a specific kind of information used in third-generation mobile communication systems called the Channel Quality Indicator, sometimes also referred to as channel quality information ("CQI"). The CQI is transmitted from user equipment—such as a cell phone—to a base station and indicates the quality of the cellular connection that the user equipment is receiving. The CQI is an integer between 0 and 30, where 0 represents a very weak signal and 30 represents a very strong signal. The CQI is represented in five bits of binary data (a_0, a_1, a_2, a_3, a_4), where each bit has a value of 1 or 0, and the bits increase in significance from left to right. For example, the integer 9 is represented by the 5-bit sequence (1, 0, 0, 1, 0), with the leftmost 1 being the least significant bit and the rightmost 0 being the most significant bit ("MSB").

The base station responds to CQI from user equipment by assigning higher data rates to user equipment reporting strong signals and lower data rates to user equipment reporting weak signals. As the '718 patent specification explains, the main benefit of modifying data rates in response to changes in channel conditions through adaptive modulation and coding is the "higher data rate available for [user equipment] in favorable positions[,] which in turn increases the average throughput." '718 patent, col. 2, ll. 42–45. "Throughput" refers to the data rate, or the amount of information transmitted per unit time. Throughput is maximized when the CQI received by the base station is accurate and can suffer when the CQI is inaccurate because it is infected with transmission errors.

II

In an effort to create a uniform standard for third-generation mobile communication systems, the Third-generation Partnership Project (“TGPP”) working group was established from a group of organizations across the globe. The TGPP was charged with developing uniform standards regarding the transmission of CQI. One challenge before the TGPP was the fact that not all transmission errors are equal—an error in the transmission of the a_4 bit, the MSB, results in a much greater deviation from the original CQI value transmitted by the user equipment than an error in the transmission of the a_0 bit, the least significant bit. Specifically, an error in a_4 that flips the bit from 1 to 0 or 0 to 1 causes the CQI value to change by a value of 16, whereas the same error in a_0 would cause a corresponding change of only 1.

Before the critical date of the ’718 patent, February 13, 2002,¹ the TGPP working group was already familiar with a (16, 5) Transmit Format Combination Indicator (“TFCI”) encoder for encoding a 5-bit CQI signal into a 16-bit codeword.² The (16, 5) TCFI encoder generates a 16-bit

¹ The parties do not dispute that the prior art in the petition qualifies as 35 U.S.C. § 102(b) prior art under the pre-AIA Patent Act, which requires that the reference be in public use or on sale in this country more than one year prior to the date of application for patent in the United States. Because the application that resulted in the ’718 patent was filed on February 13, 2003, the critical date is February 13, 2002.

² An encoding method typically specifies two numbers with which the method will be associated (A, B), where A represents the number of bits of the output codeword, and B represents the number of bits of the input signal.

codeword (b_0, b_1, \dots, b_{15}) by combining the five input bits (a_0, a_1, a_2, a_3, a_4) with the five basis sequences $M_{i,n}$ depicted in the basis sequence table below:

i	$M_{i,0}$	$M_{i,1}$	$M_{i,2}$	$M_{i,3}$	$M_{i,4}$
0	1	0	0	0	1
1	0	1	0	0	1
2	1	1	0	0	1
3	0	0	1	0	1
4	1	0	1	0	1
5	0	1	1	0	1
6	1	1	1	0	1
7	0	0	0	1	1
8	1	0	0	1	1
9	0	1	0	1	1
10	1	1	0	1	1
11	0	0	1	1	1
12	1	0	1	1	1
13	0	1	1	1	1
14	1	1	1	1	1
15	0	0	0	0	1

'718 patent, col. 4, ll. 40–65 (Table 1a). To calculate each codeword bit, the following procedure is used: (1) the five CQI bits (a_0, a_1, a_2, a_3, a_4) are multiplied bit-by-bit with the corresponding row of the basis sequence table; (2) these five multiplication products are added together; (3) the resulting sum is divided by 2; and (4) the resulting bit is determined from the remainder value, where a remainder of 0 results in a codeword bit b_i of 0 and a remainder of 1 results in a codeword bit b_i of 1.³

By November 2001, the TGPP working group had determined that the codeword for the 5-bit CQI needed to be composed of twenty bits instead of sixteen bits. Various

³ Each codeword bit is defined by the following equation: $b_i = \sum_{n=0}^4 (a_n \times M_{i,n}) \bmod 2$ where $i = 0, 1, \dots, 15$. See '718 patent, col. 3, ll. 55–60.

TGPP members proposed alternatives to extend the (16, 5) TCFI encoder by four bits into a (20, 5) encoder. Because of the unequal significance of the five CQI bits, there was disagreement about what information the additional four codeword bits should contain to optimize the accuracy of the CQI. The conventional method was to protect each bit equally so as to minimize the bit error rate, which is the ratio of data bits compromised during transmission. A newer method was to provide unequal error protection for the more significant bits so as to minimize the root-mean-square error, which measures the total difference between the received value and the intended value rather than the raw number of incorrect bits.

During a TGPP meeting that began on November 19, 2001, Telefonaktiebolaget LM Ericsson (“Ericsson”) proposed modifying the (16, 5) TCFI encoder by “simply taking [the] four least reliable information bits [*i.e.*, the four least significant bits] and append[ing] these to the end of the code words.” J.A. 1741. Later, during a TGPP meeting that began on January 8, 2002, Koninklijke Philips N.V. (“Philips”) submitted a proposal entitled “Coding of Channel Quality Information” (the “Philips reference”), which disclosed a method for extending the codeword generated by the (16, 5) TFCI encoder by four bits by appending the MSB a_4 (the bit that, if erroneously changed, would create the largest error in the resulting message) to the existing 16-bit codeword three times and then appending the second most significant bit a_3 to the modified 19-bit codeword once. *See id.* at 1423–24. To achieve this result, the Philips reference provided the following basis sequence table:

Table 1: Basis sequences for (20,5) code as an extended (16,5) TFCI code

i	M _{i,0}	M _{i,1}	M _{i,2}	M _{i,3}	M _{i,4}
0	1	0	0	0	1
1	0	1	0	0	1
2	1	1	0	0	1
3	0	0	1	0	1
4	1	0	1	0	1
5	0	1	1	0	1
6	1	1	1	0	1
7	0	0	0	1	1
8	1	0	0	1	1
9	0	1	0	1	1
10	1	1	0	1	1
11	0	0	1	1	1
12	1	0	1	1	1
13	0	1	1	1	1
14	1	1	1	1	1
15	0	0	0	0	1
16	0	0	0	0	1
17	0	0	0	0	1
18	0	0	0	0	1
19	0	0	0	1	0

Id. at 1424. The rationale for the method proposed by the Philips reference was to “give significant extra protection to the MSB, and a little more robustness to the next most significant bit” by repeating the MSB three times and repeating the second most significant bit once. *Id.* at 1423. The method was thus primarily concerned with minimizing the root-mean-square error rather than focusing on the bit error rate, recognizing that unequal bit protection, which reduces the root-mean-square error, “would reduce the probability that transmission errors would result in large errors in the received channel quality value.” *Id.*

On February 16, 2002, shortly after the critical date, LG Electronics, Inc. (“LGE”) filed Korean Patent Application No. 10-2002-0008350, to which the ’718 patent claims priority. LGE filed U.S. Patent Application No. 10/365,498 on February 13, 2003. Throughout the proceedings on appeal, the parties have treated claim 1 of

the '718 patent as representative of the challenged claims.⁴ Claim 1 recites:

⁴ The dissent faults us for not separately considering independent claim 6 and its dependent claims 7 and 9–13, which Honeywell urged before the Board were obvious over the Phillips reference as modified by Nokia's TGPP proposal entitled "Channel coding and error detection for uplink QI signaling" (the "Nokia reference"). But 3G itself agreed that claim 1 was "exemplary," Appellee's Br. Cover Sheet, and neither party has made any argument about challenged claims other than claim 1. Where parties do not "separately argue[] the patentability of the remaining [challenged claims,] . . . all [challenged claims] rise and fall with" the argued claim. *Monsanto Tech. LLC v. E.I. DuPont de Nemours & Co.*, 878 F.3d 1336, 1339 n.1 (Fed. Cir. 2018); *see also Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1365 n.2 (Fed. Cir. 2008); *In re Kaslow*, 707 F.2d 1366, 1376 (Fed. Cir. 1983).

Contrary to the dissent's view, our ruling relies on the Philips reference for a particular limitation (which was pressed below by Honeywell), not for the entire claim as the dissent suggests. Dissent at 4. As the Board found, the Nokia reference discloses several other limitations of claim 6, none of which 3G disputed below or on appeal. *See* J.A. 37–40. The Board reasoned that Honeywell's "argument for . . . claim 6 hinge[d] on the same arguments [it] made for why one of ordinary skill would have been motivated to swap the last two bits of the last row of" the Philips reference. J.A. 43. Because the unpatentability case came down to a single limitation that was the same in substance for both claims, our review of the Board's rejection of Honeywell's motivation-to-modify-Philips argument thus controls the outcome for both claims 1 and

1. A method of coding channel quality information (CQI), comprising the steps of:

providing information bits, a_0 , a_1 , a_2 , a_3 , and a_4 ;

providing five basis sequences $M_{i,n}$ for a (20, 5) CQI code;

encoding the information bits by combining the information bits with the basis sequences; and

generating a 20-bit codeword, wherein the basis sequences $M_{i,n}$ are defined as:

i	$M_{i,0}$	$M_{i,1}$	$M_{i,2}$	$M_{i,3}$	$M_{i,4}$
0	1	0	0	0	1
1	0	1	0	0	1
2	1	1	0	0	1
3	0	0	1	0	1
4	1	0	1	0	1
5	0	1	1	0	1
6	1	1	1	0	1
7	0	0	0	1	1
8	1	0	0	1	1
9	0	1	0	1	1
10	1	1	0	1	1
11	0	0	1	1	1
12	1	0	1	1	1
13	0	1	1	1	1
14	1	1	1	1	1
15	0	0	0	0	1
16	0	0	0	0	1
17	0	0	0	0	1
18	0	0	0	0	1
19	0	0	0	0	1.

'718 patent, col. 12, ll. 28–58. There is no dispute that the basis sequence table disclosed in the '718 patent is

6. (To be sure, the Board also determined that the Nokia reference did not disclose switching the last two digits, and Honeywell does not make any argument to the contrary.) Moreover, 3G at no point on appeal or before the Board, *see* J.A. 542–44, raised the argument now pressed upon by the dissent, so it is forfeited.

identical to the table disclosed in the Philips reference except for the last two bits in the last row, which are flipped.

On February 18, 2002, two days after filing the Korean patent application and after the critical date of the '718 patent, during a TGPP meeting, LGE proposed a modification to the Philips reference flipping the last two digits in the table, as disclosed in the Korean patent application. The LGE proposal explained that, because “there is a trade[-]off between [bit error rate] and [root-mean-square] error,” the proper coding method should instead focus on optimizing system throughput. J.A. 2608. LGE proposed that the TGPP should adopt the basis sequence table that was the subject of its patent application.

During a TGPP meeting beginning on April 9, 2002, Philips supported LGE’s modification, and Philips and LGE requested that the TGPP standards be changed to switch the last two digits in the basis sequence specified by the Philips reference. On July 2, 2002, LGE’s proposal was approved. The '718 patent issued on January 15, 2008. On February 10, 2020, 3G Licensing S.A. (“3G”) obtained ownership of the '718 patent—which effectively claimed the TGPP standard for encoding CQI—from LGE. On May 10, 2020, 3G filed a complaint for infringement of the '718 patent against Honeywell after Honeywell declined to enter into a licensing agreement for the '718 patent. 3G agrees that the challenged '718 claims are “essential to cellular standards including 3G and 4G technologies.” See Complaint ¶ 29, *Sisvel Int’l S.A. v. Honeywell Int’l, Inc.*, 1:20-cv-00652 (D. Del. May 15, 2020).

III

Honeywell filed a petition for inter partes review as to the challenged claims of the '718 patent with the Board, contending that claims 1, 2, 4, 5, and 15–23 are

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unpatentable as obvious over the Philips reference and that claims 6, 7, and 9–13 are unpatentable as obvious over the Philips reference and the Nokia reference, urging that the challenged claims were the product of routine experimentation and optimization stemming from the Philips reference’s teachings. In its final written decision, the Board acknowledged that the only difference between the Philips reference and the claim 1 was that the 1 and 0 in the last row of the basis sequences table were switched. It nonetheless declined to hold any of the challenged claims unpatentable as obvious.

The Board first found that the petition had not shown that a person of ordinary skill in the art would have been motivated to switch the last two bits of the table in the Philips reference to provide additional protection to the MSB. The Board next held that even if the petition had sufficiently made this showing, it had not demonstrated that a person of ordinary skill in the art “would have believed that such a change would be desirable,” J.A. 27, explaining that the ’718 patent’s inventor was not motivated by a desire to increase the MSB’s protection and that there was “no consensus at the relevant time that this was the preferred approach that should be the focus of the TGPP’s efforts.” *Id.* at 33. Honeywell filed this timely appeal. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A).

DISCUSSION

In reviewing the Board’s determinations on the question of obviousness, “[w]e review the Board’s legal conclusions de novo and its factual findings for substantial evidence.” *MCM Portfolio LLC v. Hewlett-Packard Co.*, 812 F.3d 1284, 1293 (Fed. Cir. 2015). “Substantial evidence is ‘such relevant evidence as a reasonable mind might accept as adequate to support a conclusion.’” *OSI Pharms., LLC v. Apotex Inc.*, 939 F.3d 1375, 1381 (Fed. Cir.

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2019) (quoting *Consol. Edison Co. v. N.L.R.B.*, 305 U.S. 197, 229 (1938)).

A claim is unpatentable as obvious under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person of ordinary skill in the art. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). A determination of obviousness “requires finding that a person of ordinary skill in the art would have been motivated to combine or modify the teachings in the prior art and would have had a reasonable expectation of success in doing so.” *OSI Pharms.*, 939 F.3d at 1382 (quoting *Regents of Univ. of Cal. v. Broad Inst., Inc.*, 903 F.3d 1286, 1291 (Fed. Cir. 2018)).

Honeywell contends that the Board committed legal error and that its findings are not supported by substantial evidence. We agree. Because the Board’s final written decision is predicated on multiple legal errors and is unsupported by substantial evidence, we now reverse.

I

First, the Board improperly based its conclusion of non-obviousness on its finding that the ’718 patent’s primary motivation was to “focus[] on system throughput” rather than to minimize root-mean-square error or bit error rate. J.A. 32. It noted 3G’s argument that the “’718 patent is concerned with maximizing the entire system throughput, not minimizing the [r]oot-[m]ean-[s]quare . . . error of the code, minimizing bit error rate . . . of the code, nor maximizing the protection of the [most significant bits], as disclosed by [the] Philips [reference.]” *Id.* at 18. The Board here concluded that a person of ordinary skill in the art would not have been motivated to modify the Philips reference to swap the bits to improve protection for the MSB because the ’718 patent’s main objective was to

maximize entire system throughput, relying on a portion of the '718 patent specification.⁵ 3G's defense of the Board's decision follows the same reasoning, proclaiming that "system throughput, not [root-mean-square] error reduction, is the paradigm that led to the innovations of the '718 patent," Appellee's Br. 20, and that "protecting the MSB was not the goal or problem sought to be solved by the '718 patent," *id.* at 35.

Both the Board and 3G ignore the Supreme Court's directive in *KSR*, in which the Court recognized that "the problem motivating the patentee may be *only one of many* addressed by the patent's subject matter" and that, accordingly, "*any need or problem* known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." 550 U.S at 420 (emphases added).

Both prior to and after *KSR*, "[w]e have repeatedly held that the motivation to modify a prior art reference to arrive at the claimed invention need not be the same motivation

⁵ The Board reasoned:

[S]ince the HSDPA system has been designed in order to increase the system throughput," the '718 patent explains, "it is desirable to use the system throughput as one of the criteria in order to select [an] optimum CQI coding scheme." . . . Thus, the invention of the '718 patent seeks to "provide a method for generating basis sequences for CQI coding capable of maximizing a system throughput.

J.A. 6 (alterations in original) (first quoting '718 patent, col. 6, ll. 50–53, then quoting *id.* at col. 7, ll. 59–61).

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that the patentee had.” *Alcon Rsch., Ltd. v. Apotex Inc.*, 687 F.3d 1362, 1368 (Fed. Cir. 2012) (citing *KSR*, 550 U.S. at 420; *In re Kahn*, 441 F.3d 977, 990 (Fed. Cir. 2006); *DyStar Textilfarben GmbH v. C.H. Patrick Co.*, 464 F.3d 1356, 1361 (Fed. Cir. 2006)). Requiring the motivation to modify to be the same motivation as that of the patent inventor has no basis in obviousness doctrine. *KSR* directs precisely the opposite, explaining that “[i]n determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls.” 550 U.S. at 419. The fact that the inventor of the ’718 patent may have had a different or even novel motivation that led them to swap the last two digits of the Philips reference is irrelevant.

II

Second, the Board’s finding that the IPR petitioners “ha[d] not sufficiently shown that [a person of ordinary skill in the art] would have been motivated to swap the last two bits in the last row of the [Philips reference] in order to provide more protection to the [MSB],” J.A. 26–27, is not supported by substantial evidence. The uncontroverted evidence in the record demonstrates that the Philips reference teaches protecting the MSB through redundancy and that a person of ordinary skill in the art would understand that flipping the two digits in the last row of the basis sequence table would repeat the MSB and hence increase its protection.

On its face, the Philips reference teaches that it is preferable for “the most significant bits of the data [to be] better protected than the least significant bits.” J.A. 1423. In the Phillips reference, a_4 is the MSB and a_3 is the second most significant bit, and the reference states that extending the basis sequences as disclosed “gives significant extra protection to the MSB, and a little more robustness to the next most significant bit.” *Id.* The

Board's finding that the petition failed to show that a person of ordinary skill in the art would not understand how protecting the MSB was taught by the Philips reference is not supported by substantial evidence. In making this factual finding, the Board ignored the un rebutted statement by Honeywell's expert Dr. Clark in the petition that a person having ordinary skill in the art would have understood that the scheme proposed in the Philips reference "would have the purpose and effect of providing extra protection to the MSB" and that "providing extra protection to the MSB would be a desirable goal." *Id.* at 978.

Although 3G's expert Dr. Smith testified at length about disagreement among TGPP members about which parameters should be prioritized, at no point did he attempt to rebut Dr. Clark's opinion that a person of ordinary skill in the art would understand that swapping the two digits in the basis sequence would repeat the MSB an additional time and provide increased protection to the MSB. *See* J.A. 2047–49. Dr. Smith did not dispute that swapping the last-row digits would increase protection to the MSB and instead simply disputed whether it was understood that doing so would have been desirable. There is accordingly no evidence in the record from which a reasonable mind could conclude that the petition failed to show that a person of ordinary skill in the art would not understand that the modification of the Philips reference would have increased protection for the MSB, a goal that the Philips reference itself recognized.⁶

⁶ The Board relied on Dr. Smith's testimony that "[a]dding all protection to just the MSB removes protection for all other bits," J.A. 27 (alteration in original) (emphases removed) (quoting *id.* at 2538 ¶ 16), in concluding that

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Contrary to the dissent’s charge that we have taken “the extraordinary step of fact finding,” Dissent at 1, we hold only that the Board’s conclusion is not supported by substantial evidence.

III

Third, the Board’s decision appears to be based in part on a conflation between the relevant standards for obviousness and anticipation. In its final written decision, the Board acknowledged the Philips reference’s “recognition that it is beneficial to ‘give significant extra protection to the MSB,’” but found it significant that the Philips reference “did not propose doing so by swapping the last two bits of the last row.” J.A. 33.

Honeywell had “not sufficiently shown that one of ordinary skill would have believed that such a change would be desirable.” *Id.* But on its face, this statement conflicts with the plain language of the Philips reference and claimed modification. The claimed modification transfers only the “little more robustness” from the next most significant bit to the MSB, *id.* at 12 (quoting *id.* at 1423), not “remov[ing] protection for all other bits,” *id.* at 27 (emphases removed) (quoting *id.* at 2538 ¶ 16).

The dissent faults us for “discredit[ing],” Dissent at 2, Dr. Smith’s testimony; however, we are not required to uncritically accept expert testimony that is flatly contradicted by the record. *See Homeland Housewares, LLC v. Whirlpool Corp.*, 865 F.3d 1372, 1378 (Fed. Cir. 2017) (“[W]e must disregard the testimony of an expert that is plainly inconsistent with the record.”). In any event, our cases have consistently held that conclusory expert testimony does not qualify as substantial evidence. *See TQ Delta, LLC v. CISCO Sys., Inc.*, 942 F.3d 1352, 1358 (Fed. Cir. 2019).

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If the Philips reference did in fact “propose . . . swapping the last two bits of the last row,” J.A. 33, the Philips reference would anticipate the ’718 patent, and the inquiry before the Board would be at an end. *See Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1543 (Fed. Cir. 1983) (“[T]he need to determine obviousness presumes anticipation is lacking.”). In according *any* weight to the mere fact that there is a difference in the basis sequence tables in the Philips reference and ’718 patent, the Board committed legal error by “deviat[ing] impermissibly from the invalidity theory set forth in [the] petition.” *M & K Holdings, Inc. v. Samsung Elecs. Co., Ltd.*, 985 F.3d 1376, 1385 (Fed. Cir. 2021).

IV

Fourth, the Board erred in finding that there was an insufficient motivation to switch the last two bits in the Philips reference because of uncertainty as to “what CQI coding scheme would be best,” J.A. 28, or the “preferred” approach, *id.* at 33, for the working group to adopt as the standard for coding CQI. In particular, the Board’s analysis stressed that Honeywell failed to show consensus among the working group members during the relevant time period that a scheme of unequal error protection favoring the MSB was the preferred approach. But Honeywell was not required to make this showing.

We have long recognized that obviousness “does not require that a particular combination must be the preferred, or the most desirable, combination described in the prior art in order to provide motivation for the current invention.” *Novartis Pharms. Corp. v. West-Ward Pharms. Int’l Ltd.*, 923 F.3d 1051, 1059 (Fed. Cir. 2019) (quoting *In re Fulton*, 391 F.3d 1195, 1200 (Fed. Cir. 2004)); *see also PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1197–98 (Fed. Cir. 2014) (explaining that our case law “does not require that the motivation be the *best* option”).

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Rather, “the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness,” of the claimed invention. *In re Beattie*, 974 F.2d 1309, 1311 (Fed. Cir. 1992) (quoting *Lindemann Maschinenfabrik GMBH v. Am. Hoist & Derrick Co.*, 730 F.2d 1452, 1462 (Fed. Cir. 1984)).

By failing to recognize that the claimed modification needed only to be desirable in light of the prior art and not the “best” or “preferred” approach, the Board committed legal error. Here, the Philips reference’s disclosed goal of “giv[ing] significant extra protection to the MSB,” J.A. 1423, provided the motivation for the claimed modification.

CONCLUSION

For the foregoing reasons, the decision of the Board is reversed.

REVERSED

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

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Appeals from the United States Patent and Trademark
Office, Patent Trial and Appeal Board in No. IPR2021-
00908.

STOLL, *Circuit Judge*, dissenting.

I agree with the majority's determination in Part III that the Board erred by giving weight to the fact that the Philips reference did not propose swapping the last two bits of the last row of its basis sequence table. In so doing, the Board erroneously conflated obviousness with anticipation. This conclusion should result in our vacating the Board's decision for the Board to reevaluate obviousness of claims 1–2, 4–5, and 15–23 under the proper legal framework. Instead, the majority takes the extraordinary step of fact finding, a role not appropriate at the appellate

stage, making arguments for the parties that they did not make and then deciding those arguments. Respectfully, this is not our role. This case should be vacated for the Board to review the evidence and make fact findings, we should not be reversing. I respectfully dissent from the majority's departure from our role as an appellate court.

This case presents a close factual dispute of whether Honeywell proved by preponderant evidence that a skilled artisan would have been motivated to swap the last two bits in Philips' basis sequence table without making other changes to the table. This case is unique in that the Board relied heavily on the history of the 3GPP proceedings, including evidence regarding the contemporaneous development of the several different prior art CQI coding schemes (including the Philips scheme) and the claimed CQI coding scheme, as well as a critique of the claimed CQI coding scheme relative to the prior art coding schemes. The Board relied on that evidence to understand the knowledge of a person of ordinary skill in the art at the time of the invention and how such a person would have viewed the proposed modification to the prior art. Careful consideration of such objective evidence can be extremely important in a non-obviousness analysis because it "serve[s] to 'guard against slipping into use of hindsight,'" *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 36 (1966) (citation omitted).

Were I the fact finder, perhaps I would have found differently than the Board when considering whether a person of ordinary skill in the art would have been motivated to modify the Philip's basis sequence table to flip the last two numbers in the table without making any responsive changes to other parts of the table. But I am not the fact finder. Nor is the majority, although the majority does appear to reweigh unchallenged evidence on appeal. For example, at Footnote 6 of its opinion, the majority discredits expert testimony from Dr. Smith, 3G's expert, as allegedly conclusory and contradicted by the

Philips reference notwithstanding that the Board found this very testimony credible and Honeywell did not challenge it on appeal (even when asked about it at oral argument). Specifically, Dr. Smith testified about why one of ordinary skill in the art would have considered switching the last two bits in Philips' table to arrive at the claimed invention undesirable—i.e., because “[a]dding all protection to just the MSB removes protection for all other bits,” Majority Op. at 15–16 n.6 (alteration in original) (quoting J.A. 27). By switching the last two bits of the Philips' table, protection is removed from the second most significant bit and more protection is provided to the most significant bit. To be sure, Dr. Smith's testimony more aptly relates to protection for the second most significant bit. But Dr. Smith's testimony is supported by—not contradicted by—the Philips reference. In particular, Philips' recognition that “giv[ing] significant extra protection to the MSB, and a little more robustness to the next most significant bit,” J.A. 1423, is consistent with Dr. Smith's concern that switching the last two bits removes protection from the next most significant bit. What a prior art reference teaches is a question of fact. *Apple Inc. v. Samsung Elecs. Co., Ltd.*, 839 F.3d 1034, 1051 (Fed. Cir. 2016). The majority is not the Board, whose role it is to make fact findings about what a person of ordinary skill in art would understand a prior art reference to teach in this case. I would thus vacate the Board's decision and remand for further proceedings consistent with the majority's reasoning in Part III as to Ground 1 of Honeywell's Petition challenging claims 1–2, 4–5, and 15–23 of the '718 patent.

Additionally, a complete reversal of the Board's decision is inappropriate for a separate reason. Honeywell's Petition for IPR relied on two separate grounds: (1) “Ground 1: Claims 1, 2, 4, 5, and 15–23 are Unpatentable Under 35 U.S.C. § 103(a) as Obvious Over *Philips*[],” a single-reference obviousness challenge, which

is discussed above; and (2) “Ground 2: Claims 6, 7, and 9–13 are Unpatentable Under 35 U.S.C. § 103(a) as Obvious Over *Philips* and *Nokia*,” a two-reference combination obviousness challenge based on the Philips reference and the Nokia reference. J.A. 141. With regards to Ground 2, the Board reached three conclusions to hold that Honeywell had not proven by preponderant evidence that claim 6 and its dependents were obvious over the Philips reference and the Nokia reference: (1) “Petitioner has failed to prove by a preponderance of the evidence that one of ordinary skill would have been motivated to modify Philips,” for the reasons discussed for Ground 1; (2) “Nokia does not disclose repeating one of the information bits four times, as claim 6 requires, but rather discloses that each codeword is ‘extended with the four least reliable information bits’”; and (3) “Petitioner has not sufficiently shown that one of ordinary skill [in the art] would have found it obvious to alter Nokia’s method of repeating the four least reliable bits in order to achieve the ’718 patent’s method of repeating a single information bit four times,” as claim 6 requires. J.A. 43 (citation omitted).

Honeywell’s Petition does not contend that claim 6 and its dependents would have been obvious over the Philips reference alone, and it makes no argument on appeal about the Nokia reference. The Supreme Court in *SAS Institute, Inc. v. Iancu*, made clear that IPRs are limited to the grounds raised in the petition. 584 U.S. 357, 363–68 (2018). Neither the Board nor this court can alter the grounds presented for claim 6 and its dependents. And Honeywell forfeited any argument regarding the Board’s fact findings on the scope and content of the Nokia reference. See, e.g., *Astellas Pharma, Inc. v. Sandoz Inc.*, 117 F.4th 1371, 1379 n.4 (Fed. Cir. 2024). Even with the majority’s new reading of Philips above, it is for the Board to determine, in the first instance, whether a skilled artisan at the time of the invention would have been motivated to combine Philips and Nokia in the manner

proposed in the petition.¹ Thus, I would, at minimum, vacate and remand for further proceedings as to the non-obviousness of claims 6–7 and 9–13.

The majority’s view that we can reverse the Board’s unchallenged fact findings with respect to claims 6–7 and 9–13 because Appellee/Patent Owner 3G identified claim 1 as an exemplary claim on the inside cover of its appeal brief finds no support in law. *See* Majority Op. at 8–9 n.4. As the Supreme Court has made clear, the petitioner sets the stage for the issues in an IPR and the appellant identifies the issues on appeal. The dissent’s holding that 3G waived the Board’s findings in its favor on claims 6–7 and 9–13 (two of which were not even challenged by Honeywell on appeal) simply because it included claim 1 as an exemplary claim on the inside cover of its principal brief as required by Federal Circuit Rule 32(a)(3) ignores these principles and cannot stand.

While it might seem more expeditious to reverse—replacing the Board’s fact finding with our own—this is not our role. Accordingly, I dissent.

¹ At oral argument, we asked Honeywell’s counsel to clarify whether Honeywell was abandoning its challenge to claims 6–7 and 9–13. Counsel asserted that Honeywell was not and, in fact, contended that whether *remand* was appropriate for those claims would rise and fall with this court’s decision regarding the Philips reference. *See* Oral Arg. at 5:27–7:01, https://oralarguments.cafc.uscourts.gov/default.aspx?fl=23-1354_10082024.mp3. This concession from Honeywell illustrates that not even the Appellant requests a full reversal of the Board’s decision.