

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NEC CORPORATION, NOKIA CORPORATION, and
ALCATEL SUBMARINE NETWORKS,
Petitioner,

v.

NEPTUNE SUBSEA IP LIMITED,
Patent Owner.

IPR2018-01161
Patent 8,971,171 B2

Before BARBARA A. BENOIT, GREGG I. ANDERSON, and
JASON W. MELVIN, *Administrative Patent Judges*.

MELVIN, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

Petitioner, NEC Corporation, Nokia Corporation, and Alcatel Submarine Networks,¹ filed a Petition (Paper 4, “Pet.”) requesting *inter partes* review of claims 1–10 (“the challenged claims”) of U.S. Patent No. 8,971,171 B2 (Ex. 1001, “the ’171 patent”). Patent Owner, Neptune Subsea IP Limited, timely filed a Preliminary Response. Paper 8 (“Prelim. Resp.”). We instituted *inter partes* review of the challenged claims. Paper 11 (“Institution Decision” or “Inst.”). After institution, Patent Owner filed a Patent Owner Response (Paper 14, “PO Resp.”), and Petitioner filed a Reply (Paper 15, “Pet. Reply”). Neither party requested an oral hearing and none was held.

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons discussed below, Petitioner has shown by a preponderance of the evidence that claims 1–10 of the ’171 patent are unpatentable

A. RELATED MATTERS

As required by 37 C.F.R. § 42.8(b)(2), each party identifies various judicial or administrative matters that would affect or be affected by a decision in this proceeding. Pet. 61–62; Paper 6.

B. THE ’171 PATENT

The ’171 patent discloses a system for transmitting digital data over a long distance, such as those used in submarine or cross continental terrestrial

¹ Petitioner additionally identifies NEC Networks & System Integration Corporation and NEC Corporation of America as real parties in interest. Pet. 61.

systems. Ex. 1001, 1:4–12. Because such transmissions suffer from data errors, various error-correction methods are used, taking bandwidth otherwise available for transmitting data. *Id.* at 1:13–24. For example, Forward Error Correction (“FEC”) is one method commonly used to achieve a balance between data integrity and transmission speed by operating on blocks of incoming data to add redundant bits. *Id.* at 1:24–54.

Redundant bits added for data integrity also add overhead to the data transmission, and the coding approaches required for long-distance transmissions impose significant overhead that may eliminate the benefit of error correction. *Id.* at 1:27–33, 1:55–65. The ’171 patent discloses that it may use an encoder “with any appropriate encoding” but preferably operates with FEC coding. *Id.* at 2:56–58. The ’171 patent seeks to achieve beneficial error correction in long-distance transmissions by using a partitioner to separate an encoded data sequence into a number of channels so that each portion may be transmitted at a lower rate than the overall encoded sequence would otherwise require. *Id.* at 1:66–2:10. Because the ’171 patent’s system separates coding overhead from the signal data, higher levels of error-correction overhead may be added to the signal, for example, in the form of more-complex coding to compensate for the poor performance of a transmission link. *Id.* at 2:47–55. Figure 6 of the ’171 patent is reproduced below:

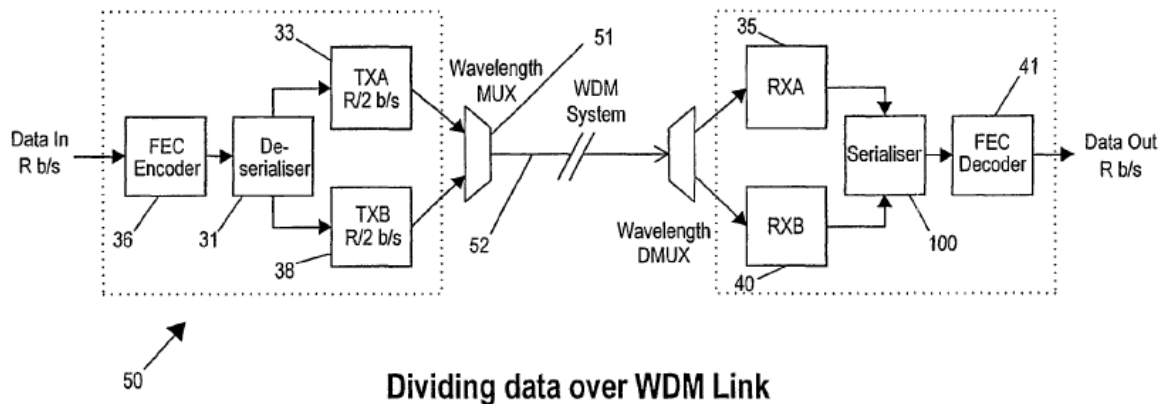


Figure 6 depicts an embodiment of the '171 patent in which incoming data ("Data In") is processed by FEC encoder 36 to make a coded information sequence, which is then divided by deserialiser 31 into sequence portions. *Id.* at 8:24–41. The first sequence portion is transmitted by transmitter 33, while the second sequence portion is transmitted by transmitter 38. *Id.* at 8:29–30. Multiplexer 51 combines the two signals into different wavelengths for transmission over single optical fiber 52. *Id.* at 8:41–56. At the receiving end, corresponding functionality demultiplexes the portions, recombines them, and then decodes the data to produce data out. *Id.* at 8:47–51.

C. CHALLENGED CLAIMS

Independent claim 1 is reproduced below:

1[.P]. A transmission system for transmitting data in a form of a digital signal including an information sequence, the data being transmitted at a predetermined rate, the system comprising:

- [1.1] a FEC encoder for transforming the information sequence into a FEC encoded sequence comprising the information sequence and coding overhead;
- [1.2] a partitioner for partitioning the encoded sequence into a plurality of sequence portions, so that the encoded

sequence is transmitted as a plurality of separate channels,

[1.3] wherein the partitioner partitions the encoded sequence between two channels such that one part of the encoded sequence is identical to the information sequence and the other part is equivalent to coding overhead;

[1.4] wherein the sequence portions are transmitted at a rate which is lower than, and not equal to, the predetermined rate.

Id. at 9:9–26.² Claims 2–10 each depend (directly or indirectly) from claim 1. *Id.* at 9:27–10:5.

D. PRIOR ART AND ASSERTED GROUNDS

This review includes the following grounds of unpatentability:

Claims Challenged	35 U.S.C. §	Reference(s)
1–10	103	Ait Sab ³
1–10	103	Ait Sab, Dugan ⁴
4–6	103	Ait Sab, Dugan, Chraplyvy ⁵

See Pet. 9–61. In addition to the cited references, Petitioner relies on the Declaration of Dr. Todd K. Moon. Ex. 1003.

E. LEGAL PRINCIPLES

An invention is not patentable “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter

² We include annotations dividing claim elements as addressed by the parties. *See* Pet. 10–19; PO Resp. 29–51.

³ U.S. Pat. Pub. No. 2002/0027684 A1 (pub. Mar. 7, 2002) (Ex. 1005).

⁴ U.S. Pat. No. 5,710,650 (iss. Jan. 20, 1998) (Ex. 1006).

⁵ U.S. Pat. Pub. No. 2003/0007216 A1 (pub. Jan. 9, 2003) (Ex. 1007).

as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” 35 U.S.C. § 103(a) (2006).⁶ The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, so-called secondary considerations, including commercial success, long-felt but unsolved needs, and failure of others. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). When evaluating a combination of teachings, we must also “determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (citing *In re Kahn*, 441, F.3d 977, 988 (Fed. Cir. 2006)). Whether a combination of elements produced a predictable result weighs in the ultimate determination of obviousness. *Id.* at 416–17.

II. DISCUSSION

A. CLAIM CONSTRUCTION

In an *inter partes* review, the Board interprets claims of an unexpired patent using the broadest-reasonable construction in light of the specification of the patent. 37 C.F.R. § 42.100(b) (2017); *Cuozzo Speed Techs., LLC v.*

⁶ The America Invents Act (“AIA”) included revisions to, *inter alia*, 35 U.S.C. § 103 effective on March 16, 2013. *See* Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011). Because the application resulting in the ’171 patent was filed before March 16, 2013 (*see* Ex. 1001, code (22)), the pre-AIA version of 35 U.S.C. § 103 applies.

Lee, 136 S. Ct. 2131, 2144–46 (2016).⁷ Under that standard, we generally give a claim term its “ordinary and customary meaning,” which is “the meaning that the term would have to a person of ordinary skill in the art in question” at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

The parties dispute whether the claimed “FEC encoder” and “partitioner” “require separate and distinct components.” PO Resp. 14–27; Pet. Reply 3–6.⁸ As discussed below, we find that the prior art teaches a system having elements with the separately identifiable functionalities of the claimed FEC encoder and partitioner. *See infra* at 17. Thus, the only claim-construction issue of significance in this proceeding is whether the FEC encoder and partitioner must be physically separate components. We determine the ’171 patent does not impose such a requirement.

Patent Owner argues first that, by using two different terms, the claims establish a presumption of requiring separate structures. PO Resp. 15. Although the claim language recites two distinct elements, it does not establish to what degree those elements must be embodied in separate components. *See Powell v. Home Depot U.S.A., Inc.*, 663 F.3d 1221, 1231–

⁷ The Petition was filed before the November 13, 2018, effective date of the amendment to 37 C.F.R. § 42.100 changing the claim-construction standard applied in *inter partes* reviews. *Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board*, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (now codified at 37 C.F.R. pt. 42 (2019)).

⁸ Although Petitioner sought construction of an additional phrase in the Petition relating to the claimed “partitioner,” it now agrees that construction of that phrase does not affect the issues before us. Pet. Reply 3 n.2.

32 (Fed. Cir. 2011) (reasoning that separate claim terms require consideration of the specification to determine whether they require separate structures).⁹ Rather, the Specification controls the central issues of this claim-scope inquiry.

The figures of the '171 patent show schematic representations of the various embodiments. Ex. 1001, 5:26–43, Figs. 4–8. Neither those figures nor their descriptions describe tangible systems specifically limiting how the components are arranged or how functionality is allocated among physical components. Instead, the Specification only functionally describes an FEC encoder or partitioner as used in the various embodiments. *Id.* at 8:24–30. Further, assigning separate reference numerals to items that perform distinct functionality does not necessarily impose a corresponding number of physical components. *See Gen. Elec. Co. v. Int'l Trade Comm'n*, 685 F.3d 1034, 1044–46 (Fed. Cir. 2012) (holding it was error to construe a claim to require physical separation of an inverter and shunt circuit—claim elements described with different reference numerals). For example, we do not see how the teachings of the '171 patent would be inconsistent with locating both FEC encoder 36 and partitioner 31 (described as a deserializer) within the same physical enclosure. *See* Pet. Reply 26 (arguing that Patent Owner's construction would read out the preferred embodiment, in which “transmitter 200” includes both the FEC encoder and the partitioner). Similarly, the Specification is consistent with implementing the functionality of each

⁹ Petitioner notes that Patent Owner, in other contexts, has argued that *Powell* supports a presumption against requiring separate structures. Pet. Reply 5 (citing Ex. 1014, 52). Because of the Specification's importance, we do not view any such “presumption” as affecting the result here.

element in software such that a single processor performs both functions. At bottom, in view of its functional description, the Specification supports a construction encompassing a single physical component serving as both the FEC encoder and the partitioner, as long as the functionality of each remains distinctly identifiable.

The transmission system 30 comprises a FEC encoder 36 and a partitioner 31 in the form of a deserialiser. The encoder encodes the data to form a coded information sequence. The sequence is then divided by deserialiser 31 into sequence portions. Transmitters 33, 38 transmit the sequence portions.

Ex. 1001, 8:25–30 (describing transmission system 30 shown in Figure 5).

Patent Owner argues that *General Electric* “indicates the focus should be on the claim language and specification.” PO Resp. 26. According to Patent Owner, the issue in that case was whether one structural component could be located outside of another, as opposed to whether “one distinct structural component can cover two distinct structural components recited in a claim.” *Id.* at 27 (citing *Gen. Elec.*, 685 F.3d at 1044–46). Patent Owner’s characterization is flawed because, as explained above, the ’171 patent’s Specification does not describe the two claim elements at issue as “distinct structural components” but instead describes them in functional terms. Focusing on the intrinsic record shows that the claims do not require physical separation of the FEC encoder and partitioner.

Patent Owner argues that, in *Powell*, the Federal Circuit determined that the specification described a common structure performing multiple claimed roles. PO Resp. 24–26. According to Patent Owner, the Specification of the ’171 patent describes only “separate and distinct components.” *Id.* at 25. But as discussed above, the only separation

described in the '171 patent is a functional separation—the Specification uses two named elements and describes the behavior of those elements. *See* Ex. 1001, 8:24–30. Both elements in question—the FEC encoder and partitioner—are part of a “transmission system 30.” *Id.*; *see also* Pet. Reply 26 (noting that the Specification describes that the FEC encoder and partitioner are part of a higher-level component in the described embodiments, “transmitter 200”).

Thus, we do not construe the claims as imposing a requirement for physical distinctness between the FEC encoder and partitioner. We determine that no further aspect of the challenged claims requires construction. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017); *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

B. OBVIOUSNESS OVER AIT SAB
(CLAIMS 1–10)

1. Claim 1

Petitioner submits that Ait Sab teaches or renders obvious every limitation of claim 1. Pet. 9–22. Ait Sab discloses a method and system for transmission of digital error-control data via an optical transmission line using wavelength-division multiplexing. Ex. 1005 ¶ 1. Ait Sab’s Figure 2 is reproduced below:

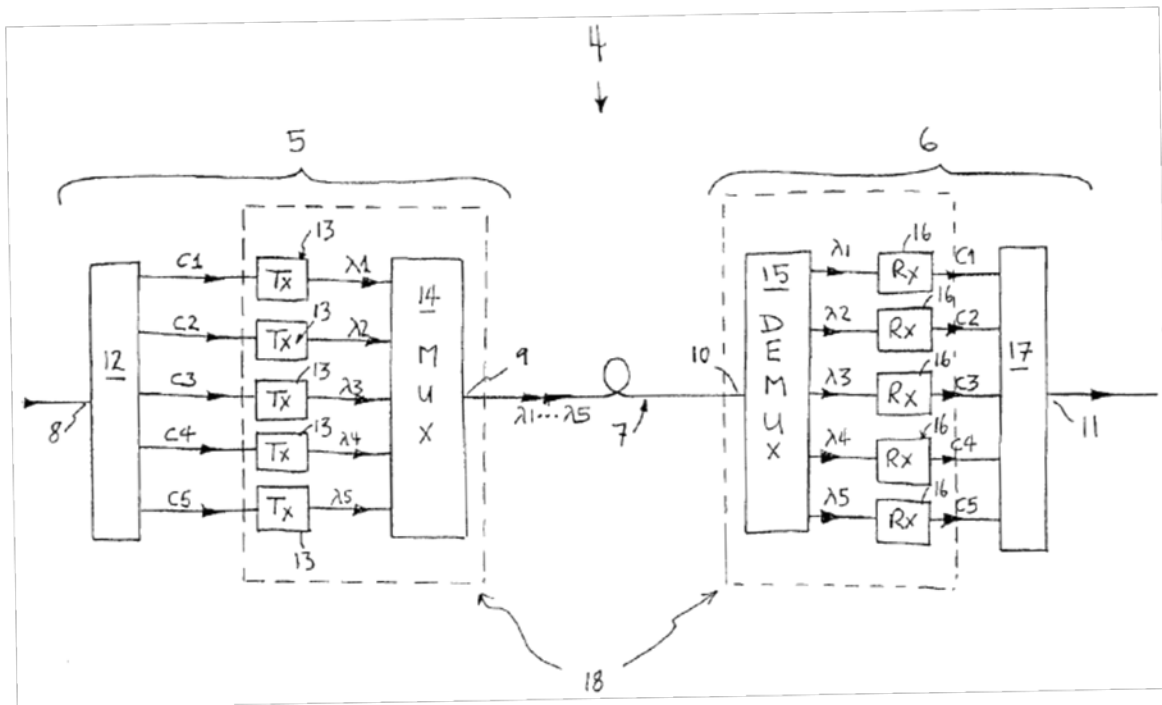


Figure 2 depicts an optical fiber communication system with data transmitter 5 having data input terminal 8 and data output terminal 9, which is connected via fiber-optic transmission line 7 to data-input terminal 10 of data receiver 6. *Id.* ¶ 56.

To that end, Ait Sab discloses that:

The input 8 of transmitter 5 is connected to an input of a data encoder 12 which, in turn, has five channel output terminals (denoted C1, . . . C5) each one of which is further connected to an input terminal of a respective one optical channel transmitter 13 (denoted Tx). The optical channel transmitters 13 are each connected, at their output (denoted λ_1 , . . . , λ_5), to respective inputs of a wavelength division multiplexer 14 the output of which is then connected to optical fibre 7 at the transmitter output 9.

Id. ¶ 58. It further discloses the process of generating error-correction data:

[R]eceived information data is partitioned into blocks of data of a given length, and for each such information data block a corresponding error-control data block is produced. Subsequent to block encoding, information data blocks and their corresponding error-control data blocks are output, preferably in synchrony, from encoder 12 via separate ones of the five channel outputs (C1, . . . , C5) of the encoder.

Id. ¶ 61. As to the step of “block encoding,” a type of FEC coding (*see id.* ¶ 26), Ait Sab discloses an example depicted in Figure 1, reproduced below:

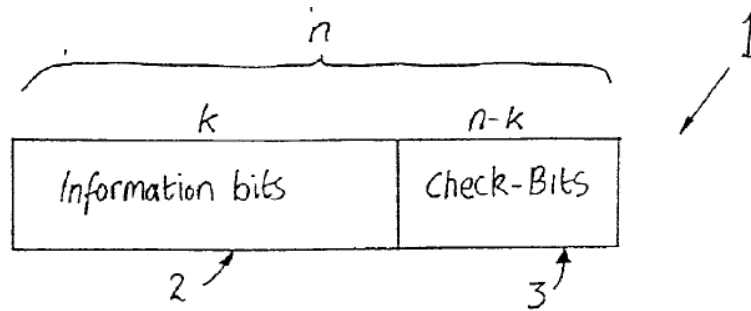


Figure 1 depicts an encoded data block (codeword) with n total bits, of which k bits are information data and the remaining $(n-k)$ bits are check bits used only in bit-error processing of the k data bits to which they are added.

Id. ¶ 6. Ait Sab gives an example of coding where the information data comprises 4 data bits appended with 3 check bits, forming an overall codeword of 7 bits. *Id.* ¶ 7. Ait Sab discloses that when the encoder outputs error-control and information data blocks, it may do so on separate channel outputs. *Id.* ¶ 62. Ait Sab’s Figure 3 is reproduced below:

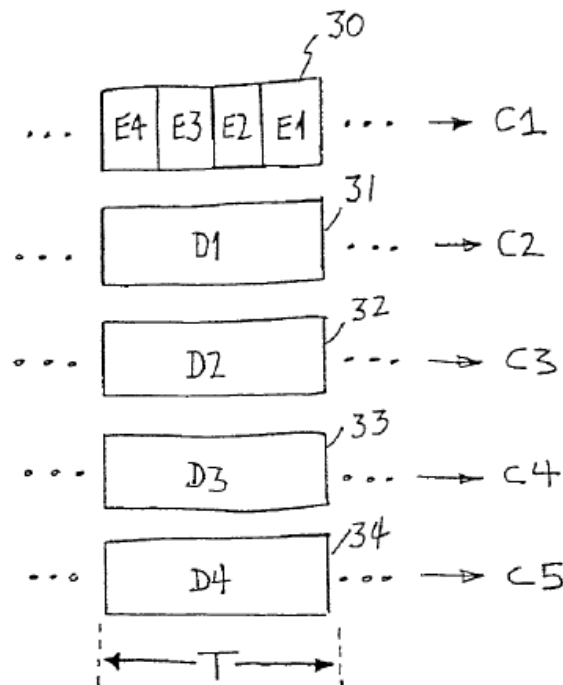


Figure 3 depicts that error-control data blocks E1 through E4 are output on one channel from the encoder, while information data blocks 31 through 34 are output on channels C2 through C5, respectively. *Id.* Ait Sab states that data blocks of each type (error-control and information) may be transmitted on “a subset of one or more WDM transmission channels.” *Id.* at code (57). It further states that, in its method, “digital information data and its associated error control data may be transmitted via an optical transmission line without requiring an increase in the transmission bit rate of the information data.” *Id.*

Petitioner asserts that Ait Sab’s “encoder 12” includes an “FEC encoder” that performs as claimed. Pet. 13–15. Petitioner relies on Ait Sab’s disclosure that an FEC block encoder produces a codeword comprising both information bits and check bits. *Id.* at 13–14 (citing Ex. 1005 ¶¶ 5, 6–7, 22, 40, Fig. 1; Ex. 1003 ¶¶ 73–75). Because Ait Sab discloses that the input data receives “subsequent FEC encoding” and that the encoder “proceeds by

encoding the data according to, for example, an FEC block-coding algorithm,” Petitioner reasons that the encoder includes an FEC encoder. *Id.* at 15 (quoting Ex. 1005 ¶¶ 56, 61; citing *id.* ¶¶ 6, 22, 30, 69, 82, Fig. 2).

Petitioner asserts that Ait Sab’s “encoder 12” further includes the claimed partitioner. Pet. 15–16. Petitioner relies on Ait Sab’s disclosure that, after FEC encoding, “information data block and their corresponding error-control data blocks are output, preferably in synchrony, from encoder 12 via separate ones of the five channel outputs (C1, . . . , C5) of the encoder.” *Id.* at 15 (emphasis omitted) (quoting Ex. 1005 ¶ 61). As to structuring the outputs as claimed in element [1.3], Petitioner relies on Ait Sab’s examples of separating information data from error-control data. *Id.* at 15–16 (citing Ex. 1005 ¶¶ 61–62, Fig. 3; Ex. 1003 ¶ 79). Petitioner further asserts it would have been obvious to structure the outputs as claimed, to the extent Ait Sab’s disclosures lack that aspect of the claim. *Id.* at 15 (citing Ex. 1003 ¶¶ 78–82).

a. Disputed elements

Patent Owner challenges Petitioner’s assertions, arguing that Ait Sab does not disclose both an FEC encoder (element [1.1]) and partitioner (elements [1.2] and [1.3]), as claimed. PO Resp. 29–32. It argues first that “both the claims and the specification of the ’171 patent demonstrate that these claim elements require separate and distinct structures.” *Id.* at 30 (emphasis omitted). As discussed above, we do not agree that the claims or Specification impose a requirement for physical separation or distinctness. *See supra* at 6. Rather, we construe the claims to require functionally distinct components as described in the Specification. Petitioner asserts that Ait Sab’s “encoder 12” contains two components—an FEC encoder and a

partitioner—as described above. Thus, the fact that both are part of “encoder 12” does not undermine Petitioner’s unpatentability case.

Petitioner points to Ait Sab’s disclosure that, “[s]ubsequent to block encoding,’ the sequence is partitioned and output via separate channels.” Pet. Reply 24–25 (quoting Ex. 1005 ¶ 61; citing Ex. 1003 ¶ 80); *accord* Pet. 15 (quoting Ex. 1005 ¶ 61). Thus, the language of claim 1 reads on Ait Sab’s disclosure of “encoder 12” because that component includes multiple independent aspects—one that corresponds to the claimed FEC encoder and one that corresponds to the claimed partitioner.

Patent Owner also challenges Ait Sab’s disclosure of the claimed partitioner (as recited in elements [1.2] and [1.3]), arguing that “claim 1 requires an information sequence and coded overhead arranged as a single encoded sequence, which is then partitioned by a partitioner.” PO Resp. 37–39. Without the single encoded sequence, Patent Owner submits, Ait Sab cannot teach the limitation of element [1.3] that “the partitioner partitions the encoded sequence.” *Id.* at 37. Patent Owner argues that, in the embodiment depicted in Figures 2 and 3, Ait Sab discloses deriving separate error-control data rather than a sequence containing both information data and error-control data. *Id.* at 40–43. According to Patent Owner, “the Petition does not allege that the information data and separately derived error-control data . . . are combined into an ‘encoded sequence’ that is then ‘partition[ed].’” *Id.* at 43. Although Petitioner relies on Ait Sab’s disclosures in paragraphs 1–13 regarding generation of a codeword (*see supra* at 12), Patent Owner contends that such disclosure relates only to the prior art, not to Ait Sab’s teachings. *Id.* at 43–45. In contrast, according to Patent Owner,

Ait Sab's embodiment generates error-control data for separate output without combining it with the information data. *Id.*

We do not find Patent Owner's argument persuasive. Ait Sab states that its invention overcomes the deficiencies of the prior art "by obviating the need to transmit information data and its associated error control data together via the same WDM transmission channel." Ex. 1005 ¶ 18; *accord id.* at code (57). Ait Sab's focus is on how the two data types are transmitted, not how they are generated. See Pet. 10 (citing Ex. 1005, code (57)), 13 (citing Ex. 1005 ¶¶ 5–7, 22, 40).

Indeed, Ait Sab indicates that it uses conventional methods for generating error-correction data. Ait Sab states that, "as is known in the art of FEC, data of the second type may be used in the detection or correction of bit errors within the entire codeword of which it forms a part (i.e. data of the second type may be employed in controlling errors within itself)." Ex. 1005 ¶ 22. That passage indicates that Ait Sab's invention does generate a "codeword" of combined information and error-correction data, as was done in the prior art. *Id.* at Fig. 1, ¶¶ 6–8 (explaining that block-coding algorithms generate a codeword containing both information and error-correction data). By expressly stating that its error-correction data is generated "as is known in the art of FEC," Ait Sab refers to the process discussed in its earlier paragraphs. *Id.* ¶ 22; Pet. 13–15 (citing Ex. 1005 ¶¶ 6–7, 22; discussing Ait Sab's use of "FEC encoding" as it existed in the prior art). Thus, we do not agree with Patent Owner that Ait Sab's paragraph 61 relates to a process of generating error-control data blocks separate from the information data blocks. See PO Resp. 46. To the contrary, we find that Ait Sab discloses an encoder that operates according to Ait Sab's disclosure of conventional FEC

encoding to generate a codeword containing combined information and error-correction data. *See* Ex. 1005 ¶¶ 6–7, 22, 61 (“encoding the data according to, for example, an FEC block-coding algorithm”).

Because Ait Sab discloses its encoder performing conventional FEC encoding as discussed above, and further discloses that, “[s]ubsequent to block encoding,” “encoder 12” outputs information and error-correction data blocks on separate outputs, it teaches a partitioner that “partitions the encoded sequence” as an additional element of “encoder 12.” *See* Ex. 1005 ¶ 61.¹⁰

Regarding the limitations in element [1.3] that the partitioner partitions “between two channels such that one part of the encoded sequence is identical to the information sequence and the other part is equivalent to coding overhead,” Petitioner points to Ait Sab’s purpose of transmitting data of different types on different channels. Pet. 16–18 (citing Ex. 1005, code (57), ¶¶ 14–16, 19, 22, 30, 40, 61, 62). Petitioner recognizes that Ait Sab’s Figure 3 shows four channels outputting information data but submits that Ait Sab discloses using a single channel because it states that “a subset of one or more WDM transmission channels” may be used to transmit information data. *Id.* at 17–18 (emphasis omitted) (quoting Ex. 1005, code (57); citing Ex. 1005, Fig. 3, ¶ 15).

¹⁰ Patent Owner argues that Petitioner does not adequately support or explain Petitioner’s alternative arguments that Ait Sab renders obvious claim element [1.2] or the “partitioner partitions the encoded sequence” limitation of element [1.3]. *See* PO Resp. 32–36, 50–51. Although we agree with Patent Owner that Petitioner has not adequately supported obviousness in this regard (*see* Pet. 16), that does not affect our decision because we find that Ait Sab teaches those limitations, for the reasons discussed.

Petitioner argues further that, even if we do not view Ait Sab as disclosing exactly two output channels from its partitioner (one for information data and one for error-correction data), it would have been obvious for a person of skill to configure Ait Sab's system that way. Pet. 19.

Although Patent Owner contests Petitioner's obviousness reasoning as to element [1.3], it does so only as to the "partitions the encoded sequence" limitation. PO Resp. 50–51. Patent Owner expressly recognizes that Petitioner's contentions regarding obviousness address the use of two channels, and does not challenge those contentions. *Id.* at 51 ("Petitioners' obviousness argument for claim element [1.3] is confined to the issue of the number of channels for transmitting 'the encoded sequence,' and does not address the deficiency in their analysis regarding the 'encoded sequence' that must be 'partition[ed],' as recited in claim 1."). We determine that Patent Owner has waived any challenge to Petitioner's showing of the limitation relating to the number of channels. *See* Paper 12, 5 ("Patent Owner is cautioned that any arguments for patentability not raised in the response may be deemed waived.").

In light of Ait Sab's disclosure that "one or more WDM transmission channels" may be used to transmit the information data or error-correction data (Ex. 1005, code (57)), we conclude that Petitioner has proven by a preponderance of the evidence that Ait Sab teaches element [1.3]'s channel-configuration limitations.

For the reasons discussed, we find that Ait Sab teaches the FEC encoder of element [1.1] and the partitioner of elements [1.2] and [1.3].

b. Undisputed elements

Petitioner asserts further that Ait Sab teaches element [1.4]. Pet. 19–22. Petitioner points to Ait Sab’s disclosure of transmitting information data and error-control data “without requiring an increase in the transmission bit rate of the information data.” *Id.* at 19 (emphasis omitted) (quoting Ex. 1005, code (57)); *see also* Pet. 12–13 (citing Ex. 1005 ¶ 12) (identifying Ait Sab’s discussion of adding error-control data without increasing the overall bit transmission rate). Patent Owner does not dispute Petitioner’s contentions for element [1.4], and we determine Patent Owner has waived any such challenge. *See* Paper 12, 5.

Based on our review of the record, we agree with and adopt Petitioner’s submissions and find that Ait Sab teaches element [1.4] as described by Petitioner. Pet. 12–13, 19–21; Ex. 1003 ¶¶ 67, 92–104; Ex. 1005, code (57), ¶¶ 7, 12–13, 18, Fig. 3.

c. Summary

For the reasons discussed above, we find that Ait Sab teaches each of the limitations of claim 1 as asserted by Petitioner. Patent Owner has not offered evidence or argument supporting objective indicia of nonobviousness. We therefore conclude that Ait Sab renders claim 1 unpatentable.

2. Claims 2–10

For claims 2–10, which depend from claim 1 either directly or indirectly, Petitioner identifies Ait Sab’s disclosures that teach or render obvious the claimed limitations. Pet. 22–40. Patent Owner argues that Petitioner’s showings for claims 2–10 are inadequate only because of those claims’ dependency from claim 1; Patent Owner raises no arguments

specific to any of claims 2–10. PO Resp. 51–52. Patent Owner has waived any challenge to unpatentability of claims 2–10 other than as discussed above regarding claim 1. *See* Paper 12, 5.

Based on our review of the record, we agree with and adopt Petitioner’s contentions for claims 2–10, as supported by its declarant and the references of record. We conclude that Petitioner has shown by a preponderance of the evidence that those claims are unpatentable over Ait Sab for the reasons given by Petitioner. *See* Pet. 22–40; Ex. 1003 ¶¶ 105–145; Ex. 1005, code (57), claims 1, 9, 16, 24, ¶¶ 1–3, 17, 34, 47–51, 54, 56–61, 69, 72–74, 76, 78, 81, Fig. 2; Ex. 1007, code (57), claims 4–6, ¶¶ 2, 5, 9, 22; Ex. 1008, 173–203; Ex. 1009, 1094; Ex. 1010, 604.

C. OBVIOUSNESS OVER AIT SAB AND DUGAN
(CLAIMS 1–10)

For the ground based on a combination of Ait Sab and Dugan, Petitioner relies on Ait Sab for most claim elements but turns to Dugan for the limitation in claim 1 requiring “the sequence portions are transmitted at a rate which is lower than, and not equal to, the predetermined rate.” Pet. 41–48.

Patent Owner argues that Petitioner’s showing of obviousness over Ait Sab and Dugan is inadequate only for the same reasons discussed above regarding obviousness over Ait Sab; Patent Owner raises no arguments specific to the ground including Dugan. PO Resp. 52. Patent Owner has waived any challenge to unpatentability over Ait Sab and Dugan other than as discussed above regarding Ait Sab alone. *See* Paper 12, 5.

Because we conclude that Ait Sab alone renders obvious the challenged claims, and because a conclusion on the ground including Dugan

would not further our resolution of the parties' dispute, we do not reach the additional ground. *See In re Gleave*, 560 F.3d 1331, 1338 (Fed. Cir. 2009) (not reaching obviousness rejection after affirming anticipation rejection).

D. OBVIOUSNESS OVER AIT SAB, DUGAN, AND CHRAPLYVY
(CLAIMS 4–6)

Petitioner relies on Ait Sab and Dugan for most claim elements but turn to Chraplyvy for the limitations added by claims 4–6. Pet. 49–61. Petitioner asserts that Chraplyvy teaches those added limitations and that skilled artisans had reason to incorporate them into Ait Sab's system. *Id.*

Patent Owner argues that Petitioner's showing of obviousness over Ait Sab, Dugan, and Chraplyvy is inadequate only for the same reasons discussed above regarding obviousness over Ait Sab; Patent Owner raises no arguments specific to the ground including Dugan. PO Resp. 52–53. Patent Owner has waived any challenge to unpatentability over Ait Sab, Dugan, and Chraplyvy other than as discussed above regarding Ait Sab alone. *See* Paper 12, 5.

Because we conclude that Ait Sab alone renders obvious the challenged claims, and because a conclusion on the ground including Dugan and Chraplyvy would not further our resolution of the parties' dispute, we do not reach the additional ground. *Gleave*, 560 F.3d at 1338.

III. CONCLUSION

For the foregoing reasons, we conclude Petitioner has shown by a preponderance of the evidence that claims 1–10 are unpatentable.¹¹

¹¹ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice*

In summary:

Claims	35 U.S.C. §	Reference(s)	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–10	103	Ait Sab	1–10	
1–10	103 ¹²	Ait Sab, Dugan		
4–6	103 ¹³	Ait Sab, Dugan, Dhraplyvy		
Overall Outcome			1–10	

IV. ORDER

Accordingly, it is:

ORDERED claims 1–10 of the '171 patent are unpatentable; and

FURTHER ORDERED that because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

¹² As explained above, we do not reach this ground of unpatentability because it would not change our Order or offer any additional analysis of disputed issues.

¹³ As explained above, we do not reach this ground of unpatentability because it would not change our Order or offer any additional analysis of disputed issues.

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