

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ERICSSON INC. and TELEFONAKTIEBOLAGET LM ERICSSON,
Petitioner,

v.

INTELLECTUAL VENTURES I LLC,
Patent Owner.

Case IPR2015-01367
Patent 5,602,831

Before DAVID C. McKONE, MATTHEW R. CLEMENTS, and
JOHN F. HORVATH, *Administrative Patent Judges*.

CLEMENTS, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Ericsson Inc. and Telefonaktiebolaget LM Ericsson (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–17 of U.S. Patent No. 5,602,831 (Ex. 1001, “the ’831 patent”). Paper 1 (“Pet.”). Intellectual Ventures I LLC (“Patent Owner”) filed a Preliminary Response. Paper 5 (“Prelim. Resp.”). On December 9, 2015, we instituted an *inter partes* review of claims 1–3, 6–9, and 12–14 (“the instituted claims”) of the ’831 patent on certain grounds of unpatentability alleged in the Petition. Paper 6 (“Dec. to Inst.” or “Inst. Dec.”).

After institution of trial, Patent Owner filed a Patent Owner Response (Paper 13, “PO Resp.”) to which Petitioner filed a Reply (Paper 16, “Pet. Reply”). Patent Owner also filed a Motion for Observations (Paper 22) to which Petitioner filed a Response (Paper 26).

We held a hearing on September 15, 2016. Paper 29 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6(b). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has not shown, by a preponderance of the evidence, that claims 1–3, 6–9, and 12–14 of the ’831 patent are unpatentable.

A. *Related Proceedings*

The ’831 patent is involved in several district court proceedings. Pet. 1–2; Paper 4, 1–2. The ’831 patent also was the subject of an earlier petition for *inter partes* review, which was denied. *Ericsson Inc. v. Telefonaktiebolaget LM Ericsson v. Intellectual Ventures I LLC*, Case IPR2014-00958, Paper 11 (PTAB Nov. 28, 2014) (“the 958 DI”).

B. The '831 patent

The '831 patent, titled “Optimizing Packet Size to Eliminate Effects of Reception Nulls,” issued February 11, 1997, from U.S. Patent Application No. 08/414,746, filed on March 31, 1995. Ex. 1001 at [54], [45], [21], [22]. Patent Owner informs that the '831 patent expired on March 31, 2015. PO Resp. 9 (“The '831 patent therefore expired on March 31, 2015, prior to the filing of the present petition.”).

The '831 patent is directed to increasing the reliability of a wireless communications system when a wireless receiver is moving. Ex. 1001, 1:5–8. According to the '831 patent, an information-carrying frequency modulated (“FM”) signal can have spatial variations in signal strength, referred to as “burst errors” or “nulls,” that occur for discrete periods of time and disrupt a receiver’s ability to receive the information encoded in the signal. *Id.* at 1:23–34, Fig. 1. Schemes for correcting errors in received information were known in the art, but were limited in the number of bits they could correct. *Id.* at 1:35–39.

The “signal drop-out characteristics” of these burst errors change, from the standpoint of the receiver, as the speed of the receiver changes. *Id.* at 4:44–52, Figs. 3–5. For example, as the receiver’s speed increases, the burst errors become more frequent, while the duration of each burst error decreases. *Id.* at 4:59–65; *compare id.* at Fig. 3, *with id.* at Fig. 4.

The '831 patent describes transmitting information in “packets” that are further grouped into “packet blocks.” *Id.* at 2:18–20, 2:34–35. If multiple burst errors affect a packet block, error correction schemes can become ineffective. *Id.* at 5:40–42. As receiver speed increases and burst

errors become more frequent, it becomes more likely that a packet block will be affected by more than one burst error. *Id.* at 5:38–39.

The '831 patent describes two techniques to reduce the effects of burst errors. First, the patent describes varying the number of packets that are placed in a packet block. *Id.* at 3:58–64. “Varying the packet block size according to the speed of motion of the receiver increases the probability that each packet in the packet block will be successfully received during burst error conditions.” *Id.* at 3:64–67.

Second, data in the packets are interleaved. *Id.* at 6:24–29. For example, a transmitter determines, based on receiver speed, that a packet block should include a certain number of packets. *Id.* at 6:30–33. Before transmission, the data from those packets are read into a two-dimensional register, e.g., as columns of characters. *Id.* at 6:33–36. Then, the data are read out of the register as rows into a packet block, which is transmitted to the receiver. *Id.* at 6:40–48. Reading out rows of the two-dimensional register in this fashion interleaves the columns of data that were read into the register. *Id.* at Fig. 9.

According to the '831 patent, “[i]nterleaving packets together is known in the art.” *Id.* at 6:66.

C. Illustrative Claim

Of the instituted claims, claims 1 and 9 are independent. Claim 1 is reproduced below:

1. A method for transmitting a message packet to a receiver, comprising:
 - identifying changes in signal drop-out characteristics each associated with the receiver;

encoding packets into packet blocks;
transmitting each packet block to the receiver; and
varying the number of packets encoded in the packet block
according to the changes in the signal drop-out characteristics.

Ex. 1001, 8:47–56.

D. Evidence Relied Upon

Petitioner relies upon the following references:

Reed	U.S. 4,939,731	July 3, 1990	Ex. 1006
Mahany	U.S. 5,425,051	June 13, 1995	Ex. 1007
Webb, W.T., <i>et al.</i> , <i>Bandwidth efficient QAM schemes for Rayleigh fading channels</i> , 138 IEEE PROCEEDINGS-I NO. 3 (June 1991) (“Webb”)			Ex. 1008

Pet. 3. Petitioner also relies upon the Declaration of Wayne Stark, Ph.D. (“Stark Decl.”) (Ex. 1003) and the Reply Declaration of Wayne Stark, Ph.D. (“Stark Reply Decl.”) (Ex. 1023).

Patent Owner relies upon the Declaration of Johnathan Wells, Ph.D. (“Wells Decl.”) (Ex. 2006).

E. The Instituted Grounds of Unpatentability

We instituted *inter partes* review of the ’831 patent based upon the following grounds (Dec. to Inst. 22):

References	Basis	Claim[s] challenged
Reed and Mahany	§ 103	1–3, 6, 7, 9, and 12–14
Reed, Mahany, and Webb	§ 103	8

II. ANALYSIS

A. Claim Construction

In the Petition, Petitioner proposed claim constructions for five terms under the broadest reasonable interpretation standard. Pet. 10–15;

37 C.F.R. § 42.100(b). In the Preliminary Response, Patent Owner agreed with Petitioner's proposed construction of "packet," disputed Petitioner's proposed construction of "packet block," argued that "signal drop-out characteristics" need not be construed, criticized the structure identified by Petitioner for "means for varying the number of packets combined in the packet block," and did not challenge Petitioner's proposed construction of "means for transmitting a speed indication signal." Prelim. Resp. 10–15. On that record, in our Decision to Institute, we construed six terms using the broadest reasonable interpretation standard. Inst. Dec. 7–10.

As we explained above, however, the '831 patent expired on March 31, 2015. *See* PO Resp. 9; Pet. Reply 5. In order to determine if Petitioner has demonstrated, by a preponderance of the evidence, that the instituted claims are unpatentable, given the '831 patent's expiration, we construe the claims in accordance with the principles followed in district court. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc); *In re Rambus Inc.*, 694 F.3d 42, 46 (Fed. Cir. 2012) ("While claims are generally given their broadest possible scope during prosecution, the Board's review of the claims of an expired patent is similar to that of a district court's review." (internal citation omitted)).

"In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). The words of a claim generally are given their ordinary and customary meaning, and that is the meaning the terms would have had to a person of ordinary skill at the

time of the invention, in the context of the entire patent, including the specification. *See Phillips*, 415 F.3d at 1312–13. Claims are not interpreted in a vacuum, but are a part of and are read in light of the specification. *See Slimfold Mfg. Co. v. Kinkead Indus., Inc.*, 810 F.2d 1113, 1116 (Fed. Cir. 1987). Although it is improper to read a limitation from the specification into the claims, the claims still must be read in view of the specification of which they are a part. *See Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1347 (Fed. Cir. 2004).

Neither party argues that our constructions of “packet,” “packet block,” “means for transmitting a speed indication signal,” or “interleaving portions of each of the packets together” (claim 10) / “common portions of each message packet are interleaved together” (claim 15), set forth in the Decision to Institute, should change under a *Phillips*-type construction. We determine that our previous constructions of those terms are the correct constructions under *Phillips*.

Patent Owner proposes constructions, under the *Phillips* standard, for “encoding packets into packet blocks” and “encoder for combining and varying the number of packets transmitted in each of the packet blocks.” PO Resp. 11–15. Patent Owner also argues that “signal drop-out characteristics” need not be construed expressly, and disputes Petitioner’s identification of structure corresponding to the “means for varying the number of packets combined in the packet blocks.” *Id.* at 15–17. Petitioner does not dispute Patent Owner’s proposed constructions of “encoding packets into packet blocks,” and “encoder for combining and varying the number of packets transmitted in each of the packet blocks.” Pet. Reply 4–5. Petitioner agrees with Patent Owner that there is no need to construe

expressly “signal drop-out characteristics” and also argues there is no need to construe the means-plus-function terms because none of the disputes in this proceeding turn on the constructions of those terms. *Id.* at 6.

We determine that only three terms require express construction.

1. “encoding packets into packet blocks”

Patent Owner proposes to construe this term to mean “forming blocks by interleaving packets together.” Pet. 11–12 (citing Ex. 2009 (Joint Claim Construction Brief filed in district court), 25–42; Ex. 1001, Fig. 2B, 2:34–41, 3:1–2, 4:10–13; Ex. 2006 (“Wells Decl.”) ¶ 58). Petitioner agrees. Pet. Reply 4–5.

The ’831 patent equates “encoding” with interleaving several times. The ’831 patent discloses, for example, that “[p]ackets are encoded into packet blocks by first *interleaving* the packets together in a register. The *interleaved* packet block is then transmitted to the receiver. Because the packets are *interleaved*, a single burst error is dispersed over multiple packets.” Ex. 1001, 2:34–35 (emphasis added). In the detailed description of transmitter 20, an outgoing message is “transferred to a register 96/98,” which “*interleaves* a message into a large packet block size.” *Id.* at 4:10–13 (emphasis added). Figure 9 of the ’831 patent, which “is a schematic diagram of a transmitter register used for *encoding* packets into a variable sized packet block” (*id.* at 3:18–20) (emphasis added), discloses the use of *interleaving* as the block coding technique (*id.* at 6:24–25 (“FIG. 9 shows a diagram for a block coding technique (interleaving) according to the invention”). *See also id.* at Figs. 10, 11, 6:49–65. Also, the ’831 patent describes the point of novelty as “varying the number of bytes in each packet *interleaved* together according to receiver speed.” *Id.* at 6:66–7:2

(emphasis added); *see also id.* at 7:5–30. We, therefore, agree that the proper construction of “encoding packets into packet blocks” is “forming blocks by interleaving packets together.”¹

2. “encoder for combining and varying the number of packets transmitted in each of the packet blocks”

Patent Owner proposes to construe this term to mean “an encoder for forming blocks by interleaving packets together and varying the number of packets transmitted in each of the blocks.” Pet. 14–15 (citing Ex. 2009 (Joint Claim Construction Brief filed in district court), 40–42; Ex. 1001, 6:24–48; Wells Decl. ¶ 59). Petitioner agrees. Pet. Reply 4–5. For the same reasons discussed above, we agree that the proper construction of “encoder for combining and varying the number of packets transmitted in each of the packet blocks” is “an encoder for forming blocks by interleaving packets together and varying the number of packets transmitted in each of the blocks.”

¹ In the Patent Owner Response and Petitioner’s Reply, the parties allude to claim construction briefing for these terms in the co-pending district court litigation. *See, e.g.*, PO Resp. 11–15; Pet. Reply 4–5. On August 12, 2016, subsequent to the filing of Petitioner’s Reply, the district court issued its Claim Construction Order. Ex. 3001. The district court construed “encoding packets into packet blocks” to mean “forming blocks by interleaving *a discrete number of* packets together.” *Id.* at 7–8 (emphasis added). The district court’s construction differs from the agreed construction in this proceeding by including the language “a discrete number of,” which Petitioner argued for in the district court and Patent Owner opposed. *Id.* The parties represent that the issue is still disputed in district court and that the extra language in the district court’s construction is not necessary to resolve this case. Tr. 8:24–11:14, 46:7–47:12. We, therefore, determine that it is not necessary, in this proceeding, to resolve that disagreement.

3. “means for varying the number of packets combined in the packet blocks”

In our Decision to Institute, we identified the structure disclosed in the '831 patent as performing the recited function to be the CPU performing one of the algorithms identified by Petitioner. Inst. Dec. 8–9. Patent Owner argues that the function is “performed by ‘memory/CPU,’ and not just the CPU alone.” PO Resp. 16–17 (citing Ex. 1001, Figs. 16–18, 8:16–31).

The '831 patent discloses that “[a] *memory* and CPU 108 determines the appropriate packet block size for the current car travel speed from signal 70.” Ex. 1001, 7:67–8:2 (emphasis added). “The packet block size is determined by reading prestored packet block size values in *memory 108*.” *Id.* at 8:3–4 (emphasis added). According to the '831 patent, “the travel speed received from signal 70 is used as an address to read the *memory* location containing the appropriate packet block size value.” *Id.* at 8:5–8 (emphasis added). “The message from receiver/register 102 and the packet block size value determined in *memory/CPU 108* are both input to a register 106.” *Id.* at 8:10–12 (emphasis added). We are persuaded, therefore, that the structure disclosed in the '831 patent as performing the recited function is not only the CPU, but also the memory, performing one of the algorithms identified by Petitioner.

*B. Claims 1–3, 6, 7, 9, and 12–14—
Obviousness over Reed and Mahany*

Petitioner argues that claims 1–3, 6, 7, and 9–14 are unpatentable under 35 U.S.C. § 103(a) as obvious over Reed and Mahany. Pet. 15–45. For the reasons explained below, Petitioner has not established, by a

preponderance of the evidence, that claims 1–3, 6, 7, 9, and 12–14 would have been obvious over Reed and Mahany.

1. Reed (Exhibit 1006)

Reed describes a data transmission protocol for a telecommunications system. Ex. 1006, 1:43–46. The protocol includes “a first station transmitting data signals as a data packet to one or more receiving stations, the packet including one or more blocks of data each encoded with an error correcting code.” *Id.* at 1:67–2:2. Reed explains that “the forward transmission (Packet) consists of several S-blocks, the exact number depends on the baud rate in use.” *Id.* at 4:42–47. “The use of error correction and detection enables a quantitative assessment of the channel to be made. This information is used by the recipient to request data rate changes and, possible [sic], a channel change.” *Id.* at 4:60–63. “To maximise throughput, the baud rate is increased on a good (low error) channel and decreased on a poor (high error) channel.” *Id.* at 5:4–7. “[T]he number of S-blocks per packet changes with baud rate,” (*id.* at 5:23–24), as shown in Figure 7, reproduced below.

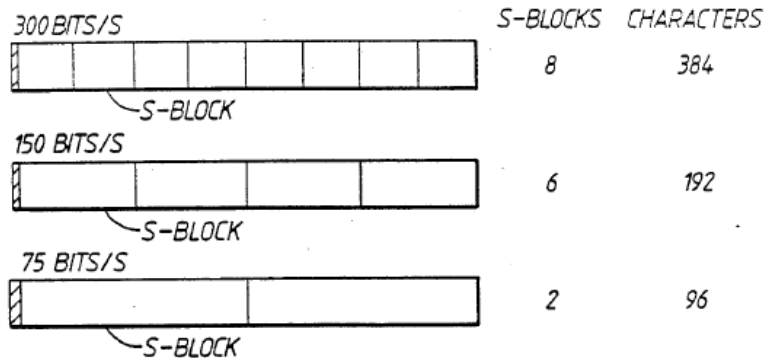


FIG.7.

Figure 7 is a diagram of the components of packets for different baud rates. *Id.* at 3:28–29.

2. Mahany (Exhibit 1007)

Mahany is titled “Radio Frequency Communication Network Having Adaptive Parameters.” Ex. 1007, Title. Mahany discloses embodiments in which “the data (or messages) to be sent through the RF communication link is segmented into a plurality of DATA packets and is then transmitted.”

Id. at 14:48–54. Mahany observes that “choosing smaller data packets for transmission also reduces the amount of data loss by reducing the inherent effects of perturbations and fluctuations found in RF communication links.”

Id. at 14:61–65. Mahany teaches that “[t]he faster the relative movement between a transmitter and a receiver the greater the effect of fading, and, therefore, the smaller the data segment should be. Similarly, if the relative movement is slower, the data segment can be larger.” *Id.* at 15:58–62. “For example, if a receiver detects repeated faulty transmissions, the data segment size parameter might be incrementally reduced (under the assumption that fading caused the faults) until the data throughput reaches an optimal level.”

Id. at 16:20–25. “Similarly, the size of the data segment can be reduced based on a measured indication of the degree of fading in the network.”

Id. at 16:25–27.

3. Analysis

Independent claim 1 recites “encoding packets into packet blocks” and “varying the number of packets encoded in the packet block.” Ex. 1001, 8:51–52. Independent claim 9 recites “an encoder for combining and varying the number of packets transmitted in each of the packet blocks.”

Id. at 9:32–34.

Petitioner maps Reed’s “S-block” to the recited “packet,” and Reed’s “packet” to the recited “packet block.” Pet. 24–27. Petitioner argues that

Reed teaches encoder 32 that “encodes” its S-blocks into packets by concatenating them as shown in Figure 4 of Reed, and encodes message data for error protection using Golay codes. *Id.* at 26–27 (citing Ex. 1006, Figs. 1, 4, 2:18–20, 3:20–21, 3:60–63, 4:9–10, 4:23–25). Petitioner also argues

[t]o the extent that interleaving can also be considered encoding packets into blocks, this is also disclosed by [Reed], which states, “further protection against burst errors may be provided by interleaving two or more blocks of data within each packet of data so that should burst errors occur these will be spread equally over the interleaved blocks so that the blocks may nevertheless be recoverable.”

Id. at 27 (quoting Ex. 1006, 2:63–68). According to Petitioner, Reed “thus confirms the ’831 Patent’s statement: ‘Interleaving packets together is known in the art,’” and, therefore, Reed “discloses that its S-blocks (i.e., ‘packets’) are further encoded into packets (i.e., ‘packet blocks’) through interleaving.” *Id.* (citing Stark Decl. ¶ 115). The cited testimony by Dr. Stark mirrors the language in the Petition.

In our Decision to Institute, we were persuaded that Reed teaches “encoding packets into packet blocks” because Patent Owner had not “propose[d] (or support[ed] with evidence) a construction of ‘encoding’ that would exclude concatenation,” “the claims . . . do not require interleaving,” and we declined to import limitations from the example encoding technique described in the ’831 patent into the claims. Inst. Dec. 13–14.

As discussed above, however, the parties agreed, in briefing subsequent to institution, that “encoding packets into packet blocks” means “forming blocks by interleaving packets together,” a construction which we have adopted. Accordingly, we revisit whether the combination of Reed and Mahany teaches “encoding packets into packet blocks,” as recited in

independent claim 1, and “an encoder for combining and varying the number of packets transmitted in each of the packet blocks,” as recited in independent claim 9.

Patent Owner argues that Reed teaches interleaving *within* an S-block—i.e., interleaving of R-blocks to form an S-block, as depicted in Figure 4 of Reed—but does not teach interleaving one S-block with another S-block. PO Resp. 44–45 (citing Ex. 1006, Fig. 4, 4:39–41; Wells Decl. ¶¶ 76–77).

Petitioner argues, in its Reply, that (1) the '831 patent concedes that interleaving packets together was known in the art; (2) Reed teaches or suggests interleaving packets; and (3) Reed's teachings, at a minimum, render obvious interleaving packets together. Pet. Reply 7. We consider each argument in turn.

a. The '831 patent

Petitioner argues that “the ['831 patent] twice admits that [interleaving packets together] was known in the art.” Pet. Reply 7. According to Petitioner, such admissions are binding on Patent Owner. *Id.* at 7–8 (citing *Pharmastem Therapeutics, Inc. v. Viacell, Inc.*, 491 F.3d 1342, 1362 (Fed. Cir. 2007)). Petitioner concludes that “[b]ecause the '831 Patent makes the legally binding admission that ‘interleaving packets together is known in the art,’ such interleaving cannot, as a matter of law, be a basis for asserting non-obvious.”

At the hearing, counsel for Patent Owner distinguished *Pharmastem*, saying:

We're not disputing that interleaving was known. But what was not known is the interleaving as applied in this claim, which is

the concept of interleaving in a system where you vary the number of packets per block.

. . . If I recollect [*Pharmastem*], what was happening [was] the prior art in that case actually taught the invention as claimed.

. . . .

So it's not the same situation here where we have the prior art just doesn't teach the invention as claimed.

Tr. 43:4–44:6.

We agree with Patent Owner that *Pharmastem* is distinguishable. In that case, “[patentee] distinguished each of the prior art references on the ground that none of them disclosed the presence of stem cells in cord blood.” *Pharmastem*, 491 F.3d at 1361. Patentee argued that “[e]ven though some of the references referred to stem cells as being present in cord blood,” these references reflected little more than flawed nomenclature describing the presence of progenitor cells rather than stem cells in the cord blood. *Id.* Patentee’s basis for the distinction, though, was contradicted by statements in the specification of the asserted patent indicating that stem cells had in fact been identified in cord blood. *Id.* at 1361–62. In this proceeding, the issue is not whether the general concept of interleaving was known in the prior art—it was. Rather, the issue is whether the prior art teaches interleaving packets together to form packet blocks in a way that results in varying the number of packets encoded in the packet blocks. Specifically, the issue is whether Reed teaches interleaving S-blocks together to form a packet. This is because Petitioner does not contend that R-Blocks are interleaved in a way that results in varying the number of R-Blocks encoded into an S-Block. Because the number of S-Blocks in one of Reed’s packets can vary with baud rate, we look to whether Reed teaches

interleaving S-Blocks into such packets. Patent Owner argues that although Reed teaches concatenating S-blocks to form a packet, Reed does not teach interleaving one S-block with another S-block to form a packet. Therefore, Patent Owner's argument to that effect is not contradicted by the '831 patent's admission that interleaving was known in the art.

b. Whether "blocks of data" includes S-blocks

Petitioner also argues that Reed's teaching of "interleaving two or more blocks of data within each packet of data" teaches interleaving one S-block with another S-block. Pet. Reply 8–13 (quoting Ex. 1006, 2:63–68). In our Decision to Institute, we found that "blocks of data," as used in that passage of Reed, referred to R-blocks, not to S-blocks, because elsewhere "Reed uses 'blocks of data' . . . only when referring to blocks of data encoded with an error correcting code," and because "Reed describes only R-blocks—not S-blocks—as being encoded with an error correcting code." Inst. Dec. 16. Petitioner argues that our conclusion was wrong because Reed discloses that S-blocks also are encoded by error correcting codes, such as the two 23-bit Golay codewords appearing before the two R-blocks in Figure 4 of Reed. Pet. Reply 9–10. Petitioner also argued, at the hearing, that these two codewords are "[e]rror correcting the S-block itself in the sense of making sure the destination information is received properly and the R-block identification information is received properly." Tr. 31:13–16.

Having reviewed Petitioner's and Patent Owner's arguments and evidence, and the disclosure of Reed, we agree with Petitioner that our determination, in the Decision to Institute, that Reed uses "blocks of data" to refer only to R-blocks is not supported by the weight of the evidence in the full record. There is one instance, other than column 2, lines 63 to 68, where

Reed uses “blocks of data” without describing them as encoded by an error correcting code. Specifically, Reed describes “concatenating two or more blocks of data and interleaving the bits of data in each block.” Reed, claim 6. In this context, Reed uses “blocks of data” broadly enough to include S-blocks, which are described elsewhere as being concatenated to form packets with the bits within each S-block being interleaved. *See, e.g.*, 4:32–41.

Nevertheless, even assuming that Reed uses “blocks of data” to include S-blocks, we find that Reed’s teaching of “interleaving two or more blocks of data within each packet of data” (Ex. 1006, 2:63–68) is ambiguous and should not be read so broadly when Reed is considered as a whole. Petitioner would like us to interpret the sentence to mean interleaving the data from a first block of data (*i.e.*, S-block) in a packet *with* data from a second block of data (*i.e.*, S-block) in the packet—*i.e.*, “interleaving two or more blocks of data [with each other] within each packet of data.” However, an equally plausible interpretation is that it means “interleaving [the data *within* each of] two or more blocks of data within each packet of data.” In other words, interleaving the data *within* a packet’s first block of data (*i.e.*, R-blocks interleaved in a first S-block) and, separately, interleaving the data *within* the packet’s second block of data (*i.e.*, R-blocks interleaved in the second S-block). In the latter interpretation, no data from the first block of data (*i.e.*, S-block) are interleaved with data from the second block of data (*i.e.*, S-block). We find that only this latter interpretation is supported by Reed’s disclosure. For example, in Figure 4, Reed discloses interleaving the data within S-blocks in a packet of data, but not interleaving the data between S-blocks. Ex. 1006, 3:20–22, Fig. 4. Reed further discloses employing an “interleaving scheme . . . over *each* S-block (690 bits), FIG.

4.” *Id.* at 4:39–41 (emphasis added). Reed similarly claims “concatenating two or more blocks of data and interleaving the bits of the data in each block.” *Id.*, claim 6 (emphasis added). We find no similar support for Petitioner’s interpretation of Reed. Given the lack of support for Petitioner’s interpretation in the rest of the disclosure in Reed, we are not persuaded that a person of ordinary skill in the art, reading this ambiguous sentence in the Summary of Invention of Reed, would have understood it to be teaching interleaving one of Reed’s S-blocks with another of Reed’s S-blocks.

c. Whether a person of ordinary skill in the art would have interleaved S-blocks

Finally, Petitioner argues that, at a minimum, Reed’s teachings regarding interleaving would have rendered obvious interleaving S-blocks together because “[t]he difference between interleaving R-blocks together and interleaving S-blocks together is insubstantial at best” and Reed “suggests that an added benefit would be obtained from interleaving larger data portions.” Pet. Reply 13. According to Petitioner, “a [person of ordinary skill in the art] would understand that the goal of spreading out burst errors is best-accomplished by interleaving larger data segments.” *Id.* at 13–14 (citing Ex. 1023 (Stark Reply Decl.) ¶ 12). Petitioner concludes that “even if there were some minor distinction between the interleaving taught by Reed/Mahany and ‘interleaving packets together,’ use of the la[t]ter would amount to no more tha[n] ‘the mere substitution of one element for another known in the field’ to yield ‘predictable results.’” *Id.* at 14 (citing *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 416 (2007)).

Petitioner did not make this argument in the Petition. *See* Pet. 15–45. Although a Reply may properly respond to arguments raised in Patent

Owner's Response (*see* 37 C.F.R. § 42.23(b)), it is not an opportunity for Petitioner to identify, for the first time, new and different prior art elements that are alleged to satisfy the claim requirements. We consider Petitioner's argument to be improper under 37 C.F.R. § 42.23(b) as not responding to arguments raised in the Patent Owner Response and, therefore, decline to consider it. *See In re Nuvasive, Inc.*, 2016 WL 6608999, Nos. 2015-01672, 2015-1673, slip op. at 11–13 (Fed. Cir. Nov. 9, 2016).

4. Conclusion

Petitioner has not established, by a preponderance of the evidence, that claims 1–3, 6, 7, 9, and 12–14 are unpatentable as obvious over the combination of Reed and Mahany.

C. *Claim 8—
Obviousness over Reed, Mahany, and Webb*

Petitioner argues that claim 8 is unpatentable under 35 U.S.C. § 103(a) as obvious over Reed, Mahany, and Webb. Pet. 45–48. Claim 8 depends from independent claim 1, and recites “varying the number of packets encoded in each packet block according to the content of the packets.” As discussed above, we are not persuaded that Petitioner has established, by a preponderance of the evidence, that independent claim 1 would have been obvious over Reed and Mahany. In this ground, Petitioner relies upon Webb only to teach the additional limitation recited in claim 8. Pet. 45–46. As a result, we are not persuaded that Webb cures the deficiencies noted above with respect to Petitioner's analysis for independent claim 1. Petitioner, therefore, has not established, by a preponderance of the evidence, that claim 8 is unpatentable as obvious over the combination of Reed, Mahany, and Webb.

III. MOTION FOR OBSERVATION

Patent Owner filed a Motion for Observation on the cross-examination testimony of Petitioner's expert, Dr. Stark. Paper 22. Petitioner, in turn, filed a Response. Paper 26. We have considered Patent Owner's observations and Petitioner's responses in rendering this Final Written Decision, and accorded Dr. Stark's testimony appropriate weight where necessary.

IV. CONCLUSION

Petitioner has not shown, by a preponderance of the evidence, that claims 1–3, 6–9, and 12–14 of the '831 patent are unpatentable under 35 U.S.C. § 103.

V. ORDER

Accordingly, it is

ORDERED that claims 1–3, 6–9, and 12–14 have not been shown, by a preponderance of the evidence, to be unpatentable;

FURTHER ORDERED that Patent Owner's Motion for Observation is taken into consideration; 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.

IPR2015-01367
Patent 5,602,831

For PETITIONER:

Steven G. Spears
G. Matthew McCloskey
MCDERMOTT WILL & EMERY LLP

sspears@mwe.com
mmccloskey@mwe.com

For PATENT OWNER:

Lori A. Gordon
Steven W. Peters
STERNE, KESSLER, GOLDSTEIN & FOX

James R. Hietala
Tim R. Seeley
INTELLECTUAL VENTURES

lgordon-PTAB@skgf.com
speters-PTAB@skgf.com
jhietala@intven.com
tim@intven.com