

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC., and
ZTE(USA) INC.,
Petitioner,

v.

INVT SPE LLC,
Patent Owner.

Case IPR2018-01474
Patent 7,206,587 B2

Before THU A. DANG, KEVIN F. TURNER, and BARBARA A. BENOIT,
Administrative Patent Judges.

DANG, *Administrative Patent Judge.*

DECISION
Denying Institution of *Inter Partes* Review
37 C.F.R. § 314(a)

I. INTRODUCTION

A. Background

Apple Inc. and ZTE (USA) Inc. (collectively “Petitioner”) filed a Petition for *inter partes* review of claims 3 and 4 of U.S. Patent No. 7,206,587 B2 (Ex. 1001, “the ’587 patent”). Paper 3 (“Pet.”). INVT SPE LLC (“Patent Owner”) filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). After receiving authorization (Paper 8), Petitioner filed a Reply (Paper 9) to address Patent Owner’s argument that institution should be denied for efficiency reasons, and Patent Owner filed a Sur-Reply (Paper 10).

Although Petitioner initially sought to include claim 3 in its challenge, Patent Owner statutorily disclaimed that claim after the Petition was filed. *See* Ex. 2001. For the reasons discussed below, in this Decision, we do not regard disclaimed claim 3 as a claim challenged in the Petition, and instead regard claim 4 as the only challenged claim.

By statute, institution of an *inter partes* review may not be authorized “unless . . . the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a).

Upon consideration of the Petition and the Preliminary Response, we are not persuaded Petitioner demonstrated a reasonable likelihood of prevailing in establishing unpatentability of claim 4 of the ’587 patent. Accordingly, no trial is instituted.

B. Related Proceedings

According to Petitioner, the '587 patent is at issue in: *INVT SPE LLC v. Apple, Inc.*, Case No. 2:17-cv-03738 (D.N.J.); *INVT SPE LLC v. HTC Corporation and HTC America, Inc.*, Case No. 2:17-cv-03740 (D.N.J.); and *INVT SPE LLC v. ZTE Corporation and ZTE (USA) Inc.*, Case No. 2:17-cv-06522 (D.N.J.). Pet. 32. Further, Petitioner asserts that the '587 patent was previously at issue in *Inventergy, Inc. v. Apple, Inc.*, Case No. 1:17-cv-00196 (D. Del.). *Id.*

C. The '587 Patent

The '587 patent issued on April 17, 2007, from an application filed December 18, 2002, and is a continuation of application No. 10/089,605, filed on April 1, 2002, now U.S. Patent No. 6,760,590. Ex. 1001, [45], [22], and [63].

The '587 patent relates to “[allocating] communication resources . . . to communication terminals based on downlink channel quality.” *Id.* at 2:37–43. According to the '587 patent, “among information indicative of downlink channel quality, which has a possibility of decreasing the downlink throughput when the information is received erroneously in a base station, a communication terminal provides such information with less susceptibility to errors in the propagation path to transmit.” *Id.* at 2:44–52.

In an embodiment, “[the] communication terminal . . . transmits with less susceptibility to errors in the propagation path in proportion to information for which the amount of change is large within CIR[, i.e., ‘desired carrier to interference ratio’] information.” *Id.* at 19:30–34 (brackets in original). For example, “[i]f a CIR value is indicated by a value with a decimal fraction (such as 8.7 dB),” then “information for which the

amount of change is large” and “that indicates a broad value” refers to “the integer part (here, ‘8’).” *Id.* at 19:40–45. In such case, “since the amount of change per unit of the integer part is 1dB, while the amount of change per unit of the fractional part is 0.1 dB, the integer part is ‘information for which the amount of change is large[.]’” *Id.* at 19:45–54. Therefore, “if an integer part is received erroneously by a base station, the degree of error is large compared with the case where a fractional part is received erroneously[.]” *Id.*

Figure 15, reproduced below, illustrates a configuration of the CIR signal creation section of a communication terminal. *Id.* at 3:32–34.

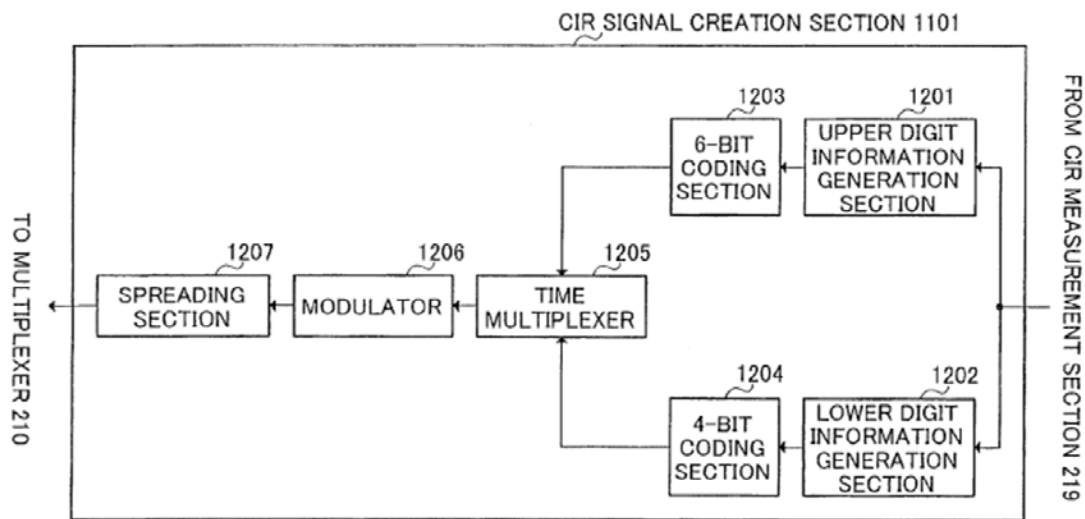


FIG.15

Figure 15 depicts a configuration of CIR signal creation section 1101, wherein, for a CIR value output from CIR measurement section is “8.7 dB,” “upper digit information generation section 1201 outputs the value of the integer part, ‘8’, to the 6-bit coding section 1203,” and “lower digit

information generation section 1202 outputs the value of the fractional part, ‘7’, to the 4-bit coding section 1204.” *Id.* 20:29–41.

D. The Challenged Claim

Independent claim 4 is the remaining challenged claim at issue, and is reproduced below:

4. A communication terminal apparatus comprising:

a measuring device that measures reception quality of a pilot signal to output information having a plurality of bits that indicate the measured reception quality;

a coding device that encodes the information to obtain a code word; and

a transmitter that transmits the code word, wherein:

the coding device encodes the information such that the most significant bit of the plurality of bits is less susceptible to errors in a propagation path than other bits of the plurality of bits.

Ex. 1001, 26:20–30.

E. Asserted Grounds of Unpatentability

Petitioner contends that claims 3 and 4 are unpatentable based on the following specific grounds (Pet. 7):

Reference(s)	Basis	Claim(s) Challenged
Bender ¹ and Jarvinen ²	§ 103 ³	3

¹ Paul Bender, et al., “CDMA/HDR: A Bandwidth-Efficient High-Speed Wireless Data Service for Nomadic Users,” IEEE COMMUNICATIONS MAGAZINE (July 2000) (“Bender”; Ex. 1004).

² U.S. Patent No. 6,470,470 B2 (October 2, 2002) (“Jarvinen”; Ex. 1006).

³ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), revised 35 U.S.C. § 103 effective March 16, 2013. Because the challenged patent was filed before March 16, 2013, we refer to the pre-AIA version of § 103.

Reference(s)	Basis	Claim(s) Challenged
Bender and Piret ⁴	§ 103	4

As discussed above, and for the reasons discussed below, we regard claim 4 as the only challenged claim. *See* Section I.A.

Petitioner also relies on the declaration of Andrew C. Singer, Ph.D. (Ex. 1003) for support.

II. ANALYSIS

A. Claim Construction

The Board accorded the Petition a filing date of August 21, 2018 (Paper 6, 1), prior to the effective date of the rule change that replaces the broadest reasonable interpretation (“BRI”) standard. *See* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51340 (Oct. 11, 2018) (“This rule is effective on November 13, 2018 and applies to all IPR, PGR and CBM petitions filed on or after the effective date.”).⁵ Under that standard, and absent any special definitions, we generally give claim terms their ordinary and customary meaning, as would be understood by one of ordinary skill in the art, at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definitions for claim terms must be set forth in the specification with reasonable clarity,

⁴ U.S. Patent No. 4,747,104 (May 24, 1988) (“Piret”; Ex. 1005).

⁵ We are not apprised of any evidence of record in this proceeding that would lead to a different outcome under the claim construction standard in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc).

deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

Petitioner and Patent Owner contend that no terms require express construction for this Decision. Pet. 8; Prelim. Resp. 14. To the extent it is necessary to determine whether to institute an *inter partes* review, we discuss claims terms in the context of analyzing the asserted ground. See *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (holding that “only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy”); see also *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs.* in the context of an *inter partes* review).

B. Principles of Law

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)); see also 37 C.F.R. § 42.104(b) (requiring a petition for *inter partes* review to identify how the challenged claim is to be construed and where each element of the claim is found in the prior art patents or printed publications relied on). Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

A claim is unpatentable under 35 U.S.C. § 103 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 having ordinary skill in the art to which the subject matter pertains. *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 406 (2007). 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 ordinary skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). In determining the level of ordinary skill, various factors may be considered, including the “type[s] of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citation omitted).

C. Level of Skill in the Art

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *Id.* In that regard, Petitioner’s Declarant, Dr. Singer, testifies that a person of ordinary skill in the art at the time of the ’587 Patent’s invention would have been

a person having a Bachelor’s degree in electrical engineering or the equivalent plus three years of experience working with wireless communication systems or a Master’s degree in electrical engineering with an emphasis on communication

systems or the equivalent plus one year of experience working with digital communication systems or in network engineering.
Pet. 6; Ex. 1003 ¶ 39.

At this juncture, Patent Owner does not dispute Dr. Singer's assessment on the level of ordinary skill in the art. *See generally* Prelim. Resp. Based on the current record, we apply Dr. Singer's assessment for purposes of this Decision. We also note that the prior art of record currently in the instant proceeding is consistent with this level of ordinary skill in the art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1354–55 (Fed. Cir. 2001) (holding that absent evidence to the contrary, “the prior art itself reflects an appropriate level” of ordinary skill in the art).

D. Asserted Obviousness over Bender, in view of Jarvinen

Petitioner alleges that claim 3 would have been obvious over Bender and Jarvinen. Pet. 8–22. As noted above, Patent Owner “disclaimed claim 3 of the '587 patent[.]” Prelim. Resp. 1 (citing Ex. 2001). Thus, according to Patent Owner, this asserted ground of obviousness of claim 3 “is therefore moot.” *Id.*; *see also* 35 U.S.C. § 253 (indicating a patentee may disclaim claims).

We agree with Patent Owner. “A statutory disclaimer under 35 U.S.C. § 253 has the effect of canceling the claims from the patent and the patent is viewed as though the disclaimed claims had never existed in the patent.” *Guinn v. Kopf*, 96 F.3d 1419, 1422 (Fed. Cir. 1996) (citing *Altoona Publix Theatres, Inc. v. Am. Tri-Ergon Corp.*, 294 U.S. 477 (1935)). An *inter partes* review cannot be instituted on claims that have been disclaimed and no longer exist. *See* 37 C.F.R. § 42.107(e) (“No *inter partes* review will be instituted based on disclaimed claims.”). This conclusion is consistent with other panel decisions addressing this issue. *See, e.g., Intuitive Surgical,*

Inc. v. Ethicon LLC, Case IPR2018-00935, Paper 9, 9–10 (PTAB Dec. 7, 2018); *Vestas-Am. Wind Tech. Inc. v. Gen. Elec. Co.*, Case IPR2018-01015, Paper 9, 12–14 (PTAB Nov. 14, 2018).

Accordingly, we treat claim 3 as having never been part of the '587 patent, and do not institute *inter partes* review on this claim. As discussed above, we regard claim 4 as the only challenged claim. See Sections I.A and I.E.

E. Asserted Obviousness over Bender, in view of Piret

Petitioner alleges that claim 4 would have been obvious over Bender and Piret. Pet. 23–31. Patent Owner raises several arguments in response. Prelim. Resp. 1–3, 20–51. Below are brief overviews of Bender and Piret, followed by an analysis of the parties' contentions regarding the challenged claim.

1. *Bender*

Bender, titled “CDMA/HDR: A Bandwidth-Efficient High-Speed Wireless Data Service for Nomadic Users,” is an IEEE article published in July 2000. Ex. 1004, 1. Bender provides a technical approach to high-speed data, which includes “measur[ing] the received signal-to-noise-plus-interference ratio (SNR).” *Id.* at 2. “The data rate which can be supported to each user is proportional to its received SNR,” wherein “over each user’s reverse (uplink) channel, the SNR or equivalently the supportable data rate value is transmitted to the base station.” *Id.* Because “data can tolerate considerably more delay than voice, . . . turbo codes . . . can be employed which will operate well at lower [signal energy per bit to noise ratio] E_b/N_0 , and hence lower SNR and higher interference levels.” *Id.*

In an embodiment, “the access terminal . . . forms a prediction of the effective received SNR,” and “the SNR is then mapped to a value representing the maximum data rate such a SNR can support for a given level of error performance.” *Id.* at 4 (footnote omitted). This “channel state information,” in the form of “a data rate request,” is then “fed back to the AP via the reverse link data rate request channel (DRC) and updated.” *Id.* The “reverse link data request” is “a 4-bit value that maps the predicted SNR into one of the data rate modes.” *Id.*

Table 2, illustrating the SNR for a 1 percent error rate, is reproduced below (*id.* at 5):

Data rate (kb/s)	E_d/N_t (dB)
38.4	-12.5
76.8	-9.5
102.6	-8.5
153.6	-6.5
204.8	-5.7
307.2	-4.0
614.4	-1.0
921.6	1.3
1228.8	3.0
1843.2	7.2
2457.6	9.5

■ Table 2. SNR for a 1 percent packet error rate.

Table 2 shows a summary of “the SNR required to achieve a 1 percent packet error rate (PER).” *Id.* at 4. As shown in Table 2, “the required SNR . . . at the lower rates . . . corresponds to $E_b/N_0 \approx 2.5$ dB, a result of using iterative decoding techniques on serial concatenated codes,” while “for the two highest rates, E_b/N_0 increases considerably because 8-phase shift keying (PSK) modulation and 16-quadrature amplitude modulation (QAM) are employed.” *Id.*

2. *Piret*

Piret, titled “Data Transmission System Employing a Combination of Block Encoding and Convolution Encoding for Error Protection,” issued as a U.S. Patent on May 24, 1988, from an application filed on June 5, 1986. Ex. 1005, [54], [45], [22]. *Piret* relates to a “data transmission system for providing error protection of transmitted data words.” *Id.*, Abstract.

In particular, *Piret* relates to “transmitting data words from a transmitting station to a receiving station, wherein redundancy bits are added for protection against bit errors arising in the transmission.” *Id.* at 1:8–11. In such a system, “communication between stations is subject to burst error phenomena,” wherein “a higher effective level of reliability can be attained if the more significant bits are better protected than the less significant bits.” *Id.* at 1:20–28. Thus, *Piret* recognizes that, in audio transmission such as speech transmission, “errors in the less significant bits make the speech less agreeable or somewhat difficult to understand but an error in a more significant bit can easily make the speech completely uncomprehensible.” *Id.* at 1:28–33.

In *Piret*, an encoder system comprises “a first encoder” which “by matrix multiplication block encodes a set of less significant bits of each data word into a first proto-codeword” and “a second encoder” which “by further matrix multiplication block encodes the remaining, more significant, bits of each data word into a set of a further proto-code words.” *Id.* at 1:65–2:5.

3. *Analysis*

a. Claim 4 over Bender and Piret

Petitioner argues that claim 4 would have been obvious over Bender and *Piret*. Pet. 24–31. We have reviewed the parties’ assertions and

supporting evidence. For the reasons discussed below, Petitioner does not demonstrate a reasonable likelihood of prevailing in showing that claim 4 would have been obvious over Bender and Piret.

We recognize that Piret teaches and suggests a method of encoding less significant bits differently from the more significant bits of each data word, wherein the most significant bit of the plurality of bits is encoded to be less susceptible to errors. See Ex. 1005, 1:20–33. We also recognize that Bender teaches information about channel quality including an upper digit and a lower digit. See Ex. 1004, 2–4. However, neither Piret nor Bender teaches or suggests a “coding device” that encodes “information having a plurality of bits that indicate *the measured reception quality*,” as required by claim 4. See claim 4 (reciting “a measuring device that measures reception quality of a pilot signal to output information having a plurality of bits that indicate the measured reception quality; a coding device that encodes the information”) (emphasis added).

Petitioner contends “[a] POSITA would have understood that a measurement of the SNR is a measurement of reception quality” (Pet. 24), wherein “the SNR value would have necessarily been digitized (i.e., encoded) into binary code words” (*id.* at 25), and that “[i]t would have been obvious to those of ordinary skill in the art to encode the SNR values of *Bender* in accordance with the teachings of *Piret*” (*id.* at 26). That is, according to Petitioner, in view of Piret’s teaching of encoding information, it would have been obvious to encode information such as Bender’s SNR value that indicates measured reception quality. *Id.*

However, for support, Petitioner merely cites to passages of the testimony of Petitioner’s Declarant, Dr. Singer, who contends that to

determine “how the SNR values in *Bender* should be encoded/digitized prior to transmission,” one of ordinary skill in the art “would have looked to related disclosures describing data coding systems,” such as *Piret*. Pet. 25 (citing Ex. 1003 ¶¶ 50–58). According to Dr. Singer, based on *Bender*’s discussion of forward error coding, one of ordinary skill in the art “would have been motivated to seek additional guidance on how to implement . . . error correcting coding” and “would have looked specifically to *Piret*.” Ex. 1003 ¶ 57.

Although Dr. Singer testifies that one of ordinary skill in the art would seek guidance from *Piret* (Ex. 1003 ¶ 56), Dr. Singer’s testimony does not provide sufficient support for Petitioner’s contentions that one of ordinary skill in the art would have encoded *Bender*’s SNR value using *Piret*’s method of encoding more important information with less susceptibility to error. In particular, although Petitioner contends that “the SNR value would have necessarily been digitized (i.e., encoded) into binary code words” (Pet. 25), Dr. Singer’s testimony does not provide sufficient support for Petitioner’s contentions that it would have been obvious to then perform such necessitated digitizing of *Bender*’s SNR value using *Piret*’s encoding method.

Instead, according to Patent Owner, although Petitioner contends that “*Bender*’s signal to noise ratio (‘SNR’) corresponds to the claimed ‘information’ that is encoded according to the Challenged Claim[,] *Bender*’s SNR value, however, is never transmitted, let alone encoded.” Prelim. Resp. 2. As Patent Owner contends, “*Bender* discloses deriving a 4-bit ‘reverse link data request’ based on the SNR value and transmitting this value back to

the base station,” wherein the SNR value itself is neither transmitted nor encoded. *Id.*

We acknowledge that Bender also describes a “forward error correcting (FEC) scheme [that] employs serial concatenated coding and iterative decoding, with puncturing for some of the higher code rates.” Ex. 1004, 4. Bender’s FEC discussion, however, does not relate to transmitting SNR values, let alone encoding the SNR values. Bender’s discussion of the FEC scheme immediately follows Bender’s statement that “[t]he main coding and modulation parameters are summarized in Table 1,” which in turn follows Bender’s discussion of determining and transmitting “a 4-bit value that maps the predicted SNR into one of the data rate modes of Table 1,” not the SNR value itself. Ex. 1004, 4; see Ex. 1004, 2 (indicating “the SNR or equivalently the supportable data rate value is transmitted to the base station”). In addition, the FEC scheme in Table 1 is a parameter of a variable data rate (not the SNR value shown in Table 2). This further supports our finding that the FEC scheme relates to determining and transmitting a data rate value to the base station, not transmitting an SNR value to the base station.

Accordingly, a plain reading of the reference does not support a finding that Bender teaches or suggests that the FEC scheme is used to encode the SNR itself. Therefore, we are not persuaded that Bender’s FEC description would have provided reason to look to Piret’s encoding techniques for encoding Bender’s “quality” information. That is, although we agree with the Petitioner that Piret teaches and suggests a method of encoding less significant bits differently from the more significant bits of each data word, wherein the most significant bit of the plurality of bits is

encoded to be less susceptible to errors (Ex. 1005, 1:20–33), that alone is insufficient to support a conclusion of obviousness of providing an encoder that encodes Bender’s SNR “quality” information, as required by claim 4.

That Piret discloses encoding transmitted information does not address the requirements set forth in *KSR* to provide articulated reasoning with rational underpinning to support the legal conclusion of obviousness. That is, the Petitioner’s obviousness position does not explain why a person of ordinary skill in the art would have encoded the SNR value in Bender, which may not even be transmitted, using Piret’s encoding method. Indeed, Petitioner does not direct us to persuasive evidence that encoding the SNR value would have been expected to provide any advantage, outside the teachings of the ’587 patent.

Here, for these reasons discussed above, we conclude that Petitioner has not provided sufficient evidence from prior art references or Dr. Singer’s declaration testimony to support its contention that one of ordinary skill in the art would have used Piret’s techniques to encode Bender’s SNR values in the manner required by the claims—such that the most significant bit of the plurality of bits is encoded to be less susceptible to errors. Therefore, Petitioner has not demonstrated articulated reasoning with rational underpinning to support the legal conclusion of obviousness. *See PAR Pharm., Inc. v. TWI Pharm., Inc.*, 773 F.3d 1186, 1193 (Fed. Cir. 2014). Instead, we conclude that Petitioner used improper hindsight to reconstruct the claimed subject matter by using the claims as a guide to combine the prior art references. *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 840 F.2d 902, 907 (Fed. Cir. 1988) (“Care must be taken to avoid hindsight reconstruction by using ‘the patent in suit as a guide through the maze of

prior art references, combining the right references in the right way so as to achieve the result of the claims in suit.” (citation omitted)).

For the foregoing reasons, Petitioner does not demonstrate a reasonable likelihood of prevailing in showing that claim 4 would have been obvious over Bender and Piret. See 35 U.S.C. § 316(e) (To prevail in an *inter partes* review that has been instituted, “the petitioner shall have the burden of proving a proposition of unpatentability by a preponderance of the evidence.”).

III. CONCLUSION

We conclude that Petitioner has not demonstrated a reasonable likelihood of prevailing with respect to at least one claim of the ’587 patent challenged in the Petition.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is denied as to all challenged claims of the ’587 patent, and no trial is instituted.

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