

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RENESAS ELECTRONICS CORPORATION,
Petitioner,

v.

BROADCOM CORPORATION,
Patent Owner.

IPR2019-01040
Patent 8,284,844 B2

Before THOMAS L. GIANNETTI, PATRICK M. BOUCHER, and
NORMAN H. BEAMER, *Administrative Patent Judges*.

BEAMER, *Administrative Patent Judge*.

PRELIMINARY GUIDANCE
PATENT OWNER'S MOTION TO AMEND

I. INTRODUCTION

On November 13, 2019, we instituted *inter partes* review of claims 1 and 9–14 of U.S. Patent No. 8,284,844 B2 (“the ’844 patent”). Paper 9 (“Institution Decision”). After institution, Patent Owner filed a contingent Motion to Amend. Paper 15 (“Motion” or “Mot.”). Should we find in a Final Written Decision that the challenged claims are unpatentable, Patent Owner’s Motion proposes replacing claims 10–14 with respective substitute claims 15–19. Mot. 1, App. A. Patent Owner requests that we provide Preliminary Guidance on the Motion in accordance with the Board’s pilot program concerning motion to amend practice and procedures. Mot. 1; *see also* Notice Regarding a New Pilot Program Concerning Motion to Amend Practice and Procedures in Trial Proceedings under the America Invents Act before the Patent Trial and Appeal Board, 84 Fed. Reg. 9,497 (Mar. 15, 2019) (providing a patent owner with the option to receive preliminary guidance from the Board on its motion to amend) (“Notice”). Petitioner filed an Opposition to the Motion. Paper 18 (“Opposition” or “Opp.”). We have considered Patent Owner’s Motion and Petitioner’s Opposition and the associated arguments and evidence.

In this Preliminary Guidance, we provide information indicating our initial, preliminary, non-binding views on whether Patent Owner has shown a reasonable likelihood that it has satisfied the statutory and regulatory requirements associated with filing a motion to amend in an *inter partes* review and whether Petitioner (or the record) establishes a reasonable likelihood that the proposed substitute claims are unpatentable. *See* 35 U.S.C. § 316(d); 37 C.F.R. § 42.121; *Lectrosonics, Inc. v Zaxcom, Inc.*, IPR2018-01129, Paper 15 (PTAB Feb. 25, 2019) (precedential); *see also* Notice, 84 Fed. Reg. at 9,497 (“The preliminary guidance . . . provides preliminary, non-binding guidance from the Board to the parties about the [motion

to amend].”). In a Final Written Decision, we will determine whether the proposed substitute claims are unpatentable by a preponderance of the evidence based on the entirety of the record, including any opposition made by the petitioner.

Lectrosonics, Paper 15, at 4.

For purposes of this Preliminary Guidance, we focus on the proposed substitute claims, and specifically on the amendments proposed in the Motion. *See* Notice, 84 Fed. Reg. at 9,497. We do not address the patentability of the originally challenged claims. *Id.* Moreover, in formulating our preliminary views on the Motion and Opposition, we have not considered the parties’ other substantive papers on the underlying merits of Petitioner’s challenges. We emphasize that the views expressed in this Preliminary Guidance are subject to change upon consideration of the complete record, including, if applicable, any revision to the Motion filed by Patent Owner. Thus, this Preliminary Guidance is not binding on the Board when rendering a final written decision. *See id.* at 9,500.

II. PRELIMINARY GUIDANCE

A. Statutory and Regulatory Requirements

For the reasons discussed below, at this stage of the proceeding, and based on the current record, Patent Owner does not appear to have shown a reasonable likelihood that it has satisfied the statutory and regulatory requirements under 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121(a) associated with filing a motion to amend for substitute claims 15–19.

1. Reasonable Number of Substitute Claims

Does Patent Owner propose a reasonable number of substitute claims? (35 U.S.C. § 316(d)(1)(B))

Yes. Patent Owner proposes to replace each of challenged claims 10–14 with one of respective substitute claims 15–19. Mot. 1, 3, App. A.

Petitioner does not contest Patent Owner’s arguments on this point. *See generally* Opp.

2. Respond to Ground of Unpatentability

Does the Motion respond to a ground of unpatentability involved in the trial? (37 C.F.R. § 42.121(a)(2)(i))

Yes. Patent Owner presents the amendment to proposed substitute claim 15 in an attempt to add features to further distinguish the claim as patentable over the references asserted in the instituted grounds. In particular, because Patent Owner expressly addresses the Fandrianto ’459, Fandrianto ’351, and Reader references, which underlie our Institution Decision, the Motion responds to the grounds of unpatentability involved in the trial. *See* Mot. 12–13, 22–23.

We disagree with Petitioner’s contention that proposed substitute claim 16 does not respond to any ground of unpatentability (*see* Opp. 4–6), because claim 16 includes the responsive features in the claim 15 amendment, based on claim 16’s dependence on claim 15. Claims 17–19 also include the responsive features, based on their dependence on claim 16. To the extent Petitioner argues proposed substitute claim 16 fails the statutory and regulatory requirements for motions to amend because of its additional broadening limitation (*see id.*), we address this issue below.

3. Scope of Amended Claims

Does the amendment seek to enlarge the scope of the claims? (35 U.S.C. § 316(d)(3); 37 C.F.R. § 42.121(a)(2)(ii))

Claim 15

No. Proposed substitute claim 15 includes narrowing limitations as compared to original claim 10. *See* Mot., App. A. Petitioner does not contest Patent Owner’s arguments on this point. *See generally* Opp.

Claims 16–19

No. Proposed substitute claim 16 does not enlarge the scope of the claims because at least original claim 1 is broader in scope than proposed substitute claim 16.

Petitioner’s argument that “substitute claim 16 is nothing more than an attempt to broaden claim 11” (Opp. 4) is not persuasive. Although

proposed substitute claim 16 amends challenged claim 11 to require only “at least four of” the five recited hardware accelerators, whereas claim 11 requires all five recited hardware accelerators, the proper standard is whether the substitute claim at issue broadens the *claims of the patent*, not any particular claim. *See Lectrosonics*, IPR2018-01129, Paper 15, at 6–7 (“A substitute claim will meet the requirements of § 42.121(a)(2)(i) and (ii) if it narrows the scope of at least one claim of the patent . . .”). As stated above, proposed substitute claim 16 is narrower than original claim 1.

Proposed substitute claims 17–19 also do not enlarge the scope of the claims because they are narrower than original claim 1.

4. New Matter

Does the amendment seek to add new subject matter? (35 U.S.C. § 316(d)(3); 37 C.F.R. § 42.121(a)(2)(ii))

Yes. On the current record, Patent Owner does not appear to have identified adequate written description support for the amendment in proposed substitute claim 15.

Patent Owner provides citations to the application from which the ’844 patent issued to show written description support for each limitation in the proposed substitute claims, and additionally provides explanation for the newly added limitations in proposed substitute claims 15 and 16. *See Mot.* 4–10 (citing Exs. 2008,¹ 2009²).

Petitioner contends Patent Owner fails to meet its burden of setting forth written description support for the proposed substitute claims. *See Opp.* 2–4. Specifically, Petitioner argues the Motion “provides nothing but bare string cites to show written description support for the majority of the claims and only provides minimal explanation for the limitations it is seeking to add to the claims.” *Id.* at 3.

We are not persuaded by Petitioner’s contention that string cites, in general, are insufficient to set forth written description support. Written

¹ Exhibit 2008 refers to U.S. Appl. No. 10/114,798 (“the ’798 application”) (now the ’844 patent), which was filed April 1, 2002.

² Exhibit 2009 is a Declaration of Dr. Scott T. Acton.

description support for claim limitations, a factual issue, is often self-evident upon identification of the appropriate disclosure.

With respect to the newly added negative limitation in proposed substitute claim 15—“and wherein the plurality of hardware accelerators do not comprise programmable processors which are configured to operate according to different encoding/decoding formats by changing the software executed by those processors” — Petitioner contends that Patent Owner’s cited paragraphs in the ’798 application do not provide adequate written description support. *See id.* at 6–9.

At this stage of the proceeding and based on the current record, we are persuaded that Patent Owner has not identified sufficient written description support for the negative limitation in proposed substitute claim 15, and therefore, Patent Owner fails to show a reasonable likelihood that proposed substitute claim 15 does not add new matter.

Under 35 U.S.C. § 112, first paragraph, the written description requirement is satisfied when “the description ‘clearly allow[s] persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed.’” *Inphi Corp. v. Netlist, Inc.*, 805 F.3d 1350, 1355 (Fed. Cir. 2015) (quoting *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1562–63 (Fed. Cir. 1991)). “In particular, ‘[n]egative claim limitations are adequately supported when the specification describes a reason to exclude the relevant limitation.’” *Id.* (quoting *Santarus, Inc. v. Par Pharm., Inc.*, 694 F.3d 1344, 1351 (Fed. Cir. 2012)). Such a reason to exclude may be provided “by properly describing alternative features of the patented invention.” *Id.* at 1356.

Here, for support for the negative limitation Patent Owner relies (*see* Mot. 6–7, 9) on the ’798 application’s disclosure that, “[i]n another illustrative embodiment, some or all of the hardware accelerators comprise programmable processors which are configured to operate according to different encoding/decoding formats by changing the software executed by those processors, in addition to programming registers as appropriate to the design.” Ex. 2008 ¶ 84. However, the fact that ’798 application discloses an alternative embodiment that *does* use programmable processors is not sufficient disclosure of an embodiment where none of the hardware accelerators can be programmable processors. Rather, the ’798 application contains examples throughout where hardware accelerators are implemented by processors or coprocessors, without specifying that configuring those processors excludes changes to the software executed.

See, e.g., Ex. 2008 ¶ 31 (“In a further embodiment, modules 310 and 312 are implemented in the form of a filter engine 311 which consists of an internal SIMD (single instruction multiple data) processor and a general purpose controller to interface to the rest of the system”); *id.* (“In a further embodiment, module 314 is implemented in the form of another filter engine similar to 311”); *id.* ¶ 32 (“In an illustrative embodiment . . . the PVL module 306 is designed as a coprocessor to the core processor 302”); *id.* ¶ 75 (“The coprocessor/accelerators operate concurrently with the core processor while decoding a series of macroblocks.”). While the ’798 application discloses that “in one illustrative embodiment the programming for different decoding formats is done through register read/write” where “[t]he core processor programs registers in each module to modify the operational behavior of the module” (*id.* ¶ 83), this embodiment is not clearly exclusive of software changes occurring alongside changes to parameters stored in registers.

In short, Patent Owner has not shown that the ’798 application discloses clear and distinct alternatives that provide a reason to exclude any “programmable processors which are configured to operate according to different encoding/decoding formats by changing the software executed by those processors.” *Cf. Inphi*, 805 F.3d at 1357 (holding that substantial evidence supported the Board’s finding that the relevant disclosure properly distinguished between different signal types where the memory module claim at issue excluded certain types of chip select signals).

Accordingly, on this record, we are persuaded by Petitioner’s argument that proposed substitute claim 15 does not have proper written description support. Proposed substitute claims 16–19 depend from claim 15, and lack written description support for the same reasons as claim 15. Therefore, proposed substitute claims 15–19 add new matter.

B. Patentability³

³ We express no view on the patentability of original claims 1 and 9–14 in this Preliminary Guidance. Instead, we focus on limitations added to proposed substitute claims 15–19 in the Patent Owner’s Motion to Amend.

For the reasons discussed below, at this stage of the proceeding, and based on the current record, it appears that Petitioner (or the record) has shown a reasonable likelihood that proposed substitute claims 15–19 are unpatentable.

Does the record establish a reasonable likelihood that the proposed substitute claims are unpatentable?

Yes. Based on the current record, it appears that Petitioner (or the record) has shown a reasonable likelihood that proposed substitute claims 15–19 are unpatentable for the reasons discussed below.

We note that Patent Owner will have the opportunity to respond to the evidence cited in Petitioner’s Opposition and this Preliminary Guidance in a Reply or in a Revised Motion to Amend in this proceeding.

1. Indefiniteness

No. On this record, it appears that Petitioner (or the record) has not shown a reasonable likelihood of establishing that proposed substitute claims 16–19 are indefinite under 35 U.S.C. § 112, second paragraph.

Petitioner contends that proposed substitute claim 16 is indefinite because “it is open to multiple interpretations and thus does not inform a POSITA about the scope of the invention.” Opp. 9. For example, Petitioner argues, “it is unclear whether any combination of four accelerators, for instance: a decoder that includes four separate programmable entropy decoders with no other accelerators, or two programmable entropy decoders with an inverse transform accelerator and a pixel filter, satisfies the claim language.” *Id.* at 9–10.

We are not presently persuaded that proposed substitute claim 16 is unclear in its recitation requiring “at least four of” the five listed hardware accelerators. We are of the view, at this point in the proceeding, that one of ordinary skill in the pertinent art would understand that proposed substitute claim 16 requires the system to include, at a minimum, four out of the five different types of hardware accelerators recited, i.e., “a programmable entropy decoder,” “an inverse quantizer,” “an inverse transform accelerator,” “a pixel filter,” and “a motion compensator.” Whether the claim covers additional combinations of hardware accelerators, including multiple accelerators of the same type, beyond the

minimum of four different types of accelerators, appears to be an issue of breadth, not indefiniteness.

Thus, at this stage, neither Petitioner nor the record has shown a reasonable likelihood that proposed substitute claim 16, and proposed substitute claims 17–19, which depend from claim 16, are indefinite under either the standard in *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014) (“a patent is invalid for indefiniteness if its claims . . . fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention”) or *In re Packard*, 751 F.3d 1307, 1311 (Fed. Cir. 2014) (finding claims are properly rejected for indefiniteness when the USPTO makes un rebutted findings that claim language is “ambiguous, vague, incoherent, opaque, or otherwise unclear”).

2. Obviousness

Yes, as to each of Petitioner’s grounds identified below.

Proposed Substitute Claim 15

Petitioner contends proposed substitute claim 15 is unpatentable as obvious on the following grounds:

- (1) Fandrianto ’459,⁴ Kopet,⁵ and Malladi⁶; and
- (4) Kopet and Malladi. *See* Opp. 12–19, 31–32.

Based on the current record, it appears that Petitioner (or the record) has shown a reasonable likelihood that proposed substitute claim 15 is obvious over each of the above Grounds 1 and 4 in the Opposition as currently proposed.

The New Limitations in Proposed Substitute Claim 15

Proposed substitute claim 15 replaces original claim 10 and adds new limitations. *See* Mot., App. A. The new limitations of proposed substitute claim 15 are as follows:

15. The video decoding system of claim 9 comprising a plurality of hardware accelerators . . . and wherein the plurality of hardware

⁴ US 5,982,459, issued November 9, 1999 (filed June 11, 1997) (Ex. 1004) (relied upon for Grounds 1–3 in the Petition).

⁵ US 5,699,460, issued December 16, 1997 (filed June 17, 1993) (Ex. 1024).

⁶ US 5,815,206, issued September 29, 1998 (filed May 3, 1996) (Ex. 1025).

accelerators do not comprise programmable processors which are configured to operate according to different encoding/decoding formats by changing the software executed by those processors.

See id. (underlining indicating added words).

Petitioner contends that Fandrianto '459 teaches a “plurality of hardware accelerators [that] do not comprise programmable processors which are configured to operate according to different encoding/decoding formats by changing the software executed,” as recited in proposed substitute claim 15, by disclosing H.221/BCH bit stream parser/multiplexer (decoder) 240 and Huffman codec 260 (including Huffman decoder 268). *See Opp.* 12–14 (citing Ex. 1004, 9:42–11:6, 11:40–63, Figs. 5, 7; Ex. 1023⁷ ¶¶ 94–104).

Petitioner also contends that Kopet teaches a “plurality of hardware accelerators [that] do not comprise programmable processors which are configured to operate according to different encoding/decoding formats by changing the software executed,” as recited in proposed substitute claim 15, by disclosing functional units in a video encoder/decoder architecture that can be implemented with specialized hardware. *See id.* at 14–16, 32 (citing Ex. 1024, 2:40–45, 3:20–24, 6:30–33, 7:5–7, 8:33–39, Figs. 4, 17; Ex. 1023 ¶¶ 105–110).

Petitioner further contends that Malladi teaches parsing and decoding video stream headers associated with a decoding standard and transmitting parameters to memory registers of hardware blocks including a video core. *See id.* at 18–19, 32 (citing Ex. 1025, 7:63–8:40, 8:43–53, 10:38–46; Ex. 1023 ¶¶ 92, 118–119).

At this stage of the proceeding, and based on the current record, we are persuaded by Petitioner’s arguments regarding the new limitations in proposed substitute claim 15. We find no evidence or argument on the present record with respect to the new limitations that persuasively rebuts the above disclosures of the Fandrianto '459-Kopet-Malladi and Kopet-Malladi combinations of Petitioner’s Grounds 1 and 4.

Rationale for Combining the References in Grounds 1 and 4

Petitioner presents the following rationales:

⁷ Exhibit 1023 is a Declaration of Dr. Alan C. Bovik.

1) It would have been obvious to modify Fandrianto '459 to “substitute Fandrianto '459’s video processor 280 that executes software to implement multiple decoding functions with multiple hardware accelerators that do not comprise programmable processors in view of Kopet” because “Kopet explains that dedicated hardware designed to quickly perform a particular data flow path (e.g., a specific standard), is faster than software based solutions.” Opp. 16–17.⁸

2) It would have been obvious to apply Malladi’s technique of “parsing the header of each video frame to extract the parameters needed to change the decoding method” to Kopet, so that Kopet “could embed that information into the token that it transmits to each of the accelerators so that they can use the information to change the decoding method of each accelerator according to the decoding standard of the frame of the video being processed.” *Id.* at 18–19.⁹

At this stage of the proceeding, and based on the current record, we are persuaded by Petitioner’s rationales that it would have been obvious to combine Fandrianto '459, Kopet, and Malladi as currently proposed in the Opposition.

Thus, Petitioner (or the record) has shown a reasonable likelihood that proposed substitute claim 15 is obvious over each of Ground 1 (Fandrianto '459, Kopet, and Malladi) and Ground 4 (Kopet and Malladi).

Proposed Substitute Claims 16–18

Petitioner contends proposed substitute claims 16–18 are unpatentable as obvious on the following grounds:

⁸ Petitioner presents this rationale in the case that the Board determines Fandrianto '459’s H.221/BCH bit stream parser/multiplexer 240 is not “a hardware accelerator adapted to perform a decoding function,” in which case Fandrianto '459 would not teach multiple hardware accelerators that are not programmable processors, as required by proposed substitute claim 15. *See* Opp. 16–17. Accordingly, this rationale only applies to Petitioner’s Ground 1, not Ground 4 based on Kopet and Malladi.

⁹ Petitioner presents this rationale “to the extent that Kopet does not explicitly disclose how its control unit 418 would generate control tokens with the parameters that the accelerators use to change its decoding method.” *Id.* at 18.

- (2) Fandrianto '459, Kopet, Malladi, and Wise¹⁰; and
(5) Kopet, Malladi, and Wise. *See* Opp. 19–29, 32–34.

Based on the current record, it appears that Petitioner (or the record) has shown a reasonable likelihood that proposed substitute claims 16–18 are obvious over each of the above Grounds 2 and 5 in the Opposition as currently proposed.

The New Limitations in Proposed Substitute Claim 16

Proposed substitute claim 16 replaces original claim 11 and adds new limitations. *See* Mot., App. A. The new limitations of proposed substitute claim 16 are as follows:

16. The video decoding system of claim 15 wherein the plurality of hardware accelerators comprise at least four of:

- a programmable entropy decoder . . . ;
- an inverse quantizer . . . ;
- an inverse transform accelerator . . . ;
- a pixel filter . . . ; and
- a motion compensator

See id. (underlining indicating added words).

Proposed substitute claim 16 depends from proposed substitute claim 15, and thus includes the limitation that “the plurality of hardware accelerators do not comprise programmable processors which are configured to operate according to different encoding/decoding formats by changing the software executed by those processors.” *See* Opp. 19. Accordingly, we consider below Petitioner’s contentions that the combinations in proposed Grounds 2 and 5 teach specific hardware accelerators, as recited in proposed substitute claim 16, that are not “programmable processors which are configured . . . by changing the software executed,” as recited in proposed substitute claim 15.

Petitioner contends Fandrianto '459 teaches “a programmable entropy decoder” that is not a programmable processor by disclosing Huffman codec 260 (including Huffman decoder 268). *See* Opp. 19–20 (citing Ex. 1004, 11:40–47; Ex. 1023 ¶¶ 148–155). Petitioner also contends Wise

¹⁰ US 6,697,930 B2, issued February 24, 2004 (filed February 7, 2001) (Ex. 1026).

teaches “a programmable entropy decoder” that is not a programmable processor by disclosing Huffman decoder 56. *See id.* at 19–21, 33 (citing Ex. 1026, 52:32–46; Ex. 1023 ¶¶ 129–130).

Petitioner contends Kopet teaches “an inverse quantizer” that is not a programmable processor by disclosing quantization processing unit 422. *See id.* at 19–20, 22, 33 (citing Ex. 1024, 9:48–52, 10:1–44, 11:45–51, 32:18–20, 32:24–37; Ex. 1023 ¶¶ 132–133).

Petitioner contends Kopet teaches “an inverse transform accelerator” that is not a programmable processor by disclosing DCT (discrete cosine transform) unit 424. *See id.* at 19–20, 23, 33 (citing Ex. 1024, 7:5–7, 30:48–57; Ex. 1023 ¶¶ 138–143).

Petitioner contends Wise teaches “a pixel filter” that is not a programmable processor by disclosing prediction filter 103. *See id.* at 19–20, 24–25, 33–34 (citing Ex. 1026, 282:65–283:30, Fig. 12; Ex. 1023 ¶¶ 144–145).

Petitioner contends Kopet suggests “a motion compensator” that is not a programmable processor by disclosing a motion estimation coprocessor, because it would have been obvious to one of ordinary skill in the art to include a complementary motion compensator corresponding to Kopet’s motion estimation coprocessor. *See id.* at 25, 34 (citing Ex. 1024, 15:22–28; Ex. 1023 ¶ 146). Petitioner also contends Wise teaches “a motion compensator” that is not a programmable processor by disclosing a temporal decoder. *See id.* at 19–20, 25–26, 34 (citing Ex. 1026, 15:39, 19:65–20:3, 51:18–26, Fig. 12; Ex. 1023 ¶¶ 147–148).

The New Limitations in Proposed Substitute Claim 17

Proposed substitute claim 17 depends, via dependence from proposed substitute claim 16, from proposed substitute claim 15, and thus includes the limitation that “the plurality of hardware accelerators do not comprise programmable processors which are configured to operate according to different encoding/decoding formats by changing the software executed by those processors.” Accordingly, the “de-blocking filter” recited in proposed substitute claim 17 is not a “programmable processor[] [that is] configured to operate . . . by changing the software executed,” as recited in proposed substitute claim 15.

Petitioner contends Kopet teaches “a de-blocking filter” that is not a programmable processor by disclosing arithmetic processor unit (APU)

420. *See* Opp. 26–27, 34 (citing Ex. 1024, 12:54, 32:33–37, 33:5–8, App. 1, at 70; Ex. 1023 ¶¶ 149–157).

Proposed Substitute Claim 18

Proposed substitute claim 18 does not include any additional new limitations that require further consideration at this juncture.

At this stage of the proceeding, and based on the current record, we are persuaded by Petitioner’s arguments regarding the new limitations in proposed substitute claims 16–18. We find no evidence or argument on the present record with respect to the new limitations that persuasively rebuts the above disclosures of the Fandrianto ’459-Kopet-Malladi-Wise and Kopet-Malladi-Wise combinations of Petitioner’s Grounds 2 and 5.

Rationale for Combining the References in Grounds 2 and 5

Petitioner presents the following rationales:

1) Given Kopet’s description of “a video processing architecture that includes Auxiliary Interface Unit (AIU) 430, which provides expandability and flexibility . . . to support other instructions and functions,” “[i]t would have been an obvious design choice for a POSITA to add Wise’s Huffman decoder 56 to Fandrianto ’459 and Kopet’s system.” Opp. 21 (citing Ex. 1024, 7:34–39; Ex. 1023 ¶¶ 129–130).

2) “In view of the well-known hardware/software tradeoffs as described by Kopet, it would have been an obvious design choice for a POSITA to replace Fandrianto ’459’s video processor 280 with a hardware accelerator that is not a programmable processor such as Wise’s prediction filter 103.” *Id.* at 24 (citing Ex. 1023 ¶ 144).

3) “[I]n view of the well-known hardware/software tradeoffs as discussed . . . it would have been obvious to a POSITA to replace Fandrianto ’459’s video processor 280 with a hardware accelerator that is not a programmable process such as Wise’s temporal decoder.” *Id.* at 25–26 (citing Ex. 1023 ¶ 147).

At this stage of the proceeding, and based on the current record, we are persuaded by Petitioner’s rationales that it would have been obvious to combine Fandrianto ’459, Kopet, Malladi, and Wise as currently proposed in the Opposition.

Thus, Petitioner (or the record) has shown a reasonable likelihood that proposed substitute claims 16–18 are obvious over each of Ground 2

(Fandrianto '459, Kopet, Malladi, and Wise) and Ground 5 (Kopet, Malladi, and Wise).

Proposed Substitute Claim 19

Petitioner contends proposed substitute claim 19 is unpatentable as obvious on the following grounds:

(3) Fandrianto '459, Kopet, Malladi, Wise, and Harrand¹¹; and

(6) Kopet, Malladi, Wise, and Harrand. *See* Opp. 19–29, 32–34.

Proposed substitute claim 19 does not include any additional new limitations that require further consideration at this juncture because it changes only the claim's dependency. *See* Institution Decision 33–34.

Based on the current record, it appears that Petitioner (or the record) has shown a reasonable likelihood that proposed substitute claim 19 is obvious over each of the above Grounds 3 and 6 in the Opposition as currently proposed.

¹¹ US 5,995,513, issued November 30, 1999 (filed September 8, 1995) (Ex. 1006) (relied upon for Ground 3 in the Petition).

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