

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMAZON.COM, INC. and AMAZON.COM SERVICES LLC,
Petitioner

v.

NOKIA TECHNOLOGIES OY
Patent Owner

Case No. IPR2024-00725
Patent. No. 8,204,134

PATENT OWNER'S PRELIMINARY RESPONSE

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Ex. Number	Title
2001	Declaration of Dr. Omid Kia
2002	<i>Curriculum Vitae</i> of Dr. Omid Kia

I. INTRODUCTION

Amazon.com, Inc. and Amazon.com Services LLC, (“Petitioner” or “Amazon”) petitioned for *inter partes* review of claims 1-22 (“Challenged Claims”) of U.S. Patent No. 8,204,134 (“’134 Patent”), which is owned by Nokia Technologies Oy (“Patent Owner” or “Nokia”). Petitioner asserts four grounds of unpatentability but only one ground with regard to the independent claims. The Board should decline institution.

The Board should deny institution under 35 U.S.C. § 314(a) because the Petitioner has failed to meet its burden of showing a reasonable likelihood of unpatentability for any challenged claims of the ’134 Patent. In its first and only ground challenging the independent claims, based on Yagasaki, Petitioner fails because Yagasaki does not teach or suggest “at least one discontinuity in the numbering of the image frames,” as required by the independent claims. In fact, Yagasaki is clear that there is no discontinuity in its numbering (alleged to be its continuous temporal_reference code). In its analysis, Petitioner mischaracterizes the operation and teachings of Yagasaki and fails to demonstrate that Yagasaki discloses or renders obvious all the claim elements of the independent claims.

The remaining grounds are only directed to dependent claims. In these grounds, Petitioner relies on additional references, which alone or in combination with Yagasaki, fail to cure the deficiencies of Yagasaki.

Accordingly, Patent Owner requests that the Board deny institution of *inter partes* review.

II. BACKGROUND

A. Overview of the '134 Patent

The '134 Patent relates to the grouping of multimedia files, particularly video files in connection with streaming. Ex. 1001 at 1:13-15. The '134 Patent explains that many video coding methods take advantage of the temporal redundancy of successive image frames, by using motion compensated temporal prediction. *Id.* at 2:15-23. The '134 Patent explains that, if a telecommunications network is used in the transmission, it can cause a bottleneck in the data transfer. *Id.* In this case, the bit rate of the transmission should substantially correspond to the bandwidth available in the telecommunications network. *Id.* Typically, multimedia data and/or data contents are very large and their transfer to the terminal device can be time-consuming and require a significant amount of storage memory capacity. Ex. 2001 at ¶47; Ex. 1001 at 32-42.

The '134 Patent discloses that to reduce the amount of data in video files, the image data can be compressed by reducing the amount of redundant information in the image frames. Ex. 1001 at 2:5-7. The '134 Patent also discloses that redundancy can be further reduced using efficient lossless coding of compression parameters known as Variable Length Coding (VLC). *Id.* at 2:10-14. The '134

Patent explains that, many video coding methods take advantage of the temporal redundancy of successive image frames, by using motion compensated temporal prediction. *Id.* at 2:15-23. In this case, contents of some of the image frames in a video sequence are predicted from other frames in the sequence by tracking changes in specific objects or areas in successive image frames. *Id.* at 2:17-23. However, issues may arise with this method if a frame is lost because frames dependent on it can no longer be correctly decoded. *Id.* at 2:31-33.

Each video frame can be divided into macroblocks that comprise color components (such as Y, U, V) of all pixels of a rectangular image area and that macroblocks can be further grouped into slices, which are groups of macroblocks that are typically selected in the scanning order of the image. *Id.* at 2:56-58. The '134 Patent discloses that to allow for flexible streaming of video files, many video coding systems employ scalable coding in which some elements or element groups of a video sequence can be removed without affecting the reconstruction of other parts of the video sequence. *Id.* at 3:3-7. The '134 Patent further discloses that scalability is typically implemented by grouping the image frames into a number of hierarchical layers. *Id.* at 3:7-8. The hierarchical layers typically include a base layer and one or more enhancement layers that include image frames. *Id.* at 3:8-18.

The '134 Patent further describes controlling the transmission bit rate, including without limitation leaving out or removing frames having high

information content from the transmission, including less scalability layers in the transmission, or using different video sequence coding methods for the transmission. *Id.* at 3:21-36. However, the '134 Patent identifies a number of drawbacks with the above approach, including without limitation that a group of pictures (GOP) employing reference picture selection cannot necessarily be decoded independently, and the adjusting of scalability or coding method in the streaming server or a network element becomes difficult because the video sequence must be decoded, parsed, and buffered for a long period of time to allow any dependencies between different image groups to be detected. Ex. 1001 at 3:37-61; Ex. 2001 at ¶54.

The '134 Patent further describes issues with discontinuity in image numbering and informing the decoder whether the removal of image frames was intentional. Ex. 1001 at 3:62-4:17, 11:9-23. To address these issues and others, the '134 Patent discloses a decoding method; a video decoder; and a computer program product, stored on a non-transitory computer readable medium and executable in a data processing device that are configured such that a decoder takes into account a discontinuity in image frames. *See, e.g., id.* at Claims 1-22, 4:21-5:4.

The '134 Patent further discloses that the decoding method, video decoder, and computer program product decode a compressed video sequence, where image frames are entered into a buffer memory in connection with the decoding. *Id.* at

4:31-33. The compressed video sequence includes an indication informing an discontinuity in the numbering of the image frames, which indication is decoded from the compressed video sequence. *See, e.g., id.* at 4:33-36, 4:41-45. The missing image frames cause discontinuities in the numbering of the image frames. *See, e.g., id.* at 4:45-47. In response to the indication, the buffer memory is configured to provide a number of image frames corresponding to at least one discontinuity in the numbering of the image frames. *See, e.g., id.* at 4:36-40. The image frames in the buffer memory are used in the decoding process. *See, e.g., id.* at 4:36-45. The number of image frames in the buffer memory can be used in place of image frames that do not exist at a decoder due to the at least one discontinuity in the numbering of the image frames. *See, e.g., id.* at 4:41-45.

After the buffer memory has been configured to provide the number of image frames corresponding to the discontinuities in the numbering of the image frames, entering of the image frames comprised by the video sequence into the buffer memory can be continued from the correct image frame number. *See, e.g., id.* at 4:48-53. A number of, for example, filler frames corresponding to the discontinuities in the numbering of the image frames can be entered into the buffer memory and that the filler frames can be designated by an identifier indicating that the filler frames do not belong to the actual video sequence. *See, e.g., id.* at 4:54-59. The '134 Patent further discloses that configuring the buffer memory to

provide a number of image frames corresponding to the discontinuities in the numbering of the image frames can also be carried out by memory indications, whereby no data is entered into the buffer memory. *See, e.g., id.* at 4:60-64. In the '134 Patent, the number of image frames in the buffer memory can also be used in sliding window buffering of image frames. *See, e.g., id.* at 19:58-20:1.

One benefit of the approach disclosed by the '134 Patent is that the buffer memories of the encoder and the decoder can be kept in synchronism, which enables a fluent operation of the process of reference picture selection. *See, e.g., id.* at 5:1-4. Other benefits include without limitation redundant image frame removal, removal of frames unnecessary for reference, transmission bit rate management, buffer memory management, efficiency increases, avoidance of unnecessary error correction actions, insertion of a video sequence (such as a commercial) in the middle of another video sequence, and others. *See, e.g., id.* at 1:32-42, 2:5-33, 3:21-36, 3:62-4:17, 4:21-28, 4:60-5:4, 5:56-67, 6:61-7:12, 11:9-23, 20:34-56.

B. Yagasaki (“Yagasaki,” Ex. 1005)

At best, Yagasaki relates to a process for coding a video signal derived from a motion picture into a motion picture film source in which the video signal includes duplicate pictures, and includes frames consisting of fields originating from different frames of the motion picture film source. Ex. 2001 at ¶81; Ex. 1005 at 1:8-12, Figs. 1-22. Yagasaki states that “duplicate pictures are detected in the

input video signal, and each duplicate picture is eliminated from the input video signal to provide an encoder input signal.” Ex. 1005 at 3:26-30. Yagasaki discloses that “a skip-picture flag is included in the coded signal in lieu of each eliminated duplicate picture, and a reference picture code identifying a field to be copied to provide each eliminated duplicate picture is also included in the coded signal.” *Id.* at 3:32-36. At the decoder, Yagasaki further discloses that “the skip picture flag and the reference picture code are extracted from the coded video signal” and “the picture indicated by the reference picture code is copied in response to the skip picture flag to restore an eliminated duplicate picture to the output video signal.” *Id.* at 3:60-67.

Yagasaki discloses that the skip-picture flag relates to temporal references that indicates whether the picture is a duplicate picture, where a duplicate picture is one with little or no temporal change relative to another picture. *See, e.g.*, Ex. 1005 at 8:49-52, 16:58-62, 17:9-22, 19:15-29, 19:44-65, 21:23-33. Yagasaki discloses that, in one embodiment, a temporal_reference code is incremented each consecutive picture. *Id.* at 19:17-25. In the embodiment where the temporal_reference code is used, every picture includes a temporal_reference code (even the pictures with duplicate content). Ex. 2001 at ¶82. Yagasaki describes that, in the encoded and decoded signals, both the skip-picture flag and the temporal_reference code are included together for each picture. *See* Ex. 1005 at

21:27-33. Dr. Kia explains that, in Yagasaki, the decoder input signal is fed into the decoder, which extracts from the decoder input signal the skip picture flag, the processing unit flag, the prediction mode code, the reference picture code, and the temporal reference code for each picture, each of which was encoded at the encoder. Ex. 2001 at ¶82; *See, e.g.*, Ex. 1005 at 16:58-62, 17:9-22, 19:15-29, 19:44-63, 21:23-33.

Dr. Kia concludes Yagasaki is fundamentally directed to a data compression technique and does not disclose any discontinuities in image frames, temporal reference codes, or any other numbering of frames. Ex. 2001 at ¶83.

C. Person of Ordinary Skill in the Art (POSITA)

Patent Owner contends that a person of ordinary skill in the art (“POSITA”) for the ’134 Patent would have at least a bachelor’s degree in electrical engineering, computer engineering, or a related field, with about two years of experience in video decoding or encoding technologies. Ex. 2001 at ¶19.

Additional work or practical experience may qualify one not having the requisite education as a person with ordinary skill in the art while a higher level of education could offset less experience. *Id.*

While Petitioner provides a different definition of a POSITA for the ’134 Patent, Patent Owner does not believe the ultimate definition of a POSITA impacts the issues presented herein for the purposes of Institution. *See* Petition at 6. As

such, while Patent Owner reserves all rights to challenge Petitioner's definition of the POSITA in this proceeding, for the purposes of Institution, Patent Owner does not dispute Petitioner's definition.

D. Claim Construction

Petitioner contends that the claims should be construed "in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." 37 C.F.R. §42.100(b). Petition at 6. Petitioner asserts that no constructions are necessary to resolve any disputes identified in the Petition and argued herein for the purposes of Institution. Petition at 6. While Patent Owner agrees that no terms need to be construed to resolve the issues presented herein, Patent Owner also reserves the right to address construction of any terms if this proceeding is instituted and/or in any other action involving the '134 Patent.

III. THE BOARD SHOULD NOT INSTITUTE *INTER PARTES* REVIEW

A. Petitioner Has Failed to Establish a Reasonable Likelihood that Any Challenged Claim Is Unpatentable under 37 C.F.R. § 42.108(c).

Pursuant to 37 C.F.R. § 42.108(c), Petitioner must demonstrate a reasonable likelihood "at least one of the claims challenged in the petition is unpatentable" to warrant institution of an *inter partes* review for that claim. Petitioner has not done

so for asserted Ground 1. Because Ground 1 is the only ground that challenges the independent claims, because Ground 1 fails, so to do Grounds 2-4.

1) Ground 1 – Yagasaki Does Not Render Obvious Claims 1-5, 9-12, and 16-19

Petitioner alleges that Yagasaki alone discloses or renders obvious Claims 1-5, 9-12, and 16-19. *See* Petition at 19-51. However, Yagasaki fails to teach, suggest, disclose, or otherwise render obvious at least the claim elements discussed below.

Claims 1[b], 9[b], and 16[b] recite configuring the buffer memory to provide a number of image frames in a buffer memory that correspond to at least one discontinuity in the *numbering* of the received image frames (e.g., a missing number of an image frame), which results from an intentional discontinuity and/or an error in a video sequence. Ex. 2001 at ¶86; *See e.g.*, Ex. 1001 at Claim 1[b] (configuring, in response to the indication, the buffer memory to provide *a number of image frames corresponding to at least one discontinuity in the numbering of the image frames.*”). As disclosed, the provided number of image frames, such as the filler frames (*see e.g.*, Claim 5), can be re-interpreted as an unintentional gap allowing the decoder to perform error correction (*see, e.g.*, Claim 8). Ex. 2001 at ¶87. Configuring the buffer memory to provide image frames to the video sequence to address any discontinuity in the frame numbering “allows the buffer

memories of the encoder and the decoder to be kept preferably in synchronism.”

Id. at ¶86; Ex. 1001 at 20:49-51.

a) Yagasaki fails to disclose “a number of image frames corresponding to at least one discontinuity in the numbering of the image frames”

Petitioner asserts:

Yagasaki thus teaches, in response to the skip-picture flag (“*the indication*”), causing field memories 1207 through 1210 (“*configuring...the buffer memory*”) to provide a picture (“*a number of image frames*”) to replace the skipped picture (“*corresponding to [the] discontinuity*”).

Petition at 34 (citing Ex. 1003 at ¶106). Petitioner’s cropped quote of the claim language is telling. Petitioner rewords the claim language to say “*corresponding to [the] discontinuity*” when the actual claim language is “corresponding to ***at least one discontinuity in the numbering*** of the image frames.” The claim language clearly requires that there be ***at least one discontinuity in the numbering of the image frames***, which is missing in Petitioner’s lone reference, Yagasaki. Ex. 2001 at ¶91. As will be demonstrated below, Petitioner relies on continuously incremented “temporal_reference codes” as the claimed numbering, but these continuously incremented “temporal_reference codes” never have a discontinuity.

Petitioner’s arguments with regard to claims 1[b], 9[b], and 16[b] turn on the Petitioner’s theory that Yagasaki removes a duplicate picture, adds a skip picture

flag into the location of the removed duplicate picture, and the decoder receives a discontinuity. Petitioner mischaracterizes Yagasaki.

First, in Yagasaki, a removed duplicate picture does not correspond to *at least one discontinuity in the numbering of the image frames*. Yagasaki describes that a skip-picture flag is included in a coded signal in lieu of each eliminated duplicate picture (i.e., the picture is not actually removed from the sequence, but simply coded in a very compressed manner), which a POSITA would understand refers to the duplicate picture content. Ex. 2001 at ¶93; *See* Ex. 1005 at Abstract, 3:18-24, 3:31-35, 3:57-62, 4:10-15, 4:36-40, 4:62-5:8, 5:57-64. However, eliminated duplicate picture content within a frame is not the same as the numbering of the image frame. Ex. 2001 at ¶93.

In order to allegedly show the required numbering for each image frame, Petitioner solely relies on Yagasaki's "temporal_reference code." Petition at 25. Dr. Havlicek likewise points to the "temporal_reference code" as the claimed numbering for each image frame. Ex. 1003 at ¶92. But Yagasaki discloses that each encoder and decoder signal *includes* at least the skip-picture flag as well as the temporal_reference code (the alleged image frame number). Petition at 25. Thus, each encoder and decoder signal *includes a temporal_reference code that is incremented by one for each consecutive picture* in the coder with the counter starting at zero for each GOP. Ex. 1005 at 19:22-27. Thus, based on Petitioner's

mapping and Yagasaki's disclosure, the only alleged *numbering in Yagasaki*, temporal_reference code, *remains continuous* regardless of whether a picture or skip-picture flag is transmitted.

Moreover, in Yagasaki, the encoder output signal VC1 includes at least all of the following for each picture: (1) the skip-picture flag SPC; (2) the processing unit flag PUC; (3) the prediction mode code PMC; (4) the reference picture code RFC; and (5) *the temporal_reference code*. Ex. 2001 at ¶97; Ex. 1005 at 16:58-62, 19:15-29, 21:23-33. Similarly, the decoder input signal VD3 includes at least all of the same flags and codes for each picture, including the temporal_reference code. Ex. 2001 at ¶97; Ex. 1005 at 17:9-19, 19:44-63, 21:23-33. Therefore, in the encoded and decoded signals, both the skip-picture flag and the temporal_reference code are included together for each picture. Ex. 2001 at ¶97; Ex. 1005 at 21:27-33 (“The skip picture flag SPC . . . and the temporal_reference are included together with the signal for each picture”), 16:29-31, 16:58-62, 19:15-29, 21:23-33. Thus, even when duplicate picture content is coded in the bitstream using a skip-picture flag, the continuously incremented temporal_reference code is still included for each picture ensuring no discontinuity in the temporal_reference codes (i.e., the alleged numbering of the image frames). Ex. 2001 at ¶97. Therefore, in Yagasaki, there is not at least one discontinuity in the numbering of the image frames because

the encoder sends and the decoder receives continuous temporal_reference codes.

Id.

As such, because every skip-picture flag also includes a temporal_reference code (so as to maintain the continuous numbering of frames in Yagasaki), there are no discontinuities in the numbering of the video sequence.

Second, Petitioner and its expert err in asserting that that Yagasaki's skip-picture flag informs an intentional discontinuity of numbering of the decoded pictures stored in field memories 1207 through 1210. Petition at 34.

Yagasaki discloses a process that uses skip-picture flag to trigger the decoder to use the reference picture code to restore picture content. Ex. 2001 at ¶100; *See, e.g.*, Ex. 1005 at 5:61-65. Yagasaki discloses removing a duplicate picture by replacing the duplicate picture with a skip-picture flag and other relevant information (e.g., a picture reference code and a temporal reference code) during encoding and compression. Ex. 2001 at ¶100; Ex. 1005 at 4:8-15; *See, also* Ex. 1005 at Abstract, 3:18-24, 3:31-35, 3:57-62, 4:10-15, 4:36-40, 4:62-5:8, 5:57-64. Yagasaki discloses that the encoder uses the skip-picture flag to inform the decoder to identify and use a corresponding reference picture code to restore the data content of an image frame with the data content from another picture frame. Ex. 2001 at ¶100; Ex. 1005 at 16:53-62. A POSITA would understand that Yagasaki uses the skip-picture flag to preserve each image frame and then restores

additional data content in the preserved frames at the decoder to avoid discontinuities in numbering. Ex. 2001 at ¶100.

Moreover, just as there is no discontinuity in temporal_reference codes in the video sequence, there is no discontinuity in temporal_reference codes in the field memories. Ex. 2001 at ¶101. Dr. Havlicek himself explains that “a POSITA would have understood that Yagasaki discloses, in response to the skip-picture flag, copying into field memories 1207 through 1210 (‘entering into the buffer memory’) the picture indicated by the reference picture code.” *See* Ex. 1003 at ¶144 (“Yagasaki copies reference frame P2 (or I0) into the buffer position of P4 because . . . P4 may subsequently be identified as a reference picture for calculating another picture in the video sequence.”) *See id.* at ¶120. The picture indicated by the reference picture code is then copied into the field memories in response to the skip-picture flag. Ex. 2001 at ¶101; Ex. 1005 at Fig. 15 and 15:17-29 (describing copying the frame, which a POSITA would understand to mean copying the frame into the field memory).

Thus, even if Petitioner and its expert were correct that “[e]ach decoded picture in field memories 1207 through 1210 is therefore associated with a temporal_reference code” (which was discussed above as being continuous), then there would be no intentional discontinuity in temporal_reference codes in the field memories. Ex. 2001 at ¶102. This is because the picture content along with the

temporal_reference code for any skipped pictures would be stored in the field memories along with the other pictures and temporal_reference codes. *Id.*

Third, even though there would be no discontinuity in temporal_reference codes in the field memories under Petitioner's theory that each decoded picture in field memories 1207 through 1210 is associated with a temporal_reference code, Yagasaki does not actually teach that the temporal_reference codes are stored in the field memories for any of the pictures at all. Ex. 2001 at ¶103. Dr. Havlicek cites to Yagasaki at 19:18-30 and Fig. 20. Ex. 1003 at ¶93. However, Yagasaki at 19:18-30 merely discusses the generation of temporal_reference codes and not that they are stored in the field memories with the picture content. Ex. 2001 at ¶103. And there are no arrows in Fig. 20 from the Temporal/Reference Generator 1020 to any of the field memories. *Id.*

Indeed, Petitioner and its expert acknowledge that there is an entire functioning embodiment that does not include temporal_reference codes at all; therefore, there is no need to store temporal_reference codes in the field memories, and there would be no discontinuities in the temporal_reference codes if there never any to begin with. *See* Ex. 1003 at ¶¶55-63; Ex. 1005 at Figs. 12, 14, 13:7-15:10. Dr. Havlicek states that a "POSITA would have understood field memories 1207 through 1210 to have a small capacity," therefore it would not make any

sense to store values in the field memory that are unnecessary for Yagasaki to reproduce the skipped picture content. *See* Ex. 1003 at ¶109.

At bottom, either all of the image frames are stored in the field memories with temporal_reference codes or all of the image frames are stored in the field memories without temporal_reference codes. Ex. 2001 at ¶104. In either case, there will be no discontinuity of numbering of the image frames. *Id.*

Fourth, even if there was at least one discontinuity in numbering of the image frames, which there is not, the skip-picture flag would not be an indication informing an intentional discontinuity of numbering of the image frames as alleged because the skip-picture flag is not used to configure the decoder to treat any discontinuity as intentional. Ex. 2001 at ¶105; *See* Ex. 1005 at 5:61-65. There is no disclosure or teaching in Yagasaki that a skip-picture flag would inform the decoder to treat at least one discontinuity in temporal_reference codes. The “skip-picture flag” of Yagasaki is directed to a different problem, and provides a different solution. Ex. 2001 at ¶105.

Indeed, Yagasaki is directed to compressing digital video signals for transmission and storage. *Id.* at 1:14-2:63, 2:66-3:6 (“[I]t is a principal object of the present invention to provide a method and a apparatus for coding with high efficiency an input video signal derived from a motion picture source using 2-3 pulldown, which is a method for analogue-to-digital ”telecine” conversion that

applies to matching frame rates in different analogue / digital environments; a method and a decoding apparatus for decoding a coded signal, as counterparts to the above-mentioned coding method and apparatus, and recording of a recording signal coded by the above-mentioned coding method.”). Yagasaki describes a technique to detect duplicate picture content, which is added as a result of the 2-3 pulldown process to address frame rate mismatch, represent the duplicate picture content using less data (such as with flags and codes), and to decode the data at a decoder. *See id.* at Abstract, 3:18-5:64. However, Yagasaki is not directed to configuring, in response to the skip-picture flag, the buffer memory to provide a number of image frames corresponding to at least one discontinuity in the temporal_reference code. Ex. 2001 at ¶106. Yagasaki does not create any discontinuity in the temporal_reference code (the alleged numbering of the image frames), and the skip-picture flag does not inform the decoder to treat discontinuities as intentional. *Id.*

Yagasaki retains every image frame and intends to reproduce the content within each image frame for display. Ex. 2001 at ¶107. Yagasaki does not teach removing image frames or sub-sequences, or any discontinuity in the image frame numbering. *Id.*

Finally, Petitioner states that “[t]he picture indicated by the reference picture code further corresponds to the skip picture ... because it ‘replace[s] ... the skip

picture[] ... eliminated in the coding process.” Petition at 34. Once again, Petitioner relies on a mischaracterization of Yagasaki’s reference picture codes. Ex. 2001 at ¶108. Petitioner’s expert incorrectly construes Yagasaki’s teachings that a reference picture code “indicates ... the picture that is to be used as the reference picture for reproducing the skip picture” as also suggesting that the “picture indicated by the reference picture code is a ‘number of image frames’” and that the “picture indicated by the reference picture code also corresponds to ‘at least one discontinuity in the number of the image frames,’” without relying on any support from Yagasaki. *Id.*

As discussed above, Yagasaki discloses a technique to detect duplicate picture content, represent the duplicate picture content using less data (such as with flags and codes) while still preserving each image frame, and decode the data at a decoder. *See, e.g.*, Ex. 1005 at Abstract, 3:18-5:64; Ex. 2001 at ¶108. In this technique, Yagasaki does not eliminate entire image frames when it identifies a duplicate picture. Ex. 2001 at ¶109. Instead, Yagasaki encodes the picture into the bitstream in a compressed manner using skip-picture flags and other relevant information in place of duplicate pictures or duplicate picture content. *Id.*; *See, e.g.*, Ex. 1005 at Abstract, 3:18-24, 3:31-35, 3:57-62, 4:10-15, 4:36-40, 4:62-5:8, 5:57-64; Ex. 2001 at ¶109.

Yagasaki discloses that reference picture code “indicates, when the picture is a skip picture, the picture (field or frame) that will be used as the reference picture for reproducing the skip picture.” *See* Ex. 1005 at 16:29-31; Ex. 2001 at ¶110. When the decoder receives the temporal_reference code, the skip-picture flag, and the reference picture code, the decoder knows that, for the particular temporal_reference code, the skip picture was coded into the bitstream (albeit in a very compressed manner using the skip-picture flag) and that the reference picture indicated by the reference picture code should be reproduced and the reference picture code is used to restore eliminated picture content, which results in actual picture content. Ex. 2001 at ¶110. Yagasaki explains that the reference picture code indicates, when a picture is a skip picture, the picture field that will be used as the reference picture for reproducing the skip picture. Ex. 1005 at 7:31-34; *see also id.* at 8:65-67.

Yagasaki’s decoder is configured to use the data content from the picture indicated by the reference picture code to restore a duplicate frame. Ex. 1005 at 5:62-64. Yagasaki’s process preserves and restores the data content of a duplicate picture frame with the data content from another picture frame. Ex. 2001 at ¶111. Through this process, Yagasaki retains every image frame and intends to reproduce the content within each image frame at the decoder for display. *Id.* Yagasaki does not disclose providing a number of image frames corresponding to at least one

discontinuity in the numbering of the image frames, that the number of image frames are, for example, filler frames (*see e.g.*, claim 5) or memory indications (*see e.g.*, claim 7) that are not from the video sequence. *Id.*; *see* Ex. 1005 at 20:34-45.

Thus, contrary to Petitioner's assertions, Yagasaki's reference picture codes are used to preserve picture content of an image frame and not to introduce discontinuities, as Petitioner claims. As such, Petitioner fails to demonstrate that a picture indicated by the reference picture codes is at least one discontinuity in the numbering of the image frames.

For at least these reasons, Petitioner has failed to demonstrate that Yagasaki discloses or renders obvious this claim element. Ex. 2001 at ¶113.

b) Dependent claims 2-5, 8-12, and 17-19

Dependent claims 2-5, 8-12, and 17-19 depend from independent claims 1, 9, and 16, respectively. As discussed above, Yagasaki fails to disclose or render obvious independent claims 1, 9, and 16. For at least this reason, Yagasaki also fails to disclose or render obvious dependent claims 2-5, 8-12, and 17-19.

2) Ground 2 – The Combination of Yagasaki and Oliver Does Not Render Obvious Dependent Claims 5, 7, 13, 15, 20, and 22

Claims 5 and 7 depend from independent claim 1, claims 13 and 15 depend from independent claim 9, and claims 20 and 22 depend from independent claim

16. As discussed above, Yagasaki fails to disclose or render obvious independent claims 1, 9, and 16. Oliver alone or in combination with Yagasaki does not cure the deficiencies of Yagasaki. For at least this reason, the combination of Yagasaki and Oliver fails to disclose or render obvious dependent claims 5, 7, 13, 15, 20, and 22.

3) Ground 3 – The Combination of Yagasaki, Oliver, and Lyon Does Not Render Obvious Dependent Claims 6, 14, and 21

Claim 6 depends from independent claim 1, claim 14 depend from independent claim 9, and claim 21 depends from independent claim 16. As discussed above, Yagasaki fails to disclose or render obvious independent claims 1, 9, and 16. Oliver and Lyon alone or in combination with Yagasaki do not cure the deficiencies of Yagasaki. For at least this reason, the combination of Yagasaki, Oliver, and Lyon fails to disclose or render obvious dependent claims 6, 14, and 21.

4) Ground 4 – The Combination of Yagasaki and Ran Does Not Render Obvious Dependent Claim 8

Claim 8 depend from independent claim 1. As discussed above, Yagasaki fails to disclose or render obvious independent claims 1. Ran alone or in combination with Yagasaki does not cure the deficiencies of Yagasaki. For at least this reason, the combination of Yagasaki and Ran fails to disclose or render obvious dependent claim 8.

IV. THE BOARD SHOULD EXERCISE ITS DISCRETION TO DENY INSTITUTION

The Petition fails to demonstrate a likelihood of success with respect to a single claim. Indeed, Patent Owner has demonstrated that the grounds, are facially deficient. As a result, Petitioner fails to demonstrate that any of the challenged claims are likely found to be unpatentable. For at least these reasons, the Board should exercise its discretion and deny institution.

V. CONCLUSION

For the above-stated reasons, Patent Owner requests that the Board deny institution of the Petition.

Dated: July 30, 2024

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CERTIFICATE OF WORD COUNT

Under the provisions of 37 C.F.R. § 42.24, the undersigned hereby certifies that the word count for the foregoing Patent Owner Preliminary Response totals 5,199 words, which is less than the 14,000 allowed words under 37 C.F.R. § 42.24(a)(1)(i),(b)(1).

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that the foregoing **PATENT OWNER'S PRELIMINARY RESPONSE** was served electronically via e-mail on July 30, 2024, in its entirety on the following counsel of record for Petitioner:

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