UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

NOKIA TECHNOLOGIES OY,
Patent Owner

Case: IPR2024-00848
U.S. Patent No. 7,532,808

PATENT OWNER'S REQUEST FOR REHEARING BY THE DIRECTOR

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I. INTRODUCTION AND SUMMARY

This request arises from the Board's decision to institute IPR of Patent No. 7,532,808 (the "'808 Patent"). IPR2024-00848, Paper No. 3 ("Pet."). Amazon.com, LLC and Amazon.com Services, LLC (collectively, "Petitioner") challenge claims 10-11, 15-16, 20-22, 44, 47-49, 51-54, 58-60, and 62-64 ("Challenged Claims") on two obviousness grounds. The first ground is in view of WO 01/11891 A1 ("Karczewicz"). The second is in view of U.S. Pat. Pub. 2003/0123738 ("Frojdh") and AAPA.[1]

The Board's decision to institute IPR was based on erroneously (1) concluding a POSITA would have found it obvious to combine a prior art's two mutually exclusive modes of operation into one mode without explanation of how those two mutually exclusive modes of operation could exist as a single mode, and (2) ignoring parts of the inventor's lexicography of the term "skip coding mode." Both errors constitute abuses of discretion. The first error contravenes Federal Precedent that a POSITA must have a reasonable expectation of success in modifying the teachings

[1] Ground 2 is split into Ground 2A (Frojdh) and Ground 2B (Frojdh, AAPA and H.263). Ground 2B is directed at dependent claims. Ground 2A is the subject of this Request.

of the prior art. Indeed, the Board made no findings on this front. The second error contravenes Federal Circuit precedent on claim construction.

The ’808 Patent provides a new “skip” coding mode for video encoders and decoders. The patent describes that conventional “skip” modes served a limited copying function. With conventional skip modes, a block of pixels in a current frame was copied directly from the same location in a reference picture.

The patent also describes that conventional non-skip coding modes used motion vector predictions to measure the displacement of a current block of pixels from a reference picture. The patent provides examples of prior art coding modes in Table 3 as they existed in the “JM1” (Joint Model 1) draft of the H.264 Standard.

TABLE 3

Macroblock Coding Modes of JM1

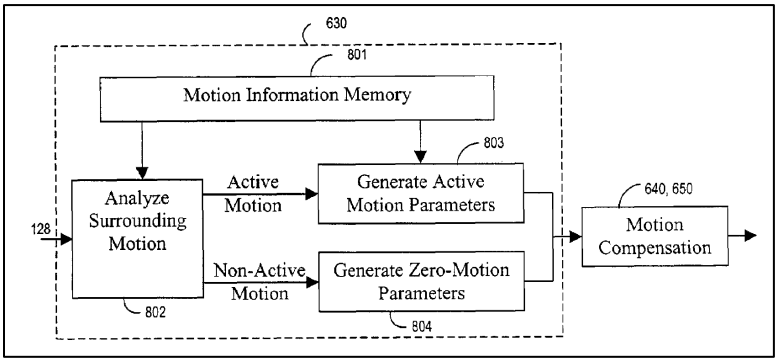
Codeword Index	Mode	UVLC Ccodeword
—	SKIP	Run-Length Coded
0	16 × 16	1
1	16 × 8	001
2	8 × 16	011
3	8 × 8	00001
4	8 × 4	00011
5	4 × 8	01001
6	4 × 4	01011

Every non-SKIP coding mode in Table 3 predicted motion vectors. The predicted motion vectors could be zero or non-zero valued.

The ’808 Patent did not invent the idea of having zero or non-zero valued motion vectors. This would be trivial. All real numbers have the property of being

zero or non-zero valued. Rather, the ’808 Patent invented a redefined skip coding mode with an analysis of the motion characteristics of image segments surrounding a current block to determine how to generate a motion vector for that block. The patent expressly redefines “skip coding mode” at 17:43-53 (and 14:23-32).

Figure 8 (also on the cover page) coincides with this lexicography:



In “non-active” scenarios, zero-valued motion vectors are always assigned to skip mode image blocks akin to conventional skip mode. *E.g.*, Ex. 1001 at 14:23-32. In “active” scenarios, the skip coding mode uses motion vector prediction to determine what motion vector to assign to skip mode image blocks. In both cases, no additional signaling is required beyond an indication of skip coding mode. The claimed encoders and decoders understand such an indication in a bitstream requires the processes described above following a “non-active” or “active” classification.

Karczewicz, the basis of the first ground, describes affine motion vector field modeling options that consist of (a) a prediction field describing how to predict a motion vector; (b) a refinement field that may enhance a prediction; and/or (c) a zero

motion vector field. An affine motion vector model uses basis functions (covering movements like translation, rotation, and skewing) to describe motion vectors that may be weighted by signaled coefficients. Karczewicz describes an "MCI" (motion coefficient indicator) indicates whether these coefficients are included in a bitstream.

In a first abuse of discretion, the Board determined that a POSITA would have been motivated to combine two of Karczewicz's coding options: (1) where an image segment is only represented by a prediction field and (2) where a segment is coded with no motion vector field (i.e., it is copied directly from the same location in a reference frame). IPR2024-00848, Paper 11 ("Paper 11") at 32-33. A segment cannot be both represented by a prediction field (i.e., a decoder is instructed how to predict a motion vector for a segment) and by no motion vector field (i.e., a decoder is instructed to copy a segment directly from a reference frame with no motion vector prediction). Put simply, video encoders and decoders cannot both **predict** a motion vector field and **not predict** a motion vector field for a segment at the same time.

The Board concluded for institution purposes that a zero MCI bit would signal both above options, and "a person of ordinary skill would have been able to fit those modes together." Paper 11 at 36. Neither the Board nor Petitioner explained how a POSITA could have done this. Neither the Board nor Petitioner explained why a POSITA would have disregarded Karczewicz's express teaching that "it is necessary" to provide specific information for the prediction field coding options.

Ex. 1006 at 17:23-25. Indeed, if a zero MCI bit signaled both options at the same time, as the Board found, video coding devices in this new system would confront a contradiction: Does a zero MCI bit require them ***to predict a motion vector field*** (option 1) or ***to not predict a motion vector field*** (option 2)? The Board's decision contends a zero MCI bit indicates both options but does not describe any additional signaling or modification to distinguish these mutually exclusive options within a single mode. The Petition (and declaration) fail to explain how a POSITA would expect to succeed in making such a combination. It is impossible to both ***predict*** and ***not predict*** a motion vector field for the same segment based on a common indication in an alleged "combined" mode. The Board's conclusion was clearly erroneous.

In a second abuse of discretion, in the second ground (based on Frojdh), the Board concluded Frojdh's "IGMC" mode that always uses a median of three neighboring motion vectors to predict a current motion vector discloses the '808 Patent's skip coding mode. The Board did not address that Frojdh's coding mode predicts motion vectors in the same way as conventional modes described in the '808 Patent. Rather, for the Frojdh ground, the Board started with the premise that the inventor's redefinition of skip coding mode merely requires a process that results in a zero or non-zero motion vector. Then the Board reasoned that Frojdh's median calculation sometimes results in zero values and sometimes results in non-zero

values. To reach its conclusion, the Board ignored parts of the inventor's lexicography in contravention of Federal Circuit precedent.

This Request is worthy of the Director's attention. Nokia should not face the burdens of trial based on the Board's erroneous interpretation of the Challenged Claims or unsupported conclusion that a POSITA would combine two mutually exclusive modes of operation in a logically impossible way. Nokia respectfully requests that the Director vacate the Board's decision instituting trial.

II. ARGUMENT

The Board abused its discretion in finding Petitioner had a reasonable likelihood of prevailing on the two grounds raised ("Karczewicz" and "Frodjh").

As a threshold matter, the Board's decision ostensibly assumes two different scopes of the term "skip coding mode" for purposes of the first and second grounds of the petition. For the Karczewicz ground, the Board's decision appears to acknowledge that any "skip coding mode" as defined in the '808 Patent must involve separate processes for "non-active" and "active" scenarios. This is why the Board (and Petitioner) argued that a POSITA would combine two coding options in Karczewicz that (1) predict a motion vector field (corresponding to "active") and (2) not predict a motion vector field (corresponding to "non-active").

For the Frodjh ground, by contrast, the Board interpreted "skip coding mode" far more broadly. The Board did not give meaning to the "active" and "non-active"

language in the ’808 Patent’s lexicography. Rather, the Board implicitly assumed that “skip coding mode” was satisfied by a coding mode that sometimes results in zero-valued motion vectors and sometimes results in non-zero-valued motion vectors despite this being the case for conventional non-skip coding modes listed in Table 3 of the patent—and, hence, all relevant prior art described in the specification.

The Board’s reasoning was error on both fronts. First, as to Karczewicz, the Board erroneously concluded a POSITA would have combined two mutually exclusive modes of operation in a logically impossible way. The Board made no findings about how a POSITA could have accomplished this, such as any additional signaling or modifications necessary for video coding devices to distinguish these mutually exclusive options. Moreover, the Board failed to make any findings about a POSITA’s reasonable expectation of success as the law requires.

Second, as to Frojdh, the Board failed to adhere to the inventor’s lexicography of “skip coding mode,” which is consistent with the construction adopted by the Board and by two ALJ’s in separate ITC Investigations.[2] Ex. 2007; ITC 337-TA-

[2] Petitioner and Patent Owner dispute whether the phrase “and residual information can be provided for each skip mode Macroblock” should be appended to the “skip coding mode” lexicography. That dispute is not relevant to this Request.

1208, Order No. 22.

A. Ground 1 (Karczewicz) – No evidence of motivation to combine

"An obviousness determination requires finding that a person of ordinary skill in the art would have been motivated to combine or modify the teachings in the prior art and would have had a reasonable expectation of success in doing so." *Regents of Univ. of Cal. v. Broad Inst., Inc.*, 903 F.3d 1286, 1291 (Fed. Cir. 2018). The Board's decision as to the Karczewicz ground fails to make any findings about how a POSITA would have had a reasonable expectation of success in combining two of Karczewicz's mutually exclusive modes of operation. Indeed, ***the Board's proposed combination is logically impossible***. Thus, the Board abused its discretion.

Karczewicz discloses an MCI bit that is set to zero when no refinement motion coefficients are included with a block of data. The MCI bit instructs the decoder whether to expect enhancement information related to a predicted affine motion field. Ex. 1006 at 37:5-13. The MCI bit does not indicate how a predicted block has been coded in the bitstream. *Id*. For example, the MCI bit says nothing about whether a block is represented by a motion prediction field. Ex. 1006, 17:8–18, 31:22–25; Ex. 1003 ¶¶ 99–103. Karczewicz describes separate signaling in the bitstream for these coding options so a decoder can distinguish when, e.g., a block is represented by a prediction field from, e.g., when a block is assigned a zero-motion vector field. *See, e.g.,* Ex. 1006 at Fig. 2 (signaling both prediction motion vector field and

refinement motion vector field information). Separate from any MCI bit, Karczewicz expressly instructs a decoder how a predicted block has been coded. *Id*. at 17:23-25.

The Board found Karczewicz's MCI bit can be set to zero (indicating no refinement information in a bitstream) in two situations. Paper 11 at 33. The first is where a segment is coded "using a zero-motion vector field, e.g., a copy from the reference frame." *Id.* In this situation, an encoder instructs a decoder to assign a zero-motion vector field to a segment. The second is where a segment is "represented as a prediction field only…when the segment can be adequately represented in terms of the motion field of one or more of its previously coded neighbors." *Id*. Here, an encoder instructs a decoder to form a predicted motion vector field for a segment. The encoder must "provide information about the neighboring segment(s) used in the prediction." Ex. 1006 at 17:23-25. In each case, an encoder sets the MCI bit to zero to indicate no refinement information is present in the bitstream and then, if a segment is represented as a prediction field, separately instructs the decoder how the segment has been coded. Without these instructions, a video coding device would not know whether to use a prediction field or a zero-motion vector field for a given block in lieu of a prediction. A device cannot both use a prediction field and not use a prediction field. This is an irreconcilable contradiction.

Nonetheless, the Board adopted this irreconcilable contradiction in instituting trial. The Board found "an ordinarily skilled artisan would have found it obvious to

combine" the coding options that (i) use "a prediction field only" and (ii) use "a zero motion vector field." Paper 11 at 33. The Board found a POSITA "would have been able to fit those modes together."[3] *Id.* at 36.

The Board did not explain how this alleged combination is possible, what modifications would be performed to make it so, or why a POSITA would have a reasonable expectation of success (as the law requires). Paper 11 at 32-36. The Petition (including the corresponding declaration) likewise failed to meet its burden on these fronts.

The Board's logic is flawed. A POSITA is "a person of ordinary creativity, not an automaton." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007). However, like all people, a POSITA is bound by the law of noncontradiction. *See also id* (referring to a POSITA's common sense). As stated, a video coder cannot

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[3] It is unclear from the Board's decision whether the Board separately found the two different coding options to—apart from any alleged combination—disclose the '808 Patent's skip coding mode. Paper 11 at 32-33. This would be an untenable position. The claims require a coding mode "for a first segment." Multiple coding options—particularly mutually exclusive ones—cannot be simultaneously assigned or indicated for a single segment. Neither the Board nor Petitioner argue otherwise.

both ***use*** a prediction field and ***not use*** a prediction field for a given block. These are mutually exclusive propositions and cannot be a single "mode" without additional modification. Any coherent encoding or decoding process must include a means to determine whether to use a prediction field or not for a given block. *See* Ex. 1006 at 17:4-8 (coding option information about must be sent in "unambiguous way").

Karczewicz's MCI bit does not avoid the contradiction. The MCI bit indicates whether refinement information is included in the bitstream, not whether or how a block is predicted. Nor does the Board explain how a POSITA would have a reasonable expectation of success in the alleged Karczewicz combination considering this contradiction. Even putting aside logic, the Board's failure to make findings about reasonable expectation of success is, on its own, an abuse of discretion. *See Regents of Univ. of Cal.*, 903 F.3d at 1291.

B. Ground 2 (Frojdh) – Failure to apply lexicography

Frojdh discloses video compression techniques that rely on global motion compensation ("GMC"). (Ex. 1007, [0002].) Macroblocks (16x16 blocks of pixels) are grouped into slices. GMC information is transmitted with encoded slices. (*Id.*) GMC is enabled at the slice level. That is, if an encoder indicates GMC for a given slice of macroblocks, that indication applies to all the macroblocks within the slice. When the GMC slice flag is "on," Frojdh teaches that the signaling for COPY mode (i.e., a conventional skip mode) is reinterpreted as a mode called Implicit Global

Motion Compensation ("IGMC"). IGMC predicts a motion vector for a current block by calculating the median value of the motion vectors associated with three neighboring, previously coded blocks. This is the same technique the patent describes was performed by prior art coding modes. Ex. 1001 at 12:25-37,19:36-41.

In deciding to institute, the Board found that Frojdh's IGMC sufficiently discloses the '808 Patent's skip coding mode. The Board reached this conclusion because the median calculation in Frojdh's IGMC could result in a zero or non-zero motion vector. Paper 11 at 60. However, the Board's reasoning ignores express components of the lexicography of "skip coding mode" and clear descriptions of the invention from the specification.

The Board agreed with Patent Owner that the term "skip coding mode" should be construed, based on the inventor's lexicography at 17:45-52, as "a coding mode in which a zero (non-active) motion vector or a non-zero (active) motion vector is associated with each skip mode macroblock, depending on the characteristics of the motion in image segments surrounding the macroblock in question." Paper 11 at 18-19. This lexicography is referenced and reinforced throughout the patent, including in Figure 8 and column 14 (lines 23-35, provided below):

> According to the invention, the skip mode concept is redefined in such a way that a macroblock assigned to skip mode is either associated with a zero (non-active) motion vector, in which case it is treated in the same

> way as a conventional skip mode macroblock and copied directly from the reference frame, or it is associated with a non-zero (active) motion vector. The decision as to whether a macroblock should be associated with a zero or non-zero motion vector is made by analysing the motion of other macroblocks or sub-blocks in a region surrounding the macroblock to be coded. If it is found that the surrounding region exhibits a certain type of motion, a non-zero motion vector representative of that motion is generated and associated with the current macroblock.

The specification makes clear the distinction between the "non-active" and "active" processes for generating motion vectors has meaning.[4] Ex. 1001 at 14:23-51, 15:61-67, 18:51-19:10, 20:6-16, 24:61-25:3, Fig. 8. The '808 Patent's skip coding mode does not merely cover any outcome of a coding mode that results in zero or non-zero motion vector values. Rather, the '808 Patent's skip coding mode is limited to a specific process. In non-active scenarios, assigned motion vectors are

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[4] The Board incorrectly states the '808 Patent "does not specify the processes these [active and non-active motion parameter generation] blocks employ to produce motion vectors." Paper 11 at 62. This is contradicted by the '808 Patent at least at 14:23-29 (process for non-active) and 19:64-20:3 (exemplary process for active).

always zero-valued as in conventional skip mode. In active scenarios, motion vectors are predicted to represent motion. *See also* Paper 11 at 10.

The Board ignored these aspects of the inventor's lexicography. The Board treated the lexicography as if the terms "non-active" and "active" were absent or otherwise treated those terms as superfluous despite the overwhelming intrinsic evidence to the contrary. This was error for several reasons.

First, "the inventor's lexicography governs," and "the inventor's intention, as expressed in the specification, is regarded as dispositive." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005) (citations omitted). The inventor chose to include the distinction between non-active and active processes for generating motion vectors in the lexicography and throughout the specification. This is dispositive. The Board's reasoning ignores the inventor's intention and thus violates explicit Federal Circuit precedent.

Second, the Board's reasoning runs afoul of "an important principle of interpretation … It is highly disfavored to construe terms in a way that renders them void, meaningless, or superfluous." *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 801, 809–10 (Fed. Cir. 2021). Under the Board's interpretation of the lexicography, the terms "non-active" and "active" are either ignored (in contravention of *Phillips* and progeny) or mean the same thing as "zero" and "non-zero," which both contradicts the specification and renders the terms "non-active" and "active" superfluous.

Third, the Board erroneously concluded the '808 Patent does not describe different processes for generating non-active and active motion vectors because it "discloses an embodiment with surrounding motion analysis block 802 removed and active motion parameter generation block 803 activated for all the skip mode macroblocks." Paper 11 at 62 (internal quotations omitted) This is labeled an "alternative embodiment" and not within the scope of the Challenged Claims. Ex. 1001 at 24:42-45. The Board erred because an inventor's lexicography governs, particularly over inconsistent alternative embodiments. *Sinorgchem Co., Shandong v. Int'l Trade Comm'n*, 511 F.3d 1132, 1138 (Fed. Cir. 2007) ("[Where multiple embodiments are disclosed,] we have previously interpreted claims to exclude embodiments where those embodiments are inconsistent with unambiguous language in the patent's specification."). If the "surrounding motion analysis block" is removed and "active" is "active for all the skip mode macroblocks," as in the "alternative embodiment," the resulting coding mode no longer fits the surrounding motion analysis or "non-active" components of the lexicography the Board adopted as the construction of skip coding mode. *Phillips* leaves no ambiguity about how to proceed in this situation: "[T]he inventor's lexicography governs." 415 F.3d at 1316.

III. CONCLUSION

For these reasons, Nokia asks that the Director grant Director Review and vacate the Board's decision instituting trial.

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Respectfully submitted,

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CERTIFICATION OF SERVICE

The undersigned hereby certifies that a copy of this **PATENT OWNER'S REQUEST FOR REHEARING BY THE DIRECTOR** is being served on the director via electronic mail, in its entirety, at Director_PTABDecision_Review@uspto.gov and on counsel for Petitioner via email, in its entirety, on the on the following counsel of record for Petitioner:

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