

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

APPLE INC.,

Petitioner,

v.

ADVANCED CODING TECHNOLOGIES LLC,

Patent Owner.

Patent No. 9,986,303

Filing Date: March 13, 2015

Issue Date: May 29, 2018

Inventors: Hideki Takehara and Motoharu Ueda

Title: VIDEO IMAGE CODING DATA TRANSMITTER,  
VIDEO IMAGE CODING DATA TRANSMISSION METHOD, VIDEO IMAGE  
CODING DATA RECEIVER, AND VIDEO IMAGE CODING  
DATA TRANSMISSION AND RECEPTION SYSTEM

---

**PATENT OWNER'S PRELIMINARY RESPONSE**

Case No. IPR2025-00983

---

**TABLE OF CONTENTS**

|                                                                                                                                                                                                                                        | <b><u>Page(s)</u></b> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| I. INTRODUCTION .....                                                                                                                                                                                                                  | 1                     |
| II. THE '303 PATENT .....                                                                                                                                                                                                              | 2                     |
| III. THE ALLEGED PRIOR ART .....                                                                                                                                                                                                       | 6                     |
| A. Demircin .....                                                                                                                                                                                                                      | 6                     |
| B. Kimoto .....                                                                                                                                                                                                                        | 7                     |
| IV. CLAIM CONSTRUCTION .....                                                                                                                                                                                                           | 8                     |
| V. LEVEL OF ORDINARY SKILL IN THE ART .....                                                                                                                                                                                            | 8                     |
| VI. PETITIONER HAS NOT DEMONSTRATED A REASONABLE<br>LIKELIHOOD OF SUCCESS FOR THE GROUNDS ADVANCED<br>IN THE PETITION, AND THE PETITION SHOULD BE DENIED .....                                                                         | 9                     |
| A. Ground 1A and 1B: Claims 1-2 Are Not Obvious Over<br>Demircin Alone or in View of Kimoto .....                                                                                                                                      | 11                    |
| 1. The Petition Does Not Show that Demircin Alone or in<br>View of Kimoto Discloses “ <i>a basic hierarchy and a<br/>supplementary hierarchy being set in units of the group<br/>of pictures,</i> ” as Required by Claim [1.5.3] ..... | 11                    |
| 2. The Petition Does Not Show that Demircin Renders<br>Claim 2 Obvious .....                                                                                                                                                           | 13                    |
| B. Ground 2: Claim 1 Is Not Obvious Over Kimoto in View of<br>Demircin .....                                                                                                                                                           | 14                    |
| 1. The Petition Does Not Show that Kimoto in View of<br>Demircin Discloses “ <i>a basic hierarchy and a<br/>supplementary hierarchy being set in units of the group<br/>of pictures,</i> ” as Required by Claim [1.5.3] .....          | 14                    |
| VII. CONCLUSION.....                                                                                                                                                                                                                   | 15                    |

**TABLE OF AUTHORITIES**

|                                                                                                                                            | <b>Page(s)</b> |
|--------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <b>Cases</b>                                                                                                                               |                |
| <i>Apple, Inc. v. Contentguard Holdings, Inc.</i> ,<br>IPR2015-00355, Paper 9 at 9-10 (P.T.A.B. June 26, 2015) .....                       | 9              |
| <i>Broadcom Corp. v. Emulex Corp.</i> ,<br>732 F.3d 1325 (Fed. Cir. 2013) .....                                                            | 10             |
| <i>Graham v. John Deere Co. of Kansas City</i> ,<br>383 U.S. 1 (1966).....                                                                 | 9              |
| <i>Innogenetics, N.V. v. Abbott Lab 'ys.</i> ,<br>512 F.3d 1363 (Fed. Cir. 2008) .....                                                     | 11             |
| <i>Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.</i> ,<br>821 F.3d 1359 (Fed. Cir. 2016) .....                                     | 10             |
| <i>KSR Int'l Co. v. Teleflex Inc.</i> ,<br>550 U.S. 398 (2007).....                                                                        | 9              |
| <i>Los Angeles Biomedical Rsch. Inst. at Harbor-UCLA Med. Ctr. v.</i><br><i>Eli Lilly &amp; Co.</i> , 849 F.3d 1049 (Fed. Cir. 2017) ..... | 10             |
| <i>Pers. Web Techs., LLC v. Apple, Inc.</i> ,<br>848 F.3d 987 (Fed. Cir. 2017) .....                                                       | 10             |
| <i>Stratoflex, Inc. v. Aeroquip Corp.</i> ,<br>713 F.2d 1530 (Fed. Cir. 1983) .....                                                        | 9              |
| <i>In re Van Os</i> ,<br>844 F.3d 1359 (Fed. Cir. 2017) .....                                                                              | 10             |

**LIST OF EXHIBITS**

| <b>Exhibit No.</b> | <b>Description of Document</b>                                                                                                                                                                                     |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2001               | Third Amended Docket Control Order, Dkt. 42, <i>Advanced Coding Techs. LLC v. Apple Inc.</i> , Case No. 2:24-cv-00572-JRG (E.D. Tex. October 29, 2024)                                                             |
| 2002               | Apple Inc.'s Second Supplementary Invalidity Contentions in <i>Advanced Coding Techs. LLC v. Apple Inc.</i> , Case No. 2:24-cv-00572-JRG (E.D. Tex.), dated July 3, 2025                                           |
| 2003               | Advanced Coding Technologies LLC's Infringement Contentions and P.R. 3-1 and 3-2 Disclosures in <i>Advanced Coding Techs. LLC v. Apple Inc.</i> , Case No. 2:24-cv-00572-JRG (E.D. Tex.), dated September 18, 2024 |

## I. INTRODUCTION

On May 9, 2025, Apple Inc. (“Petitioner” or “Apple”) submitted a Petition (Paper 2, “Petition” or “Pet.”) to institute *inter partes* review (“IPR”) of U.S. Patent No. 9,986,303 (APPLE-1001, the “’303 Patent”), challenging claims 1-2 (the “Challenged Claims”). The Petition asserts that (i) the Challenged Claims are rendered obvious over U.S. Patent Application Publication No. 2008/0181302 (“APPLE-1005” or “Demircin”); (ii) the Challenged Claims are rendered obvious over Demircin in view of U.S. Patent Application Publication No. 2011/0211631 (“APPLE-1007” or “Kimoto”); and (iii) Claim 1 is rendered obvious over Kimoto in view of Demircin. Pet. at 1.

The Board should deny institution of the Petition at least because the Petition fails to show how any combination of Demircin and Kimoto discloses “a basic hierarchy ***and*** a supplementary hierarchy being set in units of the group of pictures.” The Petition merely describes that Demircin’s base layer combined with the enhancement layer form ***one*** hierarchy set in units of GOPs of four pictures each, as shown in FIG. 1 of Demircin. Because Petitioner identifies only three B-frames (i.e., only inter predicted pictures) out of each 4 frame GOP as supplementary video image coding data, such data cannot be a supplementary hierarchy set in a unit of a GOP, which must “includ[e] ***an intra coded picture*** and a plurality of inter prediction coded pictures.” ’303 Patent, Claim 1 (emphasis added). In short, Demircin’s

enhancement layer only includes B-frames and thus lacks an intra coded picture required to form a full GOP. Therefore, the Petition is facially deficient because it ignores the plain language of this claim limitation that both the “basic hierarchy and [] supplementary hierarchy [are] set in units of the group of pictures.”

Accordingly, the Board should deny institution of the Petition.

## **II. THE '303 PATENT**

The '303 Patent “relates to a video image coding data transmission technology and, more particularly, to a video image coding data transmission technology for transmitting video image coding data in real time.” '303 Patent, 1:18-21.

The '303 Patent discloses “basic video image coding data” in its relation to a “transmission structure of a video image based on the transmission rate”:

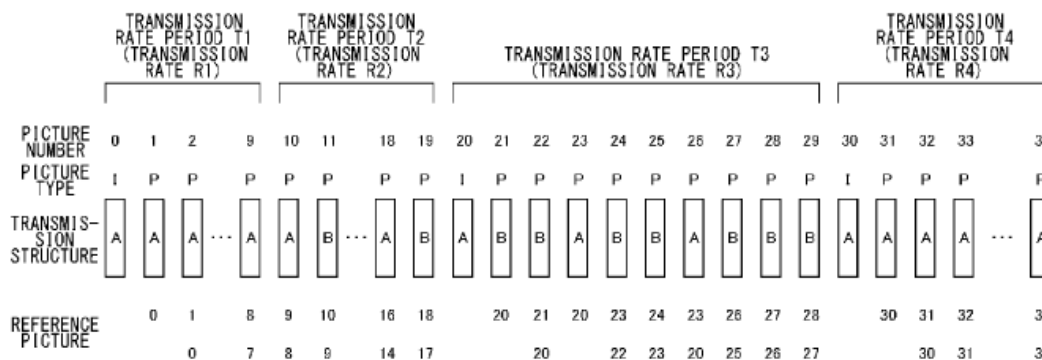
The predictive transmission structure setting unit 100 sets the transmission structure of a video image based on the transmission rate provided from the transmission rate acquisition unit 105 and also sets a prediction structure that indicates a reference relationship of each picture of the video image. The transmission structure of the video image includes a basic hierarchy and a supplementary hierarchy. A basic hierarchy is a hierarchy for transmitting an overview video image, and a supplementary hierarchy is a hierarchy for transmitting an extension video image.

*Id.*, 3:58-67. Depending on the transmission rate, the proportion of basic to supplementary video image coding data transmitted can be changed:

As described, the proportion of basic hierarchies to supplementary hierarchies can be changed in accordance

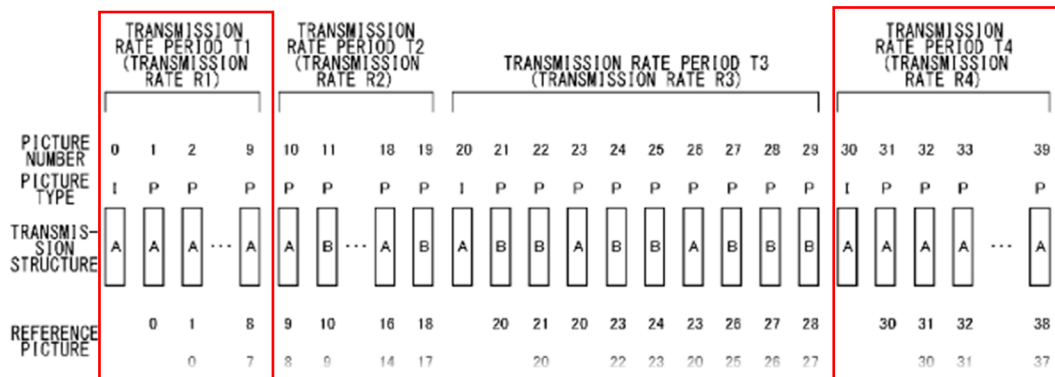
with the transmission rate. *When the transmission rate is sufficiently high (there is a margin), all basic hierarchies in the transmission rate are coded as basic hierarchical pictures.* As the transmission rate becomes lowered (there is less margin), supplementary hierarchical pictures are increased, and the ratio of basic hierarchical pictures is reduced.

*Id.*, 9:49-56 (emphasis added). The '303 Patent graphically describes this relationship in FIG. 4 and its corresponding disclosure:



*Id.*, FIG. 4. In FIG. 4, basic hierarchical pictures comprising the basic video image coding data are represented as “A,” while supplementary hierarchical pictures comprising the supplementary video image coding data are represented as “B.” *Id.*, 9:27-36 (“There are two types of transmission structures: a basic hierarchical picture (A) and a supplementary hierarchical picture (B).”). Additionally, FIG. 4 represents each picture as either “an I picture for performing intra coding” or “a P picture for performing inter prediction coding” although “instead of a P picture, a B picture may be used as a picture type,” which “perform[s] inter prediction coding in a bidirectional manner.” *Id.*, 9:18-26.

As described by the '303 Patent, FIG. 4 shows that when the transmission rate is sufficiently high to accommodate the data of all of the basic video image coding data, as is the case for both R1 at 4 Mbps or R4 at 6Mbps in the exemplary embodiment, only basic video image coding data will be transmitted, shown as “A” rectangles below.



*Id.*, 8:65-9:7, FIG. 4 (annotated).

When the transmission rate drops to R2 at 2 Mbps, as shown below, supplementary video image coding data (i.e., lower quality predictive pictures) are interspersed with the basic video image coding data.



*Id.* (annotated.)

In the case of R3, as shown below, there is an even greater percentage of supplementary video image coding data or “B” rectangles than within R2 because R3 (800 kbps) is a lower transmission rate than R2 (2 Mbps).



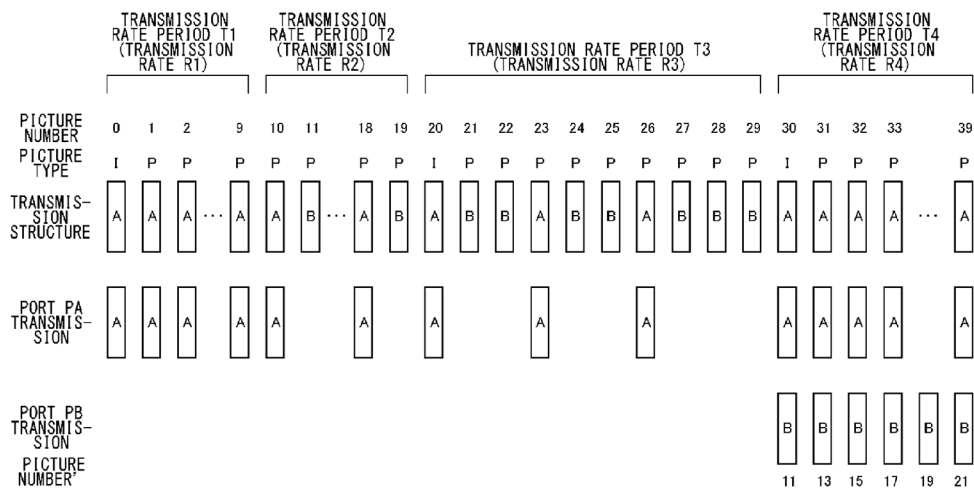
*Id.* (annotated.)

Therefore, if bandwidth or transmission rate decreases, FIG. 4 shows that more P pictures, which are predicted frames containing less data, are transmitted instead of some of the I pictures of the basic video image coding data, which contain more data. This enables the adaptation to available bandwidths, namely to send higher quality or lower quality video in real time. *Id.*, 1:64-67 (“[A] purpose of the present invention is to provide a video image transmission technology capable of achieving real-time video image transmission and viewing of high-quality video images at the same time.”).

Moreover, as shown in FIG. 5 of the ’303 Patent below, “‘Port PA transmission’ indicates basic hierarchical pictures transmitted from the port PA, and ‘Port PB transmission’ indicates supplementary hierarchical pictures transmitted

from the port PB.”

FIG. 5



*Id.*, 11:46-52, FIG. 5.

III. THE ALLEGED PRIOR ART

A. Demircin

Demircin relates to “methods and systems for rate-adaptive transmission of video.” APPLE-1005, [0001].

Demircin’s “base layer provides a minimum level of video quality, and may provide compatibility with H.264/AVC.” *Id.*, [0035], [0022]). Demircin also discloses “[o]ne or more enhancement layers provide additional quality in an incremental manner, also referred to as progressive refinement. Decoding of the first enhancement layer requires availability of the base layer. Decoding of each subsequent enhancement layer requires availability of all previous enhancement

layers, as well as the base layer.” *Id.*, [0035].

As depicted in Demircin’s FIG. 1, Demircin’s enhancement layer pictures have corresponding base layer pictures to which they are added to in order to provide higher quality for those respective enhanced pictures (i.e., a base layer and two enhancement layer pictures that can be added exist for each of A, B, C, D, etc.):

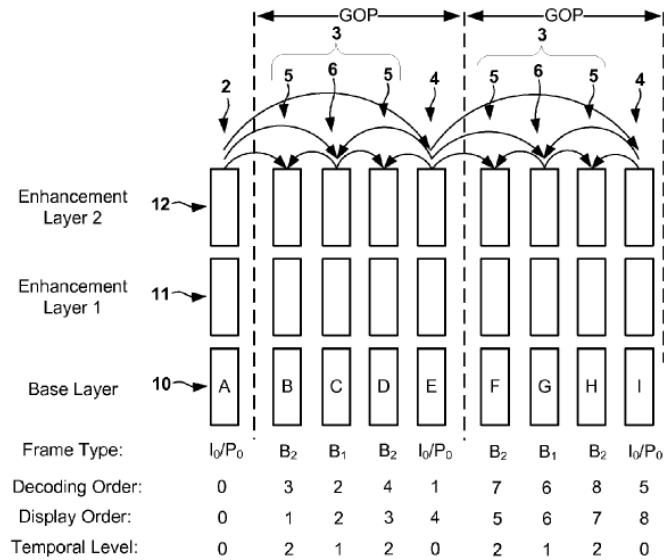


FIG. 1

*Id.*, FIG 1 (annotated).

Therefore, the system of Demircin combines the base layer and enhancement layer comprised of network abstraction layer (“NAL”) units consistent with Scalable Video Coding (“SVC”) techniques. *Id.*, [0035].

## B. Kimoto

Kimoto “relates to a moving image distribution system including a transmitting unit that transmits moving image data and a receiving unit that receives

moving images.” APPLE-1007, [0001].

Kimoto discloses “lower layer data” from which moving image contents can be viewed at a low quality. *Id.*, [0019]-[0025]. Kimoto’s “lower layer data” has a “corresponding part” to “upper layer subsequent data” for a given picture. *Id.*, [0069]-[0070]). Kimoto also describes “synthesizing” corresponding lower layer and upper layer pictures to generate high quality data for reproduction. *Id.*, [0019], [0043], [0069]-[0071], FIG. 2 (S05-S06).

#### **IV. CLAIM CONSTRUCTION**

For the purposes of this Preliminary Response only, Patent Owner believes that “no formal construction are [sic] presently necessary.” Pet. at 2-4.

#### **V. LEVEL OF ORDINARY SKILL IN THE ART**

For the purposes of this Preliminary Response only, Patent Owner utilizes Petitioner’s proposed level of skill in the art: “at least a bachelor’s degree in electrical engineering, computer engineering, or computer science, with 2-3 years of experience in digital video processing and familiarity with standards. Additional graduate education could substitute for professional experience, and *vice versa*.” Pet. at 4 (citations omitted).

**VI. PETITIONER HAS NOT DEMONSTRATED A REASONABLE  
LIKELIHOOD OF SUCCESS FOR THE GROUNDS  
ADVANCED IN THE PETITION, AND THE PETITION  
SHOULD BE DENIED**

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 skill in the art, and (4) so-called secondary considerations where in evidence. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966); *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1537 (Fed. Cir. 1983).

The Board has held that a failure to identify the differences between the claimed subject matter and the prior art is fatal to an obviousness challenge. *See, Apple, Inc. v. Contentguard Holdings, Inc.*, IPR2015-00355, Decision Denying Institution of *Inter Partes* Review, Paper 9 at 9-10 (P.T.A.B. June 26, 2015) (denying institution for failure to identify the differences between the claimed subject matter and the prior art).

In arriving at an obviousness determination, the Board must sufficiently explain and support the conclusions that the prior art references disclose all the

elements recited in the Challenged Claims and a relevant, skilled artisan not only could have made, but would have been motivated to combine all the prior art references in the way the patent claims and reasonably expected success. *Pers. Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 994 (Fed. Cir. 2017). That is, even if all the claim elements are found across a number of references, an obviousness determination must consider whether a person of ordinary skill in the art would have the motivation to combine those references. *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1368 (Fed. Cir. 2016); *Los Angeles Biomedical Rsch. Inst. at Harbor-UCLA Med. Ctr. v. Eli Lilly & Co.*, 849 F.3d 1049, 1067 (Fed. Cir. 2017) (vacating and remanding an obviousness determination, in part, because the Board did not make factual finding as to whether there was an apparent reason to combine all three prior art references to achieve the claimed invention and whether a person of skill in the art would have had a reasonable expectation of success from such a combination). This combinability determination, as supported by an articulated motivation to combine, requires a plausible rationale as to why those prior art references would have worked together. *Broadcom Corp. v. Emulex Corp.*, 732 F.3d 1325, 1335 (Fed. Cir. 2013). Absent some articulated rationale, a “common sense” finding is no different than the conclusory statement “would have been obvious.” *In re Van Os*, 844 F.3d 1359, 1361 (Fed. Cir. 2017). Of additional importance, “knowledge of a problem and motivation to solve it are entirely different

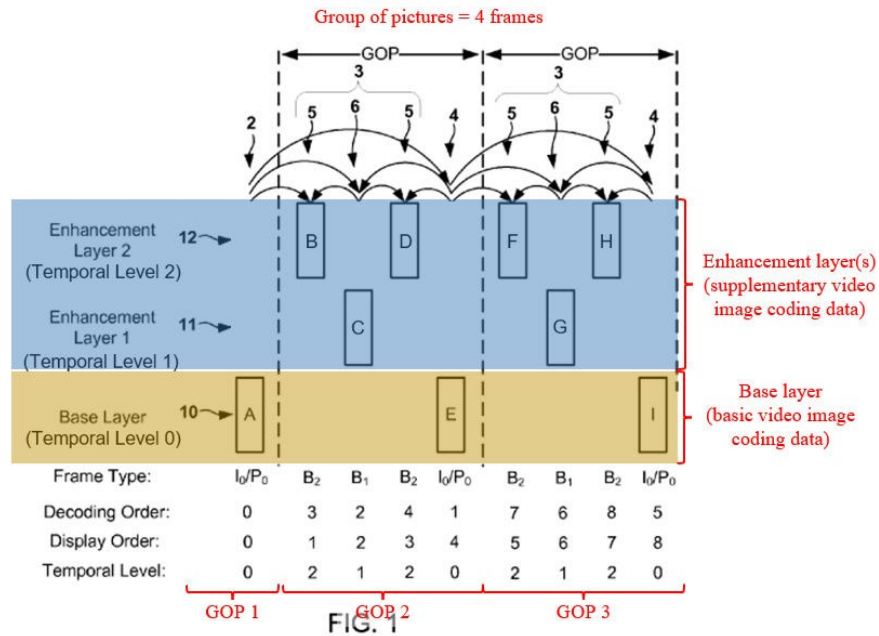
from motivation to combine particular references . . . .” *Innogenetics, N.V. v. Abbott Lab’ys.*, 512 F.3d 1363, 1373 (Fed. Cir. 2008).

**A. Ground 1A and 1B: Claims 1-2 Are Not Obvious Over Demircin Alone or in View of Kimoto**

**1. The Petition Does Not Show that Demircin Alone or in View of Kimoto Discloses “a basic hierarchy and a supplementary hierarchy being set in units of the group of pictures,” as Required by Claim [1.5.3]**

Claim 1.5.3 of the ’303 Patent recites “a basic hierarchy and a supplementary hierarchy being set in units of the group of pictures.”

The Petition is deficient because it fails to describe how Demircin or Kimoto disclose that both a basic hierarchy *and* a supplementary hierarchy are set in units of groups of pictures (GOPs). *See* Pet. at 36-38. Instead, the Petition merely describes that the base layer combined with the enhancement layer form *one* hierarchy set in units of GOPs of four pictures each, as shown in FIG. 1 of Demircin:



Pet. at 37 (citing Demircin, FIG. 1 (modified and annotated)). But those GOPs of 4 frames each (Pet. at 37) are a combination of one I-frame/P-Frame that is purportedly basic video image coding data and three B-frames that are purportedly supplementary video image coding data, not a GOP corresponding to any one type of basic or supplementary hierarchies.

Petitioner ignores that Demircin’s enhancement layer described in FIG. 1, which Petitioner relies on as disclosing the claimed supplementary hierarchy, cannot be its own hierarchical group of pictures. As recited by Claim 1.5.2, “a group of pictures includ[es] an intra coded picture and a plurality of inter prediction coded pictures.” ’303 Patent, Claim 1. Notably, this recitation of Claim 1.5.2 provides the antecedent basis for Claim 1.5.3’s recitation of “the group of pictures” and thus the same requirement of “an intra coded picture and a plurality of inter prediction coded

pictures” in a GOP applies. Demircin’s enhancement layer only includes B-frames and thus lacks an intra coded picture required to form a full GOP. Therefore, the Petition is facially deficient because it ignores the plain language of this claim limitation that both the “basic hierarchy and [] supplementary hierarchy [are] set in units of the group of pictures.”

Ground 1B only utilizes Kimoto in the context of Claims [1.6]-[1.7] and [2.15]-[2.16]. *See* Pet. at 46-47 (“Beyond the relevance of Demircin’s teachings on its own (Ground 1A), a POSITA also would have found the features recited in [1.6]-[1.7] and [2.15]-[2.16] obvious based on the teachings of Demircin as modified in view of Kimoto.”) (citations omitted). As a result, the Petition’s Ground 1B does not remedy the defects of Ground 1A with respect to Claim [1.5.3].

Therefore, the Petition is deficient because it fails to show that Claim 1.5.3 is disclosed or rendered obvious by Demircin alone or in view of Kimoto.

## **2. The Petition Does Not Show that Demircin Renders Claim 2 Obvious**

The Petition relies on its arguments for Claim 1 to render obvious at least Claims [2.P]-[2.2], [2.3.1] to [2.6.1], [2.7], and [2.9]-[2.16]. Pet. at 41-51. Therefore, for at least the same reasons as described for Claim 1, the Petition fails to show how Claim 2 is rendered obvious over Demircin alone or in view of Kimoto.

**B. Ground 2: Claim 1 Is Not Obvious Over Kimoto in View of Demircin**

**1. The Petition Does Not Show that Kimoto in View of Demircin Discloses “a basic hierarchy and a supplementary hierarchy being set in units of the group of pictures,” as Required by Claim [1.5.3]**

Claim 1.5.3 of the '303 Patent recites “a basic hierarchy and a supplementary hierarchy being set in units of the group of pictures.”

Ground 2 of the Petition is deficient for the same reasons as Grounds 1A and 1B because it relies on Demircin for the incorrect assumption that “the lower layer data and the upper layer data of Kimoto are set in units of GOPs, such as the GOP described by Demircin.” Pet. at 70 (citing APPLE-1005, [0036]-[0037], FIG. 1). However, as described above, Demircin does not actually disclose that both the basic and supplementary video image coding data have hierarchies set in units of GOPs. The Petition otherwise makes general statements that “[t]he upper layer data and the lower layer data in the combination are hierarchically coded using an international standard of hierarchical coding, such as H.264/MPEG-4 AVC SVC” and “[a]ccording to MPEG, a GOP is ‘the smallest coding *unit* that can be independently decoded,’” which do not remedy the deficiencies of Grounds 1A and 1B. Pet. at 70 (citing APPLE-1015, 54). As a result, as with its Grounds 1A and 1B, the Petition’s Ground 2 ignores the plain language of this claim limitation that both the “basic hierarchy *and* [] supplementary hierarchy [are] set in units of the group of pictures”

and is thus deficient.

Therefore, the Petition is deficient because it fails to show that Claim 1.5.3 is disclosed or rendered obvious by Kimoto in combination with Demircin.

## VII. CONCLUSION

For the foregoing reasons, Patent Owner respectfully requests that the Board deny institution of the Petition in its entirety.

Respectfully submitted,

Dated: September 12, 2025      By: /Peter Lambrianakos /  
Peter Lambrianakos (Reg. No. 58,279)  
Email: plambrianakos@fabricantllp.com  
Lead Counsel for Patent Owner  
Vincent J. Rubino, III (Reg. No. 68,594)  
Email: vrubino@fabricantllp.com  
Back-Up Counsel for Patent Owner  
Joseph M. Mercadante (Reg. No. 64,077)  
Email: jmercadante@fabricantllp.com  
Julian G. Pymonto (Reg. No. 75,999)  
Email: jpymonto@fabricantllp.com  
Back-Up Counsel for Patent Owner  
FABRICANT LLP  
411 Theodore Fremd Avenue  
Suite 206 South  
Rye, New York 10580  
Tel. 212-257-5797  
Fax. 212-257-5796

**CERTIFICATE OF WORD COUNT**

The undersigned hereby certifies that the portions of the above-captioned PATENT OWNER'S PRELIMINARY RESPONSE specified in 37 C.F.R. § 42.24 has 2,636 words in compliance with the 14,000 word limit set forth in 37 C.F.R. § 42.24. This word count was prepared using Microsoft Word for Office 365.

Respectfully submitted,

September 12, 2025

By: /Peter Lambrianakos /  
Peter Lambrianakos (Reg. No. 58,279)  
Lead Counsel for Patent Owner  
FABRICANT LLP  
411 Theodore Fremd Avenue  
Suite 206 South  
Rye, New York 10580  
Tel. 212-257-5797  
Fax. 212-257-5796  
Email: plambrianakos@fabricantllp.com

**CERTIFICATE OF SERVICE**

A copy of the foregoing Patent Owner's Preliminary Response have been served on Petitioner's counsel of record as follows:

W. Karl Renner  
Email: IPR50095-0243IP1@fr.com  
Jeremy J. Monaldo  
Nicholas Stephens  
Rishi Gupta  
**FISH & RICHARDSON**  
60 South Sixth Street, Suite 3200  
Minneapolis, Minnesota 55402

*Attorneys for Apple Inc.*

September 12, 2025

By: /Peter Lambrianakos /  
Peter Lambrianakos (Reg. No. 58,279)  
Lead Counsel for Patent Owner