PUBLIC VERSION

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UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.

Before the Honorable Doris Johnson Hines
Administrative Law Judge

In the Matter of **CERTAIN VIDEO CAPABLE ELECTRONIC DEVICES, INCLUDING COMPUTERS, STREAMING DEVICES, TELEVISIONS, CAMERAS, AND COMPONENTS AND MODULES THEREOF**	**Inv. No. 337-TA-1379**

RESPONDENTS' JOINT PRE-HEARING BRIEF

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I. INTRODUCTION

Finnish Complainants Nokia Technologies Oy and Nokia Corporation brought this Investigation boasting about their technical achievements and alleging infringement of two patents that were purportedly essential to the video coding standard H.264. But Nokia is nothing more than a foreign company who, with its brightest days behind it, turned to patent assertion as a source of revenue. For H.264, Nokia's own technical proposals were rejected by the standard-setting committee; once that happened, Nokia tried to strategically steer its patent prosecution to cover aspects of H.264 that were developed by others, even aspects that were old or trivial. Now, armed with patents it contends are "essential," Nokia has targeted two American companies—Amazon and HP—and thousands of their feature-rich downstream products.

Nokia's tactics represent not only an abuse of Section 337 and the patent system, but they also directly violate the RAND licensing commitments. Nokia made when it chose to participate in the standard-setting process. Even worse, Nokia's approach threatens to stand the ITC's purpose on its head, denying American end-customers access to valuable products developed by home-grown companies while benefitting foreign entities with no technical or economic ties to the United States with extortionary license fees. Nokia has no domestic industry of its own, and its licensees—Microsoft and Samsung—either developed their own technology or purchase the patent practicing articles off the shelf.

For all the reasons discussed herein, Nokia's claims should be denied and no violation should be found.

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A. Procedural History[1]

On October 31, 2023, Nokia filed a Complaint alleging that Respondents are violating Section 337 through the alleged infringement of claims 1-3, 6-7, 9-12, 15-17, 20-25, 28-30, 32-34, 36, 39-41, 43-44, 47-49, 51-54, 58-60, and 62-65 of the '808 patent and claims 1-22 of the '134 patent. On November 30, 2023, the Commission instituted this Investigation. 88 Fed. Reg. 84832 (Dec. 6, 2023). Nokia has since withdrawn claims 2, 3, 11, 12, 17, 25, 28, 33, 39, 43, 47, 53, 58, and 63 of the '808 patent and claims 1-8 of the '134 patent. Order Nos. 20, 44. Nokia moved for summary determination on the economic prong of the domestic industry requirement. Motion 1379-032 (Doc. ID 822870). On June 3, 2024, Respondents moved for summary determination that the asserted claims of the '808 patent are either not infringed or are invalid. Motion 1379-031

[1] Around the same time, in addition to this Investigation, Nokia launched against Amazon a second investigation in the ITC; litigation in the U.S. District Courts for the District of Delaware and the Eastern District of Virginia; litigation in the United Kingdom; multiple proceedings in Germany; proceedings in the Unified Patent Court; and litigation in India and Brazil. Inv. No. 337-TA-1380; *Nokia Technologies Oy v. Amazon.com, Inc. et al*, No. 1:23-cv-01236-GBW (D. Del.); *Nokia Corporation v. Amazon.com, Inc.*, 1-23-cv-01232-GBW (D. Del. Oct. 27, 2023); *In re Nokia Technologies Oy and Alcatel Lucent SAS*, No. 1:23-mc-0032 (E.D. Va.) (transferred D. Del.); *Alcatel Lucent SAS v. Amazon Digital UK Ltd. et al*, No. HP-2023-000038; *Nokia Technologies Oy v. Amazon Europe Core S.à r.l. et. al*, 7 O 77/23 (Landgericht Mannheim); *Nokia Technologies Oy v. Amazon Europe Core S.à r.l. et. al*, 7 O 14174/23 (Landgericht Muenchen I); *Alcatel Lucent SAS v. Amazon Europe Core S.à r.l. et. al*, 7 O 13903/23 (Landgericht Muenchen I); *Alcatel Lucent SAS v. Amazon Europe Core S.à r.l. et. al*, 4c O 49/23 (Landgericht Duesseldorf); *Nokia Technologies Oy v. Amazon Europe Core S.à r.l. et. al*, 4c O 50/23 (Landgericht Duesseldorf); *Nokia Technologies Oy v. Amazon EU S.a.r.l.*, Case No. ACT_584119/2023, UPC CFI 399/2023 (Unified Patent Court – Local Chamber Munich); *Nokia Technologies Oy v. Amazon Seller Servs. Private Ltd. & Ors. et al*, I.A. No. 22003 of 2023 (High Court of Delhi at New Delhi); *Nokia Technologies Oy v. Amazon Servicios de Varejo do Brasil Ltda.* (Brazil); *In Re: Request from Germany In Re: Nokia Technologies Oy*, No. 1:23-cv-01395 (D. Del.); *In Re: Request from Germany In Re: Nokia Technologies Oy*, No. 1:24-cv-00493 (D. Del. April 18, 2024). Amazon filed IPRs against Nokia's patents asserted in the ITC. IPR2024-00572; IPR2024-00604; IPR2024-00605; IPR2024-00626; IPR2024-00627; IPR2024-00691; IPR2024-00725;

Nokia launched litigation against HP in the U.S. District Court of Delaware, multiple proceedings in Germany, the Unified Patent Court, and Brazil. *Nokia Corp. v. HP Inc.*, 1:23-cv-01237-GBW (D. Del); *Nokia Technologies Oy v. HP Brasil Industria E Comercio De Equipamentos El*, Case No. 0958559-14.2023.8.19.0001; *Nokia Technologies Oy v. HP Inc. et. al.*, Munich Regional Court I, 7 O 14901/23; *Nokia Technologies Oy v. HP Inc. et. al.*, Munich Regional Court I, 7 O 14902/23; *Nokia Technologies Oy v. HP Inc. et. al.*, UPC LD Munich, ACT_588466/2023.

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(Doc. ID 822901). Both summary determination motions are pending. The evidentiary hearing is scheduled for July 24-31, 2024. Order No. 13.

B. The Parties

1. Complainants

Complainants are Finnish companies. Although Nokia's complaint touted its role as a technical innovator, those allegations concerned cellular and wireless technology that has no relevance to the video standard at issue in this Investigation. Instead, as the world has moved toward different technologies, Nokia has become a non-practicing entity (NPE) with no cognizable U.S. presence, domestic industry, or competing products relevant to video patents it asserts and the products it seeks to exclude. As a patent-assertion NPE, Nokia seeks to leverage the threat of an exclusion order to coerce supra-RAND royalties from Respondents, who are willing licensees. Indeed, Nokia has pursued similar litigation against other targets in other forums. *See Nokia Techs. Oy v. Apple,* No. 2:16-cv-01440 (E.D. Tex., Dec. 21, 2016); *Nokia Techs. Oy v. Lenovo (Shanghai) Electronics Technology Co. Ltd. Et Al*, No. 5:19-cv-00427 (E.D.N.C., Sept. 25, 2019).

2. Respondents

a) Amazon

Amazon.com, Inc. and Amazon.com Services, LLC are Delaware corporations with their principal places of business in Seattle, Washington and Arlington, Virginia. RX-0369 (2023 10-K). Amazon is an innovator, renowned for transforming online retail. Founded in a Bellevue, Washington garage in 1994, Amazon now employs nearly one million workers across the United States, supports over 1.5 million additional jobs, and has created more positions than any other U.S. company over the last decade. RX-2225 (Amazon job creation). Amazon's domestic investments have resulted in countless innovations, including a range of products that have become household names, from electronic reading devices (Kindle), to tablet computers (Fire), voice-

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controlled speakers with intelligent personal assistant (Echo with Alexa), and video doorbells (Ring). RX-0369.0003 (2023 10-K).

b) HP Inc.

HP was founded in 1939 and is one of the leading printing and personal systems technology companies in the world, with 58,000 employees worldwide, with approximately 20,000 of those in the United States, and its headquarters in Palo Alto, California. RX-1393.0001, .0009; RPX-0460. HP holds over 23,000 patents with over 5,500 relating to the HP Accused Products. RX-1393.0007; RPX-0448C. HP has three reportable business segments— Personal Systems, Printing, and Corporate Investments. RX-1393.0008. HP believes that "[i]nnovation across products, services, business models and processes is a key element" of its culture and success. RX-1393.0007.

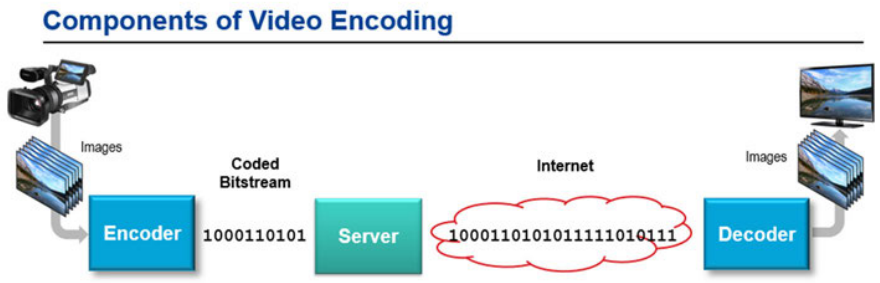
C. Overview of the Technology

1. Video Coding Background

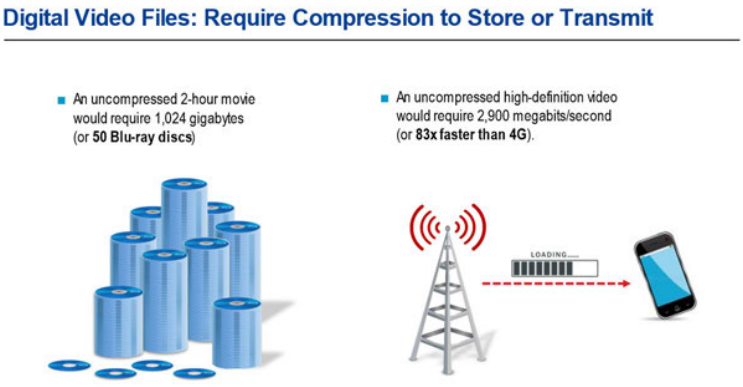
Digital video is a series of still images that, when displayed rapidly one after the other, give rise to the illusion of motion. Video used to be captured on physical media like film reels, but most modern video consists of electronic images. These are captured and encoded before being transmitted by a server as a bitstream of digital information to a decoding device, which can decode and display the images:

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Each digital image is a mosaic of "picture elements" or "pixels." Each pixel carries a brightness and color value. HD video involves digital images that are 1280 wide x 720 pixels high, with each frame containing nearly a million pixels. When displayed at thirty frames per second or more to create the appearance of motion, the amount of pixel information in a video file becomes staggering. One technical challenge with digital video is that compression is necessary for storage and transmission:

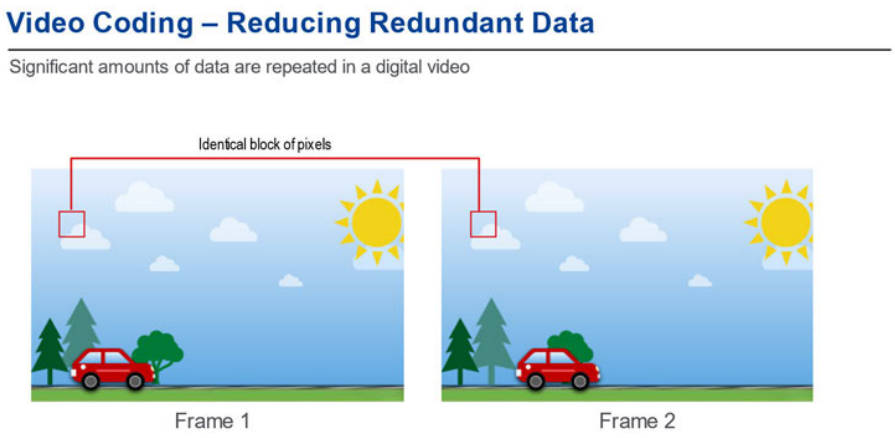


As Respondents explained at the tutorial, there are two basic ways of compressing video data: (1) reducing redundant data, and (2) removing data the human mind will not perceive as missing. When it comes to reducing redundant data, it saves space in the bitstream to tell a decoder

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merely to copy parts of a previous frame that are identical rather than resending all the pixel information over again:



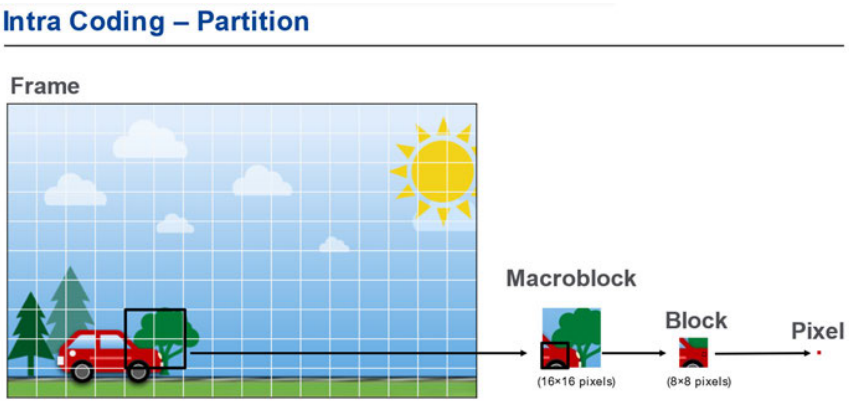
In the example above, Frame 1 is created as a standalone image, in a process called intra-coding, and called an I-frame. Frame 1 is a reference for the creation of Frame 2. When frames of video are created by copying pixels between frames, the process is called "inter-coding." The resulting frame, Frame 2, is called a "P frame" for "predicted frame" because its pixels are being predicted from those in Frame 1.

a) '808 Technical Background

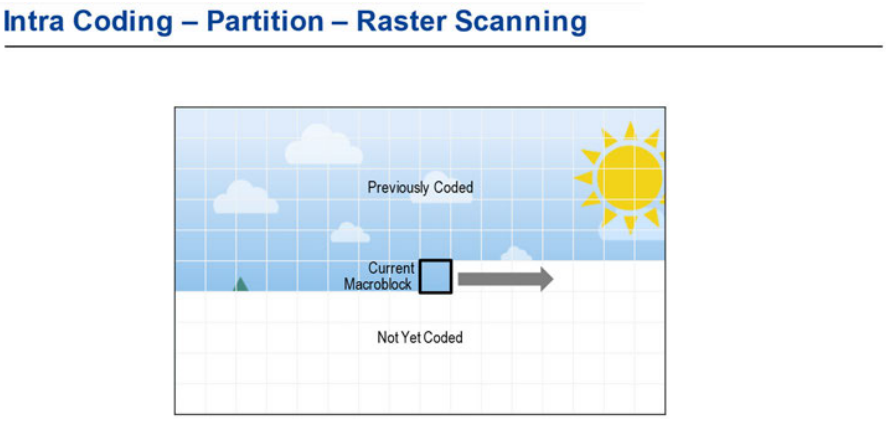
To make coding easier, frames are broken into pieces in a process called "partitioning." As shown below, pixels are grouped into "blocks" of 8x8 pixels, while blocks are collected into groups of four called "macroblocks":

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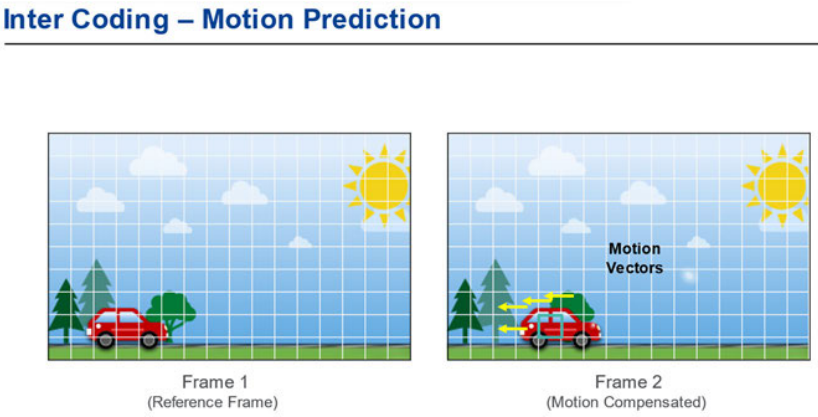
Macroblocks are encoded and decoded in a specific order, from right to left and from top to bottom, just like words on a page:



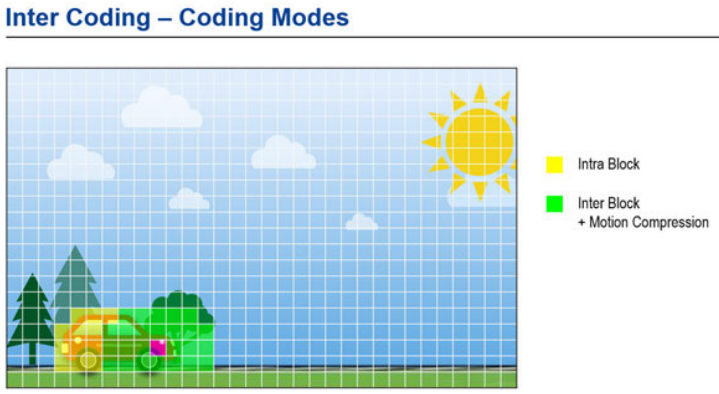
If the frames being encoded and decoded show things moving, like a car driving from one side of a frame to the other, the location of the pixels have to be adjusted. For example, while the car may look the same, its position has changed. As shown below, Frame 2 has to know where to find the pixels in Frame 1. Each block or macroblock of the car in Frame 2 can use a "motion vector" that points to where to get the pixels from Frame 1. The process for dealing with these complexities is called "motion compensation."

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Not all blocks or macroblocks in a given frame need to be coded the same way. Instead, the encoders and decoders can use "coding modes" to adapt to different regions in a frame depending on whether things are changing or not. In the image below, yellow blocks are "intra coded" and green blocks are inter-coded using motion vectors.

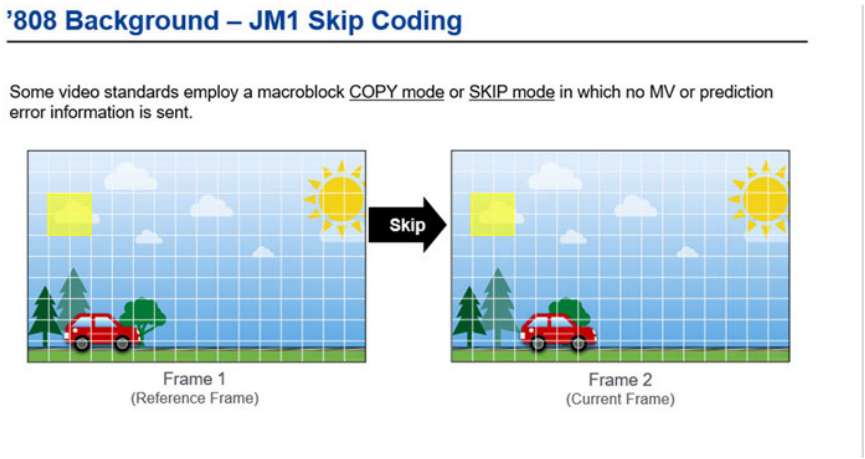


One type of well-known coding mode is called "skip mode" that includes no additional information beyond the mode type. As discussed in more detail below, MPEG-1 was the first standard to include a skip mode. MPEG-1 had a skip mode for P-frames for stationary parts of video that just copied pixels from the same location in the previous frame. MPEG-1 also had a skip mode for frames that were predicted from both directions, called B-frames, that associated a zero or non-zero motion vector from a neighboring macroblock. Other standards had skip modes

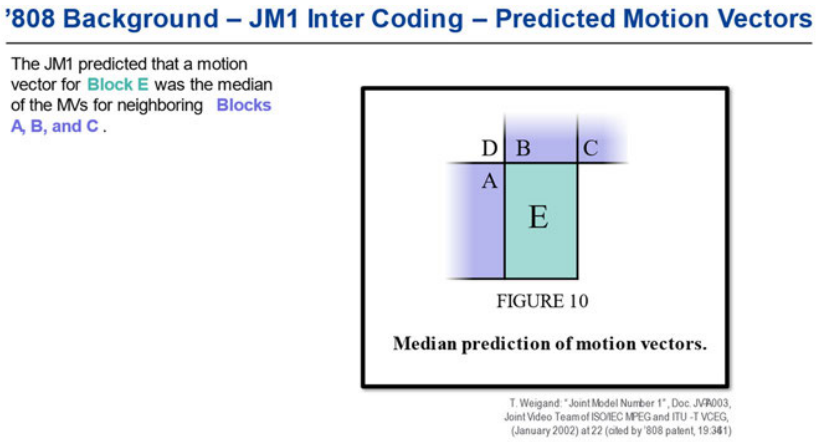
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as well. The ’808 patent background only mentions one skip coding mode, which is from a draft of the H.264 standard called Joint Model 1 or JM1. As shown below, JM1’s skip mode, liked MPEG-1’s P-frame skip mode, copied pixels from the same location in the previous frame.



Because blocks often move together, motion vectors themselves can be predicted from neighboring blocks. So, rather than send the entire motion vector for a block, it is more efficient to “predict” the motion vector from one or more neighboring blocks and then send any differences from the motion vector predictor. MPEG-1 used a single block to the left as the predictor. H.263 used the median of three blocks. As shown below, JM1 also used a median of A, B, and C, and sometimes D, as the predictor.



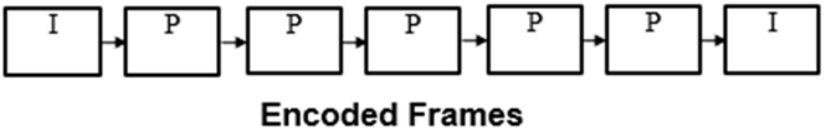
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After video is encoded, the video must be transmitted and sometimes frames are dropped during transmission for a variety of reasons, forcing the decoder to account for their absence during playback.

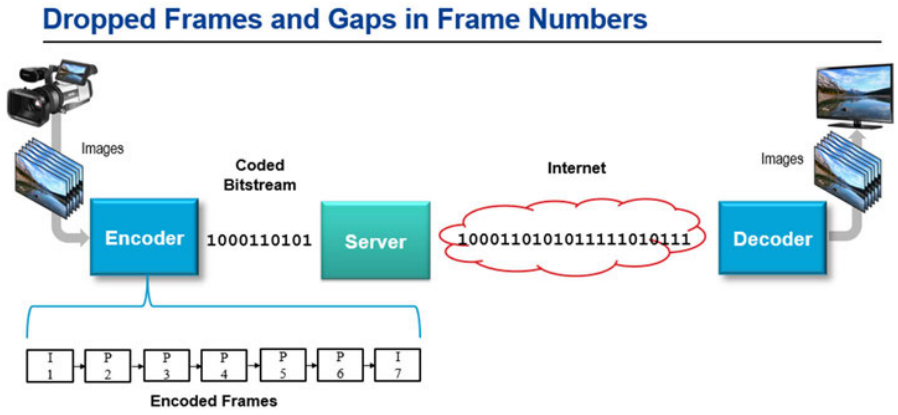
b) '134 Technical Background

Multiple frames can be coded in a series that depend on each other. Here we see the encoder has coded a series of pictures starting with an intra-frame (I-frame), followed by five predicted-frames (P-frames), and then another I-frame.



Encoded Frames

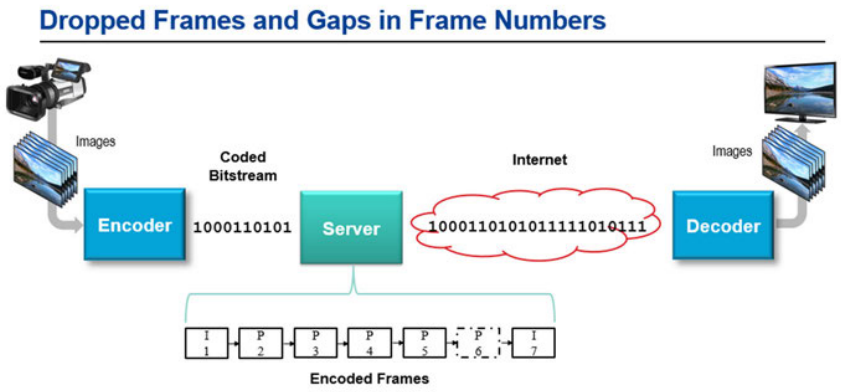
Because each P-frame copies pixels from a previous reference frame, you cannot decode a P-frame without its reference frame. The encoder numbers each frame to help the decoder understand these dependencies for decoding and playback. Here we see the encoder creating the series of encoded frames with their frame numbers.



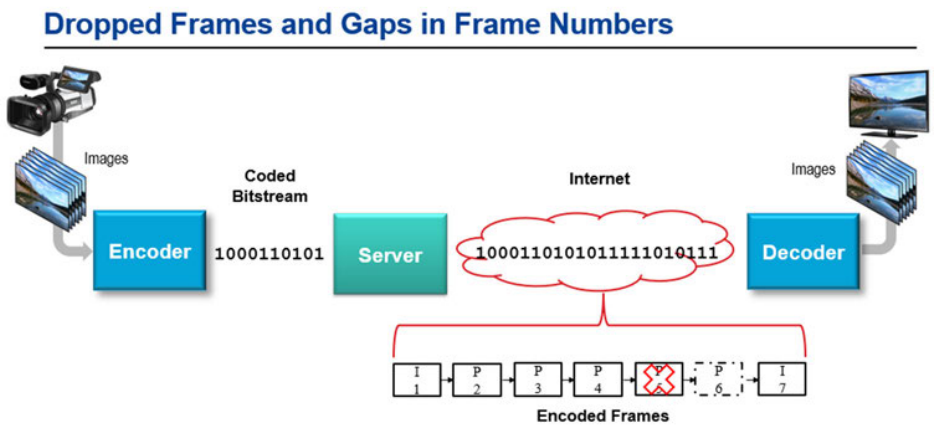
Sometimes the server decides it does not have enough bandwidth to send all of the frames, so it will intentionally drop or omit a frame. In this case, the server has chosen to drop P-frame 6. This creates a discontinuity in the frame numbers because the frame numbers jump from 5 to 7.

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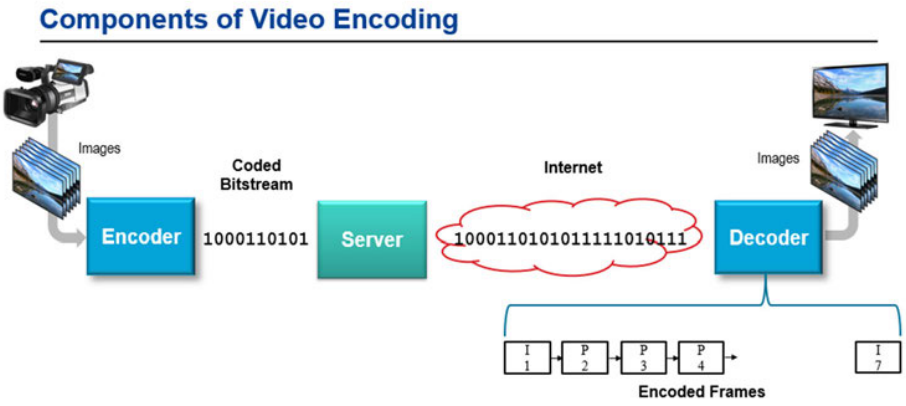
When the server sends the coded bitstream across the Internet, sometimes data or packets are lost. This can result in an accidentally, or unintentionally, dropped frame. The red X below shows that P-frame 5 was accidentally lost during transmission.



The decoder receives frames 1-4 and 7. The decoder knows that there is a discontinuity in frame numbers for frames 5 and 6.

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When a frame is missing, a decoder needs to make several decisions. First, it decides how to address the missing frame. It could request the server to resend the missing frame, or it could conceal the missing frame by copying a neighboring frame to replace the missing frame. For example, P-frame 4 could be copied into the place of missing frame 5. Second, the decoder must also protect the order of entries in its decoded frame buffer. The decoded frame buffer keeps frames in a certain order so the decoder can copy pixels from the right frame. When a frame is missing, it can disorder the buffer entries. The decoder can protect the order by keeping the correct spacing in the buffer by using placeholders or copying a neighboring frame as mentioned above. As discussed below, the '134 patent proposes treating intentionally dropped frames differently from unintentionally dropped frames.

2. Brief History of Video Coding Standards Prior to H.264

Over the years, stakeholder groups[2] including industry and academia have created "standards" that represent agreed-upon approaches to certain aspects of video compression. The

[2] The main standardization bodies for video compression are the International Telecommunication Union - Telecommunication Standardization Sector (ITU-T) and the International Organization for Standardization (ISO). Within ITU-T, the stakeholder group that develops video compression standards is called the Video Coding Experts Group (VCEG), while the corresponding group within ISO is called the Moving Picture Experts Group (MPEG). When the VCEG and MPEG work collaboratively, the joint group has been called the Joint Video Team (JVT). Historically,

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benefit of standards is that they facilitate interoperability of products and services—by agreeing on common approaches to certain aspects of video compression, industry participants provide a common foundation on which their respective products and services can operate.

As Dr. Acton will explain, much of the actual content of standards involves implementation-level details that, standing alone, do not represent significant innovation. Indeed, there are often many options available for a given feature that offer similar performance levels, so standardization involves choosing one alternative to create a single approach for the industry. From a technological perspective, that chosen option is often no better than other readily available alternatives. Much of the value in standardization comes from the universal adoption and implementation, rather than the inherent benefits of any particular feature or set of features.

Industry standards tend to be iterative, e.g., H.262 followed H.261. Each iteration does not represent a clean start, but rather an incremental evolution over what came before. For example, the MPEG-2 standard did not completely overhaul video compression; it added support for interlaced video coding to what already existed in MPEG-1.[3]

a) MPEG-1

Introduced by the ISO in 1993, MPEG-1 enabled the efficient storage of multimedia content on standard CDs and was pivotal in the development of Video CDs, significantly impacting the way video was distributed and consumed. One of the key innovations of MPEG-1 was the

the ITU-T has been more focused on enabling video technology for telecommunication applications like videoconferencing, while the ISO's ties to Hollywood have led it to concentrate on media-centered applications like DVD and Blu-Ray.

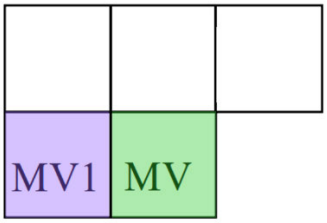
[3] These evolutions are detailed in resources like Thomas Wiegand's article previewing H.264, "Overview of the H.264/AVC Video Coding Standard," in the July 2003 edition of IEEE Transactions on Circuits and Systems for Video Technology, and Iain Richardson's book, "The H.264 Advanced Video Compression Standard," second edition. RX-0535; RX-0536.

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introduction of the I, P, and B frames, which significantly reduced the amount of data needed to represent a typical video signal without severely impacting the visual quality.

MPEG-1 also added a "skip mode" for B-frame macroblocks that associated motion based on motion characteristics in neighboring segments. Specifically, where a motion macroblock was going to be skipped, MPEG-1 called for the skipped macroblock to assign a motion vector based on the previous macroblock. RX-1488.0116, D.6.5.2 (assigning "the same motion vector … as the previous macroblock"). An MPEG-1 macroblock is made up of blocks, which are each a segment. RX-1488.0116, 0.3 ("Each macroblock consists of six 8 by 8 blocks.") Whether the motion vector of the previous block was zero or non-zero, the skip block would be associate with the very same zero or non-zero motion vector. *Id*. Because MPEG-1 encoded from left to right, this meant that a motion vector for any macroblock could be copied from the single, neighboring macroblock to its left. RX-1488.0032 ("Slice is a series of… macroblocks… proceeding by raster-scan order from left to right"). Although MPEG-1 provided no visual depiction of its technique, below is a graphic from Respondents' motion for summary determination to illustrate:



In MPEG-1's technique, the motion vector (MV) for the current macroblock in green would be associated with the motion vectors characteristics of the blocks/segments of motion vector 1 (MV1) from the macroblock in purple. RX-1488.0116. MPEG-1 explained that the motion vector of the previous macroblock (e.g., MV1) is a good motion vector predictor: "[T]he motion vector of a macroblock tends to be well correlated with the vector of the previous macroblock. For

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example, in a pan all vectors would be roughly the same." RX-1488.0100. It called this vector the "prediction vector". RX-1488.0092.

b) H.262

H.262, the ITU-T's telecommunications version of the ISO's MPEG-2 standard, first published in 1995. In particular, H.262 introduced a "temporal scalability" feature, where video could be presented at different frame rates—*i.e.* two different quality levels—to account for differing bandwidth availability. As Dr. Acton will testify, when plentiful bandwidth allowed for higher frame-rate video, all the encoded frames would be displayed, while in lower bandwidth situations certain frames would be dropped and only a "base layer" of frames would be shown. The optional frames were called the "enhancement layer," *i.e.*, they would be shown to enhance the quality of the video when possible. To track whether frames were in the base layer or the enhancement layer, H.262 developed an organizational system that grouped frames together and labeled them with specialized headers for tracking purposes.

c) H.263

H.263, ratified by the ITU-T in 1996, featured lower bitrates compared to H.262 and therefore became a staple for internet streaming and videophone applications. Like MPEG-1, H.263 included motion vector predictors from neighboring blocks, but the group of blocks considered were expanded. RX-0616 (H.263). Instead of merely looking to the left at the previous block as MPEG-1 did, H.263 considered as many as three neighboring blocks (MV1, MV2, and MV3) by taking using their median motion vector as a predictor:

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[redacted]

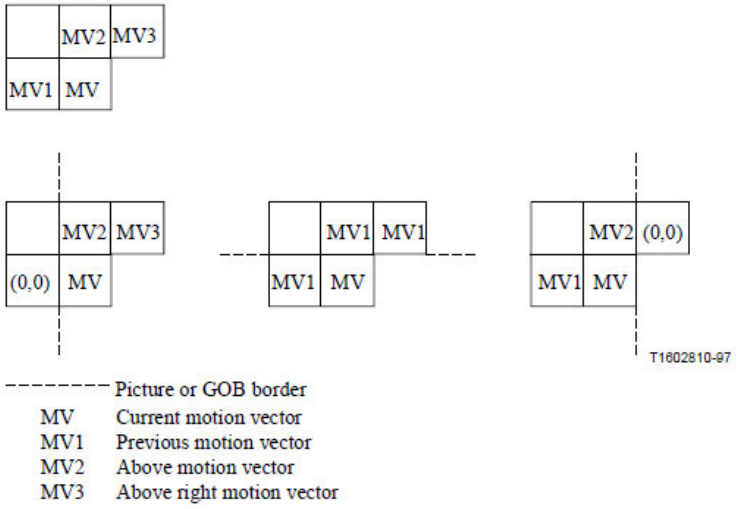


Figure 12/H.263 – Motion vector prediction

Id.

D. The Patents at Issue

1. U.S. Patent No. 7,532,808

The '808 patent is titled "Method for Coding Motion in a Video Sequence" and issued on May 12, 2009. JX-0003. It lists Jani Lainema as its sole inventor. The '808 patent issued from U.S. Patent Application No. 10/390,549, which was filed on March 14, 2003. The '808 patent claims priority to U.S. Provisional Application No. 60/365,072, which was filed on March 15, 2002. JX-0003. The '808 patent expires on December 11, 2025.

Nokia is asserting nine claims from the '808 patent. These are divisible into four groups, based on whether they claim functionality on the encoding or decoding side, and whether they are styled as methods or apparatuses. The dependent claims in each of these four groups contain corresponding limitations, so they can be aligned and addressed together, as shown below (independent claims in *italics*):

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[redacted]

Group 1: Method of Encoding Claims	Group 2: Video Encoder Claims	Group 3: Method of Decoding Claims	Group 4: Video Decoder Claims
Claim 1	*Claim 10*	*Claim 7*	*Claim 16*
	Claim 21		Claim 22
Claim 29	Claim 48	Claim 40	

The '808 patent describes "[a] method of motion-compensated video encoding that enables a video sequence with a global motion component to be encoded in an efficient manner." JX-0003, '808 patent, Abstract. Specifically, the '808 patent's "Summary of the Invention" explains that the purpose of the patent is to "enabl[e] global or regional motion to [be] taken account of in an efficient manner." *Id*., 14:48-51, *see also* 14:18-22 ("The method according to the invention not only provides an improvement in coding efficiency in the presence of global motion (*i.e.*, motion affecting the entire area of video frame), but also enables regional motion to be represented in an efficient manner."), 15:2-7.

To account for global or regional motion, "a previously encoded region surrounding the macroblock is examined and the characteristics of motion in that region determined." *Id*., Abstract. Specifically, the '808 patent explains looking at whether the "surrounding region exhibits a certain type of motion":

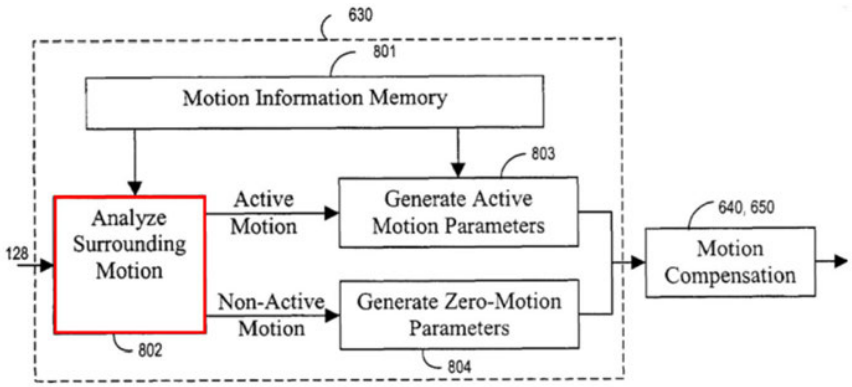
> *In particular, the continuity, velocity or deviation of motion in the surrounding macroblocks or sub-blocks can be analyzed.* For example, if the motion in the surrounding region exhibits a certain level of continuity, a certain common velocity, or a particular form of divergence, *a motion vector representative of that motion can be assigned to the current macroblock to be coded.* On the other hand, if the region surrounding the current macroblock does not exhibit such continuity, common velocity or divergence and has an insignificant level of motion, the macroblock to be coded is assigned a zero motion vector, causing it to be copied directly from the reference frame, just as if it were a conventional SKIP mode macroblock. *In this way, according to the invention, SKIP mode macroblocks can adapt to the motion in the region surrounding them, enabling global or regional motion to* [sic] *taken account of in an efficient manner.*

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[redacted]

Id., 14:32-51 (emphasis added). By analyzing the characteristics of motion such as continuity, common velocity, or deviation/divergence among a region of macroblocks surrounding the macroblock to be coded, the global or regional motion can be accounted for, and a decision can be made "as to whether a macroblock should be associated with a zero or non-zero motion vector." *Id*., 14:29-32. "If the surrounding region exhibits a certain type of motion, for example it has characteristics indicative of global or regional motion," "a non-zero valued skip mode motion vector representative of the motion" is generated. *Id*., 17:54-18:11. "[I]f the encoder determines that the region surrounding the current macroblock does not exhibit global or regional motion, but instead has an insignificant level of motion," "a zero valued skip mode motion vector" is generated. *Id*.

The '808 patent further explains that "[t]he decision whether to generate a zero valued skip mode motion vector or a non-zero valued skip mode motion vector is made by surrounding motion analysis block 802," shown below. *Id*., 18:34-36.



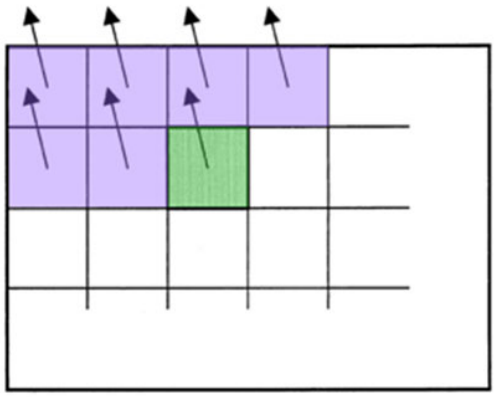
Id., Fig. 8 (annotated). The '808 patent further describes how motion analysis block 802 performs the analysis:

> In order to perform the analysis, surrounding motion analysis block 802 retrieves motion information relating to the macroblocks and/or sub-blocks in the surrounding region from motion information memory 801. Depending on the specific details of the implementation, surrounding motion analysis block may be

[redacted]

> arranged to analyze the continuity, velocity or deviation of motion *in the surrounding macroblocks or sub-blocks*. For example, if the motion *in the surrounding region* exhibits a certain level of continuity, a certain common velocity (as depicted in FIG. 9, for example), or a particular form of divergence, this may suggest that some form of global or regional motion is present. As a consequence surrounding motion analysis block concludes that "active motion" is present *in the surrounding region* and a non-zero valued skip mode motion vector should be used. On the other hand, *if the region surrounding the current macroblock* does not exhibit such continuity, common velocity or divergence and has a generally insignificant level of motion, the surrounding motion analysis block concludes that "non-active motion" is present in the surrounding region and consequently a zero valued skip mode motion vector should be used.

Id., at 18:40-61 (emphasis added). Notably, Figure 9 shown below illustrates a "surrounding region" exhibiting "a certain common velocity." *Id*. The '808 patent further describes Figure 9 as "a particularly advantageous embodiment of the invention" that illustrates a "surrounding region of macroblocks or sub-blocks analyzed by the surrounding motion analysis block [that] comprises previously encoded macroblocks neighboring the macroblock to be coded (FIG. 9)." *Id*., 19:11-20. Figure 9 shows that the "surrounding region" (shown in purple) includes the areas above and to the left of the macroblock being coded (shown in green). This is because the '808 patent specifies that macroblocks are processed in "raster-scan order," meaning from the top left to the bottom right of the frame. *See id*., 4:14-16.



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[redacted]

Id., Fig. 9 (annotated). Thus, when accounting for global or regional motion, the '808 patent teaches analyzing the characteristics of motion, such as the continuity, common velocity or deviation/divergence, in surrounding macroblocks, and associating the macroblock to be coded (shown above in green) with a zero or non-zero motion vector depending on the characteristics of motion in those surrounding macroblocks (shown above in purple).

The '808 patent further describes a "first" and "second" preferred embodiment. In the "first preferred embodiment," the "surrounding motion analysis block 802 classifies the motion in the region surrounding the macroblock" using the following three step procedure:

> Firstly, surrounding motion analysis block retrieves *motion information for the macroblocks or sub-blocks surrounding the macroblock to be coded* (i.e. previously encoded macroblocks neighboring the macroblock to be coded, as shown in FIG. 9) and generates a median motion vector prediction for the macroblock. The median motion vector prediction is formed, for example, in a manner analogous to that used in motion vector prediction according to JM1 of the JVT codec (see T. Weigland: "Joint Model Number 1", Doc. JVT-A003, Joint Video Team of ISO/IEC MPEG and ITU-T VCEG, January 2002). Next surrounding motion analysis block determines if any of the resulting motion vector components has an absolute value larger than a certain threshold value (for example half a pixel). *If this condition is fulfilled, the motion is classified as "active motion", otherwise it is classified as "non-active motion."* Finally, depending on the classification result, surrounding motion analysis block 802, sends an indication to either the active motion parameter generation block 803 or the zero motion parameter generation block 804 to in order to generate the appropriate skip mode motion parameters.

Id., 19:28-51. Thus, the first preferred embodiment analyzes "surrounding" motion, as shown in Figure 9, and makes an "active" or "non-active" classification based on comparison to a "threshold." *Id*.

In the "second preferred embodiment," the "surrounding motion analysis block analyses the motion in *vicinity* of the macroblock to be coded," rather than the motion in macroblocks "surrounding" the macroblock to be coded as described in the "first preferred embodiment." *Compare id*., 20:6-9, *with id.*, 19:28-31. Specifically, in this embodiment, the "classification to the

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[redacted]

'non-active motion' category takes place if either or both of [] two conditions [] are true, otherwise the motion is classified as 'active motion'." *Id.*, 20:12-16. The two conditions specified for the "second preferred embodiment" are:

> Condition 1: The macroblock immediately above or the macroblock immediately to the left of the macroblock under consideration is not available (that is, is out of the picture or belongs to a different slice).
>
> Condition 2: The macroblock or block immediately above, or the macroblock or block immediately to the left that are used in motion vector prediction for the 16x16 INTER mode has a Zero motion vector and uses the latest picture as reference in motion compensation.

Id., 20:17-25.

a) Nokia's Provisional Application No. 60/365,072 Described a "Surrounding" Technique for "Skip Mode" Motion Compensation

On March 15, 2002—two months after the H.264 JVT's work in Geneva—Nokia filed Provisional Application No. 60/365,072, which eventually issued as the '808 patent. JX-0003. The provisional comprised barely eight pages of double-spaced text, with three figures appended at the end. *See generally* RX-0010 (Provisional). Nokia described its purported invention as a single, preferred embodiment, *i.e.*, "*the* preferred embodiment." *Id.* at RX-0010.0008, ¶ 34 (emphasis added). That lone embodiment "consist[ed] of three steps":

> (1) "generating a median motion vector prediction for the Macroblock as for example in reference 1";
>
> (2) "[i]f any of the resulting motion vector components has absolute value larger than a threshold…the motion is classified as 'Active Motion'. 'Otherwise it is classified as 'Non-Active Motion,'" and
>
> (3) "[d]epending on the classification result" from step 2, "activate the appropriate block to generating [sic] the motion parameters," again, as explained in reference 1.

Id. at ¶¶ 34-37. The provisional's text disclosed nothing more about "generating motion parameters" in step 3 than that it was to be done in accordance with reference 1, *i.e.*, the operative

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[redacted]

version of the H.264 standard under development at the time, Joint Model Number 1 (JM-1), a document produced by the entire JVT, not Nokia alone. *See generally id.*, *see also* RX-0546 (JVT-A003). Both because steps 1 and 3 represented the work of the entire JVT, and because Nokia's attempt to incorporate "reference 1" was legally improper and ineffective, only step 2 of the single preferred embodiment—the classification scheme of "active" versus "non-active" based on comparison to a "threshold"—represented the purported invention.

The bimodal choice between "active" and "non-active" motion was embodied in one of the provisional's three figures:

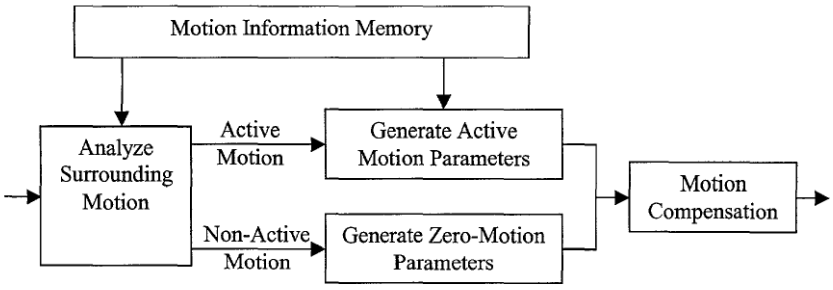


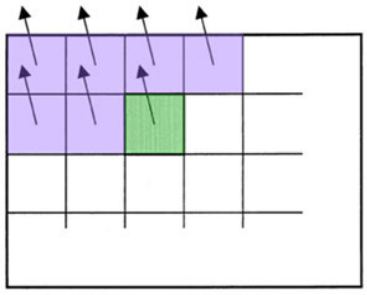
Figure 2: Encoding and decoding block for SKIP mode Macroblocks in a system according to a particular embodiment of the invention.

RX-0010.0013, Fig. 2. Figure 3 of the provisional indicated the set of motion vectors for comparison would be expanded from the four used in JM-1 to six. *Id.*

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[redacted]

Specifically, Figure 3 identified the two neighboring macroblocks directly to the left (purple) and the four macroblocks in the row above (purple) of the macroblock being encoded (green) as those for comparison:



RX-0010.0014, Fig. 3 (annotation added). The caption to Figure 3 referred to this collection of six macroblocks as "surrounding motion." *Id.*

b) Nokia's Utility Application Claimed Priority to the Provisional, But Added New Matter Directed to What Had Been Adopted into H.264

When Nokia filed its full utility application on March 14, 2003, parts of the document corresponded to the provisional application filed a year earlier. The '808 patent specification's discussion of a "first preferred embodiment" came from the provisional application's discussion of the three-step process for classifying motion as "active" or "nonactive." *Compare* JX-0003.00025 at 19:11-20 and 19:28-51, *with* RX-0010.0008, ¶¶ 34-38. And a cleaner version of provisional Figure 3 was included in the '808 patent specification as Figure 9. *Compare* RX-0010.0014, Fig. 3, *with* JX-0003.0014, Fig. 9.

But much of the application was new matter. In particular, Nokia added a new section of the specification dedicated to a previously unmentioned "second preferred embodiment of the invention" beginning at Column 20, line 6. *Id*. at .0025. Unlike the three- step process outlined in the provisional, in this "second embodiment," the "classification to the 'non-active motion'

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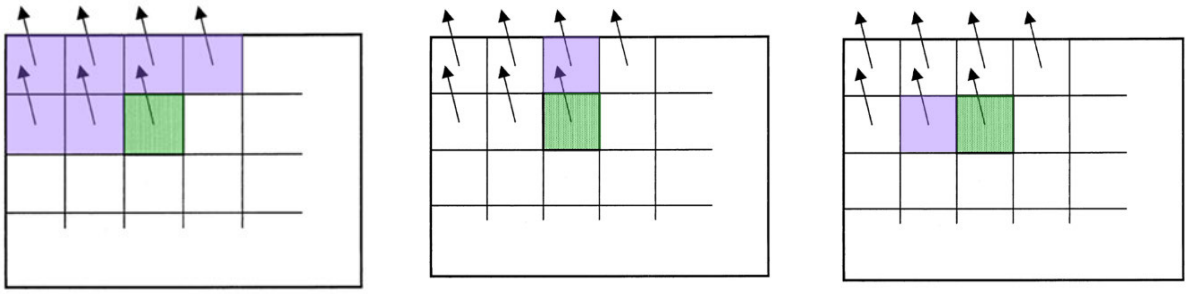
[redacted]

category takes place if either or both of…two [one-block] conditions…are true, otherwise the motion is classified as active motion." *Id.* at 20:12-16. The two conditions specified for the "second embodiment" are:

> Condition 1: The macroblock *immediately above* or the macroblock *immediately to the left* of the macroblock under consideration is not available (that is, is out of the picture or belongs to a different slice).
>
> Condition 2: The macroblock or block *immediately above*, or the macroblock or block *immediately to the left* that are used in motion vector prediction for the 16x16 INTER mode has a Zero motion vector and uses the latest picture as reference in motion compensation.

Id. (emphasis added). Yet this "second embodiment" is nowhere to be found in the provisional. *Compare* RX-010, *with* RX-0009.

The '808 patent itself lacks any figures that depict this "second embodiment." *See generally* JX-0003. The shift to this "second embodiment" from the approach announced in the provisional is apparent. Respondents have annotated with color and juxtaposed three versions of '808 Figure 9—*i.e.*, the "cleaned up" version of Provisional Figure 3—to illustrate this point:



Provisional: Surrounding Motion | **"Second Embodiment": Above** | **"Second Embodiment": Left**

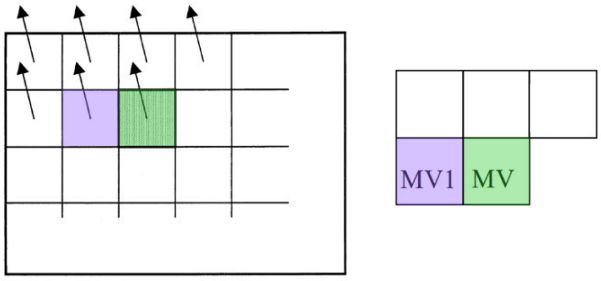
In the lefthand version, the macroblock whose motion vector is being determined has been shaded green, while six surrounding macroblocks have been colored purple. JX-0003.0014, Fig. 9. Consistent with the provisional and '808 patent, at 19:28-51, these purple "surrounding" macroblocks are the ones whose motion vectors the system will measure for the assessment of

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[redacted]

whether this motion is "active" or "non-active." JX-0003.0025 19:28-51; RX-0010.0008t ¶¶ 34-37. The middle version of Figure 9, however, is colored to match one of the scenarios from the '808 patent's description of the "second embodiment." In this middle figure, consistent with the description in Column 20, the only macroblock evaluated to classify the motion as "active" or "non-active" is the purple macroblock directly above the current macroblock. JX-0003.0025 20:6-25. Finally, the righthand version of Figure 9 is colored to match the other scenario from the '808 patent's description of the "second embodiment," namely where the only macroblock evaluated to classify the motion as "active" or "non-active" is the purple macroblock to the left of the current macroblock. *Id.* The '808 specification confirms that in the "second embodiment" these two purples macroblocks are evaluated separately, not together. *Id.*

Again, no text in the provisional application addresses the "second embodiment" described in '808 Column 20. RX-0010. No figure in the provisional application describes this different block-by-block technique. *Id.* When shown graphically, the '808 patent's block-by-block "second embodiment" looks very similar to the block-by-block approach defined for MPEG-1 and adopted into the standard:



Nokia's priority claim hinges on the last two sentences in paragraph 24 of the Provisional. RX-0010.0006 ('808 Provisional), ¶ 24. But those two sentences cannot be support for the "Conditional Analysis" embodiment because the '808 patent repeats the same text as those two sentences in an "alternative embodiment." *Cf.* RX-0010.0006 ('808 Provisional), ¶ 24 and RX-0006 ('808 patent), 20:12-25. In other words, the '808 patent itself states the Conditional Analysis

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embodiment (’808 patent at 20:6-25) is distinct from the “alternative embodiment” (’808 patent at 19:21-27), and they cannot both be supported by only the same two sentences from the Provisional. This is consistent because the Provisional’s two sentences relate to “coding modes,” not the Conditional Analysis which relates to “motion vectors.”

Dr. Acton will explain how this understanding is reinformed by looking at the prosecution history of the ’808 patent. When the ’549 Application was filed on March 14, 2003, claim 1 and its dependents required “analysis of motion in a *region…surrounding* the segment to be encoded,” including “examining said region” to determine whether there is some commonality of motion in the blocks of that region, such as “*continuous motion, motion having a common velocity, and motion having a certain deviation.*” RX-0556.0057-58 (’808 Prosecution History, Mar. 14, 2003 Claims 1-7). “[I]f it is determined” that the surrounding region has “characteristic[s] of *global or regional motion*,” “skip mode is assigned,” and “if it is determined” that the surrounding region has “*an insignificant level*” of motion, “skip mode is assigned.” *Id*. Notably, on November 1, 2007—more than four years after the initial release of the first H.264 draft—Nokia amended its existing claims and added 43 new claims directed to what had been adopted into H.264. RX-0556.0303-324 (’808 Prosecution History, Nov. 1, 2007 Response to Office Action). All of the sections applicant cited to justify its substantive changes discussed analyzing *surrounding* regional motion and applicant did not cite to the “second preferred embodiment.” RX-0556.0342 (’808 Prosecution History, Nov. 1, 2007 Response to Office Action).

c) H.264 Adopted a Version of MPEG-1’s Block-by-Block “Skip Mode” Rather Than Nokia’s Proposed “Surrounding” Approach

The joint ITU-and-ISO H.264 standardization effort began in 2001, and its JVT included some prominent members of the video industry. RX-0249.

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[redacted]

Sharp Labs of America identified early that making global motion compensation more efficient would be a significant issue for H.264. RX-0559.

Over a month before Nokia filed its provisional application that led to the '808 patent, the JVT met in Geneva from January 29 to February 1, 2002. Proposals on global motion compensation at that meeting included JVT-B019 ("Global Motion Vector Coding (GMVC)") proposed by Sharp, and JVT-B046 ("GMVC and GMC switched by MV") proposed by NTT. RX-0548 (JVT-B019); RX-0549 (JVT-B046). In addition, the JVT commented that the skip decision should be made "at the MV predictor," *i.e.*, the same place that decision had been made since MPEG-1, almost a decade earlier.[4] RX-1492.0009 (JVT-B001d1). At that time, median motion vector prediction was already disclosed in JM1 and used 3-4 macroblocks, *i.e.*, macroblocks A, B, C, and sometimes D, to form a prediction. *See* RX-0546.0022 (JVT-A003r1). Thus, the JVT identified the solution ("skipping at the MV predictor")—prior to the submission of Nokia's proposals—and formed a smaller, ad hoc group to "study[] the use of MB skip at [the motion vector] predictor."[5] RX-1492.0009 (JVT-B001d1). Like other JVT ad hoc groups, this one used an email reflector to allow members to share ideas and collaborate closely. *See, e.g.*, RX-1493.0002 (JVT-C011).

At a May 2002 meeting in Fairfax, Virginia, the entire JVT considered and voted on a series of proposals from various members regarding global motion compensation. RX-1494 (JVT-

[4] Notably, Ericsson attended this meeting and had already filed a provisional patent application (U.S. Provisional Application No. 60/334,979, filed November 30, 2001) directed to global and regional motion that described a macroblock mode where "motion vectors [] are defined by the prediction from neighboring blocks." RX-0588.0012 (U.S. Provisional Application No. 60/334,979).

[5] Nokia's Provisional Application No. 60/365,072, filed two months after the JVT's comment, adopted the JVT's proposed solution of "skipping at the MV predictor" with the minor addition of classifying motion as "active" or "non-active" based on comparison to a "threshold." RX-0010.0008 ¶ 36.

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[redacted]

C001d3). One proposal—a block-by-block proposal—was authored by the '808 patent's named inventor Lainema and Marta Karczewicz. RX-1494.0009 (JVT-C001d3); RX-1497 (JVT-C027). The proposal included a "simple modification" that involved "no syntax changes" to the bitstream because "the motion vector prediction for 16x16 is reused." RX-1497.0001 (JVT-C027). This proposal indicated that, depending on a comparison of a particular macroblock to the one immediately to its left or to the one immediately above it, the predictor could either set the motion vector to zero or use the motion vector predictor 16x16. RX-1494.0009-0010 (adopting JVT-C027). The proposal indicated that the decision whether to use a zero motion vector or a prediction should be premised on the following block-by-block "rule" wherein, as a result of the conjunction "or," a decision with respect to *any one macroblock* results in a zero motion vector. *Id*. The zero motion vector also turned on criteria unrelated to motion of any blocks, specifically the "availability" of blocks and whether a block used "the latest picture".

> - If a Macroblock immediately above or to the left is not available (that is, is out of the picture or belongs to a different slice).
> - If a Macroblock or block immediately above or to the left that is used in motion vector prediction has a zero motion vector and uses the latest picture as reference in motion compensation.
>
> Otherwise the predictor is used for skip-mode motion compensation prediction.

The JVT adopted JVT-C027, categorizing the functionality as a "bug-fix/clean-up." RX-0511 (JVTC001d3). The JVT's concept of "skipping at the predictor," along with the block-by-block modifications in JVT-C027 authored by Lainema and Karczewicz, appear in the JVT's first draft of the H.264 standard in December of 2002. *See* RX-1495.0111 ("Derivation process for … skipped macroblocks").

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The first draft of H.264 shows in standard syntax language the four conditions for setting the motion vector to zero and otherwise assigning the motion vector predictor (*i.e.*, from subclause 8.4.1.3):

> For the derivation of the motion vector mvL0 of a P_Skip macroblock type, the following applies.
>
> - The process specified in subclause 8.4.1.3.2 is invoked with mbPartIdx 0, subMbPartIdx = 0, and list suffix L0 as input and the output is assigned the mbAddrA, mbAddrB, mvL0A, mvL0B, refIdxL0A, and refIdxL0B.
> - If at least one of the following conditions is true, both components of the motion vector mvL0 are set to zero.
>   - mbAddrA is not available
>   - mbAddrB is not available
>   - refIdxL0A is equal to 0 and both components of mvL0A are equal to 0
>   - refIdxL0B is equal to 0 and both components of mvL0B are equal to 0
> - Otherwise, with the following functions being extended as mb_part_width(mb_type) = 16 and mb_part_height(mb_type) = 16, the derivation process for luma motion vector prediction as specified in subclause 8.4.1.3 is invoked with mbPartIdx = 0, subMbPartIdx = 0, and list suffix L0 as input and the output is assigned to mvL0.
>
> NOTE – The output is directly assigned to mvL0, since the predictor is equal to the actual motion vector.

Id. (emphasis added).

2. U.S. Patent No. 8,204,134

a) The ’134 Patent Is Not Directed to the Claimed “Indication Informing an Intentional Discontinuity”

The ’134 patent, entitled “Grouping of Image Frames in Video Coding,” was filed November 29, 2002, and expires on January 21, 2028. JX-0004. It lists Miska Hannuksela as its sole inventor and claims priority to a Finnish patent application filed on Jan 23, 2002. On that same date, Hannuksela made a submission to the JVT standard development committee working on H.264. RX-0574 His submission, JVT-B042, contains a discussion of ideas that are closely related to the contents of the ’134 patent, and, as discussed below, were initially adopted before being diluted.

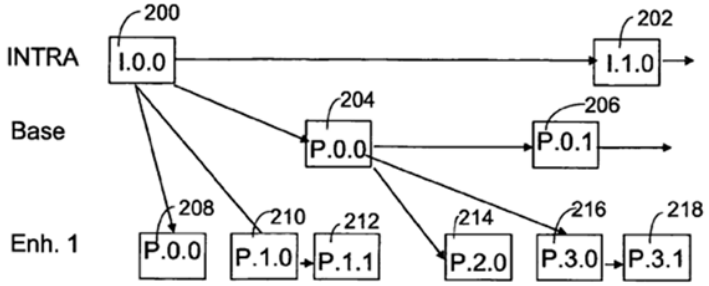
Nokia is asserting five claims directed to video decoders: claims 9, 11, and 13-15. The asserted claims focus on a video sequence having “an indication informing an intentional discontinuity of numbering of image frames.” Yet the ’134 specification is directed to something

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else—a hierarchy of image frames that predict from each other and a numbering system to track frame interdependency.

For example, none of the ’134 patent’s 14 figures are directed to the “indication informing an intentional discontinuity.” JX-0004. Figure 1 shows a typical video streaming system and does not mention an “intentional discontinuity.” Figures 2-7 show hierarchies of video frames with a unique numbering system. For example, Figure 2 is described as illustrating “a scalable coding arrangement and a hierarchical structure and numbering of image frames according to a preferred embodiment of the invention.” It shows three rows of video frames with arrows showing which frame depends from which other frame and a numbering system:



Figures 3-7 show similar sequences and numbering systems. But none of these hierarchies or numbering systems made its way into the claims of the ’134 patent.

b) The ’134 Patent’s “Indication Informing an Intentional Discontinuity” Identifies which Frames Were Intentionally Removed

In the few places where the ’134 patent does discuss “intentional discontinuities,” it clarifies that the purpose of doing so is to identify if a specific frame or set of frames was intentionally removed. JX-0004. At the start of the “Brief Description of the Invention,” the ’134 patent purports to describe “an improved method and equipment implementing the method, which enable the decoder to take into account *the image frames the encoder has intentionally removed*.”

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[redacted]

Id. at 4:21-24 (emphasis added). As another example, the '134 patent says that, because its system is "sensitive," it is:

> essential that the decoder can be controlled to take into account image frames and sub-sequences that the encoder has intentionally removed from the video sequence. In that case the image frame numbering may comprise gaps, which the decoder typically interprets as errors and tries to reconstruct the image frames interpreted as lost. For this reason, it is essential that the encoder is capable to inform the decoder that *the discontinuities* in the image numbering of the transmitted image frames *are intentional*.

Id. at 20:24-33 (emphasis added). Similarly, the '134 patent describes its advantage as identifying which gaps in the frame numbers were intentional:

> An advantage of the procedure of the invention is that it provides the decoder with the information, *which gaps in the image frame numbering are intentional*, whereby the decoder does not start unnecessary error correction actions.

Id. at 4:65-5:1 (emphasis added).

c) During H.264 Standardization, the JVT Diluted Nokia's Proposal Until It Could Not Identify if a Discontinuity was Intentional

In January 2002, Nokia inventor Hannuksela proposed to the JVT its ideas for hierarchies of video frames with a unique numbering system and a new on/off flag, called "temporal scalability indication." RX-0574 (JVT-B042). Located in the parameter set, this flag could be toggled on and off between frames, so it could indicate which frames were intentionally omitted. When on, the flag required decoders to do multiple things. *Id*. As the standard progressed, all of that changed. The name was changed to reflect different functionality. The flag was moved so it could only be toggled on/off between long sequences of multiple frames, and thus was no longer able to indicate which frames were intentionally dropped. And decoders were not required to do anything when it was turned on. RX-1495 (JVT-F100).

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[redacted]

Nokia's proposal presented modifications to TML-9, the JVT's working document for the standard it was developing. RX-0564. Previously, TML-9 section 7.6.2 had suggested that when the decoder detected a discontinuity in the received picture numbers it could respond by "insert[ing] an error-concealed picture into the multi-picture buffer." RX-0564.0039. Hannuksela now proposed to add a flag called a "temporal scalability indication" in the parameter set for the encoded sequence and direct the decoder to take specific action in response to this indication. RX-0029.0006. If the indication was set, "[d]ecoders shall not infer an accidental loss immediately [and] shall not invoke any immediate concealment." If it was not set, then the decoder could insert error-concealed pictures, as TML-9 provided. RX-0029.0006. Hannuksela's rationale for this change was that the use of error-concealed pictures was "correct for accidentally lost pictures only." *Id.*

The JVT initially named the proposed indication the "required picture number update behavior," and directed that it was to be set in the "slice or data partition" data, meaning that the value could be changed on a picture-by-picture basis. RX-0021.0049 (JVTB18). The JVT later renamed it the "required_frame_number_update_behavior" and moved it so that it was only transmitted at the beginning of a sequence of multiple pictures. CX-5606.0044 (JVT-C167); RX-0035.0031 (JVT-D157). This made it impossible for the flag to serve as an identifier of specific pictures that had been intentionally omitted. Despite this change, the JVT initially kept in place Hannuksela's proposal that the flag would be used to select between two possible decoder behaviors. RX-0035.0078.

However, in December 2002, in the JVT-F100 document, the JVT removed any discussion of two different behaviors. RX-1495. The new draft provides only one decoder response to detected discontinuities in picture numbering. The decoder is to insert picture frames

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corresponding to the missing picture numbers in the decoder buffer, as TML-9 had suggested. RX-0564. The language conditioning the decoder's response on the value of any indication was deleted. RX-1495.0098. This change, which eliminated Hannuksela's proposal to select between two different responses based on the value of an indication, was carried forward into the final H.264 standard. RX-0070.0115. Section 8.2.5.2 of the H.264 standard, which directs the decoder's response to discontinuities in frame numbering, references the behavior flag, now renamed the gaps_in_frame_num_value_allowed_flag, but only in a NOTE, which both experts agree is not a controlling part of the standard. Kia Dep. Tr. at 149:21-150:10.

d) The USPTO Required Nokia to Amend Their Claims to Identify if a Discontinuity Was Intentional

After Nokia's proposal to H.264 was diluted, Nokia tried to broadly claim an indication that related to an intentional or unintentional discontinuity in the numbering of frame images. But the USPTO required Nokia to amend its claims to make the indication identify if a discontinuity was intentional.

The independent claims originally only recited "an indication related to at least one discontinuity of numbering of the image frames," which is less restrictive than the final form of the allowed claims. JX-0002.0039-41. The examiner rejected these claims. JX-0002.1829-45 ('134 prosecution history, Feb. 18, 2011, Office Action). The examiner indicated that dependent claims which recited, "said indication *informs* that *the at least one discontinuity* in the numbering of the image frames in the video sequence *is intentional*," would be allowable if written in independent form. *Id* (emphasis added). In other words, the dependent claim additionally required that the indication needed to inform whether the discontinuity was intentional.

Rather than incorporate the dependent claim in full, Nokia tried a half measure. Nokia modified the "indication" recitation to read "an indication related to an intentional discontinuity

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of numbering the image frames." JX-0002.2094-2102 ('134 prosecution history, Amendment of May 17, 2011, pp. 2, 3, 5). This change, however, was not sufficient to overcome the prior art or satisfy the examiner.

In the August 9, 2011 responsive office action, the examiner concluded that the "related to" language was insufficient to distinguish the prior art. JX-0002.2127-42. The examiner explained that prior art decoder acted on an indication "related to" an intentional discontinuity when it detected and processed missing frames, because "the detected error is related to the intentional discontinuity (frames in subsequence of the even frames that is missing from the subsequent of the odd frames) since the error rate is reconstruct[ed] by interpolation or estimation based on the odd frame." JX-0002.2127-42 (Office Action of August 9, 2011) at 3, 4-5). To overcome this, Nokia finally gave in and narrowed the "indication" recitation further to restrict it to an "indication informing an intentional discontinuity of numbering of the image frames." JX-0002 (Amendment of November 7, 2011, at 2, 3, 5).

Nokia now makes an infringement claim that tries to revert the now claimed "indication informing an intentional discontinuity" to the "indication related to at least one discontinuity" that the USPTO expressly rejected and the standard did not adopt.

E. The Products at Issue

Nokia alleges the H.264 standard practices the '808 and '134 patents and therefore products using H.264 infringe the Asserted Patents. Specifically, Nokia contends chipsets and mobile operating systems practice claims 1, 7, 10, 16, 21, 22, 29, 40 and 48 of the '808 patent and claims 9, 11, and 13-15 of the '134 patent. Nokia asserts the '808 patent against Amazon's Echo Shows, Fire Tablets, Fire TVs, Fire TV Sticks, Fire TV Cube, Ring, and Blink products and HP's notebook and desktop PCs. Nokia asserts the '134 patent against the same products with the exception of the Ring and Blink products. For domestic industry, Nokia alleges Microsoft's Surface laptops and

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Xbox gaming consoles and Samsung's Galaxy smartphone products practice both Asserted Patents.

1. Accused Amazon Products

a) Echo Show

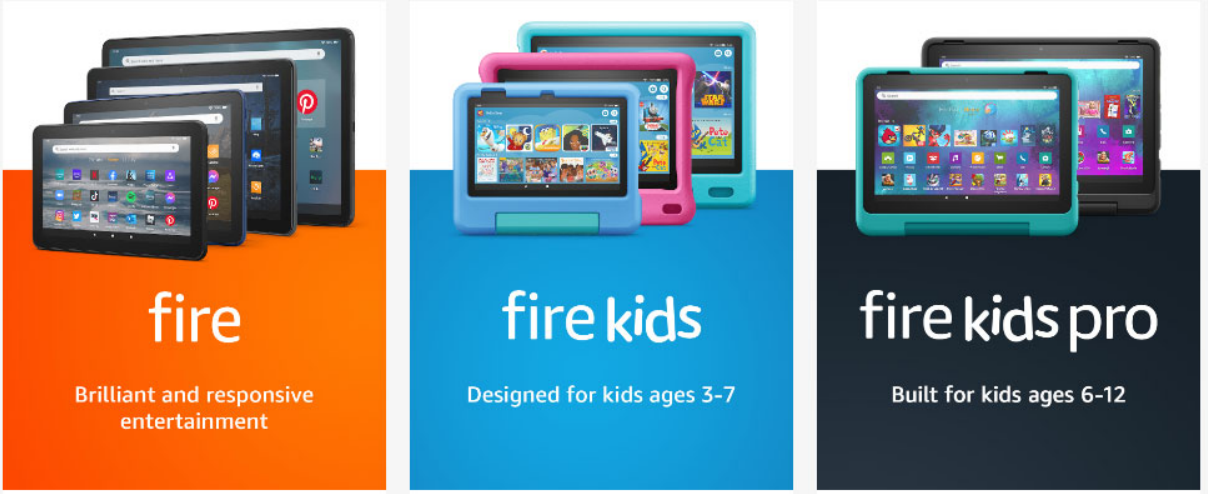
In 2014, Amazon launched the Echo speaker, a voice-controlled speaker with an intelligent personal assistant, Alexa. The technology underlying Echo and Alexa was groundbreaking: using voice control in an ambient environment to ask questions or control devices. In the decade since Echo launched, devices like the Echo have revolutionized how people interact with their homes and ushered in the era of the smart home. Amazon was at the forefront. Today, Alexa can perform more than 100,000 skills. The Echo Show is a continuation of this innovation, pairing the Echo speaker with a display and camera, allowing consumers to control their homes through a touchscreen as well as by voice; make video calls with friends or family; surf the web; display recipes, the weather, the time, photos, or other information or images; check in on elderly parents, children, or pets; and stream music or videos, among other uses. Almost none of these uses implicates the Asserted Patents. Nokia accuses Echo Show devices containing [redacted] and [redacted] chipsets, as well as Fire OS and [redacted].



[redacted]

b) Fire Tablet

The Amazon Fire Tablets are the leading tablet in the value segment, with a deep set of features at a price point making them affordable and accessible to everyone. CX-2400 (Bansal Tr. at 77:16-22; 98:5-8). The Fire Tablets are used for a variety of purposes, including streaming audio or music, accessing e-books, educational materials, web content, and video games, streaming video, and includes Alexa integration, among other things. Amazon also created kids versions of the Fire Tablets, with different performance capabilities and protections for different ages that give parents control over the content accessed by their children. None of these capabilities is related to the Asserted Patents. Nokia accuses Fire Tablet devices containing [redacted] chipsets, as well as various versions of Fire OS.



c) Fire TV

The Amazon Fire TV is a television with a flat-panel LED screen. It has many display and audio features that have nothing to do with the Asserted Patents. For example, it can show images in HD, 4K, and 4K Ultra High Definition, provides support for surround sound, streams music, and can turn into a gaming console. As with other Amazon devices, the Fire TVs include voice control and integration with the Alexa system. Nokia accuses Fire TV devices containing

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[redacted]

[redacted] CPUs, as well as various versions of Fire OS, which does not modify the video codec provided in stock Android OS.



d) Fire TV Stick and Fire TV Cube

The Amazon Fire TV Stick is a thumb-drive device that can plug into a television's HDMI port. It offers many of the same features as the Fire TVs. As with the Fire TVs, the content and services are far broader than anything related to the technology claimed in the patents asserted here. The remote that comes with the Fire TV Stick is able to control other devices around the home through Alexa, for example, lights and thermostats. The Fire TV Cube offers similar functionality as the Fire TV Stick and is also an Alexa speaker. Nokia accuses Fire TV Sticks and Fire TV Cubes containing [redacted] and [redacted] chipsets, as well as various versions of Fire OS.

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[redacted]



e) Ring

Ring was at the forefront of making home security more accessible by offering solutions that made installation and use easier at a lower price than professionally installed systems at the time and remains at the top of the market segment today. RX-3286C (Gluckman Dep. Tr.) at 167:7-168:17. Ring launched with the video doorbell that allowed users to see and communicate with people through the doorbell. Ring also designed and developed various indoor and outdoor cameras, an alarm system, a car cam, and various other products related to home security. Ring pioneered multiple features, including Neighbors that allow people to share information, Sidewalk that is a long-range wireless communication protocol, Pet-Tag that helps owners find lost pets, and motion detection that distinguishes between person, animal, or other types of motion. *Id.* at 122:10-123:7, 142:16-147:1, 167:21-168:9. These features are far afield of the Asserted Patents. The Ring products work with other Alexa-enabled devices to provide seamless smart home integration. Nokia accuses Ring Video Doorbells, indoor and outdoor Ring cameras, and the Ring Car Cam

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[redacted]

containing chipsets from [redacted]

[redacted].[6]



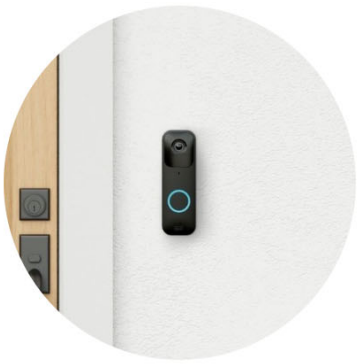
f) Blink

The Blink product line includes a video doorbell and indoor and outdoor cameras for use in smart home security systems. The Blink devices are optimized to extend battery life, going two years before requiring the batteries to be changed. *Id.* at 167:7-168:9. The Blink devices include motion detectors to allow both for power saving and activation by unexpected activities in view of the device. As with Ring, the Blink products work with other Alexa-enabled devices to provide seamless smart home integration. Nokia accuses Blink Video Doorbell and cameras containing [redacted]

[6] The accused functionality in the [redacted]

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[redacted]


2. Accused HP Products

Nokia accuses HP's computer products containing [redacted] CPUs and GPUs of infringing the Asserted Patents. The Accused HP Products include nearly every HP desktop and notebook computer.

Also at issue are two redesign computers: the [redacted] RPX-0009C and the [redacted] RPX-0010C (collective, the "HP Redesign Products"). HP provided discovery on these two redesign products, including technical documents, testing information, and deposition testimony. [redacted] provided source code relating to these two redesign products.

a) The HP Redesign Products Should Be Adjudicated

Nokia may argue that the HP Redesign Products should not be adjudicated as part of this Investigation. However, the Commission has a "policy in favor of adjudicating redesigns to prevent subsequent and potentially burdensome proceedings that could have been resolved in the first instance in the original Commission investigation." *Certain Human Milk Oligosaccharides and Methods of Producing the Same*, 337-TA-1120, Comm'n Op., 2020 WL 3073788, at *11 (June 8, 2020) ("*Human Milk*"). The Commission's has identified a four-factor test to determine whether a product should be adjudicated: (1) whether the product is within the scope of the investigation; (2) whether it has been imported; (3) whether it is sufficiently fixed in design; and (4) whether it

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has been sufficiently disclosed by respondent during discovery. *Id.* These factors all weigh in favor of adjudication.

First, the Notice of Investigation identifies the scope of the Investigation as "laptop computers, desktop computers, tablet computers, streaming devices, televisions, cameras, and components and modules thereof." EDIS Doc. ID 810224. Here, the HP Redesign Products are laptop computers, and so the products are within the scope of the Investigation. *See* RPX-0009C; RPX-0010C. Second, the HP Redesign Products have been imported. *See* RX-1916 and RX-1918. Third, the products are sufficiently fixed in design. HP has imported the products, and has made physical copies of the products available. RX-1916, RX-1918, RPX-0009C, RPX-0010C. Moreover, Jack McKinney will testify that the [redacted] is currently being offered for sale. And HP's witnesses testified that it is HP's policy not to [redacted]. McKinney 4-30-2024 Dep. Tr. at 25:22-28:5; McKinney 5-2-2024 Dep. Tr. at 261:19-263:5; Stout Dep. Tr. at 30:8-15, 31:1-32:21, 33:6-8, 34:22-35:9, 36:3-9, 51:12-17, 91:3-22. Given the above evidence, the HP Redesign Products are sufficiently fixed in design.

Finally, the HP Redesign Products have been sufficiently disclosed by HP during discovery. Specifically, HP first identified and made available the [redacted] product and source code on April 4, 2024. CX-2395C.255. HP updated its discovery responses to address the [redacted] days later on April 8, 2024. *Id.* HP then identified and addressed its [redacted] in discovery responses served on April 23, 2024, and made the product and source code available by the close of fact discovery on April 30, 2024. *Id.* HP further produced witnesses to testify about its redesign products, including Peter Zhang, Jack McKinney, and Pamela Stout—and Nokia has designated testimony from these witnesses in this Investigation.

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[redacted]

Indeed, Dr. Kia, Nokia's expert identified both HP Redesign Products is his Opening Expert Report and provided analysis related to [redacted]

The facts here are similar to *Human Milk*, where the Commission found that the redesign product was sufficiently disclosed by respondent during discovery. 2020 WL 3073788, at *13-14. The Commission further stated that "[i]f [Complainant] and its expert deemed such evidence to be insufficient, [Complainant] could and should have taken available procedural steps, such as a motion to reopen discovery or to compel further discovery, because the burden of establishing infringement remains with [Complainant]." *Id.* Further support can be found in *Certain Audio Players and Controllers*, where the redesigns were sufficiently disclosed by the respondent because the respondent supplemented its interrogatory responses, made source code for the redesigns available, and made physical devices incorporating the source code for the redesigns available for inspection. Inv. No. 337-TA-1191, Order No. 19 at 4-5 (Sept. 4, 2020) (denying complainant's motion to strike redesigns).

Given that the Commission factors weigh in HP's favor, the HP Redesign Products should be adjudicated as part of this Investigation.

3. Alleged Domestic Industry Products

Nokia alleges the domestic industry requirement is met through its licensees—Microsoft and Samsung. Nokia does not rely on the mobile phone business it sold Microsoft in 2014. Rather, it relies on Microsoft's Surface products and Xbox gaming consoles. Specifically, Nokia claims the Surface Go 2, Surface Pro 7+, Surface Pro 8, Surface Pro 9, Surface Pro 10, Surface Go 3, Surface Studio 2+, Surface Laptop 3, Surface Laptop 4, Surface Laptop 5, Surface Laptop 6, Surface Laptop SE, Surface Laptop Studio, and Surface Laptop Studio 2+ ("Microsoft Surface Domestic Industry Products", and Xbox X and S Series gaming consoles ("Microsoft Xbox Domestic Industry Products") (collectively, "Microsoft Domestic Industry Products") practice the

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asserted claims. Nokia relies on Samsung's Galaxy smartphone product line, including Galaxy S20, Galaxy S20 5G, Galaxy S20 FE, Galaxy S20 FE 5G, Galaxy S20+, Galaxy S20+ 5G, Galaxy S20 Ultra, Galaxy S20 Ultra 5G, Galaxy S21, Galaxy S21 5G, Galaxy S21+, Galaxy S21+ 5G, Galaxy S21 Ultra, Galaxy S21 Ultra 5G, Galaxy S21 FE, Galaxy S21 FE 5G, Galaxy S22, Galaxy S22+, Galaxy S22 Ultra, Galaxy S23, Galaxy S23+, Galaxy S23 Ultra, Galaxy S23 FE, Galaxy S24, Galaxy S24+, Galaxy S24 Ultra, Galaxy Z Fold 5, Galaxy Z Fold 4, Galaxy Z Fold 3, Galaxy Z Fold 3 5G, Galaxy Z Flip 5, Galaxy Z Flip 4, Galaxy Z Flip 4 5G, Galaxy Z Flip 4 Bespoke Edition, Galaxy Z Flip 3 5G, Galaxy Z Flip 3 5G Bespoke Edition ("Samsung Domestic Industry Products").

II. IMPORTATION AND JURISDICTION

Section 337 of the Tariff Act declares unlawful the importation into the United States and the sale within the United States after importation by the owner, importer, or consignee, of articles infringing a valid and enforceable United States patent if an industry relating to the articles protected by the patent exists or is in the process of being established. *See* 19 U.S.C. §§ 1337(a)(1)(B) and (a)(2). The scope of this investigation is identified by the Commission as "laptop computers, desktop computers, tablet computers, streaming devices, televisions, cameras, and components and modules thereof." 88 Fed. Reg. 84832 (Dec. 6, 2023).

A. Importation

Respondents stipulated to importation of the Accused Products in this Investigation. Doc. IDs 818554, 818478 (JX-0007C, JX-0008C). Additionally, HP imported its [redacted] redesign products. RX-1916 and RX-1918.

B. Jurisdictional and Statutory Authority Limitations and Constitutional Issues

Lack of a Quorum. There are jurisdictional and/or statutory issues in this Investigation based on the number of active Commissioners participating in this Investigation. With two of the

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four active Commissioners recused from this Investigation, the two remaining Commissioners do not constitute a quorum and the Commission cannot take any actions with respect to this Investigation. In particular, two Commissioners cannot issue a remedy. The ITC's enabling statute requires a quorum of the ITC to be "[a] majority of commissioners in office." 19 U.S.C. § 1330(c)(6). Because there are only four Commissioners currently in office, at least three would need to be participating in this Investigation to constitute a quorum. And absent a quorum of three or more Commissioners, the Commission lacks statutory authority to take any actions with respect to this Investigation. *See, e.g.*, *Frischer & Co. v. Bakelite Corp.*, 39 F.2d 247, 254 (C.C.P.A), *cert. denied* 282 U.S. 852 (1930) (majority of a quorum necessary to act for Commission in decision arising from unfair import investigation); USITC GC-G-198, 1983 WL 206945, at *1 (Aug. 9. 1983) ("[W]hen there are only four Commissioners the presence of three of the four Commissioners is required for a meeting quorum, three of four votes are generally needed to take an action."); USITC GC-H-116, 1984 WL 273516 (Apr. 20, 1984) ("The purpose of the quorum requirement is to prevent an unduly small number of persons from taking totally unrepresentative action in the name of the body."). A notice of proposed rulemaking ("NOPR") from the Commission acknowledged that issuance of an agency remedial order in a Section 337 investigation requires majority action, and not even a tie vote would be sufficient. *Advance Notice of Proposed Rulemaking concerning Comm'n Voting Procs. In Investigations & Related Proc. On Unfair Pracs, in Imp. Trade*, 60 Fed. Reg. 3785 (Jan. 11, 1995). In that Notice, the Commission indicated:

> The common law rule for multiple administrative agencies, articulated in the frequently-cited *Bakelite* decision arising from a Commission Section 337 determination is that a majority of a quorum is necessary to act for the agency.

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Id. (referring to Commission review of Section 337 IDs and stating "a majority of a Commission quorum would be required to take some affirmative action with respect to the reviewed ID") (citing *Frischer & Co.*, 39 F.2d at 254).

Violation of U.S. Const. Article II. Respondents respectfully assert that the Commission's current structure violates Article II of the U.S. Constitution, rendering it unable to issue a remedy. The Supreme Court has explained that under Article II, the President must have the unfettered "power to remove" officers "who assist him in carrying out his duties." *See Free Enter. Fund v. Pub. Co. Acct. Oversight Bd.*, 561 U.S. 477, 513-14 (2010); *Myers v. United States*, 272 U.S. 52, 117 (1926) (power of removal is essential to execution of the laws). The Supreme Court in *Free Enter. Fund v. Pub. Co. Acct. Oversight Bd.* held that by creating two layers of statutory removal protection for members of the Public Company Accounting Oversight Board ("PCAOB"), Congress had "contraven[ed] the President's 'constitutional obligation to ensure the faithful execution of the laws.'" 561 U.S. 477, 484 (2010). The PCAOB is housed within the SEC, and its members could only be removed for cause by the SEC after a hearing in front of the Merit Systems Protection Board ("MSPB"). And because the members of the SEC itself could be removed by the President only for cause, this created an effective second layer of protection for members of the PCAOB—one layer of removal protections for the members, and a second layer of protections for their superiors. Accordingly, the Court explained, "[t]he result is a Board that is not accountable to the President, and a President who is not responsible for the Board," and the structure of the PCAOB was found to be unconstitutional under Article II. *Id*. at. 495. More recently, the Fifth Circuit noted in *Jarkesy v. Sec. and Exch. Comm'n* that the removal restrictions for SEC ALJs also violated the Take Care Clause of Article II. 34 F.4th 446 (5th Cir. 2022) (cert. granted, *Sec. and Exch. Comm'n v. Jarkesy,* No. 22-859 (U.S. June 30, 2023), affirmed and remanded on other

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grounds, *Sec. & Exch. Comm'n v. Jarkesy*, 2024 WL 3187811 (June 27, 2024)). There, the court noted that for an SEC ALJ to be removed, the MSPB must find good cause and the commission must act on that finding. *Id*. at 465. Additionally, both the SEC Commissioners and the MSPB ALJs have for-cause protection, thereby creating an unconstitutional multi-layer system of protection for SEC ALJs. *Id*. at 465-66. The ITC's structure violates Article II for the very same reasons. Once appointed, the ITC's Commissioners are not subject to removal by the President absent a finding of "cause." *See, e.g.*, *Free Enter. Fund*, 561 U.S. at 496 (noting that the President might "intervene" in the SEC only if its determinations are "so unreasonable as to constitute 'inefficiency, neglect of duty, or malfeasance in office'" (quoting *Humphrey's Ex'r v. United States*, 295 U.S. 602, 620 (1935))). Moreover, because an ITC-appointed ALJ can also only be removed for "good cause" in accordance with statutory procedures, 5 U.S.C. § 7521(a), (b)(1), an impermissible "dual-layer of protection" further restricts Executive control. *See Free Enter. Fund*, 561 U.S. at 495. Such a dual-layer for-cause removal structure violates Article II of the U.S. Constitution.

Violations of U.S. Const. Article III and Seventh Amendment Jury Trial Right. Nokia's requested exclusionary relief is also contrary to the equitable and legal principles and is an end-run around the principles set forth by the Supreme Court in *eBay*. Nokia—a foreign company—seeks relief that it is not entitled to, where it is neither harmed by any infringement nor does it or its alleged domestic industry licensees, Samsung and Microsoft, receive any benefit from its requested relief. Indeed, as described below, Nokia's domestic industry is based on nothing more that Samsung and Microsoft's investments wholly unrelated to the functionality allegedly covered by the Asserted Patents—functionality that is incorporated into off-the-shelf components purchased by Samsung and Microsoft. A finding of domestic industry under these facts renders

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that statutory requirement essentially meaningless, turning the Commission into a non-Article III patent litigation forum where infringement actions are tried without a jury. That outcome would not only be contrary to Section 337, it would threaten the constitutionality of the Commission's proceedings. Stripped of the critical role of protecting a true "industry in the United States," 19 U.S.C. § 1337(a)(2), the Commission's resolution of patent infringement disputes would violate both Article III and the Seventh Amendment. *See, e.g.*, *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 377 (1996) (noting that "there is no dispute that infringement cases today must be tried to a jury, as their predecessors were more than two centuries ago); *Oil States Energy Servs., LLC v. Greene's Energy Grp., LLC*, 584 U.S. 325, 344 (2018) (reserving ruling on whether "infringement actions[] can be heard in a non-Article III forum"); *see also Sec. & Exch. Comm'n v. Jarkesy*, No. 22-859, 2024 WL 3187811 (June 27, 2024) (holding SEC's imposition of civil penalty for violation of federal securities law violated the defendants' Seventh Amendment right to trial by jury).

Agency Deference. Further, to the extent Nokia and the Commission rely on principles of agency deference predicated on agency interpretations—such as set forth in *Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837 (1984) or its progeny—to support its arguments regarding the foregoing issues or the issues discussed below, including as to domestic industry and public interest, such principles of agency deference have been overturned. *Loper Bright Enterprises v. Raimondo*, No. 22-451, No. 22-1219, 2024 WL 3208360 (June 28, 2024).[7] Courts must exercise independent judgment in deciding whether an agency has acted within its statutory authority and may not defer on agency interpretation simply because a statute is

[7] This decision was issued just hours before the deadline to submit this brief so its full impact is still subject to analysis.

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ambiguous. As set forth herein, Nokia's use of the ITC in this Investigation is contrary to the intent, purpose, and language of Section 337.

III. U.S. PATENT NO. 7,532,808

A. The Claim Construction Requires Analysis of Image Segments "Surrounding" the Macroblock Being Coded

During claim construction, the parties raised a single claim construction dispute regarding the meaning of "skip coding mode" appearing in various asserted terms of the '808 patent. Relying on lexicography, Nokia proposed construing "skipping code mode" 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." *See, e.g.*, Parties' Updated Joint Proposed Claim Construction Chart, EDIS Doc. ID 815800 (Mar. 8, 2024) Thus, during claim construction, Nokia recognized the asserted claims require analyzing "surrounding" motion. As discussed above, this is consistent with the provisional, the claims of the provisional, and the specification of the '808 patent.

On April 16, 2024, the ALJ adopted Nokia's claim construction. Order 38 at 15. From the papers on Respondents' Motion for Summary Determination, the parties disagree sharply about the term "surrounding," and the infringement and validity determinations on the '808 patent will likely turn on its application.

As discussed below, Nokia's expert, Dr. Orchard takes numerous and inconsistent positions regarding the claim construction to try and find infringement and validity.

B. The Accused Products Do Not Infringe

1. Nokia Cannot Carry Its Burden of Proof

Nokia has the burden to prove infringement for each Accused Product. *Certain LED Lighting Devices, LED Power Supplies, and Components Thereof*, Inv. No. 337-TA-1081, Comm.

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Op. at 10 (July 23, 2019) (citing *Medtronic, Inc. v. Mirowski Family Ventures, LLC*, 571 U.S. 191, 199 (2014)); *see also Spansion, Inc. v. Int'l Trade Comm'n*, 629 F.3d 1331-1350-51 (Fed. Cir. 2011). As such, Nokia "cannot simply assume that the [analyzed products] are representative of the [unanalyzed products]," but rather "must show by a preponderance of the evidence that the products its expert[] analyzed are indeed representative of unanalyzed products." *LED Lighting Devices*, Comm Op. at 10 (alterations in original; *quoting Certain Semiconductor Devices, Semiconductor Device Packages, and Products Containing Same*, Inv. No. 337-TA-1010, Order No. 77 at 9 (Mar. 15, 2017), *not reviewed*, Notice (April 14, 2017) ("*Semiconductor Devices*"). Yet, Nokia's analysis suffers from five overarching flaws, each of which dooms its infringement case on the '808 patent.

a) Nokia's '808 Patent Is Not Essential to H.264

Although Nokia directs its infringement allegations at the H.264 standard rather than the Accused Products (Orchard Inf. Rep., ¶¶ 67-75), the '808 patent is *not* standard-essential. Indeed, Nokia and its expert present no evidence to support their assumption that practicing the standard necessitates using one or more of the '808 asserted claims.

Conversely, Respondents have demonstrated that it is possible to encode and decode video compliant with H.264 without ever using the alleged '808 invention. As discussed above and detailed more fully below, the '808 claims all require a "skip coding mode" that has been construed to require reference to "surrounding" macroblocks. But H.264 does not use such a "surrounding" approach. Instead, H.264 employs a block-by-block approach akin to the process developed for MPEG-1. Accordingly, the '808 patent is not standard-essential, and Nokia cannot carry its burden of proof by pointing to the standard as evidence of infringement.

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[redacted]

b) Nokia Cannot Demonstrate that the Few Chips It Analyzed Are "Representative"

Nokia's entire infringement case rests on an analysis of a mere subset of chips from Respondents' products, but Nokia and its expert have failed to demonstrate that the chips they analyzed are representative of those they did not. Establishing representativeness is Nokia's burden. *LED Lighting Devices*, Inv. No. 337-TA-1081, Comm'n Op. at 10-16; *see also Certain Non-Volatile Memory Devices*, Inv. No. 337-TA-1046, Initial Deter. at 67 (Apr. 27, 2018) ("In order to meet its burden, Macronix must show by a preponderance of the evidence that the products its expert analyzed are indeed 'representative' of unanalyzed products.") (internal citations omitted). In *LED Lighting Devices*, the Commission found that the type of analysis, as performed by Dr. Orchard here, was "conclusory and insufficient to establish representativeness." *See, e.g.*, Comm'n Op. at 11. The Commission further found that unsupported testimony with no evidentiary basis will not be credited. *Id.* at 15.

Nokia cannot meet its burden to show the subset of chipsets analyzed are somehow representative of the remaining chipsets at issue. For example, the Amazon accused products use eighteen different chipsets from [redacted], the HP accused products use [redacted]

[redacted]

RPX-0565. Yet, Nokia's expert Dr. Orchard only analyzed a single version of that code without specifying which one. *See, e.g.*, Orchard Inf. Rep., ¶¶ 159-60. Worse, he made no effort to establish that whichever code he reviewed was representative. *Id*.

To the extent Nokia attempts to rely on declarations it received from certain of the chip vendors, this fails to establish representativeness. None of the chip vendors indicated that a single chip was representative of all other chips, which is the approach Dr. Orchard took in his report. Nokia also did not take a single chip vendor deposition and, as such, has no confirmation that the

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[redacted]

chip operates in the manner it claims, that the functions it is pointing to are ever called, or in what manner a chip is representative of another chip. The declarations fail to explain how a chip is representative of other chips and at least some of them raise questions as to representativeness. For example, as Dr. Acton will explain, in the [redacted] declaration, chips grouped together have different processors and GPUs, raising significant questions about what is meant by "representative."

Moreover, twelve Amazon accused products use chipsets from vendor [redacted] Yet, Dr. Orchard presents no analysis of [redacted] source code. Without this evidence, Nokia has no basis for alleging infringement of the '808 patent by accused Amazon products using [redacted] chipsets.

Dr. Acton will testify that Dr. Orchard's analysis is similarly deficient for all of Amazon's other chip vendors [redacted] Fire OS, [redacted] and for HP's other chip vendors ([redacted][8] As such, neither Nokia nor Dr. Orchard can say with certainty how the chips in any particular Accused Product function, let alone how that compares to other chips by the same manufacturer incorporated in the Accused Products.

Having failed to perform this basic and required analysis, Nokia cannot satisfy its burden of proof on representativeness. *LED Lighting Devices*, Inv. No. 337-TA-1081, Comm'n Op. at 10-16.

[8] As explained below with respect to Dr. Kia's analysis of the '134 patent, Nokia has not provided information demonstrating that the source code analyzed by Dr. Kia is representative of all HP Accused Products. Dr. Orchard's analysis is even less supported, and Dr. Orchard fails to even allege representativeness. Nonetheless, Dr. Orchard's analysis fails for at least the same reasons as identified below with respect to the '134 patent.

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[redacted]

c) Nokia's Superficial Source Code Analysis Proves Nothing

For the single, unspecified version of code that Dr. Orchard examined, his opinion consists of nothing more than repeating an identical list of source code file names and functions for every asserted limitation. Put differently, Dr. Orchard failed to analyze how any individual file or function would satisfy particular limitations of the claims, and therefore failed to provide the detailed basis required to prove infringement. Dr. Orchard's "analysis" does not include line number citations to the code, or any other specific references that might explain Dr. Orchard's theory of infringement.

For example, in discussing [redacted] source code, Dr. Orchard repeats the following two paragraphs for *every limitation of every claim* of the '808 patent:

[redacted]

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[redacted]

See, e.g., Orchard Inf. Rep., ¶¶ 159-60. Indeed, Dr. Orchard's vague source code citations fail to identify how the identified files or functions individually or jointly satisfy specific limitations and where in the cited source code the functionality is allegedly being performed. As yet another example, with respect to the Accused Products having [redacted], Dr. Orchard copies the following paragraph for *every limitation of every decoding claim*:

[redacted]

Id., ¶ 88.

By repeating the *identical* language that lacks any source code functions or line numbers for every limitation of every decoding claim Dr. Orchard is intentionally concealing his opinions for all limitations and, as such, failing to satisfy his burden.

Dr. Orchard's source code analysis also fails for additional reasons. Dr. Orchard entirely fails to opine on how the source code satisfies the required "skip coding mode" as construed by the ALJ. Even worse, since Dr. Orchard copies the exact same paragraphs for every asserted limitation, he relies on decoding source code when addressing encoding claims. Orchard Inf. Rep., ¶¶ 581-82 (referencing [redacted] decoding files and function when addressing encoding claim limitation 1(b)). For example, in discussing [redacted] source code, Dr. Orchard also cites to a decoding file [redacted] when addressing encoding claims. *See, e.g.,* Orchard Inf. Rep., ¶¶ 551; Acton Rebuttal Rep., Appendix No. 808-D ("Dr. Orchard also cites to a 'decoding' file [redacted] in support of his opinions on the 'encoding' claim, as noted by [redacted]).

Dr. Acton will testify that Dr. Orchard's source code analysis—to the extent that it exists at all—is similarly deficient for all of Amazon's other chip vendors [redacted]

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[redacted] Fire OS, [redacted] and for HP's chip vendors [redacted] and non-existent as to [redacted] as addressed above.[9] As such, neither Nokia nor Dr. Orchard can say with certainty how the chips in any particular Accused Product function.

Having failed to perform this basic and required analysis, Nokia cannot satisfy its burden of proof on infringement.

d) Nokia Fails to Address Hardware Component Limitations in the Claims

Two asserted claims—apparatus claims 10 and 16 (and their dependents)—require specific hardware components ("coding controller," "motion estimation block," "multiplexer," "demultiplexer," "motion compensated prediction block," and "multimedia terminal"), yet Nokia and its expert fail to identify any of these hardware components in the accused products.

For example, claim limitation 10(b) recites "a *coding controller* for assigning a skip coding mode to a first segment." JX-0003. However, Dr. Orchard does not provide any evidence that the Accused Products comprise a coding controller, let alone a coding controller for "assigning a skip coding mode to a first segment." Nor does Dr. Orchard offer any analysis to conclude that the Accused Products have a coding controller or why one would be necessary. For example, Dr. Orchard does not identify a coding controller in any of the chip schematics used in the Accused

[9] Dr. Orchard also fails to include any relevant allegations regarding claim limitation 1(d) ("forming a prediction…with respect to a reference frame…"). Specifically, Dr. Orchard points to no vendor source code in which a prediction is formed with respect to a reference frame. *See* Orchard Inf. Rep, ¶¶ 613, 614, 616, 617, 618, 622, 611, 615, 620. In fact, the words "prediction with respect to a reference frame" are never mentioned at all in his report with respect to the chip vendor source code. As described in the specification and would be well understood by a POSITA, a prediction with respect to a reference frame requires predicting the current block being encoded using a particular reference frame, and may be used to determine, at the encoder, the prediction error that will result. *See,* RX-0006 ('808 patent), 5:54-6:10, 7:5-8:18. As Dr. Acton will explain, to the extent Dr. Orchard is opining that a motion vector assignment meets the limitation 1(d) requirement for forming a prediction with respect to a reference frame, he is incorrect as that is not directed to a particular reference frame. Therefore, Dr. Orchard has failed to provide any allegation of a prediction formed with respect to a reference frame and failed to meet his burden to show infringement.

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[redacted]

Products. Instead, Dr. Orchard copies the exact same purported analysis from claim limitation 1(b), which does *not* recite a "coding controller." Specifically, Dr. Orchard uses the same purported VQ Analyzer screenshots and source code references that he did for claim limitation 1(b)—making no distinction for the claimed "coding controller" in claim limitation 10(b).

Dr. Acton will testify that Dr. Orchard has also similarly failed to discuss, let alone identify, a "motion estimation block" (recited in claim limitation 10(c)), "multiplexer" (recited in claim limitation 10(e)), "demultiplexer" (recited in claim limitation 16(b)), "motion compensated prediction block" (recited in claim limitations 16(c) and 16(d)), and "multimedia terminal" (recited in claim limitations 21 and 22). For example, Dr. Acton will explain that Dr. Orchard does not provide any evidence that the accused products comprise a motion estimation block (recited in claim limitation 10(c)), let alone a motion estimation block for "assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment," and, even worse, Dr. Orchard uses the same purported VQ Analyzer screenshots and source code references for claim limitation 10(c) that he does for claim limitation 1(c)—making no distinction for the claimed "motion estimation block" in claim 10(c).

Moreover, for "multiplexer" (claim limitation 10(e)) and "demultiplexer" (claim limitation 16(b)), Dr. Acton will explain that Dr. Orchard relies on a POSITA's understanding, and does not provide any evidence that the Accused Products include a multiplexer and demultiplexer. For example, Dr. Acton will explain that Dr. Orchard opines that "[a] POSITA would understand that an encoder including [] variables…would comprise a multiplexer (as described in the '808 Patent) that '… forms a single bit-stream from the various types of information produced by the encoder …'" Orchard Inf. Rep., ¶ 882, *see also* ¶¶ 879-881, 350 ("A POSITA would understand that a decoder complying with the H.264 Specification and extracting the variables…would be serving

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[redacted]

as a demultiplexer that '… receives an encoded video bit-stream from the encoder and demultiplexes it into its constituent parts, …'"). Dr. Acton will explain that Dr. Orchard's conclusory statement that somehow the presence of "variables" means that there must necessarily be a "multiplexer" or "demultiplexer" lacks complete support, and Dr. Orchard fails to point to anything in the Accused Products indicating the presence of a multiplexer and demultiplexer. Dr. Acton will also explain that a POSITA would recognize that there are alternative components that can be used to transmit different variables or payloads. Dr. Acton will also explain that the "encoding process" defined in the H.264 specification is silent as to whether a "multiplexer" is necessary to produce "a bitstream conforming to this Recommendation." *See* H.264, 3.52. Similarly, Dr. Acton will explain that the "decoding process" specified in the H.264 specification is silent as to whether a "demultiplexer" is necessary to "read[] a bitstream and derive[] decoded pictures from it." *See id*., 3.46.

Finally, Dr. Acton will explain that Dr. Orchard does not provide any evidence that the accused products include a motion compensated prediction block (recited in claim limitations 16(c) and 16(d)), let alone a motion estimation block for "assigning either a zero motion vector or a predicted non-zero motion vector…" and "forming a prediction…." Dr. Acton will also explain that all of the sections of the H.264 specification cited by Dr. Orchard for claim limitations 16(c) and 16(d) relate to the decoding process, and none of the sections describe the use of a component, *i.e.*, a "motion compensated prediction block," during the decoding process.

Accordingly, Nokia and Dr. Orchard have failed to satisfy the burden of showing the specific hardware components in claims 10 and 16 are present in the Accused Products.

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[redacted]

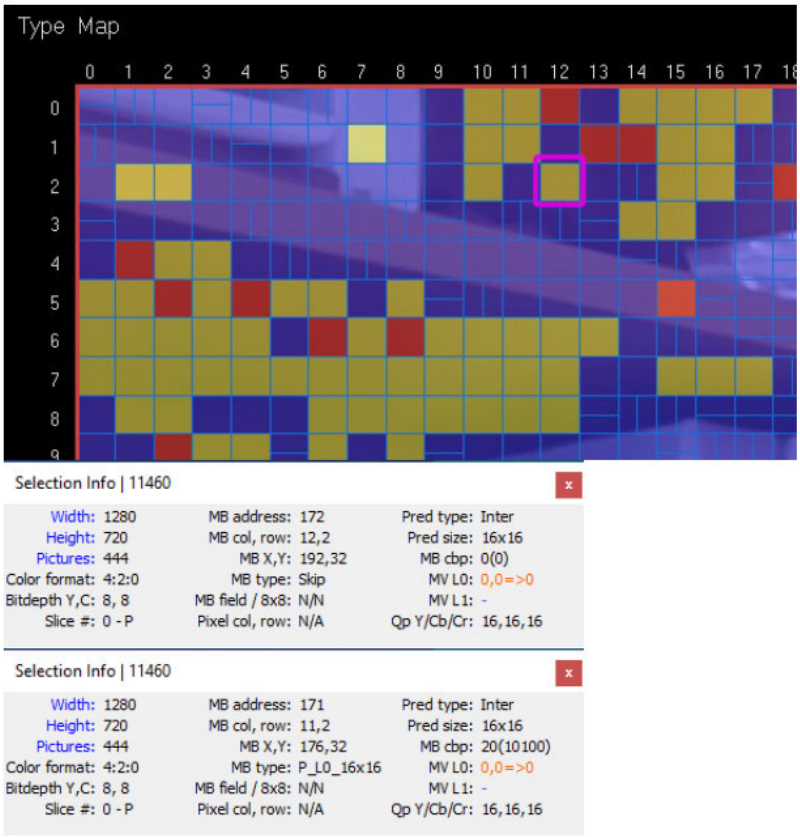
e) Nokia's VQ Analyzer Analysis Confuses Correlation with Causation

Nokia's reliance on VQ Analyzer screenshots to allege infringement of encoding claims 1 and 10 (and their dependents) is flawed because the screenshots fail to show that the Accused Products actually perform the claimed method limitations. Indeed, Dr. Orchard acknowledges "that VQ Analyzer shows video sequences that the Encoding Accused Products have *already encoded*," and therefore does not show the method of encoding used. Orchard Inf. Rep., ¶¶ 1817-1818. Given that all of the asserted claims contain limitations representing the encoding and decoding functions that must performed, and in which order, such a post-hoc snapshot cannot possibly demonstrate infringement. At best, Nokia's VQ Analyzer screenshots amount to circumstantial evidence regarding how encoding might have been performed. But that is wholly insufficient to meet Nokia's burden of proof on these claims.

For example, claim limitations 1(c) and 10(c) recite "assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment." Pointing to the below VQ Analyzer screenshot, Dr. Orchard states that "Macroblock 12,2 is assigned a zero motion vector" and "also has a left neighbor (Neighbor A) that has a zero motion vector." Orchard Inf. Rep., ¶¶ 588, 840.

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[redacted]



Dr. Acton will explain that while, according to the screenshot, macroblock 12,2 has a zero motion vector and an adjacent neighbor (macroblock 11,2) with a zero motion vector, Dr. Orchard's VQ Analyzer screenshot fails to show that the Accused Products are actually performing the claim limitation of "assigning either a zero motion vector or a predicted non-zero motion vector…based at least in part on the motion information of a second segment neighboring the first segment." For example, Dr. Orchard alleges a correlation between macroblock 12,2 and macroblock 11,2, but fails to provide any evidence that macroblock 12,2's motion vector is "based" on macroblock 11,2's motion information. Dr. Orchard also does not show how the Accused Products are actually performing the "assigning" step. Indeed, Dr. Orchard's VQ Analyzer screenshot, at most, shows the use of motion vectors (a very common feature in nearly all encoders), the characteristics of an already encoded video sequence, and *not* the manner of

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[redacted]

encoding the video sequence as required by the claims. Thus, Nokia and Dr. Orchard's post-hoc snapshot cannot possibly demonstrate infringement.

Dr. Acton will testify that Dr. Orchard's VQ Analyzer analysis for the other limitations in encoding claims 1 and 10 (and their dependents) is similarly deficient because they confuse correlation with causation and do not show the manner of encoding used. For example, for claim limitations 1(b) and 10(b), Dr. Acton will explain that Dr. Orchard's VQ Analyzer screenshot showing syntax info mb_skip_run equal to 1 fails to show how the accused products are actually performing "assigning a skip coding mode." *See, e.g.*, Orchard Inf. Rep., ¶¶ 566-567, 819-820. For claim limitations 1(d) and 10(d), Dr. Acton will explain that Dr. Orchard's VQ Analyzer screenshot showing an arrow from one frame pointing to another frame fails to show how the accused products are performing the step of "forming" the prediction and the instruction that the prediction be formed "with respect to a reference frame *based at least in part* on the assigned motion vector for the skip coding mode." *See, e.g.*, Orchard Inf. Rep., ¶¶ 609, 860. For claim limitations 1(e) and 10(e), Dr. Acton will explain that Dr. Orchard's VQ Analyzer screenshot showing "mb_skip_run" in the syntax info fails to show how the accused products are actually performing "providing in an encoded bitstream an indication of the skip coding mode." *See, e.g.*, Orchard Inf. Rep., ¶¶ 628, 885. For claim limitations 29 and 48, Dr. Acton will explain that Dr. Orchard's VQ Analyzer screenshot showing a correlation between a "first segment," "second segment," "third segment" fail to show that the "first segment" is "based" on the other segments or that the accused products are actually performing the "deriving" step. *See, e.g.*, Orchard Inf. Rep., ¶¶ 756, 986. Nokia and Dr. Orchard do not provide any VQ Analyzer analysis for claim 21. As such, the VQ Analyzer screenshots are wholly insufficient to meet Nokia's burden of proof on these claims.

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[redacted]

2. The Accused Products Do Not Meet the Limitations of the Asserted Claims

In addition to the overarching flaws discussed above, Nokia cannot demonstrate that every claimed limitation is present in the Accused Products.

a) The Accused Products Lack the "Skip Coding Mode" Required by Every Asserted Claim Because They Do Not Analyze "Image Segments Surrounding" the Macroblock Being Coded

Every asserted claim[10] from the '808 patent requires a "skip coding mode," which the ALJ construed, as Nokia proposed, to be "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." Order 38 at 15.

Applying this understanding, the Accused Products do not—ever—look at characteristics of the motion in the image segments *surrounding* the macroblock in question when deciding between a zero (non-active) motion vector or a non-zero (active) motion vector. Nokia and Dr. Orchard rely on portions of the H.264 standard to allege infringement—and fail at that—but and further fail to prove infringement because they provide only cursory analysis regarding whether the chipsets in the Accused Products comply with the H.264 standard or infringe. Respondents first address Nokia's allegations of infringement under the H.264 standard and separately address any chip supplier specific arguments Nokia and Dr. Orchard actually made.

In its infringement analysis, Nokia and Dr. Orchard identify only portions of the H.264 standard directed to analyzing motion vectors on a block-by-block basis, and not to analyzing characteristics of motion among image segments in a region surrounding the current image

[10] The "skip coding mode" limitation is expressly present in all four asserted independent claims, 1, 7, 10, and 16. All the asserted dependent claims stem from these four independents, meaning that "skip coding mode" is a requirement for every asserted claim.

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segment. *See, e.g.*, Orchard Inf. Rep., ¶¶ 123-24. Section 8.4.1.1 of the H.264 standard explains that the "motion vector mvL0 of a P_Skip macroblock" is set to zero if any of the following conditions are true: *neighbor* macroblock A is unavailable; or *neighbor* macroblock B is unavailable; or *neighbor* macroblock A has a zero motion vector and zero refIdxL0, or *neighbor* macroblock B has a zero motion vector and zero refIdxL0. RX-1499.0155.[11]

As an initial matter, as Dr. Acton will explain, the first two conditions of Section 8.4.1.1 (i.e., macroblock A or B are not available) are not "characteristics of the motion in image segments surrounding the macroblock" at least because those conditions relate to *availability* and not characteristics of motion.

Dr. Acton will further explain that the third and fourth conditions of Section 8.4.1.1 consider neighboring blocks on a block-by-block basis to determine whether mvL0 should be set to zero, and never use characteristics of motion of image segments in a region surrounding the current image segment to determine whether to assign a zero or non-zero motion vector. As such, Nokia's contention that "depending on the characteristics of the motion in image segments surrounding the macroblock in question" is met by analyzing a single, previously coded neighboring block fails. Such an embodiment does not analyze characteristics of the motion in image segments, much less image segments surrounding the macroblock in question.

[11] Dr. Orchard also cites to sections 8.4.1.3 and 8.4.1.3.1 of the H.264 standard. Orchard Inf. Rep., ¶¶ 124-26. As Dr. Acton will explain, Sections 8.4.1.3 and 8.4.1.3.1 are *not* invoked when deciding between a zero (non-active) motion vector or a non-zero (active) motion vector. Rather, and as Dr. Orchard confirms, "[i]f a zero motion vector is not assigned to the first segment (the current macroblock being decoded)" and instead a *non-zero* motion vector is assigned, then "Subclause 8.4.1.3 is invoked which calculates the predicted luma motion vector that is assigned to the first segment macroblock." Orchard Inf. Rep., ¶ 124. In other words, subclauses 8.4.1.3 and 8.4.1.3.1 are only invoked *after* the decision between a zero (non-active) motion vector or a non-zero (active) motion vector has already been made. Therefore, subclauses 8.4.1.3 and 8.4.1.3.1 of the H.264 standard are not relevant to deciding between a zero (non-active) motion vector or a non-zero (active) motion vector.

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[redacted]

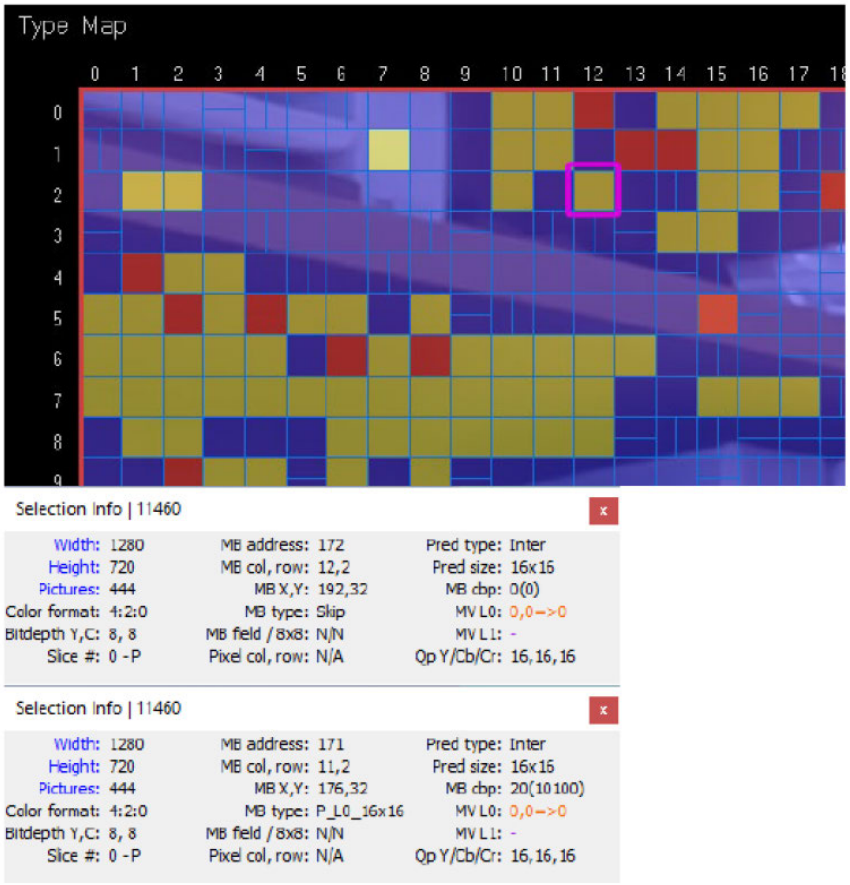
Moreover, determining that a neighboring macroblock to the left has a zero motion vector does not indicate if there is motion in a macroblock above, or above and right, or above and left. Section 8.4.1.1 of H.264 only looks at one macroblock at a time, and a maximum of two macroblocks, to decide whether to associate a zero (non-active) motion vector or a nonzero (active) motion vector with each skip mode macroblock. RX-1499.0155. Analyzing each of those two neighboring macroblocks in isolation block-by-block is not analyzing the "surrounding" macroblocks under the plain and ordinary meaning of "surrounding," nor can such an analysis account for global or regional motion. As Dr. Acton explains, a POSITA would understand that determining characteristics indicative of global or regional motion, *e.g.*, continuity, common velocity, and/or deviation/divergence, cannot be derived using only a single macroblock. For example, by looking at only one neighboring macroblock, a POSITA would not be able to discern whether a region exhibits a common velocity similar to that neighboring macroblock, or whether the region exhibits deviation/divergence. Therefore, "surrounding" requires all the macroblocks illustrated in Nokia's provisional to be analyzed together—and certainly more than a single macroblock.

The lack of considering motion in "surrounding" macroblocks is confirmed by Dr. Orchard's own purported testing. For example, referencing the below VQ Analyzer screenshot, Dr. Orchard states that because "[m]acroblock 12,2 [] has a left neighbor [11,2] (Neighbor A) that has a zero motion vector," "[m]acroblock 12,2 is assigned a zero motion vector." Orchard Inf. Rep., ¶ 588, *see also* ¶ 589 (because "40,9 has a neighbor to the left (Neighbor A)" that "has a non-zero motion vector," "the encoder assign[s] a zero motion vector to 40,9."). Based on Dr. Orchard's purported testing, the decision to associate a zero or non-zero motion vector is necessarily made solely based on the characteristics of motion in the left neighbor—and not based

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on the "characteristics of the motion in image segments surrounding the macroblock in question [i.e., macroblock 12,2]." *Id*.



Furthermore, as Dr. Acton will explain, the chipsets used in the accused products consider neighboring blocks on a block-by-block basis and never use characteristics of motion of image segments in a region surrounding the current image segment to determine whether to assign a zero or non-zero motion vector. For example, Fire OS invokes [redacted] when deciding whether to assign a zero or non-zero motion vector. Notably, the "or" syntax in the function confirms that each macroblock [redacted] is considered individually. *See, e.g.*, RPX-0012, [redacted]

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[redacted]

Dr. Acton will testify that all of Amazon's other chips and chip vendors [redacted] and HP's chip vendors [redacted] have source code demonstrating that the accused products consider neighboring blocks on a block-by-block basis and never use characteristics of motion of image segments in a region surrounding the current image segment to determine whether to assign a zero or non-zero motion vector. [redacted]

Examination of Dr. Orchard will show he has inconsistent interpretations of the claim construction. In his report, Dr. Orchard reads "surrounding" out of the claim and reduces it to just one segment—"As the term 'skip coding mode' has been construed in this investigation to mean 'a coding mode in which a zero (non-active) motion vector or a nonzero (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,' this claim limitation requires that the choice of which motion vector to assign to the skip coding mode of the first segment (a current macroblock being decoded) should be based at least in part on motion information of a second segment (*one or more* neighboring macroblocks that have previously been decoded)." *See, e.g.*, Orchard Inf. Rep., ¶ 121. In other words, Dr. Orchard distills "surrounding" down to one macroblock. During deposition, Dr. Orchard took the position that the construction requires two

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[redacted]

segments but the "surrounding" has no positional requirement. Orchard Dep. Tr., 135:16-137:6 ("Q. Does that mean left, right, above? A: According to the construction, it could be any of the above, yeah"), 138:19-139:10. This inconsistency undermines his credibility and exposes a clear departure from the claim's original intent. Dr. Orchard's opinion is further inconsistent in that he considers a "segment" to be both one macroblock (i.e., first segment is "a current macroblock") and more than one macroblock (i.e., second segment is "one or more neighboring macroblocks"). *See, e.g.*, Orchard Opening Rep., ¶ 121, *see also id.*, ¶ 124 ("A POSITA understands that the assignment of a zero-motion vector is based at least in part on the motion information of neighboring macroblocks A and B, which comprise a second segment neighboring the first segment.").

Dr. Acton will explain that the reason to look at "surrounding" image segments (as explained by the patent) is to account for regional or global motion. Dr. Acton will explain that this can be achieved by using a 3x3 transformation matrix, which involves nine variables, and requires a careful balance between assumptions and accuracy. Dr. Acton will further explain that for accurate motion estimation, this analysis extends to at least four neighboring macroblocks, rather than just one or two macroblocks analyzed in isolation. In practice, video content often exhibits complex motion patterns, including rotations, zooms, and non-uniform movements, which cannot be adequately captured by examining, *e.g.*, a single neighboring macroblock. By analyzing "surrounding" macroblocks, including at least the four adjacent macroblocks (above, above-right, above-left, left), the codec can gather a more comprehensive understanding of the motion dynamics within the region, leading to better prediction accuracy.

The Accused Products do not infringe the "skip coding mode" claims, because they do not consider the "characteristics of motion in image segments *surrounding* the macroblock in

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question" when deciding whether a zero (non-active) motion vector or a nonzero (active) motion vector is associated with each skip mode macroblock.

b) The Accused Products Encode Motion in the Opposite Order from What the Claims Require

The '808 patent's encoding claims 1 and 10[12] require performing a series of ordered steps to encode a video sequence. For example, claim 1 requires: (i) assigning a skip coding mode to a first segment, (ii) assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode of the first segment, (iii) and forming a prediction for the first segment based at least in part on the assigned zero motion vector or predicted non-zero motion vector for the skip coding mode. Therefore, the '808 patent's encoding claims require that a skip coding mode is assigned to a segment *first*, *before assigning* a zero or non-zero motion vector *for the skip coding mode*, followed by forming a prediction for the first segment *based on the zero or non-zero motion vector assigned in the previous step*. In contrast, the accused products generate predicted macroblocks (i.e., form a prediction for the first segment) first, then ultimately decide whether to encode a macroblock as SKIP type.

As Dr. Acton will explain, the sequence of steps in the Accused Products is completely different from the encoding claims. With respect to the Accused Products operating with Fire OS, to the extent any "skip coding mode" is considered "assigned" to a first segment in the Accused Products, such assignment occurs only *after* forming a prediction for the first segment and assigning either a zero or non-zero motion vector for the first segment. For example, Fire OS invokes functions [redacted] to determine if a macroblock type [redacted] should be set to BSKIP or PSKIP, but this occurs only after

[12] Dependent claims 21, 29, and 48 stem from these two independents, and are thus not infringed for the same reasons.

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[redacted]

forming a prediction invoked [redacted] within the function [redacted]. *See, e.g.*, RPX-0012, [redacted]. Therefore, the Accused Products operating with Fire OS do not infringe the "encoding" claims of the '808 patent.

Similarly, with respect to the accused products having [redacted]

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[redacted] For these reasons, the Accused Products operating with [redacted] do not infringe the "encoding" claims of the '808 patent.

Dr. Acton will also explain how Accused Products having [redacted] chips do not infringe the "encoding" claims of the '808 patent for the same reasons explained above. For example, with respect to [redacted]

The same non-infringement analysis applies [redacted]

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[redacted]

and [redacted]

[redacted] Dr. Acton will testify about all the specific source code corresponding to these processes (as identified in the appendices to his rebuttal report).

Dr. Acton will testify that all of Amazon's other chip vendors [redacted] and HP's chip vendors [redacted] have source code demonstrating that the accused products [redacted]

[13] As discussed above, Dr. Orchard only cites to decoding source code for [redacted] and does not provide any encoding source code analysis. Dr. Orchard also does not cite to any [redacted] source code.

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[redacted]

In contrast with Dr. Acton's thorough analysis, Dr. Orchard *entirely fails to opine* on how the products operate with respect to the claim's required order of steps, and *entirely fails to rebut* Dr. Acton's opinion regarding non-infringement of the accused products as explained above.

c) The Amazon Accused Products Do Not Use the Fire OS and [redacted] Decoder Codes that Nokia Analyzes

Nokia incorrectly alleges that certain Amazon Accused Products use Fire OS and [redacted] However, Nokia and its expert present no evidence that any application found on any of the Amazon Accused Products invoke the Fire OS or [redacted]. In fact, testimony from Ralf Karge confirms that the Amazon supplied applications on the Amazon Accused Products [redacted] when decoding H.264, and do not use the Fire OS and [redacted]. RX-1975C (Karge Dep. Tr.) at 61:19-62:14, 157:9-22.

Nokia cannot prove infringement, even of apparatus claims, on the basis of inaccessible or unused software on the accused devices. *INVT SPE LLC v. International Trade Commission*, 46 F.4th 1361, 1377 (Fed. Cir. 2022) (affirming determination of non-infringement despite finding that claims were drawn to capability, not performance of a specific function, because "what the device does (and how it does it) is highly relevant to understanding what the device is, in the computer/software context. Because we require claim limitations to have some teeth and meaning, proof of reasonable capability of performing claimed functions requires, at least as a general matter, proof that an accused product—when put into operation—in fact executes all of the claimed functions at least some of the time or at least once in the claim-required environment"). Nokia also cannot rely on post-sale modification of the devices by customers installing third-party software

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[redacted]

that enables otherwise unused codecs. In *Nazomi Communications, Inc. v. Nokia Corp.*, 739 F.3d 1339 (Fed. Cir. 2014), the accused hardware was present on the devices at issue, but it was not functional without JTEK software. The Federal Circuit rejected the assertion that these devices infringed because "[t]he purchase and installation of the JTEK software clearly constitutes a 'modification' of the accused products." *Id*., at 1345. This is not a case like *Suprema, Inc. v. U.S. International Trade Commission*, 796 F.3d 1338 (Fed. Cir. 2015), where the Federal Circuit upheld the Commission's determination that importer Suprema induced another party, Mentalix, to combine Suprema's scanner with specific software inside the United States, producing a combined system that infringed. Amazon does not modify the accused products after importation to cause them to access one of the software codecs, and Nokia has not identified any specific third-party software that would modify the Amazon products to cause them to use software codecs.

For example, each of the Amazon Accused Products that use versions of the Fire OS [redacted] used on that device. *See, e.g.*, [redacted]. [redacted]. Given that the hardware codecs are available, that they are widely understood to have advantages over software codecs, and that they are offered first on the list of available codecs, there would need to be a very unusual reason for an application supplied on the Amazon Accused Products to reject the hardware codec in favor of the software codec.

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[redacted]

Dr. Acton will testify that Dr. Orchard has not identified any application supplied on the Amazon Accused Products that uses the software codec rather than the hardware codec. Therefore, the Accused Products operating with Fire OS and [redacted] do not infringe the asserted claims of the '808 patent.

3. Respondents Do Not Indirectly Infringe the '808 Patent

Even if Nokia had shown that the Accused Products can be used in a directly infringing manner, which it has not, Nokia has failed to establish that Respondents have induced or contributed to any such direct infringement through its importation and sale of the Accused Products—i.e., the "articles" under 19 U.S.C. § 1337(a)(1)(B) that form the basis of this Investigation. There is no liability for indirect infringement for this reason alone.

Neither Nokia, nor its expert, have shown indirect infringement of the '808 patent. Similarly, in its previous infringement contentions, Nokia offered at most a boilerplate assertion of indirect infringement without any specific supporting facts.

a) Respondents Do Not Contribute to Any Alleged Infringement

To prove contributory infringement, Nokia must demonstrate that Respondents sold, or offered to sell, "a component of a patented machine, manufacture, combination, or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use." 35 U.S.C. § 271(c); *Fujitsu Ltd. v. LG Elecs., Inc.*, 620 F.3d 1321, 1326, 1330 (Fed. Cir. 2010). Noninfringing uses are substantial "when they are not unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental." *Vita-Mix Corp. v. Basic Holding, Inc.*, 581 F.3d 1317, 1327 (Fed. Cir. 2009).

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[redacted]

Here, the Accused Products may be used not only for playing and recording video but also for countless other functions as explained above. Indeed, as Dr. Acton will testify, the range of functions incorporated into the Accused Products allow them to be used in countless noninfringing ways to perform a vast number of tasks. Moreover, the allegedly claimed skip mode with motion is a minor feature in the H.264 standard, and is nothing more than a "bug-fix/clean-up" in the words of the JVT committee. RX-0511 (JVTC001d3).; *see also* Orchard Dep. Tr., 115:21-116:20 (calling the '808 patent's alleged solution an "enhancement"). In fact, Dr. Acton will explain that from the video files analyzed by Dr. Orchard, skip mode with motion was used only 1.59% of the time. As a result, the Accused Products are not especially made or adapted for an infringing use, and they have substantial noninfringing uses that are not "unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental." *Vita-Mix*, 581 F.3d at 1327. Therefore, Nokia will fail to show contributory infringement of the '808 patent.

Nokia will also fail to prove the knowledge and specific intent required for contributory infringement with respect to the '808 patent. While Respondents expect Nokia to rely on an alleged April 2015 notice to Amazon and April 2019 notice to HP to show knowledge, neither of those alleged notices provide a reasonable basis to assert that Respondents should have known that they were infringing the '808 patent. In particular, as Dr. Action will testify, there is no reason that anyone who was not intimately involved in the minutiae of the H.264 standard would have any reason to be aware of the skip coding mode allegedly claimed in the '808 patent. Moreover, neither Nokia, nor its expert, discuss, let alone show, that Respondents had sufficient knowledge of the third party chipsets that Nokia asserts practice the asserted claims, nor has Dr. Orchard shown that Respondents had knowledge of the source code cited in Nokia's contentions. For these reasons, Respondents had a reasonable belief that their products do not infringe.

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[redacted]

b) Respondents Do Not Induce Any Alleged Infringement

Nokia will be unable to meet its burden to show induced infringement. Neither Nokia nor its expert has ever identified a direct infringer alleged to have performed the claimed method in the United States at Respondents' inducement. Moreover, Nokia has failed to show knowledge and specific intent at least for the same reasons discussed above regarding contributory infringement. Further, under 35 U.S.C. § 271(b), "inducement requires [an] 'alleged infringer [to have] knowingly induced infringement and possessed specific intent to encourage another's infringement.'" *DSU Med. Corp. v. JMS Co.*, 471 F.3d 1293, 1306 (Fed. Cir. 2006) (citation omitted). It is well established, however, that "where a product has substantial noninfringing uses, intent to induce infringement cannot be inferred even when the [alleged inducer] has actual knowledge that some users of its product may be infringing the patent." *Vita-Mix*, 581 F.3d at 1329 (citation omitted).

Dr. Acton will testify that the Accused Products have countless noninfringing uses. Nokia has not offered even a scintilla of evidence to suggest that Respondents have imported even a single instrument with the intent to induce a customer to perform any limitation covered by the '808 patent. Therefore, Nokia has failed to show that Respondents possessed the requisite "specific intent" to induce infringement of the '808 patent.

4. The HP Redesign Products Do Not Infringe the '808 Patent

As set forth above (with respect to the '808 patent) and below (with respect to the '134 patent), Nokia and its experts' infringement arguments with respect to the HP Accused Products alleged infringement are based solely on the premise that the HP Accused Products encode and decode H.264-compliant video using hardware chipsets manufactured by [redacted]. *See e.g.,* Kia Opening Report at ¶ 171-175; Orchard Opening Report at ¶¶ 68-70. At no point does Nokia, Dr. Kia, or Dr. Orchard [redacted]

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[redacted]

The HP Redesign Products do not infringe because [redacted]

It is Nokia's burden to demonstrate infringement, even for the HP Redesign Products. *Human Milk*, 2020 WL 3073788 at *13-14. Generally, for certain patent claims, a device does not infringe unless it actually operates as claimed. *ParkerVision, Inc. v. Qualcomm Inc.*, 903 F.3d 1354, 1361 (Fed. Cir. 2018). However, for other claims, infringement can be found if a device is only capable of operating according to the relevant claim limitations *NVT SPE LLC v. ITC*, 46 F.4th 1361, 1371 (Fed. Cir. 2022) (citing *Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1204 (Fed. Cir. 2010)). "[T]he most straightforward example of this is the common distinction between method claims and apparatus claims" where "non-method claims describe capabilities without requiring that any software components be 'active' or 'enabled'" and method claims that "require[] actual performance of each claimed step." *Id.* (quoting and citing *Finjan*, 626 F.3d at 1204-05, 1206).

The Federal Circuit has found that a device infringes a capability claim when it has "the capability of performing the recited functions when in operation *without any modification or further programming*." *Id.* at 1374 (emphasis added). Accordingly, the Federal Circuit has established that for infringement of:

> a claim that recites capability and not actual operation, an accused device "need only be capable of operating" in the described mode. *Intel Corp. v.*

[14] [redacted]

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[redacted]

> *U.S. Int'l Trade Comm'n*, 946 F.2d 821, 832 (Fed. Cir. 1991). Thus, depending on the claims, "an accused device may be found to infringe if it is *reasonably capable* of satisfying the claim limitations, even though it may also be capable of noninfringing modes of operation." *Hilgraeve Corp. v. Symantec Corp.*, 265 F.3d 1336, 1343 (Fed. Cir. 2001).

Finjan, 626 F.3d at 1204 (emphasis added). Moreover, the Federal Circuit has held that an accused device is considered "reasonably capable" of satisfying the claim limitations when one can utilize the mode that would infringe "without significant alteration." *See INVT*, 46 F.4th at 1373-75 ("We held [in Silicon Graphics and Fantasy Sports] that the apparatus claim directed to a computer, claimed in functional terms, is nonetheless infringed so long as the product is designed in such a way as to enable a user of that [product] to utilize the function . . . *without having to modify [the product]*—i.e., capable of the functions.") (quoting *Silicon Graphics, Inc. v. ATI Techs., Inc.*, 607 F.3d 784, 795 (Fed. Cir. 2010) and *Fantasy Sports Props., Inc. v. Sportsline.com, Inc.*, 287 F.3d 1108, 1118 (Fed. Cir. 2002) (internal quotation marks omitted) (emphasis added*); see also Versata Software, Inc. v. SAP Am., Inc.*, 717 F.3d 1255, 1262 (Fed. Cir. 2013) ("[A] device does not infringe simply because it is possible to alter it in a way that would satisfy all the limitations of a patent claim[.]") (quoting *High Tech Med. Instrumentation v. New Image Indus., Inc.*, 49 F.3d 1551, 1555 (Fed. Cir. 1995).

> In sum, when the asserted claims recite capability, our case law supports finding infringement by a 'reasonably capable' accused device on a case-by-case basis particularly where . . . there is evidence that the accused device is actually used in an infringing manner and *can be so used without significant alterations*."

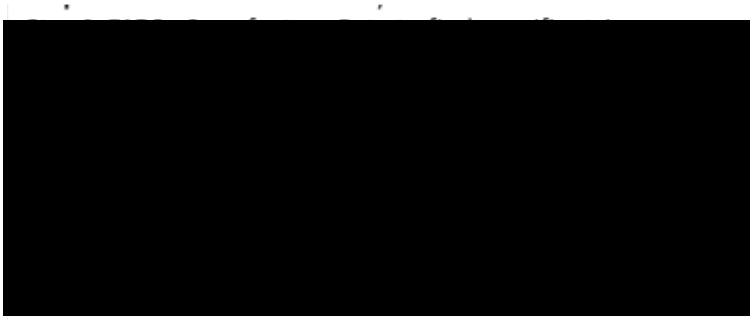
Ericsson, Inc. v. D-Link Sys., Inc., 773 F.3d 1201, 1217 (Fed. Cir. 2014) (emphasis added).

Here, the HP Redesign Products cannot infringe under either standard (either actual practice or capability) because the HP Redesign Products have had [redacted]

[redacted]

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[redacted]



[redacted]

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[redacted]

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[redacted]

Because the evidence demonstrates that the HP Redesign Products are not "reasonably capable" of practicing the Asserted Claims, they do not infringe.

C. Domestic Industry – "Technical Prong"

Nokia fails to demonstrate the Domestic Industry Products practice the asserted claims of the '808 patent, either literally or under the doctrine of equivalents.

1. Nokia Relies on the Same Technology for Both Infringement and Domestic Industry

Dr. Orchard identifies the Domestic Industry Products as Microsoft products with [redacted] processors and Samsung products with [redacted] processors. Orchard, App. 11; Orchard Rep., ¶1065. Even though it is not identified in the chart of Domestic Industry Products, Dr. Orchard also provides allegations directed to Android OS, which is developed by Google. Orchard Rep., ¶ 1074.

In his report, Dr. Orchard relies exclusively on the functionality in the hardware or software developed by the chip vendors and Google in support of his assertion that the Domestic Industry Products practice the asserted claims of the '808 patent. Dr. Orchard does not suggest or identify any evidence that the Domestic Industry Products decode and/or encode H.264 video using any hardware or software developed by Microsoft and Samsung themselves. As Dr. Acton will explain and will be apparent, including because Dr. Orchard relies on the same allegations for infringement and domestic industry, the chipsets are regularly used by many companies. Similarly, Android OS is a known open-source mobile operating system that is used by many companies for a variety of devices.

Dr. Orchard's theories regarding how the Domestic Industry satisfy the claim elements are the same as his theories on infringement of the Accused Products. Orchard Rep., ¶¶82-1064, 1065-1815. Each of the processors identified in the Domestic Industry Products (*i.e.*, [redacted]

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[redacted] processors) are also processors used in the [redacted] *Id.* Dr. Orchard also alleges practice of the '808 patent by the Samsung mobile phone devices on the basis that they incorporate some version of the Android OS. Orchard Rep., ¶ 1074. Dr. Orchard's allegations related to Android OS are the same he made as the basis for infringement by Fire OS. Orchard Rep., ¶¶82-1064, 1065-1815.

2. The Alleged Domestic Industry Products Do Not Meet the Limitations of the Asserted Claims

For the same reasons the Accused Products do not infringe, Dr. Orchard has not established the technical prong for domestic industry is met.

a) The Same Flawed Analysis Related to Infringement Applies to Domestic Industry

As addressed above in Section III.B.1, Nokia's analysis is flawed. The '808 patent is not essential to H.264 and Nokia cannot show the Domestic Industry Products practice the asserted claims of the '808 patent by pointing to the standard. *See* Section III.B.1.a). As with the Accused Products, Dr. Orchard only analyzed a single version of the source code from each chip vendor and made no effort to demonstrate that the reviewed code was representative. *See* Section III.B.1.b). Dr. Orchard's "analysis" is superficial and fails to demonstrate how any individual file or function would satisfy the limitations of the asserted claims. *See* Section III.B.1.c). Dr. Orchard does not identify any hardware components (*e.g.*, "coding controller," "motion estimation block," "multiplexer," "demultiplexer," "motion compensated prediction block," and "multimedia terminal") in the Domestic Industry Products. *See* Section III.B.1.d). Dr. Orchard further relies on a VQ Analyzer to demonstrate that the Domestic Industry Products practice many of the claim limitations, but Dr. Orchard confuses causation with correlation and is insufficient to show that the limitations are met by the Domestic Industry Products. *See* Section III.B.1.d).

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[redacted]

b) Nokia Has Not Shown the Domestic Industry Products Practice the Asserted Claims

Dr. Orchard alleges practice of the '808 patent by the Domestic Industry Products on each device's inclusion of support for the H.264 standard. This is insufficient to establish practice of the Domestic Industry Products because, as addressed in Section III.B.1.a), implementation of a compliant H.264 decoder does not require practice of the '808 patent claims.

Nokia's allegations are insufficient to show that the Domestic Industry Products satisfy the limitations of the asserted claims. As with the Accused Products, Dr. Orchard repeats the same paragraphs with source code cites for every limitation without any line citations and without explaining the relevance of the source code to that limitation. Dr. Orchard has failed to show that the Domestic Industry Products meet the ALJ's "skip coding mode" construction as it applies to the claim limitations of the asserted claims. *See* Section III.B.2.a). Additionally, Dr. Orchard has failed to show the Domestic Industry Products perform the encoding claims in the order required by the claims. *See* Section III.B.2.b). Thus, Nokia cannot show the Domestic Industry Products practice all elements of the asserted claims of the '808 patent, literally or under the doctrine of equivalents.

c) Nokia Cannot Show the Xbox Gaming Consoles Practice the Asserted Claims

Dr. Orchard's identification of Domestic Industry Products indicates the Xbox gaming consoles use custom built ASICs and firmware, but identifies [redacted] as representative source code. (Orchard Rep., App. 11) Dr. Orchard identifies no evidence connecting [redacted] used on Xbox devices. [redacted]. Nokia did not [redacted]

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[redacted]

[redacted] Nor does Dr. Orchard identify which [redacted] build he reviewed or is relying on in his opening report, so it is unclear if Dr. Orchard's opinion is based on [redacted] in the first place. Additionally, public documents produced by Microsoft indicate differences in the processors used in the Xbox X Series and Xbox S Series, including the speed of the cores, the number of TFLOPS (trillion floating point operations per second) and CUs (computing units), and the overall die size. RX-3290; RX-3291. Nokia cannot show that the Xbox Domestic Industry Products practice the asserted claims of the '808 patent because there is no evidence that the source code Dr. Orchard relies on is used on the Xbox Domestic Industry Products. *See, e.g.*, *INVT SPE LLC v. Int'l Trade Comm'n*, 46 F.4th 1361, 1371, 1380 (Fed. Cir. 2022) (finding no infringement where expert did not review source code loaded on device).

d) Nokia Cannot Show the Samsung Domestic Industry Products Practice the Asserted Claims Based on Android OS

Dr. Orchard alleges practice of the '808 patent by the Samsung mobile phone devices on the basis that they incorporate some version of the Android OS. (Orchard Rep., ¶ 1074). Samsung did not [redacted]. Dr. Orchard does not identify which version of Android OS he reviewed in support of his allegations that the [redacted] Dr. Orchard relies on the publicly available version of Android OS, [redacted] decoder that corresponds to the one that is publicly available from Google. Nokia cannot show that the Samsung Domestic Industry Products practice the asserted claims of the '808 patent based on Android OS because there is no evidence that the source code Dr. Orchard relies on is used on the

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[redacted]

Samsung Domestic Industry Products. *See, e.g.*, *INVT*, 46 F.4th at 1371, 1380 (finding no infringement where expert did not review source code loaded on device).

D. Invalidity

1. Level of Ordinary Skill in the Art

As Dr. Acton has opined, a person of ordinary skill in the relevant art, or POSITA, at the time of the '808 patent's effective filing date would have had (1) a Bachelor's degree in electrical engineering, computer engineering, computer science, or a comparable field of study, and (2) approximately two to three years of practical experience with video and/or image processing or coding. Additional experience can substitute for the level of education, and vice-versa.

2. Multiple References Anticipate and Render Obvious the '808 Patent

a) MPEG-1's Block-by-Block Skip Mode Anticipates the '808 Patent

MPEG-1 was published on August 1, 1993, so it is prior art to the '808 patent irrespective of the patent's priority date. RX-1488.

As discussed above, MPEG-1 disclosed "skipped macroblocks" for which no data are stored or coded. *Id.* at Sections 2.1.131, 2.4.4.4 ("For some macroblocks there are no coded data, that is neither motion vector information nor DCT information is available to the decoder. These macroblocks are called skipped macroblocks and are indicated when the macroblock_address_increment is greater than l."). Moreover, where a motion macroblock will be skipped, MPEG-1 assigns a motion vector to the skipped macroblock that is identical to the previous macroblock, i.e., the macroblock directly to the left. *Id*. at D.6.5.2 (assigning "the same motion vector … as the previous macroblock"). This design was implemented as a nod toward global motion, as MPEG-1 explained that "the motion vector of a macroblock tends to be well

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[redacted]

correlated with the vector of the previous macroblock…. [f]or example, in a pan [where] all vectors would be roughly the same." *Id*. at D.6.2.3.

MPEG-1's B-frame skip mode follows a similar process as the first preferred embodiment of the '808 patent. In the '808 patent, you start with the predictor, evaluate if the "motion vector components has an absolute value larger than a certain threshold value (for example half a pixel)," and then if it is above the threshold, assign the predictor. JX-0003 '808 at 19:28-51. Otherwise, a zero is assigned. *Id*. MPEG-1's skip mode also starts by looking at the "prediction vector," which for MPEG-1 is the previous macroblock. RX-1488.0092. Next, MPEG-1 inherently applies a threshold to the predictor because MPEG-1 motion vectors have a built-in half-pixel threshold due to their half-pixel accuracy. RX-1488.0004. In other words, in MPEG-1, if there is any motion, it must be above a half-pixel to appear in the motion vector. If the motion is below a half pixel, the motion vector component is zero. The '808's first embodiment follows the same process. Lastly, MPEG-1 associates the zero or non-zero motion vector of the predictor with the current macroblock. RX-1488.0037-38 and 108.

MPEG-1 also matches the embodiment Nokia is relying on for priority to the provisional. Nokia relies on two sentences in paragraph 24 of the provisional for priority – "Also, the coding modes of the already processed Macroblocks can be included. For example, if there is *one* or more stationary neighboring *Macroblocks*, 'Non-Active Motion' can be declared." RX-0010.0006 ('808 Provisional), ¶ 24 (emphasis added). While Respondents disagree that this meets the construed claims, as noted above, it indisputably discusses, "one… Macroblock" like MPEG-1. So if Nokia is correct that this disclosure meets the claim language, as construed, then MPEG-1 invalidates those claims.

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[redacted]

Dr. Orchard's only disputes with MPEG-1 rely on two made up claim constructions based on the "skip mode" claim construction. Orchard Dep. Tr. at 250:4-19 ("Q… the two I have are … how MPEG-1 generates the zero non-active motion vector, the other one is that it is not based on image segments surrounding the macroblock in question, right? A: yeah, I already – yes, I agree.") First, Dr. Orchard believes that the construction's language of associating a "a zero (non-active) motion vector," requires something from Figure 8 akin to a means-plus-function incorporation. Orchard Dep. Tr. at 244-246 ("Figure 8 shows that there is a decision to engage two different forms of ways of generating a motion vector: One that is able only to generate 0 motion vectors; the other one this is able to -- that predicts any motion vector"). No such thing is required by the claim or construction. Second, even though Dr. Orchard admits that MPEG-1's skip mode has motion vector components that meet the construction's "motion characteristics" (Orchard Dep. Tr. at 250:20-251:15.) and has multiple blocks that meet the construction's "image segments surrounding," (*Id*.), Dr. Orchard advocates to add to the construction that *each segment must have its own motion characteristics*. Orchard Dep. Tr. at 252 ("MPEG-1 does not assign motion vectors to blocks…"). As noted above, Dr. Orchard took the position that "surrounding" has no positional requirement. Orchard Dep. Tr., 135:16-137:1, 138:19-139:10. Dr. Orchard's attempt to provide constructions of the construction is not viable and shows MPEG-1 invalidates the claims.

(1) Claim elements 1[a] and 10[a]

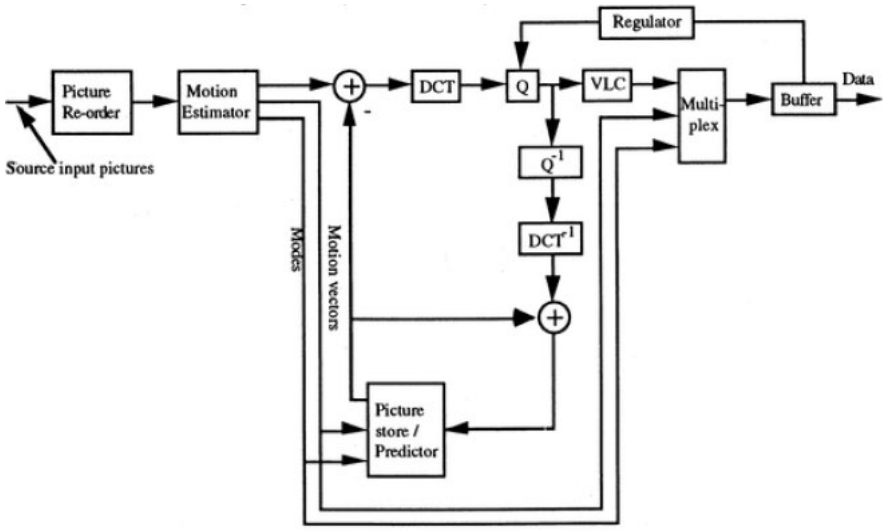
Claim Element 1[a][15]	Claim Element 10[a]
1[a]. A method of encoding a video sequence, the method comprising:	10[a]. A video encoder for encoding a video sequence, the encoder comprises:

[15] To avoid confusion, Respondents have adopted the numbering Nokia applied in its expert reports for this brief. This number does not correspond to the numbering used in Dr. Acton's Opening Expert Report on Invalidity as the report used a preamble indication where Nokia starts directly with element [a].

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[redacted]

MPEG-1 at Figure 2 details the various functions and blocks that constitute the video encoding process. "This clause is a brief description of the functions that need to be performed by an encoder." RX-1488, Section 0.3 Encoding; *see also id.*, Annex D.



MPEG-1 at Figure 2 — Simplified video encoder block diagram

MPEG-1 explicitly outlines the digitization of the input video signal, preprocessing, format conversion, motion vector estimation, picture reordering, and coding of macroblocks sequentially within a picture. *Id.* Specifically, MPEG-1 states that the "encoder must choose which picture type to use for each picture," and "[h]aving defined the picture types, the encoder estimates motion vectors for each 16 by 16 macroblock in the picture," which constitutes a video encoding method. *Id.* Additionally, MPEG-1 describes the steps of choosing a coding mode, motion compensated prediction, forming an error signal, DCT, quantization, and variable length coding, concluding with the regeneration of I-Pictures and P-Pictures for further encoding. *Id.* All these elements described are part of a video encoding method, hence satisfying claim elements 1[a] and 10[a].

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[redacted]

(2) Claim elements 1[b] and 10[b]

Claim Element 1[b]	Claim Element 10[b]
1[b]: assigning a skip coding mode to a first segment of a first frame of the sequence;	10[b]: a coding controller for assigning a skip coding mode to a first segment;

Under Nokia's apparent infringement theory, MPEG-1 renders obvious claim elements 1[b] and 10[b].

MPEG-1 defines "skipped macroblock" in section 2.1.131 as, a macroblock (first segment of the sequence) "for which no data are stored." RX-1488 (MPEG-1), Section 2.1.131. Dr. Acton will explain that a POSITA would have understood that there is a "skip coding mode" assigned to that macroblock where encoding is "skipped."

MPEG-1 further clarifies the nature of skipped macroblocks, stating that, "[f]or some macroblocks there are no coded data, that is neither motion vector information nor DCT information is available to the decoder. These macroblocks are called skipped macroblocks and are indicated when the macroblock-address-increment is greater than 1." *Id*. at Section 2.4.4.4. This indicates an assignment of a mode (the skipped mode) to certain macroblocks, particularly within P-pictures and B-pictures. For P-pictures, "the skipped macroblock is defined to be a macroblock with a reconstructed motion vector equal to zero and no DCT coefficients." *Id*. For B-pictures, the definition provided indicates a relative adjustment from a prior macroblock, with differential motion vectors set to zero, again consistent with the assignment of a skip coding mode. *Id*.

Further, according to Nokia's expert, Dr. Orchard, each macroblock has sub macroblocks which are "segments," and those segments are "surrounding" when "within one macroblock of the current macroblock in question" or "touching the macroblock in question." Orchard Dep. Tr. at 150:10-151:10, 139:1-10.

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[redacted]

Moreover, to the extent MPEG-1 does not to disclose a coding controller (as recited in claim element 10(b)), Dr. Acton will explain that a POSITA would have found it obvious to add AAPA's coding controller into MPEG-1's encoder. For example, Figure 1 of the '808 patent (below) shows a prior art video encoder 100 which includes a control manager 160. JX-0003 ('808 patent), FIG. 1, 3:44-4:12.

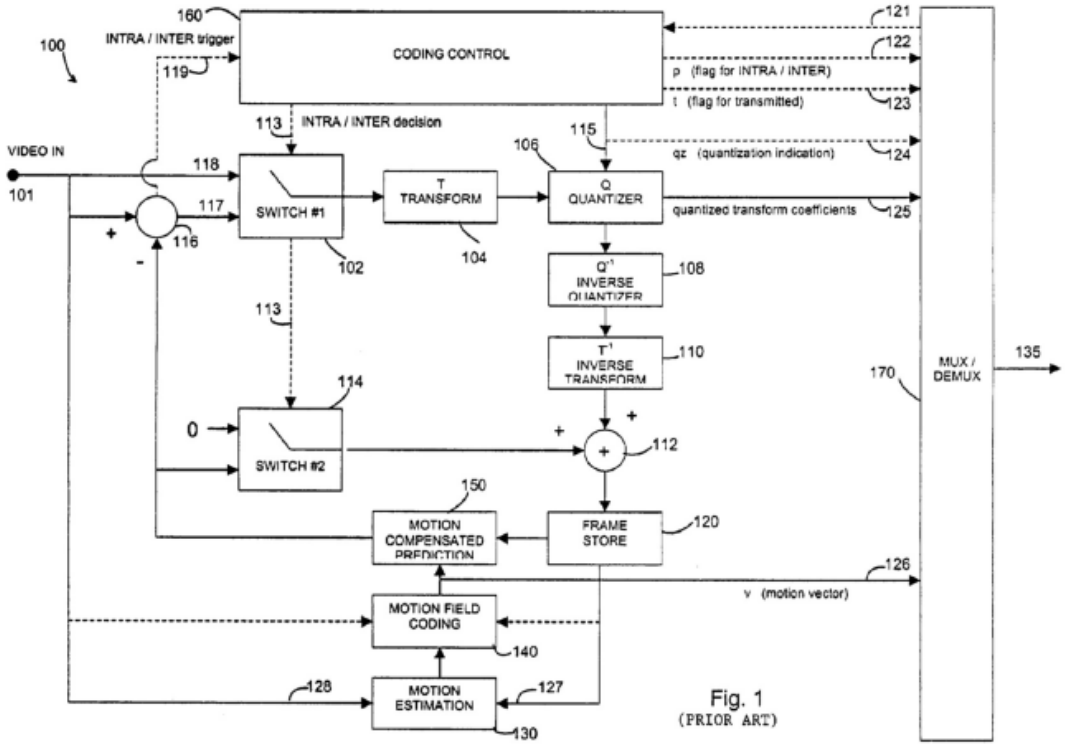


Fig. 1
(PRIOR ART)

This control manager 160 coordinates the operation of switches 102 and 114 to select between different coding modes. '808 patent, FIG. 1, 3:44-4:12. Dr. Acton will explain that a POSITA would have understood that in the context of video encoding, assigning a coding mode is a task of a coding controller, which is responsible for controlling the encoding process, including determining how each segment of the video sequence should be encoded based on various parameters such as motion, complexity, and bit rate constraints. Indeed, the explicit label "CODING CONTROL" in the corresponding box in Figure 1 indicates its primary function within

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the encoder, which is to exercise control over the coding process, deciding on how each segment is to be encoded.

Based on these disclosures, Dr. Acton will explain that a POSITA would have understood or found it obvious that MPEG-1's method assigns a skip coding mode to a segment (macroblock) of a frame (P-pictures or B-pictures) within the video sequence, and to add AAPA's coding controller into MPEG-1's encoder.

(3) Claim elements 1[c] and 10[c]

Claim Element 1[c]	Claim Element 10[c]
1c]: assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment; and	10[c]: a motion estimation block for assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment; and

Under Nokia's apparent infringement theory, MPEG-1 renders obvious claim elements 1[c] and 10[c].

Figure 2 of MPEG-1 in Section 0.3 outlines the main functional blocks of a simplified video encoder (shown above). The figure illustrates that the encoder includes a "Motion Estimator" block which takes input from a "Picture Re-order" block and provides motion vectors. RX-1488 (MPEG-1), Section 0.3. Dr. Acton will explain that a POSITA would have understood that the Motion Estimator would assign motion vectors to segments of a frame, which could be either a zero motion vector (when no motion is estimated or for skipped segments) or a non-zero motion vector (when motion is predicted). Indeed, MPEG-1 describes that "in P-pictures one vector is needed for each non-intra macroblock and in B-Pictures one or two vectors are needed," which indicates that the encoder assigns motion vectors to these macroblocks. Moreover, for P-pictures, "the skipped macroblock is defined to be a macroblock with a reconstructed motion vector equal

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[redacted]

to zero and no DCT coefficients." *Id*. at Section 2.4.4.4. This indicates that, for P-pictures, a zero motion vector is assigned to skipped macroblocks. This satisfies one aspect of the limitation—assigning a zero motion vector for the skip coding mode. Furthermore, for B-pictures, MPEG-1 describes skipped macroblocks as having "the same macroblock-type as the prior macroblock, differential motion vectors equal to zero, and no DCT coefficients." Thus, MPEG-1 discloses or renders obvious assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment.

MPEG-1 also articulates that predictive coding is used "in the encoding of motion vectors," which indicates that MPEG-1 contemplates that motion vectors can be estimated based on previously decoded values—essentially, the motion information of previous pels and, by extension, previous segments (or macroblocks) of the video. Specifically, as explained in MPEG-1, predictive coding leverages the fact that changes in pels—and by analogous reasoning, changes in motion vectors—are typically "small and cluster around the value 0 since pel values typically do not have large changes within a small spatial neighbourhood." RX-1488 (MPEG-1), Section D.2.2.3. Based on these disclosures, Dr. Acton will explain that a POSITA would have understood, or found it obvious, that the motion vector for a given segment (macroblock) could be predicted based on the motion vectors of neighboring segments, as the motion is often correlated across adjacent areas in a video sequence, and when a "skip coding mode" is applied to a segment, the motion vector for this segment could be assigned based on the predictive information gleaned from the neighboring segment's motion vectors.

Moreover, to the extent MPEG-1 does not to disclose a motion estimation block (as recited in claim element 10(c)), Dr. Acton will explain that a POSITA would have found it obvious to add AAPA's motion estimation block into MPEG-1's encoder. For example, Figure 1 of the AAPA

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explicitly labels a component as "motion estimation" (130), demonstrating the encoder includes a motion estimator. JX-0003 ('808 patent), FIG. 1, 3:44-4:12.

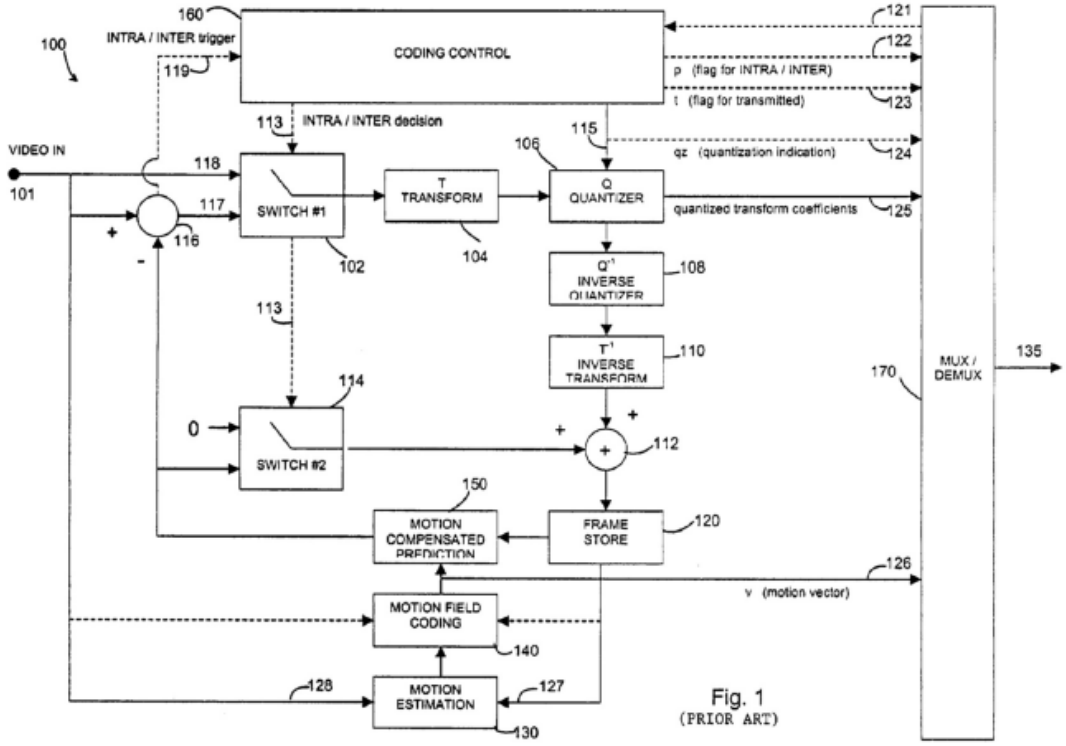


Fig. 1
(PRIOR ART)

This motion estimator 130 is a part of the encoding process for determining motion vectors used in motion-compensated prediction. *Id.*, 3:11-25. Additionally, the AAPA outlines the components of the encoder 100, including a motion estimator 130 alongside a motion field coder 140 and a motion-compensated predictor 150. *Id.*, 3:44–4:12. The motion estimator 130's role in the encoder is to analyze the video input and calculate motion vectors that describe the movement of objects or image regions from one frame to another. *Id*.

Based on these disclosures, Dr. Acton will explain that a POSITA, knowing that predictive coding is used for motion vectors and that motion information is statistically likely to be similar across adjacent macroblocks (as taught by MPEG-1), would have found it obvious that when

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assigning a motion vector to a segment in a skip coding mode, the prediction would, at least in part, be based on the motion information of a neighboring segment.

(4) Claim elements 1[d] and 10[d]

Claim Element 1[d]	Claim Element 10[d]
1[d]: forming a prediction for the first segment with respect to a reference frame based at least in part on the assigned motion vector for the skip coding mode, wherein the assigned motion vector is one of the zero motion vector and the predicted non-zero motion vector; and	10[d]: forming a prediction for the first segment with respect to a reference frame based at least in part on the assigned motion vector for the skip coding mode, wherein the assigned motion vector is one of the zero motion vector and the predicted non-zero motion vector; and

Under Nokia's apparent infringement theory, MPEG-1 renders obvious claim elements 1[d] and 10[d].

As explained above (limitation 1[c]), MPEG-1 discloses or renders obvious assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment. Specifically, Figure 2 of MPEG-1 in Section 0.3 outlines the main functional blocks of a simplified video encoder (shown above). The figure illustrates that the encoder includes a "Motion Estimator" block which takes input from a "Picture Re-order" block and provides motion vectors, which could be a zero motion vector or a non-zero motion vector. RX-1488 (MPEG-1), Section 0.3; *see also supra* Section for MPEG-1, Limitation 1[b]. The "Picture store/Predictor" block then uses the (assigned) motion vector, which can be a zero motion vector or a non-zero motion vector, to form a prediction for the current frame segment. RX-1488 (MPEG-1), Section 0.3. Specifically, the Picture store/Predictor uses the motion vector information to predict the content of the current frame segment by referencing the corresponding area in a previous (or future) frame. *Id.* This predictive model is the result of subtracting the predicted content (determined by the motion vector and the reference frame) from the actual macroblock content of

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[redacted]

the current frame, generating an error signal. The error signal indicates the difference between the expected content (based on the prediction) and the actual content of the macroblock. *Id.*; *see also* MPEG-1, Section D.2.2.3 (describing that its predictive coding that is based on the prediction error between the actual pel (picture element) values and those predicted from previously decoded pels).

Dr. Acton will testify that based on these disclosures, a POSITA would have understood that MPEG-1 discloses or renders obvious claim elements 1[d] and 10[d].

(5) Claim elements 1[e] and 10[e]

Claim Element 1[e]	Claim Element 10[e]
1[e]: providing in an encoded bitstream an indication of the skip coding mode, wherein no further motion vector information for the first segment is coded in the encoded bitstream.	10[e]: a multiplexer for providing in an encoded bitstream an indication of the skip coding mode, wherein no further motion vector information for the first segment is coded in the encoded bitstream.

Dr. Acton will testify that under Nokia's apparent infringement theory, MPEG-1 renders obvious claim elements 1[e] and 10[e].

Figure 2 of MPEG-1 in Section 0.3 (shown above) illustrates the video encoding process and includes a Multiplex for combining various streams of data, including mode information, into an encoded bitstream. The multiplexer incorporates the indication of skip coding mode into the bitstream. Dr. Acton will explain that a POSITA would have understood that when a macroblock is indicated with the skip coding mode, the encoder does not store or transmit motion vectors for that macroblock. RX-1488 (MPEG-1), Section 0.3, Section 2.1.131 ("2.1.131 skipped macroblock [video]: A macroblock for which no data are stored."). Section 2.4.4.4 details the encoding/decoding process for skipped macroblocks, "there are no coded data, that is neither motion vector information nor DCT information is available to the decoder." RX-1488 (MPEG-1), Section 2.4.4.4. As Dr. Acton will explain, this indicates that the encoding process for skipped

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macroblocks does not involve the generation or encoding of new motion vectors or any residual data, aligning with the claim limitation that no further motion vector information is coded in the bitstream for these macroblocks. For example, in P-pictures, a skipped macroblock is specifically defined as one with "a reconstructed motion vector equal to zero and no DCT coefficients." RX-1488 (MPEG-1), Section 2.4.4.4. This is an explicit acknowledgment that the encoding process involves indicating a skip coding mode (a macroblock with a zero motion vector) without the need to encode additional motion vector information. Thus, in the case of skipped macroblocks, the mode information indicating a skip would be part of what is encoded into the bitstream, without accompanying motion vector data, since the motion vector for skipped macroblocks is zero or not changed from a prior macroblock. RX-1488 (MPEG-1), Section 2.4.4.4; *see also id.*, Section 0.3, Figure 2.

Moreover, to the extent MPEG-1 does not to disclose a multiplexer (as recited in claim element 10(e)), Dr. Acton will explain that a POSITA would have found it obvious to add AAPA's multiplexer into MPEG-1's encoder. For example, Figure 1 of the AAPA explicitly labels a component as "multiplex coder" (170), demonstrating the encoder includes a multiplexer. JX-0003 ('808 patent), FIG. 1, 3:44-4:12.

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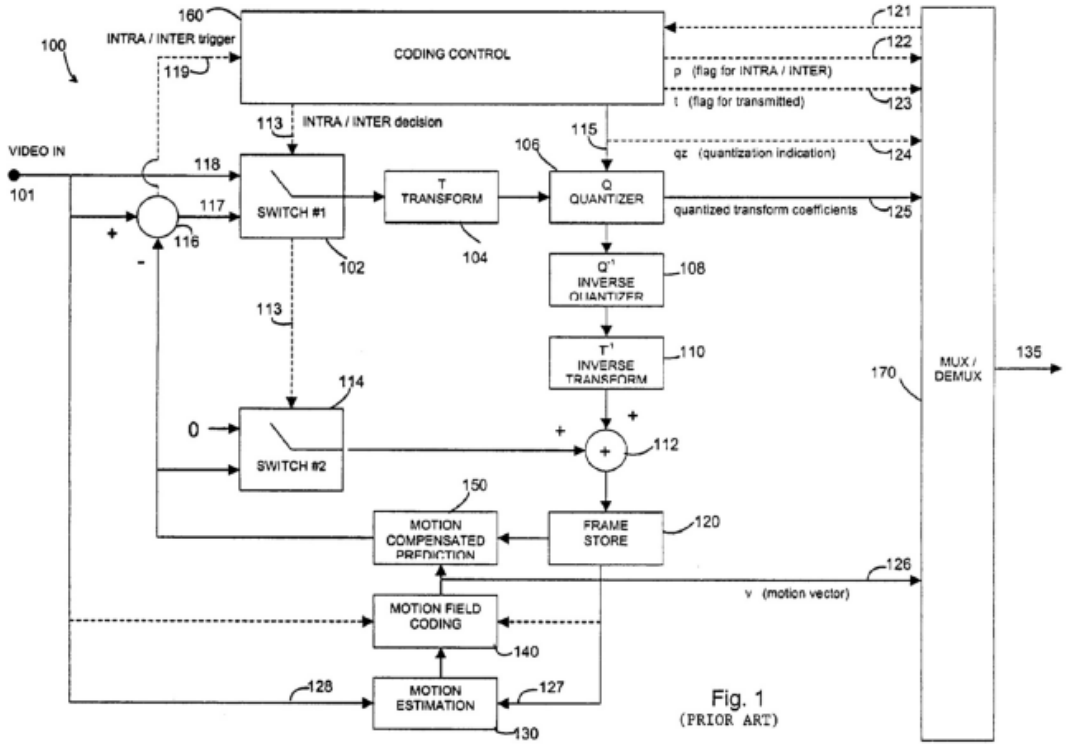


Fig. 1
(PRIOR ART)

The AAPA describes the video multiplex coder 170 as part of the system that forms a bitstream from the various types of information produced by the encoder for transmission or storage. Dr. Acton will explain that a POSITA would have understood that in the context of encoding a video sequence, AAPA's multiplexer is for consolidating different streams of data into one bitstream. This would include the indication of coding modes for various segments. When the encoder assigns a skip coding mode to a segment, it is the multiplexer's role to integrate this information into the bitstream, ensuring that the decoder can correctly interpret the skip coding mode during the decoding process.

Based on these disclosures, MPEG-1 discloses or renders obvious claim elements 1[e] and 10[e].

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[redacted]

(6) Claim element 21

Claim Element 21
21: A multimedia terminal, comprising an encoder according to claim 10.

Dr. Acton will testify that Under Nokia's apparent infringement theory, MPEG-1 renders obvious claim element 21.

MPEG-1 details an encoder employing motion compensation techniques as part of a video compression methodology and provides the technological foundation for a multimedia terminal's video processing capabilities. *See, e.g.*, RX-1488 (MPEG-1), Sections 0.3. Given that MPEG-1's encoder is described as capable of efficiently handling the encoding process, Dr. Acton will explain that a POSITA would have found it obvious to integrate this type of encoder into the design of a multimedia terminal.

The AAPA further discloses or renders obvious the additional limitations of claim 21. For example, the '808 patent discloses, in the background, the use of video compression techniques when the available bandwidth is low, such as in videotelephony systems. JX-0003 ('808 patent), 2:25-34. The '808 patent background further explains that these video compression techniques include reducing temporal redundancy, such as through motion-compensated prediction. '808 patent, 2:35-46, 3:11-35. Further, the exemplary video encoder described in the '808 patent background performs motion-compensated prediction. '808 patent, 7:3-4. The exemplary video encoder of the '808 patent background "receiv[es] a digital video signal from a camera or other video source," and "employs a combination of INTRA- and INTER-coding to produce a compressed (encoded) video bit-stream." '808 patent, 3:47-50, 3:61-63.

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(7) Claim elements 29 and 48

Claim Element 29	Claim Element 48
29: A method according to claim 1, further comprising: deriving the predicted non-zero motion vector based at least in part on the motion vector of the second segment and motion vector of a third segment neighboring the first segment.	48. An encoder according to claim 10, wherein the motion estimation block further arranged to derive the predicted non-zero motion vector based at least in part on the motion vector of the second segment and motion vector of a third segment neighboring the first segment.

Dr. Acton will testify that, for the reasons discussed above, for limitations 1[c] and 10[c], under Nokia's apparent infringement theory, MPEG-1 renders obvious claim elements 29 and 48.

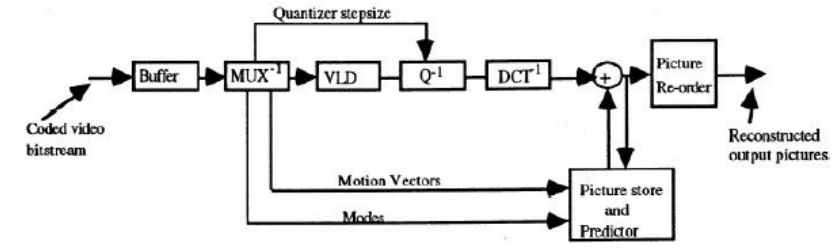
(8) Claim elements 7[a] and 16[a]

Claim Element 7[a]	Claim Element 16[a]
7[pre]: A method of decoding an encoded video sequence, the method comprising:	16[pre]: A video decoder for decoding an encoded video sequence, the decoder comprising:

Dr. Acton will testify that MPEG-1 at Section 0.4 describes the decoding process as "the inverse of the encoding operation." RX-1488 (MPEG-1), Section 0.4. It explains that "[t]he decoder reads the bitstream, identifies the start of a coded picture and then the type of the picture . . . [and] decodes each macroblock in the picture in turn." *Id.* This process of reading the bitstream and identifying picture starts and types includes the decoding of an encoded video sequence. Moreover, Figure 4 and the relevant disclosures in MPEG-1 outline a decoder and decoding process—the bitstream is read, de-multiplexed, and the necessary information is extracted and processed to reconstruct the picture. *Id.*

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[redacted]



Where

DCT-1 is inverse discrete cosine transform
Q-1 is dequantization
MUX-1 is demultiplexing
VLD is variable length decoding

Figure 4 -- Basic video decoder block diagram

Similarly, Dr. Acton will testify that Figure D.7 demonstrates the different components a decoder might use to process inter-coded frames (P- or B-pictures), showing how motion compensation (MC) is applied to the reference frames stored in the decoder to aid in the reconstruction of the current frame. RX-1488 (MPEG-1), D.2.7. Together, Figures 4 and D.7 illustrate the blocks of a basic video decoder, showing the decoder's architecture including the "Buffer," "VLD" (Variable Length Decoder), "Inverse Quantizer," and "Inverse DCT," among others.

A simplified block diagram of a possible decoder implementation is shown below:

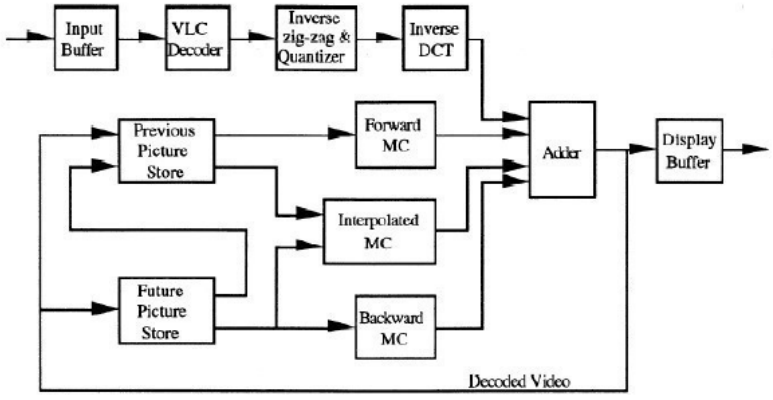


Figure D.7 -- Simplified decoder block diagram

Thus, MPEG-1 discloses the claim elements 7[a] and 16[a].

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[redacted]

(9) Claim elements 7[b] and 16[b]

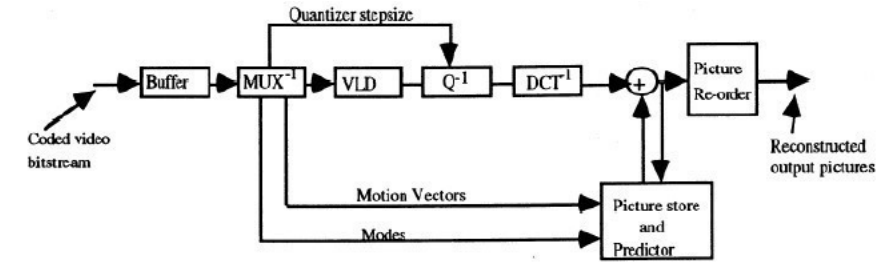
Claim Element 7[b]	Claim Element 16[b]
7[b]: receiving an indication of a skip coding mode for a first segment;	16[b]: a demultiplexer for receiving an indication of a skip coding mode assigned to a first segment;

Dr. Acton will testify that, for the reasons discussed above for limitations 1[b] and 1[b], under Nokia's apparent infringement theory, MPEG-1 renders obvious claim elements 7[b] and 16[b] because MPEG-1's decoding method performs the same steps as the encoding method for receiving an indication of a skip coding mode for a first segment. *See, e.g.*, RX-1488 (MPEG-1), Section 0.4 (explaining its decoding process as "the inverse of the encoding operation").

Moreover, MPEG-1 discloses a demultiplexer for performing the claimed functions. Specifically, MPEG-1 explains that "[t]he decoder reads the bitstream, identifies the start of a coded picture and then the type of the picture . . . [and] decodes each macroblock in the picture in turn." *Id.* Figure 4 of MPEG-1 in Section 0.4 (below) illustrates the main functional blocks of a basic video decoder, which includes a component labeled "MUX-1" (demultiplexer), and explains this component is "demultiplexing." *Id.*, Figure 4. Given the position of this MUX-1 component in the decoder and decoding process described in Figure 4, Dr. Acton will explain that a POSITA would have understood that its function is to take the combined encoded bitstream and separate it back into its individual data streams, such as motion vectors, modes, and other relevant information for each segment.

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[redacted]



Where

DCT^{-1}	is inverse discrete cosine transform
Q^{-1}	is dequantization
MUX^{-1}	is demultiplexing
VLD	is variable length decoding

Figure 4 -- Basic video decoder block diagram

Figure 4 also shows the MUX-1 component with multiple outputs, where one output is specifically labeled "Modes." *Id.* This indicates that the MUX-1 component is responsible for demultiplexing various types of data from the encoded bitstream, including the "Modes" data. The label directly associated with the "Modes" output from the MUX-1 component illustrates that this component handles the mode information pertinent to macroblocks within the video sequence. *Id.* In other words, this mode information includes indications of skip coding modes for macroblocks, which the MUX-1 component receives and separates from the combined bitstream. Once this mode data is isolated, it informs the decoder about the treatment of each macroblock. If a macroblock is marked with a skip coding mode, it means no additional processing for motion vectors or DCT coefficients is required for that macroblock, since it has been encoded with the intention to be skipped during playback or further processing. *See also id.*, Section 0.4 (explaining the decoding process including reading the bitstream and identifying the type of each macroblock and decode it accordingly), Section D.2.4.

Based on these disclosures, MPEG-1 discloses or renders obvious claim elements 7[b] and 16[b].

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(10) Claim elements 7[c] and 16[c]

Claim Element 7[c]	Claim Element 16[c]
7[c]: assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment; and	16[c]: a motion compensated prediction block for assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment; and

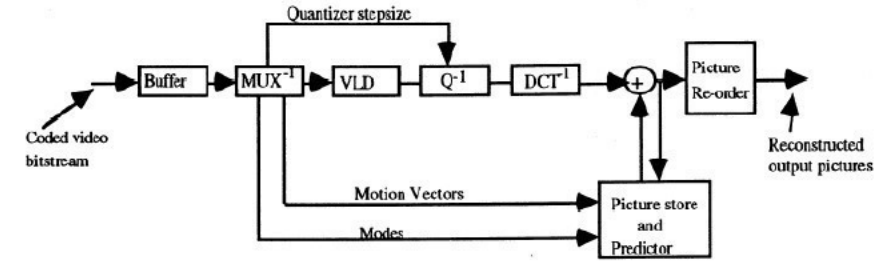
Dr. Acton will testify that, for the reasons discussed above for limitations 1[c], under Nokia's apparent infringement theory, MPEG-1 renders obvious claim elements 7[c] and 16[c] because MPEG-1's decoding method performs the same steps as the encoding method for assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment. *See, e.g.*, MPEG-1, Section 0.4 (explaining its decoding process as "the inverse of the encoding operation").

Moreover, MPEG-1 discloses or renders obvious a motion compensated prediction block for performing the claimed functions. Specifically, MPEG-1 provides an overview of the decoding process, stating that the macroblock type and motion vectors, if present, are used to construct a prediction of the current macroblock based on past and future reference pictures stored in the decoder. *Id.* This indicates the function of a motion compensated prediction block, which would use the decoded motion vectors to facilitate this prediction. In particular, Figure 4 (below) shows a "Picture store / Predictor" block, which would be responsible for utilizing the motion vectors from the "Motion Vectors" output of the MUX-1 component. *Id.*, Figure 4. Dr. Acton will explain that a POSITA would have understood that this "Picture store / Predictor" block constitutes a motion compensated prediction block because its function aligns with the function of a motion

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[redacted]

compensated prediction block in the decoder, where it assigns the received motion vectors to the corresponding macroblocks for accurate frame reconstruction.



Where

DCT^{-1}	is inverse discrete cosine transform
Q^{-1}	is dequantization
MUX^{-1}	is demultiplexing
VLD	is variable length decoding

Figure 4 -- Basic video decoder block diagram

In addition, Figure D.7 (below), titled "Simplified decoder block diagram," shows several blocks including "Forward MC," "Backward MC," and "Interpolated MC," which a POSITA would have recognized as motion compensation in different predictive modes. Dr. Acton will explain that a POSITA would also have understood that these blocks correspond to the motion compensated prediction block as they perform the operation of reconstructing the current frame using motion vectors and the stored reference pictures.

A simplified block diagram of a possible decoder implementation is shown below:

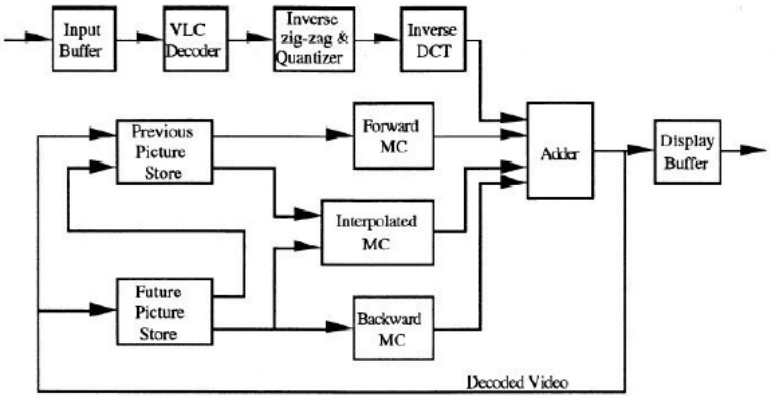


Figure D.7 -- Simplified decoder block diagram

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[redacted]

To the extent MPEG-1 does not disclose a motion compensated prediction block, Dr. Acton will explain that a POSITA would have found it obvious to add AAPA's motion compensated prediction block into MPEG-1's decoder. For example, Figure 2 of the AAPA includes a "motion compensated prediction block 240," which is explicitly tasked with utilizing motion vectors 225, input into motion compensated prediction block 240, to predict the content of frames.'808 patent, FIG. 2, 8:19-26, 3:11-25. The AAPA explains that motion compensated prediction of a video frame is typically performed macroblock-by-macroblock, using motion vectors to track the movement of image regions. *Id.*, 3:44-4:12.

Based on these disclosures, MPEG-1 discloses or renders obvious claim elements 7[c] and 16[c].

(11) Claim elements 7[d] and 16[d]

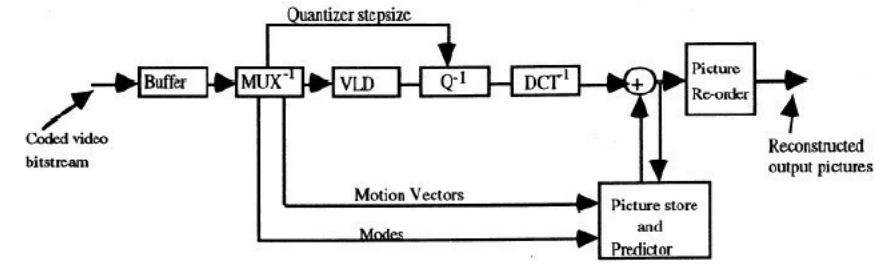
Claim Element 7[d]	Claim Element 16[d]
7[d]: forming a prediction for the first segment with respect to a reference frame based at least in part on the assigned motion vector for the skip coding mode, wherein the assigned motion vector is one of the zero motion vector and the predicted non-zero motion vector.	16[d]: forming a prediction for the first segment with respect to a reference frame based at least in part on the assigned motion vector for the skip coding mode, wherein the assigned motion vector is one of the zero motion vector and the predicted non-zero motion vector.

Dr. Acton will testify that, for the reasons discussed above for limitations 1[d], under Nokia's apparent infringement theory, MPEG-1 renders obvious claim elements 7[d] and 16[d] because MPEG-1's decoding method performs the same steps as the encoding method for assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment. *See, e.g.*, MPEG-1, Section 0.4 (explaining its decoding process as "the inverse of the encoding operation").

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[redacted]

Moreover, MPEG-1 states that "the macroblock type and the motion vectors, if present, are used to construct a prediction of the current macroblock based on past and future reference pictures that have been stored in the decoder." In other words, in MPEG-1, during decoding, when a skip coding mode is identified, the decoder utilizes the motion vector information—which may be zero for skipped macroblocks—to predict the current macroblock from stored reference pictures. Figure 4 of MPEG-1 illustrate the functional blocks of a basic video decoder. MPEG-1, Section 0.4, Figure 4 (below). MPEG-1's decoder includes a "Picture Store and Predictor" block that receives "Modes," which indicates that the decoder is designed to handle the reconstruction of a macroblock using prediction based on motion vectors. Specifically, the "Picture Store and Predictor" block would use the motion vector assigned to the macroblock in skip coding mode—whether zero or non-zero—to form a prediction by referencing the appropriate picture stored in the "Previous Picture Store" or "Future Picture Store," corresponding to the reference frame associated with that motion vector. *Id.*, Section 0.4.



Where

DCT^{-1}	is inverse discrete cosine transform
Q^{-1}	is dequantization
MUX^{-1}	is demultiplexing
VLD	is variable length decoding

Figure 4 -- Basic video decoder block diagram

To the extent that this limitation requires the motion compensated prediction block for performing the claimed function, MPEG-1 discloses or renders obvious the claimed motion compensated prediction block as explained in claim element 16[c].

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[redacted]

Moreover, to the extent that MPEG-1 does not disclose a motion compensated prediction block, Dr. Acton will explain that a POSITA would have found it obvious to add AAPA's motion compensated prediction block into MPEG-1's decoder to perform the claimed functions as discussed above for imitation 16[c].

Based on these disclosures, MPEG-1 discloses or renders obvious claim elements 7[d] and 16[d].

(12) Claim element 22

Claim Element 22
22: A multimedia terminal, comprising a decoder according to claim 16.

Dr. Acton will testify that, under Nokia's apparent infringement theory, MPEG-1 in view of AAPA renders obvious claim element 22.

AAPA further describes a multimedia terminal as specified in this claim. As described above for claim 21, the background of the '808 patent describes the application of video compression (like motion-compensated prediction) in videotelephony systems, which along with MPEG-1, discloses or renders obvious a videotelephony system incorporating the encoder of this combination. Moreover, the '808 patent background notes that its exemplary video decoder "is configured to receive and decode the video bit-stream generated by encoder 100, resulting in a reconstructed video sequence." '808 patent, 3:47-52. This exemplary video decoder is equipped with a motion compensated prediction block, which "employs the same motion model as that used in encoding the INTER-coded macroblock in encoder 100." *Id.*, 8:20-26, 9:56-60.

Similarly to how a POSITA would have found it obvious to incorporate a video encoder from the MPEG-1-AAPA combination into a videotelephony system (for instance, to enable video compression including motion-compensated prediction, due to bandwidth constraints) (as

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[redacted]

mentioned above for claim 21), Dr. Acton will explain that a POSITA would have found it obvious to include the combination's video decoder in the videotelephony system. Including a video decoder of the MPEG-1-AAPA combination in a videotelephony system would have been obvious to a POSITA to, for example, decode encoded video received from a videotelephony system with the combination's encoder (for example, between receiving and transmitting telephony systems).

Dr. Acton will explain that a POSITA would further have understood that a videotelephony system is a "multimedia terminal," as recited by the claim, due to its capability to handle two-way audio and video signal exchange. *Id*. Thus, the MPEG-1-AAPA combination renders obvious a videotelephony system ("multimedia terminal") featuring the decoder prescribed by the combination.

(13) Claim element 40

Claim Element 40
40: A method according to claim 7, further comprising: deriving the predicted non-zero motion vector based at least in part on the motion vector of the second segment and motion vector of a third segment neighboring the first segment.

Dr. Acton will testify that, for the reasons discussed above for limitations 29 and 48, under Nokia's apparent infringement theory, MPEG-1 renders obvious claim element 40 because MPEG-1's decoding method perform the same steps as the encoding method for the limitations recited in claim 40.

(14) Motivation to Combine Applicant Admitted Prior Art (AAPA) Disclosure of Hardware Components with MPEG-1

Dr. Acton described that POSITA would have been motivated to integrate AAPA's coding controller, motion estimation block, multiplexer, and motion compensated prediction block (recited in claim elements 10[b], 10[c], 10[e], 16[c]) with MPEG-1's encoder based on their mutual goal of enhancing video data encoding and decoding efficiency.

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[redacted]

Both the AAPA and MPEG-1 operate within the same field of endeavor—the encoding and decoding of video data employing motion compensation techniques. MPEG-1 discusses an encoder and decoder framework that utilizes motion compensation as a critical part of its compression method. MPEG-1, Sections 0.3, 0.4, Annex D. Similarly, the AAPA describes an encoder and decoder with capabilities in motion compensation, including detailed implementations of a coding controller, a motion estimation block, and a multiplexer. '808 patent, Abstract, 1:9-11, 3:11-21, FIG. 1. Dr. Acton explains that recognizing the objectives outlined in MPEG-1, a POSITA, would see AAPA's descriptions of the coding controller, motion estimation block, and multiplexer as valuable for filling in the gaps (if such gaps existed in MPEG-1) and enhancing the encoding process described therein. '808 patent, 3:11-21. Given the compatibility of their respective goals and methods, Dr. Acton will explain that a POSITA would have been motivated to incorporate the structural details and functionalities of AAPA's coding controller, motion estimation block, and multiplexer into the framework of MPEG-1 to achieve an improved encoding process. This combination would use the AAPA's detailed component design to implement MPEG-1's encoding strategy (if such gaps existed in MPEG-1). Such an integration would be advantageous in efficiently executing the assignment of a skip coding mode, which would have allowed the reduction of bit rates in encoded video streams.

Dr. Acton will explain that a POSITA would have had a reasonable expectation of success in combining AAPA's coding controller, motion estimation block, and multiplexer with MPEG-1's encoder at least because of the similarities in purpose and function of the systems described in both references and the established practice of applying known techniques to refine similar systems. *Id*. Integrating these components into MPEG-1's encoder would align with the conventional understanding of efficient video encoding systems.

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[redacted]

Finally, Dr. Acton will explain that the combination of AAPA's coding controller, motion estimation block, and multiplexer with MPEG-1's method constitutes an application of known methods to a system with a shared objective—efficient motion compensation in video encoding. This combination does not hinge on the development of novel technologies or untested theories but on the pragmatic application of well-established video encoding principles. As evidenced by the prior art, a POSITA would have had a reasonable expectation that such a combination would function effectively and reliably, consistent with the teachings of AAPA and MPEG-1.

b) H.263

Dr. Acton will testify that, like MPEG-1, H.263 assigned predicted motion vectors based on the motion vectors of neighboring segments. RX-0616 (H.263), § 6.1.1. Instead of just looking to the single, previous macroblock, however, in H.263 the candidate predictors for the differential coding are taken from "three surrounding macroblocks," namely the immediately preceding macroblock, the macroblock directly above, and the macroblock above and to the right. *Id.* ("In case of one vector per macroblock, the candidate predictors for the differential coding are taken from three surrounding macroblocks as indicated in Figure 12. The predictors are calculated separately for the horizontal and vertical components."). Figure 12 of the standard illustrates this arrangement:

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[redacted]

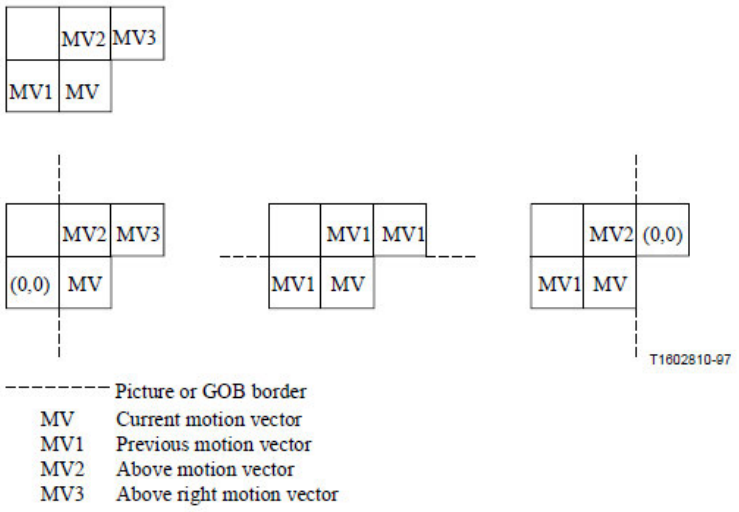


Figure 12/H.263 – Motion vector prediction

(1) Claim elements 1[a] and 10[a]

Claim Element 1[a]	Claim Element 10[a]
1[a]. A method of encoding a video sequence, the method comprising:	10[a]. A video encoder for encoding a video sequence, the encoder comprises:

Dr. Acton will testify that, under Nokia's apparent infringement theory, H.263 renders obvious claim elements 1[a] and 10[a].

For example, H.263 illustrates the video encoder's fundamental blocks, showing that the method encompasses various steps from video signal (video sequence) to coded bitstream output. RX-0616, Figure 1 Section 3.

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[redacted]

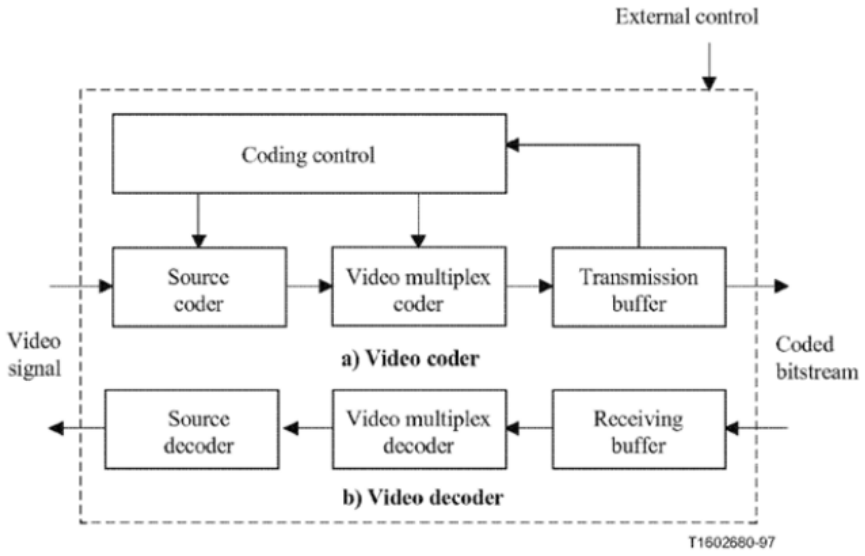
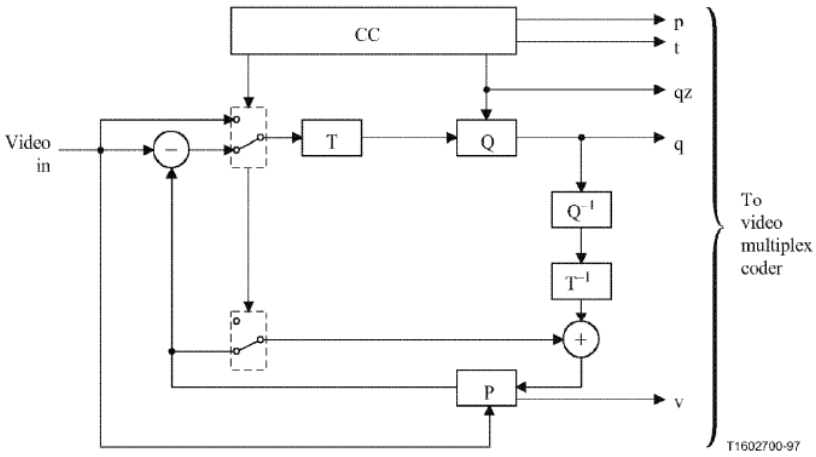


Figure 1/H.263 – Outline block diagram of the video codec

H.263 explicitly states that the video coder provides "a self-contained digital bitstream which may be combined with other multi-facility signals (for example as defined in Recommendation H.223)." RX-0616, Section 3.2. Furthermore, the source coding algorithm detailed in Section 3.4 describes the method of encoding, utilizing inter-picture prediction and transform coding to reduce both temporal and spatial redundancies. *Id.*, Section 3.4. The encoding process involves motion compensation, variable length coding, and multiple negotiable coding options for enhanced encoding strategies. *Id.* H.263 also provides for various modes such as the Reference Picture Selection mode and Reduced-Resolution Update mode, which are used to optimize encoding in different scenarios, such as error-prone environments or highly active scenes. *Id.*, Sections 3.4.12, 3.4.15; *see also id.*, Section 4.2, Figure 3 (showing a generalized form of the source coder that receives video as input).

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[redacted]



(2) Claim elements 1[b] and 10[b]

Claim Element 1[b]	Claim Element 10[b]
1[b]: assigning a skip coding mode to a first segment of a first frame of the sequence;	10[b]: a coding controller for assigning a skip coding mode to a first segment;

Dr. Acton will testify that, under Nokia's apparent infringement theory, H.263 renders obvious claim elements 1[b] and 10[b].

H.263 details the structure of frames within a video sequence by dividing each picture into macroblocks, which are the segments for encoding a video sequence. RX-0616, Section 4.2.1. These macroblocks are formed according to the structure of Groups Of Blocks (GOBs) or slices, with a GOB comprising up to k * 16 lines. *Id.* Each GOB is segmented into macroblocks. For standard operation outside of RRU mode, "each macroblock relates to 16 pixels by 16 lines of Y and the spatially corresponding 8 pixels by 8 lines of CB and CR," as delineated in the associated Figure 5/H.263 (below).

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[redacted]

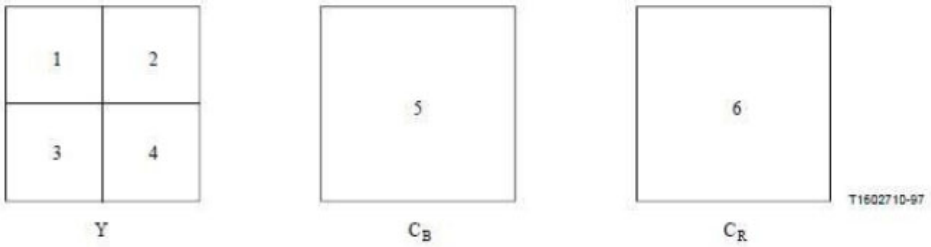


Figure 5/H.263 – Arrangement of blocks in a macroblock

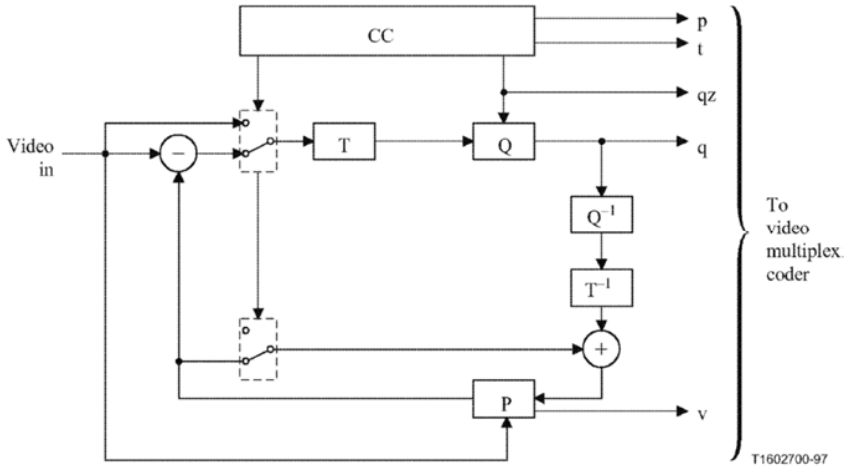
Thus, H.263 teaches that a macroblock constitutes a first segment within a frame of a video sequence.

Additionally, H.263's macroblock layer comprises various elements, including COD, or Coded Macroblock Indication, which is a single-bit flag that serves as a switch. *Id.*, Section 5.3.1 (Coded macroblock indication (COD) (1 bit). When the COD bit is set to "0," it indicates that the macroblock is coded, meaning additional data for this macroblock will follow in the bitstream. *Id.* In contrast, when the COD bit is set to "1," it signifies that no further information is transmitted for this macroblock. *Id.* Dr. Acton will explain that a POSITA would understand that H.263's encoder setting the COD to "1" constitutes the assignment of a "skip coding mode" to the macroblock, because a non-coded macroblock, indicated by such a flag, is not requiring any encoding of motion or texture information. *See, e.g.*, *id.*, Section 5.3 ("Data for each macroblock consists of a macroblock header followed by data for blocks. The structure is shown in Figure 10. COD is only present in pictures that are not of type 'INTRA', for each macroblock in these pictures."), Section 5.3.1.

Moreover, as explained above for limitation 1[a], H.263's video coder (video encoder) comprises a source coder. H.263 specifies the source coder's capabilities, including prediction and motion compensation, which are components for determining skip coding modes. H.263, Section 4.2. The "Coding Control" (CC) element, as indicated in Figure 3, oversees and manages the coding operations.

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[redacted]



Based on these disclosures, a POSITA would have understood that H.263 discloses or renders obvious claim elements 1[b] and 10[b].

(3) Claim elements 1[c] and 10[c]

Claim Element 1[c]	Claim Element 10[c]
1[c]: assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment; and	10[c]: a motion estimation block for assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment; and

Dr. Acton will testify that, under Nokia's apparent infringement theory, H.263 renders obvious claim elements 1[c] and 10[c].

As explained above for limitation 1[b], H.263 can assign a skipping coding mode to a macroblock by setting the COD bit to "1," which signifies that no further information is transmitted for this macroblock, and a zero motion vector is assigned to the current block. *See, e.g.*, RX-0616, Section 5.3.1 (Coded macroblock indication (COD)).

Additionally, H.263 describes a method for predicting motion vectors, which includes both horizontal and vertical components. H.263 describes that "for each component, the predictor is the

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[redacted]

median value of the three candidate predictors for this component." RX-0616.0044-45. H.263 further explains that "the candidate predictors for the differential coding are taken from three surrounding macroblocks as indicated in Figure 12." *Id.* at 0044. Thus, in typical scenarios excluding special cases, the motion vector predictor for a macroblock (labelled MV in Figure 12 annotated below) is derived by calculating the median of the motion vectors from the three neighboring macroblocks: the left, top, and top-right macroblocks (labeled MV1, MV2, and MV3, respectively).

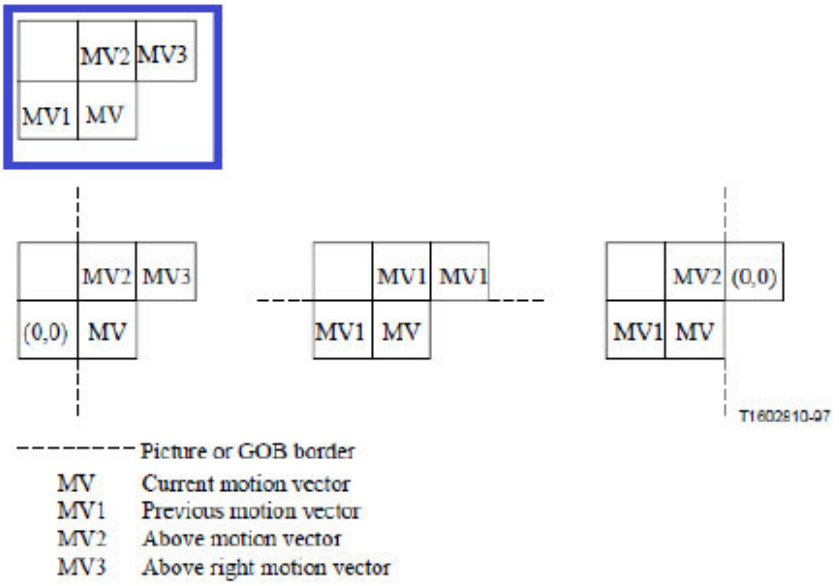


Figure 12/H.263 – Motion vector prediction

This process derives the motion vector predictor of the current block by using the position and motion vectors of these adjacent macroblocks. The process is illustrated in the annotated version of H.263's Figure 12 above, which highlights the neighboring candidate predictors in blue to highlight their use in standard candidate predictors when none of the special cases apply.

As mentioned above, H.263 includes provisions for handling special cases, such as when the current macroblock is located at the border of the slice:

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> In the special cases at the borders of the current GOB, slice, or picture, the following decision rules are applied in increasing order:
>
> 1) When the corresponding macroblock was coded in INTRA mode (if not in PB-frames mode with bidirectional prediction) or was not coded (COD = 1), the candidate predictor is set to zero.
>
> 2) The candidate predictor MV1 is set to zero if the corresponding macroblock is outside the picture or the slice (at the left side).
>
> 3) Then, the candidate predictors MV2 and MV3 are set to MV1 if the corresponding macroblocks are outside the picture (at the top) or outside the GOB (at the top) if the GOB header of the current GOB is non-empty; or outside the slice when in Slice Structured mode.
>
> 4) Then, the candidate predictor MV3 is set to zero if the corresponding macroblock is outside the picture (at the right side).

RX-0616.0044-45.

H.263 specifies a particular protocol for handling situations where the current macroblock is located at the top border of the picture or a Group of Blocks (GOB). According to the third decision rule outlined in the standard, if the top and top-right neighboring macroblocks (MV2 and MV3) are not available due to the macroblock's border position, their candidate vectors are replaced with the motion vector of the left neighboring macroblock (MV1). Consequently, all three candidate vectors for determining the motion vector predictor are set to the motion vector of the left neighboring macroblock. The visual representation of this rule can be seen in an annotated version of H.263's Figure 12 below, where the use of the left neighbor's motion vector for all three candidate motion vectors is highlighted in green, illustrating the application of the third decision rule in video encoding scenarios.

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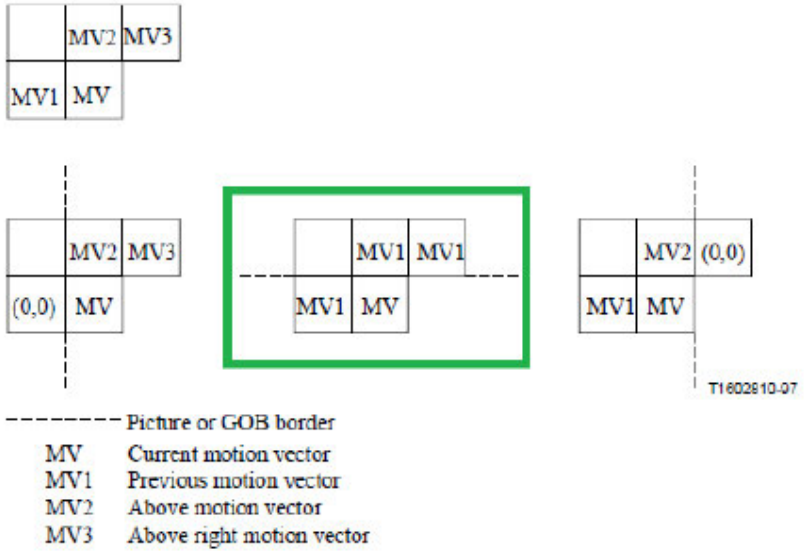


Figure 12/H.263 – Motion vector prediction

Further, Dr. Acton will explain that a POSITA would have known that the median of three identical values (i.e., three MV1s) is equal to those values. To illustrate, if the motion vector from the left neighboring macroblock (MV1) is repeatedly used as the candidate under certain conditions— such as when the current macroblock is at the top boundary of the video frame—the predicted motion vector for the current macroblock (MV) will be the same as MV1. Therefore, if MV1 is a zero motion vector, the prediction process outlined in H.263 will conclude that the predicted motion vector (MV) for the current macroblock should also be a zero motion vector. And if MV1 is a non-zero motion vector, H.263's prediction process will conclude that the predicted motion vector (MV) for the current macroblock should also be a non-zero motion vector. Dr. Acton will explain that a POSITA would have understood or found it obvious that this scenario teaches or suggests assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment.

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[redacted]

Dr. Acton will explain that a POSITA would have been motivated to replace H.263's current protocol for assigning a zero motion vector to the current macroblock when COD is set to 1 with H.263's mechanism for deriving the motion vector of the current macroblock based on the motion vectors of surrounding macroblocks and assigning this derived motion vector of the current macroblock. In such modified system, instead of automatically assigning a zero motion vector when the COD bit is set to 1, the encoder will now compute the motion vector of the current macroblock based on the motion vectors of the three surrounding macroblocks. For example, the encoder could calculate "the *median value* of the three candidate predictors for this component" and assign the calculated median values as the motion vector for the current macroblock. *Id.*, Section 6.1.1 (emphasis added). As a result, the modified encoder will (1) assign a zero motion vector to the current macroblock if all three surrounding macroblocks have zero motion vectors (since the median value of three zero motion vectors is also zero) or when specific rules apply due to the position of the current block (when the value of MV1 are assigned to MV2 and MV3, and MV1 is a zero motion vector); and (2) assign a non-zero motion vector if one of the three surrounding macroblocks have a non-zero motion vector or when specific rules apply due to the position of the current block (when the value of MV1 are assigned to MV2 and MV3, and MV1 is a non-zero motion vector). Thus, the modified system would "assign[] either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment."

Dr. Acton will explain that a POSITA would have understood that rather than assigning a zero motion vector to the current macroblock in the skip coding mode, the modified encoder could assign a more accurate motion vector to the current macroblock by utilizing the motion information of surrounding macroblocks. This could result in better prediction of the macroblock's contents,

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reducing the error after motion compensation. Dr. Acton will explain that a POSITA would also have recognized that the improved prediction accuracy not only would contribute to efficiency but also enhance the video quality, particularly in scenes with consistent but subtle motion. *Id*. By deriving the motion vector from neighboring blocks rather than assigning a static zero vector, the encoder can capture the nuances of motion more effectively, which may be critical in maintaining the fluidity of motion, reducing artifacts, and preserving detail. Dr. Acton will explain that a POSITA would have been motivated to make the proposed modifications to H.263 to achieve these benefits. *Id*. Moreover, this modification would have introduced more flexibility to the encoding process by computing the motion vector even when the COD bit is set to "1" so that the encoder would have an additional tool for handling complex motion scenarios. For example, the proposed modification would have allowed for a selective approach to motion compensation that can adapt to the content of the video sequence, potentially offering a tailored encoding strategy for different types of content.

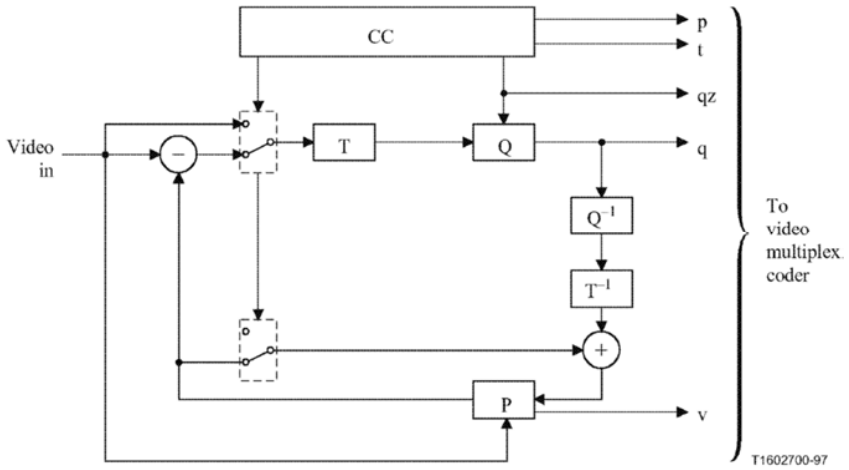
Dr. Acton will explain that a POSITA would have had a reasonable expectation of success in implementing the proposed modifications to H.263 because the technique of deriving motion vectors from surrounding macroblocks had been a well-known concept in video coding. *See, e.g.*, H.263, Section 6.1. Thus, a POSITA would have recognized that adapting an existing motion vector prediction methodology from one encoding standard to another is a conventional process and would have reasonably expected it to succeed. Additionally, the proposed modifications are incremental and do not require substantial changes to the existing H.263 framework. The modifications involve merely a reinterpretation of the function of the COD bit from setting a motion vector to zero to activating the motion vector mechanism (already taught by H.263). A POSITA would be familiar with such parameter adjustments, viewing them as routine tuning of

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[redacted]

encoder process, a regular task in encoder optimization, and a POSITA would have understood that the modifications would have yielded expected results.

Moreover, as explained above for limitation 10[b], H.263 discloses a source coder H. within its codec system, specifically in Figure 3, which includes various components such as coding control ("CC"), and processes associated with motion vector determination ("v") and a flag for "transmitted or not" ("t"). RX-0616, Section 4.2, Figure 3.



The source coder's design demonstrates capabilities that extend to complex predictive algorithms that would inherently include motion estimation processes for determining motion vectors ("v"). RX-0616, Section 4.2, Figure 3. Thus, Dr. Acton will explain that a POSITA would have recognized its capacity to function as a "motion estimation block" because it possesses motion estimation capabilities as a part of its predictive coding strategy. *Id*. Moreover, the "v" label in Figure 3, adjacent to the picture memory and coding control components, points to the motion vector output, indicating that the source coder is responsible for calculating or assigning motion vectors, which would serve the purpose of a motion estimation block as claimed. *Id.*

Based on these disclosures, a POSITA would have understood that H.263 discloses or renders obvious claim elements 1[c] and 10[c].

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[redacted]

(4) Claim elements 1[d] and 10[d]

Claim Element 1[d]	Claim Element 10[d]
1[d]: forming a prediction for the first segment with respect to a reference frame based at least in part on the assigned motion vector for the skip coding mode, wherein the assigned motion vector is one of the zero motion vector and the predicted non-zero motion vector; and	10[d]: forming a prediction for the first segment with respect to a reference frame based at least in part on the assigned motion vector for the skip coding mode, wherein the assigned motion vector is one of the zero motion vector and the predicted non-zero motion vector; and

Dr. Acton will explain that, under Nokia's apparent infringement theory, H.263 renders obvious claim elements 1[d] and 10[d].

H.263 explains that the "main elements" of its source coder include "prediction, block transformation and quantization." RX-0616, Section 4.2. H.263 specifies the types of prediction utilized in the encoding process: "The primary form of prediction is inter-picture and may be augmented by motion compensation." *Id.*, Section 4.2.2. *See also id.* ("INTER: A picture using a temporally previous reference picture."). Here, H.263 delineates the INTER coding mode, where a current frame or macroblock is predicted based on previously coded frames—referred to as reference frames.

H.263 also discloses that when COD is set to 1 (skip coding mode), Section "6.1.1 Differential motion vectors" of H.263 specifies that "the candidate predictor is set to zero," which indicates for skipped macroblocks, the reference for prediction does not involve any motion vectors—meaning the prediction is made directly from the same location in the reference frame, essentially duplicating that region in the current frame without any motion offset. Thus, H.263 discloses or renders obvious forming a prediction for the first segment with respect to a reference frame based at least in part on the assigned motion vector for the skip coding mode, when the assigned motion vector is a zero motion vector.

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[redacted]

H.263 further discloses in another coding mode where COD is set to 0, a non-zero motion vector is used to form the prediction of the current macroblock. H.263, Section 4.2, Section 6.1 (motion compensation). In particular, the motion vector for the current macroblock is conveyed as a difference from a prediction calculated from the motion vectors of neighboring macroblocks (the candidate predictors MV1, MV2, and MV3 from the surrounding macroblocks) that have already been decoded. *Id.* Once the motion vector is determined, this vector points to a specific area in the reference frame(s), and the prediction for the current macroblock is formed by copying the block of pixels from the referenced area (offset by the motion vector) into the current macroblock position. *Id.*; *see also id.*, ANNEX F (Advanced Prediction mode). Thus, H.263 discloses or renders obvious forming a prediction for the first segment with respect to a reference frame based at least in part on the assigned non-zero motion vector.

Further, as explained above for limitation 1[c], a POSITA would have been motivated to replace H.263's current protocol for assigning a zero motion vector to the current macroblock when COD is set to 1 with H.263's mechanism for deriving the motion vector of the current macroblock based on the motion vectors of surrounding macroblocks and assigning this derived motion vector of the current macroblock. In this modified system, in the skip coding mode (i.e., COD is set to 1), when the derived motion vector is zero, the prediction mirrors the current H.263 approach by copying from the reference frame. However, if the derivation process results in a non-zero motion vector, the source coder adapts this vector as the offset for prediction (as taught in Sections 4.2, 6.1, and ANNEX F of H.263 and explained above). As explained above (limitation 1[c]), a POSITA would have been motivated to make such modifications with a reasonable expectation of success.

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Based on these disclosures, a POSITA would have understood that H.263 discloses or renders obvious claim elements 1[d] and 10[d].

(5) Claim elements 1[e] and 10[e]

Claim Element 1[e]	Claim Element 10[e]
1[e]: providing in an encoded bitstream an indication of the skip coding mode, wherein no further motion vector information for the first segment is coded in the encoded bitstream.	10[e]: a multiplexer for providing in an encoded bitstream an indication of the skip coding mode, wherein no further motion vector information for the first segment is coded in the encoded bitstream.

Dr. Acton will explain that, under Nokia's apparent infringement theory, H.263 renders obvious claim elements 1[e] and 10[e].

Figure 1 (below) illustrates an "[o]utline block diagram of the video codec" which schematically represents the flow of data from the video input to the output of a coded bitstream. H.263, Section 3, Figure 1. Specifically, Figure 1 visualizes the pathway leading to the "Coded bitstream," which is the culmination of various encoding processes, including the assignment of coding modes to macroblocks and the encoding of motion vectors—or the lack thereof in the case of skip coding mode. Thus, H.263 specifies a coding scheme where an encoded bitstream contains all the necessary information for the decoder to reconstruct the video sequence because H.263's "video coder provides a self-contained digital bitstream." RX-0616, Section 3.2.

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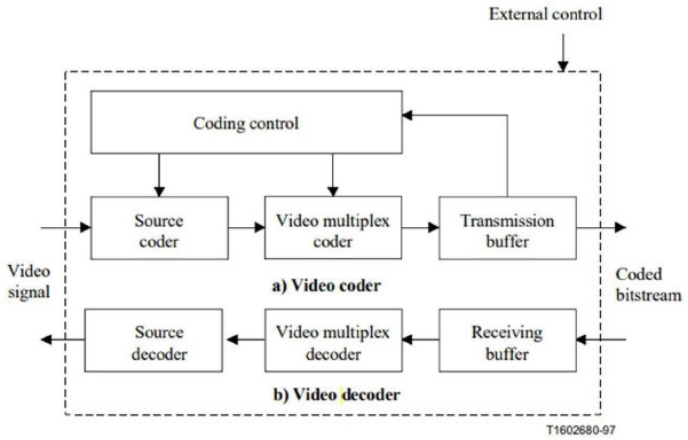


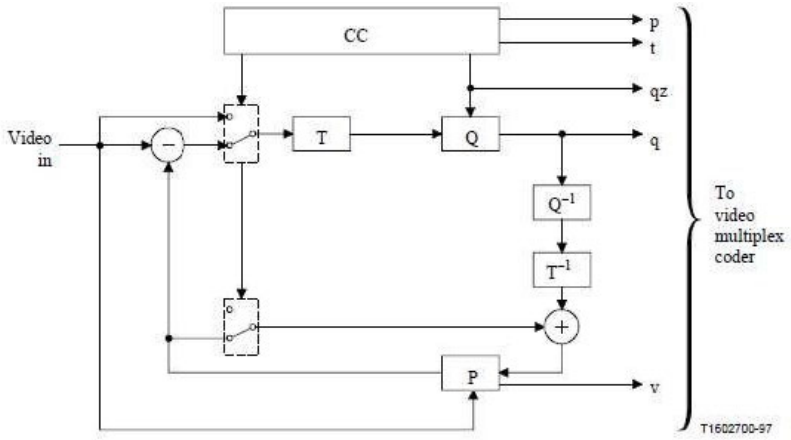
Figure 1/H.263 – Outline block diagram of the video codec

As explained above, H.263 also discloses that when the skip coding mode is applied to a current macroblock, no further motion vector information for the current macroblock is coded in the encoded bitstream. *See* RX-0616, Section 5.3.1. Dr. Acton will explain that a POSITA would understand that in the proposed modified H.263 scheme outlined above, there would also be no further motion vector information for the current macroblock in the encoded bitstream. Specifically, in the modified H.263 scheme, the setting of the COD bit to 1 within the macroblock layer continues to serve as an explicit indication that no additional motion vector information for the current macroblock will be coded into the encoded bitstream. The proposed modification, which allows for an internally computed motion vector for predictive purposes, does not alter H.263's existing COD protocol that, in accordance with the skip coding mode indicated by the COD bit, the encoded bitstream remains devoid of any further motion vector information for that macroblock. Therefore, even with the proposed modification, the efficiency of the encoding process is maintained, as the bitstream size is not increased by motion vector data for macroblocks in skip coding mode, consistent with the objective of reducing the bitrate and complexity in transmission.

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[redacted]

Moreover, H.263's video coder includes a multiplexer for providing in an encoded bitstream an indication of the skip coding mode. Specifically, H.263 explains that its video coder includes a component labeled "Video multiplex coder." RX-0616, Section 3, Figure 1. The role of a multiplexer in a video coding system is to aggregate and encode multiple data elements into a bitstream for transmission. This function is consistent with the representation of H.263's video multiplex coder (illustrated in Figure 3 of Section 4.2), which functions to combine multiple data elements, such as the "t" flag (for transmitted or not), transform ("T"), quantizer ("Q"), and the Picture Memory with motion-compensated variable delay ("P"). *Id.* This flow of information is indicative of the multiplexing process, where multiple signals are combined into a single output stream.



T	Transform
Q	Quantizer
P	Picture Memory with motion compensated variable delay
CC	Coding control
p	Flag for INTRA/INTER
t	Flag for transmitted or not
qz	Quantizer indication
q	Quantizing index for transform coefficients
v	Motion vector

Figure 3/H.263 – Source coder

Based on these disclosures, H.263 discloses or renders obvious claim elements 1[e] and 10[e].

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[redacted]

(6) Claim element 21

Claim Element 21
21: A multimedia terminal, comprising an encoder according to claim 10.

Dr. Acton will explain that, under Nokia's apparent infringement theory, H.263 renders obvious claim element 21.

H.263 describes a system designed to encode (and decode) the moving picture component of audio-visual services at low bit rates. RX-0616.0001. The standard specifies a video source coding algorithm based on H.261 with enhancements, aligning with the functionality expected of a multimedia terminal that can encode video sequences. *Id*.

Additionally, H.263's references to other ITU-T Recommendations, such as H.223, H.245, and H.324, indicate that H.263's video coder operates within a broader multimedia terminal, with capabilities extending to multiplexing, control protocols, and low bit rate multimedia communication. RX-0616.0001-2. Moreover, H.263 explains its video coder's ability to operate with various standardized and custom picture formats, including CIF, sub-QCIF, QCIF, 4CIF, 16CIF, various resolutions and aspect ratios (e.g., 4:3 picture, 16:9 picture), indicating that H.263's video coder would be fit into a multimedia terminal to handle these diverse encoding tasks. *Id.*, at .0008-9.

(7) Claim elements 29 and 48

Claim Element 29	Claim Element 48
29: A method according to claim 1, further comprising: deriving the predicted non-zero motion vector based at least in part on the motion vector of the second segment and motion vector of a third segment neighboring the first segment.	48. An encoder according to claim 10, wherein the motion estimation block further arranged to derive the predicted non-zero motion vector based at least in part on the motion vector of the second segment and motion vector of a third segment neighboring the first segment.

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[redacted]

Dr. Acton will discuss that, for the reasons discussed above for limitations 1[c] and 10[c], under Nokia's apparent infringement theory, H.263 renders obvious claim elements 29 and 48.

(8) Claim elements 7[a] and 16[a]

Claim Element 7[a]	Claim Element 16[a]
7[a]: A method of decoding an encoded video sequence, the method comprising:	16[a]: A video decoder for decoding an encoded video sequence, the decoder comprising:

Dr. Acton will explain that, under Nokia's apparent infringement theory, H.263 renders obvious claim elements 7[a] and 16[a].

Figure 1 illustrates a video decoder that receives and decodes coded bitstream (encoded video sequence) and outputs a video signal. RX-0616, Figure 1. Figure 1 illustrates various components of the video decoder, including a receiving buffer, a video multiplex decoder, and source decoder, as well as the roles of these components in the decoding process.

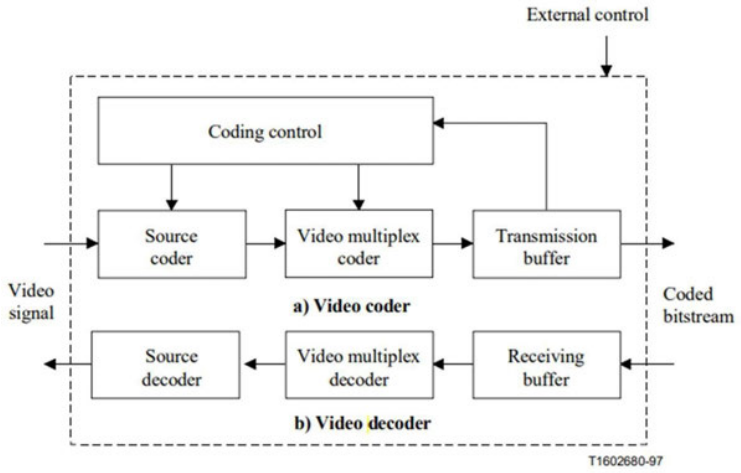


Figure 1/H.263 – Outline block diagram of the video codec

H.263 describes that its "video coder provides a self-contained digital bitstream which may be combined with other multi-facility signals (for example as defined in Recommendation H.223) [and . . . t]he video decoder performs the reverse process." RX-0616, Section 3.2.

[redacted]

Thus, H.263 discloses claim elements 7[a] and 16[a].

(9) Claim elements 7[b] and 16[b]

Claim Element 7[b]	Claim Element 16[b]
7[b]: receiving an indication of a skip coding mode for a first segment;	16[b]: a demultiplexer for receiving an indication of a skip coding mode assigned to a first segment;

Dr. Acton will discuss how, for the reasons discussed above for limitations 1[b] and 1[e], under Nokia's apparent infringement theory, H.263 renders obvious claim elements 7[b] and 16[b] because H.263's decoding method performs the same steps as the encoding method for receiving an indication of a skip coding mode for a first segment.

Moreover, H.263 discloses a demultiplexer for performing the claimed functions. Specifically, Figure 1 in H.263 outlines a video decoder structure comprising several components, including a video multiplex decoder. RX-0616.

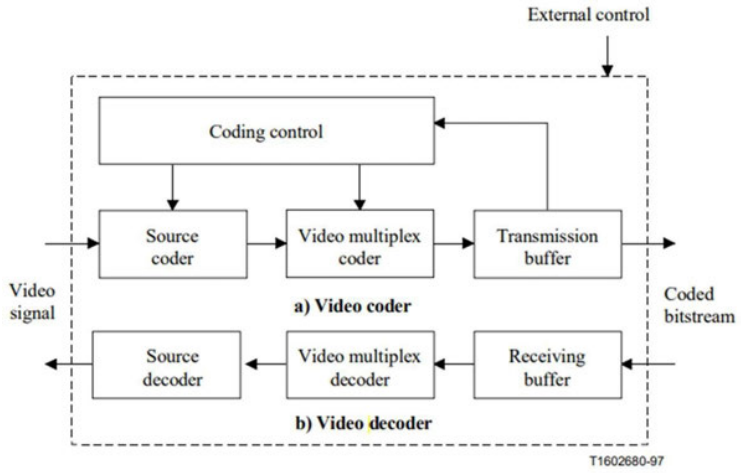


Figure 1/H.263 – Outline block diagram of the video codec

H.263's video multiplex decoder constitutes a demultiplexer as it performs the function of separating a multiplexed signal into its constituent parts. Additionally, the description in Section 3.2 of H.263 explicitly states that the video decoder performs the "reverse process" of the video

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[redacted]

coder, which includes handling a "self-contained digital bitstream" that may be combined with other signals. H.263, Section 3.2. Since multiplexing is a process of combining multiple signals into one bitstream, this reverse process includes demultiplexing—separating the combined signals and involves a demultiplexer function performed by the video multiplex decoder, including receiving an indication of a skip coding mode assigned to a first segment.

Based on these disclosures, H.263 discloses or renders obvious claim elements 7[b] and 16[b].

(10) Claim elements 7[c] and 16[c]

Claim Element 7[c]	Claim Element 16[c]
7[c]: assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment; and	16[c]: a motion compensated prediction block for assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment; and

Dr. Acton explains that, for the reasons discussed above for limitations 1[c], under Nokia's apparent infringement theory, H.263 renders obvious claim elements 7[c] and 16[c] because H.263's decoding method performs the same steps as the encoding method for assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment. RX-0616

Moreover, H.263 discloses or renders obvious a source decoder (motion compensated prediction block) for performing the claimed functions. Specifically, in the context of decoding, the motion compensated prediction block's function is to apply the motion vectors that have been extracted from the encoded bitstream to reconstruct the current frame from the reference frames.

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[redacted]

This process is the inverse of the encoding operation, where motion vectors are used to predict the content of the macroblocks. Indeed, H.263 describes the decoding process as the "reverse process" of the video coder, which is performed by its source decoder (corresponding to the source coder in the encoding process). RX-0616, Section 3.2.

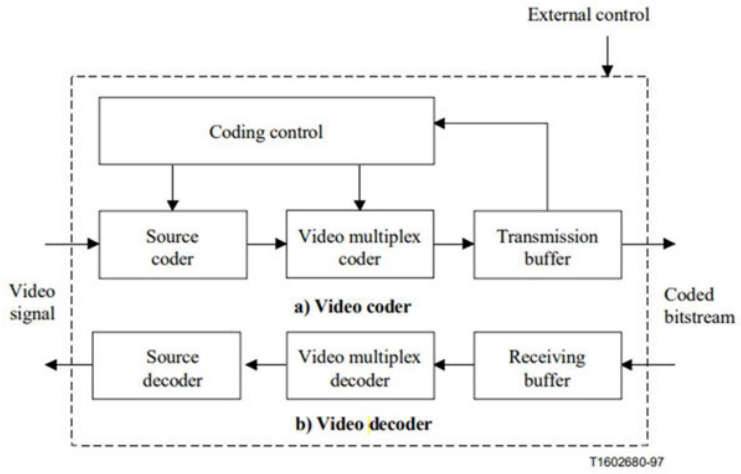


Figure 1/H.263 – Outline block diagram of the video codec

Based on these disclosures, H.263 discloses or renders obvious claim elements 7[c] and 16[c].

(11) Claim elements 7[d] and 16[d]

Claim Element 7[d]	Claim Element 16[d]
7[d]: forming a prediction for the first segment with respect to a reference frame based at least in part on the assigned motion vector for the skip coding mode, wherein the assigned motion vector is one of the zero motion vector and the predicted non-zero motion vector.	16[d]: forming a prediction for the first segment with respect to a reference frame based at least in part on the assigned motion vector for the skip coding mode, wherein the assigned motion vector is one of the zero motion vector and the predicted non-zero motion vector.

Dr. Acton discuss how, for the reasons discussed above for limitations 1[d], under Nokia's apparent infringement theory, H.263 renders obvious claim elements 7[d] and 16[d] because

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[redacted]

H.263's decoding method performs the same steps as the encoding method for forming a prediction of a segment.

To the extent that this limitation requires the motion compensated prediction block for performing the claimed function, H.263 discloses or renders obvious the claimed motion compensated prediction block as explained in claim element 16[c].

Based on these disclosures, H.263 discloses or renders obvious claim elements 7[d] and 16[d].

(12) Claim element 22

Claim Element 22
22: A multimedia terminal, comprising a decoder according to claim 16.

Dr. Acton will explain that, under Nokia's apparent infringement theory, H.263 renders obvious claim element 22.

H.263 describes a system designed to decode the moving picture component of audio-visual services at low bit rates. The standard specifies a video source coding algorithm based on H.261 with enhancements, aligning with the functionality expected of a multimedia terminal that can decode video sequences. RX-0616.0001.

Additionally, H.263's references to other ITU-T Recommendations, such as H.223, H.245, and H.324, indicate that H.263's video coder operates within a broader multimedia terminal, with capabilities extending to the decoding process. RX-0616.0001-2. Moreover, H.263 explains its video decoder's ability to operate with various standardized and custom picture formats, including CIF, sub-QCIF, QCIF, 4CIF, 16CIF, various resolutions and aspect ratios (e.g., 4:3 picture, 16:9 picture), indicating that that H.263's video decoder would be fit into a multimedia terminal to handle these diverse decoding tasks. *Id.*, at .0008-9.

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[redacted]

(13) Claim element 40

Claim Element 40
40: A method according to claim 7, further comprising: deriving the predicted non-zero motion vector based at least in part on the motion vector of the second segment and motion vector of a third segment neighboring the first segment.

Dr. Acton explains that, for the reasons discussed above for limitations 29 and 48, under Nokia's apparent infringement theory, H.263 renders obvious claim element 40 because H.263's decoding method perform the same steps as the encoding method for the limitations recited in claim 40.

c) Karczewicz

International Patent Publication No. WO 01/11891 A1 ("Karczewicz") was published on February 15, 2001, and is therefore prior art irrespective of the '808 patent's priority date. RX-0586 (Karczewicz).

Dr. Acton will explain that Karczewicz described a video system with at least five coding modes, but two of those modes calculated predicted motion vectors based on the motion vectors of a neighboring segment. *Id.* at 11:1-8, 31:14-25 ("For instance, the segment can be coded using only prediction motion vector fields extrapolated from a neighboring segment"). While Karczewicz noted that this calculation may include a small refinement field to account for differences between motion vectors of neighboring segments, Karczewicz expressly explained that, in some circumstances, this refinement field may be zero and the motion vectors will be identical. *Id.*; *see also id.* at 31:20-24 (explaining that the second segment "can be coded by using a zero motion vector field, e.g., a copy from the reference frame").

Specifically, after coding a first segment, Karczewicz teaches determining whether it is "more efficient to model the second segments in terms of the affine motion model previously

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determined for the first segment, rather than according to the newly determined affine motion coefficients for the second segment itself." *Id.* at 14:27-15:1. Karczewicz explains that this technique can provide advantages to coding efficiency:

> The benefit of this approach to motion predictive coding may not be immediately apparent. However, in many cases, it is found that after projection of the motion field model from a neighboring segment, very little or even zero refinement information is required. This can result in a significant reduction in the amount of data that must be transmitted from encoder to decoder. In the case where zero refinement information is required, the motion vector field of the second segment can be predicted purely on the basis of motion coefficients already stored in the decoder.

Id. at 15:26-16:3

(1) Claim elements 1[a] and 10[a]

Claim Element 1[a]	Claim Element 10[a]
1[a]. A method of encoding a video sequence, the method comprising:	10[a]. A video encoder for encoding a video sequence, the encoder comprises:

Dr. Acton will explain that, to the extent that the preamble is limiting, under Nokia's apparent infringement theory, Karczewicz renders obvious claim elements 1[a] and 10[a].

For instance, Karczewicz discloses an "apparatus, and an associated method, for encoding, and decoding, a video sequence utilizing motion compensated prediction." RX-0586, 1:7-8. Moreover, Karczewicz's encoder and decoder are depicted in Karczewicz's Figure 1, reproduced below with annotations:

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[redacted]

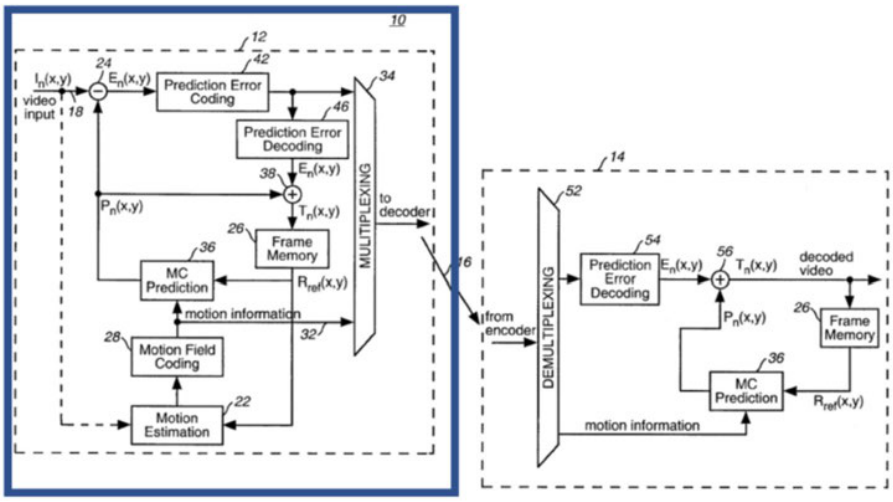


FIG. 1

(2) Claim elements 1[b] and 10[b]

Claim Element 1[b]	Claim Element 10[b]
1[b]: assigning a skip coding mode to a first segment of a first frame of the sequence;	10[b]: a coding controller for assigning a skip coding mode to a first segment;

Dr. Acton will explain that, under Nokia's apparent infringement theory, Karczewicz renders obvious claim elements 1[b] and 10[b].

Karczewicz uses the terms "prediction field" and "refinement field" to explain the functions of its coding modes. Karczewicz states that a "prediction field" is "the motion field model predicted from the neighboring segment(s)." RX-0586, 16:19-21. Karczewicz further notes that these neighboring segment(s) are "previously coded." *Id.* at 17:10-14. Moreover, Karczewicz specifies that the "refinement field" pertains to "the difference between the prediction field and the motion field model determined specifically from the segment itself." *Id.* at 16:21-23. Both fields, the prediction and the refinement, may represent affine motion fields. *Id*.

Karczewicz further explains that "[t]he sum of the prediction field and the refinement field should thus be equivalent to the motion field model determined by applying the affine motion

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[redacted]

model to the segment itself." *Id.* at 16:23-27. This means that the prediction field estimates the motion of a segment using the motion predictions for neighboring segments, and the refinement field makes adjustments for any discrepancies between this neighbor-based forecast and a prediction tailored to the segment itself.

Karczewicz describes a video system with at least five "coding modes," but two of those modes (the first and fourth coding modes) calculate predicted motion vectors based on the motion vectors of a neighboring segment. *Id.* at 11:1-8, 31:14-25. For instance, claim 61 of Karczewicz mentions "a set of coding modes" for coding a segment, and claims 64 and 65 describe features of a "first coding mode" through a "fifth coding mode" corresponding to these five methods:

> 61. In a method of encoding a video sequence, said video sequence being formed of at least a current video frame and a reference video frame, the current video frame comprising at least a first neighboring segment and a second neighboring segment, an improvement of a method for motion compensated prediction of the current video frame comprising:
>
> defining a set of coding modes for said second neighboring segment; calculating a set of cost functions, each one of said cost functions being associated with one of said set of coding modes; choosing that one of said set of cost functions with a smallest absolute value; defining that one of said set of coding modes associated with said smallest absolute value as a chosen coding mode for said second neighboring segment; encoding information about said second neighboring segment according to said chosen coding mode.
>
> 64. A method according to claim 61 wherein said set of coding modes comprises: a first coding mode wherein a motion field model from said first neighboring segment is projected into said second neighboring segment to form a prediction motion field model and said second neighboring segment is represented by said prediction motion field model; a second coding mode wherein said second neighboring segment is represented by a motion field model derived from said reference frame; a third coding mode wherein a motion field model from said first neighboring segment is projected into said second neighboring segment to form a projection field model and said second neighboring segment is represented by said prediction motion field model and a refinement motion field model.
>
> 65. A method according to claim 64 wherein said set of coding modes further comprises: a fourth coding mode wherein said second neighboring segment is encoded using pixel values from said reference frame; a fifth coding mode wherein said second

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[redacted]

neighboring segment is encoded using pixel values from said current frame.

RX-0586, claim 61, 64, 65.

Karczewicz assigns coding modes to segments based on their efficiency in a rate distortion sense. Specifically, Karczewicz teaches that in encoding a second segment of an inter frame (corresponding to the claimed "first segment"), an encoder "considers whether it is 'more efficient' to model the second segment according to the affine motion model previously determined for [a] first segment, rather than with the newly determined affine motion coefficients for the second segment itself." *Id.* at 14:27-15:1. Karczewicz evaluates "efficiency" in terms of "rate distortion," which considers "both the image distortion and the data amount required to achieve that distortion level." *Id.* at 14:12-17. Essentially, Karczewicz teaches a balance between minimizing data use and maintaining the quality of the coded video sequence.

Each method by which a segment can be coded, as taught by Karczewicz, is a coding mode. In the first coding mode, "[t]he segment may be represented as a prediction field only." *Id.* at 17:9-10, 31:16-17, claim 64 ("… a first coding mode wherein … said second neighboring segment is represented by said prediction motion field model"). Karczewicz explains that this approach may be used when the segment can be sufficiently represented by the motion field of one or more previously coded neighbors and no refinement is needed, or when it is efficient to minimize the refinement field, such as from a rate distortion perspective. *Id.* at 17:10- 14. Thus, Karczewicz's first coding mode teaches coding a second segment purely based on its neighboring segment(s), when this provides adequate representation or is efficient (e.g., considering rate distortion).

In the fourth coding mode, "[t]he segment can also be coded by using a zero motion vector field, *e.g.*, a direct copy from the reference frame." *Id.* at 31:22-24, claim 65 ("a fourth coding

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[redacted]

mode wherein said second neighboring segment is encoded using pixel values from said reference frame...").

Karczewicz teaches selecting a coding mode based on which mode is the most efficient (for instance, from a rate-distortion perspective). Specifically, Karczewicz explains that when encoding a second segment of an inter frame (aligned with the claimed "first segment"), an encoder assesses the most efficient method to encode the segment by considering the motion models of the segment's previously coded neighbors.

> The second segment has one previously coded neighboring segment (i.e. the first segment). The encoder now considers whether it is "more efficient" to model the second segment in terms of the affine motion model previously determined for the first segment, rather than according to the newly determined affine motion coefficients for the second segment itself. The rationale is as follows: Since the motion coefficients for the first segment have already been determined and transmitted to the decoder, it may be possible to reduce the amount of information that must be transmitted to the decoder while encoding the second segment. Hence an improvement in coding efficiency may be obtained.

RX-0586, 14:27-15:6.

Karczewicz explains that "efficiency" is evaluated in terms of "rate-distortion," a measure that balances image distortion against the data needed to code the segment:

> It should be emphasized here that an aim of this method is not merely to minimize the prediction error, but to find the affine motion field model that yields the best match for a segment in a "rate distortion" sense. This means that the best match is determined by taking into account both a measure of image distortion and a measure of the amount of data required to achieve that level of distortion.

Id. at 14:12-17.

Regardless of the chosen coding mode from the five options, and in line with its description of prediction error use in prior art, Karczewicz teaches that prediction error is calculated as the difference between the motion-compensated predicted frame, utilizing the selected coding mode (and corresponding motion vector information), and the current input video frame. *Id.* at 20:21-

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[redacted]

29; 9:14-27. When a prediction error for a segment is non-zero, it is encoded and transmitted to a decoder. *Id.* at 20:22-26. When a zero prediction error is calculated, Dr. Acton will explain that a POSITA would have understood, and found it obvious, that the encoder does not send any prediction error to the decoder.

Dr. Acton will explain that a POSITA would have found it obvious, based on Karczewicz's teachings and the coding standards of the time, to omit sending prediction error data for a segment if a prediction error is calculated as zero. Given Karczewicz's teaching of efficient segment coding in a rate-distortion sense, RX-0586, 14:12-17, Dr. Acton will explain that a POSITA would have found it obvious that instead of coding numerous zeros for the prediction error of pixels in a segment, no prediction error data would be transmitted. Indeed, as further noted, Karczewicz already provides a mechanism for indicating an all-zero refinement or non-refinement motion field coefficients set, described in *id.* at 37:5-13. Dr. Acton will explain that a POSITA would have found it obvious to employ a similar indicator for encoding a zero prediction error in a segment. Such an application would have simply been using a known technique (a single bit to indicate an all-zero field) to refine a similar method (transmitting an all-zero prediction error) in the same manner (efficiently indicating all zero values). Moreover, Dr. Acton will explain that it would have been seen by a POSITA as an obvious choice to use another bit or indicator, akin to the MCI bit, for coding zero prediction error, representing one of a limited number of options (e.g., coding zero prediction error or indicating zero prediction error without actual coding).

Furthermore, in cases where the prediction errors for a segment were all zero, a POSITA would have found it obvious to omit (i.e., not explicitly encode) the zero-valued prediction errors. Contemporary coding standards at the time, including H.262, H.263 (and variants such as H.263 and), as well as the emerging H.26L standard, applied a block-based transform like the discrete

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cosine transform (DCT) or an integer approximation thereof to each block of prediction error values to obtain a block of "transform coefficients." *See, e.g.*, RX-0616 (H.263), Section 5.4.2, Table 16, Table 17, 41-44, Section 6.2, 46-47; RX-0546 (JVT-A003r1.doc; H.26L/JM-1r1) at Section 4.3, 30-32. These transform coefficients were then quantized to reduce precision by discarding low-order bits and ordered in a 1D or "Zig-Zag" order to form a sequence of quantized transform coefficient values, typically containing many "runs" of consecutive zero values. This sequence was subsequently run-length encoded, where each run of consecutive zero values was denoted by a count and paired with the encoding of the non-zero value that ended the run. A special flag called "LAST" in H.263 ("this is the last non-zero coefficient in this block," RX-0616, Section 5.4.2 on p. 41) and "EOB" in H.26L ("End Of Block", see RX-0546 (JVT-A003r1.doc) at 32) signaled that all remaining values in the sequence were zero. Since a block (or "segment") with all prediction errors equal to zero would result in all transform coefficients also being zero, Dr. Acton will explain that it would have been obvious to a POSITA to simply encode a "LAST" or "EOB" flag instead of explicitly encoding an entire block of zero-valued quantized transform coefficients. *See, e.g.*, RX-0546 (JVT-A003r1), Section 4.3.3.2 on p. 31 ("remember that a lot of 4x4 blocks only have EOB").

Either way, it would have been obvious to a POSITA not to code and send prediction error where Karczewicz calculates that there is zero prediction error for a segment.

Karczewicz thus renders obvious assigning a "skip coding mode," as the term is construed, to a second segment of an inter frame ("first segment of a first frame of the sequence") in cases where the second segment is either encoded using a zero motion vector, RX-0586 at 31:22-24, or with just a prediction field, i.e., a non-zero motion vector associated with a neighboring segment. *Id.* at 17:8-14, 31:22-24.

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[redacted]

Moreover, although Karczewicz describes the use of a zero motion vector and a non-zero motion vector in terms of different coding modes, the two "modes" are identical to what the '808 patent refers to as the "modified" "skip coding mode" and Karczewicz indicates these modes in the same way. Specifically, Karczewicz teaches that a single indicator, the Motion Coefficient Indicator (MCI), only takes a zero value in the two modes that encompass the functionality of the "skip coding mode." RX-0586 at 37:12-13. When a segment is coded with a zero motion vector, the MCI bit is zero, indicating "[a]n all-zero pattern [of motion coefficients]." *Id.* at 37:12-13. Similarly, when a segment is coded with just a prediction field, the MCI bit is also zero, indicating the absence of motion coefficients for the segment (i.e., no refinement field). *Id.* at 37:5-8. These are the only two modes in Karczewicz that involve a zero MCI bit, leading a POSITA to understand that a segment coded with a zero MCI bit is assigned a "skip coding mode."

Karczewicz also discloses or renders obvious "assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment." As discussed above, Karczewicz's skip coding mode can operate with either a zero motion vector or a non-zero motion vector where the second segment (mapped here to the recited "first segment"), when coded in skip coding mode, is assigned either a prediction motion vector field "extrapolated from a neighboring segment" or a "zero motion vector field, *e.g.*, a copy from the reference frame." RX-0586, 31:16-24.

Alternatively, Dr. Acton will explain that a POSITA would have found it obvious to combine Karczewicz's coding mode where a segment is coded solely with a prediction motion vector field, and Karczewicz's coding mode where a segment is coded by a zero motion vector. Dr. Acton will explain that a POSITA would have found this combination obvious as it would have minimized the number of bits needed to encode the segment (e.g., utilizing the zero motion

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[redacted]

vector when appropriate, otherwise utilizing the prediction motion vector field without refinement when encoding motion information for the segment). It therefore would have been obvious, based on Karczewicz's teachings, to treat the two coding modes (one associated with a zero motion vector, the other associated with a non-zero motion vector) as a single coding mode. Such a coding mode that allows for a zero motion vector or a nonzero motion vector would account for the overlap in functionalities of Karczewicz's coding modes. And a POSITA would have recognized such a coding mode would provide certain advantages, including in efficiency (for example, by eliminating the need to indicate two overlapping coding modes, therefore reducing the number of bits needed to indicate the coding mode).

Dr. Orchard claims that Karczewicz's skip coding mode would require at least one bit of additional motion information to determine whether to trigger a zero motion vector or non-zero motion. As described above, Karczewicz is clear that skip mode is indicated when the MCI bit is zero. Additionally, Karczewicz discloses that "one bit is sent to the decoder 14 to signal whether the prediction field of a neighbor is used or not, but only in the case when there is at least one prediction neighbor candidate." RX-0586, 32:18-20. Thus, in Karczewicz, when MCI is equal to zero and the prediction field of a neighbor is signaled, this indicates a non-zero motion vector, and when MCI is equal to zero and the prediction field of a neighbor is not signaled, this indicates a zero motion vector. Notably, Dr. Acton will testify that a signal indicating whether a neighbor's prediction field is used or not is not "motion vector information" (as recited in claim limitation 1[e]).

At least for these reasons, a POSITA would have understood or found it obvious that Karczewicz teaches "assigning" a "skip coding mode" by determining which of its coding modes is the most efficient, in a rate-distortion sense, for coding the second segment.

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[redacted]

Moreover, Karczewicz's Motion Field Coder 28 is responsible for determining which of its modes most efficiently codes a segment and thus acts as a "coding controller" for assigning a skip coding mode. RX-0586, 11:19-23 ("The motion field coder is operable to form a compressed motion vector field which is formed of a set of motion vectors of all pixels of a current frame."), 20:11-16 ("The motion field coder 28 is operable to form a motion vector field which is a set of motion vectors of all pixels of the current frame.), Figs. 1-2.

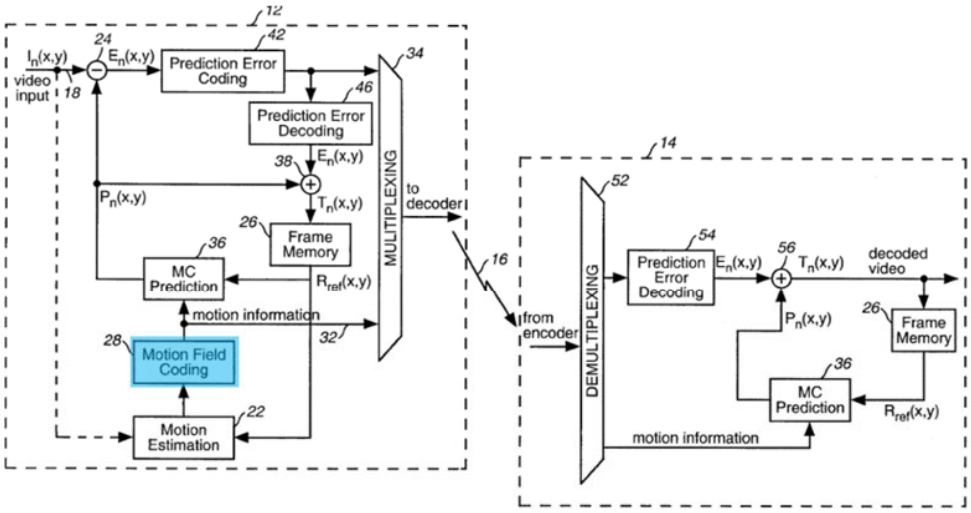


FIG. 1

Regardless of which coding mode is assigned to Karczewicz's second segment, Karczewicz also teaches calculating and sending prediction error between the motion compensated predicted version of the frame and the actual current frame. *Id.* at 20:21-29. Thus, a POSITA would have understood that prediction error information is calculated and sent for segments coded using any of Karczewicz's coding modes, including for the "skip coding mode" as taught or suggested by Karczewicz. In other words, Karczewicz teaches that residual information, in the form of prediction error information, can be provided with the skip coded macroblock. Karczewicz also teaches that the second segment may be coded with a non-zero motion vector without reference to a neighboring segment's motion vector. *Id.* at 17:14-18, 31:20-21. In such a scenario, Dr. Acton

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[redacted]

will explain that a POSITA would have understood that the second segment is not assigned a "skip coding mode" because, according to Karczewicz, the second segment does not receive a zero motion vector or a nonzero motion vector that is based, at least in part, on the motion information from a second segment neighboring the first segment.

Finally, Dr. Acton will explain that a POSITA would have understood that the decision to code a second segment with either a zero motion vector or a motion vector associated with a neighboring segment depends on the motion characteristics of the neighboring segment(s), as Karczewicz teaches determining the efficient coding mode by balancing the distortion due to coding the second segment in reference to a neighboring segment against the data required to transmit the motion vector information of the second segment. RX-0586, 15:16-20.

Based on these disclosures, a POSITA would have understood that Karczewicz discloses or renders obvious claim elements 1[b] and 10[b].

(3) Claim elements 1[c] and 10[c]

Claim Element 1[c]	Claim Element 10[c]
1[c]: assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment; and	10[c]: a motion estimation block for assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment; and

Dr. Acton will explain that, under Nokia's apparent infringement theory, Karczewicz renders obvious claim elements 1[c] and 10[c].

As explained above for limitation 1[b], Karczewicz renders obvious the assignment of a "skip coding mode" to a second segment (mapped here to the recited "first segment") based on its efficiency when considering rate-distortion, for using skip coding mode. Additionally, as described above (limitation 1[b]), Karczewicz's skip coding mode can operate with either a zero motion

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[redacted]

vector or a non-zero motion vector. Consequently, the second segment, when coded in skip coding mode, is assigned either a prediction motion vector field "extrapolated from a neighboring segment" or a "zero motion vector field, e.g., a copy from the reference frame." RX-0586, 31:16-24. Karczewicz thus discloses or renders obvious "assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment," as recited in this limitation.

Karczewicz discloses that "assigning" is "based at least in part on the motion information of a second segment neighboring the first segment." In a rate-distortion sense, if more efficient, a second segment (mapped here to the recited "first segment") is coded in reference to the motion information from a first, previously coded segment (mapped here to the recited "second segment"). *Id.* at 15:16-20. Therefore, Karczewicz discloses that the "assigning" of either the zero motion or a predicted non-zero motion vector for the skip coding mode for its second segment is based at least in part on the motion information of a neighboring segment, as Karczewicz's rate-distortion efficiency calculation considers using motion coefficients from a previously coded neighboring segment versus motion coefficients calculated for the second segment.

Karczewicz further discloses the "predicted non-zero motion vector for the skip coding mode" is "based at least in part on the motion information of a second segment neighboring the first segment." Karczewicz details how the prediction motion vector field is "extrapolated from a neighboring segment." *Id.* at 31:16-17, 25:14-17 ("the prediction motion vector field is obtained by extrapolating the affine motion vector field of a neighboring, e.g., adjacent segment"), 25:19-23 ("the prediction motion vector field is obtained from a combination of affine motion vector fields of several neighboring segments"). Therefore, the prediction motion vector field in Karczewicz's "skip coding mode" (mapped here to the recited "predicted non-zero motion vector

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[redacted]

for the skip coding mode") is based at least in part on the motion information from a previously coded neighboring segment (mapped here to the recited "second segment neighboring the first segment").

Moreover, the motion field coder 28 in Karczewicz forms a motion vector field for a second segment, receiving input from the motion estimator 22. *Id.* at 20:11-13,21:18-21, Fig. 1. As detailed for limitation 10[c], Karczewicz's motion compensated predictor 36 creates a prediction frame, utilizing inputs from both the motion field coding and the frame memory. *Id.* at 20:17-20, 21:16-21. Dr. Acton will explain that a POSITA would have understood that the motion field coder 28 and the motion compensated predictor 36 together constitute the "motion estimation block."

Specifically, Karczewicz's motion field coder 28 "determine[s] a previously encoded segment of the current frame, or a combination of such segments, whose motion vector field, or fields, is best suitable for predicting the motion of a … current segment." RX-0586, 26:13-16, *see also id.*, 26:9-20. It also identifies "a mathematically efficient representation" for a segment. *Id.* at 26:21-25. Additionally, the motion field coder 28 constructs the motion vector field for Karczewicz's second segment. *Id.* at 20:11-13. Thus, the motion field coder 28 "assigns" either a zero motion vector or a predicted non-zero motion vector for the skip coding mode of Karczewicz's second segment when it creates the motion vector field for the second segment. This assignment is "based at least in part on the motion information of a second segment neighboring the first segment" because the motion field coder 28 evaluates which previously coded neighboring segment or segments have a motion field(s) that is most suitable for predicting the motion of its second segment. *Id.* at 26:13-20.

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[redacted]

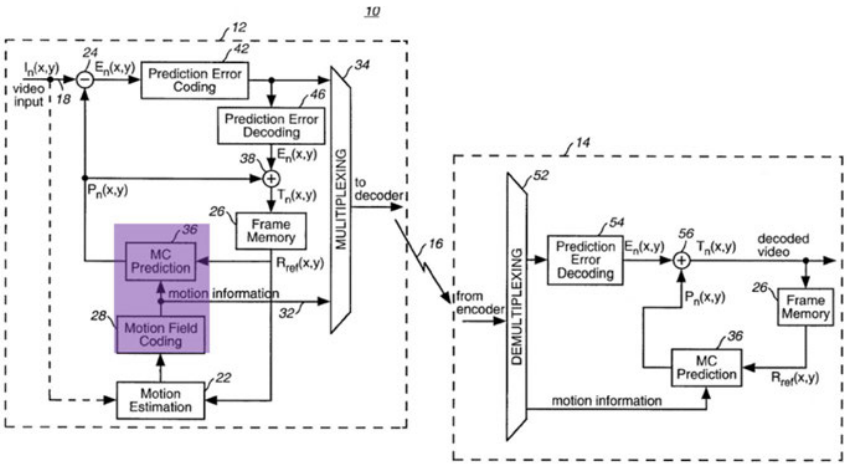


FIG. 1

Based on these disclosures, a POSITA would have understood that Karczewicz discloses or renders obvious claim elements 1[c] and 10[c].

(4) Claim elements 1[d] and 10[d]

Claim Element 1[d]	Claim Element 10[d]
1[d]: forming a prediction for the first segment with respect to a reference frame based at least in part on the assigned motion vector for the skip coding mode, wherein the assigned motion vector is one of the zero motion vector and the predicted non-zero motion vector; and	10[d]: forming a prediction for the first segment with respect to a reference frame based at least in part on the assigned motion vector for the skip coding mode, wherein the assigned motion vector is one of the zero motion vector and the predicted non-zero motion vector; and

Dr. Acton will explain that, under Nokia's apparent infringement theory, Karczewicz renders obvious claim elements 1[d] and 10[d].

Karczewicz teaches the formation of a prediction frame for its second segment (mapped here to the recited "first segment") with respect to a reference frame, assigning to this second segment either a zero motion vector or a motion vector based on one or more previously coded segments (mapped here to the recited "second segment"). *See e.g.*, RX-0586, 21:17-21 ("the compressed motion vectors and the reference frame are used to construct a prediction frame [].

[redacted]

The predicted frame is a coded version of the current frame [], calculated using the motion vector field…and the pixel values of the reference frame."), 20:17-20 ("The encoder is further shown to include a motion compensated (MC) predictor 36. The predictor 36 is also coupled to the frame memory 26. The predictor 36 is operable to generate a prediction frame which is supplied to the subtractor 24 and also to a summer 38."), 21:18-21 ("The prediction frame is a coded version of the current frame In(x, y) calculated using the motion vector field determined by the motion estimator 22 and the motion field coder 28 and the pixel values of the reference frame Rref(x, y)."); *see also id.*, 16:16-18 ("In a general case, the encoder can try to predict the motion coefficients for a given segment using the motion field model for the segment above it or to the left"), 15:15-25, 17:1-8, 20:17-20, 21:6-21, 25:13-24, 26:13-20, 31:13-24 ("For instance, the segment can be coded using only prediction motion vector fields extrapolated from a neighboring segment.…The segment can also be coded by using a zero motion vector field, *e.g.*, a copy from the reference frame.").

Moreover, Karczewicz's motion compensated predictor 36 utilizes the reference frame and the motion vectors assigned to Karczewicz's second segment (i.e., the zero motion vector or the predicted non-zero motion vector assigned for the skip coding mode) to form a prediction for that segment. RX-0586, 21:16-21, 21:3-5, 20:17-20, 23:6-9, 27:15-30. Together, the motion compensated predictor 36 and the motion field coder 28 constitute the "motion estimate block" as discussed above for limitation 10[c].

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[redacted]

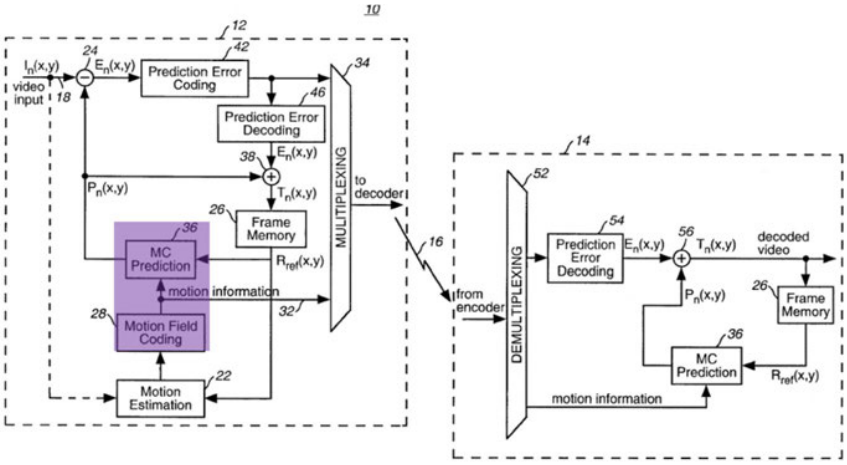


FIG. 1

Based on these disclosures, a POSITA would have understood that Karczewicz discloses or renders obvious claim elements 1[d] and 10[d].

(5) Claim elements 1[e] and 10[e]

Claim Element 1[e]	Claim Element 10[e]
1[e]: providing in an encoded bitstream an indication of the skip coding mode, wherein no further motion vector information for the first segment is coded in the encoded bitstream.	10[e]: a multiplexer for providing in an encoded bitstream an indication of the skip coding mode, wherein no further motion vector information for the first segment is coded in the encoded bitstream.

Dr. Acton will explain that, under Nokia's apparent infringement theory, Karczewicz renders obvious claim elements 1[e] and 10[e].

Karczewicz teaches that "the presence of motion coefficients in the bitstream is signaled by one bit whenever refinement or nonrefinement motion coefficients can be expected. This bit is referred to as a motion coefficient indicator (MCI)." RX-0586, 37:5-8. Furthermore, Karczewicz clarifies that "[a]n all-zero pattern [of motion coefficients] … can be signaled by the MCI bit alone." *Id.* at 37:12-13. Dr. Acton will explain that a POSITA would have understood that if the MCI bit is zero, it serves as "an indication of the skip coding mode" because the two interceding

[redacted]

modes described by Karczewicz, which align with the functionalities of the "modified" "skip coding mode" discussed in above (limitation 1[b]), are the only instances where no motion coefficients are transmitted. As previously noted, Karczewicz teaches that an all-zero motion coefficient pattern (i.e., coding a segment with a zero motion vector) is signified by the MCI bit alone, so no motion coefficients are transmitted, and when a second segment is coded solely with a prediction motion vector field, no motion coefficients are employed because the motion coefficients of a previously coded segment or segments are utilized instead.

Additionally, Karczewicz discloses that "one bit is sent to the decoder 14 to signal whether the prediction field of a neighbor is used or not, but only in the case when there is at least one prediction neighbor candidate." *Id.* at 32:18-20. This teaching supports that "no further motion vector information for the first segment is coded in the encoded bitstream" because neither the bit indicating whether a prediction motion vector field is used nor the information indicating which previously coded neighbor or neighbors to use for the prediction motion vector field constitutes "motion vector information." Thus, Dr. Orchard's claims that information about which segment to use for prediction is "further motion vector information" is incorrect.

Karczewicz also discloses or renders obvious "wherein no further motion vector information for the first segment is coded in the encoded bitstream," as further recited by this limitation. For instance, as outlined above (limitation 1[b]), Karczewicz describes coding modes where only a prediction motion vector field or a zero motion vector field is encoded. In these coding modes, additional information that Karczewicz instructs to be used in other coding modes (e.g., the refinement motion field) is not encoded. Since either a prediction motion vector field or a zero motion vector field is encoded, but other information (such as the refinement motion field)

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is not, Karczewicz discloses or renders obvious that "no further motion vector information" for the second segment (i.e., the recited "first segment") is encoded in the bitstream.

Moreover, Karczewicz discloses a multiplexor 34 that provides an encoded bitstream to the decoder. RX-0586, 20:13-16, Fig. 1.

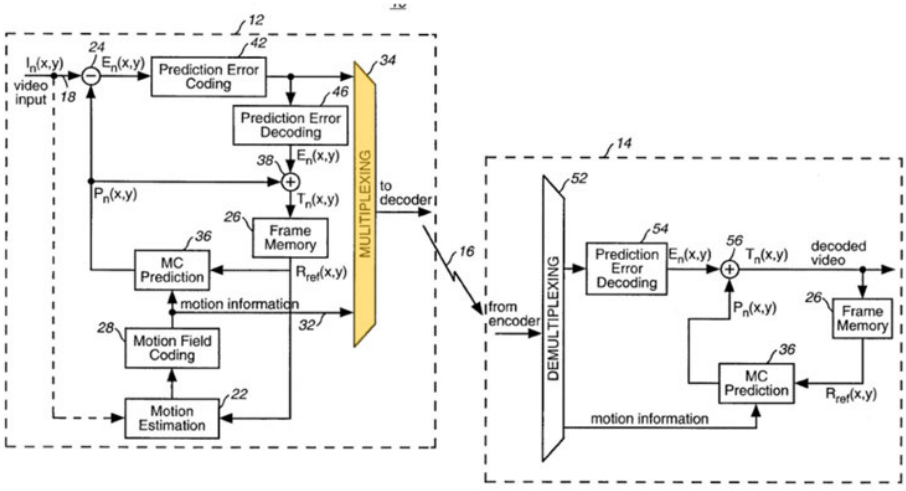


FIG. 1

Based on these disclosures, Karczewicz discloses or renders obvious claim elements 1[e] and 10[e].

(6) Claim element 21

Claim Element 21
21: A multimedia terminal, comprising an encoder according to claim 10.

Dr. Acton will explain that, under Nokia's apparent infringement theory, Karczewicz renders obvious claim element 21.

Karczewicz proposes implementing its teachings to "communications systems," including during video conferencing. RX-0586, 1:19- 22. Dr. Acton will explain that a POSITA would have understood that communications systems used for video conferencing are "multimedia terminals" because they render at least video and sound media.

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(7) Claim elements 29 and 48

Claim Element 29	Claim Element 48
29: A method according to claim 1, further comprising: deriving the predicted non-zero motion vector based at least in part on the motion vector of the second segment and motion vector of a third segment neighboring the first segment.	48. An encoder according to claim 10, wherein the motion estimation block further arranged to derive the predicted non-zero motion vector based at least in part on the motion vector of the second segment and motion vector of a third segment neighboring the first segment.

Dr. Acton will discuss how, for the reasons discussed above for limitations 1[c] and 10[c], under Nokia's apparent infringement theory, Karczewicz discloses claim elements 29 and 48. For example, Karczewicz explains that the motion vector for its second segment (mapped here to the recited "first segment") may be derived from "one or more of its previously coded neighbors." RX-0586, 17:10-14, 16:16-19 ("the encoder can try to predict the motion coefficients for a given segment using the motion field model for the segment above it or to the left. Alternatively, it can form some kind of average, using the motion field model for both neighbors."). Accordingly, Karczewicz discloses deriving a predicted non-zero motion vector for its second segment from at least two previously coded neighboring segments (the recited "second segment" and "third segment").

(8) Claim elements 7[a] and 16[a]

Claim Element 7[a]	Claim Element 16[a]
7[a]: A method of decoding an encoded video sequence, the method comprising:	16[a]: A video decoder for decoding an encoded video sequence, the decoder comprising:

Dr. Acton will explain that, under Nokia's apparent infringement theory, Karczewicz renders obvious claim elements 7[a] and 16[a]. For example, Karczewicz explains that the prediction error transmitted with the motion vector field is calculated as "the differences in pixel

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value between the current input video frame and the MC predicted version of the frame." RX-0586, 20:22-25.

Moreover, Karczewicz discloses an "apparatus, and an associated method, for encoding, and decoding, a video sequence utilizing motion compensated prediction." *Id.* at 1:7-8. Figure 1 depicts Karczewicz's encoder and decoder:

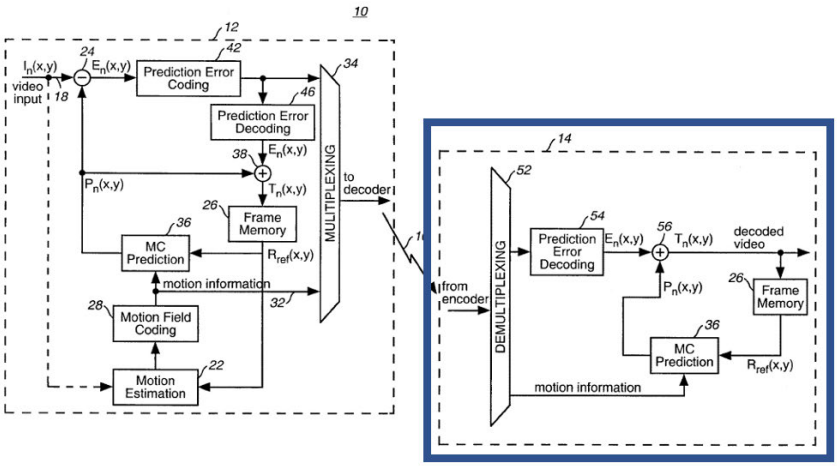


FIG. 1

(9) Claim elements 7[b] and 16[b]

Claim Element 7[b]	Claim Element 16[b]
7[b]: receiving an indication of a skip coding mode for a first segment;	16[b]: a demultiplexer for receiving an indication of a skip coding mode assigned to a first segment;

Dr. Acton will explain that, for the reasons discussed above for limitations 1[b] and 1[c], under Nokia's apparent infringement theory, Karczewicz renders obvious claim elements 7[b] and 16[b]. Specifically, as explained for limitation 1[c], Karczewicz teaches sending to the decoder, and the decoder receiving, a zero MCI that signals that no motion coefficients are sent for a segment. RX-0586, 37:12-13 ("An all-zero pattern [for motion coefficients] … can be signaled by the MCI bit alone). Further, as explained for limitation 1[b], a POSITA would have understood a

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zero MCI bit is an "indication of a skip coding mode" for Karczewicz's second segment because it indicates that no motion coefficients are used to code the segment.

Moreover, Karczewicz discloses that its decoder comprises a demultiplexor 52 that receives the encoded bitstream (and thus the recited "indication of a skip coding mode assigned to a first segment) sent by Karczewicz's encoder, as discussed above for limitation 10[e]. *Id*. at 21:1 (The decoder 14 is here shown to include a demultiplexor 52"), Fig. 1.

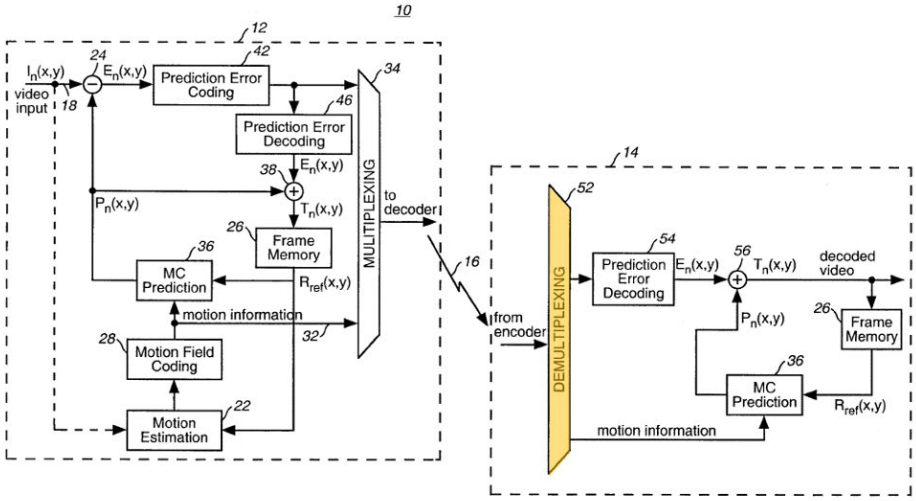


FIG. 1

Based on these disclosures, Karczewicz discloses or renders obvious claim elements 7[b] and 16[b].

(10) Claim elements 7[c] and 16[c]

Claim Element 7[c]	Claim Element 16[c]
7[c]: assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment; and	16[c]: a motion compensated prediction block for assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment; and

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[redacted]

Dr. Acton will explain that, for the reasons discussed above for limitations 1[c], under Nokia's apparent infringement theory, Karczewicz renders obvious claim elements 7[c] and 16[c] because Karczewicz's decoding method performs the same steps as the encoding method. RX-0586, 27:17-22. Specifically, Karczewicz explains that its decoder, which includes a motion compensated predictor 36 that uses the prediction motion vector field and the refinement vector field received from the encoder to reconstruct the pixels of a current frame by calculating the motion vector fields for each segment within the frame. According to Karczewicz at 27:17-22, the "functional elements of the MC predictor 36 are similar for both the encoder and decoder and the MC predictor is operable, at both the encoder and decoder, to reconstruct the pixels of a current frame by calculating the motion vector fields of each segment within the frame. The motion vector field is computed based on a prediction motion vector field [] and the refinement motion vector field coefficients," as also shown in Figures. 1, 3.

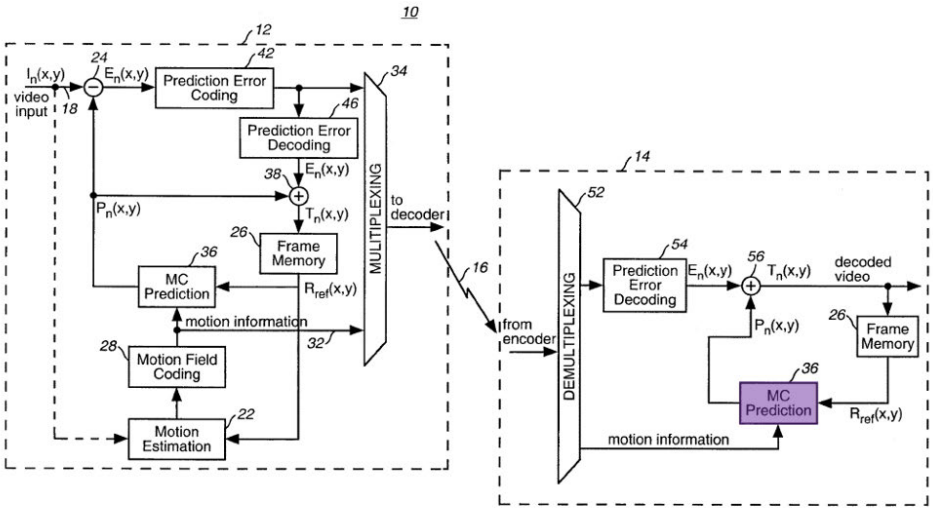


FIG. 1

Based on these disclosures, Karczewicz discloses or renders obvious claim elements 7[c] and 16[c].

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[redacted]

(11) Claim elements 7[d] and 16[d]

Claim Element 7[d]	Claim Element 16[d]
7[d]: forming a prediction for the first segment with respect to a reference frame based at least in part on the assigned motion vector for the skip coding mode, wherein the assigned motion vector is one of the zero motion vector and the predicted non-zero motion vector.	16[d]: forming a prediction for the first segment with respect to a reference frame based at least in part on the assigned motion vector for the skip coding mode, wherein the assigned motion vector is one of the zero motion vector and the predicted non-zero motion vector.

Dr. Acton will explain that, for the reasons discussed above for limitations 1[d], under Nokia's apparent infringement theory, Karczewicz renders obvious claim elements 7[d] and 16[d] because Karczewicz's decoding method performs the same steps as the encoding method. RX-0586, 27:17-22. Specifically, Karczewicz discloses its motion compensated predictor 36 forming a prediction frame using the motion vector (i.e., "the assigned either zero motion vector or predicted non-zero motion vector") and the reference frame. *Id.* at 21:16-21 ("In the motion compensated predictor 36, the compressed motion vectors and the reference frame are used to construct a prediction frame, Pn(x,y).").

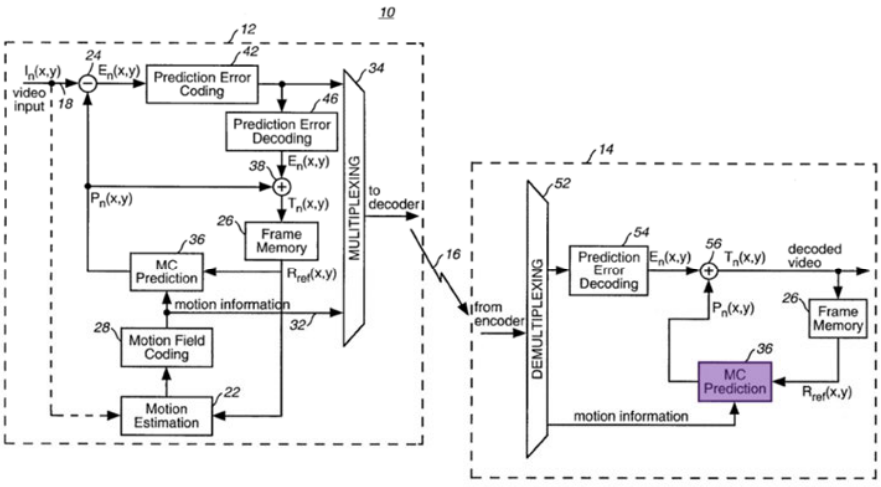


FIG. 1

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Based on these disclosures, Karczewicz discloses or renders obvious claim elements 7[d] and 16[d].

(12) Claim element 22

Claim Element 22
22: A multimedia terminal, comprising a decoder according to claim 16.

Dr. Acton will explain how, for the reasons discussed above for claim element 21, under Nokia's apparent infringement theory, Karczewicz renders obvious claim element 22.

(13) Claim element 40

Claim Element 40
40: A method according to claim 7, further comprising: deriving the predicted non-zero motion vector based at least in part on the motion vector of the second segment and motion vector of a third segment neighboring the first segment.

Dr. Acton will explain that, for the reasons discussed above for claim element 29, under Nokia's apparent infringement theory, Karczewicz renders obvious claim element 40 because Karczewicz's decoding method performs the same steps as the encoding method. RX-0586, 27:17-22.

d) Depending on the '808 Patent's Priority, the First Draft of H.264 Anticipates the '808 Patent

The simplest and most straightforward case that the '808 patent is invalid comes from the JVT's first draft of the H.264 standard in December of 2002, a document called JVT-F100. RX-1495 (JVT-F100), 8.4.1.1 ("Derivation process for … skipped macroblocks").

Dr. Acton will explain that JVT-F100 is prior art to the '808 patent unless the asserted claims have priority back to the provisional application, but Nokia cannot establish that priority. To obtain the benefit of a provisional application's date, a patent claim must be supported by the

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[redacted]

provisional application's disclosure. 35 U.S.C. § 119(e). The provisional must satisfy the requirements of 35 U.S.C. § 112 with respect to each claim for which priority is sought. *Id.* "[T]he specification of the provisional must 'contain a written description of the invention and the manner and process of making and using it, in such full, clear, concise, and exact terms,' 35 U.S.C. § 112 ¶ 1, to enable an ordinarily skilled artisan to practice the invention claimed in the non-provisional application." *New Railhead Mfg., L.L.C. v. Vermeer Mfg. Co.*, 298 F.3d 1290, 1294 (Fed. Cir. 2002); *see also Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997) ("One shows that one is 'in possession' of the invention by describing the invention, with all its claimed limitations, not that which makes it obvious.").

Dr. Acton will explain that, here, every asserted claim relates to the '808 patent's so-called "second preferred embodiment"—the one that Nokia added after it was adopted into the standard. *See* Orchard Opening Rep. ¶ 54. That embodiment purports to apply two conditional statements to the macroblocks directly to the left and directly above the macroblock in question, and to do so on an individual block-by-block basis. The text of the provisional *never* mentions those two conditional statements. RX-0010 (Provisional). The text of the provisional *never* addresses performing motion analysis block-by-block, either. *Id.* No figure from the provisional depicts this block-by-block approach. *Id.* There is no mention of deciding zero/non-zero based on "availability" of a macroblock as required in the first condition or deciding based on whether a macroblock "uses the latest picture as reference" as required in the second condition. *Id.* Instead, the *only* disclosure in the provisional is for a three-step method applied to all six macroblocks surrounding the macroblock in question at the same time. *Id.* Nokia is limited to the four corners of its provisional disclosure for anything that is "essential" to patentability. Nokia's "incorporation by reference" of two non-patent documents written by others, Joint Model Number 1 and Global

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[redacted]

Motion Vector Coding (GMVC), does nothing to augment the provisional application's text and figures. 37 CFR § 1.57(d) ("'Essential material' may be incorporated by reference, but only by way of an incorporation by reference to a U.S. patent or U.S. patent application publication…. 'Essential material' is material that is necessary to: (1) Provide a written description….").

Moreover, Dr. Acton will explain that under Nokia's theory that analyzing motion characteristics of "surrounding" macroblocks includes analyzing individual macroblocks on a block-by-block basis, none of the claims reciting "skip coding mode" are supported by the '808 Provisional. Dr. Acton will further explain that the '808 provisional also does not provide, for example, written description for at least the following additional claim limitations:

- "*forming a prediction* for the first segment with respect to a reference frame based at least in part on the assigned motion vector for the skip coding mode, wherein the assigned motion vector is one of the zero motion vector and the predicted non-zero motion vector" (claims 1, 7, 10, 16);
- "*providing in an encoded bitstream* an indication of the skip coding mode" (claims 1, 10);
- "*receiving an indication* of a skip coding mode for a first segment" (claims 7, 16);
- "a *coding controller* for assigning a skip coding mode to a first segment" (claim 10);
- "a *multiplexer* for providing in an encoded bitstream an indication of the skip coding mode" (claim 10);
- "a *demultiplexer* for receiving an indication of a skip coding mode assigned to a first segment" (claim 16);
- "a *motion estimation block* for assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part

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[redacted]

on the motion information of a second segment neighboring the first segment" (claim 10).

Dr. Acton will explain that because the provisional does not contain anything about the "second embodiment," or the asserted claims, so Nokia is not entitled to the provisional priority date for claims related to that embodiment and the critical date for the asserted claims is the filing date of the '808 patent, *i.e.*, March 14, 2003. Based on the March 14, 2003 priority date, under Nokia's interpretation of the H.264 Specification in relation to the '808 patent, the disclosures in JVT-F100, which match those Nokia cites from the H.264 Specification, would anticipate each limitation of the '808 patent.

(1) Claim elements 1[a] and 10[a]

Claim Element 1[a]	Claim Element 10[a]
1[a]. A method of encoding a video sequence, the method comprising:	10[a]. A video encoder for encoding a video sequence, the encoder comprises:

Dr. Acton will explain that under Nokia's apparent infringement theory, JVT-F100 renders obvious claim elements 1[a] and 10[a].

For example, JVT-F100 "was developed in response to the growing need for higher compression of moving pictures for various applications such as videoconferencing, digital storage media, television broadcasting, internet streaming, and communication. It is also designed to enable the use of the coded video representation in a flexible manner for a wide variety of network environments." RX-1495 (JVT-F100), Sec. 0.2. Moreover, JVT-F100 provides definitions of coding terms, including "bitstream," "coded picture," "decoded picture," "decoding process," and "primary coded picture." *Id*., Sec. 3.

Based on these disclosures, under Nokia's infringement theory, JVT-F100 discloses or renders obvious claim elements 1[a] and 10[a].

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[redacted]

(2) Claim elements 1[b] and 10[b]

Claim Element 1[b]	Claim Element 10[b]
1[b]: assigning a skip coding mode to a first segment of a first frame of the sequence;	10[b]: a coding controller for assigning a skip coding mode to a first segment;

Dr. Acton will explain that, under Nokia's apparent infringement theory, JVT-F100 renders obvious claim elements 1[b] and 10[b].

JVT-F100 defines a "skipped macroblock" as a "macroblock for which no data is coded other than an indication that the macroblock is to be decoded as 'skipped.'" RX-1495 (JVT-F100), Sec. 3.118. According to JVT-F100, "mb_type specifies the macroblock type." *Id*., Sec. 7.4.5. JVT-F100 also states that "mb_skip_run is present only when entropy_coding_mode_flag is equal to 0," and "mb_skip_flag is present only when entropy_coding_mode_flag is equal to 1." *Id*., Sec. 7.4.4.

Based on these disclosures, under Nokia's infringement theory, JVT-F100 discloses or renders obvious claim elements 1[b] and 10[b].

(3) Claim elements 1[c] and 10[c]

Claim Element 1[c]	Claim Element 10[c]
1[c]: assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment; and	10[c]: a motion estimation block for assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment; and

Dr. Acton will discuss how, under Nokia's apparent infringement theory, JVT-F100 renders obvious claim elements 1[c] and 10[c].

JVT-F100, in Section 8.4.1.1, teaches, for example, that the motion vector for a skip mode macroblock called "P_skip" is "set to zero" if the macroblock to the left has a zero motion vector

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("both components of mvL0B are equal to zero") and that as a default the motion vector is assigned to the "predictor," which can be a non-zero motion vector. RX-1495 (JVT-F100), Sec. 8.4.1.1, *see also* Sec. 8.4.1, 8.4.1.3, 8.4.1.3.2.

Based on these disclosures, under Nokia's infringement theory, JVT-F100 discloses or renders obvious claim elements 1[c] and 10[c].

(4) Claim elements 1[d] and 10[d]

Claim Element 1[d]	Claim Element 10[d]
1[d]: forming a prediction for the first segment with respect to a reference frame based at least in part on the assigned motion vector for the skip coding mode, wherein the assigned motion vector is one of the zero motion vector and the predicted non-zero motion vector; and	10[d]: forming a prediction for the first segment with respect to a reference frame based at least in part on the assigned motion vector for the skip coding mode, wherein the assigned motion vector is one of the zero motion vector and the predicted non-zero motion vector; and

Dr. Acton will explain that, under Nokia's apparent infringement theory, JVT-F100 renders obvious claim elements 1[d] and 10[d].

Based on the assigned motion vector, JVT-F100 in Section 8.4 teaches an "Inter Prediction Process" that forms a prediction using a motion vector. RX-1495 (JVT-F100), Sec. 8.4. The process includes deriving "motion vector components," which is the process in Section 8.4.1.1 discussed above, and then creating "Inter prediction samples," using the process described in Section 8.4.2 that inputs the macroblock and motion information and produces pixel values. *Id.*

Based on these disclosures, under Nokia's infringement theory, JVT-F100 discloses or renders obvious claim elements 1[d] and 10[d].

(5) Claim elements 1[e] and 10[e]

Claim Element 1[e]	Claim Element 10[e]
1[e]: providing in an encoded bitstream an indication of the skip coding mode, wherein	10[e]: a multiplexer for providing in an encoded bitstream an indication of the skip

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[redacted]

no further motion vector information for the first segment is coded in the encoded bitstream.	coding mode, wherein no further motion vector information for the first segment is coded in the encoded bitstream.

Dr. Acton will explain that, under Nokia's apparent infringement theory, JVT-F100 renders obvious claim elements 1[e] and 10[e].

Specifically, section 3.11 of JVT-F100 defines "bitstream" as "a sequence of bits that forms the representation of the data and coded… frames." RX-1495 (JVT-F100), Sec. 3.11. JVT-F100 identifies the bitstream semantics in Section 7 and specifically for how the P_skip coding mode is indicated in the bitstream in Section 7.4.4. RX-1495 (JVT-F100), Sec. 7.4.4. JVT-F100 also teaches no further motion information is coded in the bitstream because, as mentioned above, the definition of a "skipped macroblock," such as P_skip, is that it is a macroblock for which "no data is coded other than an indication that the macroblock is to be decoded as 'skipped.'" RX-1495 (JVT-F100), Sec. 3.118.

Based on these disclosures, under Nokia's infringement theory, JVT-F100 discloses or renders obvious claim elements 1[e] and 10[e].

(6) Claim element 21

Claim Element 21
21: A multimedia terminal, comprising an encoder according to claim 10.

Dr. Acton will explain that, for the reasons discussed above for limitations 1 and 10, under Nokia's apparent infringement theory, JVT-F100 renders obvious claim element 21.

(7) Claim elements 29 and 48

Claim Element 29	**Claim Element 48**
29: A method according to claim 1, further comprising:	48. An encoder according to claim 10, wherein the motion estimation block further arranged to derive the predicted non-zero

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deriving the predicted non-zero motion vector based at least in part on the motion vector of the second segment and motion vector of a third segment neighboring the first segment.	motion vector based at least in part on the motion vector of the second segment and motion vector of a third segment neighboring the first segment.

Dr. Acton will discuss how, under Nokia's apparent infringement theory, JVT-F100 renders obvious claim elements 29 and 48.

Section 8.4.1.3.1 of JVT-F100 describes the "derivation process for median luma motion vector prediction." *Id*., Sec. 8.4.1.3.1. According to this section, "each component of the motion vector prediction mvpLX is given by the median of the corresponding vector components of the motion vector mvLXA, mvLXB, and mvLXC." *Id*.

Based on these disclosures, under Nokia's infringement theory, JVT-F100 discloses or renders obvious claim elements 29 and 48.

(8) Claim elements 7[a] and 16[a]

Claim Element 7[a]	Claim Element 16[a]
7[a]: A method of decoding an encoded video sequence, the method comprising:	16[a]: A video decoder for decoding an encoded video sequence, the decoder comprising:

Dr. Acton will explain that, for the reasons discussed above for limitations 1[a] and 10[a], under Nokia's apparent infringement theory, JVT-F100 renders obvious claim elements 7[a] and 16[a]

(9) Claim elements 7[b] and 16[b]

Claim Element 7[b]	Claim Element 16[b]
7[b]: receiving an indication of a skip coding mode for a first segment;	16[b]: a demultiplexer for receiving an indication of a skip coding mode assigned to a first segment;

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[redacted]

Dr. Acton will discuss how, for the reasons discussed above for limitations 1[b] and 1[e], under Nokia's apparent infringement theory, JVT-F100 renders obvious claim elements 7[b] and 16[b].

(10) Claim elements 7[c] and 16[c]

Claim Element 7[c]	Claim Element 16[c]
7[c]: assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment; and	16[c]: a motion compensated prediction block for assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment; and

Dr. Acton will explain that, for the reasons discussed above for limitations 1[c], under Nokia's apparent infringement theory, JVT-F100 renders obvious claim elements 7[c] and 16[c].

(11) Claim elements 7[d] and 16[d]

Claim Element 7[d]	Claim Element 16[d]
7[d]: forming a prediction for the first segment with respect to a reference frame based at least in part on the assigned motion vector for the skip coding mode, wherein the assigned motion vector is one of the zero motion vector and the predicted non-zero motion vector.	16[d]: forming a prediction for the first segment with respect to a reference frame based at least in part on the assigned motion vector for the skip coding mode, wherein the assigned motion vector is one of the zero motion vector and the predicted non-zero motion vector.

Dr. Acton will explain that, for the reasons discussed above for limitations 1[d], under Nokia's apparent infringement theory, JVT-F100 renders obvious claim elements 7[d] and 16[d].

(12) Claim element 22

Claim Element 22
22: A multimedia terminal, comprising a decoder according to claim 16.

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[redacted]

Dr. Acton will explain that, for the reasons discussed above for claims 7 and 16, Under Nokia's apparent infringement theory, JVT-F100 renders obvious claim element 22.

(13) Claim element 40

Claim Element 40
40: A method according to claim 7, further comprising: deriving the predicted non-zero motion vector based at least in part on the motion vector of the second segment and motion vector of a third segment neighboring the first segment.

Dr. Acton will explain that, for the reasons discussed above for claim elements 29 and 48, under Nokia's apparent infringement theory, JVT-F100 renders obvious claim element 40.

e) Absence of Secondary Considerations

Contrary to Nokia's expert, no secondary considerations support nonobviousness for the '808 patent.

Nokia has not brought forth any evidence of purported copying, long-felt need, or initial skepticism/unexpected results, or failed attempts by others. Indeed, the standardization history laid out above demonstrates that skip coding and motion compensation prediction based on neighboring blocks was well-understood prior to H.264 and the '808 patent.

For the remaining categories of secondary considerations—commercial success and praise by others—to the extent Nokia can identify any evidence potentially demonstrating their existence generally, as Dr. Acton will explain, Nokia has not and cannot demonstrate the required nexus to the '808 patent. The Accused Products are feature-rich home electronics that offer consumers a range of value propositions, but there is absolutely no suggestion that consumers who purchase these devices know about or desire a skip coding mode with motion compensation prediction. Similarly, when pressed for examples of praise, all Nokia has identified are awards and recognition that have been given to the H.264 standard generally rather than to the particular, accused feature.

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See, e.g., RX-1984C (Lainema Dep. Tr.), 57:19-59:7. Notably, the H.264 skip mode that Nokia alleges practices the asserted claims of the '808 patent was not implemented into the H.265 skip mode. Even the JVT categorized the feature as a "bug-fix/clean-up," and Nokia's own expert identifies it as an "enhancement." RX-0511.0044 (JVTC001d3).; *see also* Orchard Dep. Tr., 115:21-116:20 (calling the '808 patent's alleged solution an "enhancement"). As such, Nokia cannot demonstrate nexus and it has no evidence of secondary considerations.

3. The'808 Patent Is Ineligible Under § 101 Because It Is Directed to an Abstract Idea and Describes Only Elements that Were Well-Known, Routine, and Conventional at the Time of the Patent.

The first step in the process for determining whether claims contain patentable subject matter under § 101 requires considering whether the claims are directed to a patent-ineligible concept. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 507 U.S. 208, 218 (2014). Consideration of the asserted claims demonstrates that each is directed to an abstract idea and is not patent-eligible.

As discussed above, the "skip coding mode" recited in every asserted '808 claim represents—at most—a way of coding motion vectors in shorthand to save space in the bitstream. But the act of abbreviating is an abstract mental process that humans have undertaken for centuries. Indeed, while the very word "shorthand" can refer to a set of abbreviated information, it is also a verb, representing the act of shortening information to occupy less space. And, whether one is talking about case citations in a legal brief[16], exponents[17], chemical formulas[18], or complex sports

[16] The Supreme Court's seminal case in this area is cited as *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 134 S.Ct. 2347, 189 L.Ed.2d 296 (2014). That citation alone contains at least seven forms of abbreviation; without them, the citation would read *Alice Corporation Property Limited. v. CLS Bank International*, 573 United States 208, 134 Supreme Court 2347, 189 Lawyers' Edition Second 296 (2014).

[17] As one example, the exponent 2^{16} represents the sum of 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2.

[18] The periodic table of elements is its own exercise in abbreviation, assigning each element a shorthand designation. To represent complex molecules, those abbreviations can be combined,

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plays[19], humans have developed all manner of codes and abbreviations to convey large amounts of information in smaller amounts of space. This type of abbreviation is exactly what the '808 patent seeks to claim. Nokia's own named inventor Lainema admitted as much. *See, e.g.*, RX-1984C (Lainema Dep. Tr.), at 326:4-10, 340:16-342:8, 343:8-18, 348:9-350:418.

Moreover, Dr. Lainema conceded that each of the pieces of the '808 motion compensation prediction existed in the prior art. *See, e.g.*, *id.* at 323:19-20, 320:19-321:9, 326:22-327:7, 337:15-338:2. This is significant because the '808 patent cannot be viewed as some type of *Enfish*-like improvement to computer technology. *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016) (finding claims to "self-referential database" eligible as improvement to computer functionality rather than utilizing computer to undertake abstract mental steps). Instead, the only improvement the '808 patent purportedly offered was to use fewer bits to represent the same information. *Id.*

Post-*Alice*, the Federal Circuit has reiterated numerous times that patents directed to mental steps are abstract and therefore ineligible, even when performed in the computer environment. *See, e.g.*, *PersonalWeb Techs., LLC v. Google LLC*, 8 F.4th 1310, 1316 (2021) ("functions are mental processes that 'can be performed in the human mind' or 'using a pencil and paper.'") (quoting *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1371–72 (Fed. Cir. 2011)). Indeed, the Federal Circuit has expressly rejected claims directed to compression and increasing

such a compound of two molecules of hydrogen, one molecule of sulfur, and four molecules of oxygen is written H_2SO_4.

[19] For example, plays in the National Football League are famously filled with codewords and abbreviations that represent underlying concepts and options that are understood by the players on a team. "Red Right 30 Pull Trap" specifies a formation including three wide receivers and two running backs. The receivers include a split end to the left, a tight end, and a flanker to the right, while the backs are split two yards apart behind the quarterback, with the fullback on the side featuring the tight end. The "3" represents a toss play, while the "0" represents the hole in the offensive line that the back should target.

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compression efficiency as abstract. *See, e.g.*, *Realtime Data LLC v. Array Networks Inc.*, No. 21-2251, No. 21-2291, 2023 WL 4924814, *1 (Fed. Cir. Aug. 2, 2023) ("Using multiple compression techniques and compressing and storing data on a generic component faster than if it were uncompressed…is an abstract idea and cannot provide an inventive concept."). This dooms claims like those in the '808 patent, which a computer has merely been substituted for a human actor that could have and would have undertaken these same mental steps directed to expressing the motion compensation information in shorter form.

Once it is determined that the claims of a patent are directed to an abstract idea, then the Commission must consider, in a second step, whether the claims contain an "inventive concept" that transforms the abstract idea into patent-eligible subject matter. *Alice*, 507 U.S. at 221. Here, the '808 patent fails the second *Alice* step as well.

Although certain '808 claims reference physical structures, the '808 patent itself does not implicate a new or improved machine for shortening the bitstream. Indeed, even the '808 apparatus claims reference method steps to be undertaken. JX-0003. And, as Dr. Acton will testify, the components used to perform the '808 patent methods are nothing more than conventional equipment arranged in routine ways. No physical structure, arrangement of components, or other purported improvement in technology saves the '808 patent from invalidity.

Given that the '808 patent attempts to claim an abstract idea while offering nothing transformative, the asserted claims fail both parts of the *Alice* test, and the '808 patent should be deemed ineligible for patenting under 35 U.S.C § 101. *See Digitech Image Techs. v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1351 (Fed. Cir. 2014) (holding patents directed towards "a process that employes mathematical algorithms to manipulate existing information to generate additional information" as ineligible); *Fuzzysharp Techs. Inc. v. Intel Corp.*, No. 12-CV-04413, 2013 WL

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5955668, at *10-13 (N.D. Cal. Nov. 6, 2013) (finding invalid under § 101 patents "eliminating or simplifying portions of otherwise well-known and established computations").

4. Independent Claim 10 and its Dependent Claims are Invalid Under § 112

Asserted claim 10 is invalid under § 112 because it is an apparatus claim ("video encoder for encoding a video sequence") that includes a freestanding method limitation ("forming a prediction…"). *See IPXL Holdings, LLC v. Amazon, Inc.*, 430 F.3d 1377, 1384 (2005). Claim 10 reads:

> 10. *A video encoder for encoding a video sequence*, the encoder comprises:
>
> a coding controller for assigning a skip coding mode to a first segment;
>
> a motion estimation block for
>
> assigning either a zero motion vector or a predicted non-zero motion vector for the skip coding mode for the first segment based at least in part on the motion information of a second segment neighboring the first segment; and
>
> *forming a prediction for the first segment with respect to a reference frame based at least in part on the assi*
>
> *ned motion vector for the skip coding mode, wherein the assigned motion vector is one of the zero motion vector and the predicted non-zero motion vector; and*
>
> a multiplexer for providing in an encoded bitstream an indication of the skip coding mode, wherein no further motion vector information for the first segment is coded in the encoded bitstream.

JX-0003, claim 10 (emphasis added).

Notably, the "motion estimation block" is not used for "forming a prediction" because, as the '808 patent describes, the motion estimation block 630 (shown in red) "analy[zes] [the] motion in a region surrounding a macroblock to be coded to determine whether a zero valued or non zero valued skip mode motion vector should be used." *Id.* at 18:24-28. Depending on whether a zero

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valued or non zero valued skip mode motion vector should be used, "active motion parameter generation block 803" or "zero motion parameter generation block 804" form either a "zero" or "non zero valued skip mode motion vector representative of the motion in the surrounding region." *Id.* at 18:62-19:10.

IV. U.S. PATENT NO. 8,204,134

A. Claim Construction

The parties did not seek construction of any terms from the '134 patent.

B. Noninfringement

1. Nokia Cannot Carry Its Burden of Proof

a) Nokia's '134 Patent Is Not Essential to H.264

Nokia alleges that, except for claim 15, each of the asserted claims are essential to implementation of an H.264 decoder. This is not correct. None of the claims are essential. For the reasons discussed in the detailed discussion of noninfringement of claim 9, below, the H.264 gaps_in_frame_num_value_allowed_flag is not, as Nokia alleges, an "indication informing an intentional discontinuity of numbering of the image frame." That is sufficient, by itself, to establish that the '134 patent is non-essential.

The claims are non-essential for the additional reasons that each independent claim recites "configur[ing], *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." JX-0004 ('134 patent), 23:40-43, 24:20-23 (emphasis added). There is nothing in the H.264 standard that requires the decoder to act in response to the gaps flag. As Dr. Acton will explain, there is no mandatory provision of the H.264 standard pertinent to the decoder process that compels the decoder to use the gaps flag for any purpose whatsoever. Dr. Kia conceded that the one place gaps

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flag was mentioned in clause 8 of H.264, which specifies requirements for the decoder, is in a NOTE in clause that is not mandatory. Kia Dep. Tr. at 125:6-10, 149:21-150:10.

Dr. Kia argued in his report that the decoder was, in effect, acting in response to the indication because intentional discontinuities in frame_num values could only be created when the gaps flag was set to 1. Kia Op. Rep., ¶¶ 264, 274. However, the fact that there can only be intentional discontinuities when the gaps flag is asserted does not mean that the decoder must consider the value of the gaps flag when it decides how to respond to a discontinuity. For example, the decoder may be constructed to respond to all discontinuities, intentional and accidental, by inserting an image frame in the decoder buffer without regard to the value of the gaps flag. Indeed, [redacted]. [redacted] In addition, as Dr. Acton will testify, [redacted]. RPX-0565C. Dr. Kia offers no evidence regarding what [redacted] Dr. Kia has effectively conceded that [redacted] (Kia Depo. Tr.) at 231:8-232:10. [redacted]

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[redacted]

[redacted]

[redacted]

b) Nokia Cannot Demonstrate that the Few Chips It Analyzed Are "Representative"

Nokia's entire infringement case rests on an analysis of a mere subset of chips from Respondents' products, but Nokia and its expert have failed to demonstrate that the chips they analyzed are representative of those they did not. Establishing representativeness is Nokia's burden. *LED Lighting Devices*, Inv. No. 337-TA-1081, Comm'n Op. at 10-16. In *LED Lighting Devices*, the Commission found that type of analysis as performed by Dr. Kia here was "conclusory and insufficient to establish representativeness." *See, e.g.*, Comm'n Op. at 11. The Commission further found that unsupported testimony with no evidentiary basis will not be credited. *Id.* at 15. Dr. Kia's assertions of representativeness are particularly problematic given the trivial nature of the difference between firmware that Dr. Kia alleges is infringing and firmware that is demonstrably noninfringing.

Nokia cannot meet its burden to show the subset of chipsets analyzed are somehow representative of the remaining chipsets at issue. Indeed, Dr. Acton will explain how Dr. Kia's representativeness analysis is deficient for all of the various source code analyzed—including source code related to Amazon's Products [redacted], Fire OS)[20] and for HP's products [redacted].

[redacted]

[redacted]

[redacted]

[20] Dr. Kia did not offer an opinion regarding [redacted]

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[redacted]

Similarly, the HP Accused Products use [redacted].

The HP Accused Products use [redacted]

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[redacted]

Related to [redacted].

[redacted] (Kia Op. Rep., App. C.4-A/D.4-A). Nokia relies on a late produced declaration [redacted] He states [redacted]

Without some explanation of these terms and how to interpret [redacted],

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[redacted] He provides no useful evidence [redacted]

Additionally, none of the chip vendors indicated that a single chip was representative of all other chips, which is the approach Dr. Kia took with respect to at least certain chip vendors in his report. Nokia also did not take a single chip vendor deposition and, as such, has no confirmation that the chip operates in the manner it claims, that the functions it is pointing to are ever called, or in what manner a chip is representative of another chip.

Having failed to perform this basic and required analysis, Nokia cannot satisfy its burden of proof on representativeness. *LED Lighting Devices*, Inv. No. 337-TA-1081, Comm'n Op. at 10-16.

c) Dr. Kia's Testing Is Not Proof of Infringement

Dr. Kia's expert report describes testing performed on a number of the Accused Products. Kia Op. Rep., App. G.2. This testing demonstrated that these devices were capable of rendering the test video sequence, MR3_TANDBERG_B.264, which specifically includes a gaps_in_frame_num_value_allowed flag set to 1 and incorporates some omitted video frames that cause the resulting video sequence to have discontinuities in frame_num values.

Dr. Kia's tests do not serve as proof of infringement. In addition to the fact that the gaps_in_frame_num_value_allowed_flag is not an "indication informing an intentional discontinuity," JX-0004 ('134 patent), claim element 9[a], Dr. Acton will explain that the H.264 standard does not require the decoder to use the flag when determining how to deal with discontinuities in frame numbering. As a result, the decoder need not infringe the claim recitations requiring it to "configur[e], *in response to the indication*, the buffer memory to provide a number

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of image frames corresponding to at least one discontinuity." JX-0004 ('134 patent), claim element 9[b] (emphasis added).

As Dr. Acton will explain, a decoder that inserts image frames in the decoder buffer for every frame number contained in a discontinuity can successfully decode any video with discontinuities without needing to consider the gaps flag. This is what the [redacted] and Dr. Kia never claimed that they are not capable of correctly decoding H.264 video. Kia Dep. Tr. at 233:15-16.

2. The Accused Products Do Not Meet the Limitations of the Asserted Claims

In addition to the overarching flaws discussed above, Nokia cannot demonstrate that every claimed limitation is present in the Accused Products. While Nokia has failed to demonstrate that a number of the various limitations of the asserted claims are met by the accused products, two key limitations are critical to understanding why the accused products do not infringe.

a) The gaps_in_frame_num_allowed_flag Is Not an "Indication Informing an Intentional Discontinuity" As Required by the Claims

The only remaining asserted independent claim recites an "indication informing an intentional discontinuity of numbering of the image frames." JX-0004 ('134 patent), 23:37-39, 24:17-19. Nokia contends that this is infringed by the gaps_in_frame_num_value_allowed_flag ("the gaps flag") that is encoded at the beginning of a sequence of frames in an H.264 encoded video sequence. Kia Opening Report, para. 239. However, the gaps flag cannot serve as the claimed "indication." Both experts agree that discontinuities in frame numbering that appear at the decoder may result from both accidental transmission errors as well as intentional decisions by the video server sending the video stream to the decoder to omit some frames. *See,* Kia Depo Tr., 101:17-103:14 (decoder may encounter frames lost due to transmission error), 105:19-22.

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[redacted]

Both experts agree about the incapacity of the gaps flag to inform the decoder that any missing frame number is an "intentional discontinuity." Dr. Acton will testify that the encoder is simply unable to know, when it sets the value of the gaps flag, whether frames will be missing at the decoder as a result of intentional act or accident. Therefore, at most the gaps flag can indicate the possibility that the video server might intentionally omit frames when the flag is asserted.

During his deposition Dr. Kia was presented with a set of frame sequences received by an H.264 decoder that included some combination of frames that had been intentionally dropped and frames that had been lost due to transmission errors. He conceded that the fact that the gaps flag was asserted did not enable the decoder to identify which frames had been intentionally dropped. For example, in the example figure below, RX-3289 deposition Exhibit 13, Figure 3, frames numbered 5 and 6 were dropped. Dr. Kia agreed that the decoder would not know whether frames 5 and 6 were intentionally dropped or not, even though the gaps flag was asserted. Kia Dep. Tr., 225:13-226:12. Dr. Kia conceded that this is generally true of any discontinuity. *Id.*, 337:19-338:3 ("Q And when the flag gaps_in_frame_num_allowed_flag is equal to 1, there can be both intentional or unintentional gaps, correct? A So for when the decoder is operating and the gap flag is set, you could have both intentional and unintentional gaps."), 308:18-310:1.

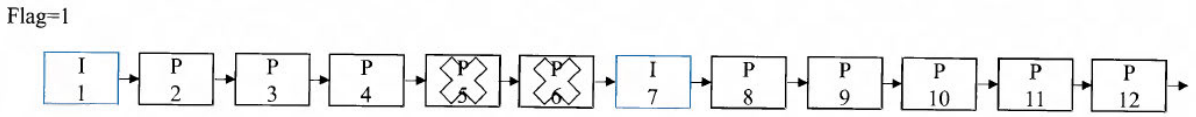


Figure 3

Dr. Kia further conceded that the gaps flag could be asserted when there no discontinuities at all in the received bitstream. Kia Depo. Tr., 306:20-308:17. Given that the gaps flag does not indicate that any frames have been intentionally dropped, and does not allow the decoder to

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determine whether individual discontinuities are accidental or intentional, it cannot be the claimed "indication."

To save infringement, Dr. Kia proposes several reinterpretations of the claimed "indication." He first argues that the "indication" need not inform the decoder of any actual discontinuities. Kia Op. Rep., ¶ 244 ("The claim language does not require that a discontinuity in fact exist."). Additionally, he argues that the "indication" need not inform the decoder of actual intentional discontinuities, but that it serves as a directive to the decoder that it should treat any discontinuities that it encounters as if they were intentional. *Id.*, ¶ 247 ("Thus, the combination of the gaps_in_frame_num_value_allowed_flag with the frame_num informs the decoder of a specific discontinuity and informs the decoder that the discontinuity should be treated as intentional."); *see also, id.* ¶ 257.

But Dr. Kia's fallback interpretations are not compatible with the disclosures in the patent specification. The '134 patent explains that the ability to distinguish intentional and accidental discontinuities is "essential."

> If the image frames are indexed in different order in the buffers of the encoder and the decoder, an incorrect reference image may be used in the decoder. To prevent this, it is essential that the decoder can be controlled to take into account image frames and sub-sequences that the encoder has intentionally removed from the video sequence. In that case the image frame numbering may comprise gaps, which the decoder typically interprets as errors and tries to reconstruct the image frames interpreted as lost. For this reason, it is essential that the encoder is capable to inform the decoder that the discontinuities in the image numbering of the transmitted image frames are intentional.

JX-0004 ('134 patent), 20:22-33. This passage asserts that the prior art behavior of a decoder is to account for missing frame numbers contained in a discontinuity by attempting to reconstruct the missing frame in the decoder buffer. This is unnecessary if the frame was intentionally omitted, because an intentionally omitted frame will never be needed for decoding other frames and thus

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need not be represented by any actual image data, reconstructed or not. *Id.* at 20:34-38 (in response to indication informing of intentional discontinuity "the decoder enters into the buffer memory a number of image frames, the contents of which may be fully random, corresponding to the missing image numbers."). Thus, the patent proposes, the effort involved in reconstructing an accidentally lost frame can be avoided for an intentionally omitted one. To allow the decoder to determine when this saving of effort is appropriate, the patent introduced the claimed "indication" to identify intentionally omitted frames. A signal, like the gaps flag, that cannot perform that "essential" function of distinguishing accidental and intentional omissions does not enable the decoder to take advantage of the only benefit of the "indication" identified in the patent, which is avoiding the need to reconstruct missing frame when the decoder can be sure that those frames were intentionally dropped.

Dr. Acton will explain that if, as Dr. Kia's fallback opinions propose, the "indication" need not actually distinguish accidental and intentional omissions, then the decoder has no sound basis for determining whether it needs to reconstruct the missing frame or not. As Dr. Action will explain, if the decoder simply assumes that all discontinuities are intentional, then it will erroneously not attempt to reconstruct frames that will be needed during subsequent decoding operations.

Further, Dr. Kia contradicts himself by admitting in other parts of his testimony that he understands that the purpose of the "indication" is to provide information to the decoder identifying gaps in the frame numbering as intentional. For example, in paragraph 243 of his Opening Report, he wrote: "The 134 Patent specification therefore makes clear that the claimed 'indication informing an intentional discontinuity in the numbering of the image frames' includes informing the decoder that any gaps (or discontinuities) in the numbering of image frames are

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intentional." Conversely, in paragraph 198 of his Rebuttal Report, Dr. Kia wrote that "the 134 Patent contributed, among other things, the novel ability to distinguish between intentional and unintentional discontinuities in frame numbering." *See also* Kia Rebuttal Rep., ¶ 107 ("the relevant claimed features of the 134 Patent, including without limitation an indication informing an intentional discontinuity of numbering of image frames and using that indication in the decoding process to distinguish from, for example, unintentional loss of image frames, corruption of data, and errors"). In these passages, Dr. Kia clearly describes that the claimed "indication" is providing information to the decoder that distinguishes intentional discontinuities from accidental. He does not claim here that the indication need not pertain to any actual discontinuities, nor does he argue that the indication only directs the decoder to treat discontinuities as if they were intentional without regard to whether this is true or not.

Dr. Kia's arguments are also incompatible with the prosecution history of the '134 patent, discussed above (section I.D.2.d) in the introduction of the '134 patent. As detailed there, Nokia was compelled to modify its claims to add the language characterizing the "indication" as "informing an intentional discontinuity." JX-0002 (Amendment of November 7, 2011, at 2, 3, 5). This change was made after the examiner determined that "indication related to an intentional discontinuity" was not sufficiently restrictive to distinguish the prior art, which included an indication that the examiner concluded was "related to" an intentional discontinuity resulting from omitted frames. JX-0002 (Office Action of August 9, 2011, at 3, 4-5). Nokia identified as the supporting disclosure for the move from "related to" to "informing" paragraph [0017] of its specification, which stated that "said indication informs that at least one discontinuity in the numbering of image frames in the video sequence is intentional." JX-0002.003-48 (Application of Jan. 25, 2006 at 6); *id.* (Amendment of Nov. 7, 2011 at 8). Nokia's movement from "related" to

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"informing an intentional discontinuity" in order to distinguish the prior art and gain allowance of its claims estops its current efforts to redefine the plain meaning of "informing."

Given these reasons to conclude that an "indication informing an intentional discontinuity" requires identification of an actual intentional discontinuity, Nokia's allegations against H.264's gaps_in_frame_num_value_allowed_flag must fail. As Dr. Kia conceded, when the gaps flag is asserted there may not be any discontinuities at all, or only discontinuities due to unintentional transmission losses. Kia Op. Rep., ¶ 246 ("It is of course possible that gaps_in_frame_num_value_allowed_flag be set to 1 and there not be any actual discontinuities…."); Kia Dep. Tr. at 225:13-226:12.

Dr. Kia also proposes that the "indication" recitation can be infringed under the doctrine of equivalents by a combination of the gaps flag and the frame_num values associated with each encoded frame received by the decoder. Kia Op. Rep., ¶¶ 253-254. However, this proposed combination does not come any closer to the recited "indication informing an intentional discontinuity" than the gaps flag by itself. As Dr. Acton will testify, the frame_num values for received frames do not provide any information about whether missing frames are absent by accident or intentionally. They identify the decoding order of frames received, so at most their absence can indicate that a frame is missing, but not explain why. In addition, the doctrine of equivalents cannot be used to recapture subject matter surrendered in prosecution when the proposed equivalent was foreseeable at the time of amendment and if the proposed equivalent has a "more than tangential" relationship to the rationale for narrowing the claims. *Honeywell, Int'l, Inc. v. Hamilton Sunstrand, Corp*., 523 F.3d 1304, 1312 (Fed. Cir. 2008). Dr. Kia's proposed expansion was foreseeable at the time of the amendment because it combines the gaps flag and frame_num value indications from the H.264 standard, which had already been published and were

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in wide use when Nokia amended its claims in 2011. Additionally, the proposed equivalent has a "more than tangential" relationship to the rationale that Nokia gave for narrowing the claims. When Nokia amended the claims to recite that the "indication" was "informing an intentional discontinuity," as opposed to merely "relating to an intentional discontinuity," it explained that it was distinguishing the prior art that did not inform of an intentional discontinuity. JX-0002.2429-2437 (Amendment of Nov. 7, 2011, at 8.) Dr. Kia's proposed combination moves away from an indication "informing" the decoder that a discontinuity is intentional. Instead, it would require the decoder to deduce from the frame_num values that a discontinuity has occurred and to infer from the gaps flag and other factors such as whether the missing frame number is referenced in the encoding of other frames, whether the missing frame was intentionally omitted or accidentally lost. Kia Opening Report, para 253 ("the decoder uses the indications in the bitstream to become informed of an intentional discontinuity of numbering of the image frames"); Kia Dep. Tr. at 99:14-101:10 (discussing Dr. Kia's notion that the decoder might distinguish accidental and intentional omissions on basis of whether other frames reference the missing frame).

b) The Accused Products Do Not "Configure, In Response to the Indication"

The remaining independent claim also requires that the decoder "configure, 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." JX-0004 at Claim 9. In order to demonstrate that this limitation is met by decoders that decode H.264 compatible video, Dr. Kia points to clause 8.2.5.2 of the standard, which describes a process for filling gaps in the "frame_num" parameter. *See* RX-1499. As Dr. Acton will explain, this gap filling process is not dependent on the value of the "gaps_in_frame_num_allowed_flag," but can be performed any time a decoder identifies a gap in "frame_num." Indeed, nothing in the H.264 standard suggests that a

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decoder is required to check the value of the gaps flag before invoking this process. To the contrary, the H.264 standard invokes the gap filling process whenever there is a gap. *Id*. ("This process is invoked when frame_num is not equal to PrevRefFrameNum and is not equal to (PrevRefFrameNum + 1) % MaxFrameNum.")

In order to avoid the implications of the clear language of the H.264 standard, Nokia and Dr. Kia rely on a "note" within the section, in order to argue that this gap filling process is only invoked with the gaps flag is equal to 1:

> NOTE 2 – This process can only be invoked for a conforming bitstream when gaps_in_frame_num_value_allowed_flag is equal to 1. When gaps_in_frame_num_value_allowed_flag is equal to 0 and frame_num is not equal to PrevRefFrameNum and is not equal to (PrevRefFrameNum + 1) % MaxFrameNum, the decoding process should infer an unintentional loss of pictures.

Id. However, Dr. Acton will explain that this is a plain misunderstanding of the standard. First, the H.264 specification is explicit that NOTEs are not normative parts of the standard. Section 0.6 of the standard states this clearly: "Throughout this Specification, statements appearing with the preamble 'NOTE –' are informative and are not an integral part of this Recommendation | International Standard." *Id*. Second, Dr. Acton will explain that this Note simply states what is obvious—that when there is a "conforming bitstream" (i.e., a bitstream that complies with the standard and does not contain transmission errors), then such a bitstream *will not have any gaps to fill* if the gaps flag is equal to zero. In other words, the decoder performs the gap filling process regardless of the flag value. However, if the gaps flag is 1, there will be no gaps unless there is an error in the bitstream.

Dr. Kia's argument that the H.264 standard requires a decoder to perform the gap filling process "in response to" the gaps_in_frame_num_allowed_flag is simply incorrect. Accordingly, Dr. Kia's reliance on the standard as proof of infringement of this limitation has no merit.

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[redacted]

c) The Source Code Relied on By Dr. Kia and Nokia Does Not Support Infringement

As discussed above, Dr. Kia has analyzed source code from various Amazon chip vendors [redacted], Amazon Fire OS software, and HP chip vendors [redacted]. While Dr. Kia cannot demonstrate which, if any, products this source code relates to, he has also failed to demonstrate that the source code analyzed even meets the claim limitations in the first instance.

Dr. Kia and Nokia's allegations with respect to the source code vendors all fail for the same general reasons as discussed above—namely that the gaps flag does not inform an intentional discontinuity and that the decoders do not take action in response to the flag. However, Respondents' expert, Dr. Acton, has analyzed to source code cited by Dr. Kia and will testify as to the additional reasons that the source code is insufficient to show that each and every claim limitation is met. The key limitations related to each of the various source code vendors are discussed briefly below.

[redacted]

[redacted]g. RPX-0566C.

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[redacted]

3. Respondents Do Not Indirectly Infringe the '134 Patent

Even if Nokia had shown that the Accused Products can be used in a directly infringing manner, which it has not, Nokia has failed to establish that Respondents have induced or contributed to any such direct infringement through its importation and sale of the Accused

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Products—i.e., the "articles" under 19 U.S.C. § 1337(a)(1)(B) that form the basis of this Investigation. There is no liability for indirect infringement for this reason alone.

Moreover, neither Nokia, nor its expert, have shown indirect infringement of the '134 patent. Nokia has offered at most a boilerplate assertion of indirect infringement without any specific supporting facts.

a) Respondents Do Not Contribute to Any Alleged Infringement

To prove contributory infringement, Nokia must demonstrate that Respondents sold, or offered to sell, "a component of a patented machine, manufacture, combination, or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use." 35 U.S.C. § 271(c); *Fujitsu*, 620 F.3d at 1326, 1330.

Here, the Accused Products may be used not only for decoding and playing video but also for countless other functions as explained above. Indeed, the range of functions incorporated into the Accused Products allow them to be used in countless noninfringing ways to perform a vast number of tasks. As Dr. Acton will [redacted] to infringe the '134 patent is a minor feature in the H.264 standard. In fact, Dr. Acton will explain that in various videos analyzed, the gaps flag was never set to 1. As a result, the Accused Products are not especially made or adapted for an infringing use, and they have substantial noninfringing uses that are not "unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental." *Vita-Mix*, 581 F.3d at 1327. Therefore, Nokia will fail to show contributory infringement of the '134 patent.

Nokia will also fail to prove the knowledge and specific intent required for contributory infringement with respect to the '134 patent. While Respondents expect Nokia to rely on an alleged

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April 2015 notice to Amazon and April 2019 notice to HP to show knowledge, neither of those alleged notices provide a reasonable basis to assert that Respondents should have known that they were infringing the ’134 patent. In particular, there is no reason that anyone who was not intimately involved in the minutiae of the H.264 standard would have any reason to be aware of the gaps flag mode allegedly claimed in the ’134 patent. Moreover, neither Nokia, nor its expert, discuss, let alone show, that Respondents had sufficient knowledge of the third party chipsets that Nokia asserts practice the asserted claims, nor has Dr. Kia shown that Respondents had knowledge of the source code cited in Nokia’s contentions. For these reasons, Respondents had a reasonable belief that their products do not infringe.

b) Respondents Do Not Induce Any Alleged Infringement

Nokia will be unable to meet its burden to show induced infringement. Neither Nokia nor its expert has ever identified a direct infringer alleged to have performed the claimed method in the United States at Respondents’ inducement. Moreover, Nokia has failed to show knowledge and specific intent at least for the same reasons discussed above regarding contributory infringement. Further, under 35 U.S.C. § 271(b), “inducement requires [an] ‘alleged infringer [to have] knowingly induced infringement and possessed specific intent to encourage another’s infringement.’” *DSU Med.,* 471 F.3d at 1306 (citation omitted). It is well established, however, that “where a product has substantial noninfringing uses, intent to induce infringement cannot be inferred even when the [alleged inducer] has actual knowledge that some users of its product may be infringing the patent.” *Vita-Mix*, 581 F.3d at 1329 (citation omitted).

Here, as noted, the Accused Products have countless noninfringing uses. Nokia has not offered even a scintilla of evidence to suggest that Respondents have imported even a single instrument with the intent to induce a customer to perform any limitation covered by the ’134

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patent. Therefore, Nokia has failed to show that Respondents possessed the requisite "specific intent" to induce infringement of the '134 patent.

4. The HP Redesign Products Do Not Infringe the '134 Patent

The HP Redesign Products do not infringe the asserted claims of the '134 patent for the same reasons as described above with respect to the '808 patent. *See* Section III.B.4.

C. Domestic Industry "Technical Prong"

Nokia fails to demonstrate the Domestic Industry Products practice the asserted claims of the '134 patent, either literally or under the doctrine of equivalents.

1. Nokia Relies on the Same Technology for Both Infringement and Domestic Industry

[redacted]

In his report, Dr. Kia relies exclusively on the functionality in the hardware or software developed by the chip vendors and [redacted] in support of his assertion that the Domestic Industry Products practice the asserted claims of the '134 patent. Dr. Kia does not suggest or identify any evidence that the Domestic Industry Products decode and/or encode H.264 video using any hardware or software developed by Microsoft and Samsung themselves. As Dr. Acton will explain and will be apparent, including because Dr. Kia relies on the same allegations for infringement and domestic industry, the chipsets are regularly used by many companies. [redacted]

Dr. Kia's theories regarding how the Domestic Industry satisfy the claim elements are the same as his theories on infringement of the Accused Products. Kia Op. Rep., Appendices D.2-A /

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E.2-A, D.3-A / E.3-A, D.4-A / E.4-A, D.5-A / F.3-A, C.2-A / F.2-A. Each of the processors identified in the Domestic Industry Products (i.e., [redacted] processors) are also processors used in the [redacted]. *Id.* Dr. Kia also alleges practice of the '134 patent by the Samsung Domestic Industry Products on the basis that they incorporate some version of the [redacted] (Kia Op. Rep., App. C.2-A / F.2.A) Dr. Kia's allegations related to [redacted] are the same he made as the basis for infringement by [redacted] *Id*.

2. The Alleged Domestic Industry Products Do Not Meet the Limitations of the Asserted Claims

For the same reasons the Accused Products do not infringe, Dr. Kia has not established the technical prong for domestic industry is met.

a) The Same Flawed Analysis Related to Infringement Applies to Domestic Industry

As addressed above in Section IV.B.1, Nokia's analysis is flawed. The '134 patent is not essential to H.264 and Nokia cannot show the Domestic Industry Products practice the asserted claims of the '134 patent by pointing to the standard. *See* Section IV.B.1.a).

As with the Accused Products, Dr. Kia cannot show that the chips he analyzed are representative of those he did not. *See* Section IV.B.1.b). Additionally, the [redacted] chips used in the Domestic Industry Products were not placed into representative groups. Dr. Kia's conclusory statements that he reviewed the [redacted] source code, and the chips all operate the same way, Kia Op. Rpt.., ¶ 182, is insufficient to establish representativeness. *LED Lighting Devices*, Inv. No. 337-TA-1081, Comm'n Op. at 10-16. In addition to the reasons set forth in Section IV.B.1.b), Dr. Kia cites to various driver source code in support of his assertions that the Samsung Domestic Industry Products practice the asserted claims of the '134 patent. Kia Op. Rpt., App. D.5-A / F.3-A. [redacted]

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[redacted]

[redacted]" RX-1252C. As Dr. Acton will testify, there is no evidence from Samsung [redacted].

Finally, Dr. Kia's testing does not show that the Domestic Industry Products practice the asserted claims of the '134 patent. *See* Section IV.B.1.c).

b) Nokia Has Not Shown the Domestic Industry Products Practice the Asserted Claims

Dr. Kia alleges practice of the '134 patent by the Domestic Industry Products on each device's inclusion of support for the H.264 standard. This is insufficient to establish practice of the Domestic Industry Products because, as addressed in IV.B.1.a), implementation of a compliant H.264 decoder does not require practice of the '134 patent claims.

Nokia's allegations are insufficient to show that the Domestic Industry Products satisfy the limitations of the asserted claims. As with the Accused Products, Dr. Kia has failed to show that the Domestic Industry Products meet the claim limitations of the asserted claims. *See* Section IV.B.2. Thus, Nokia cannot show the Domestic Industry Products practice all elements of the asserted claims of the '134 patent, literally or under the doctrine of equivalents.

c) Nokia Cannot Show the Xbox Gaming Consoles Practice the Asserted Claims

Dr. Kia's identification of Domestic Industry Products indicates the Xbox gaming consoles [redacted]. Kia Op. Rep., App. E.0. Dr. Kia identifies no evidence connecting [redacted]. Nokia did not [redacted] Nor does Dr. Kia

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identify which [redacted] he reviewed or is relying on in his opening report, so it is unclear if Dr. Kia's opinion is based on [redacted] in the first place. Additionally, public documents produced by Microsoft indicate differences in the processors used in the Xbox X Series and Xbox S Series, including the speed of the cores, the number of TFLOPS (trillion floating point operations per second) and CUs (computing units), and the overall die size. RX-3290; RX-3291. Nokia cannot show that the Xbox Domestic Industry Products practice the asserted claims of the '134 patent because there is no evidence that the source code Dr. Kia relies on is used on the Xbox Domestic Industry Products. *See, e.g.*, *INVT*, 46 F.4th at 1371, 1380 (finding no infringement where expert did not review source code loaded on device).

d) Nokia Cannot Show the Samsung Domestic Industry Products Practice the Asserted Claims

Dr. Kia alleges practice of the '134 patent by the Samsung mobile phone devices on the basis that they incorporate some version of the [redacted]. Kia Op. Rep., ¶ 187. Samsung did not [redacted]. Dr. Kia contradicts himself regarding which version of [redacted] he reviewed in support of his allegations that the Samsung Domestic Industry Products practice the asserted '134 patent claims, identifying [redacted] and then claiming to base his opinions on [redacted]. *Id.*; *see also id.*, App. C.2-A / F.2-A. [redacted]. [redacted] Dep. Tr. at 83:21-84:5. Dr. Kia relies on the publicly available version of [redacted] rather than the one actually loaded onto the Samsung Domestic Industry Products, and there is no evidence that the Samsung Domestic Industry Products use an H.264 decoder that corresponds to the one that is publicly available from [redacted] Additionally, as addressed above, Dr. Kia relies on [redacted] source code, but there is no evidence that [redacted] Dr. Kia relies on is actually used in the Samsung Domestic

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Industry Products. Nokia cannot show that the Samsung Domestic Industry Products practice the asserted claims of the '134 patent because there is no evidence that the source code Dr. Kia relies on is used on the Samsung Domestic Industry Products. *See, e.g.*, *INVT*, 46 F.4th at 1371, 1380 (finding no infringement where expert did not review source code loaded on device).

D. Invalidity

1. Level of Ordinary Skill in the Art

As Dr. Acton has opined, a person of ordinary skill in the relevant art, or POSITA, at the time of the '134 patent's effective filing date would have had (1) a Bachelor's degree in electrical engineering, computer engineering, computer science, or a comparable field of study, and (2) approximately two to three years of practical experience with video and/or image processing or coding. Additional experience can substitute for the level of education, and vice-versa.

2. Anticipation and Obviousness

The evidence discussed below, and the testimony that Dr. Acton will provide, will demonstrate that each of the asserted claims are obvious in view of the combination of TML-9 and H.262, if the claims are interpreted as Nokia proposes.

a) TML9 and H.262

(1) Preamble to claim 9

Claim Element 9 – preamble
9. A video decoder for decoding a compressed video sequence, the video decoder being connected to a buffer memory wherein image frames are entered in connection with the decoding, the video decoder being configured to

TML-9 describes a decoding method that uses a decoder buffer (the "multi-picture buffer") that stores decoded pictures so that they can be used as reference images in decoding later received image frames. RX-0564.0037 (TML-9) ("decoder stores reference pictures for inter-picture

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decoding in a multi-picture buffer"). TML-9 describes that each currently decoded image frame is characterized by a reference picture type (RPBT) that determines whether the decoded image is stored in the decoder buffer as a short-term image using a sliding window technique or is stored in the decoder buffer using adaptive memory control operations. *Id.* at .0035-36.

In his rebuttal report, Dr. Kia makes various objections to a passing reference in Dr. Acton's analysis that noted that the "sliding window" buffering techniques employed in TML-9 were very similar to those described in the prior art H.263 Annex U standard. Kia Rebuttal Rep., ¶¶ 228-230. However, Dr. Acton did not rely on H.263 Annex U as a component of his obviousness combination of TML-9 and H.262, therefore, Dr. Kia's objections to inclusion of H.263 Annex U in that combination are irrelevant. Dr. Kia identified no grounds for contending that the decoder of TML-9, as combined with H.262, does not embody the preamble of claim 9.

(2) Claim element 9[a]

Claim Element 9[a]
decode from the compressed video sequence an indication informing an intentional discontinuity of numbering of the image frames;

While Respondent's reject Nokia's assertion that H.264's gaps_in_frame_num_value_allowed_flag is an "indication informing an intentional discontinuity of numbering of the image frames," this is the basis of Nokia's infringement allegations. If the ALJ finds that these infringement allegations have merit, then the combination of TML-9 and H.262 also renders this element obvious.

A POSITA would have understood from H.262 that an encoded video stream designed to support temporal scaling necessarily includes control signals that identify that the stream contains base and enhanced layers. In H.262, each sequence of encoded frames ("group of pictures") that incorporated temporal scaling included a scalable_mode parameter identifying that temporal

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scaling was in use, RX-0578 (H.262), sections 6.2.2.1, 6.3.7, and values picture_mux_order and picture_mux_factor that identified how base layer and enhanced layer pictures were interleaved. *Id.* at sections 6.2.2.5, 6.3.7. Under Nokia's infringement theory these signals constitute the recited "indication" as they would indicate to the decoder receiving them that there was the possibility that frames from the enhanced layer might be intentionally dropped.

As Dr. Acton will testify, in TML-9 frames are identified by a picture number (PN) that is incremented for each new picture. RX-0564.0033. Thus, pictures that were lost due to accident, or B pictures intentionally dropped prior to transmission, would be detected at the decoder by a discontinuity in picture numbers. *Id.* at .0039 ("Missing pictures can be identified if one or several picture numbers are missing").

Dr. Kia argues that because section 7.2 of TML-9 refers to incrementing the picture number by 1 "for each coded and transmitted picture" this must mean that any pictures intentionally omitted as a result of temporal scaling are not assigned a picture number in the transmitted video stream. Kia Rebuttal Rep., ¶¶ 236-237. As Dr. Acton will explain, this is an absurd interpretation that would make temporal scaling in TML-9 completely impractical. It would require that the video server change all the picture numbers and revise all references to picture numbers in the video encodings to eliminate any gaps in picture numbering whenever the server intentionally dropped a B picture. No one in the JVT could have interpreted section 7.2 this way. This is proven by the fact that neither Hannuksela, nor anyone else in the JVT, felt the need to change section 7.2's reference to incrementing the picture number by one for "each coded and transmitted picture" even after the JVT adopted Hannuksela's proposal, which presumes that dropped B frames will create "missing picture numbers." RX-0574.0002 (JVT-B042) (B pictures "provided a way to achieve temporal scalability"), at .0006 (use of temporal scalability produces "missing picture number").

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[redacted]

For example, the text from section 7.2 appears unchanged in section 4.3.11 in a revised version of the standard working draft issued as JVT-B118 in March 2002. RX-0021.0023 (JVT-B1118).

Alternatively, Dr. Kia posits that when frames are intentionally dropped by a video server the temporal scaling parameters will not be transmitted as part of the encoded video stream. Kia Rebuttal Report, para. 249. However, the premise of this argument is that the video server is limited to the choice of transmitting the entire enhancement layer or omitting it in its entirety. This is not compatible with the teaching of TML-9, which describes that individual B pictures can be discarded "without destroying the ability to decode the sequence and adversely affecting the quality of any subsequent pictures," including other enhancement layer B pictures. RX-0564.0041.

Dr. Kia also claims that the H.262 parameters identifying the use of temporal scaling do not inform an intentional discontinuity of numbering. Kia Rebuttal Report, para. 256. However, in his Opening Report, Dr. Kia pointed to JVT drafts referring to a "temporal scalability indication" and a temporalScalability flag as embodiments of the claimed invention, and he provides no justification why these should be interpreted differently from H.262's temporal scaling parameters. Kia Op. Rep. at 70-72, Kia Rebuttal Rep. at 81.

Other arguments that Dr. Kia makes are based on improper incorporation of irrelevant aspects of H.262 into the proposed combination. Kia Rebuttal Rep., ¶¶ 249, 263-271, 278-279. *Allied Erecting and Dismantling Co., Inc. v. Genesis Attachments, LLC*., 825 F.3d 1373, 1381 (Fed. Cir. 2016) ("'The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.'") (quoting *In re Keller*, 642 F.2d 413, 425 (CCPA 1981)).

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[redacted]

(3) Claim element 9[b]

Claim Element 9[b]
configure, 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; and

TML-9 teaches that the decoder configures the buffer memory to provide image frames corresponding to any discontinuity in the numbering of the image frames. RX-0564.0039 ("If the decoder detects a missing picture, it may invoke some concealment process, and may insert an error-concealed picture into the multi-picture buffer. Missing pictures can be identified if one or several picture numbers are missing ….").

Dr. Kia claims that TML-9 only concerns unintentional losses of frames and not intentional omissions of image data. Kia Rebuttal Rep., ¶ 293. However, TML-9 specifically describes intentionally discarding B pictures as part of a temporal scaling function. RX-0564.0041. As Dr. Acton will testify, this is directly comparable to the intentional discarding of B frames that the '134 patent uses to adapt the bitrate of transmitted encoded video streams:

> The streaming server 112 carries out traffic shaping of the multimedia data as regards the bandwidth available or the maximum decoding and playback rate of the client 114, the streaming server being able to adjust the bit rate of the media flow for example by leaving out B-frames from the transmission or by adjusting the number of the scalability layers.

JX-0004 ('134 patent), 6:62-7:1. Dr. Kia identified this passage in his opening report as characterizing a benefit of the invention. Kia Op. Rep., at 35. His subsequent claim that a server electing to discard B frames is not an example of intentional omission of image frames is, therefore, not credible.

Dr. Kia also claims that TML-9 does not insert pictures in the decoder buffer "in response" to receiving control signaling indicating that the encoded video stream is encoded for temporal scaling. Kia Rebuttal Rep., ¶ 294. In the combination of TML-9 and H.262 the decoder inserts

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image frames only after it detects a discontinuity, not immediately upon receiving the parameters indicating that the stream is encoded to enable temporal scaling. However, this is also true of the accused H.264 systems and that did not prevent Dr. Kia from alleging that the '134 claims were infringed. Kia Op. Rep., ¶¶ 265, 271, 279-280. Dr. Acton will testify that a POSITA would find it obvious that a TML-9 decoder could examine the value of the H.262 temporal scaling parameters and subsequently determine to insert an error-concealed picture in the decoder buffer based on detecting a missing picture from discontinuities in the received picture numbers. RX-0564.0039 ("Missing pictures can be identified if one or several picture numbers are missing").

If Dr. Kia is arguing that the TML-9 decoder is not acting "in response to an indication" because it inserts pictures in the decoder buffer for every discontinuity that it detects, whether accidental or intentional, the same argument could be made about the '134 decoder, which also will insert one or more image frames corresponding to the discontinuity regardless of whether the "indication" is present or not. The patent describes that even when the claimed "indication" is not present the decoder interprets gaps in frame numbering as transmission errors and tries to reconstruct the lost frames in the buffer. JX-0004 ('134 patent), 20:24-30. This ensures that "transfer errors" do not prevent the encoder and decoder buffers from containing "mutually corresponding reconstructed images in identical order." *Id*. at 20:17-22. When the claimed "indication" is present, the decoder will also enter image frames into the buffer corresponding to the missing image numbers. *Id*., 20:34-38. Therefore, the claim language "in response to" in this claim element cannot be read to require that image frames are inserted in the decoder buffer only when the indication is present. This is also clear from Hannuksela's JVT-B042 submission, which inserted a "reconstructed picture corresponding to a missing picture number" when temporal scalability was indicated, and "cop[ied] the closest temporally preceding picture … into the

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position of the missing picture" when it was not indicated. RX-0574.0006 (JVT-B042). If the "in response to" language meant that image frames were inserted exclusively when the alleged "indication" was present, Nokia and Dr. Kia could not allege that the claims were embodied in Hannuksela's JVT submissions.

(4) Claim element 9[c]

Claim Element 9[c]
use the image frames in the buffer memory in the decoding process.

The TML-9 decoder uses the image frames in the buffer memory as reference images for decoding of subsequent frames. RX-0564.0037-38 (describing how pictures in the buffer are referenced during subsequent decoding operations), at .0038 ("The decoder employs indices when referencing a picture for motion compensation on the macroblock layer. In pictures other than B pictures, these indices are the default relative indices of the pictures in the multi-picture buffer…."). In addition, insertion of concealment pictures in the decoder buffer ensures that the ordering and relative offsets between the images in the decoder buffer are preserved. *Id*., at .0079. Dr. Acton will testify that these are examples of how the decoder uses the image frames in the buffer memory during the decoding process.

Dr. Kia does not contest that these claim elements are embodied in the combination of TML-9 and H.262.

(5) Claim 11

Claim 11
11. A video decoder according to claim 9, wherein the number of image frames in the buffer memory are used in sliding window buffering of image frames.

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TML-9 teaches the use by the decoder of a sliding window buffer. RX-0564.0039 ("The 'Sliding Window' buffering type operates as follows."). In rebuttal Dr. Kia only repeats his arguments regarding the independent claims and does not introduce any new objections specific to claims 11 or 18. Kia Rebuttal Rep., ¶¶ 300-302.

(6) Claim 13

Claim 13
13. A video decoder according to claim 9, wherein the video decoder is further configured to enter into the buffer memory a number of filler frames corresponding to the at least one discontinuity in the numbering of the image frames.

TML-9 teaches that when the decoder detects a discontinuity in picture numbers, it may respond by "insert[ing] an error-concealed picture into the multi-picture [decoder] buffer." RX-0564.0039. The error-concealed picture may be created "by copying the closest temporally preceding picture that is available in the multi-picture buffer into the position of the missing picture." *Id.* Dr. Acton will testify regarding how this demonstrates that TML-9 teaches the introduction of filler frames into the buffer memory in correspondence to discontinuities in image frame numbering.

Dr. Kia's arguments for these claims rely on a new construction of "filler frame." He argues that the error-concealed pictures used in TML-9 are not "filler frames" because "[a] POSITA would have … understood that the filler frames do not belong to the compressed video sequence" based on the language of claims 14 and 21. Kia Rebuttal Rep., ¶¶ 315-316. However, the '134 specification characterizes "filler frames" as "corresponding to the discontinuities in the numbering of the image frames." JX-0004 ('134 patent), 4:54-56; *see also id*. at 20:41-42 ("filler frames entered for purposes of buffer memory management"). The error-concealed pictures used in TML-9 also are introduced to "correspond[] to the discontinuities" and "for purposes of buffer

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memory management," RX-0564.0039 (pictures inserted in buffer corresponding to discontinuities as part of "concealment process"), at .0079 (decoder adjusts sliding window buffer when missing pictures are identified).) Thus, they constitute filler frames.

While there is no basis for reading the limitations of claims 14 and 21 into claims 13 and 20, even if Dr. Kia's new construction was adopted, the TML-9 concealment frames would still be "filler frames" because image data copied by the decoder from the closest temporally preceding picture, RX-0564.0039, is not "part of the compressed video sequence." The copied image is used *in substitution for* an image frame from the compressed video sequence that the decoder never received.

(7) Claim 14

Claim 14
14. A video decoder according to claim 13, wherein said filler frames are designated by an identifier indicating that the filler frames do not belong to the compressed video sequence.

TML-9 describes that the decoder responds to missing picture numbers by inserting an error-concealed picture into the decoder buffer. In addition, or instead, the decoder may indicate the loss of pictures to the encoder. RX-0564.0039. Dr. Acton will testify that it would be obvious to a POSITA based on the teaching that control data could be used to indicate that no image data had been received for the missing picture, and that the decoder buffer entry for the missing picture should be treated as if it were identical to the temporally preceding image. This control data would constitute an indication that image data for this missing frame did not belong to the compressed video sequence received by the decoder. Similarly, when TML-9 describes that "picture indices in the sliding window buffer are shifted appropriately," *id*. at .0079, to ensure that subsequently received frames do not use the wrong reference frames, the shifted picture indices serve as

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identifiers indicating that the missing image frames were not part of the compressed video sequence received by the decoder.

(8) Claim 15

Claim 15
15. A video decoder according to claim 9, wherein the video decoder is further configured to configure the buffer memory to provide a number of image frames corresponding to the at least one discontinuity in the numbering of the image frames by memory indications, whereby no data is entered into the buffer memory.

TML-9 describes that "when entire frames are lost, the reference buffer needs to be adjusted. … To solve this problem, the reference picture ID is used to infer how many frames are lost, and the picture indices to the sliding window buffer are shifted appropriately." RX-0564.0079. The "picture indices" referenced here constitute "memory indications" that shift the contents of the sliding window buffer to provide a number of image frames corresponding to the discontinuity in numbering of image frames. If the lost frames are concealed "by copying the closest temporally preceding picture that is available in the multi-picture buffer into the position of the missing picture," *id*. at .0039, it would be obvious to a POSITA that the temporally preceding picture need not be physically copied. Dr. Acton will testify that a POSITA would understand that control data could be used to indicate that the buffer location corresponding to the missing picture number should be treated as if it contained a copy of the closest temporally preceding picture. Thus, no data need be entered in the buffer memory at the position of the missing picture.

Dr. Kia objects that the assertion that a POSITA would already be familiar with the idea of using "memory indications" to represent missing frames in the TML-9 buffer is a hindsight reconstruction of the invention. Dr. Kia Rebuttal Rep., ¶ 336. However, the only supporting disclosure in the '134 patent for the claimed use of "memory indications" in configuring the buffer

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memory such that no data needs to be written is a passage that simply repeats the language of the claims. JX-0004, 4:60-64. Thus, the '134 patent already presumes that a POSITA understands how to use "memory indications" to represent image frames in a sliding window buffer without needing to enter data into the buffer memory. A POSITA reading TML-9 would also have this knowledge. If that was not true, claim 15 would not be enabled.

(9) Motivation for the combination of TML-9 and H.262

Dr. Acton will testify that the idea of using temporal scaling in video streaming applications was well-established prior to the '134 patent, and he identified multiple prior art technical publications that demonstrated this point. This literature describes video streams encoded with a set of base layer frames that provide a minimal frame rate, and one or more enhancement layers made up of frames that fall between the base frames and provide a higher frame rate when included in the video stream. As Dr. Acton will explain, a video server can dynamically adapt the bitrate of the video stream so that it matches the available capacity of the link to a decoder by dropping enhancement layer frames from the transmitted sequence. Ishtiaq, second page ("scalability provides a mechanism for providing video at a quality level respective of the bandwidth available to the user").

TML-9 already included a temporal scaling capability before the '134 patent. RX-0564.0041 ("Temporal scalability is achieved bi-directionally predicted pictures, or B pictures.") Because no pictures in the video stream depended on a B picture for their encoding, the video server could drop any individual B picture, or multiple such pictures, from the transmitted video stream without harming the ability of the decoder to decode the other pictures in the stream.

> The B pictures are disposable, since the B pictures are not used as reference pictures for the prediction of any other pictures. This property allows B picture to be discarded without destroying the ability to decode the sequence and adversely affecting the quality of any subsequent pictures, thus providing temporal scalability.

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RX-0564.0041.

H.262 was a well-known prior art video encoding standard that included support for temporal scaling, including parameters that identified how base layer and enhancement layer frames were interleaved. RX-0578 (H.262), section 6.3.7. Dr. Acton will testify that it would have been obvious to a POSITA that a TML-9 video stream could use parameters like those disclosed in H.262 to identify its temporal scaling components.

b) Yagasaki, Oliver, and Lyon

The Asserted Claims of the '134 patent are also invalid as obvious in view of U.S. Patent No. 5,835,672 ("Yagasaki," RX-0560), U.S. Patent No. 6,064,693 ("Oliver," RX-0561), and WO 91/06182 ("Lyon," RX-0562). Specifically, Yagasaki renders claims 9 and 11 obvious, the combination of Yagasaki and Oliver renders claims 13 and 15 obvious, and the combination of Yagasaki, Oliver and Lyon renders claim 14 obvious.

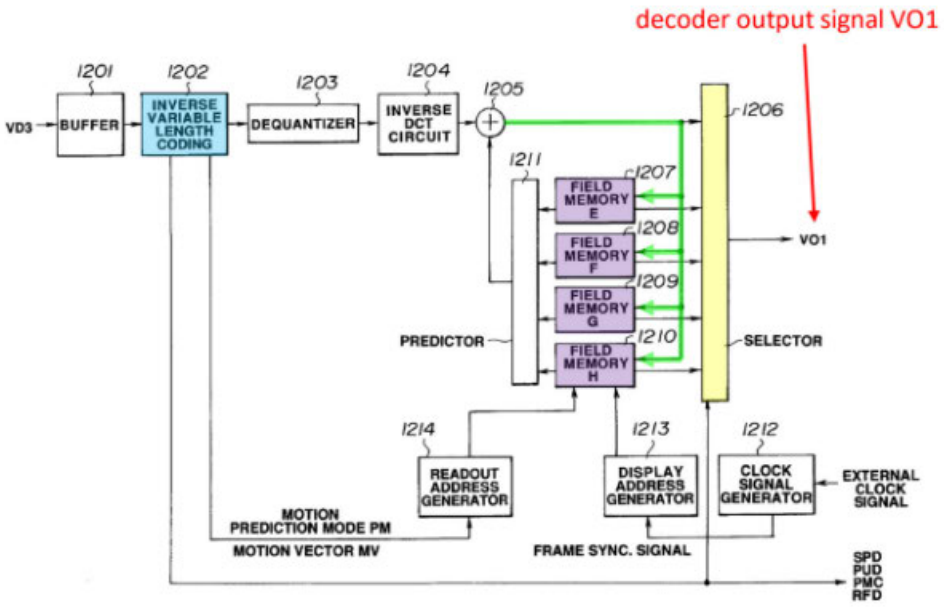
(1) Preamble to claim 9

Claim Element 9 – preamble
9. A video decoder for decoding a compressed video sequence, the video decoder being connected to a buffer memory wherein image frames are entered in connection with the decoding, the video decoder being configured to

Yagasaki discloses a video decoder, illustrated in Yagasaki's Figure 14 (below), decodes "a coded signal to provide an output video signal. RX-0560 (Yagasaki) at 3:36-37. The decoder is connected to a buffer memory implemented as field memories 1207 through 1210. *Id*. at 14:35-53 (decoding apparatus), 14:57-67 (describing how field memories are used as inputs to decoding process and also to store results of decoding process).

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Id. at Figure 14 (annotated). Figure 14 illustrates how field memories 1207 through 1210 (shaded purple) are used in the decoding process. For each picture signal in input signal VD3, the decoder "generates motion compensated macroblocks from one or more references pictures stored in the field memories 1207 through 1210 for combing in adder 1205 with the macroblocks of motion prediction errors generated by the inverse DCT circuit 1204." *Id*. at 14:62-67. Decoded image frames are built up macroblock by macroblock and are stored back into the field memories (along the green data depicted in Figure 14, above). *Id*. at 14:57-60.

Nokia does not contest that Yagasaki describes a decoder characterized by the preamble of claim 9.

(2) Claim element 9[a]

Claim Element 9[a]
decode from the compressed video sequence an indication informing an intentional discontinuity of numbering of the image frames;

[redacted]

Yagasaki describes a video encoding and decoding apparatus system that includes an encoder that intentionally introduces discontinuities in image frame numbering into the encoded video stream.

> [T]he redundancy detection circuit 402 detects duplicate pictures (field or frame) in the video signal VI1 [entering the encoder] by comparing the current picture with various other pictures in the video signal VS1. A duplicate picture is a picture that exhibits little or no change relative to another picture. The processing mode selection circuit 103 generates the skip picture flag SPC in response to duplicate pictures indicated by the duplication detection signal DDS.

RX-0560 (Yagasaki) 11:1-10; *see also id*. at Abstract, 3:25-36, 4:30-41, 18:25-32.

The encoder also uses a "temporal_reference code [that] is generated by incrementing a counter by one for each consecutive picture in the coder input signal VI. The counter is reset to zero at the beginning of each GOP [group of pictures], or when the number of pictures in the GOP exceeds 1024." *Id*. at 19:22-27. As indicated in Figure 17, coder input signal VI refers to the input video sequence before it is encoded. *Id*. at 16:1-9. As Dr. Acton will testify, if the redundancy detection circuit decides that a picture in the video sequence is to be skipped, this creates a discontinuity in the temporal_reference codes of the frames in the sequence.

Yagaski's encoder generates, for each frame in the encoded sequence, a set of parameters including a skip picture flag SPC and the reference picture code RFC. The "skip picture flag SPC, … indicates whether the picture is a duplicate picture, i.e., a picture that has little or no change relative to another picture." *Id*. at 16:17-19. The "reference picture code, RFC, … indicates, when the picture is a skip picture, the picture that is to be used as the reference picture for reproducing the skip picture." *Id*. at 16:29-31. In one of Yagasaki's embodiments, the skip picture flag SPC, the reference picture code RFC, and the temporal_reference are all included in the encoded video stream. *Id*. at 16:58-62. However, an asserted skip-picture flag is not an image frame. Instead, it is an indication that an image frame was intentionally excluded. Exclusion of that image frame

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produces a discontinuity in the numbering of the image frames, as recited in the claim, because there is no image frame bearing the temporal_reference of the skipped frame.

Yagasaki also includes a decoder, as illustrated in the bottom half of Figure 3 and in more detail in Figure 14, that decodes the encoded video stream generated by the encoder. *Id*. at 7:66-8:16. The decoder extracts image parameters, including the skip picture flag and reference picture code, which Yakasaki characterizes as SPD and RFD when they are used in the decoder. *Id*. at 8:7-13.

The skip picture flag (SPD) is an indication informing an intentional discontinuity of numbering of the image frames because it identifies image frames that have been intentionally skipped, *i.e*., not encoded. *Id*. at 11:1-10, 11:37-40, 18:28-32. As Dr. Acton will explain, when an image frame is skipped, this creates a discontinuity in the temporal_reference codes associated with the sequence of the encoded images. This is because a skipped picture has an associated temporal_reference code and this code is not associated with an encoded image.

Dr. Kia claims that Yagasaki's skip picture flag (SPD) is not "an indication informing an intentional discontinuity of numbering of the image frames" because when an image is skipped, Yagasaki's encoded video stream still includes at least the parameters SPD, RFD and the temporal_reference for the skipped picture. Kia Rebuttal Rep, ¶¶ 115, 117. However, this confuses the "indication" and the "discontinuity of numbering of the image frames." When Yagasaki's encoder elects to skip a frame is skipped there is no "image frame" encoded for the skipped frame. Accordingly, even though the temporal reference code is sent in the encoded stream, there is no image frame that is provided with it.

Dr. Kia also argues that the skip picture flag SPD does not inform an intentional discontinuity "because the skip-picture flag merely triggers the decoder to use the reference picture

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code to restore eliminated picture content." Kia Rebuttal Rep., ¶ 121. This is incorrect. If the skip picture flag is not asserted, the encoded video stream includes encoded image data that the decoder decodes and uses. RX-0560 (Yagasaki), 8:7-16 (decoder decodes coded picture signals in encoded video stream in response to SPD and other flags). If the skip picture flag is asserted the encoder made the intentional decision not to include image data for the skipped image in the encoded video stream. The decoder is informed by the SPD flag that it must use the stored picture identified by reference picture code RFD as the output picture in substitution for the image deleted by the encoder. *Id*. at 15:7-11. Thus the skip picture flag informs the decoder that there is no image data for the current image, from which it necessarily follows that there must be an intentional discontinuity in the numbering of the image frames at the currently decoded frame.

Finally, Dr. Kia claims that Yagasaki "does not teach skipping an entire frame but rather requires that the skip-picture flag, reference picture code, and temporal_reference code for each picture be transmitted and received…." Kia Rebuttal Rep., ¶ 122. This is irrelevant. The data that Dr. Kia refers to are the counterpart to the recited "indication" informing of an intentional discontinuity in image data. They are not image data. There is no prohibition in the '134 claims on transmitting some data for each frame in the video sequence. Indeed, as Dr. Acton will explain, transmitting an indication, like SPD, that identifies for each frame number whether or not that frame has been intentionally dropped is the most reliable method of providing the "indication informing an intentional discontinuity" recited in the claims.

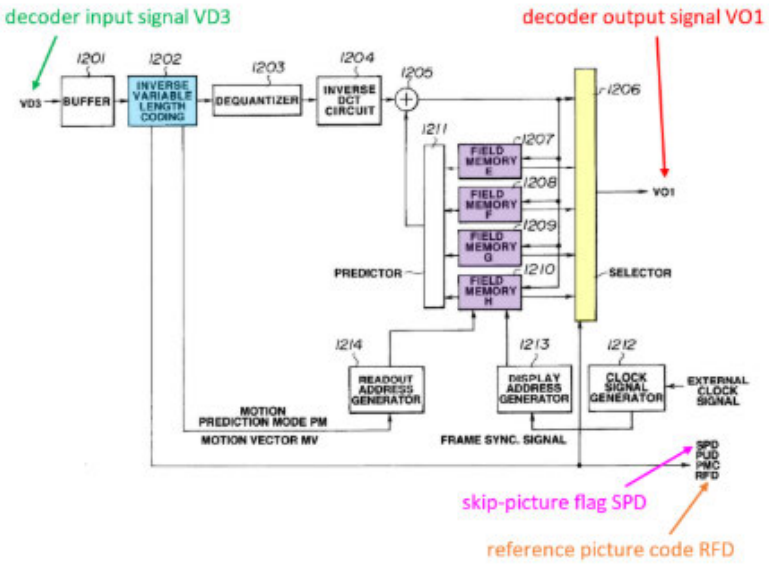
(3) Claim element 9[b]

Claim Element 9[b]
configure, 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; and

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Yagasaki describes that the decoder responds to a skip frame flag (SPD) by copying the frame referenced by the reference picture code (RFD) from its location in the field memories. RX-0560 (Yagasaki), 15:17-29. The decoder thereby replaces the skipped picture with a picture retrieved from the buffer memory. *Id*. at 14:54-15:67, Figures 14-16. When SPD indicates a skip picture, the decoder "causes the selector 1206 [annotated yellow in the figure below] to provide the picture indicated by the reference picture code [annotated orange] as a picture of the decoder output VO1 [annotated red]." *Id*. at 15:8-11. As Dr. Acton will testify, the decoder buffer memory is thereby configured, in response to the skip picture flag, to provide an image frame identified by the reference picture code that corresponds to the discontinuity in numbering of image frames, i.e., the skipped picture.



Yagasaki, Figure 14 (annotated)

Dr. Kia's arguments regarding this limitation are the same as his arguments against anticipation of the previous element and fail for the same reasons.

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(4) Claim element 9[c]

Claim Element 9[c]
use the image frames in the buffer memory in the decoding process.

Yagasaki anticipates this limitation because its decoder uses a frame stored in the decoder field memories to serve as the image data for a skipped picture. When SPD is asserted to indicate a skip picture the decoder "causes the selector 1206 to provide the picture indicated by the reference picture code as a picture of the decoder output signal VO1." RX-0560 (Yagasaki), 15:7-11. The "decoder … copies reference pictures [from the field memories] to provide skip pictures to replace the skip pictures that were eliminated in the encoding process." *Id*. at 15:12-14; see also *id*., 19:55-65 (in response to SPD, RFD, temporal_refeence code and other parameters, the field sequence exchanging and scan converting circuit feeds 844 (shown in Figure 21) feeds readout addresses to the field memory set with the selector to cause the field memories to supply the decoding output signal VO). Dr. Acton will testify that Yagasaki thus discloses or renders obvious the limitation.

Dr. Kia has not identified any objections to Dr. Acton's anticipation arguments for this element.

(5) Claim 11

Claim Element 11
11. A video decoder according to claim 9, wherein the number of image frames in the buffer memory are used in sliding window buffering of image frames.

The '134 patent describes that "sliding window" buffering is a type of reference image buffering in which M of the last coded (or decoded) images are made available in a buffer and are replaced on a first-in first-out (FIFO) basis. JX-0004 ('134 patent), 19:61-66. Dr. Acton will cite

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to the prior art technical literature to show that "sliding window" buffering was well-known to POSITAs by 2002. RX-0568 (Wiegand 231), 8:12-26; RX-0570 (Wiegand 1997), at Abstract, p. 3; RX-0571.0619-20 (Wiegand 1998); RX-0569.0062-63 (Riley).

Yagasaki's field memories also are used for decoding. RX-0560 (Yagasaki), 14:54-67, Fig. 14. Dr. Acton will testify that it a POSITA would have understood that Yagasaki's field memories 1207 through 1210 would contain the most recently decoded pictures and are intended for temporarily holding recently decoded pictures for use in doing motion compensation decoding of subsequent frames. It would be obvious to a POSITA that the field memories could be organized as a "sliding window."

Dr. Acton will testify that it would have been obvious to a POSITA to configure Yagasaki's field memories as a sliding window buffer, because sliding window buffering was one of a limited number of options available to a POSITA for effectively managing the storage and retrieval of reference pictures. Id. Because sliding window buffering was a well-known and a mature technology, a POSITA would have had a well-founded expectation of success in configuring Yagasaki's field memories to function as a sliding window buffer. *Id*.

Dr. Kia argues that the basis for combining Yagasaki and "sliding window" buffering is hindsight reconstruction. Kia Rebuttal Rep., ¶ 143. However, the actual basis for concluding that a "sliding window" buffer would be obvious is the ubiquity of "sliding window" buffering at the time of the patent. In addition to the references cited above, this is demonstrated by the fact that sliding window buffering had already been written into earlier video encoding standards such as H.263 Annex U in 2000 and had been selected by the JVT as the basis for the new H.264 standard before the '134 patent. RX-0564.0035, .0039 (TML-9). Dr. Kia provides no explanation as to why

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any of the buffering methods that he identifies would have been preferred by a POSITA over a sliding window buffer.

Dr. Kia argues that use of sliding window buffers with Yagasaki would not be obvious because of the small size of Yagasaki's field memories and because he contends that other buffering techniques would be better suited for Yagasaki's system. Kia Rebuttal Rep., ¶¶ 142, 144. Dr. Kia also claims that using a sliding window with Yagasaki's field memories would preclude a skip frame at the end of the sequence that used a frame at the beginning of the sequence as its reference image, as shown in Figure 15. Kia Rebuttal Rep., ¶¶ 142. There is no reason to believe that this is true. Each of the field memories in the decoder depicted in Yagasaki's Figure 14 can contain an unspecified number of fields which are selected by readout address generator 1214. RX-0560 (Yagasaki), 14:27-31 (describing address generator for encoder field memories), 15:1-6 (address generation by display address generator for reading out image data from decoder field memories for display); 9:50-65, Fig. 21 (address generation used to readout specified image fields from field memories in decoder). Yagasaki does not specify how deep each of the field memories is, but there is no reason to believe that is not sufficiently large to span a sequence of frames like that shown in Figure 15.

(6) Claim 13

Claim Element 13
13. A video decoder according to claim 9, wherein the video decoder is further configured to enter into the buffer memory a number of filler frames corresponding to the at least one discontinuity in the numbering of the image frames.

Oliver describes the use of filler frames in a media transport system in substitution for media data that does not arrive in time or is lost or when bad data is received. RX-0561 (Oliver), 3:35, 7:38-45. Oliver's system can be used for the transport of video data. *Id*. at 4:47-52, 9:30-32.

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The filler frames are designed to contain data that causes the least impact on the received media stream. In the context of audio a filler frame could be a "quiet" frame; in video it might be a monochromatic, neutrally colored frame. *Id*. at 7:53-64. A filler frame can also be a copy of the immediately previous frame. *Id*. at 7:63-64.

Dr. Acton will testify that a POSITA would have been motivated to improve Yagasaki's decoder using Oliver's teach of using a filler frame as "a frame inserted into a stream of data frames to compensate for lack of reception of one or more frames in the transmission." *Id*. at 3:30-35, 4:52-55. It would be obvious to store filler frames for a missing frame in Yagasaki's field memories 1207 through 1210 so that the filler frame is read out in precisely the same manner as any reference picture in Yagasaki. This would decouple the process of interpreting SPD, RFD and other parameters for a skipped frame from the process of outputting the skipped image from the decoder. Separating the decoding and playout processes by buffering the image data for the skipped frame in the decoder's field buffers was a "known technique for manipulating and storing media frames in memory."

Dr. Acton will testify that a POSITA would have had a reasonable expectation of success in making this combination because the new functionality required, storing a filler frame in the frame memories, uses known techniques of manipulating and storing frames and is very similar to what the decoder already does when it stores decoded images in the buffer.

Dr. Kia argues that a POSITA would not have been motivated to incorporate Oliver's teaching of filler frames into Yagasaki's decoder design. Kia Rebuttal Rep., ¶¶ 164-166. Dr. Acton will testify that inserting filler frames in Yagasaki's decoder buffer would allow the skipped frame to be used as a reference in encoding of subsequent frames. Dr. Kia counters that Oliver's filler frames are not suitable for this purpose because some of Oliver's "quiet" frames may be divergent

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from the actual values of the skipped image and would create an unacceptable viewing experience. Kia Rebuttal Rep., ¶¶ 166, 168-169. However, Oliver also teaches that filler frames can be constructed using data from adjacent decoded frames. RX-0561, 7:53-64. These would be close in value to the skipped frame and would not suffer from the problem that Dr. Kia identifies. Additionally, it would be obvious to a person of ordinary skill in the art that the image data identified by the reference frame code (RFD), which the encoder has already determined is a picture that "has little or no change" relative to the skipped picture, RX-0560 (Yagasaki), 11:5-10, 16:17-19, could also be used as a filler frame for the skipped image.

(7) Claim 14

Claim Element 14
14. A video decoder according to claim 13, wherein said filler frames are designated by an identifier indicating that the filler frames do not belong to the compressed video sequence.

Lyon describes a method for converting between NTSC or PAL standards for video that originated from a film source. RX-0562.0001 (Lyon). NTSC and PAL require different numbers of video lines and fields per second. Lyon uses interpolation to adapt a NTSC video encoding to a PAL encoding, but describes that interpolation is inappropriate for some source frames that include fields from two different images that straddle a scene change. Interpolation of those fields will generate pixel values that are glaringly inconsistent with the rest of the video, which Lyon characterizes as "visually disturbing artefacts." *Id*. at .0005-6. To deal with this problem, Lyon includes a cut detector that identifies the frames that should not be interpolated using the method applied to other frames, and the frames identified by the cut detector are converted using a different technique that will not produce artefacts. *Id*. at .0006, .0013 (describing what when a cut is detected, the interlaced fields are constructed from a single field to avoid the risk of visually disturbing artefacts).

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A POSITA would have drawn from Lyon the utility of identifying specific frames in a video sequence on the basis that they are different in some characteristic from other frames and require special treatment. Lyon teaches "ensur[ing] that any 'artificial' intermediate video frames … are identified as such and processed accordingly" so that these frames are "not treated in the same manner as a normal decoded frame." *Id*. at .0006, .0011.

When filler frames in accordance with Oliver are used in Yagasaki's system it would be obvious to a POSITA that these should be identified as filler frames that do not belong to the compressed video sequence. As Dr. Acton will explain, filler frames should not be used to predictively code other frames because just as a POSITA would recognize that using filler frames that do not belong to the original video sequence as reference frames during decoding would produce poor results like the "visually disturbing artefacts" that Lyon was aiming to avoid by identifying frames with fields that straddled as scene change. A POSITA would have found it obvious to incorporate Lyon's teaching of identifying artificial video frames in to the Yagasaki-Oliver combination. Using an indication like that described in Lyon to differentiate filler frames from video sequence frames in Yagasaki's decoder would allow it to ensure that filler frames are not "treated in the same manner as a normal decoded frame." *Id*. at .0011. A POSITA would conclude that this identification could be used in the Yagasaki-Oliver combination to exclude the filler frames carrying this identification from being used in motion prediction.

A POSITA would have had a reasonable expectation of success in making the proposed combination. As Dr. Acton will explain, Yagasaki teaches the use of identifiers such as the skip picture flag SPD and reference code RFD to designate images that have been skipped in the encoded video stream. RX-0560 (Yagasaki), 18:28-32. It would have been obvious that similar identifiers could be associated with a stored filler frame to indicate that it should not be used as a

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reference image for decoding other frames. Making this modification would have been trivial and a POSITA would have had a reasonable expectation of success.

Dr. Kia objects that Lyon's discussion of identifying frames containing fields that straddle a scene change is not relevant to the use of filler frames used in the combination of Yagasaki and Oliver. Kia Rebuttal Rep., ¶ 187. However, the proposed combination relies on Lyon only for the concept of identifying video frames that require processing in a manner different from other frames. A combination of references does not require bodily incorporation of irrelevant aspects of the supporting reference. *Allied Erecting and Dismantling Co., Inc. v. Genesis Attachments, LLC*., 825 F.3d 1373, 1381 (Fed. Cir. 2016) ("'The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.'" (quoting *In re Keller*, 642 F.2d 413, 425 (CCPA 1981))).

Dr. Kia also claims that Lyon does not teach an identifier. Kia Rebuttal Report, para. 188. This is not true. The cut detector shown in Lyon's Figure 6 includes an output, labeled "Sequence Information to Converter" that is used to signal when a frame has fields from either side of a cut and is not to treated in the same manner as a normal decoded frame. RX-0562.0010-11 (Lyon). This output indicates, for each frame that is processed, whether that frame should be used in interpolation in the standard manner or if it requires alternative processing. *Id*. at .0012-13 ("In the event of the film analysis unit 108 detecting a cut in the input video signal, line interpolation is switched momentarily to a cut mode in which two interlaced fields of a 625 video frame are constructed from a single field of the 525 signal."). It would be obvious that a similar indication associated with a filler frame could be used with Yagasaki to prevent filler frames from being used as input to a decoding process.

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Dr. Kia also argues that Lyon is incompatible with Yagasaki, Kia Rebuttal Rep., ¶¶ 190-192, and that it is directed to purposes that are irrelevant to Yagasaki. *Id*. at ¶ 193. However, Dr. Kia's arguments are based on aspects of Lyon that are not pertinent to the general utility of indications identifying frames that require special handling as described in Lyon and not pertinent to Dr. Acton's obviousness grounds.

(8) Claim 15

Claim Element 15
15. A video decoder according to claim 9, wherein the video decoder is further configured to configure the buffer memory to provide a number of image frames corresponding to the at least one discontinuity in the numbering of the image frames by memory indications, whereby no data is entered into the buffer memory.

While one obvious combination of Yagasaki and Oliver includes entering filler frames into Yagasaki's buffer memory, as described above in connection with claim 13, Dr. Acton will testify that it would be equally obvious in view of Yagasaki's teachings to use memory indications to provide the image frame and not enter filler frame data specific to the skipped frame.

Dr. Acton will explain that a POSITA would have understand from their knowledge of fundamental concepts in programming and data management, as well as Oliver's use of pointers to identify buffer memory locations, that the content of an image frame could be represented indirectly by memory indications referencing other image data stored elsewhere. A POSITA would understand that this has the advantage that it avoids the need to make multiple copies of data objects that contain similar data.

These use of memory indications is embodied in Yagasaki's teaching that when the decoder receives a skip picture flag that indicates that an image has been skipped it configures the field memories to provide an image frame for the skipped picture by copying an image stored in the field memories. RX-0560 (Yagasaki), 15:12-14 ("decoder … copies reference pictures to provide

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skip pictures to replace the skip pictures that were eliminated"), 15:24-27 ("[I]f the frame P4, a P-picture, is processed in frame mode, and the frame P4 is a skip picture, its reference frame being the frame P2, the frame P4 is reproduced by copying the frame P2."), 15:27-29, 15:50-59. The reference picture code RFD identifies the frame that is to be provided by the field memories for the skipped picture. *Id*. at 16:29-31, 19:55-65. Yagasaki uses the skip picture flag SPD and the reference picture code RFD as memory indications that identify that an image is skipped and identify the location in the field memories of image data that is to be provided to represent the skipped frame. No new data for this image need be entered into the buffer memory during the decoder's processing of the skipped image, meeting the last requirement of the claim.

Dr. Kia objects that any combination of Oliver and Yagasaki would require storing data, either a filler frame or a pointer to that filler frame, in the decoders frame buffer. Kia Rebuttal Rep., ¶¶ 177-178. However, nothing in Yagasaki's design, or in the obviousness combination proposed by Dr. Acton, requires the memory indications SPD and RFD to be stored in the field memories after they are used to configure the memories to provide image data for the skipped picture. And nothing requires the provided image to be stored back in the field memories.

Dr. Kia also objects that Yagasaki skip frame processing relies on reference picture code RFD values that identify other image frames that were stored in the decoder's buffer memory before the skip picture was encountered. Kia Rebuttal Rep., ¶ 179. However, claim 15 does not prohibit any data from being present in the buffer memory. It precludes the decoder from adding data to the buffer memory as part of the process of providing image frames corresponding to the discontinuity. Yagasaki's decoder does not add data to the buffer memory as part of the process of providing image data for the skip frames.

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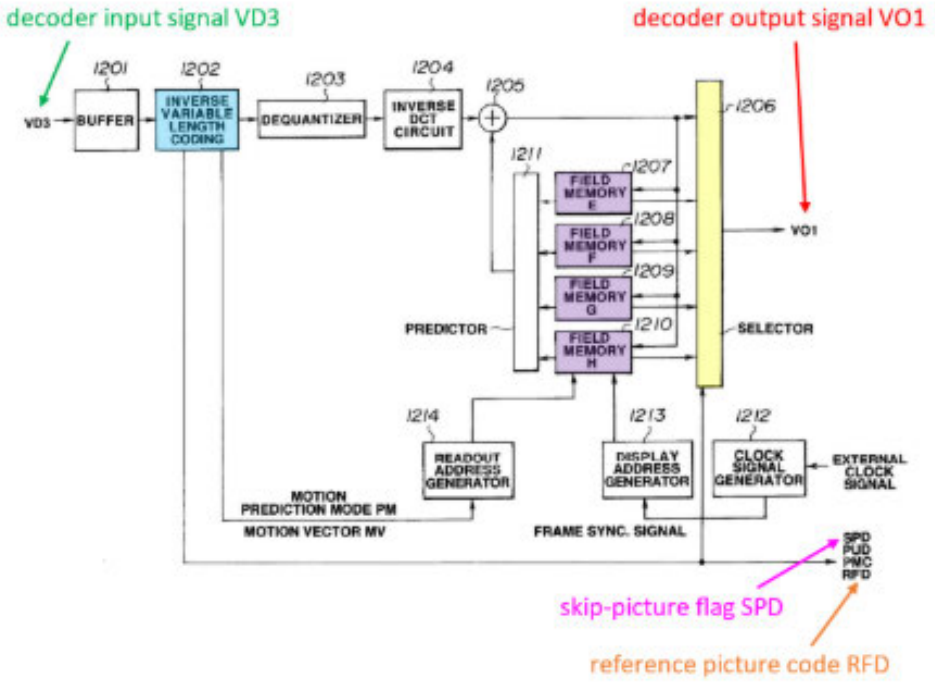
(9) Motivation for the combination of Yagasaki with Oliver and/or Lyon

Yagasaki relates to coding and decoding of video signals. RX-0560 (Yagasaki), Abstract, 1:8- 12, 5:38-65. Specifically, Yagasaki teaches that an encoder can intentionally eliminate a picture in a video sequence and not send it to the decoder. *Id.* at Abstract, 3:25-35, 3:54-67, 4:8-15, 4:30-41, 4:61-5:16, 5:38-65, 11:1-6, 11:37-40, 15:12-67, 18:25-32, Figures 15-16, claims 1-2, 9-12. Instead, the encoder includes a "skip-picture flag" in a coded video signal to indicate a picture that has been intentionally eliminated from the signal by the encoder. *Id.* During the decoding process, the decoder receives this "skip-picture flag" as well as a reference picture code that points to a picture already in the buffer memory, and the decoder replaces the eliminated picture with a picture retrieved from buffer memory. *Id.* at 14:54-15:67, Figures 14-16.

Figure 14 of Yagasaki, shown below with annotations, provides a detailed view of the entire decoder.

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Yagasaki, Figure 14 (annotated)

"The signal for each picture in…decoder input signal [VD3] [annotated green]…is fed to the variable-length decoder 1202 [shaded blue]." *Id.* at 14:37-41. Variable-length decoder 1202 "reverses the variable length coding applied…in the encoder [106 during the encoding process] and extracts various control signals and flags," including "reference picture code RFD [annotated orange] and…skip picture flag SPD [annotated pink]." *Id.* at 14:39-44; *see also id.* at 15:7-8. In normal process, the decoder uses motion prediction with residual signals to create the final output pictures that are stored in the buffer memory locations (shaded purple) and output in display order in signal VO1 (annotated red). *Id.* at 14:39-57, 14:62-67. However, "when [the skip picture flag SPD] indicates a skip picture, . . . the selector 1206 [annotated yellow]…provide[s] the picture indicated by the reference picture code [annotated orange] as a picture of the decoder output signal VO1 [annotated red]." *Id.* at 15:8-11. In short, the decoder "copies reference pictures to provide []

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pictures to replace the skip pictures that were eliminated in the coding process." *Id.* at 15:12-14. The decoder retrieves the reference pictures from the buffer memory locations (shaded purple). *Id.* at 15:1-67.

To track when the various pictures should be output in which order, Yagasaki teaches a "temporal_reference code," which "is a 10-bit code that indicates the display sequence of the picture in a group of pictures (GOP)." *Id.* at 19:20-22. When the decoder receives a "skip-picture flag," that flag corresponds to an intentional discontinuity in the "temporal_reference code" numbering of the image frames received by the decoder.

Yagasaki teaches that the decoder can receive signals from an encoder "using a suitable broadcast system, cable distribution system, telephone system, etc." *Id.* at 21:34-40. As Dr. Acton will explain, a POSITA would have understood that broadcast, cable, and telephone systems circa 2002 were susceptible to transmission errors that led to dropped frames, which reduced performance. *See e.g.,* RX-0569.0004 (Riley); RX-0573 (Girod) 1:60-63. A POSITA would have thus been motivated to improve the system of Yagasaki by implementing known techniques to enhance overall performance of the system by mitigating and ameliorating the impact of communication network transmission delays and errors including, inter alia, frames dropped due to bottlenecks at various intermediate network nodes and frames lost due to long transmission delays or unrecoverable transmission errors.

Oliver provides such an error-correction technique. Oliver teaches "an improved method and system for handling underrun and overrun of digital data frames"—e.g., MPEG video frames—in a communications system such as a telephone system. RX-0561 (Oliver), 2:61-63, 4:47-52, 9:31- 32. Oliver teaches using a "filler frame" to compensate for a missing frame—"a frame inserted into a stream of data frames to compensate for lack of reception of one or more

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frames in the transmission." *Id.* at 3:30-35, 4:52-55. Thus, as Dr. Acton will explain, a POSITA would have been motivated to improve the decoder in Yagasaki by actually entering a filler frame into the buffer memory when receiving the "skip-picture flag" instead of just copying a frame from that buffer memory into the output stream. A POSITA would have had a reasonable expectation of success in making the combination. As Dr. Acton will explain, POSITA could have easily modified Yagasaki's decoder to enable the provision of the filler frames disclosed in Oliver.

A POSITA would have known that the "filler frame" entered into the buffer memory during the combination of Yagasaki and Oliver was not part of the original sequence, but was included for buffer memory management. Accordingly, as Dr. Acton will explain, using such filler frames to predictively code other frames could cause visual distortions and decrease video quality. Due to these problems, using prediction from these filler frames should not be permitted.

Lyon provides a solution to this problem. Lyon teaches "ensur[ing] that any 'artificial' intermediate video frames…are identified as such and processed accordingly" so that such frames are "not treated in the same manner as a normal decoded frame." RX-0562.0006, 11 (Lyon). A POSITA would have found it obvious to incorporate Lyon's teaching of identifying artificial video frames into the Yagasaki-Oliver system. Like Yagasaki and Oliver, Lyon is directed to coding/decoding of video data. *Id.* at .0001-2. The relied-on teaching of Lyon would operate the same in the combined system as it does alone by indicating to the decoder when a frame does not belong to the original video sequence and should not be used for subsequent processing. *Id.* at .0005-6, 11. Using a flag like that described in Yagasaki to differentiate filler frames from video sequence frames would allow the decoder to ensure filler frames are not "treated in the same manner as a normal decoded frame," *id.* at .0011, resulting in a higher quality video signal because the filler frames are not being used as reference frames and are therefore not introducing visual

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artifacts not present in the original sequence. A POSITA would have had a reasonable expectation of success in making the proposed combination. As Dr. Acton will explain, Yagasaki teaches the use of identifiers to designate different types of pictures in the coded video signal, for example, reference pictures and skip-pictures. RX-0560 (Yagasaki), 18:28-32. Modifying the Yagasaki-Oliver combination to identify filler frames in the same manner (as taught by Lyon) would have been a trivial modification within the skill of a POSITA at the relevant time.

c) Absence of Secondary Considerations

Nokia cites the statement in the '134 patent that "there is no process for informing the decoder [of] a reason for removal" of image frames, JX-0004 ('134 patent), 4:13-14, and the claim that Hannuksela's proposal was adopted into the H.264 standard, as evidence of a long-felt need. Nokia's Rebuttal Invalidity Contentions, April 23, 2024, Exhibit B, at 97. However, as discussed above, the JVT committee significantly modified Hannuksela's initial proposal. The final version of the H.264 does not require the decoder to make any use at all of the gaps_in_frame_num_value_allowed_flag that Nokia asserts is the counterpart to the claimed "indication informing an intentional discontinuity." See RX-0012 (H.264) clause 8 (no mandatory provisions require the decoder to take any action based on the gaps flag). This suggests that the JVT ultimately decided that Hannuksela's flag was of minimal utility. Additionally, most of the elements recited in the '134 patent claims were already present in the prior art, including the temporal scaling concept of intentionally omitting frames, RX-0564.0041 (TML-9) ("B pictures [may] be discarded without destroying the ability to decode the sequence"), and a decoder that inserted frames in the decoder buffer corresponding to any discontinuity in picture numbering that it detected. *Id*. at .0039 ("If the decoder detects a missing picture, … [it] may insert an error-concealed picture into the multi-picture buffer").) At best, the '134 patent only adds an "indication" that temporal scaling is the cause of specific missing frames to the prior art functions whose

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recitation makes up most of the asserted claims. Even if Hannuksela's proposal had been included in the final H.264 specification, which it was not, it would be, at best, a minor modification of the temporal scaling functions already contemplated by the JVT in the pre-existing TML-9 draft.

Nokia cites to datasheets for three Texas Instruments video decoder chips that reference "gaps in frame_num" among a list of features supported by the chipset as evidence that the alleged invention of the '134 patent drives the commercial success of H.264 decoders, as evidence of "industry praise" for the invention, and as evidence of copying by others. Nokia's Rebuttal Invalidity Contentions, April 23, 2024, Exhibit B, at 96, 98. However, three cursory references in a datasheet is not compelling evidence of any industry trend. Furthermore, it is not even clear that the phrase "gaps in frame_num" refers to the alleged invention of an "indication informing an intentional discontinuity in frame numbering," that Nokia alleges is embodied in H.264's gaps_in_frame_num_value_allowed_flag. As Dr. Acton will testify, a POSITA would likely understand TI's reference to "gaps in frame_num" as shorthand for the temporal scaling features of H.264.

Temporal scaling was already present in the TML-9 draft of the developing standard before the '134 patent. RX-0564.0041 (TML-9) ("Temporal Scalability is achieved using bi-directionally predicted pictures, or B pictures."). In addition, Hannuksela conceded in his JVT-B042 proposal that his temporal scaling scheme was a "straightforward modification" of the prior art SALSA temporal scaling system from May 2001. RX-0029.0003 (JVT-B042). Additionally, Dr. Kia has conceded that H.264 decoders can correctly decode video sequences that use H.264's temporal scalability features without using the claimed "indication" recited in the patent claims. As a consequence, TI's three uses of the phrase "gaps in frame_num" indicate nothing about the value of the '134 patent claims.

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Even if "gaps in frame_num" did refer to use of the gaps_in_frame_num_value_allowed_flag, the fact that three TI chipsets use a flag documented in the H.264 standard is more likely attributable to TI's efforts to implement a standards-compliant product than it is attributable to intentional copying of Nokia's patent.

Nokia also refers to "initial skepticism, unexpected results, and the failed attempts of others" as additional evidence of non-obviousness, Nokia's Rebuttal Invalidity Contentions, April 23, 2024, Exhibit B, at 97, but the only supporting evidence cited is discussions in the JVT regarding concern about whether incorporating Nokia's JVT-B042 proposal, which would impact prior-art MPEG-2 distribution systems. This has nothing to do with skepticism about the technical feasibility of Nokia's proposal itself, nor does it concern failed attempts by others.

3. The '134 Patent Is Ineligible Under § 101 Because It Is Directed to an Abstract Idea and Describes Only Elements that Were Well-Known, Routine, and Conventional at the Time of the Patent.

The first step in the process for determining whether claims contain patentable subject matter under section 101 requires considering whether the claims are directed to a patent-ineligible concept. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 507 U.S. 208, 218 (2014). Consideration of the asserted claims demonstrates that each is directed to an abstract idea and is not patent-eligible.

The independent claims recite the abstract idea of decoding a video sequence, JX-0004 ('134 patent), 23:37-39, 24:16-19, configuring a buffer memory to include image data corresponding to frames not present in the decoded video sequence, *id*. at 23:40-43, 24:20-23, and using the buffered data to perform a decoding process. *Id*. at 23:44-45, 24:24-25. Thus, the claims recite the abstract concept of detecting the presence of missing frames in a decoded video sequence and providing entries in a decoder buffer for those missing frames. This is an abstract concept akin to data processing functions that the Federal Circuit has found to be abstract in previous cases. *See*, *In re TLI Communications LLC Patent Litigation*, 823 F.3d 607, 613 (Fed. Cir. 2016) ("the claims,

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as noted, are simply directed to the abstract idea of classifying and storing digital images in an organized manner"); *OIP Technologies, Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1363 (Fed. Cir. 2015) (claims reciting transmission and storage of data in computer systems recite only abstract ideas). The presence of occasional references to a "buffer memory" in the claims is insufficient to make them non-abstract. *Content Extraction and Transmission LLC v. Wells Fargo Bank, Nat. Ass'n*, 776 F.3d 1343, 1347 (Fed. Cir. 2014) ("we agree with the district court that the claims of the asserted patents are drawn to the abstract idea of 1) collecting data, 2) recognizing certain data within the collected data set, and 3) storing that recognized data in a memory").

The dependent limitations do not change the abstract nature of the concept, as they recite only that the buffer is of the well-known "sliding window" type (claim 11); that the filler frames included in the buffer correspond to the missing frames identified by the discontinuity in frame numbers (claim 13); that the filler frames are identified as not being part of the received encoded video sequence (claim 14); and that the image frames corresponding to the discontinuity do not have associated image data stored in the buffer (claim 15). Each of these restrictions are peripheral to the concept introduced in the independent claims and do not change its abstract nature.

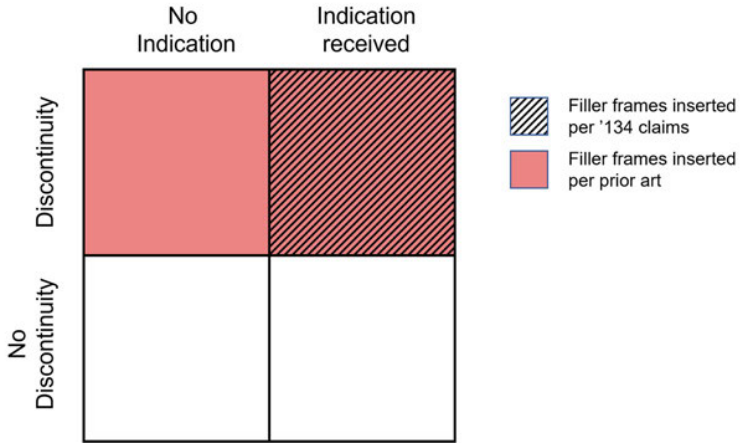
Once it is determined that the claims are directed to an abstract idea, then the Commission must consider, in a second step, whether the claims contain an "inventive concept" that transforms the abstract idea into patent-eligible subject matter. *Alice*, 507 U.S. at 221.

The alleged novelty of the claims is based on the claimed "indication informing an intentional discontinuity of numbering of the image frames" and "configuring, in response to the indication, the buffer memory to provide a number of image frames corresponding to at least one discontinuity." JX-0004 ('134 patent), 23:38-42, 24:17-22. However, as Dr. Acton will testify, configuring the buffer memory to provide image frames corresponding to any discontinuity in the

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numbering of image frames was already well-known in the prior art, having been introduced in the decoder buffering scheme formalized in H.263 Annex U, which was published in November 2000. The ’134 patents lack an “inventive concept” because they introduce no novel behavior. Instead, the claims direct the decoder to perform the same function already known from H.263 Annex U. While the claims only require the decoder to practice this prior art method when the claimed “indication” is present, the ’134 patent cannot manufacture novelty by introducing a new flag and then directing the decoder, when the flag is asserted, to do what was already known in the prior art. Dr. Acton will testify that the ’134 patent only repackaged the behavior described in H.263 Annex U for dealing with discontinuities in frame numbering, as illustrated in the figure below.



While H.263 Annex U did not condition insertion of filler frames on the presence of an “indication,” as the ’134 patent does, this requirement does not create novelty. That is especially true where, as here, the claims do not address what the decoder is to do when the new indication is not asserted, and the assumption is that the decoder will use the prior art method of H.263 Annex U in this circumstance as well. The suggestion in the ’134 patent, and in Hannuksela’s proposal to the JVT, is that when the indication is not asserted the decoder will also insert image frames in the buffer memory corresponding to any discontinuity, as TML-9 had previously prescribed. JX-0004 (’134 patent), 20:27-30 (describing that decoder default behavior is to interpret discontinuities as

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lost frames and "tr[y] to reconstruct the image frames interpreted as lost"); RX-0029.0006 (JVT-B042) ("If temporal scalability was not indicated, the decoder may insert an error-concealed picture into the multi-picture buffer ….").). Because the claims allow the decoder to practice the prior art methods of H.263 Annex U regardless of the value of claimed "indication," introduction of this indication cannot constitute an "inventive concept."

The other elements of the claims that recite manipulation of data in actual physical objects such as a "buffer memory" fail to transform the abstract idea of the claims into patent-eligible subject matter because the buffer manipulations that they recite were all already well-known in the prior art. The relevant prior art includes the decoder and buffer standardized in H.263 Annex U, and in TML-9, which used many of the features of the H.263 decoder. As Dr. Acton will testify H.263 Annex U decoders used a sliding window buffer, as recited in claim 11. RX-0616 (H.263 Annex U) at sections U.2, U.3.1.5.6, U.4.2 and U.4.5. H.263 Annex U decoders entered into the buffer memory filler frames corresponding to the discontinuity in image frame numbering, as recited in claim 13. *Id*., at U.4.2.

The concepts recited in claims 14 and 15 are non-inventive because they would have been obvious to anyone familiar with H.263 Annex U. Claim 14 recites that the filler frames added to the buffer corresponding to a discontinuity are given an identifier indicating that they do not belong to the compressed video sequence. The '134 patent refers to this identifier as an "invalid" identifier, JX-0002 ('134 patent), 20:38-42, but it does not describe what use, if any, the decoder makes of it. Dr. Acton will testify that setting flags and parameters to identify the characteristics and sources of data is a familiar aspect of data management and processing. Because the '134 patent associates no specific function with the "invalid" identifier, the identifier cannot constitute an "inventive concept" that makes these claims patentable.

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Claim 15 recites that the decoder buffer uses "memory indications" to represent the missing frame in the decoder buffer and that no actual data is entered in the buffer for the missing frame. Dr. Acton will testify that using memory indications, such as pointers, to indicate relationships between objects, is elementary computer science and would be obvious to any POSITA. Because the decoder has received no image data for any frame whose absence is indicated by a discontinuity in frame numbering it would be obvious to any POSITA that there is no new data to store in the buffer associated with the missing frame.

Therefore, none of the dependent claims introduce an inventive concept that would introduce patent-eligible subject matter in any of the claims.

V. DOMESTIC INDUSTRY – "ECONOMIC PRONG"

A. Legal Standard

The economic prong of the domestic industry requirement is met when complainant can show—with respect to articles protected by the patent—any of the following: (A) significant investment in plant and equipment; (B) significant employment of labor or capital; or (C) substantial investment in its exploitation, including engineering, research and development, or licensing. 19 U.S.C. § 1337(a)(3); *Certain Integrated Circuits, Chipsets and Prods. Containing Same*, Inv. No. 337-TA-428, Order No. 10 (May 4, 2000). For subprongs (A) and (B), the focus is on domestic investments for articles protected by the patent. 19 U.S.C. § 1337(a)(3). For subprong (C), the complainant must show a nexus between the claimed investment and asserted patent. *Certain Integrated Circuit Chips and Prods. Containing the Same,* Inv. No. 337-TA-859, Comm'n Op. at 38, 48 (Aug. 22, 2014) ("*Integrated Circuit Chips*").

"The purpose of the domestic industry requirement is to prevent the ITC from becoming a forum for resolving disputes brought by foreign complainants whose only connection with the United States is ownership of a U.S. patent." *Certain Battery-Powered Ride-On Toy Vehicles*, Inv.

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No. 337-TA-314, USITC Pub. No. 2420, Initial Deter. at 21 (Aug. 1991). The Commission counts only certain activities to ensure its strong trade remedy is only issued to protect domestic industries and not entities that are mere paper patent holders. *See* H.R. Rep. No. 40, 100th Cong., 1st Sess., at 157-58 (1987). It is the complainant's burden to show by a preponderance of the evidence that the domestic industry requirement is met. *See*, *e.g.*, *Certain Multimedia Display and Navigation Devices and Systems, Components Thereof, and Prods. Containing Same*, Inv. No. 337-TA-694, Corrected Comm'n Op. at 5 (Aug. 8, 2011).

Not all investments count toward the domestic industry requirement. *See, e.g.*, *Certain Bone Cements, Components Thereof and Products Containing the Same*, Inv. No. 337-TA-1153, Comm'n Op. at 22 (Jan. 25, 2021) ("*Bone Cements*") (holding some types of activities "such as administrative overhead, inspections, and warehousing costs associated with importation of the domestic industry products as well as sales and marketing of the product, to be indistinguishable from those of a mere importer," and excluding such expenditures from domestic industry analysis) (internal citations omitted); *Certain Video Game Systems and Controllers*, Inv. No. 337-TA-743, Initial Deter. at 13 (Feb. 24, 2011) (sales and marketing expenses cannot be considered). Investments that are too attenuated from the domestic industry product or that are not directly attributable to the domestic industry products cannot be used to satisfy the economic prong of the domestic industry requirement. *See, e.g.*, *Certain Subsea Telecoms. Sys. And Components Thereof*, Inv. No. 337-TA-1098, Comm'n Op. at 41 (Oct. 21, 2019) ("*Subsea Telecoms.*"); *Certain Video Game Systems and Wireless Controller and Components Thereof*, Inv. No. 337-TA-770, Comm'n Op. at 56-57 (Oct. 28, 2013) ("*Video Game Systems*").

The Commission examines whether the alleged domestic activities and investments "are important to the articles protected by the asserted patents in the context of the company's

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operations, the marketplace, or the industry." *Certain Network Devices, Related Software and Components Thereof (II)*, Inv. No. 337-TA-945, Initial Deter. at 279–80 (Jan. 9, 2017). "The word 'significant' denote[s] 'an assessment of the relative importance of the domestic activities.'" *Lelo Inc. v. Int'l Trade Comm'n*, 786 F.3d 879, 883-884 (Fed. Cir. 2015) (quoting *Concealed Cabinet Hinges*, Inv. No. 337-TA-289, Comm'n Op. at 11); *see also Certain Carburetors and Prods. Containing Such Carburetors*, Inv. No. 337-TA-1123, Comm'n Op. at 17 (Oct. 28, 2019) ("*Carburetors*") (finding significance may not be established by absolute values and requires assessing relative importance of domestic activities). The Commission considers a wide variety of factors, such as the value added by domestic activities, a comparison of domestic and foreign investments, and comparison of domestic industry investments to sales of domestic industry products. *Carburetors*, Inv. No. 337-TA-1123, Comm'n Op. at 17-20.

B. Nokia Has No Domestic Industry Product or Investments of its Own, Nor Does It Seek to Protect a Domestic Industry for its Licensees

Beyond the recent slew of lawsuits filed against Respondents, Nokia's connection to the United States is limited. When Nokia's mobile phone business faltered, Nokia sold it to Microsoft while creating a licensing entity—Complainant Nokia Technologies Oy—to monetize its patents. Microsoft was unable to turn the mobile phone business around, taking a $7.6 billion write down and laying off 7,800 employees a year after acquiring Nokia's mobile phone business and licensing Nokia's patents. RX-1509 (Microsoft Article). As part of the acquisition, Microsoft also received a license to Nokia's patents, including the H.264 portfolio and the Asserted Patents. RX-2978C (Nokia Microsoft PLA Amendment). The value of the agreement related to the acquisition, not the license. *Id.* This is the license Nokia relies on in support of its assertion Microsoft meets the domestic industry requirement.

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Nokia has no products or investments of its own and bases its domestic industry on the activities of its licensees: Microsoft and Samsung. But Microsoft and Samsung receive no benefit from and have no interest in this Investigation. Neither could be bothered to produce relevant source code or provide adequate financial information to demonstrate the existence of a domestic industry. Exclusion of the Accused Products will not impact or provide any protection to Microsoft, Samsung, or Nokia. *See* RX-1978C (Sheppard Dep. Tr.) at 84:5-21.

Nor is the patented technology developed or manufactured by Microsoft or Samsung. Rather, the articles alleged to practice the Asserted Patents are chipsets and the Android OS developed by other U.S. companies—[redacted]. Microsoft and Samsung purchase or acquire these alleged patent-practicing articles and incorporate them into downstream products. Nokia makes no attempt to calculate Microsoft's and Samsung's investment in the patent-practicing article as required by the statute. Instead, Nokia improperly seeks to expand the domestic industry to include investments in downstream products sold separately and manufactured by entities other than those manufacturing the patent-practicing articles.

The objective of this Investigation is not to protect a domestic industry, but to use the ITC as a vehicle to extract supra-RAND royalties from U.S. businesses.

C. The Alleged Domestic Industry Investments Are Not Directed to the Patent-Practicing Article

Nokia must show that the domestic industry investments are made "with respect to the articles protected by" the Asserted Patents. 19 U.S.C. § 1337(a)(3). Nokia fails to do so. Here, the articles alleged to practice the Asserted Patents are the chipsets or Android OS used in the downstream Microsoft and Samsung products. Orchard Rep. ¶¶ 1065, 1074; CX-5764 (Orchard App. 11); Kia Rep. ¶¶ 177-179, 187; CX-5747 (Kia App. E.0); CX-5749 (Kia App. F.0). These

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chipsets and operating system are the articles considered in determining domestic industry investments, not the downstream products.

The Commission established a three-part test to determine whether to extend the domestic industry beyond the patent-practicing articles. The Commission considers the realities of the marketplace, including: (1) whether the patent-practicing article is a separate article of commerce; (2) whether the patent-practicing article is essential to the downstream product; and (3) whether the domestic activities have a direct relationship to the exploitation of the patented technology. *Certain Magnetic Tape Cartridges & Components Thereof*, Inv. No. 337-TA-1058, Comm'n Op. at 48-50 (Apr. 9, 2019) ("*Magnetic Tape Cartridges*") (citing *Video Game Systems, Inv.* No. 337-TA-770, Comm'n Op. at 66); *see also Subsea Telecoms.*, Inv. No. 337-TA-1098, Initial Deter. at 70-75. "In sum, the Commission has credited domestic investments when they are made with respect to an 'essential,' 'necessary,' and/or 'integral' part of the article covered by the patent claims and/or is 'central to enabling' exploitation of the article covered by the patent claims." *Magnetic Tape Cartridges*, Inv. No. 337-TA-1058, Comm'n Op. at 50. Commission precedent expanding the domestic industry to include investments in downstream products involves circumstances under which exploitation of the patented technology can be achieved *only* through sales of the downstream product. *Magnetic Tape Cartridges*, Inv. No. 337-TA-1058, Comm'n Op. at 56; *Certain Sleep-Disordered Breathing Treatment Sys. and Components Thereof*, Inv. No. 337-TA-890, Initial Deter. at 149 (Aug. 21, 2014) ("*Sleep-Disordered Breathing Treatment*"); *Certain Personal Computers and Components Thereof*, Inv. No. 337-TA-140, USTIC Pub. 1504, Comm'n Op. at 41 (Mar. 9, 1984) ("*Personal Computers*").

Applying these factors, the domestic industry should be limited to the patent-practicing articles of the chipsets and the Android OS, and Nokia's attempt to expand domestic industry to

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include the downstream products—and thereby to expand the domestic industry requirement in a manner never before done—should be rejected.

1. The Patent-Practicing Articles Are Articles of Commerce Under the First Factor

The first factor relates to whether the patent-practicing article is a separate article of commerce. Here, as Respondents' expert Dr. Mody will explain, the patent-practicing chipsets and Android OS are third-party products available for sale or free acquisition in the market. Dr. Acton will further explain they are not . Nokia's Chief Licensing Officer confirmed that RX-0219C (1208 Martikainen Dep. Tr.) at 150:11-21.

For the Microsoft products, Nokia's experts identify the patent-practicing articles as the chipsets that are incorporated into the Surface products and the chipsets incorporated into the Xbox products. Orchard App. 11; Kia App. E.0.[21] Drs. Acton and Mody will testify that: design, develop, manufacture, and sell the chipsets; Microsoft purchases the chipsets of these entities; and these off-the-shelf products are not .[22]

[21] To the extent Nokia argues that claims 21 and 22 of the '808 patent cover the downstream products, such argument is waived. *Certain Vehicle Sec. & Remote Convenience Sys. & Components Thereof*, Inv. No. 337-TA-1152, Order No. 14 (Dec. 11, 2019). Nokia raised this argument for the first time in its reply brief to the summary determination motion. Nokia did not disclose its position in its contentions during fact discovery despite being an issue Respondents raised in its initial non-burden contentions.

[22] There is reference in the record to the Xbox products containing Microsoft did not produce in this Investigation and there is no discovery related to the . As addressed above, Nokia relies

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[redacted]

For the Samsung products, Nokia's experts identify the patent-practicing articles as the [redacted] and Android OS that are incorporated into the Galaxy products. Orchard Rep. ¶ 1074; CX-5764 (Orchard App. 11); Kia Rep. ¶¶ 178, 187; CX-5749 (Kia App. F.0). Drs. Acton and Mody will testify that: [redacted] designs, develops, manufactures, and sells the chipsets; Google designs, develops, and makes the Android OS source code available for use free of charge by other companies; and these off-the-shelf products are not [redacted].[23]

Nokia, and its expert, claim that the chipsets and Android OS are not articles of commerce because Microsoft and Samsung do not sell these products. As Dr. Mody will explain, [redacted] or Android OS is irrelevant to this first factor because they purchase or acquire them, making them articles of commerce. In fact, that the patent-practicing articles are sold by those other than Microsoft or Samsung makes the connection to the investments more, not less, tenuous. Moreover, as will be demonstrated by the technical experts in this Investigation, [redacted]. For

on the same source code [redacted] provided for its off-the-shelf chipsets. Given Nokia's reliance on this [redacted] source code and the lack of discovery on the [redacted], the [redacted] are appropriately considered articles of commerce. Alternatively, as discussed above, Nokia failed to show the Xbox products practice the Asserted Patents.

[23] Samsung is known to modify the Android OS for its Galaxy products. RX-1978C ([redacted] Dep. Tr.) at 83:21-84:5. Samsung did not [redacted]. Nokia relies on the source code available from the Google Android developer website. As discussed above, Nokia failed to show practice of the Asserted Patents based on Android OS. [redacted], given Nokia's reliance on the public Android OS source code, Android OS is appropriately considered as an article of commerce.

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[redacted]

example, Nokia accuses [redacted] chipsets and Amazon products using Android OS. Orchard Rep. ¶ 70; Kia Rep. ¶¶ 163-64, 169. That the patent-practicing article is itself an article of commerce dictates against expanding the domestic industry to include the downstream product. *Semiconductor Devices*, Inv. No. 337-TA-1010, Initial Deter. at 251 (July 28, 2017).

2. The Patent-Practicing Articles and Downstream Products Do Not Have an Exclusive Operational Relationship

The second factor is characterized as whether the patent-practicing article is essential to the downstream product, but the decisions themselves (discussed below) demonstrate a more specific requirement focusing on whether the downstream product is necessary for exploitation of the patented technology and whether there is an exclusive operational relationship between the patent-practicing article and the downstream product. As Dr. Acton will explain, the [redacted]. Laptops, tablets, gaming consoles, and smartphones need chipsets and operating systems to operate in the same sense that such products need hard drives, RAM, power sources, operating systems, displays, charging cables, and many other components. And, of course, chipsets and operating systems are intended to be integrated into electronic devices. This is not the relevant analysis. The question under Commission precedent is whether the patent-practicing article and downstream product are part of a proprietary and exclusive system such that the patent-practicing article could not and would not be exploited without the downstream product. *Personal Computers*, Inv. No. 337-TA-140, Comm'n Op. at 41; *Sleep-Disordered Breathing Treatment*, Inv. No. 337-TA-890, Initial Deter. at 149; *Magnetic Tape Cartridges*, Inv. No. 337-TA-1058, Comm'n Op. at 56.

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[redacted]

In *Personal Computers*, the protected technology related to an operating system program that was designed and developed for the Apple II and Apple III computers. Inv. No. 337-TA-140, Comm'n Op. at 13, 41. The Commission found that the article of commerce was the personal computer, which included an integrated keyboard assembly, custom integrated circuit chips, RAM, a housing, circuit boards, and other hardware.[24] *Id*. at 41-42. In that investigation, the protected operating system program was developed by Apple to be used exclusively in personal computers which were also developed by Apple. *Id*.

In *Magnetic Tape Cartridges*, the Commission determined that the domestic industry should be expanded beyond the patent protected tapes to include the drives used to read the tapes. Inv. No. 337-TA-1058, Comm'n Op. at 50-53. In particular, the Commission highlighted the "exclusive operational relationship between the 3592 tapes and 3592 tape drives" and found that the "3592 drives are necessary to exploit the IBM 3592 tape cartridges." *Id*. at 51, 53; *see also id*. at 53 ("Here, the '3592 tape and drive products at issue make up a closed, proprietary data storage system' and there is no dispute that one cannot be used without the other."). Because the 3592 tapes were designed to be used exclusively with the 3592 tape drives, exploitation of the patented technology required sales of and investments in the 3592 tape drives. As with *Personal Computers*, both the tape and tape drive were designed and developed by the same company, this time IBM, as part of an integrated, closed system.

Most informative as it relates to the facts in this Investigation is the decision in *Sleep-Disordered Breathing Treatment*, Inv. No. 337-TA-890, Initial Deter. at 147-50. In that investigation, the ALJ analyzed whether the domestic industry should extend to include the H5i

[24] The domestic industry in Inv. No. 337-TA-140 was analyzed under the statute as it existed before the 1988 Amendments.

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humidifier, S9 flow generator, and masks. *Id*. The H5i humidifier and masks were protected by the asserted patents, whereas the S9 flow generator was not. The ALJ determined that the domestic industry related to the H5i humidifier included the S9 flow generator, but not the masks, and the domestic industry for the masks was limited to the masks themselves. *Id*. In distinguishing between the humidifier and the masks, the ALJ explained:

> I find that the S9 flow generator is central to enabling ResMed to exploit the patented technology of the H5i humidifier because the H5i humidifier is designed to work only with the S9 flow generator, and [redacted] H5i humidifiers are sold in a 'co-pack' with an S9 flow generator. In contrast, I find that the S9 and H5i are not central to enabling ResMed to exploit the patented technology of its masks because these masks are compatible with other CPAP devices and humidifiers, and they are marketed and sold separately from ResMed's flow generator and humidifier.

Id. at 147; *see also id*. at 150 ("The H5i humidifier is wholly dependent on the S9 flow generator, and the S9 is thus central to enabling ResMed to exploit the patented technology of its humidifier."). The ALJ explained that the masks were articles of commerce separate from the S9 flow generator and the H5i humidifier because they "can be used with other companies' flow generators and humidifiers." *Id*. at 150.

The chipsets and Android OS in this Investigation are highly analogous to the masks in *Sleep-Disordered Breathing Treatment*, and the fact that they are the products of other entities removes them even one step further. No investigation has found such a tenuous relationship to satisfy that the downstream product is essential to the patent-practicing article or the exclusive operation relationship required by this factor. Like the masks, Dr. Acton will explain that [redacted]. This is further underscored by the fact that Nokia relies [redacted] to both meet the domestic industry requirement and prove infringement of certain Accused Products. Orchard Rep. ¶¶ 1065, 1074; CX-5764 (Orchard App. 11); Kia Rep. ¶¶ 177-

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[redacted]

179, 187; CX-5747 (Kia App. E.0); CX-5749 (Kia App. F.0). [redacted]

This Investigation is also similar to *Semiconductor Devices*, in which the ALJ did not include investments in a downstream product in the satisfaction of the domestic industry. Inv. No. 337-TA-1010, Initial Deter. at 247-248, 252-253. The patent-practicing article was a separate article of commerce made by a different company, Linear Technology Corporation, from the company that made the downstream product, Micron. *Id*. at 248 The patent-practicing article was a chip soldered onto the PCB used in the Micron SSDs. *Id.* The focus was on the SSD as the downstream product and the complainant relied on investments in a different component used in the SSDs that did not use the patented technology as the alleged qualifying domestic industry investments. *Id.* The ALJ found the domestic industry should not include investments in the downstream product through the investments in a component that was not the patent-practicing article. *Id.* What Nokia seeks here is more egregious than the facts in *Semiconductor Devices* as Nokia seeks to include investments in the downstream products as a whole, which includes many components that are not the patent-practicing articles. For the same reason the ALJ in *Semiconductor Devices* rejected the alleged domestic industry investments, Nokia should not be allowed to rely on investments in the downstream products without apportioning them to the investments related to patent-practicing article.

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[redacted]

3. The Alleged Domestic Investments Are Not Directly Related to Exploitation of Patented Technology

The third and final factor relates to whether the domestic activities have a direct relationship to the exploitation of the patented technology. *Magnetic Tape Cartridges*, Inv. No. 337-TA-1058, Comm'n Op. at 50. Nokia fails to demonstrate that there is any relationship—let alone a "direct" one— between the domestic activities for which it calculates investments and exploitation of the patented technology, which relates to minor features of the H.264 standard. Nokia makes no effort to allocate investments in the alleged Domestic Industry Products to integration of the patent-practicing articles in the downstream products or implementation of these minor features.

In *Semiconductor Devices,* the ALJ found that the domestic activities were not central to enabling the patented technology—which was the product of a different company—and that the domestic expenditures did not relate to the patented technology. Inv. No. 337-TA-1010, Initial Deter. at 251-252; *see also Concealed Cabinet Hing*es, Inv. No. 337-TA-289, Comm'n Op., 1990 ITC LEXIS 3, at *34 ("Because its indirect bearing on the patented features of the [product], we reduce the weight we otherwise would accord complainant's investment"). In contrast, in *Magnetic Tape Cartridges*, the Commission credited investments in the tape drive because the domestic activities were directed to exploiting the patented technology. Inv. No. 337-TA-1058, Comm'n Op. at 55 ("IBM's domestic 3592 drive development work is devoted to improving the interoperability of the 3592 tape media with drives."). As with *Semiconductor Devices*, the alleged domestic industry activities relied on by Nokia are not central to enabling or exploiting the patented technology allegedly contained on the chipsets or within Android OS.

For example, Microsoft provided a limited description of the domestic activities for the Surface products as [redacted]

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[redacted] RX-1980C ([redacted] Dep. Tr.) at 17:15-18:14, 34:4-16. Similarly, domestic activities related to the Xbox products were described as [redacted] RX-1979C ([redacted] Dep. Tr.) at 23:22-24:15. There is no mention of video or H.264 related to these activities, and there is no support in the record for the proposition that the domestic Microsoft activities are central to enabling or exploiting the patented technology or H.264.

While Samsung provides more details regarding its domestic activities, they are also not directed to video, H.264, or exploiting the patented technology. CX-4574C (SAMS1379-0026954–967) at 957–58; RX-1978C ([redacted] Dep. Tr.) at 23:2-25:17, 29:21–32:17, 34:3–35:21. Rather, many relate to [redacted] *Id.* [redacted] nothing related to the minor features of the H.264 standard allegedly covered by the Asserted Patents. In fact, [redacted], Samsung's witness testified that SEA is not involved in [redacted] *Id*. at 73:3-74:18. In other words, activities that may be considered as having a direct relationship to exploitation of the patented technology are not performed domestically.

Nokia relies on a passage from *Magnetic Tape Cartridges* to argue that any activity related to the downstream product has a direct relationship with exploitation of the patented technology.

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[redacted]

Inv. No. 1058, Comm'n Op. at 56. This takes the cited language out of context and Nokia's conclusion fails to consider other factors the Commission addressed in rendering its opinion. The portion of the Commission Opinion on which Nokia relies addresses whether there is a distinction between domestic activities with a direct relationship to the exploitation of the patented technology as compared to exploitation of the patented article. *Id.* The issue presented was not about whether there is a distinction between activities directed to the patented article as compared to the downstream product. In addressing the difference between activities directed to the patented technology versus patented article, the Commission found no distinction. Moreover, the Commission had already determined that that there was an "exclusive operational relationship" between the patent-practicing article and the downstream product, and that the domestic activities were directed to improving interoperability of the patent-practicing article with the downstream product. *Id.* at 50, 55. There are no similar facts here. [redacted].

4. Nokia Cannot Show a Domestic Industry in the Patent-Practicing Articles

Nokia took no discovery into and cannot identify investments by Microsoft or Samsung related to the patent-practicing articles. As Dr. Acton will testify, Nokia's experts present no evidence that adding the hardware or software for supporting H.264 required any special effort from Microsoft or Samsung engineers. And Nokia's experts present no evidence that adding or supporting this feature takes anything beyond what would have been required to integrate any other hardware or software features of the third-party SoCs or Android operating system within the Domestic Industry Products. Microsoft's witnesses [redacted] RX-1980C

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[redacted]

([redacted] Dep. Tr.) at 45:4-12; RX-1979C ([redacted] Dep. Tr.) at 25:3-6. Samsung's witness testified that [redacted] ting. RX-1978C ([redacted] Dep. Tr.) at 73:3-74:18. Samsung's witness further testified [redacted]. *Id.* at 76:4-77:16. Nokia did not even try to meet its burden to show a domestic industry related to the patent-practicing article. And, given the lack of investment information, Nokia cannot meet its burden to show the existence of a domestic industry related to the patent-practicing article.

D. Nokia Cannot Calculate Alleged Domestic Industry Investments Under its Broader Domestic Industry Because It Failed to Establish Representativeness of the Patent-Practicing Articles in the Alleged Domestic Industry Products

As the Federal Circuit recently reiterated, Section 337 "requires the complainant to show significant or substantial expenditures on certain activities with respect to the articles protected by the patent," and "likewise ties the domestic industry to products protected by a particular patent." *Zircon Corp. v. ITC*, 101 F.4th 817, 823 (Fed. Cir. 2024). It is impossible to evaluate whether the economic prong of the domestic industry requirement has been met without Nokia first establishing which of the alleged Domestic Industry Products practice which asserted patent(s). As addressed above related to technical domestic industry, Nokia failed to establish representativeness of the patent-practicing articles, and Nokia's experts did not analyze or opine on each of the various chipsets or Android OS versions in the alleged Domestic Industry Products. Given Nokia's use of a sales-based allocation, it is not possible to calculate the alleged domestic industry investments without knowing the alleged Domestic Industry Products that practice the Asserted Patents. It is similarly impossible to analyze the significance or substantiality of investments. As such, Nokia has not met it burden of showing the domestic industry requirement is met.

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[redacted]

E. Nokia's Timeframe Is Improper

Nokia failed to establish investments made during the relevant time period for a licensee. Nokia must establish the existence of a domestic industry at the time of filing the complaint. *See, e.g.*, *Hyosung TNS Inc. v. Int'l Trade Comm'n*, 926 F.3d 1353, at 1361 (Fed. Cir. 2019). Additionally, multiple ALJs have recognized that expenditures of a licensee can only be considered part of domestic industry after execution of the license, and the Commission has not stated otherwise. *See, e.g.*, *Certain Digital Media Devices Including Televisions, Blu-Ray Disc Players, Home Theater Systems, Tablets and Mobile Phones, Components Thereof and Associated Software*, Inv. No. 337-TA-882, Initial Deter. at 450 (July 7, 2014) (complainant BHM tried and failed to show domestic industry by relying on "investments made by ***, which was not a licensed entity at the time of the investments"), *Commission taking no position deeming the issue abandoned*, Comm'n Notice, 79 Fed. Reg. 55827 at 55828; *see also Certain Televisions, Remote Controls, and Components Thereof*, 337-TA-1263, Initial Deter. at 152-53 (Jun. 28, 2022); *Certain Devices for Improving Uniformity in a Backlight Module and Components Thereof and Products Containing Same*, Inv. No. 337-TA-805, Initial Deter. at 59 (Oct. 22, 2012) ("[T]the patentee is entitled to rely on its licensee's activities related to the Domestic Industry Products once the license agreement has been executed…"), *Commission finding the issue moot*, Comm'n Op. at 27 (May 17, 2013).

Related to Microsoft, Nokia's expert, Ryan Herrington, fails to rely on investments at the time of the filing of the Complaint and, instead, provides calculations only through June 2023—four months before the Complaint was filed. Herrington Rep. ¶ 67. This is insufficient.

Related to Samsung, Mr. Herrington relies on investments going back to [redacted] *Id*. ¶ 181. But the alleged Samsung Domestic Industry Products were not [redacted]. RX-2896C (NOK_AMPH_ITC00065618-44). Any alleged

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[redacted]

domestic industry investments predating [redacted]. To the extent Nokia attempts to [redacted], this was a late-disclosed theory made after the deadline for final burden contentions, is [redacted]. RX-1982C (Martikainen Dep. Tr.) at 18:4-19:19.

F. Nokia Overstates the Alleged Domestic Industry Investments Under Its Broader Domestic Industry

Nokia cannot show the domestic industry requirement is met under subprong (A) or (B).[25]

1. Nokia Overstates the Alleged Domestic Industry Investments in the Alleged Domestic Industry Products

Nokia overstates the alleged domestic industry investments because it captures investments and activities not directed to the alleged Domestic Industry Products.

Surface products: Microsoft's Surface witness testified that [redacted]. RX-1980C ([redacted] Tr.) at 35:21-37:5. Despite this clear testimony, Mr. Herrington apportions the research and development investments to the Surface Domestic Industry Products [redacted]. CX-5522C (Herrington Rep., Ex. 5); CX-5523C (Herrington Rep., Ex. 6A).

For example, the alleged domestic [redacted]. RPX-0209C (MSFT_NOKIA_ITC_0000568). [redacted]

[25] Nokia indicated it is withdrawing its allegations that the domestic industry requirement is met under subprong (C). Respondents, therefore, do not address subprong (C), but reserve the right to respond to any arguments made by Nokia related to subprong (C).

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[redacted]. For the remaining Surface products, Mr. Herrington does not calculate investments [redacted]. CX-5522C (Herrington Rep., Ex. 5); CX-5523C (Herrington Rep., Ex. 6A); RPX-0209C (MSFT_NOKIA_ITC_0000568). In addition, as Dr. Mody will explain, current research and development investments relate to products that have yet to launch and which [redacted]. As a result, Nokia's alleged investment numbers are inflated. Moreover, since there is no evidence as to [redacted]

Xbox products: Similarly, Microsoft's Xbox witness testified that [redacted]. RX-1979C ([redacted] Dep. Tr.) at 35:9-36:19. Mr. [redacted] further testified [redacted] *Id.* As Dr. Mody will explain, at least some of [redacted]. Nokia does not remove expenses associated with [redacted], and its alleged investments for the alleged Xbox Domestic Industry Products are overstated.

Samsung products: As Dr. Mody will testify, Samsung's alleged domestic industry activities include [redacted]

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[redacted]

[redacted]. CX-4574 (SAMS1379-00026954). Nokia inflates Samsung's investments by including [redacted].

2. Nokia's Alleged Plant and Equipment Investments Include Noncognizable Investments

Microsoft: Mr. Herrington's alleged investments in plant and equipment for Microsoft includes [redacted] CX-5523C (Herrington Rep., Ex. 6). Microsoft's witness testified that [redacted]. RX-1980C ([redacted] Dep. Tr.) at 21:21-23:5. Mr. Herrington did not receive nor did he request information as to [redacted] Herrington Dep. Tr. at 169:20-172:7. Additionally, it is unclear if the alleged plant and equipment investments also [redacted]. As Dr. Mody will testify, as a result of inclusion of these noncognizable expenses, Nokia overstates the alleged plant and equipment investments.

Samsung: Dr. Mody will testify that Mr. Herrington's alleged plant and equipment investments for Samsung also includes [redacted]. Dr. Mody will further explain that Mr. Herrington also includes [redacted]. As Dr. Mody will testify, it is unclear whether these expenses relate to or have been

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[redacted]

properly allocated to the Domestic Industry Products. By including these noncognizable expenses, Nokia inflates the alleged domestic industry investments.

As Dr. Mody will explain, Mr. Herrington also includes [redacted] as one portion of the alleged domestic industry investments, but [redacted] are frequently characterized as the activity of a mere importer and are noncognizable expenses. *Certain Artificial Eyelash Extension Sys., Prod., & Components Thereof* , Inv. No. 337-TA-1226, Comm'n Op. at 31 (Oct. 24, 2022) ("*Artificial Eyelash*"); *see also Bone Cements*, Inv. No. 337-TA-1153, Comm'n Op., at 8-11 (holding that some types of activities "such as administrative overhead, inspections, and warehousing costs associated with importation of the domestic industry products as well as sales and marketing of the product, to be indistinguishable from those of a mere importer," and excluding these expenditures from the domestic industry analysis). By including [redacted], Nokia inflates the alleged domestic industry investments.

3. Nokia's Alleged Labor and Capital Investments Include Noncognizable Investments

Microsoft: The [redacted] category that Mr. Herrington relies on for labor investments includes [redacted] Herrington Rep. ¶ 94; RX-1980C ([redacted] Dep. Tr.) at 45:12-21. As Dr. Mody will testify, Mr. Herrington has not established that [redacted] qualify as cognizable investments and has no information related to these expenses. Dr. Mody will further testify that the [redacted] relate to plant and equipment under subprong (A), not labor and capital under subprong (B). To the extent Nokia argues these qualify as capital, *Lelo* defined "capital" as "a stock of accumulated goods." *Lelo*, 786 F.3d at 883. [redacted] are not "a stock of accumulated goods."

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[redacted]

Given that the [redacted] RX-1980C ([redacted] Dep. Tr.) at 18:12-18. Dr. Mody will testify that it likely also includes [redacted]. According to Microsoft's 2023 10-K report, the company laid off 10,000 employees resulting in $800 million in severance expenses. RX-0986 (Microsoft 2023 10-K). Employee severance expenses are counter to the purpose of the ITC, which is designed to protect domestic investments, including jobs, and should be excluded similar to general administrative expenses.

Samsung: Dr. Mody will explain that Mr. Herrington's labor expenditures for Samsung also include noncognizable expenses, such as from the categories [redacted] RPX-0562C (SAMS1379-0026968). Dr. Mody will testify that the record contains no information as to what is included in these expenses or the degree to which they may relate to the Domestic Industry Products. Dr. Mody will testify that Mr. Herrington's alleged domestic industry investments further include [redacted] *Id.* It is not possible to reconcile including one while excluding the other. As Dr. Mody will testify, Mr. Herrington also includes [redacted] (*id.*) even though the ITC generally does not include sales and marketing expenditures in the calculation of the domestic industry. *Artificial Eyelash*, Inv. No. 337-TA-1226, Comm'n Op. at 53.

Plant and equipment investments: Mr. Herrington also includes [redacted] as "capital" investments under subprong (B). Herrington Dep. Tr. at 197:16-18. Plant and equipment expenses do not qualify as a stock of accumulated goods and are not capital investments. There is no support for Mr. Herrington's position that [redacted]. *Id.* at 198:7-

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[redacted]

10. No Commission decision approves including all subprong (A) investments in subprong (B) as "capital." Nor has the Commission approved including plant and equipment expenses as subprong (B) investments. *See Certain X-Ray Breast Imaging Devices and Components Thereof*, Inv. No. 337-TA-1063, Initial Deter. at 269–72 (Sept. 13, 2018) ("*Breast Imaging Devices*") and *Certain Gas Spring Nailer Prods. and Components Thereof*, Inv. No. 337-TA-1082, Comm'n Op. at 75–76 (Apr. 28, 2020) ("*Gas Spring Nailer Prods.*"). In *X-Ray Breast Imaging Devices*, the investments under subprong (B) were not contested and, as such, the ALJ did not address whether the investments in subprong (B) improperly included plant and equipment. Inv. No. 337-TA-1063, Initial Deter. at 269-72. Similarly, in *Gas Spring Nailer Prods.*, there is no discussion as to what constitutes "Broadwell facility investments" and whether they were limited to labor performed at and/or goods stored at the Broadwell facility. Inv. No. 337-TA-1082, Comm'n Op. at 75-76. While respondents in that investigation challenged other aspects of the domestic industry investments in that investigation, they did not argue that the "Broadwell facility investments" were improper plant and equipment investments that should not be credited under subprong (B) and so the Commission did not address that issue. Neither of these decisions suggest that plant and equipment may properly be attributed to labor or capital and such a finding would be inconsistent with the plain language of the statute, which provides different categories for these investments to avoid this type of double counting. 19 U.S.C. § 1337(a)(3).

G. Nokia Has Not Shown the Quantitative or Qualitative Significance of Microsoft's and Samsung's Alleged Domestic Investments

Nokia must show that the alleged domestic industry investments are qualitatively and quantitatively significant. *Certain Printing and Imaging Devices and Components Thereof*, Inv. No. 337-TA-690, Comm'n Op. at 26 (Feb. 17, 2011) ("*Imaging Devices*"). Quantitative significance requires assessing the relative importance of the domestic activities, such as by

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[redacted]

considering the value add from domestic activities, comparing domestic and foreign investments, and comparing domestic industry investments to sales of domestic industry products. *Carburetors*, Inv. No. 337-TA-1123, Comm'n Op. at 17-20. The Commission further considers "the nature of complainant's activities to determine whether they are directed to the practice of one or more claims of the asserted patent." *Imaging Devices*, Inv. No. 337-TA-690, Comm'n Op. at 28 (no evidence of "whether complainant's undertakings had a direct bearing on the practice of the patent"); *Concealed Cabinet Hinges*, Inv. No. 337-TA-289, Comm'n Op., 1990 ITC LEXIS 3, at *23 ("Because of the indirect bearing on the patented features of the [product]," the Commission gave less weight to complainant's investments relating to adding an optional dowel to the imported product); *Certain Plastic Encapsulated Integrated Circuits*, Inv. No. 337-TA-315, Initial Deter. at 90 (Nov. 1992) (significance inquiry included whether activities relate to something covered by the patent).

Nokia cannot show that any alleged domestic industry investments are directed to any aspect of the Asserted Patents much less qualitatively significant. Domestic activities do not [redacted] Nor are any domestic activities required by any claim limitation or directed to practice of the claims. As such, Nokia cannot meet its burden of showing that the alleged domestic industry investments are significant or substantial. *Imaging Devices*, Inv. No. 337-TA-690, Comm'n Op. at 28.

Microsoft: In asserting that Microsoft's domestic activities are qualitatively significant, Mr. Herrington relies on generic statements from Microsoft's 10-K and the opinion of Nokia's experts. Herrington Rep. ¶¶ 107-116. Nokia failed to get the evidence, if any exists, from Microsoft. Microsoft provided limited testimony regarding [redacted]

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[redacted]

[redacted]. RX-1980C ([redacted] Dep. Tr.) at 17:15-18:4, 34:4-16; RX-1979C ([redacted] Dep. Tr.) at 23:22-24:15. Nokia must, therefore, rely on its experts in support of its position the domestic activities are qualitatively significant.

In arguing quantitative significance, Nokia misrepresents the relevance of the data provided by Microsoft. As Dr. Mody will explain, Nokia's assertions of significance are premised on [redacted]. The data provided by Microsoft relates to [redacted]. RX-1980C ([redacted] Dep. Tr.) at 34:4-16; RX-1979C ([redacted] Dep. Tr.) at 16:10-14. The produced [redacted] RX-1980C ([redacted] Dep. Tr.) at 34:17-21, 36:18-22, 40:10-22; RX-1979C ([redacted] Dep. Tr.) at 22:15-19; 31:21-32:5; 39:11-20.

As Dr. Mody will testify, instead of performing a comparison related to [redacted]. Moreover, the data Nokia relies on for significance and substantiality from [redacted]. RPX-0208C (MSFT_NOKIA_ITC_0000222); RPX-0210C (MSFT_NOKIA_ITC_0000569). [redacted]

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[redacted]

Even accepting Mr. Herrington's alleged domestic investment numbers, as Dr. Mody will explain, putting them in context demonstrates they are not significant. Microsoft employs only [redacted] (and less than that for the alleged Xbox Domestic Industry Products). RX-1979C ([redacted] Dep. Tr.) at 18:17-21. Dr. Mody will testify that this represents just [redacted]. Dr. Mody will further testify that Mr. Herrington's calculated investments for plant and equipment, labor, and labor and capital for the Xbox Domestic Industry Products in FY2023 make up [redacted]. For the Surface products, assuming similar employee expenses, [redacted]. Herrington Dep. Tr. at 227:20-228:2. This represents [redacted]. Dr. Mody will testify that Mr. Herrington's calculated investments for plant and equipment, labor, and labor and capital for the Surface Domestic Industry Products in FY2023 make up [redacted]. Dr. Mody will further testify that the alleged investments are also only a small fraction of the [redacted] for the alleged Microsoft Domestic Industry Products.

Samsung: Nokia's own calculations demonstrate a lack of significance. For example Mr. Herrington's calculations of the alleged domestic industry investments compared to alleged allocated SEC expenses are [redacted]. Herrington Rep. ¶¶ 252, 263, 268, 273. Mr. Herrington claims this is significant [redacted] *Id.*

For its remaining analysis, Dr. Mody will explain Mr. Herrington [redacted]

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[redacted]

In the context of SEC, Dr. Mody will testify the relative size of [redacted]

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[redacted]

Nokia cannot meet its burden to show the domestic industry requirement is met. Nokia relies on the efforts of third-party U.S. companies that develop the chipset and Android OS technology alleged to practice the Asserted Claims. As Nokia has not licensed any of those entities, it seeks to expand the domestic industry to include downstream products. But the factors for expanding the domestic industry weigh against such expansion and Nokia cannot show investments by its licensees relate to the patent-practicing articles. The flawed nature of Nokia's domestic industry argument is underscored by the fact that it relies on the same technology for both domestic industry and alleged infringement. Rather than protecting the domestic industry of the patent-practicing article, Nokia seeks to harm it by excluding downstream products incorporating such articles. Quite simply, Nokia seeks an unprecedented expansion of the domestic industry that ignores investments in the patent-practicing articles and focuses on licensed downstream products without regard to the purpose of Section 337 or protecting a domestic industry. Even if Nokia's expanded domestic industry is accepted, the alleged domestic industry investments includes noncognizable expenses and Nokia has failed to show the alleged domestic industry investments are qualitatively and quantitatively significant or substantial.

VI. NON-TECHNICAL AFFIRMATIVE DEFENSES

Respondents assert the following additional defenses to Nokia's patent infringement claims and its request for exclusionary relief: (1) breach of RAND obligations; (2) breach of the duty to negotiate in good faith; (3) equitable estoppel and implied waiver; (4) waiver; (5) laches; and (6) patent misuse and unclean hands. Based on these defenses, Respondents contend Nokia is not entitled to exclusionary relief from the ITC and/or the Asserted Patents are unenforceable.

Nokia's breach of its RAND obligations, breach of the duty to negotiate in good faith, equitable estoppel and implied waiver, waiver, and patent misuse and unclean hands stem from Nokia's obligations to the ITU (and/or JVT), including RAND obligations and obligations to

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[redacted]

disclose essential patents in a timely manner. With respect to these defenses, Nokia contends each Asserted Patent has claims essential to the H.264 standard. *See* Complainants' Revised Identification of Claims It Asserts Are and Are Not Standard Essential, Inv. No. 337-TA-1379, EDIS Doc. ID 813510 (Feb. 6, 2024).[26] Respondents do not contend either Asserted Patent is essential. Accordingly, for these defenses, Nokia is not entitled to exclusionary relief and/or the Asserted Patents are unenforceable to the extent the ALJ and the Commission determine any of the Asserted Claims are essential.[27]

A. Breach of RAND Obligations

To the extent the Asserted Patents are essential to the H.264 standard, as Nokia alleges, Nokia has breached its obligations to the ITU to provide Respondents a license to its alleged H.264 portfolio on RAND terms and conditions.

Courts recognize that a commitment between a SEP holder and a SSO (such as the ITU) to license SEPs on RAND terms is binding on the SEP holder under contract law and also under the equitable doctrine of promissory estoppel. *See, e.g.*, *Microsoft Corp. v. Motorola, Inc.*, 854 F.Supp.2d 993, 999, 1002 (W.D. Wash. Feb. 27, 2012) ("The court agrees with Microsoft that through Motorola's letters to both the IEEE and ITU, Motorola has entered into binding contractual commitments to license its essential patents on RAND terms."); *Apple, Inc. v. Motorola Mobility, Inc*., No. 11-cv-178, 2011 WL 7324582, at *15 (W.D. Wis. June 7, 2011) (holding that Apple had

[26] Nokia identified as essential to the H.264 standard: claims 7, 9, 16, 17, 20, 22, 32-34, 36, 39-41, 43, 54, 58, 59, 60, 62-65 of the '808 patent; and claims 1-6, 8-14, and 16-21 of the '134 patent. Of these, the following claims were terminated from the Investigation upon Nokia's request: claim 39 of the '808 patent and claims 1-6 and 8 of the '134 patent.

[redacted]

[27] Amazon's defense of laches is not dependent on any finding that the Asserted Patents are SEPs.

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[redacted]

stated a claim for promissory estoppel based on Motorola's "promises to the standards setting organization through its commitments that it would license any essential patents under fair, reasonable and non-discriminatory terms.").[28] Even Nokia admits its commitments to the ITU create binding obligations to license its purported H.264 portfolio on RAND terms and conditions, although only as to what it calls "decoder claims." *See,* Compl. ¶¶ 55-56; *see also Certain Wireless Devices with 3G and/or 4G Capabilities, and Components Thereof,* Inv. No. 337-TA-868, Nokia Public Interest Statement at 3 (Jan. 15, 2013) ("868 Nokia PI Statement") ("[A] FRAND commitment creates a binding and enforceable undertaking for the benefit of third party manufacturers of standards-compliant products."); [redacted]

Respondents disagree with Nokia's position regarding what it calls "encoder claims."[29] To the

[28] Promissory estoppel occurs when a promisor makes "[a] promise which the promisor should reasonably expect to induce action or forbearance on the part of a promisee or a third person and which does induce such action or forbearance" and "if injustice can be avoided only by enforcement of the promise." RESTATEMENT (2D) CONTRACTS § 90; *see also Apple*, 2011 WL 7324582, at *15 ("To survive a motion to dismiss on a promissory estoppel claim, Apple must plead that Motorola made a promise that it should have reasonably to cause Apple to change its position, and that the promise caused Apple to change position in such a manner that injustice can be avoided only by enforcing the promise.").

Here, Nokia reasonably expected its commitments to the ITU to induce Respondents to adopt H.264 related technology in their products. Further, the RAND framework of the ITU, including Nokia's commitments to the ITU, did induce Respondents to market and sell products allegedly complying with the H.264 standard. Injustice can only be avoided by enforcing Nokia's commitments to the ITU. Therefore, these commitments are binding on Nokia as a matter of promissory estoppel.

[29] The H.264 standard specifies a compliant bitstream and a process for decoding that bitstream. It neither specifies an "encoder" nor a "decoder." *See,* Simcoe Opening Rep. ¶ 131 (citations

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[redacted]

extent the ALJ determines the "encoder claims" are essential based on Nokia's infringement contentions, however, Nokia's RAND obligations would apply to these "encoder claims" as well.

Entities, such as Respondents, who sell products supporting standardized technology are third-party beneficiaries entitled to enforce SEP holders' RAND obligations to an SSO to license its SEPs to third-party beneficiaries. This is specifically so with respect to the ITU and the H.264 standard. *See, Microsoft*, 854. F.Supp.2d at 999; *Microsoft Corp. v. Motorola, Inc.*, 696 F.3d 872 (9th Cir. 2012) (affirming Microsoft was a third-party beneficiary to Motorola's contractual obligations to the ITU and IEEE). Accordingly, Respondents are entitled to enforce Nokia's RAND obligations under contract law. Nokia does not deny Respondents are third-party beneficiaries entitled to enforce its RAND obligations.[30]

Breach of RAND obligations precludes the exclusionary relief Nokia seeks. Once a standard is adopted, manufacturers "have little choice but to incorporate SEP technologies into their products." *Microsoft Corp. v. Motorola, Inc.*, 795 F.3d 1024, 1031 (9th Cir. 2015). Breach of

omitted). Nokia's position regarding "encoder claims" appears to be an attempt to create a loophole to its RAND obligations, *e.g.*, by claiming the discretion to carve up the claims in its H.264 patents as directed to "decoders" and "encoders," and thereby attempting to reserve the ability to charge whatever royalties it can manage to extract. *Id.* ¶¶ 128-133.

[30] Nokia contends that Respondents are [redacted] and suggests, because of this, Respondents cannot enforce Nokia's RAND obligations that require it to license its SEPs on RAND terms and conditions. But, Nokia's RAND commitments are irrevocable and cannot be discharged by any alleged improper behavior by Respondents. *Microsoft Corp. v. Motorola, Inc.*, 864 F. Supp. 2d 1023, 1034–35 (W.D. Wash. 2012) (rejecting Motorola's theory that Microsoft repudiated its entitlement to a RAND license under the ITU policy, finding "Motorola's contracts with the IEEE and the ITU do not condition Motorola's RAND obligations on the implementer first applying for a license and then negotiating in good faith."). Additionally, Nokia has not shown that Respondents have given up their third-party beneficiary status. As explained below in Section VI.B, it is Nokia, not Respondents, who has breached its duties to [redacted] Yet Nokia has opposed Respondents' requests, and has not asked any court to make a determination of a RAND royalty rate, instead seeking exclusionary or injunctive relief.

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[redacted]

RAND obligations can result in anticompetitive harm, patent hold-up, and undue leverage, as the USTR and FTC commissioners have recognized. RX-1531.0002 (USTR Disapproval Letter) ("potential harms that can result from owners of [SEPs] who have made a voluntary commitment to offer to license SEPs on terms that are [RAND] [include] gaining undue leverage and engaging in 'patent hold-up'"); RX-1630.0003 (*Certain UMTS and LTE Cellular Comm'n Modules and Products Containing the Same*, Inv. No. 337-TA-1240, Written Submission on the Public Interest at 2 (May 16, 2022) ("1240 FTC Commissioner Statement")) (quoting *Allied Tube & Conduit Corp. v. Indian Head, Inc.*, 486 U.S. 492, 500-01 (1988)) (stating breach of RAND obligations poses "serious potential for anticompetitive harm"); *Broadcom Corp. v. Qualcomm Inc.*, 501 F.3d 297, 304, 313-14 (3d Cir. 2007).

Consequently, at least one ALJ has found an SEP holder can be limited in seeking or enforcing an injunction in circumstances when RAND-related defenses are involved. *UMTS and LTE Cellular Commc'n Modules*, Inv. No. 337-TA-1240, Recommended Deter. at 22 (May 9, 2022). Indeed, the issuance of exclusionary relief would be antithetical to a commitment to license SEPs on RAND terms and conditions. *See, Apple Inc. v. Motorola Mobility, Inc.*, 869 F. Supp. 2d 901, 914 (E.D. 2012) (citing Third Party United States Federal Trade Commission's Statement on the Public Interest, *Certain Wireless Comm'n Devices, Portable Music & Data Processing Devices, Computers & Components Thereof*, Inv. No. 337-TA-745 (June 6, 2012)); Br. of Amici Nokia Corp. et al., *Broadcom Corp. v. Qualcomm Inc.*, Appeal No. 06-4292, 2006 WL 6901076, at *3 (3d Cir. Dec. 22, 2006) (In exchange for inclusion of its patented technology in a standard, which enhances the value of the technology by expanding the market for that technology and eliminating competition from other technologies, the patent holder agrees to FRAND conditions designed to protect competition and consumers, including: … To not exclude others (*e.g.*, by

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[redacted]

seeking exclusionary remedies) from using patented technology made essential to the standard by consensus of participants in the standard-setting activity."). Drs. Simcoe and Lopez and Mr. Napper will explain the concerns regarding exclusionary relief on SEPs subject to RAND obligations from an economic perspective under the rationale shared by these previous holdings and economic principles.

Breach of RAND counsels against the issuance of exclusionary relief in a Section 337 investigation. *See*, , RX-1630.0007 (1240 FTC Commissioner Statement); *id.* ("When a District Court can make a complainant whole, both for past royalties with prejudgment interest and by establishing a future royalty rate, even a limited exclusion order is not in public interest."); RX-1531.0002 (USTR Disapproval Letter) ("The Policy Statement expresses substantial concerns, which I strongly share, about the potential harms that can result from owners of standards-essential patents ('SEPs') who have made a voluntary commitment to offer to license SEPs on terms that are fair, reasonable, and nondiscriminatory gaining undue leverage and engaging in 'patent hold-up,' *i.e.,* asserting the patent to exclude an implementer of the standard from a market to obtain a higher price for use of the patent than would have been possible before the standard was set, when alternative technologies could have been chosen."); *Certain Wireless Devices with 3G Capabilities and Components Thereof*, Inv. No. 337-TA-800, Respondents' Petition for Review, EDIS Doc. ID 514542, at 89-90 (July 15, 2013) ("This Commission, following the reasoning of its sister agencies, should adopt a policy that disfavors exclusionary relief against willing licensees . . . ."). Nokia itself conditioned exclusionary relief for essential patents on a finding that Respondents are "unwilling licensees" and thus somehow unable to rely on Nokia's RAND commitments. Compl., ¶ 265 (Nokia's Request for Relief: "Issue a permanent limited exclusion order, pursuant to 19 U.S.C. § 1337(d), prohibiting entry into the United States of Respondents' respective electronic

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[redacted]

devices, including the Accused Products that infringe one or more claims of the Asserted Patents that are essential to a standard *because Respondents are unwilling licensees*." (emphasis added)); *id.,* ¶ 267.

Given Nokia's irrevocable and binding commitment to license its SEPs on RAND terms and conditions, *Microsoft*, 864 F.Supp.2d at 1034–35, Respondents would be materially prejudiced if Nokia is allowed to enforce alleged SEPs against Respondents and obtain an exclusion order, thereby preventing broad swaths of Respondents' products from being sold and imported, in the United States. *See infra* Sections VII-VIII (public interest and remedy sections). The ALJ should deny Nokia's request for an exclusion order.

1. Nokia's Licensing Declarations to the ITU Create Enforceable RAND Obligations

The ITU patent policy in effect during the development of the H.264 standard required any party participating in ITU standards development to submit a "Patent Statement and Licensing Declaration" form ("Licensing Declaration Form") for patents or patent applications the party held and believed potentially covered an ITU standard. The form required choosing between one of three licensing options: the party was (1) willing to grant licenses "free of charge" subject to reciprocity; (2) willing to grant licenses "on reasonable terms and conditions"; or (3) unwilling to grant licenses under either option (1) or (2). RX-0074.0007-0008 (1999 Guidelines for Implementation of the TSB Patent Policy).

Nokia submitted H.264 specific Declaration Forms for both the '808 and '134 patents. RX-0364, H264-77 (dated Mar. 19, 2007) (for '808 patent); RX-0365, H264-83 (dated Oct. 4, 2007) (for '134 patent). In each Declaration Form, Nokia committed to provide licenses "to an unrestricted number of applicants on a worldwide, non-discriminatory basis and on reasonable

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terms and conditions to make, use and sell implementations of the above [H.264 standard].” RX-0364 at 2; RX-0365 at 2. =

As noted above, Nokia’s declarations create enforceable, irrevocable RAND obligations under contract law or under the doctrine of promissory estoppel. *See,* , *Microsoft*, 854 F.Supp.2d at 999, 1002 (ITU Declaration Forms create binding contractual commitments); *Microsoft*, 864 F.Supp.2d at 1034–35 (ITU commitments are not conditioned on licensee behavior); *Apple*, 2011 WL 7324582, at *15 (RAND commitments are binding under doctrine of promissory estoppel).

2. Nokia Breached Its RAND Obligations by Failing to Provide RAND Terms and Conditions

Under its RAND obligations, Nokia was required to provide Respondents with a license to its H.264 essential patents on RAND terms that would allow Respondents to “manufacture, use, and/or sell implementations” of the H.264 standard, which Nokia contends include the Accused Products. *See, Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR, 2012 WL 4827743, at *6 (W.D. Wash. Oct. 10, 2012) (“Certainly, Motorola’s commitments to the … ITU require it negotiate in good faith towards RAND terms, but those commitments go one step further and require Motorola to eventually grant a license on RAND terms.”). Nokia failed to do so. Indeed, Nokia did the opposite: [redacted], and, when Respondents did not accede, sought to enjoin Respondents from selling products all over the world, including in the United States.

a) Nokia’s [redacted] are not RAND

Nokia’s offers to Respondents, [redacted]

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[redacted]

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[redacted]

Nokia does not attempt [redacted]

[redacted][31]

These two items, of course, do not demonstrate the technological value of any of Nokia's H.264 SEPs, let alone the two asserted here. Rather, they reinforce that Nokia attempts to take credit for others' contributions to H.264, as a pretextual justification for its outsized royalty demands. In *Microsoft v. Motorola*, Judge Robart referenced the technological contributions of several companies including Nokia, but he did not ascribe any value to Nokia's *patents*. *Microsoft*, 2013 WL 2111217, at *27 ("Telenor, Nokia, Frauhofer Heirich Hertz Institute, *and others*" "made possible much of the innovation associated with the H.264 standard" (emphasis added)). Moreover, Judge Robart specifically called out Telenor—not Nokia—as the entity who made the "core contributions" to the H.264 standard, while noting Telenor did not seek patent protection on its contributions. *Id.* at *85. And another contributor mentioned by Judge Robart, Fraunhofer, is

[31] [redacted]

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an MPEG LA licensor. RX-1518 (AVC/H.264 Licensors – Via LA) at 1. As to the Emmy, it was given to the JVT for the H.264 standard as a whole, not Nokia specifically. [redacted] *see also* RX-3275, (Television Academy, *Engineering, Science & Technology Emmy Award Winners*) ("2008: High Profile for H.264 / MPEG-4 AVC: Joint Video Team Standards Committee (JVT)").

Nokia's licenses likewise fail to demonstrate its H.264 SEPs should be licensed at its [redacted] start, Nokia omits it [redacted] Lopez Opening Report ¶ 208, n.314; RX-0383.0002 (MPEG LA 2003 Press Release) (SEP holders "who have cooperated in the above [MPEG LA] terms include … Nokia ….") (cited by Akeman Opening Rep. ¶ 159); Lopez Rebuttal Rep. ¶ 19; [redacted] RX-1248.0001 (JVT-C150r3, Support for JVT Royalty Free Baseline); RX-1034.0086 (*Microsoft v. Motorola* Bench Trial Tr., Testimony of Garrett Glanz); RX-1035.0004, .0014 (*Microsoft v. Motorola* Bench Trial Tr., Ex. 1139, Glanz Handwritten Notes). On top of this, [redacted] ten years after the H.264 standard was first approved, after Nokia's phone business failed, and after Nokia set about to "[redacted] royalties from its SEPs. [redacted]; RX-1039.0007 (2014 Nokia Technologies Presentation by Ramzi Haidamus) ("Nokia's newest business: Key Paths to Monetization: Patent Licensing: Maximize value of **standard essential** and a range of **implementation** patents" (emphasis in original)); Lopez Rebuttal Report ¶ 61 (citations omitted).

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[redacted]

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[redacted]

As Dr. Lopez and Mr. Napper will explain, they have tested Nokia's rates offered to Respondents against other objective, economic benchmarks, which were established at close to the time the relevant standards were adopted: the rates for patent pools containing the overwhelming majority of the SEPs covering the H.264 and H.265 standards. Notably, MPEG LA's H.264 pool rates, which Nokia originally cooperated to set, are between $0.10 and $0.20 per unit, and cover upwards of 80% of SEPs to the H.264 standard. Lopez Opening Rep. ¶¶ 106, 135-137, 158-159, Ex. 2d; Napper Opening Rep. ¶¶ 178, 187, 191, 205. MPEG LA's AVC pool has forty-three licensors and more than 1,600 licensees. Lopez Opening Rep. ¶ 106. Meanwhile, [redacted]. Lopez Opening Report ¶¶ 158-159, Ex. 2d (8.81%); Napper Opening Rep. ¶¶ 205 (5.42%); Napper Rebuttal Rep. ¶ 138. Accordingly, Dr. Lopez and Mr. Napper will testify that Nokia's offered rates are inconsistent with well-

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established and reliable RAND benchmarks.[32] Lopez Opening Rep. ¶¶ 178-208; Napper Opening Rep. ¶¶ 202-207.

While Nokia contends pool rates are not useful indicators of the value of its patents, Nokia itself participates in patent pools and states on its website that in the absence of information about SEP holders' licenses, pool rates are "publicly available market data" to which a potential licensee can look concerning "whether a license offer is FRAND." Lopez Rebuttal Rep. ¶¶ 6, 134 (citing RX-1119.0010 (Nokia SEP Q&A, 2023)); Simcoe Rebuttal Rep. ¶¶ 51-52. As further demonstrated below, pool rates are reliable indicators of the value of H.264 SEPs.

b) RAND royalties may not capture *ex-post* hold-up value, yet Nokia's "[redacted]" do just that

A patent owner is not entitled to seek value unrelated to its claimed technology. *Garretson v. Clark*, 111 U.S. 120, 121 (1884) (a patentee "must in every case give evidence tending to separate or apportion … the patented feature and the unpatented features ..."). When SEPs are at issue, two special apportionment issues arise:

> First, the patented feature must be apportioned from all of the unpatented features reflected in the standard. Second, the patentee's royalty must be premised on the value of the patented feature, not any value added by the standard's adoption of patented technology. These steps are necessary to ensure that the royalty award is based on the incremental value that the patented invention adds to the product, not any value added by the standardization of that technology.

Ericsson Inc. v. D-Link, 773 F.3d 1201, 1232-33 (Fed. Cir. 2014).

The process of standard setting fundamentally alters a reasonable royalty assessment because, when a standard is set, manufacturers invest in designing products compatible with the

[32] This assessment is conservative in favor of Nokia as it does not consider that [redacted]. Lopez Opening Report ¶ 162; Napper Rebuttal Report ¶¶ 61-62; *see also* RX-1991C; [redacted]

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standard and become "locked-in" to the SSO-chosen technologies included in the standard. The legal and economic consensus is royalties on SEPs should not include what is known as *ex-post* value (which may include hold-up), and instead should be based on the *ex-ante* incremental value of the claimed technologies at the time the relevant standard was set. *See, e.g.*, *Ericsson*, 773 F.3d at 1232-33 (Fed. Cir. 2014).

Nokia relies on what it calls [redacted] to justify its rates. *See* RX-1958C ("Complainants' Tenth Supplemental Objections and Responses to Respondents' First Set of Interrogatories to Complainants Nokia (Nos. 1–27)," pp. 148-150). The comparable license methodology is premised on a fair-market value approach.[33] Accordingly, it is inappropriate to consider license agreements in a comparable license analysis that are "tainted by the coercive environment of patent litigation." *See, e.g.*, *LaserDynamics*, 694 F.3d at 77 ("The notion that license fees that are tainted by the coercive environment of patent litigation are unsuitable to prove a reasonable royalty is a logical extension of *Georgia-Pacific*, the premise of which assumes a voluntary agreement will be reached between a willing licensor and a willing licensee, with validity and infringement of the patent not being disputed."). Federal courts, the FTC, and numerous publications agree properly negotiated licenses must exclude the hold-up value added by adoption of the standard. *See, e.g.*, *Microsoft Corp. v. Motorola, Inc.*, 904 F.Supp.2d 1109, 1122 (W.D. Wash. 2012).

[redacted]

[33] "Fair market value" is commonly defined as: "the price, expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller, acting at arm's length in an open and unrestricted market, when neither is under compulsion to buy or sell and when both have reasonable knowledge of the relevant facts." RX-3276.0013 (The Association of International Certified Professional Accountants, Statement on Standards for Valuation Services No. 1, App. B).

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[redacted], but rather attempt to claim the very value of the standard itself. [redacted] Moreover, Nokia's [redacted]

As to lack of *ex-ante* apportionment, Nokia cooperated to set the terms of the MPEG LA licensing pool in 2003, when it was both an SEP licensor and licensee for its phone business. *See*, *e.g.*, Lopez Opening Report ¶ 208, n.314; RX-0383.0002 (MPEG LA 2003 Press Release, AMAZONITC1379_00030466) (SEP holders "who have cooperated in the above [MPEG LA] terms include … Nokia …."). At that time, the H.264 standard faced competition from several potential alternative codecs, including Microsoft's WM9 codec. To secure adoption of the standard in view of this technological competition, Nokia not only supported a *royalty-free* baseline profile for H.264, but Nokia argued a codec-license for *all* H.264 essential patents should be no more than $0.50 per unit, with an annual cap on royalties of $8 million dollars.

Ten years later, long after the H.264 standard became widely adopted and implementers "locked into" the standard, Nokia sold its phone business. Untethered from needing SEP licenses for consumer devices, Nokia set about to maximize SEP royalties as a licensor. Lopez Rebuttal Report ¶¶ 12, 19, 63; RX-1039.0007 (2014 Nokia Technologies Presentation by Ramzi Haidamus).

[redacted]. Nokia has no explanation [redacted] and has in no way attempted to justify this rate based on the value of its claimed technologies. The evidence in this Investigation will demonstrate the Asserted Patents represent

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no more than minor contributions to the H.264 standard, which do not merit the royalty rates Nokia seeks. Instead, the evidence is highly indicative (if not dispositive) that Nokia's [redacted] are the product of hold-up and not indicative of the *ex ante* value of Nokia's patented technologies. Lopez Opening Rep. ¶¶ 90-100; Lopez Rebuttal Rep. ¶¶ 8-20, 26-32, 60-129.

A change to [redacted] further demonstrates the lack of *ex-ante* apportionment. [redacted] But these [redacted] For example, [redacted]

Respondents also described why Nokia's [redacted] in Section VI.A.1.a *supra*, [redacted]

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[redacted]

[redacted]

[redacted]

34 [redacted]

[redacted]

Nokia's [redacted] and license offers to Respondents. Lopez Rebuttal Rep. ¶¶ 8-20, 26-32, 60-129; Napper Rebuttal Rep. ¶¶ 103-122, 127-132.[37]

[35] [redacted]

[36] [redacted]

[37] [redacted]

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[redacted]

c) Patent Pool Rates Are Viable Indicators of the Value of Nokia's Patents

Courts have established that patent pool rates can be reliable indicators of a RAND royalty for SEPs, including for the H.264 standard. In *Microsoft v. Motorola,* the court relied on known pool rates, *e.g.*, the MPEG LA H.264 patent pool, to determine that the royalty rate demanded by Motorola breached Motorola's RAND obligations to the ITU. 2013 WL 2111217, at *82 ("Despite the concerns with using a pool rate as the de facto RAND royalty rate, the court concludes that under certain circumstances, patent pools can serve as indicators of a royalty rate that falls within the range of royalties consistent with the RAND commitment. Here, the question is whether the MPEG LA H.264 patent pool is an indicator of a RAND royalty rate. The court finds that it is.").

For Amazon, the MPEG LA (H.264) pool, MPEG LA (H.265) pool, and Access Advance H.265) pools are highly relevant benchmarks for the value of Nokia's H.264 and H.265 SEP portfolios, as Dr. Lopez will explain.[38] Lopez Opening Rep. ¶¶ 54-177, 197; Lopez Rebuttal Rep. ¶¶ 130-175; *see also* Simcoe Rebuttal Report ¶¶ 43-58. HP likewise relies on pool rates, [redacted] Napper Opening Rep. ¶¶ 175-255.

These pools contain the vast majority of H.264 and H.265 SEPs, and at least the MPEG LA and Access Advance pool rates were set at a time when the standards were not yet widely adopted and faced competition from alternative codecs. Pool rates are thus far more reliable indicators of the reasonable value of standardized technology [redacted] set well after the H.264 standard became widely adopted. [redacted]

[38] H.265 is mentioned here because Nokia's licensing offers to Respondents covered H.265 SEPs as well.

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[redacted]

but the evidence in this Investigation will demonstrate Nokia's patents represent only minor contributions to the standards. As explained in Section VI.A.2.a *supra*, [redacted]. Nokia's arguments against reliance on pool rates are unavailing.

[redacted]

As Dr. Lopez will demonstrate, [redacted], than the rates implied by the MPEG LA H.264 pool. [redacted]

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[redacted]

[redacted]

[redacted]

[redacted]

[redacted]. Mr. Napper's benchmark rates are based in part on MPEG LA AVC pool rates, which are an appropriate benchmark for Nokia's AVC portfolio. *Id.* ¶¶ 193-201; Napper Rebuttal Rep. ¶¶ 34-67. Further, Mr. Napper and Dr. Acton will demonstrate that a comparison of exemplary sections of the H.264 standard that Nokia and MPEG LA each identified as relevant to their respective H.264 portfolios have similar relative section/sub-section coverage. Napper Rebuttal Rep. ¶¶ 34-45; Acton Rebuttal Rep. ¶¶ 421-425.

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[redacted]

[redacted]

d) To the Extent the [redacted]

The non-discrimination requirement under the ITU-T's patent policy requires Nokia to treat "similarly situated" licensees in a "similar" manner. This means Nokia may not provide others similarly situated to Respondents with substantially more favorable terms and conditions for a license to its H.264 portfolio. *See, e.g., TCL*, 2018 WL 4488286, at *29 ("The parties agree that like, or close to, like rates must be offered to firms which are similarly situated."); *In re Innovatio IP Ventures, LLC Pat. Litig.*, Case No. 11-C-9308, 2013 WL 5593609, at *38 (N.D. Ill. Oct. 3, 2013) ("[A] RAND licensor such as Innovatio cannot discriminate between licensees on the basis of their position in the market."); Br. of Amici Nokia Corp. et al., *Broadcom Corp. v. Qualcomm Inc.*, Appeal No. 06-4292, 2006 WL 6901076, at *3 (3d Cir. Dec. 22, 2006) ("FRAND commitments are a critical element of a tradeoff that is central to industry agreement to include

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[redacted]

patented technology in a common technological endeavor, the purpose of which is to create a market for many applications and multiple participants. In exchange for inclusion of its patented technology in a standard, which enhances the value of the technology by expanding the market for that technology and eliminating competition from other technologies, the patent holder agrees to FRAND conditions designed to protect competition and consumers, including: To not discriminate among licensees (*e.g.*, among cell phone manufacturers, or among chipset manufacturers)…").

To the extent the ALJ [redacted]. Lopez Rebuttal Rep. ¶¶ 111-122. As Dr. Lopez will demonstrate, [redacted]

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[redacted]

[redacted]. Accordingly, [redacted] [redacted] [redacted][39]

B. Nokia Breached Its Duty to Negotiate in Good Faith with Respondents

Nokia's declarations require it to negotiate with Respondents in good faith toward a RAND license to its H.264 SEPs. *See, e.g.*, *Microsoft*, 2012 WL 4827743, at *6 ("Certainly, Motorola's commitments to the … ITU require it negotiate in good faith towards RAND terms, but those commitments go one step further and require Motorola to eventually grant a license on RAND terms.").

Nokia's obligation to negotiate in good faith requires at least conduct "comport[ing] with the implied duty of good faith and fair dealing inherent in every contract" and requires "honesty in fact in the conduct of transaction concerned." *Microsoft*, 864 F.Supp.2d at 1038–39 (citations omitted); *Certain Elec. Devices Including Wireless Commc'n Devices, Portable Music and Data Processing Devices, and Tablet Computers,* Inv. No. 337-TA-794, Comm'n Op. at 52 (July 5, 2013) ("*Wireless Comm'n Devices*") (citing *North Star Steel Co. v. U.S.*, 477 F.3d 1324, 1332 (Fed. Cir. 2007)) ("The Federal Circuit has stated that 'a provision which calls upon the parties to a contract to agree in the future on a specified point or contract term, often referred to as an 'agreement to agree,' imposes an obligation on the parties to negotiate in good faith."); *L-7 Designs, Inc. v. Old Navy, LLC*, 964 F.Supp.2d 299 (S.D.N.Y. 2013) ("Because good faith requires honesty in fact, a party with an obligation to negotiate in good faith may breach that obligation when it makes misstatements or fails to make a disclosure necessary to correct what it knows to be a mistaken belief of the other party."); *Cambridge Capital LLC v. Ruby Has LLC*, 675

[39] [redacted]

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[redacted]

F.Supp.3d 363, 412 (S.D.N.Y. 2023) ("A duty to negotiate in good faith implies a duty to be honest.").

Nokia breached its obligation with respect to both Amazon and HP.[40]

1. Nokia Breached Its Duty to Negotiate with Amazon in Good Faith

Nokia breached its duty to negotiate in good faith with Amazon for several reasons:

First, [redacted]

[40] [redacted]

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nduct.[41]

[41]

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[redacted]

Second, [redacted]

[redacted]

Third, [redacted]

[redacted]

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[redacted]

[redacted][42] [redacted]

Fourth, [redacted]

Fifth, [redacted]

[42] [redacted]

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[redacted]

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[redacted]

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[redacted]

Amazon has at all times been and continues to be a willing licensee on RAND terms. This is demonstrated by, without limitation: [redacted]

[43] As discussed above, [redacted]

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[redacted]

Sixth, as noted above, [redacted]

[redacted]

[44] [redacted]. *See, e.g.*, Exhibits 38-45.

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[redacted]

Seventh, [redacted]

Eighth, [redacted] This is bad faith. *See e.g.*, Br. of Amici Nokia Corporation et al., *Broadcom Corp. v. Qualcomm Inc.*, Appeal No. 06-4292, 2006 WL 6901076, at *3 (3d Cir. Dec. 22, 2006) ("FRAND commitments are a critical element of a tradeoff that is central to industry agreement to include patented technology in a common technological endeavor,

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[redacted]

the purpose of which is to create a market for many applications and multiple participants. In exchange for inclusion of its patented technology in a standard, which enhances the value of the technology by expanding the market for that technology and eliminating competition from other technologies, the patent holder agrees to FRAND conditions designed to protect competition and consumers, including: … *To not exclude others (e.g., by seeking exclusionary remedies) from using patented technology made essential to the standard by consensus of participants in the standard-setting activity*." (emphasis added)); *Certain Wireless Devices with 3G Capabilities and Components Thereof*, Inv. No. 337-TA-800, Respondents' Petition for Review at 2 (July 15, 2013) ("FRAND commitments [are] *antithetical* to a patent holder . . . attempt[ing] to leverage an exclusion order based on its declared-essential patents." (emphasis added)); *id.* at 89-90 ("This Commission, following the reasoning of its sister agencies, should adopt a policy that disfavors exclusionary relief against willing licensees . . ."); *Nokia Corp. v. Qualcomm Inc.,* No. 1:09-cv-00791 (Del. Ch. 2010), Dkt. No. 86-1 at 1-2 ("An IPR holder who has . . . voluntarily submitted a FRAND undertaking for such a patent is limited, in the case of infringement of a valid patent, to FRAND compensation for such patent and *is not entitled to an injunction or exclusion order that could prevent implementation of the standard*." (emphasis added)); Brief for Amicus Curiae Nokia Corporation and Nokia Inc. In Support of Defendants-Appellants and Reversal, *CSIRO v. Buffalo Tech. (USA), Inc.*, Appeal No. 07-1449 (Fed. Cir.), 2007 WL 4618638, at *7-8 (Dec. 10, 2007) ("Once a standard is adopted, firms that implement that standard invest capital in developing innovative products that can use the standard. A standard is like grammar or the alphabet—it can be seen as an agreed-upon set of rules from which firms can invest and create products and compete. *Problems arise, however, when the holder of an essential patent asserts that the implementation of the standard infringes that patent and seeks non-F/RAND royalties and an*

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[redacted]

injunction." (emphasis added)); Brief of Amicus Curiae Nokia Corporation in Support of Petitioners, *eBay, inc. v. MercExchange, L.L.C.* (U.S.), 2006 WL 235005, at *5 (Jan. 26, 2006) ("The Federal Circuit's automatic injunction rule also threatens to undermine the cooperation between patent owners and standards organizations that is vital for the adoption of efficiency-enhancing interoperability standards. Critical to standard setting is the development of standards free from threat of shutdown by an injunction-wielding patent owner. In a world of automatic injunctions, however, a strategically opportunistic patentee could manipulate the standard-setting process to obtain such an industry-crippling injunction. For example, a patent owner could encourage the adoption of a proposed standard by agreeing to license its patents on FRAND terms to manufacturers that eventually implement the proposed standard. Then, after the standard is adopted, the unscrupulous patent owner could attempt to renege on its promise and sue the manufacturers implementing the standard for patent infringement.").

2. Nokia Breached Its Duty to Negotiate with HP in Good Faith

Nokia's conduct in negotiations with HP, including Nokia's global litigation campaign against HP, demonstrates that Nokia breached its duty to negotiate with HP in good faith.

a) Nokia's Negotiation History with HP

[redacted]

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[redacted]

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[redacted]

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[redacted]

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[redacted]

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[redacted]

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[redacted]

b) Nokia's Conduct Demonstrates Its Lack of Good Faith and Violation of Its RAND Obligation

First, [redacted]

¶¶ 63-174; RX-1926C; RX-1927C; RX-1928C (analyzing Nokia's other license agreements).

Second, [redacted]

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[redacted]

Third, [redacted]

Fourth, [redacted]

[45] [redacted]

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[redacted]

C. Implied Waiver and Equitable Estoppel Based On Nokia's Breach of Disclosure Duties to the ITU

Courts have repeatedly held breach of duties to disclose asserted patents to a SSO constitutes implied waiver and/or equitable estoppel, rendering those patents unenforceable. *See e.g., Core Wireless Licensing S.a.r.l. v. Apple, Inc.*, 899 F.3d 1356, 1365 (Fed. Cir. 2018) ("A participant in a standards-setting organization may waive its right to assert infringement claims against products that practice the standard."); *Barnes & Noble, Inc. v. LSI Corp.*, 849 F.Supp.2d 925, 942 (N.D. Cal. 2012) (citation omitted) ("Implied waiver in the context of standard-setting organizations requires a showing that '(1) the patentee had a duty of disclosure to the standard setting organization, and (2) the patentee breached that duty.'"); *Momenta Pharms., Inc. v. Amphastar Pharms., Inc.*, 298 F.Supp.3d 258, 269 (D. Mass. 2018) ("If there is a duty to disclose a patent to an SSO and the patent owner breaches that duty, that may constitute misleading conduct that supports an inference that the patent owner does not intend to enforce the patent. … Furthermore, reliance may be shown if the alleged infringer then adopts the standard that has been set with the understanding that it is available for public use.").

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[redacted]

The Federal Circuit has held the ITU patent policy and the JVT's Terms of Reference, at issue here, require SSO participants who worked on the development of the H.264 standard to have used "best efforts" to identify patents and patent applications related to standardization work. The Federal Circuit specifically held (1) "while the language of the JVT IPR policies may not expressly require disclosure by all participants in all circumstances (*e.g.*, if relevant IPR is not disclosed despite the use of best efforts), it at least incorporates a best efforts standard (even apart from the submission of technical proposals)"; and (2) "JVT participants [] had to disclose patents prior to final approval of a standard under the rules of the JVT parent organizations." *Qualcomm Inc. v. Broadcom Corp.*, 548 F.3d 1004, 1014, 1015 (Fed. Cir. 2008). The Federal Circuit then held Qualcomm's breach of these duties resulted in an implied waiver rendering the asserted patents unenforceable as to H.264 compliant products. *Id.* at 1026.

The same is true here. As Dr. Simcoe will testify, the evidence in this Investigation demonstrates that Nokia breached its duties to disclose the Asserted Patents to the ITU during work on the H.264 standard and that this failure to disclose was knowing. *See* Simcoe Opening Report ¶¶ 89-112. To start, Nokia did not disclose the Asserted Patents or any related patents or patent applications to the ITU until four years after the H.264 standard was approved (in May 2003) breaching the "rules of the JVT parent organizations," *e.g.*, the ITU patent policy, requiring disclosure of "patents prior to final approval of a standard." *Qualcomm*, 548 F.3d at 1015; [redacted]

Nokia also did not use "best efforts" to identify any such patents or patent applications prior to its untimely disclosure in 2007. For the '808 patent, Nokia filed U.S. Provisional Application (60/365,072) in March of 2002, naming Dr. Lainema as an inventor. The '808 patent

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[redacted]

claims priority to this provisional. [redacted] but neither he nor anyone at Nokia ever disclosed the provisional, or any other related patent or patent application, until 2007, five years later. So, even though the JVT's technical contribution form asks for updated patent information "if [the submitter's] knowledge or situation changes," RX-1692.0012 (JVT Terms of Reference), Nokia never disclosed the provisional application (or any related patents or patent applications) (1) upon JVT-C027 being adopted into the draft H.264 standard in May 2002 or (2) before approval of the H.264 standard in May 2003.

For the '134 patent, Nokia filed a Finnish patent application on January 23, 2002, naming Dr. Hannuksela as inventor. The '134 patent claims priority to this Finnish application. [redacted] Though Dr. Hannuksela was the author of JVT-B042, the named inventor on the Finnish patent application, [redacted] neither he nor anyone at Nokia disclosed the existence of the Finnish application to the ITU. Nokia also never disclosed any related patents or patent applications to the ITU (1) upon either JVT-B042 or related contribution JVT-B042r1 being adopted into the draft H.264 standard in 2002 or (2) before approval of the H.264 standard in May 2003.

Nokia's failure to disclose was more than just a matter of inadvertence or neglect, and instead demonstrates an affirmative lack of "best efforts." As described above, [redacted]

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[redacted], yet neither the inventors nor Nokia disclosed the Asserted Patents or any related patents or patent applications to the ITU until years after the H.264 standard was approved in May 2003. Nokia has not identified [redacted]

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[redacted][47] Although this position is directly contrary to the Federal Circuit's holding in *Qualcomm v. Broadcom* and incorrect, its position nonetheless demonstrates Nokia chose (and still chooses) not to have engaged in efforts to timely disclose relevant patents to the ITU and JVT, including before approval of the H.264 standard.

Accordingly, Nokia breached its disclosure duties to the ITU and JVT, including because it failed to use "best efforts" to identify the Asserted Patents as required. *See, e.g.*, *Qualcomm*, 548 F.3d at 1014, 1015; *see also Certain UMTS and LTE Cellular Communication Modules and Prods. Containing the Same* ("*UMTS Modules*"), Inv. No. 337-TA-1240, Initial Deter. at 248 (Apr. 1, 2022) ("Submitting a technical proposal to [the SSO] and filing a patent application on the same day, yet waiting for years after that to inform [the SSO], is evidence of 'intentional

[46] [redacted]

[47] Nokia and its "expert" Mr. Levin—a U.S. educated attorney offering a contract interpretation [redacted]

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[redacted]

nondisclosure.'") (affirmed on other grounds with statement that "Commissioner Kearns would affirm the ID's finding that the '271 patent is unenforceable under the doctrine of implied waiver").

Nokia gained unjust benefits by its conduct. Nokia's conduct knowingly deprived the ITU of the ability to consider Nokia's rights in the Asserted Patents at a time when the claimed technologies were allegedly accepted into the H.264 standard. Unenforceability of the Asserted Patents as to H.264 compliant products is a remedy "properly limited in relation to the underlying breach," particularly given Nokia's about-face regarding its early positions on RAND licensing for H.264 patents. *Qualcomm*, 548 F.3d at 1026; *see* Sections VI.A.1, VI.A.2.a, VI.A.2.b, VI.B.1 *supra*.

Additionally, Nokia has further attempted to evade its obligations under the ITU's policies by contending it need not offer a RAND license for "encoder" claims, even in patents with "decoder" claims. Nokia never told the ITU it was declaring patents only for "decoder" claims, and the ITU's policies make clear that in "complex" patents (with both essential and non-essential claims), a patent owner is supposed to submit multiple licensing declarations if necessary (*e.g.*, to identify some claims are being licensed on RAND terms and some will not). RX-0074.0004 ("Typically, one such form would be used for each Recommendation containing patented material. Multiple forms are appropriate if the patent holder … classifies different claims of a complex patent in different options of the licensing declaration."); Simcoe Opening Rep. ¶¶ 127-133; Simcoe Rebuttal Rep. ¶¶ 40. Nokia failed to abide by this policy in an effort to avoid scrutiny of its patent rights by the ITU, including the potential for the ITU to design around Nokia's patent claims.[48]

[48] As noted above, [redacted] *See, e.g.*, Sections I.D.1.c, I.D.2.c. Nokia nonetheless declared it would license its H.264 SEPs on RAND terms, but failed to

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[redacted]

The ALJ in UMTS Modules found, and Commissioner Kearns would have affirmed, that "Phillip's deliberate non-disclosure, like Nokia's in *Conversant*, demonstrates inequitable benefit." The same is true of Nokia again here.[49] In short, Nokia's conduct is antithetical to standardization predicated on RAND obligations, and unenforceability is a proper remedy.

D. Waiver of Right to Exclusionary Relief for SEPs

"A participant in a standards-setting organization may waive its right to assert infringement claims against products that practice the standard." *Core Wireless Licensing S.A.R.L. v. Apple Inc.*, 899 F.3d 1356, 1365 (Fed. Cir. 2018) (quoting *Hynix Semiconductor Inc. v. Rambus Inc.*, 645 F.3d 1336, 1347-48 (Fed. Cir. 2011) and citing *Qualcomm Inc. v. Broadcom Corp.*, 548 F.3d 1004, 1020-24 (Fed. Cir. 2008)). Waiver is an equitable defense and can either be demonstrated as an "intentional relinquishment of a known-right," *Barnes & Noble, Inc. v. LSI Corp.*, 849 F.Supp.2d 925, 941 (N.D. Cal. 2012), or as "conduct [] so inconsistent with an intent to enforce its rights as to induce a reasonable belief that such right has been relinquished," *Core Wireless*, 899 F.3d at 1365.

As described Section VI.B.1 above, Nokia has repeatedly stated exclusionary relief is improper with respect to RAND-encumbered SEPs. Indeed, Nokia did not mince its words when it told the Third Circuit:

> In exchange for inclusion of its patented technology in a standard, which enhances the value of the technology by expanding the market for that technology and eliminating competition from other

disclose the Asserted Patents (or related patents and patent applications), thereby avoiding any scrutiny of its patent rights, including the scope thereof.

[49] Nokia has previously been found to have breached disclosure obligations to SSOs, rendering SEPs unenforceable. *See Core Wireless Licensing S.A.R.L. v. Apple, Inc.*, 899 F.3d 1356, 1365-68 (Fed. Cir. 2018) (holding Nokia breached disclosure obligations to ETSI on an alleged SEP it divested to Core Wireless); *Conversant Wireless Licensing S.A.R.L. v. Apple, Inc.*, No. 15-cv-05008-NC, 2019 WL 4038419, at *6 (N.D. Cal. May 10, 2019) (on remand from Federal Circuit, court finding alleged SEP unenforceable because "Nokia and Converseant [] obtained [] an unfair competitive advantage" by "depriv[ing] ETSI members the opportunity to make a fully informed decision as to the technical solution for the GPRS standard").

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[redacted]

> technologies, the patent holder agrees to FRAND conditions designed to protect competition and consumers, including: … *To not exclude others (e.g., by seeking exclusionary remedies) from using patented technology made essential to the standard by consensus of participants in the standard-setting activity*.

Br. of Amici Nokia Corporation et al., *Broadcom Corp. v. Qualcomm Inc.*, Appeal No. 06-4292, 2006 WL 6901076, at *3 (3d Cir. Dec. 22, 2006) (emphasis added); *see also Certain Wireless Devices with 3G Capabilities and Components Thereof*, Inv. No. 337-TA-800, Respondents' Petition for Review at 89-90 (July 15, 2013) ("This Commission, following the reasoning of its sister agencies, should adopt a policy that disfavors exclusionary relief against willing licensees . . . ."); 868 Nokia PI Statement ("where a potential licensee agrees to pay FRAND compensation and makes an offer that is FRAND-compliant, an exclusion order is not a proper remedy for alleged infringement of declared-essential patents."); *Nokia Corp. v. Qualcomm Inc.,* No. 1:09-cv-00791 (Del. Ch. 2010), Dkt. No. 86-1 at 1-2 ("An IPR holder who has . . . voluntarily submitted a FRAND undertaking for such a patent is limited, in the case of infringement of a valid patent, to FRAND compensation for such patent and is not entitled to an injunction or exclusion order that could prevent implementation of the standard."); Brief of Amicus Curiae Nokia Corporation in Support of Petitioners, *eBay, Inc. v. MercExchange, L.L.C.* (U.S.), 2006 WL 235005, at *5 (Jan. 26, 2006) ("In a world of automatic injunctions, however, a strategically opportunistic patentee could manipulate the standard-setting process to obtain such an industry-crippling injunction."); Brief for Amicus Curiae Nokia Corporation and Nokia Inc. In Support of Defendants-Appellants and Reversal, *CSIRO v. Buffalo Technology (USA), Inc.*, Appeal No. 07-1449 (Fed. Cir.), 2007 WL 4618638, at *7-8 (Dec. 10, 2007).

Nokia repeatedly disclaimed the right to seek exclusionary relief on RAND-encumbered patents and so either intentionally or impliedly waived its right to seek exclusionary relief against

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Respondents here. The principles of equity counsel toward finding that exclusionary relief is inappropriate in the face of such statements and disclaimers.

E. Nokia's Claims Against HP Are Barred By License and Patent Exhaustion

As set forth above, the HP Accused Products do not infringe any claim of the Asserted Patents. However, should the ALJ find the claims valid and infringed by HP's Accused Products, any claims of infringement by Nokia are barred under the doctrines of express license and/or patent exhaustion. At a minimum, any valid asserted claims that are not essential to the H.264 standard are barred under these doctrines. And as explained above, none of the asserted claims is standard-essential. *See* Sections III.B.1.a) ('808 patent) and IV.B.1.a) ('134 patent).

[redacted]

"[I]n accordance with the basic contract law principle that a party may not assign a right, receive consideration for it, and then take steps that would render the right commercially worthless," a license granting the licensee a right to sell a product bars the patentee from interfering with that right by prohibiting the subsequent purchasers from using the licensed product. *Jacobs v. Nintendo of Am., Inc.*, 370 F.3d 1097, 1101 (Fed. Cir. 2004). Accordingly, a patent license is a defense to patent infringement, even when the alleged infringer is a third party to the original

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license agreement. *See Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 496 (1964) (a third party to a license agreement may also assert a license defense if the third party's actions are within the scope of the license agreement between the patent owner and the licensee).

The express license agreement in this case is a license between [redacted]

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As explained in Sections III.B.1.a) (’808 patent) and IV.B.1.a) (’134 patent), the Asserted

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F. Nokia's Claims Against Amazon Are Precluded Under the Doctrine of Laches

Laches is an equitable defense grounded in the principle that "Courts of equity . . . will not assist one who has slept upon his rights, and shows no excuse for his laches in asserting them." *Lane & Bodley Co .v. Locke*, 150 U.S. 193, 201 (1893). "To prove laches, a [respondent] must show that the plaintiff delayed filing suit an unreasonable and inexcusable length of time after the plaintiff knew or reasonably should have known of its claim against the defendant; and the delay resulted in material prejudice or injury to the defendant." *Wanlass v. General Elec. Co.*, 148 F.3d 1334, 1337 (Fed. Cir. 1998). To demonstrate prejudice, a respondent "may establish either evidentiary or economic prejudice." *Id.* at 1337 (citing *A.C. Aukerman Co. v. R.L. Chaides Contr.*

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Co., 960 F.2d 1020, 1039 (Fed. Cir. 1992) (en banc)). As the ALJ found in Order No. 29 of the 1380 Investigation, which Order No. 35 in this Investigation adopted, the Supreme Court has not disturbed the finding that laches may counsel against an injunction and the Commission has so far determined to take no position on the applicability of laches in Section 337 proceedings so the defense should be addressed on its merits. 1380 Investigation, Order No. 29 at 3-4 (citing *SCE Hygiene Prods. Aktiebolag v. First Quality Baby Prods., LLC*, 580 U.S. 328, 246 (2017) and *SCA Hygiene Prods. Aktiebolag v. First Quality Baby Prods., LLC*, 807 F.3d 1311, 1333 (Fed. Cir. 2015))

Here, [redacted] Compl. ¶ 71. [redacted] This 15-year delay was unreasonable and inexcusable. The presumption of laches applies and shifts the burden to Nokia. *Certain Network Devices, Related Software and Components Thereof (I)*, Inv. No. 337-TA-944, Comm'n Op. at 26 (Apr. 19, 2017) ("[D]elay of six years causes a presumption of laches to arise. If the presumption applies, the burden shifts to [complainant] to dispute the reasonableness of the delay") (citation omitted). Moreover, it has materially prejudiced Amazon. For example, [redacted]

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[redacted]; [redacted] (last visited June 27, 2024).

The ALJ should deny Nokia's request for an exclusion order due to laches.

G. Nokia's Patent Misuse and Unclean Hands with respect to its H.264 Licensing Program

Patent misuse was "born from the equitable doctrine of unclean hands" and "is a method of limiting abuse of patent rights separate from the antitrust laws." *B. Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1319, 1426 (Fed. Cir. 1997). To establish patent misuse, a respondent "must prove that the patentee impermissibly broadened the physical or temporal scope of the patent grant and has done so in a manner that has anticompetitive effects." *Multimedia Patent Trust v. Apple Inc.*, Case No. 10-cv-2618-H, 2012 WL 6863471, at *22 (S.D. Cal. Nov. 9, 2012).

Courts agree a patentee's violation of RAND obligations may constitute patent misuse. *Qualcomm*, 548 F.3d at 1027; *Multimedia Patent Trust*, 2012 WL 6863471, at *23. As described in Section VI.A above, Nokia breached its RAND obligations to Respondents, and through its breaches sought and still seeks (1) to use impermissible bargaining leverage (hold-up) to obtain supra-competitive and disproportionate royalties for its allegedly essential H.264 patents, which patents are the result of Nokia's efforts to stretch its minor technical contributions to ITU to cover minor aspects of the standard; and (2) to use exclusionary relief, including from the ITC, to bar the Respondents' Accused Products from the United States, even though Nokia has refused to offer or grant a license on RAND terms, contrary to its obligations and promises to ITU. Nokia has committed patent misuse.

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Unclean hands is based on the maxim "[o]ne who comes into equity must come with clean hands and keep those hands clean throughout the pendency of the litigation even to the time of ultimate disposition by an appellate court." *Multimedia Patent Trust*, 2012 WL 6863471, at *22 (internal quotations and citations omitted). "To prove the defense of unclean hands, a defendant must show that the patentee conducted itself as to shock the moral sensibilities of the judge, or stated otherwise, that the patentee's conduct was offensive to the dictates of natural justice." *Id.*

Nokia comes before the Commission with unclean hands concerning its H.264 licensing program. As described above in Sections VI.A.2 and VI.B, Nokia originally supported a royalty-free baseline profile for H.264 and cooperated to set the terms of the MPEG LA patent pool, including by arguing for a $0.50 per unit aggregate royalty rate for a codec license and annual $8 million annual cap on royalties. Nokia then spent nearly a decade arguing the impermissibility of exclusionary relief on RAND-encumbered patents. But, once Nokia sold its phone business and became a PAE, it set about to maximize its H.264 SEPs including by demanding royalties far in excess of what it had contended was proper at the time its technology was selected into the standard. It also used the threat of litigation and exclusionary relief to support its *supra*-RAND royalty demands. Nokia now seeks [redacted] Nokia's conduct, which shocks the conscience and is entirely antithetical to standardization predicated on RAND obligations, should not be rewarded. The ALJ should deny Nokia's request for exclusionary relief.

VII. PUBLIC INTEREST

No remedy should issue because Nokia's requested remedial orders would cause significant harm to the public interest. At a minimum, delay of enforcement to mitigate harm to

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the public interest is required. *See Certain Mobile Electronic Devices and Radio Frequency and Processing Components Thereof*, Inv. No. 337-TA-1065, Initial Deter. and Recommended Deter. at 189-191 (Oct. 19, 2018) (recommending no relief issue); *Certain Integrated Circuits and Prods. Containing the Same*, Inv. No. 337-TA-1148, Initial Deter. at 191-192 (June 16, 2020) (recommending remedy be delayed for twelve months to mitigate harm).

A. Protection of the Public Interest Is Paramount

Before issuing any remedial order, the Commission must "consider[] the effect of such [an order] upon the public health and welfare, competitive conditions in the United States economy, the production of like or directly competitive articles in the United States, and United States consumers." 19 U.S.C. § 1337(d)(1); 19 U.S.C. § 1337(f)(1). When public interest considerations are present in an investigation, "the public health and welfare and the assurance of competitive conditions in the United States economy must be the *overriding considerations* in the administration of this statute. Therefore . . . the Commission must examine . . . the effect of issuing an exclusion order or a cease and desist ('CD') order on the public health and welfare before such order is issued." *Trade Reform Act of 1974*, Report of The Committee on Finance United States Senate Together With Additional Views on H.R. 10710, November 26, 1974, at 197 (emphasis added); *see also* S. Rep. 93-1298 ("The Committee feels that the public interest must be *paramount* in the administration of the statute.") (emphasis added) (also noting Commission "must examine (in consultation with other Federal agencies) the effect of issuing an exclusion order or a cease-and-desist order" on the public interest factors and that such agencies "will often have significant information, as well as sound advice, about such impact" on the public interest); H.R. Rep. No. 93-1644, 1974 WL 11697, at *7391 (1974).

The Commission may determine that no remedy should issue because of the adverse impacts on the public interest. Moreover, when circumstances require, the Commission will tailor

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its relief in light of the statutory public interest factors. *See, e.g., Certain Automatic Crankpin Grinders,* Inv. No. 337-TA-60 (Dec. 1979) (declining relief due to countervailing national energy policies); *Certain Road Milling Machines & Components Thereof*, Inv. No. 337-TA-1067, Comm'n Op. at 32-33 (July 18, 2019) (exempting service parts); *Certain Baseband Processor Chips & Chipsets, Transmitter, & Receiver (Radio) Chips, Power Control Chips, & Prods. Containing Same, Including Cellular Tel. Handsets*, Inv. No. 337-TA-543, USITC Pub. No. 4258, Comm'n Op. at 150-51 (Oct. 2011) (grandfathering certain products to avoid unduly disrupting legitimate commerce); *Certain Personal Data & Mobile Comm'n Devices & Related Software*, 337-TA-710, USITC Pub. No. 4331, Comm'n Op., at 72-73, 80-81 (June 2012) (delaying imposition of remedy); *Certain Mobile Devices, Associated Software, and Components Thereof*, Inv. No. 337-TA-744, Comm'n Op. at 22 (May 18, 2012) (exemption warranted for components used in maintenance, service, repair, or replacement of existing devices to "prevent disruptions to the domestic business operations of innocent third parties and consumers"); *Certain Sortation Systems, Parts Thereof, and Prods. Containing Same*, Notice of Violation of Section 337, 68 Fed. Reg. 5047 (Jan 31, 2003) (exemption warranted for importation of spare parts necessary to continue operation of sorting facility); *Certain Lithium Ion Batteries*, Comm'n Opinion, Inv. No. 377-TA-1159 (Mar. 4, 2021) (issuing a limited exclusion order tailored for public interest considerations); *Certain Microfluidic Devices*, Commission Opinion, Inv. No. 377-TA-1068 (Jan. 10, 2020) (issuing exclusion order with exception for research use); *see also Certain Integrated Circuits and Prods. Containing the Same*, Inv. No. 337-TA-1148, Initial Deter. at 188–89, 193–94 (May 22, 2020) (finding no violation and recommending that, if the finding of no violation were reversed, any remedy should be delayed for twelve months to mitigate the consequent harm to the public).

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"The statute does not place the burden on any party to an investigation of proving that a public interest concern precludes a remedy or requires tailoring of a remedy." *Microfluidic Devices*, Comm'n Op. at 29. The Commission has a statutory duty to consider the public interest. *See* 19 U.S.C. § 1337 (d)(1), (f)(1). Indeed, the statute requires the Commission to consider and make findings on the public interest in every case in which a violation is found regardless of the quality or quantity of public interest information supplied by the parties. *Id*. Where, as here, information has been submitted at the outset of the investigation indicating serious public interest concerns, the Commission has delegated the issue to the ALJ under Rule 210.50(b)(1) for the development of a full evidentiary record on the public interest. *See also Certain Mobile Elec. Devices, Including Wireless Commc'n Devices*, Inv. No. 337-TA-794, Letter from United States Trade Representative, Ambassador Michael B. G. Froman Disapproving Comm'n Deter. at 3 (Aug. 3, 2013) ("USTR Disapproval Letters") ("I would like to underscore that in any future cases involving SEPs that are subject to voluntary FRAND commitments, the Commission should be certain to…(2) seek proactively to have the parties develop a comprehensive factual record related to these issues in the proceedings before the Administrative Law Judge and during the formal remedy phase of the investigation before the Commission…").

B. Detrimental Effects of the Requested Remedial Orders Are Not Negated by Intellectual Property Rights and Supersede Any Benefit to Nokia, a Paper Patent Holder with No Competing Products

"[T]he Commission must balance the damage to the patent holder's rights against the adverse impact of the remedy on 'the public health and welfare and the assurance of competitive conditions in the United States economy.'" *Certain Baseband Processor Chips & Chipsets, Transmitter, & Receiver (Radio) Chips, Power Control Chips*, Inv. No. 337-TA-543, Comm'n. Op. (Oct. 1, 2011). Section 337 is meant to protect—not harm—U.S. industries.

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As the Federal Circuit and the Commission have recognized, it is not always in the public interest to enforce intellectual property rights through an ITC exclusion order. *See Rosemount, Inc. v. U.S. Int'l Trade Comm'n*, 910 F.2d 819, 822 (Fed. Cir. 1990) ("We also agree with the Commission's rejection of the view that the public interest inevitably lies on the side of the patent owner because of the public interest in protecting patent rights, . . . other public interest factors are delineated in the above-quoted section 1337(e)(1) and must be taken into account."). Here, protecting the patent owner's rights through an exclusion order—to the extent the Asserted Patents are valid and infringed—would harm the public interest on multiple fronts. The harm from an exclusion order under every public interest factor, discussed below, is undeniable in this Investigation and outweighs any generalized interest in enforcing patent holder rights. In contrast, there is nothing to be gained by protecting Nokia. *See Certain Inclined-Field Acceleration Tubes*, Inv. No. 337-TA-67, Comm'n Op. at 11 (Dec. 29, 1980).

1. The Purpose of Section 337 Is to Protect U.S. Industries

The Congressional intent behind the public interest requirement is in keeping with the purpose of Section 337 to *protect U.S. industries*. H. Rep. No. 100-40, pt 1 at 157 ("The purpose of the Commission is to adjudicate trade disputes between U.S. industries and those who seek to import goods from abroad."). Subsection (C) was added to Section 337 in 1988 to "encompass universities and other intellectual property owners who engage in extensive licensing of their rights to manufacturers." S. Rep. No. 100-71, at 129 (1987); H.R. Rep. No. 100-40 Pt. 1 at 157 (1987). With the addition of subsection (C), Congress was again clear about its intent to protect domestic interests, in the form of "U.S. productive capacity and jobs," and avoid use of the ITC as "merely [] an expedient alternative forum to the courts for enforcement of intellectual property rights." Statement of the Honorable Lloyd M. Bentsen at a Hearing on Intellectual Property Protection in International Trade, May 14, 1986, on proposed amendments to section 337. It follows that the

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requested remedy in any section 337 investigation must have an "appreciable benefit" to a U.S. industry and may not simply serve to protect "holders of U.S. intellectual property rights who have no contact with the United States other than owning such intellectual property rights." *Id*.

Mirroring Congress's intent, the Commission recognizes that where, as here, an investigation presents significant public interest considerations, they "are not meant to be given mere lip service. On the contrary, 'public health and welfare and the assurance of competitive conditions in the United States economy must be the *overriding considerations* in the administration of this statute.'" *Certain Inclined-Field Acceleration Tubes and Components Thereof,* Inv. No. 337-TA-67, Comm'n Op. at 21-22 (Dec. 1980) ("*Certain Inclined-Field Acceleration Tubes*") (quoting S. Rep. No. 93-1298, 93rd Cong., 2d Sess. 197 (1974) (emphasis in original).

If the Commission finds that an exclusion order would have a greater adverse impact on the public interest than would be gained by protecting the patent holder, then no remedy should issue. *Id*. (relief denied due to overriding public interest in continuing basic atomic research using imported acceleration tubes that were of higher quality than domestic product); *Certain Automatic Crankpin Grinders,* Inv. No. 337-TA-60, Comm'n Op. at 17-21 (Dec. 1979) ("*Certain Automatic Crankpin Grinders*") (relief denied due to overriding public interest in fuel efficient automobiles using imported crankpin grinders where domestic industry could not meet demand); *Certain Fluidized Supporting Apparatus and Components Thereof,* Inv. No. 337-TA-182/188, Comm'n Op. at 23-25 (Oct. 1984) (relief denied due to overriding public interest in specialized hospital beds for burn patients where domestic industry could not meet demand within reasonable time and no comparable substitute was available); *see also* USTR Disapproval Letter (Presidential disapproval of exclusion order in 337-TA-794 barring import of Apple iPhone and iPad models

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found to infringe a standard essential patent, citing public interest factors and finding adverse effect on competitive conditions in U.S. economy and U.S. consumers).

2. Nokia Is a Foreign NPE That Does Not Benefit from Exclusion

Nokia would receive no benefit from an exclusion order—Nokia is after hold-up dollars alone. Nokia seeks to use the ITC—as one part of its worldwide litigation campaign—to exert leverage for settlement payments from Respondents. The Commission, the FTC, and others have drawn a sharp distinction between (1) revenue-driven—or *ex post*—licensing in which NPEs, such as Nokia, are engaged and (2) production-driven—or *ex ante*—licensing. While *ex ante* licensing, intended to transfer and proliferate technology, encourages innovation and benefits consumers, *ex post* licensing deters innovation and harms consumers. RX-0389.0050 (FTC, *Evolving IP Marketplace*); *see also Certain Multimedia Display & Navigation Devices*, Comm'n Op. at 25 (describing "at least two types of 'licensing' activities…production-driven licensing which encourages adoption and use of the patented technology to create new products and/or industries and revenue-driven licensing which takes advantage of the patent right solely to derive revenue by targeting existing production"). The situation is worse here where Nokia seeks to extract settlement [redacted] even though the ITC can only issue prospective relief and very little time remains before the expiration of the '808 patent (which expires 6 months after the current expected expiration of the Presidential Review Period) and the '134 Patent (which expires on January 21, 2028). Nokia is using the ITC, which is intended to protect American industry and consumers, to threaten successful American consumer product companies into accepting supra-RAND licensing terms, believing that those companies cannot afford to risk the imposition of the ITC's powerful trade remedy.

Nokia does not sell any products relevant to this Investigation and is not working to develop any such products or technology. RX-1982 (Martikainen Dep. Tr.) at 44:19-45:4. As Nokia's

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[redacted], As Drs. Simcoe and Mody will confirm, Nokia receives no benefit or protection from its requested remedial orders.[52] Nor are [redacted] ceased its own production activities—which were never in the United States—in 2014.

Congress expressed a production-driven preference, warned against use of a loophole by mere paper patent owners, and cautioned against turning the ITC into just an IP rights adjudicator. S. Rep. No. 100-71, at 129-30 (1987); H.R. Rep. No. 100-40 Pt. 1 at 157 (1987). More recently, in April 2013, the House Judiciary Subcommittee on Courts, Intellectual Property and the Internet held a hearing entitled "Abusive Patent Litigation: The Issues Impacting American Competitiveness and Job Creation at the International Trade Commission and Beyond." The hearing followed two other hearings concerning abusive patent litigation and the ITC, held in March 2013 and July 2012, respectively. *See* RX-2218 (Abusive Patent Litigation: The Impact on American Innovation & Jobs, and Potential Solutions: Hearing Before the H. Subcomm. on Courts, Intellectual Prop. and the Internet, 113th Cong. (2013)); RX-2210 (The Int'l Trade Comm'n and Patent Disputes: Hearing Before the H. Subcomm. On Intellectual Prop., Competition, and the

[52] Indeed, both Microsoft and Samsung have publicly advocated against allowing SEP holders like Nokia to obtain injunctive relief, including at the ITC. *Microsoft Corp. v. Motorola, Inc*., 795 F.3d 1024, 1033 (9th Cir. 2015) (affirming jury verdict determining appropriate range of RAND rates for Motorola's SEPs and noting that Microsoft "allege[d] that Motorola's filing of injunctive actions constituted a breach of contract, because the obligation to offer RAND licenses to all seekers prohibited Motorola from seeking injunctions for violations of patents subject to that obligation."); *see also Huawei Techs., Co. v. Samsung Elecs. Co*., No. 3:16- CV-02787-WHO, 2018 WL 1784065, at *9 (N.D. Cal. Apr. 13, 2018) ("Samsung argues that allowing Huawei to enforce the Shenzhen Court's injunction would frustrate specific domestic policies against injunctive relief on SEPs and general public policies against anticompetitive conduct and breaches of contract. The bulk of precedent supports its position.") (citations omitted). Indeed, the Ninth Circuit explained—when examining RAND obligations surrounding the same H.264 standard at issue here—that the "sweeping promise" to license SEPs on RAND terms includes "a guarantee that the patent-holder will not take steps to keep would-be users from using the patented material, such as seeking an injunction." *Microsoft*, 696 F.3d at 884.

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Internet, 112th Cong. (2012)). Congress has further proposed amending the Tariff Act of 1930 with the Trade Protection Not Troll Protection Act, H.R. 4763, introduced on May 20, 2014, and more recently, in the Advancing America's Interests Act, H.R. 5184, introduced on August 14, 2020, and reintroduced on September 7, 2021. The legislation would, in part, require that "the complainant may not rely upon the activities of its licensees unless the license leads to the adoption and development of articles that incorporate the claimed patents." *Id*. The legislation would also change current law to allow "public interest determinations" at the beginning of the review process. In comparison to a generalized benefit of enforcement of the Asserted Patents—which cover trivial features and are asserted against feature-loaded downstream products—Respondents have thousands of patents covering the Accused Products resulting from billions of dollars in research, development, and engineering investments. RX-1486 (Amazon Patents – Insights & Stats); RX-1393 (HP, Form 10-K, 2023) at 7; RPX-0448C (HP Patents Relating to the HP Personal Computers).

Nokia identified no product or activity of its own to support a domestic industry in this Investigation, and instead relies exclusively on activities of nonparties, which in turn do not make the full suite of products that could replace Respondents' Accused Products. Nokia comes to the ITC for injunctive relief because it seeks to exert the leverage of an ITC exclusion order, knowing that injunctive relief would be and is inequitable under *eBay*. Nokia effectively seeks injunctive relief that a district court would refuse as inequitable. But Congress did not intend the ITC to depart from traditional and equitable principles of injunctive relief. *eBay*, 547 U.S. at 391 ("major departure from the long tradition of equity practice should not be lightly implied."); 19 U.S.C. 1337(c) ("All legal and equitable defenses may be presented in all cases"). Injunctive relief that would be against the public interest if issued by a federal district court is no less so if issued by a

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government agency such as the ITC. *See Buckley v. Valeo*, 424 U.S. 1, 122 (1976) (U.S. Const. Art. III, § 1 safeguards the judiciary by preventing the "encroachment or aggrandizement of one branch at the expense of the other."). This concern is particularly salient here, where there is no protection or benefit to Nokia—a foreign NPE—apart from hold-up value against American industries. But this is contrary to the statute. Section 337 had the explicit purpose of "enhanc[ing] the competitiveness of *American* industry" and to provide "*United States owners* of intellectual property rights with adequate protections *against foreign companies*." Omnibus Trade and Competitiveness Act of 1988 § 1341(a)(2), Pub. L. No. 100-418, 102 Stat. 1107, 1212 (1988). Nokia flips the intent of the statute on its head.[53]

By contrast, Respondents are U.S. companies that are critical to U.S. innovation and employment. Amazon employs nearly one million Americans, making it the largest job creator and the second largest private employer in the United States. *See* RX-2217 (Amazon's economic impact in the U.S.); RX-2216 (Amazon Form 10-K for year ending December 31, 2022). Amazon is second on the list of Fortune 500 companies. RX-1464 (List of Fortune 500 companies). Amazon is based in Seattle, Washington, with a second headquarters in Arlington, Virginia. RX-3287 (RESPNOKIA_00008869). Investing $46.5 billion in the United States in 2022, Amazon placed No. 1 for the third consecutive year on the Progressive Policy Institute's Investment Heroes List, which ranks U.S. companies' investments in the United States. RX-1437 (PPI, "Investment Heroes 2020," 7/24/2020); RX-1438 (PPI, "Investment Heroes 2021," 6/2021); RX-1439 (PPI,

[53] Nokia has itself argued to the Supreme Court that "an automatic injunction in favor of a patent owner could undermine [the] constitutional goal [of promoting the useful arts] by forcing manufacturers of useful standards-compliant products to choose between the lesser of two evils – shutting down or paying exorbitant royalties. Either result would likely thwart effective competition, and thus diminish choice and impose greater costs on consumers." Brief of Amicus Curiae Nokia Corporation in Support of Petitioners, *eBay, inc. v. MercExchange, L.L.C.* (U.S.), 2006 WL 235005, at *5 (Jan. 26, 2006).

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"Investment Heroes 2022," 7/15/2022); RX-1440 (PPI, "Investment Heroes 2023," 10/25/2023). According to those studies, Amazon invested more in the United States than any other company for at least three consecutive years, was key to sustaining the economy during the pandemic, and helped drive economic expansion, wage growth, and job creation. Nokia seeks to exclude dozens of products developed by Amazon, including Fire tablets, TVs, and sticks; Echo products; and Ring products. Complaint ¶ 4. [redacted] threatens to create a supply gap by eliminating popular and affordable consumer choices.

The Amazon Accused Products have been revolutionary and important. Amazon pioneered the modern e-reader. Amazon continued its tradition of increasing public access to media through its touch-screen Fire tablets, which offer the public affordable new ways to acquire and consume books, audio, video, and countless other services. Amazon also pioneered the voice-controlled audio players and systems industry by introducing the original Amazon Echo, with the Alexa voice assistant, in 2014. Through Q1 2017, almost 11 million U.S. customers were estimated to own an Echo device. Amazon has continued to improve the Amazon Echo and Alexa. For over fifteen years, Amazon invested extensively in voice-controlled audio players and systems, related software, and services, with employees throughout the United States researching, engineering, and developing the Echo. In a little more than a year after its introduction, Amazon doubled the number of employees working on Alexa and Echo to over 10,000. Amazon continues to invest significant resources in its Echo products in the United States, including research, design, and engineering. All of this work, design, and innovation in the Amazon Echo, Amazon Fire Tablets, Amazon Fire TVs and streaming media players is unrelated to the accused functionality and structure of the

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accused off-the-shelf GPUs as to which Amazon has no involvement or input into their design or manufacture.

HP helps form the backbone of the technology sector in the United States. With approximately 20,000 employees in the United States alone, HP is one of the country's largest employers within the high-technology business sector. RX-2026C.0001; RX-0243.0009; 29; RX-1970C; RX-1422.0001-2; RX-1393.0029. Each year, HP sells tens of millions of personal computers and invests over a billion dollars in research and development in the United States each year. RX-3200; RX-1393. [redacted]. Nokia now seeks to exclude approximately 20% of the PCs for sale in the United States. RX-3220.0002. But there is no evidence that any of the other PC manufacturers could make up for the shortage of affordable PCs that HP supplies.

HP is one of the leading printing and personal systems technology companies in the world. HP has 20 office locations in the United States, with several focused on product development and technology. RX-1393. HP devotes significant resources to innovation, as illustrated by its vast patent portfolio that includes more than 24,000 patents worldwide and 6,200 pending applications worldwide, including 12,300 U.S. patents and 2,500 pending U.S. patent applications. RX-1393. Excluding downstream products will have a negative effect on thousands of HP's employees in the United States and HP's innovation in the United States. RX-1970C. HP's research and development is related to HP's products as a whole. The accused functionalities in this Investigation relate to off-the-shelf GPUs and CPUs, which HP merely purchases and incorporates into its full-featured downstream products. HP's products have numerous other features unrelated to the accused functionalities. Additionally, HP's PCs and desktops are used in many different consumer markets, including education and medical facilities. RX-1398; RX-1407; RX-1414.

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Excluding HP's notebooks and desktops would have a detrimental effect on thousands of U.S. employees, including those involved in the research, development, and sales of HP's products. An exclusion order would also have detrimental effect on HP's many consumers.

3. The Harm of Exclusion of Complex, Multi-Function Products Far Outweighs the Assertion of Narrow IP Rights

This Investigation presents overriding public interest considerations, coupled with an absence of any offsetting benefit to Nokia. As discussed below, the requested relief will have adverse effects on the public health and welfare, competitive conditions, and U.S. consumers. The significant harm that an exclusion order would inflict on the public interest far outweighs any interest in enforcing Nokia's patents. This is particularly true where Nokia's patents are directed to narrow functionality out of thousands of different functions included in the Accused Products. Such exclusion is contrary to the public interest and guiding legal principles. *See, e.g.*, 19 U.S.C. § 1337(d)(1); *Certain Erasable Programmable Read Only Memories*, Inv. No. 337-TA-276, USITC Pub. 2196, Comm'n Op. at 125 (May 1989), *aff'd at Hyundai Elec. Indus.*, 899 F.2d 1204 (Commission remedy properly represented a "common sense balancing of the parties' conflicting interests" where it considered, *inter alia*, "the value of the infringing articles compared to the value of the downstream products in which they are incorporated, the identity of the manufacturer of the downstream products (*i.e.*, are the downstream products manufactured by the party found to have committed the unfair act, or by third parties), the incremental value to complainant of the exclusion of downstream products, the incremental detriment to respondents of such exclusion, [and] the burdens imposed on third parties resulting from exclusion of downstream products," and stating "reasonable relation to the unlawful practices found to exist."); *eBay Inc. v. MercExchange, LLC*, 547 U.S. 388, 396-97 (2006) (Kennedy, J. concurring) ("When the patented invention is but a small component of the product the companies seek to produce and the threat of an injunction is

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employed simply for undue leverage in negotiations, an injunction may not serve the public interest."); *LaserDynamics, Inc. v. Quanta Computer,* 694 F.3d 51, 67-68 (Fed. Cir. 2012) ("Where small elements of multi-component products are accused of infringement, calculating a royalty on the entire product carries a considerable risk that the patentee will be improperly compensated for non-infringing components of that product."). The Commission is charged with balancing effects on competition and consumers as noted above. Justice Kennedy's reasoning is instructive: "When the patented invention is but a small component of the product the companies seek to produce and the threat of an injunction is employed simply for undue leverage in negotiations, an injunction may not serve the public interest." *eBay*, 547 U.S. at 396-397 (Kennedy, J. concurring). Even though the foregoing wisdom addressed the propriety of injunction in district court under *eBay*, it is instructive as Section 337 also considers what is in the public interest.[54] The FTC agrees the statutory public interest factors "should allow consideration of whether an exclusion order based on a minor patented component of a complex product can unduly harm consumers by causing hold-up, distorting competition, raising prices and deterring innovation.[55] RX-3287 (RESPNOKIA_00008464) (reporting district court injunction rate of 0% where infringing feature was "trivial component" of Accused Product). This concern is further exacerbated by the fact that any alleged infringement occurs at the chip level and yet Nokia has made no efforts to license chipmakers, seeking instead to leverage and hold-up downstream manufacturers at a higher rate. Moreover, Nokia relies on the same chips for purposes of domestic industry and infringement further highlighting the dissonance with its RAND obligations.

[54] While the Federal Circuit has stated that "[t]he Commission is not required to apply the traditional four-factor test for injunctive relief used by district courts when deciding whether to issue the equitable remedy of a permanent injunction," it did not foreclose the Commission from considering those overlapping factors in the context of the statutory criteria set forth in Section 337. *See Spansion, Inc. v. Int'l Trade Comm'n*, 629 F.3d 1331, 1359 (Fed. Cir. 2010).

[55] *Evolving IP Marketplace* at 29–30.

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While video coding plays an important role in modern technology, the Asserted Patents do not. The Asserted Patents are directed to certain aspects of "video coding technologies" that, even if practiced, which Nokia has not shown, represent a fraction of the functionalities available within the Accused Products. Despite the limited scope of the Asserted Patents, Nokia's desired exclusion order would prevent the importation of a wide variety and large volume of finished downstream electronic products. Nokia seeks to exclude these multi-component, multi-functional products in their entirety, even though the Asserted Patents, at most, relate only to narrow capabilities.

None of Amazon's innovation, the value of the products to customers, or Amazon's investment in innovation relates to the accused use of H.264 by staple, off-the-shelf, commodity chips used as components in the Amazon Fire Tablet, Echo Show, Fire TV and streaming media players.[56] But these legitimate activities would be adversely affected. Downstream relief would harm Amazon and its millions of customers by eliminating popular, unique, and affordable consumer products, as well as the interconnected products and services that are not accused of any infringement, for example, a half-million apps designed for Amazon's tablets; grocery shopping and delivery services; health, educational, news, and entertainment content; business services; personal finance management tools; accessibility tools, and communication tools. Excluding the Amazon-branded downstream products from the U.S. market would eliminate channels of commerce, deprive users of critical access to services, and could devastate U.S. industries. The detriment to Amazon, its employees, the U.S. economy, and U.S. consumers would far outweigh any relief merited by the minor accused infringement of minor commoditized components. Dr. Mody will testify that Nokia's requested relief captures value having nothing do with its

[56] The Blink products and two Ring products use a [redacted]

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inventions, which value has no benefit to Nokia or any domestic industry apart from litigation leverage (and such economic concern is compounded if the patents are further found to be SEPs).[57]

The same is true for HP. HP's research and development is related to HP's products as a whole. The accused functionalities in this Investigation relate to off-the-shelf GPUs and CPUs, which HP merely purchases and does not invest time or money in the development of. Excluding HP's PCs from the U.S. would harm consumers by eliminating over a quarter of the available and affordable PCs and would have a detrimental effect on thousands of U.S. employee, including those involved in the research, development, and sales of HP's products.

Nokia's requested remedies would harm competition and contravene the statutory public interest factors, while depriving U.S. consumers of products that are foundational for the U.S. economy. Nokia seeks to exclude *all* of HP's personal computers from the United States: the Complaint contends that "the number of HP Accused Products" is so large that "it is not practical for Nokia to identify all of HP's Accused Products." It says the same of "Amazon's Accused Products," which comprise tablets, streaming devices, and televisions. Nokia seeks to exclude approximately 27% of personal computers, 61-65% of the smart speaker displays, 48% of value-priced tablets (40% of non-Apple tablets); 45% of the streaming device market segment, and the number one player for video doorbells. Moreover, Nokia's proposed remedy has ramifications beyond the substantial quantity of products it would exclude. Excluding HP's and Amazon's Accused Products would specifically disadvantage U.S. consumers by depriving them of technology that is widely accessible elsewhere in the world.

[57] This effect and disruption to legitimate commerce would be compounded if Nokia seeks relief that extends beyond Amazon-branded products. Although Nokia was unclear in its discovery responses as to whether it would seek such relief, it now confirms that it will not seek relief beyond products manufactured for or on behalf of Respondents.

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C. Public Interest Concerning Assertion of RAND-Encumbered SEPs

As set forth in Respondents' pre-institution public interest filings and Rule 210.14(f) Public Interest Statements, Nokia's requested relief in this Investigation on patents Nokia asserts are standard-essential patents (SEPs) subject to reasonable and non-discriminatory (RAND) licensing obligations is contrary to the public interest. As discussed in the patent sections above, Respondents do not contend either of the Asserted Patents are SEPs. Nokia, however, contends that both Asserted Patents have claims that are essential to the H.264 standard. Respondents' SEP public interest concerns, like the SEP defenses in Section VI above, are therefore presented in the alternative should Nokia carry its burden to prove that the Asserted Patents or claims are essential. Nokia's requested relief on patents it asserts to be SEPs is contrary to the public interest if the Commission finds that either patent is an SEPT.

The public interest does not support any remedy at the behest of a foreign patentee asserting SEPs subject to a RAND licensing obligation. *See* Complaint ¶ 57. Complainants are Finnish companies. RX-0241 (Nokia "contact-us" website); RX-2215 (Nokia "worldwide-presence" website). Nokia is a patent-assertion NPE for purposes of this Investigation. Nokia has no cognizable U.S. presence, domestic industry, or competing products relevant to the video technology and products it seeks to exclude. Nokia seeks to leverage the threat of an exclusion order to coerce supra-RAND royalties from Respondents. Amazon and HP are willing licensees of any valid SEPs that they practice, but they are not willing to pay an extortive price for a license at a royalty rate far in excess of that Nokia would receive under well-settled Federal Circuit damages law.[58]

[58] *See*, *e.g.*, *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d 1201, 1232 (Fed. Cir. 2014) (royalty rate for SEPs must be apportioned to reflect "value of the patented feature, not any value added by the standard's adoption of the patented technology.").

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Government agencies and courts have made clear that injunctive relief based on RAND-encumbered patents undermines the public interest by reducing investment in standard-compliant products, raising prices, reducing choice, and decreasing investment into technology complementing these standards. *See* RX-1684 USTR Disapproval Letter at 2-3 (RESPNOKIA_00008865); *Certain UMTS and LTE Cellular Communication Modules and Products Containing the Same,* Inv. No. 337-TA-1240, FTC Chair Khan and Commissioner Slaughter's Written Submission on the Public Interest (May 16, 2022) ("1240 FTC Commissioner Statement"); *Certain Wireless Commc'n Devices, Portable Music & Data Processing Devices, Computers & Components Thereof,* Inv. No. 337-TA-745, Third Party United States Federal Trade Commission's Statement on Public Interest at 1 (June 6, 2012)*; Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1332 (Fed. Cir. 2014) (noting that "[a] patentee subject to RAND commitments may have difficulty establishing irreparable harm" to obtain an injunction); *Microsoft Corp. v. Motorola, Inc.,* 696 F.3d 872, 884 (9th Cir. 2012) (similar).

The FTC Chair and an FTC Commissioner recently urged the ITC not to issue an exclusion order in such circumstances because "[w]hen a District Court can make a complainant whole … even a limited exclusion order is not in the public interest." 1240 FTC Commissioner Statement at 6. Nokia itself has repeatedly argued to the ITC that allowing owners of RAND-encumbered standard essential patents to seek an exclusion order would "irreparably undermine the enforceability of RAND commitments and allow holders of essential patents to repudiate RAND commitments at will when it suits their purpose to utilize the leverage of an ITC action." *Certain Gaming and Entertainment Consoles, Related Software, and Components Thereof*, Inv. No. 337-TA-752, Nokia Public Interest Statement at 1 (June 8, 2012) ("752 Nokia PI Statement"). *See also* 868 Nokia PI Statement at 2 ("[T]he importance of enforcing RAND commitments is antithetical

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to a patent holder [who] attempts to leverage an exclusion order based on its declared essential patents."). Nevertheless, Nokia seeks an exclusion order on RAND-encumbered patents that Nokia claims are SEPs.

As Nokia argued to the ITC in a prior investigation, SEPs "raise particular risks and threaten critical harm to important U.S. markets" and "FRAND commitments [are] antithetical to a patent holder . . . attempt[ing] to leverage an exclusion order based on its declared-essential patents." 868 Nokia PI Statement at 2; *see also Nokia v. Qualcomm,* No. 1:09-cv-00791 (Del. Ch. 2010), Dkt. No. 86-1 at 1-2 ("An IPR holder who has . . . voluntarily submitted a FRAND undertaking for such a patent is limited, in the case of infringement of a valid patent, to FRAND compensation for such patent and is not entitled to an injunction or exclusion order that could prevent implementation of the standard."). Respondents agree. The USTR vetoed such an exclusion order, recognizing "the potential harms that can result from owners of [SEPs] who have made a voluntary commitment to offer to license SEPs on terms that are [RAND] gaining undue leverage and engaging in 'patent hold-up.'" USTR Disapproval Letter at 2. This practice poses a "serious potential for anticompetitive harm," because once a standard is adopted, manufacturers "have little choice but to incorporate SEP technologies into their products." *Certain UMTS and LTE Cellular Communication Modules and Products Containing the Same*, Inv. No. 337-TA-1240, Written Submission on the Public Interest at 2 (May 16, 2022) ("1240 FTC Commissioner Statement") (quoting *Allied Tube & Conduit Corp. v. Indian Head, Inc.*, 486 U.S. 492, 500-01 (1988)); *Microsoft Corp. v. Motorola, Inc.*, 795 F.3d 1024, 1031 (9th Cir. 2015).

Nokia's patented technologies are argued to have been adopted into standards, and—as

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most SEP holders must[59]—Nokia agreed to license its patents on RAND terms. That *quid pro quo* is a crucial safeguard against an SEP owner leveraging the standards to extract more than the fair value of its technology, which would hinder the widespread adoption of the standards and burden consumers by raising the cost of standards-compliant products.

Amazon and HP negotiated at length with Nokia regarding an appropriate rate and scope of a license. Rather than grant, or even offer, a license on RAND terms, Nokia launched a worldwide litigation campaign threatening injunctive relief to secure supra-RAND terms.[60] Despite previously arguing that pursuing "injunctive or exclusionary relief before the ITC against willing licensees" before "a federal court has had the opportunity to determine the scope of a patent holder's FRAND obligations … is a breach of the patent holder's contractual obligations that should support the termination of an investigation," Nokia now seeks to do just that. *See Certain Wireless Devices with 3G Capabilities and Components Thereof*, Inv. No. 337-TA-800, Respondents' Petition for Review at 89-90 (July 15, 2013) ("This Commission, following the reasoning of its sister agencies, should adopt a policy that disfavors exclusionary relief against willing licensees . . ."). Nokia threatens exclusionary relief to impose a disproportionate tax on innovation using the artificial hold-up value that arises once an industry has committed to standardization. RX-0389.0242 (FTC, *Evolving IP Marketplace*).

The USTR, FTC, members of the FTC, and *Nokia itself* have all cautioned against the

[59] *Microsoft*, 795 F.3d at 1031; *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1332 ("[T]he public has an interest in encouraging participation in standard-setting organizations but also in ensuring that SEPs are not overvalued."), *overruled on other grounds by Williamson v. Citrix Online, LLC*, 792 F.3d 1339 (Fed. Cir. 2015).

[60] *See* footnotes 1-2, *supra*, for identification of the more than 15 actions launched by Nokia against Respondents around the world, including U.S. federal district courts, the United Kingdom, Germany, the Unified Patent Court, India, and Brazil.

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dangers of pursuing exclusionary remedies in the SEP context. This Investigation raises the same risks of "hold-up, distorting competition, raising prices and deterring innovation." *Id.* at 30. When pending district court litigation exists, "under no circumstances should Section 337 remedies . . . take effect before . . . that Court has had the opportunity to render a decision." 1240 FTC Commissioner Statement at 6; *id*. ("When a District Court can make a complainant whole, both for past royalties with prejudgment interest and by establishing a future royalty rate, even a limited exclusion order is not in public interest."). Exclusionary relief is especially incongruent with the public interest where, as here, it is sought against willing licensees, as described herein. In such circumstances, there is a public interest in preventing a holder of RAND-encumbered SEPs from using the threat of an ITC exclusion order to force *supra*-RAND licensing fees.

1. Respondents Have Agreed to RAND Terms Set by Competent Tribunals While Nokia Has Repudiated Those Efforts

The Respondents are willing licensees that have agreed to be bound by RAND terms. Nokia alleged infringement of the Asserted Patents[61] in Delaware on October 31, 2023. Complaint ¶¶ 134 and 166. Nokia's compliance with its RAND obligations is before the district court. And both Amazon and HP have asked tribunals to resolve the question of what constitutes RAND terms. Amazon is seeking to have RAND terms set by the U.K. High Court of Justice as part of *Alcatel Lucent SAS v. Amazon Digital UK Ltd. Et al*, No. HP-2023-000038 and [redacted]. HP filed counterclaims requesting RAND terms be set in *Nokia Corp. v. HP Inc.*, 1:23-cv-01237-

[61] U.S. Patent Nos. 7,724,818, 8,050,321, 8,077,991, 10,536,714, 11,805,267. *See Nokia Corp. v. Amazon.com, Inc*., DDE-1-23-cv-01232.

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GBW (D. Del. Dec. 11, 2023). Nokia's motion to dismiss HP's counterclaim for declaratory relief was recently denied. *Nokia Technologies Oy v. HP, Inc.*, No. 1:23-cv-01237-BGW (D. Del. Apr. 29, 2024). In contrast, Nokia has not agreed to a RAND rate setting anywhere in the world and has in fact (unsuccessfully, so far, as to HP) attempted to avoid these efforts.

Nokia committed to license on RAND terms but now seeks to avoid such terms. Its efforts belie its true motives and misuse of the ITC. Nokia comes to the ITC as an end-run around its RAND commitments, seeking to usurp the district court's role by leveraging the threat of an exclusion order in pursuit of a supra-RAND rate. 1240 FTC Commissioner Statement at 4 (explaining "a licensee may agree to pay supra-FRAND royalties to avoid being excluded from the market for standardized products"); *see also* 868 Nokia PI Statement at 2–3 (quoting DOJ and PTO to argue "[a] decision maker could conclude that the holder of a F/RAND-encumbered, standards-essential patent had attempted to use an exclusion order to pressure an implementer of a standard to accept more onerous licensing terms than the patent holder would be entitled to receive consistent with the F/RAND commitment").

Respondents' expert Dr. Timothy Simcoe[62] will demonstrate that the public interest is best served by reserving exclusionary remedies for use only after an implementer refuses to take a license on terms that have been judged to be RAND and that seeking exclusionary relief prior to such a determination is inconsistent with both the consensus economic view of appropriate SEP remedies and Nokia's own interpretation of RAND. He will further demonstrate that RAND commitments preserve for implementers and users of the standard any benefits of *ex ante* competition that would exist in a licensing market where all users were not locked into a standard

[62] Dr. Simcoe is a Professor of Strategy and Innovation at the Boston University Questrom School of Business and a Faculty Research Fellow at the National Bureau of Economic Research. IP, industry standards, SSOs, and RAND licensing commitments are the primary focus of his research and frequently feature in his teaching.

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and that Nokia's requested relief would harm competitive conditions in the U.S. economy and U.S. consumers.

2. Nokia's Requested Relief on SEPs Would Harm Competitive Conditions in the U.S. Economy

Nokia is obligated to license its SEPs on RAND terms. Nokia alleges that patent claims in both Asserted Patents are SEPs. Allowing Nokia to secure remedial orders on patents it asserts to be SEPs would undermine the scheme that permits the creation of industry standards and would harm U.S. industry. *See* 1240 FTC Commissioner Statement at 3 ("[B]ecause developing and implementing a standard requires significant resources, firms would be much less likely to invest in either if there were a significant risk that SEP owners would opportunistically withhold licenses to block them from commercializing standard-compliant products."); *id.* at 5 ("An inappropriate exclusion order . . . harms consumers in the longer run through reduced innovation, competition, quality, and choice if firms choose to reduce investments in standardized products."). Innovators such as Amazon and HP rely on industry standards because they are assured that SEPs will be licensed at RAND rates. An exclusion order for RAND-encumbered SEPs would vitiate that assurance and disrupt this delicate arrangement. *See also* 868 Nokia PI Statement at 3 ("[I]f FRAND is not enforced, the multitude of benefits that society has reaped from the collaboration of erstwhile competitors will be lost.").

Moreover, RAND obligations assure standards developers and implementers that the patents required to implement those standards will be available for licensing on reasonable terms. Compliance with RAND obligations is critical to the creation of and proliferation of those standards in order to promote competition and innovation. An exclusion order here would undermine those assurances. A concern that any standards participant may bar the importation of products implementing any minor patented feature of the standard could discourage implementers

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from research and development investment and innovation leading to fewer choices for consumers.

Dr. Simcoe will demonstrate that Nokia's requested relief creates anticompetitive risks and would harm competitive conditions in view of the economic rationale for standardization, purpose of SSO intellectual property policies, and economic role of disclosure rules and RAND obligations, which are all intended to enhance competitive conditions and benefit consumers. Similarly, Dr. Mody will testify that Nokia's requested relief distorts the value of its patented invention where Nokia has to make its inventions available on RAND terms but now seeks an injunction, which will not benefit either Nokia nor any alleged domestic industry. *See* (Mody Opening Rep. at 18).

3. Nokia's Requested Relief on SEPs Would Harm U.S. Consumers

Enforcement of RAND-encumbered SEPs would negatively impact consumer welfare by denying the advantages of greater competition and innovation associated with industry standards backed by enforceable RAND obligations. "The USPTO, NIST, and DOJ [] recognize that standards-developing organizations (SDOs) and the widespread and efficient licensing between [SEP] holders and those who seek to implement technologies subject to [RAND] commitments helps to *promote technological innovation, further consumer choices, and enable industry competitiveness* including in emerging technologies and market entry of new and small-to medium-sized entities, whose participation in the standards ecosystem is important to promoting innovation and job creation in today's dynamic marketplace." RX-1683 (USPTO, DOJ, and NIST Withdrawal of 2019 Policy Statement on Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments, June 8, 2022, RESPNOKIA_0009261). Disruption of this scheme by threatening injunctive relief of willing licensees threatens this scheme and necessarily harms innovation, consumers, and competitiveness.

In the near term, consumers face the loss of access to products and services that rely on standardized technology. Amazon is first in the smart speaker with screen market segment in the

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United States, holding more than 60% market segment share; and Amazon is first in the video doorbell, streaming media players, and value-price market segment for tablets in the United States and second in the market segment for Android tablets. HP accounts for approximately 27% of the desktop and notebook computer market segment in the United States. RX-3220. Excluding this volume of leading products would plainly harm competition and severely disrupt consumer choice. U.S. consumers would be harmed if deprived of these popular and necessary products at the volumes implicated. In the long term, the disincentive to SEP implementation and diminished returns to follow-on innovation would limit the benefits of standardized technology to consumers.

Nokia alleges that "video has become the main form of internet traffic, coinciding with the rise in popularity of internet and social media apps and streaming video service subscriptions." Complaint ¶ 24. And Nokia alleges that the two Asserted Patents are SEPs, meaning they would be directed to standards the industry must maintain for reliable access. RX-0389.0241 (FTC, *Evolving IP Marketplace*) ("An injunction or exclusion order against standardized technology also poses a significant risk of hold-up and consumer harm."). Yet Nokia comes to the ITC to abuse a trade statute and harm U.S. consumers for no other reason than its own pursuit of supra-RAND rates. It is of great importance that SEP holders are held to their contractual obligation to license any standard-essential technology on RAND terms, as each SEP holder could otherwise wreak havoc on the industry as a whole by creating obstacles for those trying to practice a standard. *See Microsoft*, 696 F.3d at 876 ("[O]nce a standard has gained such widespread acceptance that compliance is effectively required to compete in a particular market, anyone holding a standard essential patent could extract unreasonably high royalties from suppliers of standard-compliant products and services. This problem is a form of 'patent hold-up.'").

Allowing SEP holders to leverage the threat of injunctive relief from the ITC risks

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distorting the market by forcing respondents to pay "supra-FRAND royalties to avoid being excluded from the market for standardized products." *Certain UMTS and LTE Cellular Commc'n Modules and Prods. Containing the Same*, Inv. No. 337-TA-1240, Written Submission on the Public Interest, 2022 WL 1641025, at *1 (May 16, 2022) ("Cellular Commc'n Modules"). Representatives from the FTC routinely argue against granting injunctive relief for SEPs. *Id.* ("Where a complainant seeks to license and can be made whole through remedies in a different U.S. forum, an exclusion order barring standardized products from the United States will harm consumers and other market participants without providing commensurate benefits."); *id.* at *3 ("As a general matter, exclusionary relief is incongruent and against the public interest where a court has been asked to resolve FRAND terms and can make the SEP holder whole."); *Certain Wireless Commc'n Devices, Portable Music and Data Processing Devices, Computers and Components Thereof*, Inv. No. 337-TA-745, FTC Statement on Public Interest, 2012 WL 7681646, at *2 (Jun. 6, 2012) ("[W]e are concerned that a patentee can . . . seek an exclusion order for infringement of the RAND-encumbered SEP as a way of securing royalties that may be inconsistent with that RAND commitment."). Similarly, the U.S. Trade Representative vetoed an exclusion order based on RAND-encumbered SEPs, noting that "the patent owner may continue to pursue its rights through the courts." USTR Disapproval Letter at 4.

D. Unavailability of Alternative Products

Irrespective of whether the Asserted Patents are SEPs, the unavailability of alternative products to fill any shortage left by exclusion of Respondents' products would negatively impact the public interest. A complainant must "identify like or directly competitive articles that complainant, its licensees, or third parties make which could replace the subject articles if they were to be excluded." 19 C.F.R. § 210.08(b). Nokia has not, and cannot, identify any such articles. A complainant must also "[i]ndicate whether the complainant, its licensees, and/or third parties

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have the capacity to replace the volume of articles subject to the requested remedial orders in a commercially reasonable time." *Id.* Nokia has not, and cannot, identify any ability to replace the Accused Products. Nokia does not make any competitive products; [redacted] The analysis from Dr. Mody confirms that [redacted] Mody Opening Rep. at 46-52, 71, 73, 76. The few entities Nokia has identified as replacements are not adequate. *Id.* For example, as to tablets, Nokia identifies mostly entities with no discernible share of the U.S. tablet market segment that are [redacted] of the North America Tablet Vendor Market Share for the United States, and, even combined, would not be able to replace Amazon's products. *Id.* at 51.[63] The absence of sufficient available alternatives presents particular harm to competitive conditions, U.S. consumers, and the public welfare should remedial orders issue. Nokia has not identified any entity that would be able to provide sufficient and adequate alternatives to replace the large volume and scope of Accused Products implicated.

Dr. Mody will demonstrate that the shortage left by exclusion of Respondents' products could not be adequately filled. *See Certain Elec. Digital Media Devices*, Inv. No. 337-TA-796, Comm'n Op. at 120 (Sept. 16, 2013) ("Rather, the impact is assessed in the aggregate and consideration is given to whether there are reasonable substitutes for the devices subject to the exclusion order in terms of features, price points, and other pertinent factors.").

Amazon is first in the market segment for smart speakers and market segment for smart speakers with screens. RPX-0243C (AMAZONNOKIAITC_00080240.xlsx) at tab "16. USA"

[63] As another example, Nokia identifies entities as potential replacements for the accused products [redacted] *Id.* at 51.

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(showing Amazon holds 61% market segment share for smart displays); Thuvara Dep. Tr. at 86-87, 149-150. Amazon also leads the value-priced market segment for tablets, with 48% of that market segment, and is second in the market segment for non-Apple OS tablets. RX-1470C (AMAZONNOKIAITC_00021862–874) at 1; Bansal Dep. Tr. at 79-80, 97-98; RX-1469C (AMAZONNOKIAITC_00021701–715) at 1. Amazon further holds a leading 45% of the digital media streaming device market segment. Mody Opening Report at 44; RPX-0030C (AMAZONNOKIAITC_00080259.xlsx) at tab "8. United States"). Amazon is also a leader with respect to camera/video doorbells with Ring as the number one player in the premium-home security and smart home device market segment. Mody Opening Rep. at 44; Gluckman Dep. Tr. at 118; CX-0419.0002. Likewise, HP is one of the leading companies in the PC market segment. In Q4 of 2023, HP accounted for more than 27% of the U.S. PC market. RX-3220.0002.

Nokia simply cannot show that alternative products can fill the shortage left by the overbroad remedy that it seeks. *See Certain Automatic Crankpin Grinders*, Inv. No. 337-TA-60, Comm'n Op. at 17-21 ("This is the first time the Commission has determined that the public interest factors preclude imposition of a remedy. The primary reason for our determination is that the domestic industry cannot supply the demand for new orders of the patented product within a commercially reasonable length of time. Neither complainant nor its domestic licensee can make delivery on a new order to a domestic customer prior to the expiration of the patent."); *see also Spansion*, 629 F.3d at 1359.

E. The Requested Remedial Orders Would Adversely Impact Competitive Conditions

As described above, Nokia's requested relief harms competitive conditions in light of the nature of the Asserted Patents as it relates to Nokia's SEPs and RAND obligations. Irrespective of whether the Asserted Patents are found to be SEPs, and in addition to hold-up resulting from the

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essential nature of some of the Asserted Patents, Nokia engages in patent hold-up as an NPE. The economic theory of "patent hold-up" refers to the opportunistic practice of patent owners using patent assertion and threats to seek increased licensing fees when a company is most vulnerable—after it has implemented a technology. Under this theory, exclusion orders predictably shift the outcome of patent negotiations away from a reasonable royalty and toward unreasonably high royalties. The FTC has recognized the competitive harm that this practice causes and has explained that revenue-driven licensing in the face of a threatened injunction adds a substantial "hold-up value" to patent rights, which in turn, may "distort competition in technology markets." RX-0389 (Evolving IP Marketplace) at 52-54, 143-44; *see also Certain Wireless Communications Devices, Portable Music and Data Processing Devices, Computers, and Components Thereof*, Inv. No. 337-TA-745, FTC Statement on the Public Interest (June 6, 2012) ("Hold-up and the threat of hold-up can deter innovation by increasing costs and uncertainty for other industry participants, including those engaged in inventive activity. It can also distort investment and harm consumers by breaking the connection between the value of an invention and its reward—a connection that is the cornerstone of the patent system."); *Certain Gaming and Entertainment Consoles, Related Software, and Components Thereof*, Inv. No. 337-TA-752 (same); *see also* 868 Nokia PI Statement ("where a potential licensee agrees to pay FRAND compensation and makes an offer that is FRAND-compliant, an exclusion order is not a proper remedy for alleged infringement of declared-essential patents.").

F. The Requested Remedial Orders Would Adversely Impact U.S. Consumers

Dr. Mody will demonstrate that the requested remedial orders would negatively impact U.S. consumers. First, the remedial orders would prevent the importation of a large breadth of leading products with important uses by customers and unique features. Second, Nokia, its domestic industry licensees, or any other participants to not have the ability to meet U.S. demand

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for the Accused Products. Third, large percentages of U.S. market segments would be implicated leading to shortages of smart displays, tablets, cameras, streaming devices, smart TVs, and PCs that would lead to reduced competition, increase prices, reduce consumer choice, and deprive U.S. consumers access to unique features and products available outside the United States.

The requested relief would also harm related products and services. The requested remedial orders would negatively impact numerous interconnected products and services that are not accused of infringement. Investments in the applications, components, and services that consumers are able to access from the accused devices would also be lost. Existing consumers who have products under warranty will also suffer harm if they are not able to receive the repair and warranty services covered by those warranties. The Accused Products are all subject to a warranty that permits service/repair or replacement. *See Certain Mobile Devices, Associated Software, and Components Thereof*, Inv. No. 337-TA-744, Comm'n Op. 2012 (June 5, 2012) (agreeing that public interest is served by an exemption for the importation of parts and components used in the maintenance, service, repair, or replacement of mobile devices and citing cases based on avoiding disruption to U.S. customers.); *Certain Liquid Crystal Display Devices*, Inv. No. 337-TA-631, Comm'n Op. at 27 (July 14, 2009) ("the public interest weighs in favor of an exemption to allow importation of service and replacement parts"). Mody Opening Rep. at 56-57; RX-1476 (AMAZONNOKIAITC_00025449–451); RX-1473 (AMAZONNOKIAITC_00025440–42); RX-1477 (AMAZONNOKIAITC_00025452–53); RX-1474 (AMAZONNOKIAITC_00025443–45); RX-1475 (AMAZONNOKIAITC_00025446–48); RX-1472 (AMAZONNOKIAITC_00025342–43); RX-1471 (AMAZONNOKIAITC_00025336–37); RX-2028.2033.

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G. The Requested Remedial Orders Would Harm the Public Health and Welfare

1. The Requested Relief Will Harm to U.S. Investments and Employment

Public welfare also encompasses adverse impacts on employment or economic growth. *See, e.g.*, *Certain Microprocessors, Components Thereof, and Products Containing Same*, Inv. No. 337-TA-781, ID at 366-69 (Dec. 14, 2012) (considering impact on public welfare from projected job losses, decreased U.S. manufacturing, and adverse macroeconomic effects). Nokia threatens consumers and Respondents' employees developing the Accused Products by broadly targeting products that provide significant benefits, including by allowing millions to work, access news, listen to music, watch movies, learn, play video games, and communicate. Dr. Mody will testify about how exclusion of the Accused Products would have an extreme, and direct, impact on U.S. investments, U.S. jobs, and U.S. innovation. As described above in Sections I.B.2, VII.B.2, and VII.B.3, the Respondents in this Investigation are two of the most prominent technology companies in the world and each make significant contributions to the U.S. economy, investing billions in research and development domestically, directly employing hundreds of thousands of U.S. citizens, and indirectly supporting the employment of millions more, as discussed above. Nokia's requested relief would harm Respondents' continued investments in their Accused Product lines. Indeed, in Inv. No. 337-TA-781, the ALJ acknowledged that an exclusion order directed at Intel and HP would result in a loss of high-value manufacturing work in the U.S. RX-1315.0366-70 ("an exclusion order that cuts off supplies of Intel microprocessors to the United States would severely harm the U.S. Manufacturing base . . . . Specifically, such an exclusion order would harm manufacturing activities conducted by Intel, HP, and third parties."[64]

[64] Nokia's requested exclusion order is also likely to impact the third-party manufacturers of the processors (or "chips") used in the accused HP products, including [redacted]

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An exclusion order will have no impact on innovation by Nokia because Nokia does not perform R&D relating to the technology at issue in this Investigation, and it will have a substantial impact on innovation by Respondents and the rest of the industry if the Accused Products are banned from import. Incentives matter when it comes to innovation: companies will stop or significantly curtail investments in R&D for the incorporated technology in the face of a threat of total exclusion. For example, Amazon occupies more than two million square feet of office space in Seattle alone, has nearly 1 million U.S. employees, and directly or indirectly supports two million jobs in the United States. Amazon completed construction on its second headquarters in Arlington, VA in 2023 and will invest more than $2 billion on its new headquarters, which will create at least 25,000 high-wage jobs by 2030. RX-3287 (RESPNOKIA_00008869). HP has a significant presence in the U.S. Approximately 21,000 of its 58,000 employees are located in the United States. HP's global headquarters are located in Palo Alto, California. RX-2027 (HP-ITC-00040727). HP also has 20 office locations in the U.S., with several focused on product development and technology, including its locations in San Diego, California; Fountain Valley, California; Spring, Texas; Corvallis, Oregon; Vancouver, Washington; Boise, Idaho; and Fort Collins, Colorado. *Id*. HP also devotes many resources to innovation, as illustrated by its vast patent portfolio that includes more than 24,000 patents worldwide and 6,200 pending applications worldwide, including 12,300 U.S. patents and 2,500 pending U.S. patent applications. RX-2027.0007. Moreover, HP has more than 5500 patents relating to its PCs. RPX-0448C. None of this is true of Nokia—it is not a domestic industry at all.

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The sweeping exclusion order Nokia seeks would also adversely impact Respondents' ability to continue contributing to the U.S. economy in the form of domestic investments.

2. The Requested Relief Will Harm Access to Health, Accessibility, Education, and Security Features

Dr. Mody and Respondents witnesses will demonstrate the many health, accessibility, educational, and public security and safety features of the products that will be excluded and harmed by Nokia's requested relief.

The Accused Products are used for health uses including:

A. Use of Echo Show Devices and Fire Tablets by Amazon, Amazon's partners, and Amazon customers for digital health access, telemedicine, medicine management and ordering, connecting hospital workers with patients and interpreters, performing health screenings, use in hospitals and senior living environments, monitoring by caregivers, and donations of and through the devices to the healthcare industry. Mody Opening Report at 18-26; RX-2220; RX-2246; RX-1325; RX-1342; RX-1346; RX-1384; RX-1389; RX-1335; RX-1423.
B. Use of HP's computers by HP, its partners, and its customers for digital health, interaction with patients, designated medical grade for healthcare settings, and for use by clinicians. *Id.* at 58-59; RX-1398; RX-1410; RX-1466; RX-1407; RX-1435; RX-1467; RX-1394; RX-1400; RX-1414.

The accused Amazon products, as Dr. Mody and Amazon's witnesses will explain, offer vision, hearing, and speech accessibility feature to help people with disabilities to be more connected, more independent, and more entertained. RX-0924 (Vision Accessibility), RX-1336 (Alexa Accessibility), RX-3264 (Hearing Accessibility); RX-3265 (Speech Accessibility). Amazon's Director of Product Management for Amazon Echo testified the Amazon Echo Show devices are "constantly used for public health and welfare, whether it is customers with accessibility trying to –who are not able to get up from their chair and turn on the switch or light in their home, whether it's kids trying to do their homework, item to find older people to detect fall and call emergency services or look for yoga or meditation videos or even food recipes with restrictions." RX-1969 (Thuvara Dep. Tr. at 18, 61, 92-93. Amazon has partnered with The Arc,

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the largest national community-based organization advocating for people with disabilities to donate 5,000 Echo Show and Fire Tablet devices to nearly 600 chapters of The Arc across the United States. RX-2222 (The Arc).

The Accused Products have unique access and education benefits that would be adversely affected, including:

A. Amazon tablets are used for education, including those specifically designed for children, with unique features and parental controls (RX-1331; RX-1337; RX-1339; RX-1354; RX-1356-57, RX-1359-60; RX-1377; RX-1383; RX-1387; RX-1436);
B. Amazon invests in education through partnerships with schools and community organizations to donate Amazon tablets to students for educational purposes (RX-1456; RX-2245; RX-1380; RX-1324; RX-1375);
C. HP's Accused Products are used in U.S. schools to facilitate education in the classroom and at home with tech solutions for every level (RX-1407; RX-1435; RX-1467; RX-1400; RX-1414); and
D. Certain HP products are specifically tailored for education and HP supports education programs such as HP Refresh and educational initiatives (RX-1394-96; RX-1413-15);

Amazon's Accused Products have unique security and safety benefits that would be adversely affected, including popular and affordable home monitoring. The Blink and Ring cameras permit users to monitor the outside and inside of their homes; to see, hear, and speak to people and pets in their home; to get alerts when motion or actions are detected; and to alert neighbors and law enforcement. RX-1347 (Blink Mini); RX-1321 (5 Great Features of a Ring Video Doorbell); RX-1971 (Gluckman Dep. Tr.) (testifying "Ring products are designed to help people keep their home safe, stay connected to their families, property, etcetera. We have programs like Neighbors where people can share information. We have programs like the Pet Tag, which helps people find lost pets, helping keep an eye on elderly relatives. And also we have studies showing that devices, including Ring doorbells can reduce crime in areas.").

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H. Production of Like or Directly Competitive Articles in the United States

Nokia's requested relief may not directly impact any production in the United States of like or directly competitive articles and Nokia has not addressed this public interest factor. "Nokia's requested relief, will, however, decrease Amazon['s and HP's] substantial investment[s] in the United States with respect to the Accused Products and the research and development related to the Accused Products and substantial investment in labor. Nokia's requested relief will also impact the Alexa ecosystem that extends beyond Amazon but also encompasses app developers. Moreover, …, Nokia has not identified any products that would be suitable alternatives to replace the scope of Accused Products, let alone products produced in the United States." Mody Opening Rep. at ¶¶ 97, 149. And as Dr. Mody will testify, Nokia's expert's (Mr. Dastmalchi) analysis regarding the alleged ability of other companies to replace HP's and Amazon's products is not economically sound or reliable. Specifically, there is no credible evidence that other manufacturers could manufacture enough products to replace HP's and Amazon's products in a commercially reasonable amount of time. For example, [redacted]

Moreover, there is no evidence that HP's and Amazon's customers would be willing to switch from HP's and Amazon's affordable products and in certain cases, to products with different operating systems

I. At a Minimum, Public Interest Considerations Strongly Favor Tailored Exemptions and Delay

For the reasons set forth above, the requested remedies against the Accused Products would significantly harm the public interest. In contrast, the requested remedies would provide no benefit to Nokia. As such, no remedy should issue. *See Certain Inclined-Field Acceleration Tubes*, Inv.

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No. 337-TA-67, Comm'n Op. at 11. At a minimum, relief must be tailored to the realities of this Investigation, for example, permitting warranty and repair, and delaying implementation of any remedial orders for a period of time sufficient to allow a judicial determination of RAND terms and for Respondents and their customers time to begin making changes to their products and supply chains to alleviate harm to the public interest, *see Certain Integrated Circuits and Prods. Containing the Same*, Inv. No. 337-TA-1148, Initial Deter. at 188–89, 193–94 (May 22, 2020) (finding no violation and recommending that, if the finding of no violation were reversed, any remedy should be delayed for twelve months to mitigate the consequent harm to the public). The public interest concerns above warrant the remedial tailoring discussed in further detail in the following section.

VIII. REMEDY AND BOND

The Commission has broad discretion in the form, scope, and extent of a particular remedy. *Viscofan S.A. v. ITC*, 787 F.2d 544, 548 (Fed. Cir. 1986). The remedy provided must have a "reasonable relation to the unlawful practices found to exist." *Hyundai Elecs. Indus. Co., Ltd. v. ITC*, 899 F.2d 1204, 1209 (Fed. Cir. 1990); *see also* 19 U.S.C. § 1337(d). Nokia bears the burden of proving (1) that it is entitled to a remedy and (2) the appropriate remedy. *Certain Semiconductor Chips Having Synchronous Dynamic Random Access Memory Controllers, & Prods. Containing Same*, Inv. No. 337-TA-661, Comm'n Op. at 11-13 (Aug. 10, 2010).

A. Even if a Violation is Found, No CDO Should Issue Against Amazon

Nokia bears the burden to demonstrate a CDO is "necessary to address the violation found in the investigation," and cannot satisfy that burden against Amazon. *Certain Table Saws Incorporating Active Injury Mitigation Tech. & Components Thereof*, Inv. No. 337-TA-965, Comm'n Op. at 4 (Feb. 1, 2017); *Certain Mobile Devices, Associated Software, and Components Thereof*, Inv. No. 337- TA-744, Comm'n Op. at 25-26, 2012 WL 3715788 at *16 (June 5, 2012);

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Certain Sulfentrazone, Sulfentrazone Compositions, and Processes for Making Sulfentrazone, 337-TA-914, Initial Deter. at 89 (Apr. 10, 2015) (declining to recommend CDOs where complainant failed to meet its burden).

Nokia's only argument for a CDO is its conclusory assertion that "Respondents maintain commercially significant levels of inventory at various locations throughout the United States, such that a limited exclusion order could be circumvented." RX-1958 (Nokia's 10th Supp. Responses to Interrogs) at 190-193. But Nokia's contention cites generic materials such customs entry forms, website printouts regarding Respondents' distribution networks, and suppositions about how quickly orders for the Accused Products can be fulfilled. Nokia relies on snapshots of Amazon inventory data, but that data does not demonstrate commercially significant inventory. For example, certain products have zero or negative inventories. CX-5583 (Herrington Report Ex. 37) [redacted]. Nokia's expert further relies [redacted], and assumes yearly sales for products not sold for a full year. Mody Rebuttal Rep. at 54-56. Respondents' expert, Dr. Nisha Mody, will demonstrate that these errors lead to overstatements of inventory of up to 81%.

Because Nokia has no proof that Amazon's inventory of Accused Products would undercut a limited exclusion order, no CDO should be issued as to Amazon.

B. No LEO Should Issue—And If One Does, It Should be Appropriately Tailored to Imported, Infringing Products

Nokia cannot meet its burden to show that it is entitled to an LEO, or that the scope of its requested LEO is warranted. *Hyundai Elecs. Indus. Co., Ltd.*, 899 F.2d at 1209 (remedy provided must have "reasonable relation to the unlawful practices found to exist.").

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Nokia seeks a remedy against complex, multi-component, multi-functional products based on patents allegedly covering only trivial aspects of video coding. Nokia claims "the infringing component provides significant value to the imported product," but provides no support for this allegation. RX-1958C.0188. Not only do the Asserted Patents represent a fraction of video coding, but video coding is just one feature among many in the Accused Products. Nokia does not—and cannot—identify any incremental value attributable to the Asserted Patents, and that is because Nokia is after hold-up value alone. Nokia does not compete with Respondents and would receive no benefit from an exclusion order. Indeed, as discussed in connection with the public interest above, Nokia fails to identify even a single alternative product or any entity that could provide the full breadth of Accused Products at their same volumes. *Id*. at .0189. Thus, Nokia's requested remedy does not bear any "reasonable relation to the unlawful practices" alleged and no LEO should be issued against the Accused Products. Although Nokia requests a permanent LEO "directed to Respondents and their agents, subsidiaries, affiliates, importers of record, and suppliers," Section 337 only authorizes the Commission to issue exclusion orders as to "any person violating the provision[s] of this section."[65] 19 U.S.C. § 1337(d)(1).

C. Any Remedy Should be Properly Tailored

If the Commission finds a remedy is warranted, the remedy—whether an LEO or CDO—should be narrowly and expressly tailored, as explained below. *See Baseband Processor Chips and Chipsets, Transmitter, and Receiver (Radio) Chips, Power Control Chips. and Prods. Containing Same*, 337-TA-543, Comm'n Op. 2011 WL 6121182, at *20, *23 (Oct. 1, 2011) (Commission "has broad discretion in selecting the form, scope, and extent of the remedy").

[65] Respondents agree with Nokia that any relief should be directed only to products "manufactured by or on behalf of Respondents that infringe" a claim as to which a violation is found. RX-1958C.0188. Respondents disagree with any attempt by Nokia to expand beyond such scope.

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1. Service, Repair, and Replacement Exception

Any remedial order should include a service and repair exception, to allow Respondents to continue to service and repair products sold before the remedy's effective date and during the presidential review period. *See Certain Mobile Devices, Associated Software, and Components Thereof*, Inv. No. 337-TA-744, Comm'n Op. 2012 WL 3715788 at *14 (June 5, 2012).

As to Amazon, the Amazon Accused Products are supported by warranty that covers service, repair, and/or replacement. RX-1471-1477, RX-2240-2243. Any remedy as to Amazon should exempt service, repair, and replacement during any warranty obligations that existed as of the date of the remedial orders to ensure no disruption to U.S. consumers or to Amazon's obligations.

As to HP, each of HP's products include a warranty. RX-2028-2033. HP's customers have an expectation based on their warranty that their product will be replaced, repaired, or serviced. Any remedy against HP should include a carve out for service, repair, and replacement for any warranty obligations that existed as of the date of the remedial orders to ensure no disruption to U.S. consumers or to HP's obligations under its warranty.

2. Certification Provision

Any LEO should also include a certification provision whereby Respondents can certify that certain of their imported products are not subject to exclusion. *See Laser Bar Code Scanner & Scan Engines*, Inv. No. 337-TA-551, Comm'n Op., 2007 WL 9772266 at *13 (June 14, 2007). Certification provisions are generally included in exclusion orders and aid Customs in enforcing the Commission's Orders, benefiting the public interest. *Certain Access Control Systems and Components Thereof*, Inv. No. 337-TA-1016, Comm'n Op. at 34 (Apr. 21, 2018) (describing a standard certification provision aiding Customs in the enforcement of Commission Orders); *Certain Marine Sonar Imaging Devices, Including Downscan and Sidescan Devices, Products*

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Containing the Same and Components Thereof, Inv. No. 337-TA-921, Comm'n Op. at 80 (Jan. 6, 2016) (characterizing a proposed certification provision as "standard" and consistent with Commission practice).

3. Limit to Amazon-Branded Products

Any remedial order as to Amazon must have a "reasonable relation to the unlawful practices found to exist." *Hyundai*, 899 F.2d at 1209. Nokia's infringement allegations are directed to the accused Amazon-, Ring-, and 196-197. Blink- branded products. Products of many non-respondent third parties, however, such as Dell, Lenovo, and even domestic industry licensees Samsung and Microsoft are available for sale on Amazon.com and by Amazon. Nokia has confirmed it does not seek a remedy beyond products manufactured by or on behalf of Respondents so no remedy should extend to the products of non-respondent third parties.[66] RX-1958 (Nokia's Response to Interrogatory No. 15) at Any attempt to expand a remedy beyond such products would be improper. The scope of an exclusion order should be commensurate with the supporting evidence. *See Certain Neodymium-Iron-Boron Magnets*, Inv. No. 337-TA-372, 1995 WL 1049833, Initial Deter. at *12-16 (Dec. 11, 1995) (declining to exclude certain downstream products due to lack of evidence of importation).

4. No Downstream Relief

Nokia's claims of infringement are directed to the component integrated circuits, and not the accused downstream products. None of the asserted claims is drawn to downstream products and none of Nokia's infringement allegations refer to the features of the downstream products themselves. Respondents are not the party responsible for any alleged infringement. Therefore, no downstream relief should issue as to Respondents. Whether analyzed under the traditional

[66] Any downstream relief should also be limited to the downstream products identified in the Notice of Investigation and not a broader set of products. 19 C.F.R. § 210.11(b)(1).

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nonexclusive EPROMs factors concerning downstream relief or under a common-sense balancing of the parties' conflicting interests, Nokia's requested relief is overbroad and unwarranted as to downstream products. *See Hyundai Elec. Indus. Co. v. ITC*, 899 F.2d 1204, 1209 (Fed. Cir. 1990) (Commission's determination properly bore a reasonable relation to the unlawful practices found where it presented "a careful and commonsense balancing of the parties' conflicting interests as well as other relevant factors"); *Certain Erasable Programmable Read-Only Memories, Components Thereof, Prods. Containing such Memories, and Processes for Making Such Memories*, Inv. No. 337-TA-276, USITC Pub. No. 2196 (May 1989) ("EPROMs").

Nokia's requested remedy is unnecessary, will adversely impact Respondents, non-parties, customers, and have no value to Nokia apart from hold-up. The Accused GPU and CPU chips represent a small and minor component of the downstream products. The Accused Products are complex, multi-functional products. The value of Respondents' products is significantly higher than the value of the narrow, accused functionality incorporated into the GPU and/or CPU chips incorporated therein. The cost of the GPU and CPU chips is low. Respondents' Accused Products, in contrast, cost significantly more. *See Certain EPROM, EEPROM, Flash Memory, and Flash Microcontroller Semiconductor Devices and Prods. Containing Same*, Inv. No. 337-TA-395, Comm'n Op. at 82 (Dec. 11, 2000) (value of flash memory chips was "quite small" compared to the $200 downstream computer motherboards). The functionality, associated services, value, and importance of any implicated downstream products also far exceeds the accused value, functionality, and importance of the accused functionality on the GPUs and/or CPUs and is unrelated to the allegedly infringing components and alleged infringement. The accused functionality is largely alleged to reside in the chip functionality and software that Amazon and HP do not control as to all non-camera products. There is no value to Nokia of the downstream

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exclusion it seeks. Nokia has not demonstrated a domestic industry in the Asserted Patents, let alone any U.S. operations relating to the Asserted Patents that compete with Respondents. Nokia does not manufacture downstream products such as tablets, TVs, smart speakers with screens, security cameras, or personal computers. Nokia does not compete with Respondents. Nokia does not offer any products, including the Domestic Industry Products, competing with any of the Respondents' Accused Products.

The exclusion of downstream products would impose significant burden to both Respondents and third parties. The broad downstream relief sought by Nokia in this Investigation will adversely affect Respondents, their employees, and their customers. It will also impede on Respondents' ability to continue to create innovative consumer products.

As detailed above in the context of the public interest—and also relevant in consideration of the scope of remedy—Respondents make substantial contributions to the U.S. economy.

5. Delayed Implementation

Any remedy should be delayed to (1) permit a determination of an appropriate RAND rate by a court of competent jurisdiction; (2) permit appeal of any finding of unpatentability by the Patent Trial and Appeal Board (PTAB); and/or (3) permit Respondents an opportunity to develop alternative, non-infringing products.

Any remedy, should one issue, should be delayed and/or suspended until a RAND rate is determined by a court of competent jurisdiction. Nokia has filed numerous infringement actions against both Amazon and HP in many different jurisdictions, and Amazon and HP have requested RAND rates be determined in the U.K. High Court of Justice and Delaware, respectively. Amazon and HP have each committed to be bound by the determinations made by these courts, and to take a license to Nokia's portfolio—including the two patents asserted here—at whatever rates are determined to be RAND. RX-1699 (Amazon May 17, 2024 Letter) [redacted]

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[redacted] Amazon and HP should not be required to pay supra-RAND rates or face the exclusion of their products. The Commission routinely suspends exclusionary relief when the Patent Trial & Appeal Board has issued a Final Determination of unpatentability of claims pending before the Commission, as the public does not have an interest in the enforcement of exclusionary relief relating to invalid claims. Here too, enforcement of exclusionary relief based on RAND-committed standard essential patents where the Respondents have made unqualified commitments to take a license at rates determined by a neutral arbiter is inconsistent with the RAND commitments made by Nokia,[67] the scope of the requested relief, and, as described above, harms the public interest considerations of competitive conditions, U.S. consumers, and the public welfare.

Additionally, any remedy should be delayed and/or suspended until any findings of unpatentability by the PTAB are through final appeal. The Commission suspends exclusionary relief when the PTAB has issued a Final Determination of unpatentability of claims pending before the Commission. *Certain Unmanned Aerial Vehicles and Components Thereof*, Inv. No. 337-TA-1133, Comm'n Op. (Sept. 8, 2020); *Certain Magnetic Tape* Cartridges, Inv. No. 337-TA-1058 (April 9, 2019). The '134 Patent is subject to a petition for inter partes review (IPR) and the '808 Patent is subject to two IPR petitions. Should those petitions result in institution and/or a finding of unpatentability, the Commission should delay any remedy on the relevant patent until such decisions are through final appeal.

[67] Section VI.A above describes that Respondents' experts will demonstrate that awarding injunctive relief in the absence of an adjudicated RAND rate will, as a matter of economics, overcompensate SEP holders and be contrary to a patent holder's RAND commitments.

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Given that the accused functionality relates to the GPUs and/or CPUs incorporated within Respondents' products, and the high value of Respondents' products as compared to the small value of the GPUs and/or CPUs, any remedy should be delayed to allow Respondents to coordinate with the GPU and/or CPU vendors and source non-infringing alternative to Respondents' current products, or to replace any relevant GPU/CPUs found to be infringing. By not allowing Respondents time to develop and adjudicate a non-infringing alternative, Nokia will be able to continue to threaten and hold up Respondents for supra-RAND rates with the significant negative consequences of an exclusion order and the possibility of excluding many of Respondents' products based on the functionality of an off-the shelf component.[68]

D. No Bond is Appropriate

The purpose of a bond during Presidential Review is to prevent injury to the Complainant, 19 U.S.C. § 1337(j)(3), and the complainant bears the burden of showing both the necessity for and amount of any bond. Nokia has not provided evidence that Respondents' sale of Accused Products during the presidential review period ("PRP") would affect Nokia's ability to compete. *See Certain Magnetic Tape Cartridges and Components Thereof*, Inv. No. 337-TA-1058, Comm'n Op., 2019 WL 2635509 at *45 (Apr. 9, 2019) (no bond during PRP where complainant failed to show bond was warranted). Nokia fails to meet its burden of establishing that a bond is necessary during the PRP.

Nokia is not entitled to a 100 percent bond. Nokia does not directly compete with Respondents and Nokia "presents no evidence of a competing product that needs protection from injury during the [PRP]." *Wireless Commc'n Devices*, Inv. No. 337-TA-794, Comm'n Op. at 118-

[68] HP has introduced redesigns in this Investigation, but they have not yet been adjudicated as non-infringing.

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[redacted]

119. For these reasons, the bond rate should be set at zero, or no more than a reasonable royalty (*i.e.* a RAND rate).

Nokia also contends, in a conclusory fashion, that "[t]o the extent the ALJ believes a reasonable royalty is determinable based on the record, Nokia contends that for the standard-essential claims of the Asserted Patents, [redacted]." RX-1958C.0195. But Nokia omits that it also [redacted]. Additionally, [redacted]. Additionally, [redacted]. Moreover, [redacted].

IX. CONCLUSION

For the reasons stated above, the ALJ should find no violation of Section 337 in this Investigation and should recommend no remedy issue in view of the public interest concerns.

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[redacted]

Dated: June 28, 2024 Respectfully submitted,

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Nokia Exhibit 2008, p. 376
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CERTIFICATE OF SERVICE

I hereby certify that a copy of **RESPONDENTS' JOINT PRE-HEARING BRIEF** have been served on June 28, 2024, as indicated, on the following:

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