

**UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

**Before The Honorable Monica Bhattacharyya
Administrative Law Judge**

In the Matter of

**CERTAIN ELECTRONIC COMPUTING
DEVICES, AND COMPONENTS AND
MODULES THEREOF**

Investigation No. 337-TA-1387

COMPLAINANT'S OPENING CLAIM CONSTRUCTION BRIEF

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CXM-0001	U.S. Patent No. 10,708,618
CXM-0002	Prosecution History for U.S. Patent No. 10,708,618
CXM-0003	U.S. Patent No. 9,641,841
CXM-0004	Prosecution History for U.S. Patent No. 9,641,841
CXM-0005	U.S. Patent No. 10,142,659
CXM-0006	Prosecution History for U.S. Patent No. 10,142,659
CXM-0007	Declaration of Zixiang Xiong Regarding Claim Construction for U.S. Patent Nos. 9,641,841 and 10,708,618, dated April 22, 2024
CXM-0008	Rebuttal Declaration of Zixiang Xiong Regarding Claim Construction for U.S. Patent Nos. 9,641,841 and 10,708,618, dated May 9, 2024
CXM-0009	U.S. Pub. No. 2019/0297346

TABLE OF ABBREVIATIONS

Abbreviation	Description
“the ’841 Patent”	U.S. Patent No. 9,641,841
“the ’659 Patent”	U.S. Patent No. 10,142,659
“the ’618 Patent”	U.S. Patent No. 10,708,618
“the ’613 Patent”	U.S. Patent No. 10,708,613
“Complainant” or “Ericsson”	Complainant Telefonaktiebolaget LM Ericsson
“Respondents” or “Lenovo”	Respondents Lenovo (United States) Inc.; Lenovo (Shanghai) Electronics Technology Co., Ltd.; Lenovo Beijing Co. Limited; Lenovo PC HK Limited; Lenovo Information Products (Shenzhen) Co., Ltd.; and Lenovo Group Limited
“POSITA”	Person of Ordinary Skill in the Art
“Xiong Op. Dec.”	Declaration of Zixiang Xiong Regarding Claim Construction for U.S. Patent Nos. 9,641,841 and 10,708,618, dated April 22, 2024
“Xiong Reb. Dec.”	Rebuttal Declaration of Zixiang Xiong Regarding Claim Construction for U.S. Patent Nos. 9,641,841 and 10,708,618, dated May 9, 2024
“Hemami Dec.”	Declaration of Dr. Sheila S. Hemami Regarding Claim Construction, dated April 22, 2024

I. INTRODUCTION

The claim construction disputes in this Investigation relate to three of the Asserted Patents: the '618 Patent, the '841 Patent, and the '659 Patent.¹

As to the '618 Patent, the primary question is whether the term “circuit [configured to]” requires an affirmative construction that excludes processors and limits the scope of the term to hardware-only circuits. Each of the preferred embodiments in the '618 Patent describes the invention being implemented using a processor. Lenovo cannot point to any disclaimer or disavowal and thus has no basis for a narrow interpretation of “circuit” that excludes processors. Therefore, its proposed construction should be rejected.

For the '841 Patent, there are two disputed limitations: the determining terms and the calculating terms. For both, Lenovo again attempts to narrowly construe the claims to read out preferred embodiments. For example, Lenovo attempts to interpret the two claimed determinations as requiring the use of pixels that do not have a mathematical relationship. The intrinsic record provides no support for such a narrow interpretation. Instead, the plain language of the claims and the intrinsic record simply requires two *separate* determinations. The specification acknowledges that there are situations, such as when motion prediction is used, where pixels in different blocks would have a mathematical relationship. Thus, Lenovo’s limiting construction again is contrary to the intrinsic record. Second, Lenovo seeks to invalidate claims 2 and 6 of the '841 Patent as improper dependent claims. Lenovo’s argument is premised on an interpretation of the calculating steps in claims 1 and 5 that requires those claims to use *one and only one* line of pixels in the

¹ There are four Asserted Patents in the present Investigation, U.S. Patent Nos. 9,641,841 (“the '841 Patent”), 10,142,659 (“the '659 Patent”), 10,708,618 (“the '618 Patent”), and 10,708,613 (“the '613 Patent”). Only terms of the '618, '841, and '659 Patents are disputed. An overview of those patents is provided in the subsequent sections.

relevant calculations. The '841 Patent, however, discloses several embodiments that use multiple lines of pixels, including an embodiment that mirrors the requirements of claims 2 and 6. Lenovo's attempt to narrowly read claims 1 and 5 to exclude those embodiments should be rejected, and claims 2 and 6 should be found to be definite.

Finally, as to the '659 Patent, the primary dispute is whether the entire preamble is limiting. Lenovo's proposed construction that only part of the preamble is limiting is contrary to tenets of claim construction law and the plain and ordinary meaning of the claims.

Accordingly, for the reasons described herein, Ericsson respectfully requests that the ALJ adopt Ericsson's proposed constructions.

II. CLAIM CONSTRUCTION LAW

Mindful that the ALJ is familiar with the tenets of claim construction, Ericsson offers a brief synopsis of the relevant law.

1. Construing Claim Terms Based on Intrinsic and Extrinsic Evidence

Claim terms are afforded their ordinary and customary meaning within the context of the entire patent in which the terms are used, *i.e.*, the meaning that the term would have to a person of ordinary skill in the art at the time of the invention. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc) (internal citation omitted). “There are only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution.” *Thorner v. Sony Comp. Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (citing *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1580 (Fed. Cir. 1996)). The claim language and the context in which a term is used in the patent specification are intrinsic evidence. *Id.* at 1312, 1315. Extrinsic evidence, including expert testimony, dictionaries, and treatises, for example, may also inform claim construction. *Phillips*, 415 F.3d at 1318.

2. Indefiniteness

A claim is indefinite only when “an accused infringer shows by clear and convincing evidence that a skilled artisan could not discern the boundaries of the claim based on the claim language, the specification, and the prosecution history, as well as her knowledge of the relevant art area.” *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1249–50 (Fed. Cir. 2008); *HZNP Meds. LLC v. Actavis Labs. UT, Inc.*, 940 F.3d 680 (Fed. Cir. 2019).

III. LEVEL OF ORDINARY SKILL IN THE ART

In the context of the Asserted Patents, a person of ordinary skill in the art would have had at least a bachelor’s degree in electrical engineering, computer engineering, or a related field, with about two years of experience in video decoding or encoding technologies. CXM-0007 (Xiong Op. Dec.) ¶ 29. More work or practical experience may qualify one not having the requisite education as a person with ordinary skill in the art while a higher level of education could offset less experience. *Id.* While the parties dispute the correct definition, regardless of which definition is adopted, Ericsson’s proposed constructions remain the same.

IV. AGREED CONSTRUCTIONS

Term	Claim(s)	Agreed Construction
“configured to” <i>Proposed by: Respondents</i>	’618 Patent, Claims 8, 12, 14, 15 ’613 Patent, Claims 1-3 ’841 Patent, Claims 5-13 ’659 Patent, Claims 10-16	Plain and ordinary meaning, which requires more than mere capability
“A decoder configured to decode an encoded representation of a picture in a video stream of multiple	’618 Patent, Claims 8, 12	Preamble is limiting, plain and ordinary meaning

Term	Claim(s)	Agreed Construction
pictures, the decoder comprising” <i>Proposed by: Complainant</i>		
“A decoder for managing reference pictures to be used for decoding an encoded representation of a picture of a video sequence, the decoder configured to:” <i>Proposed by: Complainant</i>	’613 Patent, Claim 1	Preamble is limiting
“A non-transitory computer-readable medium comprising, stored thereupon, a computer program for filtering control of a block of multiple pixels in a video frame, each pixel having a respective pixel value, said computer program comprising code means which when run on a computer causes the computer to:” <i>Proposed by: Respondents</i>	’841 Patent, Claim 16	Preamble is limiting
“calculating a second offset to be based on $(p_2 + p_0 = 2x_{pl} + 2x_{\Delta})/4$ ” <i>Proposed by: Complainant</i>	’659 Patent, Claim 4	“calculating a second offset to be based on $(p_2 + p_0 - 2x_{pl} + 2x_{\Delta})/4$ ”

V. DISPUTED TERMS

A. The ’618 Patent

1. Background

The ’618 Patent generally describes “efficient reference picture signaling and buffer management in connection with video encoding and decoding.” CXM-0001 (’618 Patent), 3:20-22. For purposes of claim construction, the details of the reference picture signaling and buffer

management are not directly at issue. Instead, the focus is whether the claims cover a decoder that can be implemented using a processor and/or software or are limited to implementations using hardware-only circuits. As will be described in more detail below, the preferred embodiments are directed to implementing a decoder using a processor and software. For example, Figure 22 illustrated below shows a decoder that includes a processor 630 and memory 640.

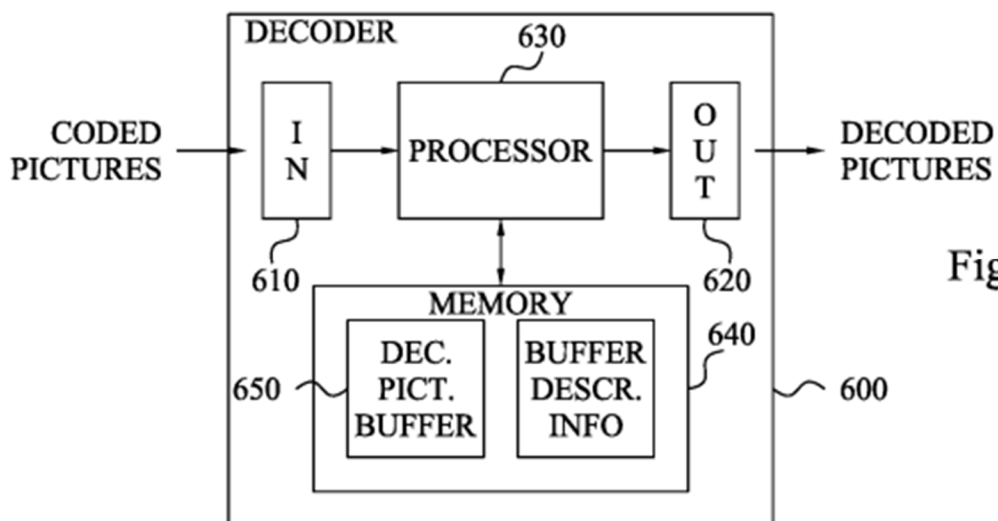


Fig. 22

CXM-0001 ('618 Patent), Fig. 22; *see also* CXM-0007 (Xiong Op. Dec.) ¶ 83. The memory 640 includes a decoded picture buffer and buffer description information that are used by the processor 630 to decode coded pictures.

The disputed term “circuit” is found in independent Claims 12 and 14. Exemplary Claim 12 is reproduced below, and the circuit terms are emphasized:

12. A decoder configured to decode an encoded representation of a picture in a video stream of multiple pictures, the decoder comprising:

a data retriever **circuit** configured to retrieve buffer description information defining a plurality of reference pictures, wherein the buffer description information is retrieved from the encoded representation of the picture;

a picture identifier determiner **circuit** configured to:

determine, based on the buffer description information, a reference picture identifier that identifies a respective reference picture among the plurality of reference pictures, the respective reference picture comprising a decoding reference for the picture;

determine whether the reference picture identified by the reference picture identifier is one of missing or non-existing;

responsive to determining the reference picture identified by the reference picture identifier is one of missing or non-existing, generate a non-existing picture with parameters set to parameters of the reference picture identified by the reference picture identifier; and

a buffer manager **circuit** configured to update a decoded picture buffer based on the reference picture identifier.

CXM-0001 ('618 Patent), Claim 12 (emphasis added).² Each of the “circuit” components (data retriever circuit, picture identifier determiner circuit, and buffer manager circuit) are part of the “decoder” of claim 12.³

For the reason stated below, it would be improper to exclude processors from the types of circuits covered by the claims.

2. “Circuit [configured to]”

No.	Term	Claim(s)	Complainant's Proposed Construction	Respondent's Proposed Construction
1	“circuit [configured to]” <i>Proposed by: Respondents</i>	'618 Patent Claims 12-16	Plain and ordinary meaning, <i>i.e.</i> “arrangement of electrical components [configured to].”	“arrangement of electrical components implemented in hardware, and not effectuated by a processor, [configured to].”

² Claim 14 similarly claims a receiver that comprises, *inter alia*, an input section circuit, a decoder circuit, and an output section circuit where the decoder circuit comprises a data retriever circuit picture identifier determiner circuit, and a buffer manager circuit.

³ The parties have agreed that the entirety of the preamble of claim 12 is limiting.

The parties agree that the term “circuit” is an “arrangement of electrical components” but dispute whether Lenovo’s proposed restrictions of “implemented in hardware, and not effectuated by a processor” should be imported into the claims. A POSITA would have understood that “circuit” is a well-understood term in the art that refers generally to an arrangement of electrical components. CXM-0007 (Xiong Op. Dec.) ¶ 81. A POSITA would have further understood that “[p]rocessors are a well-known type of circuit.” *Id.* There is no evidence of any disclaimer, disavowal, or lexicography to support Respondents proposal of a negative limitation that the circuit cannot include or be a “processor.” *See* CXM-0007 (Xiong Op. Dec.) ¶¶ 81-85.

a. The intrinsic record expressly acknowledges that the invention can be implemented using a processor

As described above, claims 12 and 14 respectively claim a “decoder” and a “decoder circuit” that include several circuits, including data retriever circuit, picture identifier determiner circuit, and buffer manager circuit. The specification expressly discloses that the decoder and its circuits can be implemented using a processor. Lenovo’s proposed construction improperly reads these embodiments out of Claims 12-16 and thus should be rejected. *See, e.g., EPOS Techs. Ltd. v. Pegasus Techs. Ltd.*, 766 F.3d 1338, 1347 (Fed. Cir. 2014) (“A claim construction that excludes a preferred embodiment is rarely, if ever correct and would require highly persuasive evidentiary support.”) (cleaned up); *Carucel Invs. L.P. v. Vidal*, 2023 U.S. App. LEXIS 34137, at *17 (Fed. Cir. Dec. 26, 2023) (“Carucel’s narrowed construction, thus, would improperly read embodiments relating to pedestrian traffic out of the scope of the claims.”).

The following illustrates that each of the embodiments disclosed in the ’618 Patent describe a decoder and its circuit as being implemented using a processor. For example, the specification explicitly states that the “decoder” can be implemented using a processor executing software in several embodiments.

Another related aspect of the embodiments defines a **decoder** comprising an input section configured to receive encoded representations of multiple pictures of a video stream. **The decoder also comprises a processor configured to process code means of a computer program stored in a memory.** The code means causes, when run on the processor, the **processor to retrieve buffer description information** defining at least one reference picture from an encoded representation of a picture. The **processor is also caused to determine**, based on the buffer description information, at least one picture identifier identifying a respective reference picture of the at least one reference picture as decoding reference for the picture. The code means further causes the **processor to update a decoded picture buffer** based on the at least one picture identifier.

CXM-0001 ('618 Patent), 3:49-63 (emphasis added); *see also* CXM-0007 (Xiong Op. Dec.) ¶ 83.

This is illustrated in Fig. 22, shown in the prior section, which shows a decoder that includes “processor” executing software. CXM-0001 ('618 Patent), Fig. 22; *see also* CXM-0007 (Xiong Op. Dec.) ¶ 83. The '618 Patent also states that a processor, like the processor in Figure 22, can be used to execute software to implement the data retriever circuit, picture identifier determiner circuit, and buffer manager circuit.

The **decoder** could be implemented **at least partly in software**. In such an embodiment as shown in FIG. 22, the decoder 600 comprises an input section 610 configured to receive encoded representations of multiple pictures of a video stream. **The decoder 600 also comprises a processor 630 configured to process code means of a computer program stored in a memory 640.** The code means causes, when run on the processor 630, **the processor 630 to retrieve buffer description information** defining at least one reference picture from an encoded representation of a picture. The code means also **causes the processor 630 to determine at least one picture identifier** identifying a respective reference picture from the buffer description information. The respective reference picture is to be used as decoding reference for the picture. **The processor 630 is further caused to update a decoded picture buffer 650** based on the at least one picture identifier. The decoder 600 also comprises an output section 620 configured to output the decoded pictures of the video stream.

CXM-0001 ('618 Patent), 28:25-43. The '618 Patent adds that the “processor 630” is not limited to a particular type of processor insofar as it “could be a general purpose or specially adapted computer, processor or microprocessor, such as a central processing unit (CPU).” *Id.* at 28:44-46;

see also CXM-0007 (Xiong Op. Dec.) ¶ 84. Thus, the specification acknowledges that the claimed circuits could be and likely would be a processor.

The specification also explains that the decoder is not limited to *hardware* as the “software includes computer program code elements or software code portions effectuating the operation of at least data retriever 410, the picture identifier determiner 420 and the buffer manager 430 of FIG. 21.” CXM-0001 (’618 Patent), 28:46-50. The specification teaches that this “**software** may thus be loaded into the operating memory of a computer or equivalent processing system for execution by a **processor**.” *Id.* at 28:58-60 (emphasis added). The ’618 Patent also discloses that “numerous variants of circuitry elements that can be used and combined to achieve the functions of the units 410-480 of the decoder 400,” including processors (“digital signal processor (DSP)”) and “general-purpose” integrated circuit technology, which is simply another name for a processor. *Id.* at 28:67-29:7; CXM-0007 (Xiong Op. Dec.) ¶ 85.

Thus, Lenovo’s proposed construction *reads out each embodiment disclosed in the ’618 Patent specification* from claims 12-16. This absurd result should be summarily rejected. *See, e.g., Kaneka Corp. v. Xiamen Kingdomway Grp. Co.*, 790 F.3d 1298, 1304 (Fed. Cir. 2015) (holding that “[a] claim construction that excludes a preferred embodiment is rarely, if ever, correct,” and “[a] construction that excludes *all* disclosed embodiments . . . is especially disfavored”) (internal quotations omitted) (emphasis in original).

b. Ericsson did not disavow a processor during prosecution

Given that the claim language and specification clearly do not exclude a processor, Lenovo attempts to argue that the Applicant disavowed use of a processor during prosecution. The prosecution, however, does not include the type of “clear and unmistakable surrender of subject matter” required for disavowal. *Ecolab, Inc. v. FMC Corp.*, 569 F.3d 1335, 1342 (Fed. Cir. 2009); *see also, e.g., Aventis Pharma S.A. v. Hospira, Inc.*, 675 F.3d 1324, 1331 (Fed. Cir. 2012) (“The

prosecution history can offer insight into the meaning of a particular claim term, but the claim language and the specification generally carry greater weight.”) (cleaned up).

Lenovo relies on statements made in a February 11, 2020 Amendment in a response to a rejection that certain claim terms were not definite to support its argument (Hemami Dec., ¶¶ 81-82), but the Amendment includes statements by the Applicant that link the implementation of the data retriever circuit, picture identifier determiner circuit, and buffer manager circuit to the use of a processor. For example, the Applicant stated that “Paragraph [0187]-[0207] of the application as published describe how the ‘data retriever,’ the ‘picture identifier determiner,’ the ‘buffer manger,’ and the ‘input section’ work and paragraphs [0207]-[0210] of the application as published describe how these components are implemented.” CXM-0002.0053 (’618 File History), Feb. 11, 2020, Office Action Resp. at 12.

Paragraphs [0207]-[0210] describe how to implement these components using a processor, memory, and software. *See, e.g.*, CXM-0009 (U.S. Pub. No. 2019/0297346) ¶ [0208] (describing implementation of the decoder using “a processor 630 configured to process code means of a computer program stored in a memory 640”); ¶ [0209] (“The processor 630 could be a general purpose or specially adapted computer, processor or microprocessor, such as a central processing unit (CPU)”); ¶ [0210] (“The software may thus be loaded into the operating memory of a computer or equivalent processing system for execution by a processor.”). For example, Paragraph ¶ [0209] states:

[0209] The processor 630 could be a general purpose or specially adapted computer, processor or microprocessor, such as a central processing unit (CPU). *The software includes computer program code elements or software code portions effectuating the operation of at least data retriever 410, the picture identifier determiner 420 and the buffer manager 430 of FIG. 21.*

Id. at ¶¶ [0207]-[0210] (emphasis added).

Because the only description identified by the Applicant for how these components could be implemented uses a processor, it is illogical to suggest that the Applicant clearly and unmistakably disclaimed the use of a processor.

Ericsson expects that Lenovo's argument will point to the fact that claims 8-11 expressly claim a processor whereas claims 12-16 claim different types of circuits. The difference in claim scope does not indicate that claims 12-16 exclude a processor. Instead, claims 12-16 are broadly directed to the use of any type of circuit, which could include a processor, whereas claims 8-11 are directed only to implementations that use a processor. This is consistent with the specification that discloses that a circuit can be a processor but could include other type of circuitry. CXM-0007 (Xiong Op. Dec.) ¶ 82 ("Processors are a well-known type of circuit, which are commonly referred to as an integrated circuit or 'IC.'"); CXM-0001 ('618 Patent), 29:6-7 ("integrated circuit technology, including both general-purpose electronic circuitry and application-specific circuitry."). Indeed, the '618 Patent even identifies a digital signal *processor* as one of the "numerous variants of circuitry elements." CXM-0001 ('618 Patent), 29:3-5; *see also* CXM-0007 (Xiong Op. Dec.) ¶ 85.

In sum, not only does the '618 Patent specification expressly disclose that decoder circuits can be implemented using a processor that implements software instructions, but the prosecution history explicitly points that out. The statements responding to the rejection related to indefiniteness thus do not give rise to "clear and unmistakable" disavowal of claim scope. *Cont'l Circuits LLC v. Intel Corp.*, 915 F.3d 788, 798-99 (Fed. Cir. 2019) ("[C]learly describing a particular claim term to overcome an indefiniteness or written description rejection is not the same as clearly disavowing claim scope."). The claim term "circuit" should therefore not be limited to only hardware excluding the use of a processor as proposed by Respondents.

B. The '841 Patent

1. Background

The '841 Patent is directed to improved filtering control for deblocking filtering over block boundaries in a video frame. As background, the '841 Patent illustrates two neighboring pixel blocks in Figure 2A:

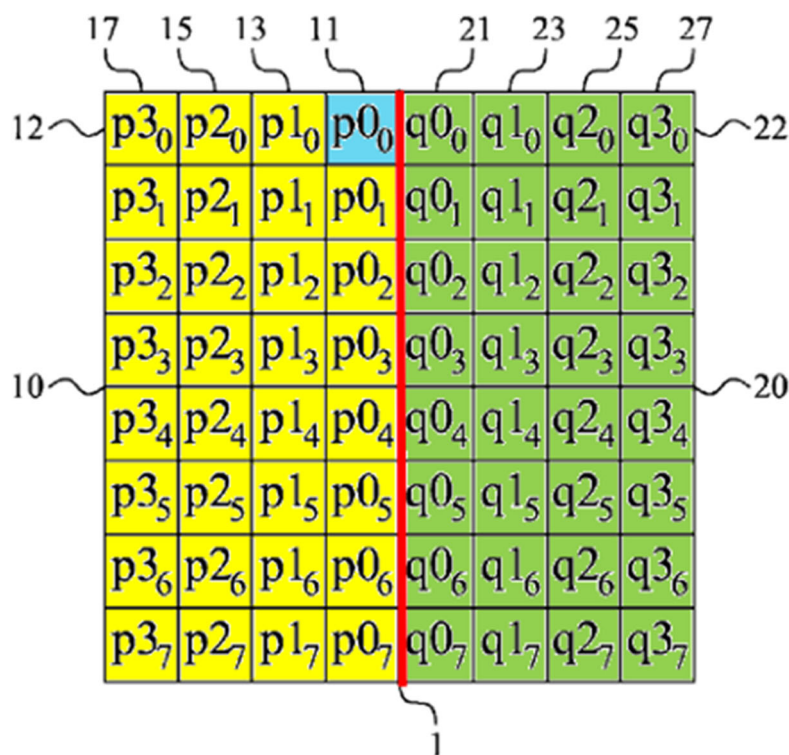


Fig. 2A

Here, there are two blocks of pixels (block 10 and block 20), and the blocks are separated by a block boundary which is annotated in red. Block 10 is the block of pixels being decoded and includes 28 pixels, each of which is labelled “p” and annotated in yellow. Block 20 is the neighboring block of pixels and also includes 28 pixels, each of which is labelled “q” and annotated in green. Each pixel in this diagram is identified by the syntax “ p_{ji} ” or “ q_{ji} .” The “i” refers to the line of the pixel or row of the pixel from top to bottom, and “j” represents the column in which the

pixel appears relative to the block boundary (with column 0 being closest to the block boundary and 3 being furthest away).” Hemami Dec., ¶ 36. For example, the syntax “p0_i” refers to the pixel in column 0 (closest to the boundary) in row 0 (or the first row), which is highlighted in blue in Figure 2A above.

The ’841 Patent is directed to an improved filtering control for deblocking filtering over block boundaries (e.g. the red line above). Specifically, the ’841 Patent describes improved deblocking filtering that allows for asymmetric deblocking decisions that control deblocking filtering to be adaptive to the structure on each side of a block boundary. CXM-0003 (’841 Patent), 4:62-5:2.

Claim 1 is an example claim that highlights the improved deblocking filtering of the ’841 Patent:

A method for filtering control applicable to a block of multiple pixels in a video frame, each pixel having a respective pixel value, said method comprising:

calculating *a first filter decision* value for said block, by only using pixels p2_i, p1_i and p0_i, based on:

$$|p2_i - 2p1_i + p0_i|$$

wherein p0_i denotes a pixel value of a pixel closest to, in a first line of pixels in said block, a block boundary to a neighboring block of multiple pixels in said video frame, p1_i denotes a pixel value of a pixel next closest to, in said first line of pixels, said block boundary and p2_i denotes a pixel value of a pixel second next closest to, in said first line of pixels, said block boundary;

calculating *a second filter decision* value for said neighboring block, by only using pixels q2_i, q1_i and q0_i, based on:

$$|q2_i - 2q1_i + q0_i|$$

wherein q0_i denotes a pixel value of a pixel in said neighboring block closest to, in a corresponding first line of pixels in said neighboring block, said block boundary, q1_i denotes a pixel value of a pixel of said neighboring block next closest to, in said corresponding first line of pixels, said block boundary and

q_{2i} denotes a pixel value of a pixel in said neighboring block second next closest to, in said corresponding first line of pixels, said block boundary;

determining how many pixels in said first line of pixels in said block to filter relative to said block boundary *based on a comparison of said first filter decision value to a first threshold value*; and

determining how many pixels in said corresponding first line of pixels in said neighboring block to filter relative to said block boundary *based on a comparison of said second filter decision value to a second threshold value*.

CXM-0003 ('841 Patent), cl. 1 (emphasis added). As shown here, the claim requires calculating a “first filter decision value” and a “second filter decision value.” The first filter decision value is calculated using pixels p_{2i} , p_{1i} and p_{0i} of the block being decoded, and the second filter decision value is calculated using pixels q_{2i} , q_{1i} and q_{0i} of the neighboring block. Importantly, the claim then requires two separate determining steps. The first determination step determines how many pixels to filter in the block being decoded (*i.e.* “said block”) using the first filter decision value. The second determination step determines how many pixels to filter in the neighboring block using the second filter decision value. The claim thus expressly requires separate filtering decisions to be made for each block. This enables the asymmetric filtering described above.

2. The “determining” terms

No.	Term	Claim(s)	Complainant's Proposed Construction	Respondent's Proposed Construction
2	determin[ing] how many pixels in [a/said] first line of pixels in said block to fil[t]er relative to said block boundary based on [a comparison of] said first filter decision value to a first threshold value <i>Proposed by: Respondents</i>	'841 Patent Claims 1, 5, 16	Plain and ordinary meaning	“determin[ing] how many pixels in [a/said] first line of pixels in said block to fil[t]er relative to said block boundary based on [a comparison of] said first filter decision value [to a first threshold value], wherein determining how many pixels in said first line of pixels in said block has no mathematical basis (no relationship with) the

No.	Term	Claim(s)	Complainant's Proposed Construction	Respondent's Proposed Construction
				pixel values of pixels in said neighboring block . . .”
3	determin[ing] how many pixels in [a/said] corresponding first line of pixels in said neighboring block to filter relative to said block boundary based on [a comparison of] said second filter decision value to a second threshold value <i>Proposed by: Respondents</i>	'841 Patent Claims 1, 5, 16	Plain and ordinary meaning	“determin[ing] how many pixels in said corresponding first line of pixels in said neighboring block to filter relative to said block boundary based on [a comparison of] said second filter decision value [to a second threshold value], wherein determining how many pixels in said corresponding first line of pixels in said neighboring block has no mathematical basis (no relationship with) the pixel values of pixels in said block”

The two determining steps are entitled to their plain and ordinary meaning. As described above, the claim language itself dictates that there are two separate determining steps that occur independently from one another. Lenovo ignores the express requirements of the claims and instead attempts to insert negative limitations into the determining steps: “wherein determining how many pixels in said [corresponding] first line of pixels in said [neighboring] block has no mathematical basis in (no relationship with) the pixel values of pixels in said [neighboring] block.” Ericsson anticipates that the cornerstone of Lenovo’s argument will be a mischaracterization of a single statement the Examiner made during the prosecution history. As a preliminary matter, the Examiner’s statement does not give rise to clear and unmistakable disavowal. Regardless, Lenovo’s interpretation is contrary to the arguments made by the Applicant and would result in a

construction that is entirely inconsistent with how the '841 Patent describes the decoding process. Lenovo's attempt at a "gotcha" claim construction should be rejected.

Here, there is no reason to depart from the plain and ordinary meaning of the determining steps. The claim language, specification, and prosecution history support that the claims should be construed according to the plain and ordinary meaning and are not subject to any disavowal.

a. A POSITA would understand the plain language of the claims without construction

As described above, there are two separate determinations in the independent claims. CXM-0003 ('841 Patent), cl. 1, 5, 16; CXM-0008 (Xiong Reb. Dec.) ¶¶ 24-27. Each determining step involves independently determining the number of pixels on a side of a block boundary, thus allowing for asymmetric filtering. *Id.* The independence of the two determinations stems from the fact that each determination uses a separate filter decision value. For example, one determination is based on the first filter decision value, which is calculated using pixels p_{2i} , p_{1i} and p_{0i} of the block being decoded. The second determination is based on the second filter decision value, which is calculated using pixels q_{2i} , q_{1i} and q_{0i} of the neighboring block. Because one determination is effectively based on pixels in the block being decoded (i.e. "p" pixels) and the other determination is based on pixels in the neighboring block (i.e. "q" pixels), the express language of the claims requires the two determinations be based on different sets of pixels. CXM-0007 (Xiong Op. Dec.) ¶¶ 44-48.

b. Lenovo's proposed negative limitation is contrary to the claims and the preferred embodiment

Although the claims expressly describe that the pixels being used for each determination are different, Lenovo seeks to add the additional requirement that pixel values used in each determination have no mathematical basis or relationship. In other words, Lenovo requires that the process for calculating the "p" and "q" pixels before deblocking filter occurs cannot be performed

such that any “p” and “q” value has a mathematical basis or relationship to each other. This additional requirement is contrary to the preferred embodiment in the claims. *See, e.g., Retractable Techs., Inc. v. Becton*, 653 F.3d 1296, 1305 (Fed. Cir. 2011) (“It is axiomatic that the claim construction process entails more than viewing the claim language in isolation. Claim language must always be read in view of the written description. . . .”). Specifically, the ’841 Patent describes an embodiment where the deblocking filtering that is relevant to the claims is part of a larger decoding process, which likely would cause the “p” and “q” values to have a mathematical relationship prior to the deblocking filtering.

For example, the specification explains the claimed filtering process is part of a larger decoding process:

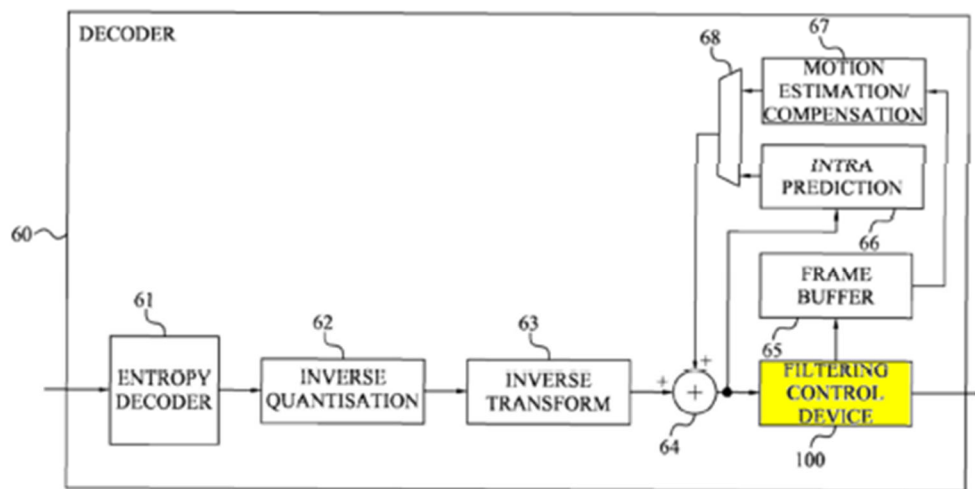


Fig. 14

CXM-0007 (Xiong Op. Dec.) ¶¶ 52-58. As shown in Figure 14, before the filtering control device (which is where the determining steps take place), the ’841 Patent discloses that there can be operations such as entropy decoding, inverse quantization, inverse transform, motion estimation/compensation, and intra prediction. CXM-0007 (Xiong Op. Dec.) ¶ 53; CXM-0003 (’841 Patent), 24:52-25:10. The “p” and “q” pixel values are calculated as part of these operations,

and the '841 patent does not purport to limit how these other operations are performed. CXM-0007 (Xiong Op. Dec.) ¶ 54. In fact, a POSITA would understand that it is likely that those pixel values “were the result of calculations in prior steps that involved using pixel values of neighboring blocks.” CXM-0007 (Xiong Op. Dec.) ¶ 55. After all, using pixel values of neighboring blocks to calculate the pixel values of the current block is “the whole point of using motion compensation and prediction.” *Id.* The specification also acknowledges this likelihood, stating in one embodiment that “[a] current block of pixels is predicted by performing a motion estimation by a motion estimator 50 *from an already provided block of pixels in the same frame or in a previous frame.*” CXM-0003 ('841 Patent), 24:14-17 (emphasis added); *see also* CXM-0007 (Xiong Op. Dec.) ¶ 55.

Because the determining steps use the filter decision values, which derive from pixel values that may derive from neighboring blocks, the determining steps may have a mathematical relationship with a neighboring block. There is nothing in the intrinsic record of the '841 Patent to indicate that the patent intended to limit the types of operations performed before deblocking filtering to calculate the values of pixels.

In addition to explaining that decoders use multiple operations before the determining steps that ultimately effect the “p” and “q” values, the '841 patent also teaches that the “threshold values,” which are used in the claimed determinations, may be based on neighboring blocks. For example, it teaches that in certain embodiments the threshold values can be “based on a quantization parameter associated with the neighboring block 20 and/or a quantization parameter associated with the block 10.” CXM-0003 ('841 Patent), 16:28-32. A POSITA would have understood that the quantization parameter of a block has a mathematical relationship to the pixels in that block. CXM-0007 (Xiong Op. Dec.) ¶ 57. Thus, a POSITA would have understood that the

“threshold values” may have a mathematical relationship to the neighboring block. *Id.* Because the determining steps use the threshold values, the determining steps necessary may have a mathematical relationship with a neighboring block. Thus, Lenovo’s construction would read out what is explicitly described in the specification.

c. The prosecution history does not support Lenovo’s construction

The prosecution history is consistent with the claim language and specification and does not support any claim by Lenovo of prosecution disavowal. *See Biogen Idec, Inc. v. GlaxoSmithKline LLC*, 713 F.3d 1090, 1095 (Fed. Cir. 2013) (explaining that only a “clear and unmistakable disavowal during prosecution overcomes the heavy presumption that claim terms carry their full ordinary and customary meaning”) (additional quotations omitted). Ericsson, however, expects that Lenovo will argue that a statement by the Examiner in a Notice of Allowance supports its argument that the pixels used in the two claimed determinations cannot have any mathematical relationship with pixels in a neighboring block.

Lenovo’s argument is contrary to the prosecution history, which clearly established that the primary distinction over the art argued by the Applicant and accepted by the examiner was that the prior art only disclosed a single determination using pixels from two neighboring blocks whereas the claim required two separate determinations. This distinction is reflected in the plain language of the claims, which require two separate determinations, and thus no further construction is required.

For context, during prosecution, in response to a non-final § 103 rejection in view of Bjontegaard, Ericsson explained that Bjontegaard included a single determination of how many pixels to filter on each side of the block boundary, while the invention of the ’841 Patent comprises two separate determinations, one on each side of the block boundary. CXM-0004.0079 (’841 File History), Applicant Arguments / Remarks Made in an Amendment dated April 20, 2016, at p. 16;

CXM-0008 (Xiong Reb. Declaration) ¶¶ 19-20. The Applicant explained that this distinction allows for asymmetric filtering of pixels on each side of the block boundary in the '841 Patent, as compared to the symmetrical filtering in Bjontegaard. CXM-0004.0083 ('841 File History), Applicant Arguments / Remarks Made in an Amendment dated April 20, 2016, at p. 20 (“This technique has the advantage of *allowing* for asymmetric filtering, an advantage that is not provided by Bjontegaard’s technique.”) (emphasis added); CXM-0008 (Xiong Reb. Declaration) ¶¶ 20-23.

In light of the remarks made by Applicant, the Examiner allowed the claims:

The following is an examiner’s statement of reasons for allowance. Examiner adopts as his reasons for allowance the explanation in the submission filed by Applicant on 4/20/2016. Specifically, Applicant’s argument, that the ***claims cover a separate treatment of the pixels on each side of the block boundary***, so that the decision to filter a determined number of pixels on one side of a block boundary has no mathematical basis in (no relationship with) the pixels on the other side of the block boundary, was persuasive. [The] Bjontegaard [prior art reference] describes filtering equations that consider pixel values on both sides of a block boundary, ***so that the decision regarding how many pixels to filter is tied to the values of pixels on both sides (i.e., no separation in pixel analysis)***.

CXM-0008 (Xiong Reb. Declaration) ¶ 24; CXM-0004.0049 ('841 File History), Notice of Allowance dated December 27, 2016, at p. 2 (emphasis added). As shown in the emphasized statements above, the Examiner recognized that the Applicant’s argument was premised on the separate treatment of pixels instead of a single determination based on pixels on both sides of the block boundary.

Ericsson expects that Lenovo will rely on the statement in the Notice of Allowance that “the decision to filter a determined number of pixels on one side of a block boundary has no mathematical basis in (no relationship with) the pixels on the other side of the block boundary.” See Hemami Dec., at ¶¶ 50-53. Lenovo’s reliance on this statement is misplaced.

First, the Examiner's statements in a Notice of Allowance are not statements made by Ericsson and are insufficient to alter the plain meaning of the claims. *Sorensen v. Int'l Trade Comm'n*, 427 F.3d 1375, 1379 (Fed. Cir. 2005) (citing *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1124 (Fed. Cir. 2004) ("[I]t is the applicant, not the examiner, who must give up or disclaim subject matter that would otherwise fall within the scope of the claims.")). In *Sorenson*, the Federal Circuit found that a "final exchange between the inventor and the examiner during prosecution appear[ed] to have misled the administrative judge." *Id.* at 1381. Lenovo is urging the ALJ to make the same mistake here, i.e., to ignore the claim language, specification, and the rest of Ericsson's statements during prosecution in favor of a single statement made by the Examiner in the final exchange between the patentee and examiner. This single statement is not a clear and unmistakable disavowal by *Ericsson*, and for at least this reason, Lenovo's construction should be rejected.

Second, the Examiner's statement is different from the negative limitation Lenovo seeks to add to the determining steps. The Examiner stated that "*the decision to filter a determined number of pixels on one side of a block boundary has no mathematical basis in (no relationship with) the pixels on the other side of the block boundary.*" CXM-0004.0049 ('841 File History), Notice of Allowance dated December 27, 2016, at p. 2 (emphasis added). Here, the Examiner acknowledges that the claim language already require separate filter decisions to be performed for each side of the boundary and thus allowed the claims without further amendment: "Applicant's argument, that the *claims cover a separate treatment of the pixels on each side of the block boundary . . .*" CXM-0004.0049 ('841 File History), Notice of Allowance dated December 27, 2016, at p. 2 (emphasis added). Thus, Lenovo's attempt to twist the Examiner's statement into a

requirement that the pixel values of the neighboring block can *never* influence the determining steps at all, even indirectly, should be rejected.⁴

There is also no evidence of a clear and unmistakable disavowal based on the Examiner’s statements because the Examiner allowed claim 11. Claim 11 expressly describes determining how many pixels to filter in each block if and only if the “sum of said first filter decision value and said second filter decision value” is below a threshold value. Because the sum of said first and second filter decision values necessarily has a mathematical relationship with pixels from both blocks, these additional limitations undermine Lenovo’s arguments that the Examiner believed that the determinations recited in the independent claims could never be based on pixels in neighboring blocks. Instead, the Examiner’s allowance of claim 11 confirms that the Examiner’s focus was on the separate determinations as argued by the Applicant.

3. The “calculating” terms

No.	Term	Claim(s)	Complainant’s Proposed Construction	Respondent’s Proposed Construction
4	calculat[ing] said first decision value as: p ₂₀ -2p ₁₀ +p ₀₀ + p ₂₃ -2p ₁₃ +p ₀₃ ” <i>Proposed by: Respondents</i>	’841 Patent Claims 2, 6	Not indefinite, plain and ordinary meaning	Indefinite
5	“calculat[ing] said second filter decision value as: q ₂₀ -2q ₁₀ +q ₀₀ + q ₂₃ -q ₁₃ +q ₀₃	’841 Patent Claims 2, 6	Not indefinite, plain and ordinary meaning	Indefinite

⁴ Dr. Hemami also cites statements in a related PCT application. Hemami Dec., ¶ 57. These statements should not be given significant weight. *AIA Eng’g Ltd. v. Magotteaux Int’l S/A*, 657 F.3d 1264, 1279 (Fed. Cir. 2011). It is unclear how these statements support Lenovo’s proposed construction because the statements do not reference the negative limitation that Lenovo attempts to add. Instead, the statements track the plain language of the claims. Hemami Dec., ¶ 57; CXM-0008 (Xiong Reb. Dec.) ¶ 29.

	<i>Proposed by: Respondents</i>			
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The parties dispute whether the “calculating” terms render claims 2 and 6 indefinite. The heart of this dispute is whether a POSITA would have understood claims 2 and 6 to be within the scope of, and further limit the requirements of, claims 1 and 5 from which they respectively depend, or whether claims 2 and 6 are indefinite because they exceed the scope of claims 1 and 5. As set forth in detail below, Claims 2 and 6 are properly within the scope of claims 1 and 5 and are therefore not indefinite. Lenovo’s position conflicts with the plain language of the claims, the intrinsic record of the ’841 Patent, and the understanding of a POSITA, and should therefore be rejected.

a. Claims 2 and 6 are not indefinite because they are within the scope of claims 1 and 5

Claims 2 and 6 are consistent with, and further narrow the limitations of claims 1 and 5, respectively. Claim 1 requires “calculating a first filter decision value for said block, by only using pixels p_{2i} , p_{1i} and p_{0i} , based on: $|p_{2i}-2p_{1i}+p_{0i}|$.” Claim 1 likewise requires “calculating a second filter decision value for said neighboring block, by only using pixels q_{2i} , q_{1i} and q_{0i} , based on: $|q_{2i}-2q_{1i}+q_{0i}|$.” Claim 5 contains similar language. Claims 2 and 6 depend from claims 1 and 5, respectively, and add further narrowing limitations by reciting specific equations for calculating the first and second filter decisions based on specific values of the “i” variable, *i.e.* where “i” equals 0 and 3.

The ordinary role of dependent claims is to add narrowing limitations to the independent claims to which they refer. *See, e.g., Alcon Rsch., Ltd. v. Apotex Inc.*, 687 F.3d 1362, 1367 (Fed. Cir. 2012) (noting that “a dependent claim narrows the claim from which it depends”). The Federal

Circuit has explained that “narrowing does not imply contradiction,” and in fact, “it is the ordinary role of dependent claims to add narrowing limitations to the independent claims to which they refer.” *Maxell, Ltd. v. Amperex Tech. Ltd.*, 2024 U.S. App. LEXIS 5367, at *9-10 (Fed. Cir. Mar. 6, 2024). That is precisely what has occurred here: claims 2 and 6 add narrowing limitation to claims 1 and 5. Thus, Lenovo’s argument regarding indefiniteness should be rejected.

Relevant excerpts of claims 1 and 5 are reproduced below for reference.

Claim 1 (excerpted)	Claim 5 (excerpted)
calculating a first filter decision value for said block, by only using pixels p_{2i}, p_{1i} and p_{0i}, based on: $ p_{2i}-2p_{1i}+p_{0i} $ wherein p_{0i} denotes a pixel value of a pixel closest to, in a first line of pixels in said block, a block boundary to a neighboring block of multiple pixels in said video frame, p_{1i} denotes a pixel value of a pixel next closest to, in said first line of pixels, said block boundary and p_{2i} denotes a pixel value of a pixel second next closest to, in said first line of pixels, said block boundary; calculating a second filter decision value for said neighboring block, by only using pixels q_{2i}, q_{1i} and q_{0i}, based on: $ q_{2i}-2q_{1i}+q_{0i} $ wherein q_{0i} denotes a pixel value of a pixel in said neighboring block closest to, in a corresponding first line of pixels in said neighboring block, said block boundary, q_{1i} denotes a pixel value of a pixel of said neighboring block next closest to, in said corresponding first line of pixels, said block boundary and q_{2i} denotes a pixel value of a pixel in said neighboring block second next closest to,	a first decision value calculator configured to calculate a first filter decision value for a block of multiple pixels in a video frame, by only using pixels p_{2i}, p_{1i} and p_{0i}, based on: $ p_{2i}-2p_{1i}+p_{0i} $ wherein p_{0i} denotes a pixel value of a pixel closest to, in a first line of pixels in said block, a block boundary to a neighboring block of multiple pixels in said video frame, p_{1i} denotes a pixel value of a pixel next closest to, in said first line of pixels, said block boundary and p_{2i} denotes a pixel value of a pixel second next closest to, in said first line of pixels, said block boundary; a second decision value calculator configured to calculate a second filter decision value for a neighboring block, by only using pixels q_{2i}, q_{1i} and q_{0i}, based on: $ q_{2i}-2q_{1i}+q_{0i} $ wherein q_{0i} denotes a pixel value of a pixel in said neighboring block closest to, in a corresponding first line of pixels in said neighboring block, said block boundary, q_{1i} denotes a pixel value of a pixel of said neighboring block next

in said corresponding first line of pixels, said block boundary;	closest to, in said corresponding first line of pixels, said block boundary and q_{2i} denotes a pixel value of a pixel in said neighboring block second next closest to, in said corresponding first line of pixels, said block boundary;
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The use and meaning of the subscript “i” in the claims are critical to understanding their plain meaning. As Dr. Xiong explained at length, a POSITA would have known that a variable with subscript “i” in a mathematical expression indicates that the variable can take on different integer values “i” from a set of values, usually in sequence, such that the expression can be used to calculate different values based on the different values of “i”. CXM-0007 (Xiong Op. Dec.) ¶ 67. This is reinforced when read in the context of the ’841 Patent. For example, as described above, Figure 2A illustrates neighboring blocks of pixels 10 and 20 where block 10 comprises the “p” pixels and block 20 comprises the “q” pixels. CXM-0003 (’841 Patent), 7:21-27, 7:51-61, Fig. 2A.

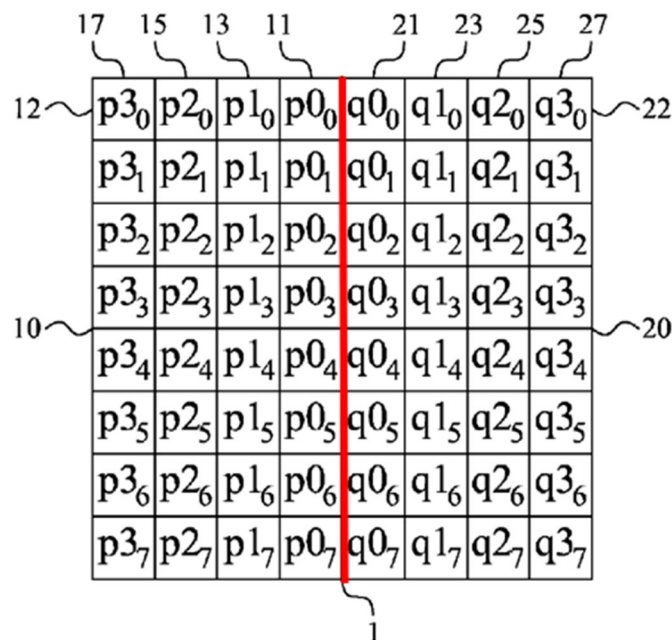


Fig. 2A

A POSITA looking at Figure 2A would understand that it reflects the syntax used in the claims. In particular, the pixels are identified by the syntax “p_j” or “q_j” where j represents the column in which the pixel appears relative to the block boundary (with column 0 being closest to the block boundary annotated in red and column 3 being furthest away). CXM-0008 (Xiong Reb. Dec.) ¶ 49.

Thus, for example, with respect to block 10, a POSITA would understand that the pixel values recited in claims 1 and 5 are as follows: “p₀” refers to any pixels in column 0 (closest to the boundary), “p₁” refers to any pixels in column 1 (next closest to the boundary), and “p₂” refers to any pixels in column 2 (third closest to the boundary). CXM-0008 (Xiong Reb. Dec.) ¶ 49. The same is true for the pixel values in neighboring block 20, “q₀”, “q₁”, and “q₂”. Annotating Figure 2A as an example, claim 1 describes calculating a first filter decision value using the pixels shown in yellow below and a second filter decision value using the pixels highlighted in green below.

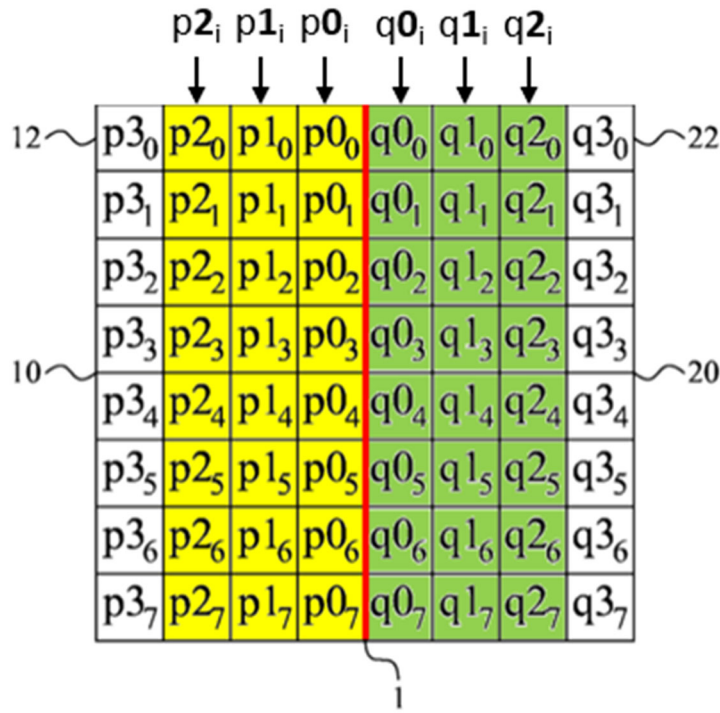


Fig. 2A

Therefore, the use of the subscript “i” in claims 1 and 5 means that the calculation of the first filter decision and second filter decision value indicates that multiple lines or rows of pixels could be used to calculate the filter decision values and would not be limited to a single line of pixels. Instead, a POSITA would understand the limitation of calculating filter decisions by using “only pixels $p2_i$, $p1_i$ and $p0_i$ ” and “only using pixels $q2_i$, $q1_i$ and $q0_i$ ” as recited in claims 1 and 5 to refer to the requirement that filter decision values can be calculated **only** using pixel values contained within the three **columns** closest to either side of the block boundary shown above in red in Figure 2A. CXM-0008 (Xiong Reb. Dec.) ¶ 51. That is why the columns are denoted with numbers (0, 1, and 2), while the rows are denoted with the variable i, which could be any number.

The Federal Circuit has explained that “[i]ndependent and dependent claims must if possible be interpreted to be consistent with each other.” *Power Probe Grp., Inc. v. Innova Elecs., Corp.*, 2022 U.S. App. LEXIS 9717, at *9 (Fed. Cir. 2022). This directive can and should be

followed because the additional limitations provided in claims 2 and 6 fall squarely within the scope of claims 1 and 5 as the claims provide narrowing limitations regarding the values of “i.” Specifically, while claims 1 and 5 allow for any value of “i,” claims 2 and 6 specify that “i” must be 0 and 3. This is reflected in the requirement of claims 2 and 6 to use the equations: (i) $|p_{20}-2p_{10}+p_{00}|+|p_{23}-2p_{13}+p_{03}|$ and (ii) $|q_{20}-2q_{10}+q_{00}|+|q_{23}-q_{13}+q_{03}|$. “[D]ependent claims [in] patents are presumed to be narrower than the independent claims on which they depend,” and that presumption is valid here because claims 2 and 6 add limitations that are within the scope of the independent claims while appropriately narrowing the scope of the independent claims in the dependent claims. *Trs. of Columbia Univ. v. Symantec Corp.*, 811 F.3d 1359, 1370 (Fed. Cir. 2016); *see also Maxell, Ltd.*, 2024 U.S. App. LEXIS 5367 at *10 (finding that where there is no contradiction between the dependent claim and independent claims, there is no indefiniteness problem).

b. Lenovo’s proposed interpretation of Claims 1 and 5 are inconsistent with the plain language of the claims

Lenovo’s indefiniteness argument hinges on an incorrect interpretation of the term “only” in claims 1 and 5. Lenovo’s proposed construction improperly attempts to tie the term “only” in the claims to the “first line of pixels” and the “corresponding first line of pixels.” Under Lenovo’s interpretation of the claims, the “only” requirement means that the calculation of the filter decision values can only be performed by using one and *only one* line of pixels (i.e., one and *only one* value of “i”).

As shown below, “only” is used to clarify that the calculating is performed “by only using pixels p_{2i} , p_{1i} and p_{0i} ”.

Lenovo’s argument is inconsistent with the plain language of the claims:

calculating a first filter decision value for said block, *by only using pixels p_{2i} , p_{1i} and p_{0i}* , based on:

$$|p_{2i}-2p_{1i}+p_{0i}|$$

wherein p_{0i} denotes a pixel value of a pixel closest to, in a first line of pixels in said block, a block boundary to a neighboring block of multiple pixels in said video frame, p_{1i} denotes a pixel value of a pixel next closest to, in said first line of pixels, said block boundary and p_{2i} denotes a pixel value of a pixel second next closest to, in said first line of pixels, said block boundary;

In other words, the “only” restricts the columns on either side of the block boundary (0, 1, and 2).⁵

Lenovo seeks to limit “a first line of pixels” to one and only one line of pixels because claims 2 and 6 require the use of two lines pixels. Specifically, Lenovo will argue that claims 2 and 6, which recite “calculat[ing] said first decision value as: $|p_{20}-2p_{10}+p_{00}|+|p_{23}-2p_{13}+p_{03}|$ ” and “calculat[ing] said second filter decision value as: $|q_{20}-2q_{10}+q_{00}|+|q_{23}-q_{13}+q_{03}|$ ” are beyond the scope of claims 1 and 5 because the first and second filter decision values are calculated using more than one line of pixels.

Lenovo’s proposed interpretation fails to give meaning to the use of the subscript “i” in independent claims 1 and 5. The use of the variable “i” indicates that the calculation of the first filter decision and second filter decision value would not be limited to using one single line of pixels because “i” can take on different values, as set forth in detail above. In addition, Lenovo’s interpretation fails to give meaning to the phrase “based on” in claims 1 and 5. The independent claims require calculating “a first filter decision value for said block, by only using pixels p_{2i} , p_{1i} and p_{0i} , **based on:** $|p_{2i}-2p_{1i}+p_{0i}|$.” CXM-0003 (’841 Patent), cl. 1 (emphasis added). The same

⁵ The terms “columns” and “rows” are used for convenience because the embodiment discussed as an example involves a vertical block boundary. However, the patent is clear that it is *not* limited to just calculating across vertical boundaries, but could also include, for example, calculating across a horizontal boundary. In that case, the terminology would flip.

claim structure exists for the second filter decision value calculation in claims 1 and 5. A POSITA reading the claims as a whole thus would understand that the “based on” language means the calculation steps are not limited to just one instance of the recited expression $|p_{2i}-2p_{1i}+p_{0i}|$ tied to one line of pixels. CXM-0008 (Xiong Reb. Dec.) ¶¶ 53-58. Instead, multiple lines of pixels could be used depending on the values of “i.”

Lenovo’s attempt to re-write the claims to limit the calculation of the filter decision values based on *one and only one* line of pixels ignores the phrase “based on” as well as the use of subscript “i” in the claims.

c. Lenovo’s interpretation of the claims is contrary to the ’841 Patent specification

Lenovo’s interpretation of the claims is also contrary to the ’841 Patent specification because the proposed interpretation of the claims would exclude many of the embodiments discussed in the ’841 Patent specification. “A claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct.” *MB Labs., Inc. v. Becton, Dickinson & Co.*, 474 F.3d 1323, 1333 (Fed. Cir. 2007).

For example, one embodiment calculates a first filter decision value as $|p_{20}-2p_{10}+p_{00}| + |p_{23}-2p_{13}+p_{03}|$ and the second filter decision value as $|q_{20}-2q_{10}+q_{00}| + |q_{23}-2q_{13}+q_{03}|$. CXM-0003 (’841 Patent), 11:61-64. Not only does this embodiment describe the filter decision values being calculated with more than one line of pixels (where $i=0$ and 3), but this embodiment describes the precise expression claimed in claims 2 and 6 that Lenovo argues is outside the scope of claims 1 and 5. Lenovo’s interpretation of the claims would also exclude the disclosure that “the first filter decision value is defined as $d_p = |p_{22}-2p_{12}+p_{02}| + |p_{25}-2p_{15}+p_{05}|$ and the second filter decision value is defined as $d_q = |q_{22}-2q_{12}+q_{02}| + |q_{25}-2q_{15}+q_{05}|$.”

The embodiments described in the '841 Patent specification illustrate that the plain language of the claims does not limit the calculation of the first and second filter decision values to using a single line of pixels, as Lenovo suggests. Instead, the embodiments described in the specification reinforce that the phrases “only pixels p_{2i} , p_{1i} and p_{0i} ” and “only using pixels q_{2i} , q_{1i} and q_{0i} ” refer to the requirement that filter decision values can be calculated **only** using pixel values contained within the three columns closest to either side of the block boundary. Lenovo’s interpretation to the contrary excludes many embodiments explicitly disclosed in the '841 Patent specification, and is therefore unsupported and improper. *See, e.g., Oatey Co. v. IPS Corp.*, 514 F.3d 1271, 1276 (Fed. Cir. 2008) (“We normally do not interpret claim terms in a way that excludes embodiments disclosed in the specification”); *Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1305 (Fed. Cir. 2007) (rejecting proposed claim interpretation that would exclude disclosed examples in the specification); *Invitrogen Corp. v. Biocrest Mfg., L.P.*, 327 F.3d 1364, 1369 (Fed. Cir. 2003) (finding district court’s claim construction erroneously excluded an embodiment described in the specification).

d. Lenovo’s interpretation of the claims is not supported by the File History of the '841 Patent

There is similarly no support in the prosecution history of the '841 Patent for Lenovo’s interpretation of the claims. Ericsson did not disclaim the scope of the claims during prosecution of the '841 Patent and, as a result, Lenovo’s construction should be rejected. *Invitrogen Corp. v. Biocrest Mfg., L.P.*, 327 F.3d 1364, 1369 (Fed. Cir. 2003) (finding district court’s claim construction erroneously excluded an embodiment described in an example in the specification, where the prosecution history showed no such disavowal of claim scope). Specifically, Lenovo cannot point to a single claim amendment that was made to avoid prior art that narrowed the claims to the use of one and only one line of pixels.

Because there is no support for Lenovo’s position in the ’841 Patent prosecution history, Lenovo has indicated that it may point to statements made by Ericsson in prosecutions of foreign applications, such as a PCT application before the European Patent Office (“EPO”). Hemami Dec., ¶¶ 67-69. However, changes to the claims in the PCT Application fail to show any intent to disclaim claim scope in the ’841 Patent. The Federal Circuit regularly cautions against reliance on the prosecution of corresponding foreign applications in the claim construction analysis, as “the theories and laws of patentability vary from country to country, as do examination practices.” *AlA Eng’g Ltd. v. Magotteaux Int’l S/A*, 657 F.3d 1264, 1279 (Fed. Cir. 2011) (quoting *Heidelberger Druckmaschinen AG v. Hantscho Com. Prods., Inc.*, 21 F.3d 1068, 1072 n.2 (Fed. Cir. 1994); see also *Lindemann Maschinenfabrik GMBH v. Am. Hoist & Derrick Co.*, 730 F.2d 1452, 1458 n.2 (Fed. Cir. 1984) (“[T]he language and laws of other countries differ substantially from those in the United States.”).

In addition, the statements before the EPO do not indicate Ericsson’s intent to disclaim the embodiments described above from the scope of claims 1 and 5. Specifically, Ericsson amended the EP claims to delete “at least” from the claims reciting calculating “a first filter decision value for the block based at least on $|p_{2i}-2p_{1i}+p_{0i}|$ ” and calculating “a second filter decision value for the block based at least on $|q_{2i}-2q_{1i}+q_{0i}|$.” Hemami Dec., ¶ 68. The deletion of these two words does not amount to disclaiming all embodiments *in any related patent in any jurisdiction* that use more than one line of pixels when calculating the filter decision values. Instead, the amendment removing “at least” merely clarified that the language at issue in the EPO must require two separate determinations, wherein the first filter decision value is calculated using only pixel values in the three columns of block 10 (p_{2i} , p_{1i} , p_{0i}) closest to the block boundary, and the second filter decision value is calculated using only pixel values in the three columns of block 20 (q_{2i} , q_{1i} , and

q0i) closest to the block boundary. Without that amendment, as Dr. Xiong explained, the claims could have been interpreted to cover a scenario where calculating filter decision values used pixels on both sides of the block boundary. CXM-0008 (Xiong Reb. Dec.) ¶ 70. Thus, the EPO prosecution does not indicate a disavowal of claim scope that would apply to the '841 Patent.

C. The '659 Patent

1. Background

The '659 Patent generally describes an improved apparatus and method for reducing blocking artifacts at a block boundary between a block of pixels and a neighboring block of pixels. CXM-0005 ('659 Patent), 5:36-58; 22:55-23:30, Fig. 13. The '659 Patent describes the use of a deblocking filter unit that comprises, *inter alia*, a first offset calculator which calculates a first offset based on the equation $(9 \times (q_0 - p_0) - 3 \times (q_1 - p_1)) / 16$, and also includes a pixel value modifier that modifies pixel values p_0 and q_0 closest to the block boundary. *Id.* at 5:36-58. The '841 Patent then describes additional features of the deblocking filter, including clipping units, second and third offset calculators, and pixel value modifiers. *Id.* at 6:19-7:3. The details of those units and operations are not directly relevant to the claim construction issue below. Instead, the sole issue below is whether the preamble of claim 10 is limiting.

2. “A user equipment comprising a deblocking filter unit for reducing blocking artifacts at a block boundary between a block of multiple pixels and a neighboring block of multiple pixels in a video frame, wherein the deblocking filter unit comprises”

No.	Term	Claim(s)	Complainant's Proposed Construction	Respondent's Proposed Construction
6	“A user equipment comprising a deblocking filter unit for reducing blocking artifacts at a block boundary between a block of multiple pixels	'659 Patent, Claim 10	Preamble is limiting, plain and ordinary meaning	Preamble is limiting as to “a deblocking filter unit for reducing blocking artifacts at a block boundary between a block of multiple pixels and a neighboring block of

	and a neighboring block of multiple pixels in a video frame, wherein the deblocking filter unit comprises:”			multiple pixels in a video frame, wherein the deblocking filter unit comprises:”
	<i>Proposed by: Complainant</i>			

The entire preamble for Claim 10 of the ’659 Patent should be found to be limiting and given its plain and ordinary meaning. Lenovo admits that everything in the preamble is limiting except for “[a] user equipment comprising.” But there is no legitimate reason to parse the preamble as Lenovo suggests. Rather, the entire preamble is essential to understanding the claim limitations, recites additional structure described by the specification as important to an embodiment, and is therefore limiting.

First, it is improper to split a preamble in the manner Lenovo suggests. *In re Certain Power Semiconductors*, Inv. No. 337-TA-1308, 2023 ITC LEXIS 71, at *16 (ITC Jan. 30, 2023) (“The Federal Circuit has cautioned against attempting to splice claims in the manner [Complainant] supports here.”). A preamble cannot be parsed into non-limiting and limiting factions where, as here, the preamble provides the structure for the claimed device and is intertwined with the rest of the preamble. *See, e.g., SIMO Holdings, Inc. v. H.K. uCloudlink Network Tech., Ltd.*, 983 F.3d 1367, 1376 (Fed. Cir. 2021) (rejecting a party’s attempt to parse the preamble where they “concede[d] that part of the preamble [was] limiting” and “the preamble supplie[d] the only structure of the claimed device and the disputed language [did] not merely identify an intended use or functional property but [was] intertwined with the rest of the preamble. . . .”) (internal citations omitted). Here, “user equipment” both provides structure for the claim and is intertwined with the rest of the preamble, which both parties agree is limiting. Indeed, the use of “a deblocking

filter *unit*” invites the question: a unit of what? The answer is supplied by the disputed part of the preamble: a user equipment.

The phrase “user equipment” is closely intertwined with the portion of the preamble providing the antecedent basis because the user equipment is the device that “a neighboring block of multiple pixels in a video frame” is being played on. Because “user equipment” gives structure and context to the rest of the preamble, including the portion that provides antecedent basis, Lenovo cannot simply read out “user equipment” from claim 10. *In re Certain Power Semiconductors*, 2023 ITC LEXIS 71, at *14 (“[T]he disputed phrase—‘a semiconductor device controlling a drive of’—is closely intertwined with the words of the preamble providing antecedent bases for the remainder of the claim. This strongly supports a finding that the preamble as a whole is limiting.”).

Second, the disputed portion of the preamble is limiting because it is essential for the understanding of other claim terms. *In re Certain Optical Disk Chips & Chipsets*, Inv. No. 337-TA-523, 2005 ITC LEXIS 894, at *82 (ITC Sept. 30, 2005) (“Generally, a preamble ‘limits the claimed invention if it recites essential structure or steps, or if it is necessary to give life, meaning, and vitality to the claim.’”) (quoting *NTP, Inc. v. Rsch. In Motion, Ltd.*, 418 F.3d 1282 (Fed. Cir. 2005)). Again, without the preamble, there is no context for the smaller component Lenovo admits is limiting, the “deblocking filter unit for reducing blocking artifacts.” These disputed first four words of the claim provide information necessary to understand that the deblocking filter unit is not just operating in the ether—it is part of a user equipment. Lenovo’s construction would read out necessary claim language. Without this part of the preamble, there would be no requirement in the claims that the deblocking filter unit be part of a user equipment. *See, e.g., Unwired Planet LLC v. Google, Inc.*, 660 F. App’x 974, 986 (Fed. Cir. 2016) (holding the preamble limiting where,

“without the preamble term, there is no requirement in the claims that the image be much larger than the dimension of the screen.”).

Third, the disputed portion of the preamble is limiting because it “recites particular structure or steps that are highlighted as important by the specification.” *Id.* For example, “FIG. 13 is a schematic block diagram of a user equipment according to an embodiment.” CXM-0005 (’659 Patent), 8:44-45. The specification explains that the user equipment is important in this embodiment because it “make[s] the video data available.” *Id.* at 22:55-60. It also explains possible configurations of the user equipment. *Id.* at 22:55-23:44. Thus, the preamble is also limiting because it adds a structure (the user equipment) that is highlighted by the specification as an important feature in at least one embodiment. *See, e.g., Proveris Sci. Corp. v. Innovasystems, Inc.*, 739 F.3d 1367, 1372 (Fed. Cir. 2014).

For at least these reasons, Lenovo cannot read “user equipment” out of Claim 10. The entire preamble for Claim 10 of the ’659 Patent is limiting and should be given its plain and ordinary meaning.

VI. CONCLUSION

For the reasons above, Ericsson respectfully requests that the ALJ construe the terms as Ericsson has set forth.

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**CERTAIN ELECTRONIC COMPUTING
DEVICES, AND COMPONENTS AND
MODULES THEREOF**

Inv. No. 337-TA-1387

CERTIFICATE OF SERVICE

I hereby certify that on May 15, 2024, copies of the foregoing were filed with and served upon the following as indicated:

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