

UNITED STATES INTERNATIONAL TRADE COMMISSION

Washington, D.C.

In the Matter of

**CERTAIN ELECTRONIC DEVICES,
INCLUDING MOBILE PHONES,
TABLETS, LAPTOPS, COMPONENTS
THEREOF, AND PRODUCTS
CONTAINING THE SAME**

Inv. No. 337-TA-1376

ORDER NO. 25: CONSTRUING TERMS OF THE ASSERTED CLAIMS

(March 13, 2024)

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	RELEVANT LAW	2
III.	THE ASSERTED PATENTS	7
A.	430 Patent.....	7
B.	273 Patent.....	8
C.	178 Patent and 313 Patent.....	10
IV.	LEVEL OF ORDINARY SKILL	13
V.	CLAIM CONSTRUCTION.....	15
A.	Agreed Terms.....	15
B.	Disputed Terms	17
1.	“content encryption key(s)” – 178 Patent & 313 Patent	17
2.	Ordering of steps (i.e., “detecting” & “issuing” steps) – 178 Patent	21
3.	Ordering of steps (i.e., the “detect” and “issue” steps) – 178 Patent.....	25
4.	“interfering frequency” – 273 Patent	26

I. INTRODUCTION

This investigation was instituted by the Commission on November 17, 2023 to determine whether certain electronic devices, including mobile phones, tablets, laptops, components thereof, and products containing the same infringe certain claims of U.S. Patent No. 7,151,430 (“the 430 patent”); U.S. Patent No. 9,509,273 (“the 273 patent”); U.S. Patent No. 9,313,178 (“the 178 patent”); U.S. Patent No. 11,122,313 (“the 313 patent”); and U.S. Patent No. 10,972,654 (“the 654 patent”) (collectively “the Asserted Patents”). *See* 88 Fed. Reg. 80337 (November 17, 2023).

The complainants are Ericsson AB and Telefonaktiebolaget LM Ericsson (collectively, “Ericsson”). The named respondents are Motorola Mobility, LLC; Lenovo (United States) Inc.; Lenovo Group Limited; Lenovo (Shanghai) Electronics Technology Co. Ltd.; Lenovo Beijing Co., Limited; Lenovo PC HK Limited; Lenovo Information Products (Shenzhen) Co. Ltd.; and Motorola (Wuhan) Mobility Technologies Communication Company Limited (collectively, “Lenovo”).

Pursuant to the procedural schedule (Order No. 11), the parties filed a joint claim construction chart setting forth certain terms to be construed, and initial and rebuttal claim construction briefs.¹ On March 6, 2024, I determined that no *Markman* Hearing was necessary and that the claim construction issues would be resolved on the briefs. *See* Order No. 23 (Mar. 6, 2024). On March 11, 2024, I granted Ericsson’s motion for leave to file a corrected version of its Rebuttal *Markman* Brief out of time. Order No. 24 (Mar. 11, 2024).

¹ The briefs and amended chart submitted by the parties are hereafter referred to as:

CIMB	Ericsson’s Initial <i>Markman</i> Brief
CRMB	Ericsson’s Corrected Rebuttal <i>Markman</i> Brief
RIMB	Lenovo’s Initial <i>Markman</i> Brief
RRMB	Lenovo’s Rebuttal <i>Markman</i> Brief
JC	Final Joint Claim Construction Chart

II. RELEVANT LAW

“An infringement analysis entails two steps. The first step is determining the meaning and scope of the patent claims asserted to be infringed. The second step is comparing the properly construed claims to the device accused of infringing.” *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc) (internal citations omitted), *aff’d*, 517 U.S. 370 (1996). Claim construction is a “matter of law exclusively for the court.” *Id.* at 970-71. “The construction of claims is simply a way of elaborating the normally terse claim language in order to understand and explain, but not to change, the scope of the claims.” *Embrex, Inc. v. Serv. Eng’g Corp.*, 216 F.3d 1343, 1347 (Fed. Cir. 2000).

Claim construction focuses on the intrinsic evidence, which consists of the claims themselves, the Specification, and the prosecution history. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc); *see also Markman*, 52 F.3d at 979. As the Federal Circuit in *Phillips* explained, courts must analyze each of these components to determine the “ordinary and customary meaning of a claim term” as understood by a person of ordinary skill in the art at the time of the invention. 415 F.3d at 1313. “Such intrinsic evidence is the most significant source of the legally operative meaning of disputed claim language.” *Bell Atl. Network Servs., Inc. v. Covad Commc’ns Grp., Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001).

“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Phillips*, 415 F.3d at 1312 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). “Quite apart from the written description and the prosecution history, the claims themselves provide substantial guidance as to the meaning of particular claims terms.” *Id.* at 1314; *see also Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1331 (Fed. Cir. 2001) (“In construing claims, the analytical focus must begin and remain centered on the language of the claims themselves, for it is

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that language that the patentee chose to use to ‘particularly point [] out and distinctly claim [] the subject matter which the patentee regards as his invention.”). The context in which a term is used in an asserted claim can be “highly instructive.” *Phillips*, 415 F.3d at 1314. And other claims in the same patent, asserted or unasserted, may also provide guidance as to the meaning of a claim term. *Id.* “Courts do not rewrite claims; instead, we give effect to the terms chosen by the patentee.” *K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1364 (Fed. Cir. 1999).

The specification “is always highly relevant to the claim construction analysis. Usually it is dispositive; it is the single best guide to the meaning of a disputed term.” *Phillips*, 415 F.3d at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). “[T]he specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor’s lexicography governs.” *Id.* at 1316. “In other cases, the specification may reveal an intentional disclaimer, or disavowal, of claim scope by the inventor.” *Id.* As a general rule, however, the particular examples or embodiments discussed in the Specification are not to be read into the claims as limitations. *Id.* at 1323. In the end, “[t]he construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be . . . the correct construction.” *Id.* at 1316 (quoting *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)).

In addition to the claims and the Specification, the prosecution history should be examined, if in evidence. *Phillips* at 1317; *see also Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004). The prosecution history can “often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.” *Phillips*, 415 F.3d at 1317; *see also Chimie v. PPG Indus. Inc.*, 402 F.3d 1371, 1384 (Fed. Cir.

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2005) (“The purpose of consulting the prosecution history in construing a claim is to exclude any interpretation that was disclaimed during prosecution.”).

When the intrinsic evidence does not establish the meaning of a claim, then extrinsic evidence (*i.e.*, all evidence external to the patent and the prosecution history, including dictionaries, inventor testimony, expert testimony, and learned treatises) may be considered. *Phillips*, 415 F.3d at 1317. Extrinsic evidence is generally viewed as less reliable than the patent itself and its prosecution history in determining how to define claim terms. *Id.* “The court may receive extrinsic evidence to educate itself about the invention and the relevant technology, but the court may not use extrinsic evidence to arrive at a claim construction that is clearly at odds with the construction mandated by the intrinsic evidence.” *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 977 (Fed. Cir. 1999).

If, after a review of the intrinsic and extrinsic evidence, a claim term remains ambiguous, the claim should be construed so as to maintain its validity. *Phillips*, 415 F.3d at 1327. Claims, however, cannot be judicially rewritten in order to fulfill the axiom of preserving their validity. *See Rhine v. Casio, Inc.*, 183 F.3d 1342, 1345 (Fed. Cir. 1999). Thus, “if the only claim construction that is consistent with the claim’s language and the written description renders the claim invalid, then the axiom does not apply and the claim is simply invalid.” *Id.*

The construction of a claim term is generally guided by its ordinary meaning. However, courts may deviate from the ordinary meaning when: (1) “the intrinsic evidence shows that the patentee distinguished that term from prior art on the basis of a particular embodiment, expressly disclaimed subject matter, or described a particular embodiment as important to the invention”; or (2) “the patentee acted as his own lexicographer and clearly set forth a definition of the disputed claim term in either the specification or prosecution history.” *Edwards Lifesciences LLC v. Cook*



Inc., 582 F.3d 1322, 1329 (Fed. Cir. 2009); *see also GE Lighting Sols., LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) (“the specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal.”); *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1324 (Fed. Cir. 2003) (“[W]here the patentee has unequivocally disavowed a certain meaning to obtain his patent, the doctrine of prosecution disclaimer attaches and narrows the ordinary meaning of the claim congruent with the scope of the surrender.”); *Rheox, Inc. v. Entact, Inc.*, 276 F.3d 1319, 1325 (Fed. Cir. 2002) (“The prosecution history limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution.”). Nevertheless, there is a “heavy presumption that a claim term carries its ordinary and customary meaning.” *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (citations omitted). The standard for deviating from the plain and ordinary meaning is “exacting” and requires “a clear and unmistakable disclaimer.” *Thorner v. Sony Computer Entm’t Am. LLC*, 669 F.3d 1362, 1366-67 (Fed. Cir. 2012); *see also Epistar Corp. v. Int’l Trade Comm’n*, 566 F.3d 1321, 1334 (Fed. Cir. 2009) (requiring “expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope” to deviate from the ordinary meaning) (citation omitted). As the Federal Circuit has explained, “[w]e do not read limitations from the Specification into claims; we do not redefine words. Only the patentee can do that.” *Thorner*, 669 F.3d at 1366; *see also Continental Circuits LLC v. Intel Corp.*, 915 F.3d 788, 797 (Fed. Cir. 2019); *Unwired Planet, LLC v. Apple Inc.*, 829 F.3d 1353, 1359 (Fed. Cir. 2016) (“[W]e have repeatedly held that it is ‘not enough that the only embodiments, or all of the embodiments, contain a particular limitation’ to limit claims beyond their plain meaning.”).

Courts are not required to construe every claim limitation of an asserted patent. *See O2 Micro Intern. Ltd. v. Beyond Innovation Technology Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008)



(citations omitted); *Vanderlande Indus. Nederland BV v. Int’l Trade Comm’n*, 366 F.3d 1311, 1323 (Fed. Cir. 2004) (noting that the administrative law judge need only construe disputed claim terms). Rather, “claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims.” *Id.* at 1362 (quoting *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997)); *see also Embrex*, 216 F.3d at 1347 (“The construction of claims is simply a way of elaborating the normally terse claim language in order to understand and explain, but not to change, the scope of the claims.”) (citation omitted). In addition, “[a] determination that a claim term ‘needs no construction’ or has the ‘plain and ordinary meaning’ may be inadequate when a term has more than one ‘ordinary’ meaning or when reliance on a term’s ‘ordinary’ meaning does not resolve the parties’ dispute.” *O2 Micro*, 521 F.3d at 1361. Claim construction, however, is not an “obligatory exercise in redundancy.” *U.S. Surgical Corp.*, 103 F.3d at 1568. “[M]erely rephrasing or paraphrasing the plain language of a claim by substituting synonyms does not represent genuine claim construction.” *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 863 (Fed. Cir. 2004). However, “there are limits to the court’s duties at the claim construction stage. For example, courts should not resolve questions that do not go to claim scope, but instead go to infringement . . . or improper attorney argument.” *Eon Corp. IP Holdings v. Silver Spring Networks*, 815 F.3d 1314, 1319 (Fed. Cir. 2016).

A claim must also be definite. Pursuant to pre-AIA 35 U.S.C. § 112(2): “The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” 35 U.S.C. § 112(2). In *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014), the Supreme Court held that § 112(2) requires “that a patent’s claims, viewed in light of the specification and prosecution history inform those skilled in the art about the scope of the invention with reasonable certainty.” A claim is required to “provide

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objective boundaries for those of skill in the art,” and a claim term is indefinite if it “might mean several different things and no informed and confident choice is among the contending definitions.” *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014). A patent claim that is indefinite is invalid. 35 U.S.C. § 282(b)(3)(A).

III. THE ASSERTED PATENTS

The 654 patent presents no claim construction issues, and the 430 patent is the subject only of agreed-upon claim constructions.

A. 430 Patent

The 430 patent, titled “Method of and Inductor Layout for Reduced VCO Coupling,” issued on December 19, 2006, to Thomas Mattsson. 430 patent at cover. The patent issued from an application filed on August 16, 2004. *Id.* On its face, the 430 patent is assigned to Telefonaktiebolaget LM Ericsson. *Id.*

The 430 Patent generally “relates to voltage-controlled oscillators (VCO) of the type used in radio frequency (RF) transceivers and, in particular, to an improved inductor design in a VCO.” 430 patent at 1:19-22. In particular, the 430 patent discloses “[a]n inductor design for reducing mutual [electromagnetic] EM coupling between VCO resonators and a method of implementing the same on a single semiconductor chip.” *Id.* at 1:59-61.

The 430 patent has 3 independent claims and 18 dependent claims, and claims 2-8, 11, and 13-18 are asserted in this investigation. The agreed-upon terms are found in claims 1 and 11:

1. An inductor layout having reduced mutual electromagnetic coupling, comprising:

a first inductor having a reduced far field, said first inductor comprising:

a first loop having a shape that is substantially symmetrical about a first predefined axis;

a second loop connected to the first loop, said second loop having a size and shape substantially identical to the first loop, said second loop arranged such that a

magnetic field emanating therefrom tends to cancel a magnetic field emanating from the first loop; and

two closely spaced terminals connected to the first loop for supplying electrical current to the first and second loops while minimizing magnetic field contributions from the terminals; and

a second inductor positioned at a predetermined distance from the first inductor, wherein a mutual electromagnetic coupling between the first inductor and the second inductor is reduced as a result of the first inductor having a reduced electromagnetic field.

11. A method of reducing mutual electromagnetic coupling between a first inductor and a second inductor on a semiconductor die, comprising:

forming the first inductor to reduce a far field, said step of forming the first inductor comprising:

forming a first loop having a shape that is substantially symmetrical about a first predefined axis;

forming a second loop having a size and shape substantially identical to the first loop;

orienting the second loop in relation to the first loop such that a magnetic field emanating from the second loop tends to cancel a magnetic field emanating from the first loop; and

connecting two closely spaced terminals to the first loop for supplying electrical current to the first and second loops while minimizing magnetic field contributions from the terminals; and

positioning a second inductor at a predetermined distance from the first inductor, wherein the mutual electromagnetic coupling between the first inductor and the second inductor is reduced as a result of the first inductor having a reduced electromagnetic field.

B. 273 Patent

The 273 patent, titled “Transformer Filter Arrangement,” issued on November 29, 2016, to Stefan Andersson, Fenghao Mu, and Johan Wernehag. 273 patent at cover. The patent issued from Application No. 14/233,497, filed as Application No. PCT/SE2012/050729 on June 28, 2012, and is assigned on its face to Telefonaktiebolaget LM Ericsson. *Id.*

The 273 patent relates to a transformer filter arrangement that can be integrated into a radio receiver or transmitter circuit. 273 patent at 1:5-8. The windings of a planar transformer form an area delineated by an inner border, and in the patented configuration, this enclosed area contains a reactive sub-circuit acting as a signal filter to efficiently utilize space that would otherwise be unused. *See id.* at 1:48-63. This reactive sub-circuit includes an inductor connected in series with and between two of the winding segments of the transformer, instead of connecting the inductor to the output of the transformer, to provide a more robust filter. *See id.* at 11:54-12:34. The resulting transformer filter arrangement is able to pass signals around a fundamental frequency and suppress signals at an interfering frequency, such as an odd-order harmonic. *See id.* at 7:3-30.

The 273 patent has 8 independent claims and 10 dependent claims, and claims 1-3, 4, 7, 8, 9-10, 12-14, 16, and 18 are asserted. The disputed and agreed-upon terms are found in claims 1, 4, 7, 8, 12, 13, and claim 1 is representative:

1. A radio communication apparatus comprising at least one transformer filter arrangement, each transformer filter arrangement including:

a transformer having a first winding and a second winding formed by conducting and isolation layers of one of a chip and printed circuit board, winding loops of both the first and the second windings, when considered in a plane of the first winding and the second winding of the transformer, enclose an area of the one of said chip and printed circuit board; and

at least one reactive sub circuit, each comprising at least one inductor;

the first winding of the transformer is divided into a plurality of winding segments;

each of the at least one reactive sub circuit:

being connected in series with the winding segments of the first winding between two such winding segments; and

having at least one of the at least one inductor located in said area; and the transformer and the at least one reactive sub circuit being tuned such that the

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transformer filter arrangement is configured to pass signals at a fundamental frequency and to suppress signals at least at one interfering frequency.

C. 178 Patent and 313 Patent

The 178 Patent, titled “Method And System For Secure Over-The-Top Live Video Delivery,” issued on April 12, 2016, to Kevin J. Ma, Robert Hickey, and Paul Tweedale. 178 patent at cover. The patent issued from Application No. 14/266,368, filed on April 30, 2014, which was a continuation of Application No. 13/530,997, filed on June 22, 2012. *Id.* The patent is assigned on its face to Ericsson AB. *Id.*

The 313 Patent, titled “Method And System For Secure Over-The-Top Live Video Delivery,” issued on September 14, 2021 to Kevin J. Ma, Robert Hickey, and Paul Tweedale. 313 patent at cover. The 313 patent issued from a series of continuation applications, including one that issued as the 178 patent, and the two patents’ specifications are substantially identical. *Id.* The patent is assigned on its face to Ericsson AB. *Id.*

The 178 patent and the 313 patent are generally directed to the secure distribution of content, such as video, using a series of encryption keys for each of a plurality of periods of use of the content. *See* 178 patent at 1:43-50. A client device retrieves encryption keys and key expiration times from a server. *See id.* at 2:15-30. The client device detects the “rotation boundaries” demarcating the times of use of each key, and before a currently used encryption key expires, the client retrieves the encryption key for the next time period. *Id.* In this manner, content is decrypted and presented to a user by the client device, while the encryption keys may be varied during the presentation of the content. *Id.* at 1:43-45.

The 178 Patent has 2 independent claims and 18 dependent claims, and claims 1-5 and 16-18 are asserted. The disputed and agreed-upon terms are found in claims 1-5 and 16-18, of which independent claims 1 and 16 are representative:



1. A method for handling secure distribution of content comprising:

initiating a media playback request and receiving a playback request response;

parsing content information from the playback request response, the content information including content encryption keys, content encryption key identifiers, and content encryption key expiration times;

retrieving content and manifest files from a content delivery server;

detecting content encryption key rotation boundaries between periods of use of different content encryption keys in decrypting retrieved content;

issuing requests to a license server ahead of a key rotation boundary to retrieve a second content encryption key to be used after a content encryption key rotation boundary is reached; and

applying the second key for content decryption after the key rotation boundary is reached.

16. A computerized device operable as a client for handling secure distribution of content, comprising:

memory operative to store computer program instructions;

one or more processors;

input/output interface circuitry; and

interconnect circuitry coupling the memory, processors and input/output interface circuitry together,

wherein the processors are operative to execute the computer program instructions from the memory to cause the computerized device to:

initiate a media playback request and receive a playback request response;

parse content information from the playback request response, the content information including content encryption keys, content encryption key identifiers, and content encryption key expiration times;

retrieve content and manifest files from a content delivery server;

detect content encryption key rotation boundaries between periods of use of different content encryption keys in decrypting retrieved content;



issue requests to a license server ahead of a key rotation boundary to retrieve a second content encryption key to be used after a content encryption key rotation boundary is reached; and

apply the second key for content decryption after the key rotation boundary is reached.

The 313 Patent has 2 independent claims and 18 dependent claims, and claims 1-4, 6, 11-14, and 16 are asserted. The disputed and agreed-upon terms of the 313 patent are found in claims 1-4 and 11-14, of which independent claims 1 and 11 are representative:

1. A method for handling secure distribution of live video content comprising:

sending a request for live media playback;

receiving a live media playback request response, the live media playback request response comprising content encryption keys and content encryption key identifiers;

receiving encrypted live media content and manifest files from a content delivery server, wherein the encrypted live media content comprises one or more content encryption key rotation boundaries wherein each content encryption key rotation boundary is associated with a change to a different content encryption key to decrypt the received encrypted live media content;

applying a first content encryption key to the encrypted live media content before a first content encryption key rotation boundary;

prior to reaching the first key rotation boundary, obtaining a second content encryption key, the second content encryption key to be used after the first content encryption key rotation boundary is reached; and

applying the second content encryption key for content decryption after the key rotation boundary is reached.

11. A computerized device operable as a client for handling secure distribution of content, comprising:

memory operative to store computer program instructions;

one or more processors;

input/output interface circuitry; and

interconnect circuitry coupling the memory, processors and input/output interface circuitry together,

wherein the processors are operative to execute the computer program instructions from the memory to cause the computerized device to:

send a request for live media playback;

receive a live media playback request response, the live media playback request response comprising content encryption keys and content encryption key identifiers;

receive encrypted live media content and manifest files from a content delivery server, wherein the encrypted live media content comprises one or more content encryption key rotation boundaries wherein each content encryption key rotation boundary is associated with a change to a different content encryption key to decrypt the received encrypted live media content;

apply a first content encryption key to the encrypted live media content before a first content encryption key rotation boundary;

prior to reaching the first key rotation boundary, obtain a second content encryption key, the second content encryption key to be used after the first content encryption key rotation boundary is reached; and

apply the second content encryption key for content decryption after the key rotation boundary is reached.

IV. LEVEL OF ORDINARY SKILL

The claims of the 178 patent and the 313 patent cover methods for, and apparatuses performing, encrypted communications, so an educational background in computer science, computer engineering, or electrical engineering would be appropriate for a skilled artisan. Ericsson further proposes two years' experience in wireless communications, "including work in secure communications," while Lenovo proposes two or three years' experience "designing or researching information security systems that employ cryptographic keys." CIMB at 21; RIMB at 11. It is true that Lenovo's proposal was adopted in a preliminary Patent Trial and Appeals Board ruling, but the level of ordinary skill in that proceeding was undisputed, and in any event the level here falls somewhere between the parties' proposals, because Ericsson's is too broad and Lenovo's is too

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narrow. *See* RIMB at 11 (citing RIMB, Ex. 15 at 10). On balance, a person having ordinary skill in the art of the 178 and 313 patents would have had a bachelor’s degree in electrical engineering, computer engineering, computer science, or a similar discipline, and at least two years of experience in the design and/or development of communication systems employing encryption, with additional education substituting for experience and vice versa.

The claims of the 273 patent cover only hardware apparatuses and “transformer filter arrangement[s]” intended to be used as components in radio communication devices. So a master’s degree in computer science, or a bachelor’s degree in computer science combined with two years’ experience “working in the wireless communications industry,” as Ericsson proposes, would not provide a sufficiently specific background to qualify as a skilled artisan. CIMB at 7. On the other hand, experience in integrated circuit design by itself, broadly understood, as Lenovo proposes, also would not be sufficiently specific. *See* RIMB at 12. Furthermore, four years’ experience with a bachelor’s degree is too narrow, given that the claimed circuit elements are largely conventional (transformers, inductors, “reactive sub circuit[s],” and the like), and a computer engineering degree would seemingly provide the needed hardware background, so an electrical engineering degree alone is similarly too narrow. *See id.*; 273 patent at cl. 1. Lastly, although Ericsson is correct that its proposal is supported by an expert declaration, the expert provides no explanation for why computer science provides an adequate background in hardware, and Ericsson is technically incorrect that its proposed level of ordinary skill was adopted for the 273 patent in a previous investigation; the ordered level of skill was actually significantly broader than the one Ericsson now proposes. *See* CIMB at 7 (citing CXM-0006 (Prucnal Decl.) at ¶ 108; CXM-0004 at 9 (“both proposals are appropriate”)). On balance, a person having ordinary skill in the art of the 273 patent would have had a bachelor’s degree in electrical engineering, computer engineering, or a similar

discipline, and at least three years of experience in the design and/or development of wireless, cellular, and/or mobile devices, with additional education substituting for experience and vice versa.

V. CLAIM CONSTRUCTION

A. Agreed Terms

The parties identify the following claim terms as having agreed-upon constructions:

Patent	Term	Construction
178 patent, cl. 1 313 patent, cl. 1	Preamble	The preamble is not a limitation of the claim
178 patent, cl. 16 313 patent, cl. 11	Preamble	The preamble is a limitation of the claim
178 patent, cls. 1, 2, 16 313 patent, cls. 1, 2, 6, 11, 12, and 14	Content encryption key identifier	For each content encryption key, a unique identifier to identify that content encryption key
178 patent, cl. 1	Ordering of certain steps	The “parsing” step needs to be after the “initiating” step The “applying” step needs to be after the “issuing” step
313 patent, cl. 1	Ordering of certain steps	The first “receiving” step needs to be after the “sending” step The second “applying” step needs to be after the “prior to reaching” step
273 patent, cls. 1, 7, 12	Preamble	The preamble is a limitation of the claim
430 patent, cls. 1, 11	Preamble	The preamble is a limitation of the claim

JC at 1-2.

For the 178 patent, the preamble of claim 1 merely states a purpose of the invention, whereas the preamble of claim 16 provides antecedent basis for the term “computerized device” and clarifies that the claimed device must be “operable as a client,” which gives meaning to the requirement in



the body of the claim that the device be operative to “issue requests to a license server.” And in claim 1 the content information logically cannot be “pars[ed]” until after the “playback request response” is received, which results from “initiating a media playback request,” so the “parsing” step must occur after the “initiating” step. Similarly, “applying the second key” for decryption can only occur if the second key has been “retrieve[d],” which results from “issuing requests” for such a key, so the “applying” step must occur after the “issuing” step.

For the 313 patent, the analyses of the preambles are the same, except that the preamble of claim 11 gives meaning to the requirement that the device be operative to “receive [data] from a content delivery server.” And in claim 1 the “live media playback request response” logically cannot be “receive[d]” without first “sending a request for live media playback,” so those two steps must be performed in the recited order. Similarly, the “second content encryption key” cannot be “appl[ied]” until that key is first “obtain[ed],” which must happen “prior to reaching” the claimed boundary, so the second “applying” step must occur after the “prior to reaching” step.

For the 273 patent, the preambles of claims 1, 7, and 12 provide antecedent basis for the term “transformer filter arrangement,” and for the 430 patent, the preamble of claim 11 provides antecedent basis for the term “first inductor.” It is not clear, however, that the preambles of these claims are otherwise limiting; for instance, it is not clear that the recitation of “on a semiconductor die” in claim 11 of the 430 patent is properly understood as a limitation, or that claims 1, 7, and 12 of the 273 patent are properly limited to “radio communication” devices. And it is entirely unclear why the preamble of claim 1 of the 430 patent is limiting.

The same is true, in fact, of the claims of the 178 and 313 patents; for instance, nothing in the body of claim 16 of the 178 patent or claim 11 of the 313 patent even references “handling secure distribution” of content, as opposed to some other use for the content. So the parties’ agreement

[REDACTED]

that the preamble of claim 1 of the 430 patent is limiting is not accepted, the parties' agreement on the other preambles is accepted only to the extent needed to provide antecedent basis or to give meaning to the claims as explained above, and the parties' agreement on the ordering of steps is accepted.

B. Disputed Terms

The parties' Joint Claim Construction Chart summarizes the disputed claim terms. *See* JC. They are discussed individually below.

1. "content encryption key(s)" – 178 Patent & 313 Patent

Complainants (Ericsson)	Respondents (Lenovo)
"a key used to encrypt and/or decrypt content"	"a cryptographic key used to encrypt a media content segment"

JC at 3.

The parties agree that "content encryption key(s)" should be given its plain and ordinary meaning, and that the meaning is the same in both the 178 patent and the 313 patent. They dispute that meaning, however, with Ericsson proposing a broad construction, "a key used to encrypt and/or decrypt content," and Lenovo proposing a narrow construction, "a cryptographic key used to encrypt a media content segment."

Two of the disputes over this term are easily resolved. First, the nature of the secure content is broad and is specified (or not) in other claim language. For example, claims 1 and 16 of the 178 patent require initiation of a "media playback request," but the encryption key is applied simply to "content" or "content information" that has been "pars[ed]" from the response to the media playback request, without limitation to a "media content segment." 178 patent at cls. 1, 16. Similarly, claims 1 and 11 of the 313 patent require application of the encryption key to "live media content," but not necessarily a "media content segment." 313 patent at cls. 1, 11. And while the specification does refer to "segments" and "segment boundaries," such segmentation is already required by the claim

[REDACTED]

language, because of the term “key rotation boundary.” *See* 178 patent at 2:62, cls. 1, 16; *see id.* at 1:54-56 (describing “transitions between sections of the packaged content encrypted by different ones of the content encryption keys”). So Lenovo’s proposal of “media content segment,” as opposed to “content” or “live media content,” is both overly narrow and redundant.

Second, a person of ordinary skill would surely recognize that the claimed key is “cryptographic.” *See* CIMB at 25. So it is unclear why this modifier is necessary or even helpful, and Lenovo’s proposal of adding it is therefore rejected.

The remaining dispute, however, requires further development, so a full construction of “content encryption key(s)” must be deferred. Starting with the claim language, a “content encryption key” is “use[d] . . . in decrypting retrieved content” or “appl[ied] . . . for content decryption.” 178 patent at cls. 1, 16; 313 patent at cls. 1, 11. So even though encryption and decryption are opposite processes, the patent plainly uses the term “encryption” in “content encryption key” to refer to both encryption and decryption. The specification confirms this usage:

Generally in operation, the packager(s) 104 receive source content and process or “package” the source content so that it may be delivered to the clients 110 via the CDN 108. Specifically, the packager(s) 104 perform content encryption using a series of content encryption keys as described below. The CMS 112 provides high-level control over content ingestion, packaging and delivery, while the WFM 102 performs more detailed control operations. The license server 106 is responsible for storing encryption keys and providing them to the clients 110 for use during playback, as described in more detail below.

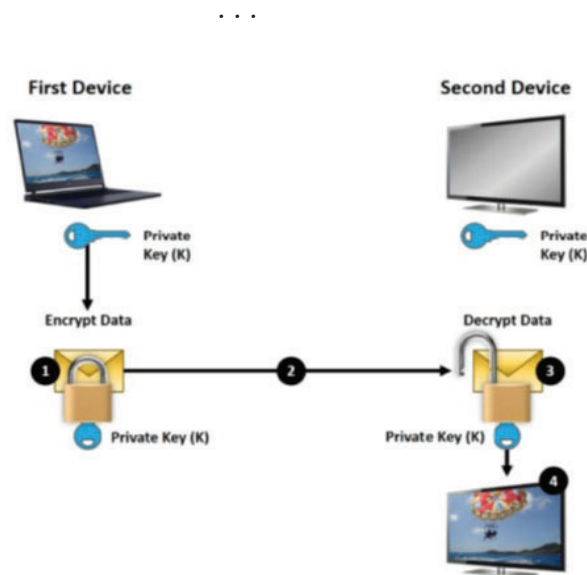
178 patent at 5:10-20. And neither party cites the prosecution history, or argues for lexicography or disavowal, so the plain and ordinary meaning of “content encryption key” is seemingly “a key that may be used to encrypt or decrypt content.”

But neither party has proposed this construction, although Ericsson’s comes close. *See* JC at 3. This appears to be because the crux of the disagreement is over whether the same key used for the unclaimed step of encryption must also be “appl[ied] . . . for content decryption” (Lenovo’s

apparent position), or whether the key used for encryption is irrelevant (Ericsson’s apparent position). *Compare* CIMB at 25 (“How the encryption was performed is simply not a proper limitation”) *with* RRMB at 3 (“Lenovo would agree to . . . ‘a cryptographic key used first to encrypt and then to decrypt a media content segment.’”).

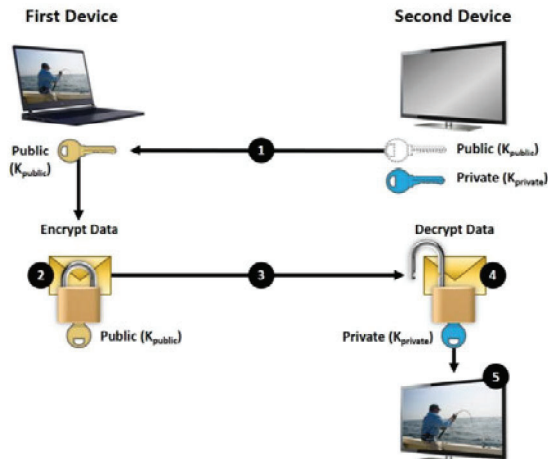
Although the parties do not squarely address the point, and the specification seems to be silent on the issue, the dispute may be over what kind of encryption falls within the scope of the claims. *Certain Digital Video-Capable Devices and Components Thereof*, Inv. No. 337-TA-1224, Initial Determination at 10-11 (Oct. 21, 2021) (“*Digital Video-Capable Devices*”), *aff’d in pertinent part*, Comm’n Op. (Mar. 23, 2022), explains the issue:

Private key encryption, illustrated below, uses a private key to encrypt and decrypt data exchanged between two devices.



Public key encryption, on the other hand, uses a private and public key pair to encrypt and decrypt data exchanged between two devices.

...



Digital Video-Capable Devices further explains that:

When a [first] device wishes to send protected digital media to a [second] device over a secure channel, the [first device] encrypts the protected digital media using the [second device's] public key and sends the encrypted data to the [second device]. The [second device] retrieves the protected digital media by decrypting the encrypted data using its private key. Because two different keys are used for encryption and decryption the process is called asymmetric-key encryption.

Id. at 11.

Under Lenovo's proposed construction, asymmetric-key encryption schemes would not fall within the scope of the claims, because the key used for encryption is not the same as the key used for decryption. Conversely, under Ericsson's proposed construction, asymmetric-key encryption would seemingly fall within the scope of the claims. If the parties' dispute is predicated on this symmetric/asymmetric distinction, construction of the term would be aided by expert evidence regarding whether "content encryption key" has a broad meaning to a person of ordinary skill in the art (say, to refer to any key used in an asymmetric-key system), or a narrow meaning (say, to refer only to keys used for encryption and decryption in a symmetric-key system), or some other meaning.

Or the parties' dispute may be over something entirely different, in which case further briefing is required to explain exactly what is disputed. In any event, further development is required

[REDACTED]

to properly construe this term. Accordingly, the term “content encryption key(s)” is construed to not require application to a “media content segment,” and its construction is otherwise deferred.

2. Ordering of steps (i.e., “detecting” & “issuing” steps) – 178 Patent

Complainants (Ericsson)	Respondents (Lenovo)
The “detecting” and “issuing” steps do not need to be performed in the recited order.	The “detecting” step must occur before the “issuing” step.

JC at 3.

Claim 1 of the 178 patent recites a method having six overall steps, two of which are “detecting content encryption key rotation boundaries” and “issuing requests . . . to retrieve a second content encryption key.” 178 patent at cl. 1. The parties’ dispute is over whether these two steps must be performed in their recited order. *See* JC at 3.

The steps of a method claim are “not ordinarily” construed to require a particular order. *Interactive Gift Express, Inc. v. Compuserve, Inc.*, 256 F.3d 1323, 1342 (Fed. Cir. 2001). They may be so construed, though, if they “actually recite an order,” or an order is required “as a matter of logic or grammar,” or “the specification directly or implicitly requires an order of steps.” *Id.*; *Mformation Technologies, Inc. v. Research in Motion Ltd.*, 764 F.3d 1392, 1398 (Fed. Cir. 2014) (internal quotation omitted). Nothing in the language of claim 1 requires a particular order, and although Lenovo asserts that the specification “confirms the sequential nature” of the two steps at issue, Lenovo’s principal argument is that the steps’ required sequence is dictated by “logic and grammar.” RIMB at 21-22.

One feature of the claimed invention is that multiple keys are used in serial order:

A disclosed method includes generating a series of content encryption keys and providing them serially to a packaging server for encrypting a content item, wherein each content encryption key is provided upon expiration of a period of use of a serially preceding content encryption key. The packaging server generates packaged content for delivery to client devices via a content delivery network, the packaged content including or accompanied by key expiration information usable by the client devices to identify transitions between sections of the packaged content encrypted



by different ones of the content encryption keys. The method further includes providing the content encryption keys to a license server for delivery to the client devices for use in decrypting the content item. The license server is operative to establish that a requesting client device is authorized to access the content item, and further operative to securely deliver the content encryption keys to a requesting client device whose authorization to access the content item has been established. The transitioning between use of different keys is also referred to herein as key “rotation[.]”

178 patent at 1:43-65. The language of claim 1 incorporates this feature by, among other things, reciting the steps of initiating a media playback request, receiving a response, “parsing” the response to extract content encryption keys and key expiration times, and retrieving content. *Id.* at cl. 1. The claim then requires “detecting content encryption key rotation boundaries” which fall “between periods of use of different content encryption keys,” and “issuing requests . . . ahead of a key rotation boundary to retrieve a second content encryption key to be used after a . . . rotation boundary is reached.” Nothing in logic or the grammar of the claim language bars a request for a key well in advance of when it needs to be used, even without knowing exactly when that is. Nor is there any bar on how many keys may be so “prefetched” ahead of time, and dependent claim 4 even recites “prefetching a next un-retrieved key” at a time “based on an expected expiration” of the current key, presumably without even knowing the actual rotation boundary or expiration time, which is determined at the “detecting” step. 178 patent at cl. 4. So an embodiment where a second key is obtained first (via the “issuing” step) and the key rotation boundaries for that key are ascertained later (via the “detecting” step) would seem to fall within the scope of the claim.

And the specification describes an iterative process, involving multiple key retrievals, key rotations, and determinations regarding key expiration, such that the scope of the claim also seemingly includes performing the issuing step in one pass, and performing the detecting step in a later pass. Figure 3 illustrates this:

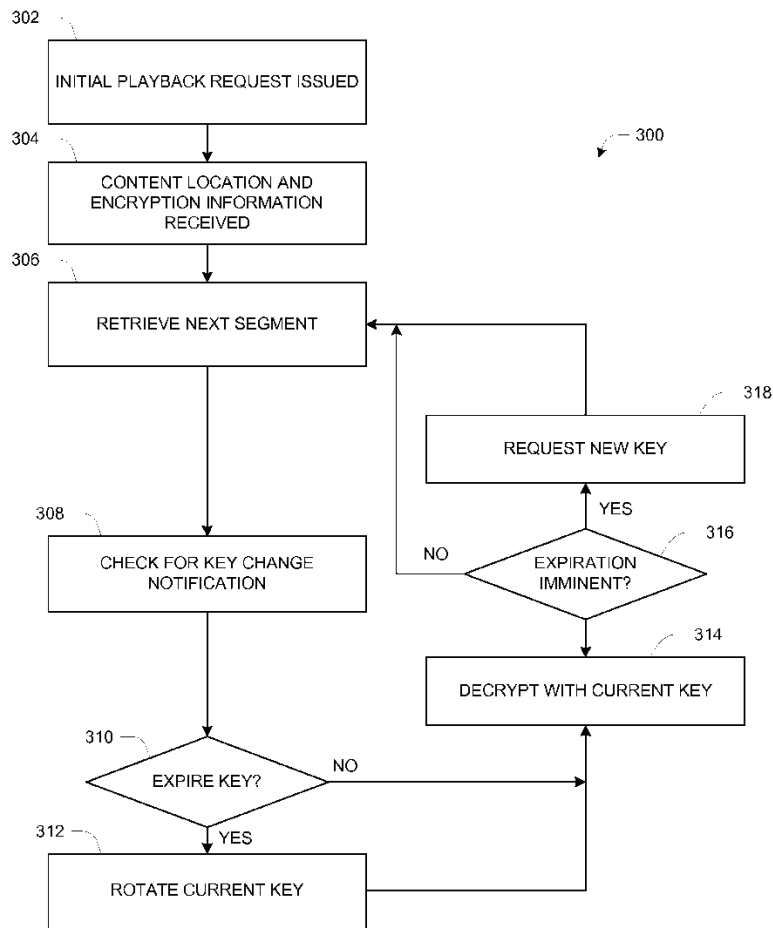


Fig. 3

178 patent at Fig. 3. The patent explains that the playback request is “issu[ed]” at step 302 (*id.* at 9:49-50), the requested “content information” is “parse[d]” at step 304 (*id.* at 9:52-56), and the content (i.e. the “next segment”) is “retriev[ed]” at step 306 (*id.* at 10:25-26).

Particularly relevant here are the next steps in the flowchart. At step 310, “the client 110 checks the expiration of [the] current content key to see if a new key should be applied,” which check can presumably be mapped to the claimed “detecting . . . rotation boundaries” step. 178 patent at 11:3-4, cl. 1. Then the content is decrypted at step 314 (*id.* at 11:32-35), a new key is requested if needed at step 318 (i.e., the client “issu[es]” a request for a “second content encryption key”) (*id.*

[REDACTED]

at 11:48-53), and the next segment of content is retrieved at step 306 (*id.* at 11:59-62). Crucially, the expiration check at step 310 is then performed again, and the second key is “rotate[d]” in for decryption of the next segment using the second key at step 314:

If the current content encryption key needs to be expired, processing proceeds to step **312** where the key is “rotated”, i.e., the current content encryption key is expired and a new one is put into use.

...

Once the new content encryption key is in place, processing proceeds to step **314**. In step **314**, the segment retrieved in step **306** is decrypted using the current content encryption key and the cipher specified in the initial playback response message. Once the segment has been decrypted it is passed to the media player for rendering and processing proceeds to step **316**.

In step **316**, the client **110** checks to see if the current content encryption key is going to expire in the near future or if a content encryption key change request for a future segment was detected in step **308**.

...

If the current content encryption key is not close to expiring and a content encryption key change request was not detected in step **308**, processing proceeds back to step **306** where the client **110** begins retrieving the next segment.

Id. at 11:9-48.

Thus, in the first pass, the “initiating,” “parsing,” and “retrieving” steps are performed, followed by the “detecting” step, all in that order, and the “issuing” step is performed last, but only if necessary. The process then undergoes a second pass by returning to the “retrieving” step, the “detecting” step is performed again, and if the “issuing” step was performed in the first pass, the second key obtained as a result of that “issuing” step is rotated in, and the “applying the second key for content decryption” step is performed. 178 patent at cl. 1. In this embodiment, then, the language of claim 1 is only satisfied if two passes are performed, because the second key cannot be “appl[ied]” unless it is first obtained by “issuing” a request for it. Most importantly, if two passes

are performed then necessarily the “detecting” step is performed twice, and the claim language does not require detecting rotation boundaries for any specific key, but only generally for “key rotation boundaries between periods of use of different content encryption keys.” *Id.* There is accordingly no reason why the second expiration check at step 310 in Figure 3 cannot be mapped to the “detecting” step of claim 1, even if the first expiration check can also be so mapped as an alternative. Using this mapping, the “detecting” step is performed after the “issuing” step.

In sum, an order of steps where the “issuing” step must be performed after the “detecting” step is not required by the claim language, logic and grammar, or the specification. Claim 1 is therefore construed such that those two steps do not have an order relative to each other.

3. Ordering of steps (i.e., the “detect” and “issue” steps) – 178 Patent

Complainants (Ericsson)	Respondents (Lenovo)
The computer program instructions must enable performance of each of these functional requirements of this device claim. It is not necessary that these functions actually be performed.	The computer program instructions must be configured to enable performance of the “detect” step prior to the “issue” step.

JC at 3-4.

Claim 16 of the 178 patent covers a “computerized device” comprising certain hardware components, including “processors [that] are operative to execute” computer programming “to cause the computerized device” to perform, in sum, the method of claim 1. 178 patent at cl. 16. Although the parties’ briefing and Ericsson’s proposed construction suggest that the parties disagree over the meaning of “operative to execute,” Lenovo makes clear in its rebuttal brief that it does not propose a construction “requir[ing] that the devices perform the recited steps.” RRMB at 11. Lenovo merely urges a construction where the devices are “configured to enable performance” such that the “detect step occurs before the issue step.” *Id.*

[REDACTED]

Lenovo bases its proposed construction on the same reasoning it articulated in connection with the order of steps in claim 1. RRMB at 12. Accordingly, for the same reasons given above regarding claim 1, claim 16 is construed such that the “detect” and “issue” steps do not have an order relative to each other. Because this seemingly resolves the parties’ dispute, no further construction is needed.

4. “interfering frequency” – 273 Patent

Complainants (Ericsson)	Respondents (Lenovo)
“frequency, such as an odd order harmonic of the fundamental frequency, that results in unwanted signal content within the bandwidth of the wanted signal content”	“particular unwanted frequency, such as an odd order harmonic of the fundamental frequency, not inherently filtered by the transformer alone”

JC at 3.

Most independent claims of the 273 patent cover either a “transformer filter arrangement” or a “radio communication apparatus comprising at least one transformer filter arrangement.” 273 patent at cls. 1, 4, 7, 8, 12, 13. Although the particular structures vary, in each of these claims the “transformer filter arrangement” comprises a transformer and at least one “reactive sub circuit,” which is further comprised of at least one inductor. *Id.* The parties’ dispute involves the requirement that each transformer filter arrangement be “configured to pass signals at a fundamental frequency and to suppress signals at least at one *interfering frequency.*” *Id.* (emphasis added).

Ericsson asserts that no construction is needed, but offers a plain and ordinary meaning, as required by Ground Rule 6. *See* CIMB at 8-9. Lenovo argues for a construction of “interfering frequency” that is either redundant or unsupported by the intrinsic evidence.

As for the relevant claim language, the claims only require the filter arrangement to pass one frequency of signals and to suppress at least one frequency of signals. Nothing in the claim language requires suppression of any “particular” frequency, nor does the suppressed frequency need to be one not suppressed by the transformer, inherently or otherwise. And dependent claim 9 requires

[REDACTED]

that the “at least one interfering frequency” includes at least one odd order harmonic, so Lenovo’s proposed “odd order harmonic” limitation is redundant.

As for the specification, one disclosed embodiment incorporates an LC series subcircuit that functions as a band pass filter. *See* 273 patent at 8:4-11. Using such a filter, “signals at frequencies outside [the] pass band are suppressed,” meaning that many more frequencies than just a “particular” one are suppressed. And another disclosed embodiment combines a band pass filter with a notch filter, where the center frequency of the notch falls outside the band, so as “to further suppress signals at that particular interfering frequency.” *Id.* at 8:22-23. The specification thus contemplates a “belt and suspenders” approach to filtering, such that even if the transformer acts as a filter, the “transformer filter arrangement” as a whole may act as or include a second filter directed to the same interfering frequency. So the specification does not support limiting the interfering frequency to one “not inherently filtered by the transformer alone.”

Beyond the claims and specification, Lenovo advances a number of points regarding prior art, extrinsic evidence, and the prosecution history, none of which are especially pertinent. *See* RIMB at 26-32; RRMB at 12-19. Accordingly, Lenovo’s proposal is rejected, which seemingly resolves the parties’ dispute, so no further construction is needed at present.

Within seven days of the date of this document, the parties shall submit to the Office of the Administrative Law Judges a joint statement as to whether or not they seek to have any portion of this document deleted from the public version. If the parties do seek to have portions of this document deleted from the public version, they must submit to this office a copy of this document with red brackets indicating the portion or portions asserted to contain confidential business information. The submission may be made by email and/or hard copy by the aforementioned date and need not be filed with the Commission Secretary.

SO ORDERED.

A handwritten signature in cursive script, appearing to read "C. Elliot", written in black ink.

Cameron Elliot
Administrative Law Judge

CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the parties listed have entered an appearance in the above captioned investigation, and a copy of the PUBLIC CERTIFICATE OF SERVICE was served upon the following parties via first class mail and air mail where necessary.

Document	Security	Document Type	Official Rec'd	Title
817874	Public	Order	04/08/2024 12:23 PM	Construing Terms of the Asserted Claims

Service Date: April 08, 2024

/s

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