**THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

NAGRAVISION SA and NAGRA FRANCE SAS,	§ § §	
v.	§ §	CASE NO. 2:16-CV-1362-JRG
COMCAST CABLE COMMUNICATIONS LLC,	§ § § §	

**CLAIM CONSTRUCTION
MEMORANDUM OPINION AND ORDER**

Before the Court is Plaintiffs Nagravision SA and Nagra France SAS's ("Plaintiffs' or "Nagravision's") Opening Claim Construction Brief (Dkt. No. 125). Also before the Court are Defendant Comcast Cable Communications LLC's ("Defendant's" or "Comcast's") Responsive Claim Construction Brief (Dkt. No. 130) and Plaintiffs' reply (Dkt. No. 136).

The Court held a claim construction hearing on November 1, 2017.

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I. BACKGROUND

Plaintiffs bring suit alleging infringement of United States Patents No. 7,725,740 ("the '740 Patent"), 8,356,188 ("the '188 Patent"), and RE40,334 (collectively, the "patents-in-suit") (Dkt. No. 125, Exs. 1–3).[1]

The '740 Patent, titled "Generating a Root Key for Decryption of a Transmission Key Allowing Secure Communications," issued on May 25, 2010, and bears an earliest priority date of May 28, 2003. Plaintiffs submit: "The invention of the '740 Patent protects the integrity of software installed on an STB [(set-top box)] by confirming—each time the STB is started up— that the installed software is authentic and has not been tampered with." (Dkt. No. 125, at 3; *see* Dkt. No. 136, at 1.) Defendant disagrees with Plaintiffs' characterization, and Defendant submits that "the asserted claims of [the] '740 patent are not directed to 'confirming . . . that the installed software is authentic' on a STB, *see* [Dkt. No. 125,] at 3, which the claimed invention does not facilitate in any way, but rather to one particular method of generating a root key in a secure module using secret information, and using that root key for a particular purpose." (Dkt. No. 130, at 4; *see id.*, at 2–3.) The Abstract of the '740 Patent states:

> A method is used to restore the security of a secure assembly such as a chip card, after the contents of its second memory zone have been read by a third party. The method is for generating a security key implemented by a secure module comprising a central unit, a first conditional access memory zone and at least one second memory zone containing all or part of the user program. The method includes reading of all or part of the second memory zone, and generation of at least one root key based on all or part of the second zone data and on at least one item of secret information stored in the first memory zone.

The '188 Patent, titled "Secure System-on-Chip," issued on January 15, 2013, and bears an earliest priority date of December 23, 2005. Plaintiffs submit that "the invention described in

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[1] The parties have not submitted any disputed terms for the '334 Patent. (Dkt. No. 140, at 1.)

the '188 Patent allows for secure storage of data within a system-on-chip by applying a layer of encryption to the information before storing it in memory." (Dkt. No. 125, at 3–4; *see* Dkt. No. 136, at 1.) Defendant submits that "[t]he '188 patent aims 'to provide a secure system-on-chip for processing data' by adding an internal encryption layer to data on the chip." (Dkt. No. 130, at 4.) The Abstract of the '188 Patent states:

> The aim of the present invention is to provide a secure system-on-chip for processing data, this system-on-chip comprising at least a central processing unit, an input and an output channel, an encryption/decryption engine and a memory, characterized in that, said input channel comprises an input encryption module to encrypt all incoming data, said output channel comprising an output decryption module to decrypt all outgoing data, said central processing unit receiving the encrypted data from the input encryption module and storing them in the memory, and while processing the stored data, said central processing unit reading the stored data from the memory, requesting decryption of same in the encryption/decryption engine, processing the data and requesting encryption of the result by the encryption/decryption engine and storing the encrypted result, outputting the result to the output decryption module for decryption purpose and exiting the decrypted result via the output channel.

Plaintiffs have asserted Claims 1 and 2 of the '740 Patent. (*See* Dkt. No. 125, Ex. 4, Aug. 23, 2017 Rubin Decl., at ¶ 22; *see also* Dkt. No. 130, at 3.)

Plaintiffs have asserted Claims 9 and 11 of the '188 Patent. (*See* Dkt. No. 125, Ex. 4, Aug. 23, 2017 Rubin Decl., at ¶ 32.)

II. LEGAL PRINCIPLES

It is understood that "[a] claim in a patent provides the metes and bounds of the right which the patent confers on the patentee to exclude others from making, using or selling the protected invention." *Burke, Inc. v. Bruno Indep. Living Aids, Inc.*, 183 F.3d 1334, 1340 (Fed. Cir. 1999). Claim construction is clearly an issue of law for the court to decide. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 970–71 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996).

"In some cases, however, the district court will need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period." *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015) (citation omitted). "In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factual findings about that extrinsic evidence. These are the 'evidentiary underpinnings' of claim construction that we discussed in *Markman*, and this subsidiary factfinding must be reviewed for clear error on appeal." *Id.* (citing 517 U.S. 370).

To ascertain the meaning of claims, courts look to three primary sources: the claims, the specification, and the prosecution history. *Markman*, 52 F.3d at 979. The specification must contain a written description of the invention that enables one of ordinary skill in the art to make and use the invention. *Id.* A patent's claims must be read in view of the specification, of which they are a part. *Id.* For claim construction purposes, the description may act as a sort of dictionary, which explains the invention and may define terms used in the claims. *Id.* "One purpose for examining the specification is to determine if the patentee has limited the scope of the claims." *Watts v. XL Sys., Inc.*, 232 F.3d 877, 882 (Fed. Cir. 2000).

Nonetheless, it is the function of the claims, not the specification, to set forth the limits of the patentee's invention. Otherwise, there would be no need for claims. *SRI Int'l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc). The patentee is free to be his own lexicographer, but any special definition given to a word must be clearly set forth in the specification. *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1388 (Fed. Cir. 1992). Although the specification may indicate that certain embodiments are preferred, particular embodiments appearing in the specification will not be read into the claims when the claim

language is broader than the embodiments. *Electro Med. Sys., S.A. v. Cooper Life Sciences, Inc.*, 34 F.3d 1048, 1054 (Fed. Cir. 1994).

This Court's claim construction analysis is substantially guided by the Federal Circuit's decision in *Phillips v. AWH Corporation*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). In *Phillips*, the court set forth several guideposts that courts should follow when construing claims. In particular, the court reiterated that "the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Id.* at 1312 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To that end, the words used in a claim are generally given their ordinary and customary meaning. *Id.* The ordinary and customary meaning of a claim term "is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id.* at 1313. This principle of patent law flows naturally from the recognition that inventors are usually persons who are skilled in the field of the invention and that patents are addressed to, and intended to be read by, others skilled in the particular art. *Id.*

Despite the importance of claim terms, *Phillips* made clear that "the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Id.* Although the claims themselves may provide guidance as to the meaning of particular terms, those terms are part of "a fully integrated written instrument." *Id.* at 1315 (quoting *Markman*, 52 F.3d at 978). Thus, the *Phillips* court emphasized the specification as being the primary basis for construing the claims. *Id.* at 1314–17. As the Supreme Court stated long ago, "in case of doubt or ambiguity it is proper in all cases to refer back to the descriptive portions of the specification to aid in solving the doubt or in ascertaining the true intent and meaning of the

language employed in the claims." *Bates v. Coe*, 98 U.S. 31, 38 (1878). In addressing the role of the specification, the *Phillips* court quoted with approval its earlier observations from *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998):

> Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction.

Phillips, 415 F.3d at 1316. Consequently, *Phillips* emphasized the important role the specification plays in the claim construction process.

The prosecution history also continues to play an important role in claim interpretation. Like the specification, the prosecution history helps to demonstrate how the inventor and the United States Patent and Trademark Office ("PTO") understood the patent. *Id.* at 1317. Because the file history, however, "represents an ongoing negotiation between the PTO and the applicant," it may lack the clarity of the specification and thus be less useful in claim construction proceedings. *Id.* Nevertheless, the prosecution history is intrinsic evidence that is relevant to the determination of how the inventor understood the invention and whether the inventor limited the invention during prosecution by narrowing the scope of the claims. *Id.*; *see Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1350 (Fed. Cir. 2004) (noting that "a patentee's statements during prosecution, whether relied on by the examiner or not, are relevant to claim interpretation").

Phillips rejected any claim construction approach that sacrificed the intrinsic record in favor of extrinsic evidence, such as dictionary definitions or expert testimony. The *en banc* court condemned the suggestion made by *Texas Digital Systems, Inc. v. Telegenix, Inc.*, 308 F.3d 1193 (Fed. Cir. 2002), that a court should discern the ordinary meaning of the claim terms (through dictionaries or otherwise) before resorting to the specification for certain limited purposes.

Phillips, 415 F.3d at 1319–24. According to *Phillips*, reliance on dictionary definitions at the expense of the specification had the effect of "focus[ing] the inquiry on the abstract meaning of words rather than on the meaning of claim terms within the context of the patent." *Id.* at 1321. *Phillips* emphasized that the patent system is based on the proposition that the claims cover only the invented subject matter. *Id.*

Phillips does not preclude all uses of dictionaries in claim construction proceedings. Instead, the court assigned dictionaries a role subordinate to the intrinsic record. In doing so, the court emphasized that claim construction issues are not resolved by any magic formula. The court did not impose any particular sequence of steps for a court to follow when it considers disputed claim language. *Id.* at 1323–25. Rather, *Phillips* held that a court must attach the appropriate weight to the intrinsic sources offered in support of a proposed claim construction, bearing in mind the general rule that the claims measure the scope of the patent grant.

The Supreme Court of the United States has "read [35 U.S.C.] § 112, ¶ 2 to require 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." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014). "A determination of claim indefiniteness is a legal conclusion that is drawn from the court's performance of its duty as the construer of patent claims." *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005) (citations and internal quotation marks omitted), *abrogated on other grounds by Nautilus,* 134 S. Ct. 2120.

III. AGREED TERMS

In their August 23, 2017 Joint Claim Construction Chart and Prehearing Statement (Dkt. No. 105, at 1) and their October 18, 2017 Joint Claim Construction Chart (Dkt. No. 140, at 2–3), the parties have set forth agreements as to the following terms in the patents-in-suit:

Term	Agreement
"eliminating the secret information from the first portion of the second memory zone" ('740 Patent, Claim 1)	"rendering inaccessible the secret information in the first portion of the second memory zone"
"management center" ('740 Patent, Claim 1)	"a computer system for providing encrypted data and keys to a remote device"

IV. DISPUTED TERMS

A. "factory key"

Plaintiffs' Proposed Construction	Defendant's Proposed Construction
No construction needed / plain and ordinary meaning	Indefinite under 35 U.S.C. § 112

(Dkt. No. 105, Ex. A, at 1; Dkt. No. 125, at 7; Dkt. No. 130, at 7; Dkt. No. 136, at 2; Dkt. No. 140, at 3.) The parties submit that this term appears in Claim 2 of the '740 Patent. (Dkt. No. 130, at 7.)

(1) The Parties' Positions

Plaintiffs argue that whereas "the range of meanings that Comcast attributes to 'factory key' makes clear that Comcast's argument is really that 'factory key' could mean different things to different people," the proper inquiry is the meaning to a person of ordinary skill in the relevant art. (Dkt. No. 125, at 9.) Plaintiffs also argue that "there is no requirement that a claim term have a 'standard meaning' or otherwise be a term of art to comply with the statute," and "[e]ven if the

inventors coined the term themselves, that does not render the term indefinite if the person having ordinary skill in the art would understand what was claimed." (*Id.*, at 11.)

Defendant responds that "factory key" is a "coined" term that "did not have an understood meaning in the relevant field, and neither the intrinsic nor extrinsic evidence informs one of skill in the art about the scope of the term with any reasonable certainty." (Dkt. No. 130, at 7–8.) For example, Defendant argues that "merely stating that a 'factory key' is not a 'root key' or 'transmission key' does not establish the scope of a 'factory key' with any reasonable certainty, as there are keys that may not be any of these." (*Id.*, at 9–10.) Defendant submits that "Nagravision provides only heavily caveated 'examples' of what a 'factory key' could be, thus leaving the scope of the term completely open-ended and leaving Nagravision itself free to mold the term as it sees fit to suit its infringement theory." (*Id.*, at 11.) Defendant concludes that "[a] skilled artisan is . . . left to guess whether the 'factory key' in claim 2 encompasses a cryptographic key loaded at the factory where the secure module is manufactured, a cryptographic key used only at the factory, or some other undefined key with or without association to the factory that manufactures the secure module." (*Id.*, at 14.)

Plaintiffs reply by reiterating that "the absence of a standard meaning for a claim term does not render it indefinite." (Dkt. No. 136, at 2.) Plaintiffs argue: "That a person of ordinary skill in the art would understand that a 'factory key' could be installed at any of a number of points in the manufacturing process before reaching the customer does not make the term indefinite, because it is clear that is what the term 'factory key' refers to: a key that is installed prior to use by a customer." (*Id.*, at 4.)

<u>(2) Analysis</u>

The parties' experts appear to agree that the relevant art is cryptography. (*See* Dkt.
No. 125, Ex. 4, Aug. 23, 2017 Rubin Decl., at ¶ 18; *see also id.*, Ex. 5, Aug. 23, 2017 Villasenor
Decl., at ¶ 21 (referring to "the context of cryptographic systems, security processors, and secure
communications"); *id.*, Ex. 6, Sept. 16, 2017 Villasenor dep. at 18:25–19:9.) Further, Defendant's
expert has agreed that a "key," in the context of encryption, is used for encryption or decryption
or both. (*See id.* at 40:17–18.)

Claim 2 of the '740 Patent depends from Claim 1. Claims 1 and 2 of the '740 Patent recite
(emphasis added):

> 1. Method for generating a root key implemented by a secure module comprising
> a central unit, a first conditional access memory zone containing all or part of a
> bootstrap program and at least one second memory zone containing a first portion
> and a second portion containing all or part of a user program, the method
> comprising:
> > executing an initialisation program from the first conditional access
> memory zone;
> > reading and temporarily storing a *secret information* from the first
> conditional access memory zone into the first portion of second memory zone
> during the initialisation of the secure module;
> > reading all or part of the second portion of the second memory zone;
> > generating the root key based on an imprint of data of the second portion of
> the second memory zone and on the stored *secret information*, the imprint being
> generated based on the application of a unidirectional function to all or part of the
> data of the second portion of the second memory zone;
> > eliminating the *secret information* from the first portion of the second
> memory zone after the root key has been generated;
> > disabling access to the first conditional access memory zone, wherein at the
> time of execution by the central unit in the second memory zone, no access is
> granted to the first conditional access memory zone
> > wherein the root key is used to allow decryption of transmission key, the
> transmission key allowing secure communication between the secure module and
> a management center.
>
> 2. Method according to claim 1, *wherein the secret information is a factory key*.

Defendant's expert, Dr. John D. Villasenor, has opined that "the term 'factory key' did not have a standard meaning to one of skill in the art in 2003." (*Id.*, Ex. 5, Aug. 23, 2017 Villasenor Decl., at ¶ 21.) Indeed, Plaintiffs have not submitted any dictionaries or treatises to demonstrate that the term "factory key" had a specific, well-established meaning throughout the relevant art at the relevant time.

Nonetheless, Plaintiffs have cited prosecution history in which the examiner cited the "Hazard" reference (United States Patent No. 5,177,790) and stated that a "factory key" is a "key . . . loaded at time of manufacture":

> Regarding claim 2:
> Hazard discloses the method according to claim 1, wherein the secret information is a factory key (figure 1 and 2; memory 13 has a key (*examiner interprets that the key is loaded at time of manufacture, thus being a factory key*) that is loaded into it; column 14 lines 39–44; a third parameter from the third zone (13) can be used in the random number generation). One of ordinary skill in the art at the time of invention could have combined memory 12 with memory 13 in order to allow at least one of the items to be a factory key.

(Dkt. No. 125, Ex. 4, Ex. C, Aug. 24, 2007 Office Action, at 4 (OTVNV_DC_00245977) (emphasis added).)

As to whether sufficient clarity is apparent in the examiner's interpretation, Defendant's expert has testified that "time of manufacture" lacks sufficiently clear boundaries because the phrase might refer to "a time or source restriction" rather than necessarily a "physical location or step restriction." (Dkt. No. 125, Ex. 6, Sept. 16, 2017 Villasenor dep. at 113:17–116:15; *see id.* at 92:3–93:3.) Nonetheless, Defendant's expert has at least acknowledged that a person of ordinary skill in the art would not understand a "factory key" to be a physical key that unlocks a factory or a physical factory at which chips are manufactured. (*See* Dkt. No. 125, Ex. 6, Sept. 16, 2017 Villasenor dep. at 86:17–23 & 89:11–17.)

The dispute thus appears to center on whether the term "factory key" connotes reasonably clear restrictions on when and where such a key is provided. On this subject, Plaintiffs' expert, Dr. Avi Rubin, has opined that "one of ordinary skill in the art at the time of the '740 inventions would understand 'factory key' to carry its plain and ordinary meaning, e.g., *a key provided by the supplier prior to use by a customer*." (*Id.*, Ex. 4, Aug. 23, 2017 Rubin Decl., at ¶ 28 (emphasis added).) Similarly, Plaintiffs' expert has testified that "[t]o one of ordinary skill in the art, the factory key would be one that was *installed on the device before it was given to the customer*." (*Id.*, Ex. 7, Sept. 1, 2017 Rubin dep. at 91:10–13 (emphasis added).)

Thus, Plaintiffs have here proposed that the plain meaning of "factory key" in the relevant art is "a key provided by the supplier prior to use by a customer." (Dkt. No. 125, at 10.) This contrasts with the examiner's interpretation of "factory key" as a key provided at the time of manufacture. (*Id.*, Ex. 4, Ex. C, Aug. 24, 2007 Office Action, at 4 (OTVNV_DC_00245977).) Indeed, Plaintiffs' expert has testified that "a key that is preloaded at the factory is an *example* of a factory key." (Dkt. No. 130, Sept. 1, 2017 Rubin dep. at 128:19–129:9 (emphasis added).)

"During prosecution, . . . the PTO gives claims their broadest reasonable interpretation." *In re Bigio*, 381 F.3d 1320, 1324 (Fed. Cir. 2004) (citation and internal quotation marks omitted).

Plaintiffs' proposal is *broader* than the examiner's "broadest reasonable interpretation" (*id.*) because Plaintiffs' proposal would encompass a key provided *after* the time of manufacture. (*See, e.g.,* Dkt. No. 125, Sept. 1, 2017 Rubin dep. at 123:12–17 ("If you had a key, for example, that a service provider installed on the device after the physical device had been manufactured, and then before it was delivered to the customer, then I would consider that a factory key, too.").) Because Plaintiffs' proposed interpretation is thus broader than the examiner's interpretation under the above-cited "broadest reasonable interpretation" standard, this prosecution history does not

support Plaintiffs' proposed interpretation. *See Facebook, Inc. v. Pragmatus AV, LLC*, 582 F. App'x 864, 869 (Fed. Cir. Sept. 11, 2014) ("The broadest reasonable interpretation of a claim term may be the same as or broader than the construction of a term under the *Phillips* standard. But it cannot be narrower.").

But although Plaintiffs' proposed interpretation is thus overbroad, the proper scope of "factory key" is the scope applied by the examiner. *See id.* This interpretation by the examiner is of significant weight in the present case. *See Am. Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1359 (Fed. Cir. 1984) (patent examiners are "assumed . . . to be familiar from their work with the level of skill in the art"), *abrogated on other grounds by Therasense, Inc. v. Becton, Dickinson & Co.*, 649 F.3d 1276 (Fed. Cir. 2011); *see also PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1304 (Fed. Cir. 2008) (citing *American Hoist*); *Salazar v. Procter & Gamble Co.*, 414 F.3d 1342, 1347 (Fed. Cir. 2005) ("Statements about a claim term made by an Examiner during prosecution of an application may be evidence of how one of skill in the art understood the term at the time the application was filed.").

This interpretation is also consistent with the specification, such as the disclosure explaining that the root key is different from the factory key:

> It is important that this *root key is never constant* and must for that reason be different from any key stored in the first memory zone such as the *factory key*. For this reason the root key is generated as a variable using the new data transmitted by the management centre.

'740 Patent at 3:5–9 (emphasis added). This passage discloses that the root key cannot be the factory key because it is important that the root key "is never constant," which implies that the factory key is constant. *See id.* This disclosure of a factory key that is constant is consistent with the examiner's interpretation that a factory key is provided at the time of manufacture.

Finally, Plaintiffs have submitted patent references in which the term "factory key" (or a similar term) is used, which Plaintiffs argue reinforces that the term "factory key" is not indefinite. (*See* Dkt. No. 125, Ex. 8, U.S. Pat. Appl. Publ'n No. 2006/0236111 ("Bodensjo") at Abstract[2]; *see also id.* at ¶ 0198 ("It is further noted that the term 'factory software' is intended to comprise any computer-executable instructions loaded into the electronic device during production."); *id.*, Ex. 4, Ex. D, U.S. Pat. No. 4,803,725 at 7:21–24, 11:11–20, 12:7–19 & Fig. 3 ("master factory key"); *id.*, Ex. E, European Patent Application Publ'n No. 0179612 ("master factory key").) Also of note, Defendant's expert has acknowledged the disclosure in the specification that "will certainly convey as to one of skill in the art that at least as discussed here, the root key is different from the factory key." (*Id.*, Ex. 6, Sept. 16, 2017 Villasenor Tr. at 65:10–13 (discussing '740 Patent at 3:5–7); *see id.* at 71:13–15 (agreeing that the patent "would suggest the transmission key would be different from the factory key").)

Thus, the evidence cited by Plaintiffs, particularly the examiner's interpretation, is persuasive that the term "factory key" "inform[s], with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus*, 134 S. Ct. at 2128 (citation and internal quotation marks omitted); *see, e.g., Honeywell Int'l Inc. v. Universal Avionics Sys. Corp.*, 488 F.3d 982, 990 (Fed. Cir. 2007) (construing "look ahead distance" in context of aviation electronics despite noting that this term was "not a term of art"). The above-discussed intrinsic and extrinsic evidence outweighs the contrary opinion of Defendant's expert. (*See* Dkt. No. 125, Ex. 5, Aug. 23, 2017 Villasenor Decl., at ¶ 22.)

As to Defendant's argument that "the Examiner's statement did not define or establish the scope of the 'factory key' term with any reasonable certainty either" (Dkt. No. 130, at 10), "[t]he

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[2] Plaintiffs submit that this reference has been "identified by Comcast." (Dkt. No. 125, at 12.)

definiteness requirement . . . mandates clarity, while recognizing that absolute precision is unattainable." *Nautilus*, 134 S. Ct. at 2129; *cf. Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014) ("We do not understand the Supreme Court to have implied in *Nautilus* . . . that terms of degree are inherently indefinite."); *Freeny v. Apple Inc.*, No. 2:13-CV-00361-WCB, 2014 WL 4294505, at *4-*6 (E.D. Tex. Aug. 28, 2014) (Bryson, J., sitting by designation) (discussing *Nautilus* and finding "low power communication signals" not indefinite). For example, Defendant has cited deposition testimony in which Plaintiffs' expert stated that the '740 Patent does not identify the types of factories that would qualify for the term "factory key" (Dkt. No. 130, Ex. 6, Sept. 1, 2017 Rubin dep. at 96:8–16.) Defendant has not demonstrated that such "absolute precision" is required. *Nautilus*, 134 S. Ct. at 2129. Indeed, even Defendant's own expert has stated: "I think one of ordinary skill in the art would understand what the examiner is saying in the parenthetical remark." (*See* Dkt. No. 125, Ex. 6, Sept. 16, 2017 Villasenor dep. at 117:22–118:15.)

Also, Defendant's expert has not adequately supported his suggestion that "factory key" is unclear because it could be interpreted as "a key that is used only at a factory." (*Id.* at 92:15–17.) In particular, the above-cited "Bodensjo" reference, which has been discussed by the parties, does not demonstrate that the term "factory key," as used in the '740 Patent, could refer to a key that is used only at a factory. (*See* Dkt. No. 125, at Ex. 8.)

As to the meaning of "manufacture," Plaintiffs have noted that Bodensjo discloses: "Typically, a manufacturer of such electronic devices delivers the device with or without some preinstalled software and/or data to a customer who further customises the electronic device prior to delivering the device to an end-user." (*Id.* at ¶ 0002.)

Plaintiffs' expert has testified that "manufacture" is "the process of creating the device before it is used by the customer" (wherein this "customer" appears to correspond to the "end-user" referred to in Bodensjo, above), but Plaintiffs' expert then also appeared to use the word "manufacture" as both including and excluding "a technician at a customer's home loading on keys to a device before the customer uses it":

> Q. But, it is your opinion that a factory key could also include keys that are not loaded at the time of manufacture, right?
> [Plaintiffs' counsel]: Objection to the form.
> THE WITNESS: Well, *manufacture being the process of creating the device before it is used by the customer*. And so, the idea in the '740 is that these keys are not keys that are derived through the use of the product but there are keys that are on there beforehand, such as keys that would be loaded at the time of manufacture.
> BY [Defendant's counsel]:
> Q. So in your broad interpretation of the word, manufacture, you are also *including a technician at a customer's home loading on keys to a device before the customer uses it*?
> A. *Right*, those --
> Q. You consider that manufacture.
> [Plaintiffs' counsel]: Hold on. Objection to the form.
> THE WITNESS: *Those keys would have the same security properties with respect to the system and the protocol that one that is loaded at the time of the manufacture would have.* And that is what is important in this patent.

(Dkt. No. 136, Ex. 1, Sept. 1, 2017 Rubin dep. at 131:2–132:7 (emphasis added).) In particular, in the final portion of the above-reproduced testimony, Plaintiffs' expert testified that keys loaded by a technician at a customer's home (before the customer uses the device) would have the *same properties as* a key loaded "at the time of manufacture." *Id.*; *see id.* at 123:12–17. This appears to be inconsistent with Plaintiffs' expert's agreement that "manufacture" would *include* a technician loading keys on a device at a customer's home before a customer uses the device. (*See id.* at 131:2–132:7 ("Right . . . .").) This inconsistency in Plaintiffs' expert's own use of the term "manufacture" evinces that "manufacture" ordinarily has a sufficiently well-understood meaning such that no further construction is necessary as to "manufacture." *See id.*; *see also id.* at 123:12–

17. Indeed, as reproduced above, the examiner used the word "manufacture" without providing any further elaboration. (Dkt. No. 125, Ex. 4, Ex. C, Aug. 24, 2007 Office Action, at 4 (OTVNV_DC_00245977).

To whatever extent any disputes remain as to the "time of manufacture," such disputes relate to factual details of the accused instrumentalities rather than to any legal question for claim construction. *See Acumed LLC v. Stryker Corp.*, 483 F.3d 800, 806 (Fed. Cir. 2007) ("The resolution of some line-drawing problems . . . is properly left to the trier of fact.") (citing *PPG Indus. v. Guardian Indus. Corp.*, 156 F.3d 1351, 1355 (Fed. Cir. 1998) ("after the court has defined the claim with whatever specificity and precision is warranted by the language of the claim and the evidence bearing on the proper construction, the task of determining whether the construed claim reads on the accused product is for the finder of fact")); *Eon Corp. IP Holdings LLC v. Silver Spring Networks, Inc.*, 815 F.3d 1314, 1318–19 (Fed. Cir. 2016) (citing *PPG*).

The Court therefore hereby construes **"factory key"** to mean **"key loaded at the time of manufacture."**

B. "processing the data" and "processed data"

"processing the data"	
Plaintiffs' Proposed Construction	**Defendant's Proposed Construction**
No construction needed / plain and ordinary meaning	"modifying the 'input data' recited in the preceding claim elements"

"processed data"	
Plaintiffs' Proposed Construction	**Defendant's Proposed Construction**
No construction needed / plain and ordinary meaning	"the data resulting from the modifying of the 'input data' recited in the preceding claim elements"

(Dkt. No. 105, Ex. A, at 1–2; Dkt. No. 125, at 13; Dkt. No. 130, at 14; Dkt. No. 136, at 6; Dkt. No. 140, at 4.) The parties submit that these terms appear in Claim 9 of the '188 Patent. (Dkt. No. 130, at 14.)

(1) The Parties' Positions

Plaintiffs submit, as to "processing the data," that "[a]lthough the phrase refers to 'the data' and not 'the input data,' the parties agree and it is otherwise clear that the data being processed is the input data." (Dkt. No. 125, at 14.) Plaintiffs also urge that "processing" is a commonly understood word that requires no construction. (*Id.*) As to "processed data," Plaintiffs argue that "'processed data' does not and cannot refer to 'input data' because 'processed data' has and needs no antecedent basis, but is instead a new element." (*Id.*, at 15.)

Defendant responds, as to "processing the data," that it is "not enough that a juror may understand the word 'processing' when used in everyday conversation; the juror still must be instructed on the meaning of 'processing' within the parlance of the patent and the patent's subject matter." (Dkt. No. 130, at 15.) Defendant argues that "[w]ithin the context of the '188 patent and the patent's subject matter, 'processing the data' requires modifying the input data recited in the preceding claim elements—and absent any disagreement with that construction from Nagravision, the jury should be so instructed." (*Id.*)

As to "processed data," Defendant argues that "[t]he fact that 'processed data' is a new claim limitation does not disconnect 'processed data' from the processing that formed it." (*Id.*, at 16.)

Plaintiffs reply that Defendant "does nothing more than baldy assert that 'processing' should mean 'modifying.' . . . Comcast's say-so is not sufficient to support that construction." (Dkt. No. 136, at 6.) Instead, Plaintiffs argue, "[t]he term 'processing' is a plain English term that a lay jury can understand, and nothing in the specification or the prosecution history of the '188 Patent suggests that the inventors deviated from the ordinary meaning of the term." (*Id.*, at 7.)

As to "processed data," Plaintiffs reply that "[t]o the extent Comcast's proposed construction suggests that 'processed data' consists of modified 'input data'—and nothing else— it is wrong." (*Id.*) In other words, Plaintiffs argue, "[w]hile 'processed data' can include and be derived from 'input data,' there is no reason to limit 'processed data' exclusively to a modified form of 'input data.'" (*Id.*, at 8.)

(2) Analysis

Claim 9 of the '188 Patent recites (emphasis added; square-bracketed lettering added in accordance with Plaintiffs' briefing):

> 9. A method for processing data on a secure system-on-chip, the system-on-chip comprising a central processing unit, an input channel, an output channel, an encryption/decryption engine and a memory, the method comprising the steps of:
> [(a)] passing input data received via the input channel through a virtual encryption module to the encryption/decryption engine to add a first internal encryption layer to the input data;
> [(b)] storing the input data with the first internal encryption layer in the memory;
> [(c)] retrieving the input data with the first internal encryption layer from the memory;
> [(d)] passing the input data retrieved from the memory through a virtual encryption module to the encryption/decryption engine to remove the first internal encryption layer from the input data retrieved from the memory;

[(e)] *processing the data* after the first internal encryption layer has been removed to form *processed data*; and

[(f)] outputting the *processed data* without the first internal encryption layer via the output channel wherein data encrypted with the internal encryption layer is never present outside the system-on-chip.

Plaintiffs' expert, Dr. Avi Rubin, frames the dispute as follows:

> While I agree that "the data" in "processing the data" refers to the input data, I disagree that the "data" in "processed data" refers to the same input data that is recited in the preceding claim elements.

(Dkt. No. 125, Ex. 4, Aug. 23, 2017 Rubin Decl., at ¶ 36.)

The parties thus appear to be in agreement that "processing the data" refers to processing the "input data" recited in the preceding claim elements.

As to Defendant's proposed construction, Defendant has not sufficiently supported its proposal of replacing "processing" with "modifying." Defendant's reliance upon Plaintiffs' expert's testimony is unpersuasive as to Defendant's contention that "processing" requires construction. (*See* Dkt. No. 130, Ex. 6, Sept. 1, 2017 Rubin dep. at 159:8–17 ("Q. . . . Can the step of processing the data in Claim 9 leave the input data completely unchanged? [Objection] THE WITNESS: I don't think that is consistent with the patent, but I would want to spend more time looking at the specification to give a definitive answer to that.").)

The Court therefore hereby expressly rejects Defendant's proposal of "modifying" as unnecessary and as tending to confuse rather than clarify the scope of the claim. *See Phillips*, 415 F.3d at 1314 ("In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words."). Any remaining dispute as to whether "processing" is present in the accused

instrumentalities relates to factual issues rather than to any legal question for claim construction. *See Acumed*, 483 F.3d at 806; *PPG*, 156 F.3d at 1355; *Eon*, 815 F.3d at 1318–19.

As to "processed data," the claim limitation itself recites "*processing the data* after the first internal encryption layer has been removed *to form processed data*," which thus explains that "processed data" is formed as a result of processing the "input data." *See Phillips*, 415 F.3d at 1314 ("the claims themselves provide substantial guidance as to the meaning of particular claim terms," and "the context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms") (citation and internal quotation marks omitted). This is not inconsistent with Plaintiffs' position that, because "processed data" is not introduced by a definite article ("the"), "[t]his 'processed data' that is formed as a result of processing the data is therefore an entirely new thing." (Dkt. No. 125, at 15.)

Plaintiffs have further argued, however, that because Claim 9 is a so-called "comprising" claim (because the transitional phrase is "the method *comprising* the steps of"), the claim is "open-ended" and therefore the term "processed data" is open-ended. (*See* Dkt. No. 125, at 16; *see also* Dkt. No. 136, at 8–9.) Plaintiffs rely upon the general principle that "[o]pen claim language, such as the word 'comprising' as a transition from the preamble to the body of a claim, signals that the entire claim is presumptively open-ended." *MagSil Corp. v. Hitachi Global Storage Techs., Inc.*, 687 F.3d 1377, 1383 (Fed. Cir. 2012) (citation and internal quotation marks omitted).

Plaintiffs' argument fails because "[a]lthough the transitional term 'comprising' indicates that the claim is open-ended, the term does not render each limitation or phrase within the claim open-ended." *In re Varma*, 816 F.3d 1352, 1362 (Fed. Cir. 2016) (citations omitted). *Varma* further explained as follows when overturning an interpretation of the term "a statistical analysis

request corresponding to two or more selected investments" as being covered by a system that

required *two* requests in order to accomplish an analysis of two or more investments:

> "Comprising" means that the claim can be met by a system that contains features over and above those specifically required by the claim element, but only if the system still satisfies the specific claim-element requirements: the claim does not cover systems whose unclaimed features make the claim elements no longer satisfied. Thus, here, a claim-covered system may receive more than one request, but it must in particular be adapted to receive "a request" that itself corresponds to two or more selected investments.

816 F.3d at 1362. Thus, even though Claim 9 is an open-ended "comprising" *claim*, it does *not*

follow that "processed data" is an open-ended *limitation*. To whatever extent Plaintiffs' "open-

ended" argument attempts to read out the limitation that "processed data" is formed by processing

the input data, the Court hereby expressly rejects Plaintiffs' argument. Nonetheless, so long as the

recited limitations are satisfied, additional processing is not necessarily precluded. *See, e.g.,*

Genentech, Inc. v. Chiron Corp., 112 F.3d 495, 501 (Fed. Cir. 1997) ("'Comprising' is a term of

art used in claim language which means that the named elements are essential, but other elements

may be added and still form a construct within the scope of the claim.").

The Court accordingly hereby construes the disputed terms as set forth in the following

chart:

Term	Construction
"processing the data"	**"processing the 'input data' recited in the preceding claim elements"**
"processed data"	**"data resulting from the processing of the 'input data'"**

V. CONCLUSION

The Court adopts the constructions set forth in this opinion for the disputed terms of the

patent-in-suit, and in reaching conclusions the Court has considered and relied upon extrinsic

evidence. The Court's constructions thus include subsidiary findings of fact based upon the extrinsic evidence presented by the parties in these claim construction proceedings. *See Teva*, 135 S. Ct. at 841.

The parties are ordered that they may not refer, directly or indirectly, to each other's claim construction positions in the presence of the jury. Likewise, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

Within thirty (30) days of the issuance of this Memorandum Opinion and Order, the parties are hereby **ORDERED**, in good faith, to mediate this case with the mediator agreed upon by the parties. As a part of such mediation, each party shall appear by counsel and by at least one corporate officer possessing sufficient authority and control to unilaterally make binding decisions for the corporation adequate to address any good faith offer or counteroffer of settlement that might arise during such mediation. Failure to do so shall be deemed by the Court as a failure to mediate in good faith and may subject that party to such sanctions as the Court deems appropriate. No participant shall leave the mediation without the approval of the mediator.

So ORDERED and SIGNED this 13th day of November, 2017.

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RODNEY GILSTRAP
UNITED STATES DISTRICT JUDGE