IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TYLER DIVISION

VSTREAM TECHNOLOGIES, LLC	§	
	§	
	§	
v.	§	**CASE NO.: 6:15cv974-JRG-JDL**
	§	**(Lead Case)**
	§	
PLR HOLDINGS, LLC, ET AL.	§	

MEMORANDUM OPINION AND ORDER

This claim construction opinion construes some of the disputed claim terms[1] in

U.S. Patent No. 6,850,647 ("the '647 Patent"), U.S. Patent No. 7,489,824 ("the '824 Patent"),

U.S. Patent No. 7,627,183 ("the '183 Patent"), U.S. Patent No. 6,690,731 ("the '731 Patent"),

and U.S. Patent No. 8,179,971 ("the '971 Patent"). Plaintiff VStream Technologies, LLC

alleges that Defendants infringe the asserted patents. Plaintiff filed an Opening Claim

Construction Brief (Doc. No. 130), to which Defendants[2] filed a Response (Doc. No. 136), and

Plaintiff filed a Reply (Doc. No. 141). Defendants also filed a Supplemental Claim

Construction Brief. (Doc. No. 146.) The parties additionally submitted a Joint Claim

Construction Chart pursuant to P.R. 4-5(d). (Doc. No. 144.) On August 4, 2016, the Court

held a claim construction hearing. (*See* Doc. No. 149, August 4, 2016 Hearing Transcript

("Tr.").) Upon consideration of the parties' arguments, and for the reasons stated herein, the

Court adopts the constructions set forth below.

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[1] The remaining claim terms in dispute between the parties are construed in the Report and Recommendation of United States Magistrate Judge John D. Love, issued concurrently herewith.

[2] Defendants who have joined the claim construction briefing and hearing include: BlackBerry Corp., BlackBerry Limited, and Motorola Mobility LLC. Contour LLC did not join with respect to claim construction. The Court granted two joint motions to stay all deadlines in the case with respect to Ricoh Americas Corporation, Ricoh Company Ltd., Ricoh Imaging Americas Corporation, Ricoh Imaging Company, Ltd., and Ricoh USA, Inc ("Ricoh Defendants"). (Doc. Nos. 124 & 138.) The time period for the parties' stays have passed; however, the Ricoh Defendants have not joined with respect to claim construction. Default was entered against Drift Innovation, Inc. on May 18, 2016. (Doc. No. 105.) PLR IP Holdings, LLC, PLR Ecommerce, LLC, PLR Brand Services, LLC, C&A IP Holdings, LLC, C&A Licensing, LLC, and C&A Marketing, Inc. were dismissed from the case. (Doc. No. 118.)

OVERVIEW OF THE PATENTS

Plaintiff contends that Defendants literally infringe and induce infringement of the asserted patents. The '647 and '824 Patents relate to "digital processing of compressed video data and more particularly to decompressing a bit stream representative of a plurality of video frames generated by a digital camera." '647 Patent, 1:13-16; '824 Patent, 1:15-18. Both the '647 Patent and the '824 Patent are entitled "System, method and article of manufacture for decompressing digital camera sensor data." Claim 1 of the '647 Patent is representative and recites as follows:

> 1. A method for decompressing a bit stream of compressed data representing a plurality of image portions, comprising:
>   obtaining a plurality of bits of compressed input data from a bit stream;
>   executing a first AC decoding operation based on the obtained plurality of bits of compressed input data in order to generate first output data as a recommendation;
>   emitting the first output data if it is determined that the recommendation should be accepted; and
>   executing a second AC decoding operation in order to generate second output data if it is determined the recommendation should not be accepted.

Claim 3 of the '824 Patent is representative and recites as follows:

> 3. An apparatus for decoding video data comprising:
>   means for obtaining encoded video data;
>   means for executing a first decoding operation on at least a portion of said encoded video data in order to generate first decoded data;
>   means for determining whether the first decoding operation was sufficiently correct;
>   means for executing a second decoding operation on said at least portion of said encoded video data which is slower than said first decoding operation in order to generate second decoded data if said first decoding operation was not sufficiently correct; and
>   means for using said first decoded data if it is determined that said first decoding operation was sufficiently correct and

said second decoded data if it is determined that said first decoding operation was not sufficiently correct.

The '183 Patent is also entitled "System, method and article of manufacture for decompressing digital camera sensor data." The '183 Patent has substantially the same specification as the '647 and '824 Patents, but its claims relate to pipelined parallel processing for data decoding. *See* '183 Patent, 13:10-14:30. Claim 5 of the '183 Patent is representative and recites as follows:

> 5. A system for decompressing compressed video data in a processor for increased efficiency, comprising:
> a processor module for extracting a plurality of components from compressed video data using a look-up table;
> a central processing unit having at least two pipelines for receiving the components of the compressed video data for processing purposes; and
> a pipe analyzer coupled between the processor module and the central processing unit for analyzing the components of the compressed video data and directing the components of the compressed video data into one of the pipelines of the central processing unit based on the analysis.

The '731 Patent is entitled "Method and apparatus for diagonal processing of video data" and the '971 Patent is entitled "Method and apparatus for video data compression." Both patents relate to pre-processing diagonally-arranged data. *See, e.g.*, '731 Patent, 2:30-34; '971 Patent, 25-29. Claim 1 of the '731 patent is representative and recites as follows:

> 1. A method for diagonal processing of video data comprising:
> separating diagonally arranged data from rectilinearly arranged data in a video stream;
> rotating said diagonally arranged data to a rectilinear position; and
> compressing said rotated diagonally arranged data by a rectilinear compression algorithm.

Claim 1 of the '971 Patent is representative and recites as follows:

> 1. A non-transitory computer readable medium embodying executable code for implementing a method for compressing video data comprising:
>> a code segment rotating diagonally arranged video data to a rectilinear position when executing on a digital processing system; and
>> a code segment compressing said rotated diagonally arranged data by a rectilinear compression algorithm when executing on a digital processing system.

LEGAL STANDARD

I.   Claim Construction

"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 v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). The Court examines a patent's intrinsic evidence to define the patented invention's scope. *Id.* at 1313-1314; *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). Intrinsic evidence includes the claims, the rest of the specification, and the prosecution history. *Phillips*, 415 F.3d at 1312-13; *Bell Atl. Network Servs.*, 262 F.3d at 1267. The Court gives claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention. *Phillips*, 415 F.3d at 1312-13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003). Claim language guides the Court's construction of claim terms. *Phillips*, 415 F.3d at 1314. "[T]he context in which a term is used in the asserted claim can be highly instructive." *Id.* Other claims, asserted and unasserted, can provide additional instruction because "terms are normally used consistently throughout the patent." *Id.*

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Differences among claims, such as additional limitations in dependent claims, can provide further guidance. *Id.*

"[C]laims 'must be read in view of the specification, of which they are a part.'" *Id.* (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995)). "[T]he 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.'" *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex. Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). In the specification, a patentee may define his own terms, give a claim term a different meaning than it would otherwise possess, or disclaim or disavow some claim scope. *Phillips*, 415 F.3d at 1316. Although the Court generally presumes terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer. *See SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1343-44 (Fed. Cir. 2001). This presumption does not arise when the patentee acts as his own lexicographer. *See Irdeto Access, Inc. v. EchoStar Satellite Corp.*, 383 F.3d 1295, 1301 (Fed. Cir. 2004).

The specification may also resolve ambiguous claim terms "where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone." *Teleflex, Inc.*, 299 F.3d at 1325. For example, "[a] claim interpretation that excludes a preferred embodiment from the scope of the claim 'is rarely, if ever, correct." *Globetrotter Software, Inc. v. Elam Computer Group Inc.*, 362 F.3d 1367, 1381 (Fed. Cir. 2004) (quoting *Vitronics Corp.*, 90 F.3d at 1583). But, "[a]lthough the specification may aid the court in interpreting the meaning of disputed language in the claims, particular embodiments and examples appearing in the specification will not generally be

read into the claims." *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988); *see also Phillips*, 415 F.3d at 1323.

The prosecution history is another tool to supply the proper context for claim construction because a patentee may define a term during prosecution of the patent. *Home Diagnostics Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1356 (Fed. Cir. 2004) ("As in the case of the specification, a patent applicant may define a term in prosecuting a patent."). The well-established doctrine of prosecution disclaimer "preclud[es] patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution." *Omega Eng'g Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003). The prosecution history must show that the patentee clearly and unambiguously disclaimed or disavowed the proposed interpretation during prosecution to obtain claim allowance. *Middleton Inc. v. 3M Co.*, 311 F.3d 1384, 1388 (Fed. Cir. 2002); *see also Springs Window Fashions LP v. Novo Indus., L.P.*, 323 F.3d 989, 994 (Fed. Cir. 2003) ("The disclaimer . . . must be effected with 'reasonable clarity and deliberateness.'") (citations omitted)). "Indeed, by distinguishing the claimed invention over the prior art, an applicant is indicating what the claims do not cover." *Spectrum Int'l v. Sterilite Corp.*, 164 F.3d 1372, 1378-79 (Fed. Cir. 1988) (quotation omitted). "As a basic principle of claim interpretation, prosecution disclaimer promotes the public notice function of the intrinsic evidence and protects the public's reliance on definitive statements made during prosecution." *Omega Eng'g, Inc.*, 334 F.3d at 1324.

Although "less significant than the intrinsic record in determining the legally operative meaning of claim language," the Court may rely on extrinsic evidence to "shed useful light on the relevant art." *Phillips*, 415 F.3d at 1317 (quotation omitted). Technical dictionaries and treatises may help the Court understand the underlying technology and the manner in which one

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skilled in the art might use claim terms, but such sources may also provide overly broad definitions or may not be indicative of how terms are used in the patent. *Id.* at 1318. Similarly, expert testimony may aid the Court in determining the particular meaning of a term in the pertinent field, but "conclusory, unsupported assertions by experts as to the definition of a claim term are not useful." *Id.* Generally, extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id.*

In patent construction, "subsidiary fact finding is sometimes necessary" and the court "may have to make 'credibility judgments' about witnesses." *Teva v. Sandoz*, 135 S.Ct. 831, 838 (2015). In some cases, "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." *Id.* at 841. "If a district court resolves a dispute between experts and makes a factual finding that, in general, a certain term of art had a particular meaning to a person of ordinary skill in the art at the time of the invention, the district court must then conduct a legal analysis: whether a skilled artisan would ascribe that same meaning to that term *in the context of the specific patent claim under review*." *Id.* (emphasis in original). When the court makes subsidiary factual findings about the extrinsic evidence in consideration of the "evidentiary underpinnings" of claim construction, those findings are reviewed for clear error on appeal. *Id.*

II.   "Means-Plus-Function" Claim Terms

A patent claim may be expressed using functional language. *See* 35 U.S.C. § 112, ¶ 6; *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347–49 & n.3 (Fed. Cir. 2015) (en banc in

relevant portion). Section 112, paragraph 6,[3] provides that a structure may be claimed as a "means . . . for performing a specified function" and that an act may be claimed as a "step for performing a specified function." *Masco Corp. v. United States*, 303 F.3d 1316, 1326 (Fed. Cir. 2002).

But section 112, paragraph 6 does not apply to all functional claim language. There is a rebuttable presumption that section 112, paragraph 6 applies when the claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms. *Masco Corp.*, 303 F.3d at 1326; *Williamson*, 792 F.3d at 1348. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. *See Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1372 (Fed. Cir. 2015) (§ 112, ¶ 6 does not apply when "the claim language, read in light of the specification, recites sufficiently definite structure" (quotation marks omitted) (citing *Williamson*, 792 F.3d at 1349; *Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1099 (Fed. Cir. 2014))); *Williamson*, 792 F.3d at 1349 (§ 112, ¶ 6 does not apply when "the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure"); *Masco Corp.*, 303 F.3d at 1326 (§ 112, ¶ 6 does not apply when the claim includes an "act" corresponding to "how the function is performed"); *Personalized Media Commc'ns, L.L.C. v. Int'l Trade Comm'n*, 161 F.3d 696, 704 (Fed. Cir. 1998) (§ 112, ¶ 6 does not apply when the claim includes "sufficient structure, material, or acts within the claim itself to perform entirely the recited function . . . even if the claim uses the term 'means.'" (quotation marks and citation omitted)).

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[3] The America Invents Act renumbered section 112, paragraph 6 to section 112(f). However, because each of the patents at issue in this case was originally filed before September 16, 2012, the Court will refer to this code section by its previous numbering, section 112, paragraph 6.

DISCUSSION

The parties dispute the meaning of the following claim terms:

I.   "diagonally arranged [. . .] data" ('**731 Patent, claims 1, 20; and** '**971 Patent, claims 1, 6, 7)**

Claim Term	Plaintiffs' Proposal	Defendants' Proposal
"diagonally arranged [. . .] data" ('731 Patent, claims 1, 20; '971 Patent, claims 1, 6, 7)	Plain and ordinary meaning. Or, if the Court believes that this term requires construction, then: Data not arranged parallel or perpendicular to a rectilinear axis.	mosaic sensor data arranged in a cross-hatched pattern with respect to the sensor edges

Plaintiff contends that it is not necessary for the Court to construe this term because "diagonally arranged data" would have been readily understood by one of ordinary skill in the art. (Doc. No. 130 at 18.) But Plaintiff further proposes an alternative construction and asserts that the Court should reject Defendants' proposed construction because it "imports limitations from the specification regarding one embodiment." (*Id.*) Plaintiff has two main disputes with Defendants' proposed construction: (1) the term should not be limited to mosaic sensor data, and (2) the term should not be limited to data arranged in a cross-hatched pattern with respect to the sensor edges. (*Id.*)

Plaintiff first argues that the claims make no reference to "mosaic sensors." Plaintiff contends that "[w]hen the applicants wanted to claim data coming from a sensor, they did so." (Doc. No. 130 at 18.) To support this argument, Plaintiff cites to Claim 9 of the '731 Patent, a dependent claim that recites a camera module including "a video sensor." (*Id.*) Plaintiff further argues that Figure 13a of the specification makes clear that the claimed data can come from any "input source." (Doc. No. 130, at 19 (citing '731 Patent, Fig. 13a, 8:10-12 ("This input source may be a video sensor array, or may be a digital storage or transmission medium.")).) With

respect to diagonally arranged data, Plaintiff contends that this phrase "refers to the relationship of data points, and is not tied to a mosaic sensor array, a cross-hatched pattern, or to any sensor edge." (*Id.* at 19.) Plaintiff further contends that the terms "cross-hatch" and "diagonal" are not used interchangeably in the patent specification, noting that the specification describes a crosshatch pattern as "illustrated by diagonal lines **38** and intersecting diagonal lines **40**." (*Id.*); '731 Patent, 5:16-18. Finally, Plaintiff cites to extrinsic evidence, including dictionary definitions and a district court decision, for the assertion that diagonal means "not parallel or perpendicular to a rectilinear axis." (*Id.* at 20.)

Defendants argue that its proposed construction is supported by the intrinsic record. Defendants cite the '731 Patent and contend that "[t]he specification only discusses the 'data' and 'video data' captured by a mosaic sensor." (Doc. No. 136, at 21 (citing '731 Patent, 1:61-2:5, 2:30-36, 3:5-6, 3:10-11, 4:55-5:26, 7:22-28, 12:39-45, Figs. 1 & 3).) Defendants further note that the "Summary of the Invention" section of the specification states that "[t]he present invention uses 'diagonal' preprocessing to assembly [sic] green pixel data derived from a Bayer-2G mosaic sensor . . . ." (Doc. No. 136, at 21); '731 Patent, 2:30-32. Defendants also clarify that "Defendants' construction does not seek to add a sensor to the claims but rather to make clear that the ***data*** is that from a mosaic sensor." (Doc. No. 136, at 21 (emphasis in original).) Defendants argue that the term should be limited to data in a "cross-hatch pattern" because "this feature is inherent in mosaic sensors and is the key to the alleged invention's specific attempt to solve a problem in a mosaic sensor arrangement." (*Id.* at 22.) Defendants further argue that the phrase "with respect to the sensor edges" is necessary in order to provide a frame of reference, and that Plaintiff's proposal should be rejected because it would allow for confusion with respect to the proper reference frame. (*Id.* at 22-23.)

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The intrinsic record makes clear that the term "diagonally arranged data" should be limited to mosaic sensor data. As Defendants note, the '731 Patent specification consistently refers to rotating mosaic sensor data. '731 Patent, 2:61-65; 3:5-6; 3:10-37; 4:55-5:26; 6:62-7:4; 7:22-28; 8:13-30; 8:42-61; 10:23-12:23; 12:39-57; (*see* Doc. No. 136, at 21.) The first sentence of the Background of the Invention states "[t]his invention relates generally to color digital cameras, and more particularly to the ***processing of color data generated by the sensor of a color digital camera***." '731 Patent, 1:17-19 (emphasis added). The Background section then goes on to specifically describe both the "advantage[s] of using a mosaic type sensor" and the difficulties with processing data collected from mosaic sensors, specifically Bayer-2G mosaic sensors. *Id.* at 1:61-2:5. The first sentence of the Summary of the Invention follows, stating "[t]he present invention manipulates incoming sensor data through a number of filters, while taking the geometry of the sensor into account." *Id.* at 2:9-11. The Summary of the Invention further states that "[t]he present invention uses 'diagonal' preprocessing to assembly [sic] green pixel data derived from a Bayer-2G mosaic sensor into blocks that are suitable for discrete cosine transformation (DCT) compression." *Id.* at 2:30-34. The specification also states that rotation of diagonally arranged mosaic sensor data into 8x8 blocks is "***key to the proper and efficient functioning of the present invention*** . . . ." *Id.* at 5:20-26 (emphasis added). It is a common precept of patent law that references to something in the specification as "the present invention" may limit the scope of the patent claims. *See Honeywell Int'l, Inc. v. ITT Indus., Inc.*, 452 F.3d 1312, 1318 (Fed. Cir. 2006) (meaning of term was limited where "[o]n at least four occasions, the written descriptions refers to the fuel filter as 'this invention' or 'the present invention'."). In this case, where the specification consistently refers to the processing of sensor data as "the

present invention," and also touts the advantages of mosaic sensor data specifically, it is proper to limit this claim term to mosaic sensor data.

The Court notes that some of the specification's discussion about "the present invention" surrounds Bayer-2G mosaic sensors in particular. *See, e.g.*, '731 Patent, 2:30-35. However, the parties agree that the '731 Patent does contemplate other types of "sensor geometries," such that the term should not be limited exclusively to Bayer-2G sensors. (*See* Tr., 23:12-24:4); *see also* '731 Patent, 12:38-42 ("As will be clear to persons skilled in the art, the code listing included herein (HAL) can be easily adapted to different sensor mosaic geometries."); '731 Patent, 7:5-7 ("In other embodiments of the present invention, the R and B color planes may be rotated, while the G plane may be rectilinear.").

Plaintiff's argument that applicant included the word "sensor" in other claims but purposely chose not to use the word "sensor" with the term "diagonally arranged data" is without merit. In the other claims Plaintiff identifies, the applicant is using the terms "sensor" or "sensor array" to describe a physical sensor, not a type of data. *See, e.g.* '731 Patent, Claim 9 ("a camera module . . . further including . . . a video sensor, and a lens assembly aligned with said video sensor.") The claims must be construed in light of the specification in which they appear. *Phillips*, 415 F.3d at 1314. If anything, these additional claims in combination with the rest of the intrinsic record reinforce the construction of "diagonally arranged data" as requiring mosaic sensor data.

Likewise, Plaintiff's argument that construing the term to require mosaic sensor data excludes express embodiments of other data "input sources" is unsupported. The specification states that "the electronic circuitry of the module, such as the encoder and the USB, need not receive its digital input from a lens assembly and sensor array." '731 Patent, 9:44-47. The

specification continues on to state that the encoder could alternatively receive the digital input from "a hard disk, CD-ROM, or DVD." '731 Patent, 9:47-53. This is consistent with a construction of "data" as "mosaic sensor data." As Defendants have clarified, the claimed data need only *originate* from a sensor; it need not come ***directly from*** a sensor to be considered mosaic sensor data. (Doc. No. 136, at 21.) Contrary to Plaintiff's assertion, these embodiments are indeed covered by this construction of the claim term.

The term diagonal would have been readily understood by one of skill in the art. Defendants' proposal equating diagonal with crosshatch is not supported by the intrinsic record because the specification identifies a crosshatch pattern as formed from multiple sets of diagonal lines. *See, e.g.*, '731 Patent, 5:16-18 ("a green mosaic **44** forms a crosshatch pattern, as illustrated by diagonal lines **38** and intersecting diagonal lines **40**.") While Defendants contend that a crosshatch pattern is "inherent" in mosaic sensor patterns (Doc. No. 136, at 22), the specification makes clear that the crosshatch pattern is specifically related to the Bayer-2G sensor, which "places the green pixels in a crosshatched pattern." '731 Patent, 2:3-4. Defendants have not submitted any evidence that all types of mosaic sensors include a cross-hatched geometry. Because this claim term is not limited to Bayer-2G sensor data, it is also not limited to crosshatched data.

The Court also finds it unnecessary to adopt Plaintiff's alternative proposal of "data not arranged parallel or perpendicular to a rectilinear axis." "Diagonal" is a commonly understood term, both by lay persons and by a person of skill in the art reviewing the specification. (Doc. No. 130, at 20.) Further, as Defendants note, Plaintiff's construction of "not arranged parallel or perpendicular to a rectilinear axis" is so vague that some of the meaning inherent in the term "diagonal" is lost in translation; a wide variety of data arrangements could presumably be

considered "not parallel or perpendicular to an axis," without necessarily being arranged diagonal to that axis. No additional construction of "diagonal" is required.

The Court agrees with the parties that a frame of reference is necessary for this term. When the claimed data is originally collected by the sensors, it does not exist in a vacuum. Stating that the data is diagonal "with respect to the sensor edges" allows a person of ordinary skill in the art to orient themselves when reviewing the data in light of the claim. Plaintiff's argument that whether the data is diagonal or rectilinear refers to the "relationship between the data points" does not provide enough information. Indeed, in its Reply brief, Plaintiff emphasizes that "the proper frame of reference to determine a rectilinear axis is the *grid of video data*." (Doc. No. 141, at 10 (emphasis added).) With this statement, Plaintiff at least inherently recognizes that some frame of reference beyond simply *between* the data points is necessary for this term. The phrase "with respect to the sensor edges" provides that frame of reference. Furthermore, the phrase is consistent with Plaintiff's "grid of video data" reference, since that video data was originally collected by a mosaic sensor. The Court does note, however, that consistent with Defendants' clarification above, inclusion of the frame of reference "with respect to the sensor edges" does not mean that the data must come *directly* from a sensor in order to satisfy this claim term. It simply means that the orientation of the data is evaluated based on how the data was arranged when it was first collected by the sensor. *See, e.g.*, '731 Patent, 4:56-59 ("[A green address generator's] design differs from the red and blue address generators because the green mosaic cells are arranged differently than the red and blue data; it is not rectilinear *with respect to the sensor edges*." (emphasis added)).

After thus considering the parties' arguments, the Court finds the phrase "diagonally arranged [. . .] data" should be construed as "mosaic sensor data arranged in a diagonal pattern with respect to the sensor edges."

II.   "rectilinear [] . . . data" ('731 Patent, claims 1, 20)

Claim Term	Plaintiffs' Proposal	Defendants' Proposal
"rectilinear[] . . . data" ('731 Patent, claims 1, 20)	Plain and ordinary meaning. Or, if the Court believes that this term requires construction, then: Data arranged parallel or perpendicular to a rectilinear axis.	mosaic sensor data arranged in a horizontal and vertical grid pattern with respect to the sensor edges

The parties' dispute over the term "rectilinear data" is substantially similar to their dispute over "diagonally arranged data." Plaintiff's arguments focus on the phrase "with respect to the sensor edges." As with diagonally arranged data, Plaintiff argues that there is no reason to include reference to an external framework or data source. (Doc. No. 130, at 20-21.) Plaintiff urges that the specification refers to the position of the data points with respect to each other, "not just with respect to the sensor edges." (*Id.* at 21.) As explained above with respect to "diagonally arranged data," a point of reference beyond simply describing the relationship *between* the data points is necessary for these terms in order to orient the person of skill in the art.

Thus, the Court construes the phrase "rectilinear[] . . . data" as "mosaic sensor data arranged in a horizontal and vertical grid pattern with respect to the sensor edges."

III.   "second AC decoding operation" ('647 Patent, claims 1, 8) and "second decoding operation" ('824 Patent, claims 1-3)

Claim Term	Plaintiffs' Proposal	Defendants' Proposal
"second AC decoding operation"	Plain and ordinary meaning. Or, if the Court believes that this term requires construction, then:	"a second operation that decodes bits representing an image block other than DC code bits of the

('647 Patent, claims 1, 8)	"An AC decoding operation performed after a first AC decoding operation"	image block, where the second operation uses a different decoding operation than the first AC decoding operation"
"second decoding operation" ('824 Patent, claims 1-3)	Plain and ordinary meaning. Or, if the Court believes that this term requires construction, then: "A decoding operation performed after a first decoding operation."	"a second operation that decodes encoded video data, where the second operation uses a different decoding operation than the first decoding operation"

Plaintiff argues that the terms "second AC decoding operation" and "second decoding operation" do not require construction. (Doc. No. 130, at 3.) Alternatively, Plaintiff argues that these terms should be construed to mean "a[n AC] decoding operation performed after a first [AC] decoding operation." (*Id.*) Plaintiff, in essence, argues that the second decoding operation may be the same as the first decoding operation; the second decoding operation simply occurs later in time. (*Id.* at 4-6.) On the other hand, Defendant argues that the second decoding operation must be different than the first decoding operation. (Doc. No. 136, at 4.)

Plaintiff argues that the claim language itself does not require that the decoding operations are different. (Doc. No. 130, at 4.) Plaintiff refers to dependent claims of the '647 Patent where the applicants expressly described the steps in a second decoding operation. (*Id.*) According to Plaintiff, this shows that "when the inventors wanted to claim different processes for decoding operations, they did so expressly." (*Id.*)

Defendants argue that the intrinsic record "consistently refers to the second decoding operation as an 'alternate second decoding operation.'" (Doc. No. 136, at 4-5 (citing '647 Patent, Abstract, 3:44-47, 4:35-38, 8:54-59, 9:5-10).) Defendants also refer to one of the patentee's amendments during prosecution where the patentee argued that the first AC decoding operation is "typically a fast, but possibly error-prone operation" and the second decoding

operation is "typically a slower operation, but is generally error-free." (Doc. No. 136, at 5; Ex.

1.) Defendants further argue that the claims refer to first and second output data, and that those

output data are different. (*Id.* at 6.) Defendants thus argue that in order to use the terms "first"

and "second" consistently, "first" and "second" operations should also be construed as

"different" operations. (*Id.*)

> Claim 1 of the '647 Patent recites:

>> 1. A method for decompressing a bit stream of compressed data representing a plurality of image portions, comprising:
>>> obtaining a plurality of bits of compressed input data from a bit stream;
>>> ***executing a first AC decoding operation*** based on the obtained plurality of bits of compressed input data in order to generate first output data as a recommendation;
>>> ***emitting the first output data if it is determined that the recommendation should be accepted***; and
>>> ***executing a second AC decoding operation*** in order to generate second output data ***if it is determined the recommendation should not be accepted***.

 (emphasis added). Essentially, the claim provides for an alternative decoding operation if "it is

determined that the recommendation should not be accepted." Claim 8 of the '647 Patent and

Claims 1-3 of the '824 Patent similarly recite that a second decoding operation is performed

based on the outcome of a first decoding operation. It is unclear why a person practicing the

claims would choose to perform the same decoding operation twice. If one were to do so, then

more likely than not the second operation would result in the same output data, or same

recommendation. Given that this same recommendation was originally rejected, this result

would not advance the goals of the invention. From a logic standpoint alone, Plaintiff's

construction is untenable.

At the hearing, Plaintiff argued that it is possible that performing the same operation

could still result in a different output if one were to start with a different number of "n bits." (Tr.

at 38:11-15.) Plaintiff has not presented any briefing to support this argument. During the hearing, Plaintiff pointed to Figures 12 and 13, which both include the step of "obtain n bits" to support this argument. (Tr. at 38:20-39:1.) However, there is no indication from the claims that a person would select a different number of bits for the second operation compared to the first operation. A plain reading of the claim language indicates that 1) a plurality of bits is obtained from a bit stream; 2) a first AC decoding operation is executed; and 3) if the output data from the first decoding operation is rejected, then a second AC decoding operation is executed. There is no explanation in either the claims themselves or the intrinsic record generally for why a different plurality of bits would be used for the first operation compared to the second operation. Indeed, Claims 1-3 of the '824 Patent make clear that "said at least portion of said encoded video data" is used in both the first and second decoding operations. Plaintiff's argument is unpersuasive.

Plaintiff's arguments regarding the dependent claims of the '647 Patent are likewise unpersuasive. Plaintiff argues that because the dependent claims recite additional details of the first and second decoding operations, this shows that independent Claim 1 encompasses scenarios where the first and second decoding operations are the same. The Court disagrees. The fact that the dependent claims specifically recite different ways to execute the decoding operations does not say anything about whether the independent claim also covers situations where the first and second decoding operations are the same. If anything, it further indicates that the patentee intended different steps for the first and second decoding operations.

The specification likewise indicates that the second decoding operation includes different steps than the first decoding operation. As Defendants note, the specification refers to "alternate second decoding operations" throughout. (Doc. No. 136, at 4-5 (citing '647 Patent, Abstract

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("on the other hand, if it is determined that there is insufficient space for the first output data, an alternate second decoding operation is executed in order to generate second output data."), 3:44-47, 4:35-38, 8:54-59, 9:5-10).) Furthermore, the patentee used different language in the specification to refer to repeated instances of a decoding operation. *See, e.g.*, '647 Patent, 8:53-54 ("the first decoding operation [] is repeated.").

In its Reply brief, Plaintiff contends that since the word "alternate" does not appear in the claims, relying on the specification's references to an "alternate second decoding operation" impermissibly imports "limitations from the written description into the claims." (Doc. No. 141, at 1 (citing *Laitram Corp. v. NEC Corp.*, 163 F.3d 1342, 1347 (Fed. Cir. 1998)).) This is not the case. Indeed, the specification *interchanges* the terms "alternate second decoding operation" and "second decoding operation." *See, e.g.*, '647 Patent, 4:35-41 ("[I]f during AC decoding it is determined that there is insufficient space for the first output data, an alternate second decoding operation is executed . . . Such second decoding operation includes multiple acts . . ."). Rather than importing limitations from the specification, the Court is simply using the specification to inform the proper scope of the claim term. *Phillips*, 415 F.3d at 1314; *Edwards Lifesciences LLC v. Cook Inc.*, 582 F.3d 1322, 1329 (Fed. Cir. 2009). Moreover, Plaintiff's argument that "alternate" does not mean "different" is unsupported. (*See* Doc. No. 141, at 1.) Plaintiff's own dictionary definition of "alternate" includes the definition "being one of two or more choices; alternative." (Doc. No. 141, Ex. A.)

Plaintiff also argues that the specification's references to repeated instances of a decoding operation support Plaintiff's argument that the decoding operations may be the same. According to Plaintiff, the patent "describes what happens ***during*** the iterative process ('an alternate second decoding operation **1220** is executed') as different from what occurs ***after*** the iterative process is

complete ('the first decoding operation **1203** is repeated')." (Doc. No. 141, at 2 (citing '647 Patent, 8:52-57).) This argument draws too thin of a distinction between the various steps of the decoding operation. The entire program is an iterative process that requires certain events to occur before others can be executed. For instance, the first decoding operation is repeated until either 1) there is insufficient space for the recommended output or 2) the operation reaches the end of the image block. *See* '647 Patent, Figure 12 (labels 1214 and 1223). The second decoding operation ("alternate decoder") is performed only if condition 1 is met. *See id.* at Figure 12 (labels 1214 and 1220), Figure 13. If the first and second decoding operations could be the same, there would be no reason to distinguish between these conditions at all, or to separately reference a "repeated" first decoding operation and an "alternate operation."

The prosecution history also shows that the patentee intended for the decoding operations to be different. In remarks to the Patent Office, the applicant stated:

> Applicant's claim 1 specifies that a number of bits are obtained from a bit stream, and a first AC decoding operation is performed. This is typically a fast, but possibly error-prone operation. The resultant of the first AC decoding operation is a "recommendation" output. If the recommendation is accepted, it becomes the output data. If the recommendation is not accepted, then a second AC decoding operation is performed. This is typically a slower operation, but is generally error-free. The resultant of the second AC decoding operation then becomes the output.

(Doc. No. 136, Ex. 1.) Plaintiff argues that because the patentee uses the term "typically" to describe the characteristics of the two decoding operations, it left open the possibility that the two decoding operations could be the same. This interpretation of the patentee's statements, however, places undue emphasis on the word "typically." Taken in context with the written description and claims, the patentee used the word "typically" to indicate the general characteristics of the two operations, not imply that they could also potentially be the same. After first describing the characteristics of the two decoding operations as "typical," the patentee

continues to distinguish the prior art by directly stating that "[the prior art] does not have a first (fast) decoder and a second (slower) decoder" and "does not teach creating a recommendation from a first decoder, and executing a second (slower) decoder if the recommendation is not accepted." (Doc. No. 136, Ex. 1.) The patentee's statements during prosecution support the conclusion that the two decoding operations are different.

Plaintiff's argument that the patentee distinguished the prior art on other grounds (Doc. No. 141, at 2) is likewise unsupported by the plain statements in the prosecution history. As is apparent from the patentee's remarks above, the patentee did not equate the two decoding operations or state that the second operation was a repeat of the first. Instead, the patentee specifically highlighted the differences between the two operations in order to distinguish the prior art. Although there may have been other differences between the prior art and the claimed invention, as Plaintiff indicates, the patentee made a point to include this explanation of the decoding operations.

Plaintiff asserts that it is a "well-settled principle of patent construction that 'first' and 'second' do not refer to different elements, but to repeated instances of the same element." (*Id.* at 4-5 (citing *3M Innovative Props. Co. v. Avery Dennison Corp.*, 350 F.3d 1365, 1371 (Fed. Cir. 2003); *Stone Basket Innovations LLC v. Cook Med. LLC*, No. 2:15-CV-464-JRG-RSP, 2016 U.S. Dist. LEXIS 39806, at *15 (E.D. Tex. Mar. 25, 2016).) The Court agrees with Defendants that Plaintiff "draws the wrong inference from the cases it cites." (Doc. No. 136, at 7); *see, e.g.*, *3M Innovative Props.*, 350 F.3d at 1372 ("In the context of claim 1, the use of the terms 'first . . . pattern' and 'second . . . pattern' . . . should not in and of itself impose a serial or temporal limitation onto claim 1"). Indeed, VStream itself recognizes that none of its cited cases "are entirely analogous because they deal with physical elements, not the timing of computer

processes." (Doc. No. 141, at 2-3.) To that end, the Court emphasizes that construing patent claim terms does not occur in a vacuum, but in the context of the patent specification and from the perspective of a person of skill in the art at the time of the invention. *Phillips*, 415 F.3d at 1314. In this case and as described above, the intrinsic record indicates that the claimed second decoding operation is different from the first decoding operation. Abandoning this record based on how other Courts have construed other terms from patents claiming different technologies would be incorrect as a matter of law.

As such, the Court construes the term "second AC decoding operation" as "an AC decoding operation that uses a different decoding operation than the first AC decoding operation." In addition, the Court construes the term "second decoding operation" as "a second operation that decodes encoded video data, where the second operation uses a different decoding operation than the first decoding operation."

IV. **"means including a digital processor and memory rotating diagonally arranged video data to a rectilinear position" ('971 Patent, claim 19)**

Claim Term	Plaintiffs' Proposal	Defendants' Proposal
"means including a digital processor and memory rotating diagonally arranged video data to a rectilinear position" ('971 Patent, claim 19)	Structure: 5:15-55; 6:41-45; 7:30-38; 8:12-23; 8:25-29	This term is subject to § 112(f) Function: rotating diagonally arranged video data to a rectilinear position, which should be construed to mean rotating mosaic sensor data arranged in a cross-hatched pattern with respect to the sensor edges around an origin to generate data arranged in a horizontal and vertical grid pattern with respect to the sensor edges before compression Structure: a digital processor and memory including software and/or hardware for performing a rotation algorithm as described in column 10, line 64-column 11, line 61,

		including: (1) translating coordinate pairs for all diagonally arranged pixels so that the origin of the coordinate system is located at a point corresponding to a diagonally arranged pixel, (2) rotating the data clockwise about the origin using equations found at col.11, ll.20-25, and (3) scaling the data so that it can be arranged in a rectilinear horizontal and vertical grid by ensuring that the distance between neighboring points is 1.

"In determining whether to apply the statutory procedures of section 112, paragraph 6, the use of the word 'means' triggers a presumption that the inventor used this term advisedly to invoke the statutory mandates for means-plus-function clauses." *York Products, Inc. v. Central Tractor Farm & Family Center*, 99 F.3d 1568, 1574 (Fed.Cir.1996) (citation omitted). Both parties agree that "means including a digital processor and memory rotating diagonally arranged video data to a rectilinear position" is governed by section 112, paragraph 6. (Doc. No. 136, at 28.) Thus, the claim term must be construed to identify a function and corresponding structure. 35 U.S.C. § 112, ¶ 6.

Regarding function, "[t]he court must construe the function of a means-plus-function limitation to include the limitations contained in the claim language, and only those limitations. *Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, 296 F.3d 1106, 1113 (Fed. Cir. 2002). Plaintiff agreed to Defendants' proposed function for "rotating diagonally arranged video data to a rectilinear position." (Doc. No. 141, at 10.) The Court agrees that this proposed function is supported by the language of the claim. Thus, the function is: "rotating diagonally arranged video data to a rectilinear position." The Court does not separately construe the term "diagonally

arranged video data" in this instance and directs the parties to the other settled claim constructions in this matter.

The parties dispute the proper structure for this term. (*Id.*) While Plaintiff proposes various portions of the specification in its claim chart, the substance of Plaintiff's argument only refers to one excerpt:

> In FIG. 13A, a method 51 for diagonal processing of video data begins with an operation 53 of obtaining video data from an input source. This input source may be a video sensor array, or may be a digital storage or transmission medium. An operation 55 separates diagonally arranged data from rectilinearly arranged data in the video stream. Next, an operation 57 rotates the diagonally arranged data to a rectilinear position, and an operation 59 compresses the rotated diagonally arranged data by a rectilinear compression algorithm

'731 Patent, 7:30-38. On the other hand, Defendants propose an algorithm in the written description of the patent "which describes an abstraction from which software code can be generated to 'mimic[] the transformations performed by the model,' resulting in the rotation of diagonal data." (Doc. No. 136, at 28-29 (citing '731 Patent, 10:20-22).)

When the corresponding structure is a computer, the specification must disclose an algorithm to perform the claimed function. *Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008); *see also WMS Gaming, Inc. v. International Game Technology*, 184 F.3d 1339 (Fed. Cir. 1999). Plaintiff's proposal fails to recite an algorithm linked to the claimed function. The Court thus agrees with Defendants that the structure of this term is the processor and memory programmed to perform the algorithm disclosed in the '971 Patent at column 9, line 65 to column 10, line 66.

The Court finds that "means including a digital processor and memory rotating diagonally arranged video data to a rectilinear position" is a means-plus-function term. The function of the term is rotating diagonally arranged mosaic sensor data to a rectilinear position.

The structure of the term is processor and memory programmed to perform the algorithm disclosed in the '971 Patent at column 9, line 65 to column 10, line 66.

V. "additional compression" ('731 Patent, claim 5; '971 Patent, claim 5)

Claim Term	Plaintiffs' Proposal	Defendants' Proposal
"additional compression" ('731 Patent, claim 5; '971 Patent, claim 5)	Any reduction in the amount of data to represent video data following some prior compression.	further encoding to reduce the size of the data used to represent video data following some prior compression

The parties primarily dispute whether the term "additional compression" means "any reduction" of data or a "further encoding" of data. Plaintiff argues that limiting this term to mean "encoding" would impermissibly exclude other forms of data compression contemplated by the patent. (Doc. No. 130, at 22.) On the other hand, Defendants argue that all forms of data compression disclosed in the patent require a form of encoding. (Doc. No. 136, at 26.) During the hearing, Defendants emphasized that their main concern with Plaintiff's proposal is that they believe it is overly broad and could encompass any inadvertent loss of data. (Tr. at 98:4-8; *see also* Doc. No. 136, at 26.)

The specification does not explicitly limit "additional compression" solely to encoding. The specification states that "[a]s part of the DCT operation various data reduction operations may be performed, including quantization that reduces the accuracy of DCT coefficients to achieve greater compression." '731 Patent, 6:32-36. The specification continues by stating: "[a] run length encoding (RLE) block 22 identifies patterns in the amplitudes that are emitted from the DCT and compress them by generating a count for the number or repetitions that are seen in the data." '731 Patent, 6:44-47. In other words, the specification appears to set forth an example

of data reduction, *i.e.* compression, that includes encoding (an RLE encoding block) and an example that does not include encoding (quantization). (Doc. No. 130, at 23.)

During oral argument, the Court asked the parties about Defendants' concerns surrounding inadvertent data loss. Defendants agreed that if the term did not encompass inadvertent loss of data, that would satisfy their concerns about the term. (Tr. at 103:14-19.) Plaintiff agreed that the language of the claims contemplate an intentional reduction of data. For instance, Claim 5 of the '731 Patent recites: "A method for diagonal processing of video data as recited in claim 4 further comprising performing additional compression on the output of the rectilinear compression algorithm." The claim thus requires an active "performing" of additional compression; not a passive additional compression that might somehow encompass inadvertent data loss.

Thus, the Court construes "additional compression" to mean "further reduction in the size of the data used to represent video data following some prior compression."

Finally, the parties submitted the following terms for which they agreed on constructions:

Term	Court's Construction
"AC decoding operation" ('647 Patent, claims 1, 8)	a decoding operation for decoding bits representing an image block other than DC code bits of the image block
"first decoding operation" ('824 Patent, claims 1-3)	a first operation that decodes encoded video data
"means including a digital processor and memory compressing said rotated diagonally arranged data by a rectilinear compression algorithm" ('971 Patent, claim 19)	**Function:** compressing said rotated diagonally arranged data by a rectilinear compression algorithm **Structure:** processor and memory programmed to perform the algorithm disclosed in the '971 Patent at 6:41-45.

"means performing additional compression on the output of the rectilinear compression algorithm" ('971 Patent, claim 23)	**Function:** performing additional compression on the output of the rectilinear compression algorithm **Structure:** processor and memory programmed to perform the encoding disclosed in the '971 Patent at 6:7-22.
"means for obtaining encoded video data" ('824 Patent, claim 3)	**Function:** obtaining encoded video data **Structure:** a hardware configuration as disclosed in the '824 Patent at 6:65-7:12
"means for executing a first decoding operation on at least a portion of said encoded video data in order to generate first decoded data" ('824 Patent, claim 3)	**Function:** executing a first decoding operation on at least a portion of said encoded video data in order to generate first decoded data. **Structure:** processor programmed to perform the algorithm disclosed in the '824 Patent, at 8:5-25, 9:47-11:6.
"means for executing a second decoding operation on said at least portion of said encoded video data which is slower than said first decoding operation in order to generate second decoded data if said first decoding operation was not sufficiently correct" ('824 Patent, claim 3)	**Function:** executing a second decoding operation on said at least portion of said encoded video data which is slower than said first decoding operation in order to generate second decoded data if said first decoding operation was not sufficiently correct **Structure:** processor programmed to perform the algorithm disclosed in the '824 Patent at 8:64-9:46.
"means for using said first decoded data if it is determined that said first decoding operation was sufficiently correct and said second decoded data if it is determined that said first decoding operation was not sufficiently correct" ('824 Patent, claim 3)	**Function:** using said first decoded data if it is determined that said first decoding operation was sufficiently correct and said second decoded data if it is determined that said first decoding operation was not sufficiently correct **Structure:** processor programmed to perform the algorithm disclosed in the '824 Patent at 8:31-34, 8:41-45, 8:58-61.

The parties submitted agreed constructions to the Court, which the Court reviewed along with the asserted claims, specifications, and prosecution history. The Court found the parties' agreed constructions appropriate, and proposed slight changes to the parties' proposed constructions for the terms construed under section 112, paragraph 6 by proposing a written

function for each of the terms. The parties agreed to these proposed modifications during the claim construction hearing. The modifications are reflected in the chart above.

CONCLUSION

For the foregoing reasons, the Court adopts the constructions set forth above**.**

So ORDERED and SIGNED this 27th day of September, 2016.

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JOHN D. LOVE
UNITED STATES MAGISTRATE JUDGE