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

CLEAR IMAGING RESEARCH, LLC,

Plaintiff,

v.

SAMSUNG ELECTRONICS CO., LTD. and SAMSUNG ELECTRONICS AMERICA, INC.,

Defendants.

Case No. 2:19-cv-00326-JRG

CLAIM CONSTRUCTION MEMORANDUM OPINION AND ORDER

Before the Court is the opening claim construction brief of Clear Imaging Research, LLC ("Plaintiff") (Dkt. No. 82, filed on August 14, 2020),[1] the response of Samsung Electronics Co. Ltd. and Samsung Electronics America, Inc. (collectively "Defendants") (Dkt. No. 91, filed on August 31, 2020[2]), and Plaintiff's reply (Dkt. No. 95, filed on September 4, 2020). The Court held a hearing on the issues of claim construction and claim definiteness on October 14, 2020. Having considered the arguments and evidence presented by the parties at the hearing and in their briefing, the Court issues this Order.

[1] Citations to the parties' filings are to the filing's number in the docket (Dkt. No.) and pin cites are to the page numbers assigned through ECF.
[2] The brief was originally filed on August 28, 2020 as Dkt. No. 90.

Table of Contents

I. BACKGROUND

Plaintiff alleges infringement of six U.S. Patents No. 8,630,484 (the "'484 Patent"), No. 9,154,699 (the "'699 Patent"), No. 9,392,175 (the "'175 Patent"), No. 9,860,450 (the "'450 Patent"), No. 10,171,740 (the "'740 Patent"), and No. 10,389,944 (the "'944 Patent") (collectively, the "Asserted Patents"). The Asserted Patents are related through continuation applications. Each of the Asserted Patents claims priority to U.S. Application No. 11/089,081, which issued as U.S. Patent No. 8,331,723, and to U.S. Application No. 60/556,230. The earliest claimed priority date is March 25, 2004.

In general, the Asserted Patents are directed to technology for addressing image blur. The patents disclose various ways of addressing blur. For example, the patents describe modeling the detected image signal (including any blur) (r) as a convolution of the real image signal (s) with a transfer function (h):

$$r(n,m) = s(n,m) ** h(n,m)$$

'484 Patent col.4 ll.12–24. Here "n" and "m" represent the coordinates in a 2-dimensional space and "h(n,m) describes the way the image 'travels' on the recording medium while it is captured." *Id*. The blur is due to light from a point on the subject traveling across multiple points on the recording medium during image capture, thus spreading the image beyond the accurate extent of the subject. *Id*. at col.3 l.66 – col.4 l.3. The patents teach correcting for blur by using an inverse transfer function (h^{-1}) to extract the real image (s) from the recorded image (r). *Id*. at col.4 l.39 – col.5 l.6. In one embodiment, the transfer function (h) is determined using motion sensors to measure the motion of the imager relative to the image subject during the image capture. The inverse transfer function (h^{-1}) can be derived from the transfer function (h). *Id*. at col.5 l.29 – col.7

l.65. In another embodiment, an estimated (or "blind") transfer function is used. *Id*. at col.7 l.66 – col.8 l.14.

The patents also teach preventing blur at acquisition by acquiring multiple images using a "shutter speed [that] is sufficiently fast compared to the motion of the imager" relative to the subject and then combining the images into a single image to increase the signal-to-noise ratio (SNR). *Id*. at col.9 l.28 – col.10 l.13. In one embodiment, the multiple images are aligned to correct for the relative motion of the camera and subject using data acquired with motion sensors on the imager. *Id*. at col.10 ll.14–30. In another embodiment, the multiple images are aligned using subject pattern recognition, a subject tracking signal, or user input to determine the position of the subject in the images. *Id*. at col.10 ll.31–48.

The patents also teach repositioning the image sensor during capture according to the inverse transfer function in order to compensate for the relative motion of the imager and subject. *Id*. at col.10 l.49 – col.11 l.6. This approach "makes use of motion sensors, and detects the movement of the camera and/or the subject while the image is being captured." *Id*. at col.10 ll.57–60.

Finally, the patents teach that "where appropriate, the different embodiments of the invention can be combined. For example, the superposition embodiment can be used to avoid most blur, and the correcting filter using blind estimation embodiment can then be applied to correct the combined image for any remaining blur." *Id*. at col.11 ll.22–27.

The abstract of the '484 Patent provides:

> Signal processing techniques are applied to digital image data to remove the distortion caused by motion of the camera, or the movement of the subject being photographed, or defective optics, or optical distortion from other sources. When the image is captured, the effect of relative motion between the camera and the subject is that it transforms the true image into a blurred image according to a 2-dimensional transfer function. The 2-dimensional transfer function representing the motion is derived using blind estimation techniques or by using information from sensors that detect the motion. The transfer function is inverted and used to define

> a corrective filter. The filter is applied to the image and the blur due to the motion is removed, restoring the correct image. Another embodiment uses the transfer function to avoid blur by combining multiple consecutive images taken at a fast shutter speed.

The abstracts of the '699, '175, and '740 Patents provide:

> A method and apparatus for use in a digital imaging device for correcting image blur in digital images by combining plurality of images. The plurality of images that are combined include a main subject that can be selected by user input or automatically by the digital imaging device. Blur correction can be performed to make the main subject blur-free while the rest of the image is blurred. All of the image may be made blur-free or the main subject can be made blur-free at the expense of the rest of the image. Result is a blur corrected image that is recorded in a memory.

The abstract of the '450 Patent provides:

> The effect of camera shake in digital video is corrected using signal processing techniques. The digital video is a sequence of digital images. When the sequence of digital images are being captured, movement of the imaging device causes the images to shift on the image sensor of the imaging device and affects the quality of the eventual video. Movement of the imaging device is detected while the video is being captured, and a motion information representing the motion is recorded. A processor determines a correcting filter based on the motion information and user input. The processor modifies the sequence of images captured according to the correcting filter and obtains a final corrected video. Corrected video is displayed in a viewfinder.

The abstract of the '944 Patent provides:

> The effect of blur in digital images of an imaging device is corrected by displaying a preview image of a scene to be captured in a user interface of a device. A user input designates a first subject in the preview image and a plurality of images that include the first subject and a second subject are captured. The plurality of images are processed to obtain a combined image, taking into account at least one of a focal length of a lens of the imaging device and a zoom level of a lens of the imaging device, and the combined image includes the first subject and the second subject, the first subject in the combined image is substantially blur free, and the second subject in the combined image is blurred com- pared to the first image. The combined image is stored in a memory of the device.

Claim 1 of the '484 Patent and Claim 14 of the '450 Patent, exemplary method and device claims respectively, recite as follows (with terms in dispute emphasized):

'484 Patent Claim 1. A method, comprising:
capturing, at a recording medium, a plurality of sequential images, wherein the images are two-dimensional photographic images;
detecting, by a processor, a main subject in each of the images in the plurality of images, wherein the main subject is the same in each of the images;
shifting, by the processor, each of the images vertically and horizontally such that the main subject is aligned at a same location in each of the shifted images; and
combining, by the processor, the shifted images to obtain a corrected image,
wherein the corrected image is a two-dimensional photographic image, and
wherein the combining includes determining, for each image point in the corrected image, a pixel value for the image point based on pixel values in the shifted images at the image point.

'450 Patent Claim 14. An imaging device, comprising:
an image sensor configured to capture a sequence of images, wherein the sequence of images comprise a video, and store the images in a memory;
one or more motion sensors configured to detect motion information for one or more images of the sequence of images, wherein the motion information represents motion of the imaging device during capturing of the one or more images of the sequence of images, and store the motion information in the memory synchronously with the storing of the one or more images; and
a processor configured to:
determine a vertical shift value and a horizontal shift value for one or more images of the sequence of images based at least in part on the motion information;
modify one or more images of the sequence of images based at least in part on the vertical and the horizontal shift values; and
combine the modified images to obtain a final video; and
wherein the memory is further configured to store the final video.

II. LEGAL PRINCIPLES

A. 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) (en banc) (quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To determine the meaning of the claims, courts start by considering the intrinsic evidence. *Id.* at 1313; *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 861 (Fed. Cir. 2004); *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d

1258, 1267 (Fed. Cir. 2001). The intrinsic evidence includes the claims themselves, the specification, and the prosecution history. *Phillips*, 415 F.3d at 1314; *C.R. Bard, Inc.*, 388 F.3d at 861. The general rule—subject to certain specific exceptions discussed *infra*—is that each claim term is construed according to its ordinary and accustomed meaning as understood by one of ordinary skill in the art at the time of the invention in the context of the patent. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003); *Azure Networks, LLC v. CSR PLC*, 771 F.3d 1336, 1347 (Fed. Cir. 2014) ("There is a heavy presumption that claim terms carry their accustomed meaning in the relevant community at the relevant time.") (vacated on other grounds).

"The claim construction inquiry … begins and ends in all cases with the actual words of the claim." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998). "[I]n all aspects of claim construction, 'the name of the game is the claim.'" *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1298 (Fed. Cir. 2014) (quoting *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998)). First, a term's context in the asserted claim can be instructive. *Phillips*, 415 F.3d at 1314. Other asserted or unasserted claims can also aid in determining the claim's meaning, because claim terms are typically used consistently throughout the patent. *Id.* Differences among the claim terms can also assist in understanding a term's meaning. *Id*. For example, when a dependent claim adds a limitation to an independent claim, it is presumed that the independent claim does not include the limitation. *Id*. at 1314–15.

"[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) (en banc)). "[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). But, "'[a]lthough the specification may aid the court in interpreting the meaning of disputed claim language, particular embodiments and examples appearing in the specification will not generally be read into the claims.'" *Comark Commc'ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187 (Fed. Cir. 1998) (quoting *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988)); *see also Phillips*, 415 F.3d at 1323. "[I]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited." *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004).

The prosecution history is another tool to supply the proper context for claim construction because, like the specification, the prosecution history provides evidence of how the U.S. Patent and Trademark Office ("PTO") and the inventor understood the patent. *Phillips*, 415 F.3d at 1317. However, "because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Id.* at 1318; *see also Athletic Alternatives, Inc. v. Prince Mfg.*, 73 F.3d 1573, 1580 (Fed. Cir. 1996) (ambiguous prosecution history may be "unhelpful as an interpretive resource").

Although extrinsic evidence can also be useful, it is "'less significant than the intrinsic record in determining the legally operative meaning of claim language.'" *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc.*, 388 F.3d at 862). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions that are too broad or

may not be indicative of how the term is used in the patent. *Id*. at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition are not helpful to a court. *Id*. Extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id*. The Supreme Court has explained the role of extrinsic evidence in claim construction:

> 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. *See, e.g., Seymour v. Osborne*, 11 Wall. 516, 546 (1871) (a patent may be "so interspersed with technical terms and terms of art that the testimony of scientific witnesses is indispensable to a correct understanding of its meaning"). 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.

Teva Pharm. USA, Inc. v. Sandoz, Inc., 574 U.S. 318, 331–32 (2015).

B. Departing from the Ordinary Meaning of a Claim Term

There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain and ordinary meaning: "1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution."[3] *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d 1362, 1365 (Fed. Cir. 2014) (quoting *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)); *see also GE Lighting Solutions, LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) ("[T]he specification and prosecution history only compel departure from the plain meaning

[3] Some cases have characterized other principles of claim construction as "exceptions" to the general rule, such as the statutory requirement that a means-plus-function term is construed to cover the corresponding structure disclosed in the specification. *See, e.g., CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1367 (Fed. Cir. 2002).

in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions*, 750 F.3d at 1309.

To act as his own lexicographer, the patentee must "clearly set forth a definition of the disputed claim term," and "clearly express an intent to define the term." *Id.* (quoting *Thorner*, 669 F.3d at 1365); *see also Renishaw*, 158 F.3d at 1249. The patentee's lexicography must appear "with reasonable clarity, deliberateness, and precision." *Renishaw*, 158 F.3d at 1249.

To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to a "clear and unmistakable" surrender. *Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1329 (Fed. Cir. 2009); *see also Thorner*, 669 F.3d at 1366 ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope."). "Where an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable." *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013).

C. Functional Claiming and 35 U.S.C. § 112, ¶ 6 (pre-AIA) / § 112(f) (AIA)

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, 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 § 112, ¶ 6 does not apply to all functional claim language. There is a rebuttable presumption that § 112, ¶ 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 Communications, L.L.C. v. International Trade Commission*, 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)).

When it applies, § 112, ¶ 6 limits the scope of the functional term "to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." *Williamson*, 792 F.3d at 1347. Construing a means-plus-function limitation involves multiple steps. "The first step … is a determination of the function of the means-plus-function limitation." *Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc.*, 248 F.3d 1303, 1311 (Fed. Cir. 2001). "[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof." *Id.* A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Id.* The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function, but rather

whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* The corresponding structure "must include all structure that actually performs the recited function." *Default Proof Credit Card Sys. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291, 1298 (Fed. Cir. 2005). However, § 112 does not permit "incorporation of structure from the written description beyond that necessary to perform the claimed function." *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999).

For § 112, ¶ 6 limitations implemented by a programmed general purpose computer or microprocessor, the corresponding structure described in the patent specification must include an algorithm for performing the function. *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999). The corresponding structure is not a general purpose computer but rather the special purpose computer programmed to perform the disclosed algorithm. *Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008).

D. Definiteness Under 35 U.S.C. § 112, ¶ 2 (pre-AIA) / § 112(b) (AIA)

Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112, ¶ 2. A claim, when viewed in light of the intrinsic evidence, must "inform those skilled in the art about the scope of the invention with reasonable certainty." *Nautilus Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014). If it does not, the claim fails § 112, ¶ 2 and is therefore invalid as indefinite. *Id.* at 901. Whether a claim is indefinite is determined from the perspective of one of ordinary skill in the art as of the time the application for the patent was filed. *Id.* at 911. As it is a challenge to the validity of a patent, the failure of any claim in suit to comply with § 112 must be shown by clear and convincing evidence. *BASF Corp. v. Johnson Matthey Inc.*, 875 F.3d 1360, 1365 (Fed. Cir. 2017). "[I]ndefiniteness is a question of law and in effect part of claim construction." *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 517 (Fed. Cir. 2012).

When a term of degree is used in a claim, "the court must determine whether the patent provides some standard for measuring that degree." *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1378 (Fed. Cir. 2015) (quotation marks omitted). Likewise, when a subjective term is used in a claim, "the court must determine whether the patent's specification supplies some standard for measuring the scope of the [term]." *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1351 (Fed. Cir. 2005). The standard "must provide objective boundaries for those of skill in the art." *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014).

In the context of a claim governed by 35 U.S.C. § 112, ¶ 6, the claim is invalid as indefinite if the claim fails to disclose adequate corresponding structure to perform the claimed function. *Williamson*, 792 F.3d at 1351–52. The disclosure is inadequate when one of ordinary skill in the art "would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim." *Id.* at 1352.

III. CONSTRUCTION OF DISPUTED TERMS

A. "processor … configured to …"

Disputed Term[4]	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"processor [is] [further] configured to …"[5] • '484 Patent Claims 8, 12, 13, 15, 19, 20, 23, 24, 28, 30 • '175 Patent Claim 15, 17, 18, 23, 25, 26 • '450 Patent Claims 14, 25, 29, 31 • '699 Patent Claims 9, 24 • '740 Patent Claims 10, 12, 14, 16, 17, 20, 21, 22, 24, 26, 27 • '944 Patent Claims 6, 7, 9, 10, 16, 17, 19, 20	This claim term does not invoke 35 U.S.C. § 112 ¶ 6. No construction is necessary, the term is not subject to § 112 ¶ 6, and is not indefinite.	This is a means-plus-function term under 35 U.S.C. 112 ¶ 6. Indefinite for lack of structure.

[4] The term charts in this order list claims identified in the parties' Joint Claim Construction Chart Pursuant to P.R. 4-5(d) (Dkt. No. 96).
[5] Functions are recited in the Joint Claim Construction Chart Pursuant to P.R. 4-5(d) (Dkt. No. 96).

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits: The term "processor" plainly denotes structure and therefore claim recitation of a "processor … configured to" perform a function does not invoke 35 U.S.C. § 112, ¶ 6. The presumption against application of § 112, ¶ 6 is further supported by other structural indicia in the claims. Specifically, the claims recite other structural components and how they interact with the processor, providing the objectives and operation of the processor terms. And "processor" is consistently used in the Asserted Patents to denote structure. If the Court determines that the presumption against § 112, ¶ 6 is overcome for any of these terms, Plaintiff "respectfully requests that the Court order supplemental briefing so Clear Imaging can identify where the structure is disclosed in the specifications for any relevant term(s)." Dkt. No. 82 at 9–17.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '484 Patent col.11 ll.43–46; '484 Patent File Wrapper June 8, 2011 Office Action at 2–3 (Plaintiff's Ex. M, Dkt. No. 82-15 at 4–5); U.S. Patent No. 8,331,723 Patent File Wrapper Claims[6] at claims 9–10 (Plaintiff's Ex. L, Dkt. No. 82-14 at 3). **Extrinsic evidence**: Jones Decl.[7] ¶¶ 22–23, 25, 27–35 (Dkt. No. 82-1); U.S. Patent No. 10,719,927 at col.13 ll.13–15, claim 1 (Plaintiff's Ex. K, Dkt. No. 82-13).

Defendants respond: A general-purpose processor is not sufficient structure for the functions recited in the claims and the claims do not recite the interaction between the processor and structural claim elements, so the claims do not provide the structural indicia that Plaintiff contends.

[6] Plaintiff represents this document as presenting the "original claims" of the patent. The Court is not able to determine this from the document itself.

[7] Declaration of Dr. Mark Jones in Support of Clear Imaging's Opening Claim Construction Brief

Therefore, the "processor … configured to …" terms are governed by § 112, ¶ 6. Because the terms are governed by § 112, ¶ 6, the patents must disclose structure (algorithms) for performing the functions. The patents fail to disclose such structure and Plaintiff has admitted as much by failing to identify any structure in the patents for these terms. As such, the "processor … configured to …" terms render claims indefinite. Dkt. No. 91 at 27–31.

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence**: '484 Patent col.4 ll.40–41. **Extrinsic evidence**: Villasenor Decl. ¶¶ 24–30 (Defendants' Ex. 91-1).

Plaintiff replies: Defendants appear to improperly apply precedent directed to determining structure when § 112, ¶ 6 applies in the analysis of whether § 112, ¶ 6 applies. Ultimately, the term "processor," and the use of that term in the claims and entire intrinsic record provide sufficient structural context to support the presumption against applying § 112, ¶ 6 to the "processor … configured to …" terms. Dkt. No. 95 at 5–6.

Analysis

There are two issues in dispute. First, whether the "processor … configured to …" terms are governed by 35 U.S.C. § 112, ¶ 6. Second, whether these terms, if governed by § 112, ¶ 6, are supported by the requisite disclosure of structure in the Asserted Patents. The terms are not governed by § 112, ¶ 6 and the second issue is therefore moot.

Defendants have not overcome the presumption against applying § 112, ¶ 6. The Court begins with the presumption that § 112, ¶ 6 does not apply because the terms do not include the "means" language traditionally used to signal application of the statute. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347–49 & n.3 (Fed. Cir. 2015) (en banc in relevant portion). This "presumption can be overcome and § 112, para. 6 will apply if the challenger demonstrates that the claim term

fails to recite sufficiently definite structure or else recites function without reciting sufficient structure for performing that function." *Id.* at 1349 (quotation marks omitted). "[T]he mere fact that the disputed limitations incorporate functional language does not automatically convert the words into means for performing such functions." *Zeroclick, LLC v. Apple Inc.*, 891 F.3d 1003, 1008 (Fed. Cir. 2018). "The question whether [a term] invokes section 112, paragraph 6, depends on whether persons skilled in the art would understand the claim language to refer to structure, assessed in light of the presumption that flows from the drafter's choice not to employ the word 'means.'" *Samsung Elecs. Am., Inc. v. Prisua Eng'g Corp.*, 948 F.3d 1342, 1354 (Fed. Cir. 2020).

The presumption against applying § 112, ¶ 6 to the "processor … configured to …" terms stands. As used in the Asserted Patents, the term "processor" is accorded its customary meaning of a class of structures on which software can run. *See e.g.*, '484 Patent col.11 ll.43–46 ("the image correcting apparatus can be implemented in an integrated circuit, or in software to run on a processor, or a combination of the two"); *IEEE 100 The Authoritative Dictionary of IEEE Standards Terms* at 872 (7th ed. 2000) (defining "processor" as hardware that "accepts a program as input, prepares it for execution. and executes the process so defined with data to produce results" and as a "device that interprets and executes instructions, consisting of at least an instruction control unit and an arithmetic unit"), Dkt. No. 82-11 at 5. Thus, "processor" in the patents is not a nonce term.

The claims themselves also provide significant indicia of the structural nature of the claimed processors. For example, Claim 20 of the '740 Patent provides:

> **20.** An imaging device for capturing and processing images, comprising:
> a user interface configured to display an image, wherein the image is a preview of the field of view of the device, and wherein the image includes a first subject and a second subject;
> a processor configured to receive user input designating the first subject in the image to be kept blur free;

> a memory configured to store a plurality of images captured by the device, wherein the plurality of images include the first subject and the second subject;
> the processor further configured to combine the plurality of images to obtain a combined image, such that:
> the combined image includes the first subject and the second subject, the first subject in the combined image is blur free, and the second subject in the combined image is blurred compared to the first subject;
> the user interface further configured to display the combined image; and
> a memory configured to store the combined image.

'740 Patent col.14 ll.33–52. This claim sets forth how the processor operates in conjunction with the user interface and memory to achieve specified image-processing objectives. This context indicates the structural nature of the claimed processor and is sufficient to sustain the presumption against § 112, ¶ 6. *Linear Tech. Corp. v. Impala Linear Corp*., 379 F.3d 1311, 1319–21 (Fed. Cir. 2004) ("circuit [for performing a function]" found to be sufficiently definite structure because the claim recited the "objectives and operations" of the circuit); *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1295, 1301 (Fed. Cir. 2014) ("heuristic [for performing a function]" found to be sufficiently definite structure in part because the claim described the operation and objectives of the heuristic); *Zeroclick, LLC*, 891 F.3d 1008 (Fed. Cir. 2018) ("program that can [perform function]" found to be sufficiently definite structure in part because the claims provided operational context for the program); *Prisua Eng'g Corp.*, 948 F.3d at 1347–48, 1353–54 ("digital processing unit … performing [functions]" found to be sufficiently definite structure in part because the claims provided operational context for the unit). Given this context, Defendant has failed to overcome the presumption against application of § 112, ¶ 6.

Accordingly, the Court rejects Defendants' position and determines that the "processor … configured to …" terms are not governed by § 112, ¶ 6 and that they have their plain and ordinary meanings without the need for further construction.

B. "user interface … configured to …"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"user interface [is further] configured to …"[8] • '740 Patent Claims 10, 12, 20, 21, 22 • '944 Patent Claims 6, 7, 16, 17	This claim term does not invoke 35 U.S.C. § 112 ¶ 6. No construction is necessary, the term is not subject to § 112 ¶ 6, and is not indefinite.	This is a means-plus-function term under 35 U.S.C. 112 ¶ 6. Indefinite for lack of structure.

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits: The presumption against application of 35 U.S.C. § 112, ¶ 6 to the "user interface … configured to …" terms cannot be overcome as the term "user interface" is plainly structural. The presumption against application of § 112, ¶ 6 is further supported by claimed and described operational associations of the "user interface" with other structural elements. If the Court determines that the presumption against § 112, ¶ 6 is overcome for any of these terms, Plaintiff "requests supplemental briefing on whether the claims disclose corresponding structure in the specification." Dkt. No. 82 at 17–20.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '944 Patent, at [57] Abstract, col.11 ll.9–12; U.S. Patent No. 6,101,238 at fig.9, col.11 ll.32–35 (Plaintiff's Ex. N, Dkt. No. 82-16); U.S. Patent No. 6,249,616 at col.4 ll.14–17 (Plaintiff's Ex. O, Dkt. No. 82-17); U.S. Patent No. 6,198,283 at col.11 ll.17–21 (Plaintiff's Ex. P, Dkt. No. 82-18); U.S. Patent No. 6,124,864 at col.6 ll.44–46 (Plaintiff's Ex. Q, Dkt. No. 82-19). **Extrinsic evidence**: Jones Decl. ¶¶ 40, 42–45 (Dkt. No. 82-1);

[8] Functions are recited in the Joint Claim Construction Chart Pursuant to P.R. 4-5(d) (Dkt. No. 96).

IEEE 100 The Authoritative Dictionary of IEEE Standards Terms at 1242 (7th ed. 2000), "user interface" (Plaintiff's Ex. I, Dkt. No. 82-11 at 7).

Defendants respond: The term "user interface" does not denote a definite structure but rather is a nonce term used to introduce a function without sufficient structure. And the Asserted Patents do not provide any description of any structure for performing the claim-recited functions. As such, the "user interface … configured to …" terms are governed by but fail to satisfy § 112, ¶ 6. Dkt. No. 91 at 31–32.

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence**: '944 Patent, at [57] Abstract. **Extrinsic evidence**: Villasenor Decl. ¶¶ 31–32, 34 (Defendants' Ex. 91-1); *IEEE 100 The Authoritative Dictionary of IEEE Standards Terms* at 1242 (7th ed. 2000), "user interface" (Plaintiff's Ex. I, Dkt. No. 82-11 at 7).

Plaintiff replies: Defendants have not overcome the presumption against § 112, ¶ 6. Dkt. No. 95 at 6.

Analysis

There are two issues in dispute. First, whether the "user interface … configured to …" terms are governed by 35 U.S.C. § 112, ¶ 6. Second, whether these terms, if governed by § 112, ¶ 6, are supported by the requisite disclosure of structure in the Asserted Patents. The terms are not governed by § 112, ¶ 6 and the second issue is therefore moot.

The presumption against applying § 112, ¶ 6 to the "user interface … configured to …" terms stands. As used in the Asserted Patents, the term "user interface" is accorded its customary meaning of a class of structures through which a user of a device interacts with the device. *See e.g.*, '944 Patent, at col.12 ll.54–56 ("displaying a preview image of the scene to be captured in a

user interface of the [imaging] device; receiving a user input in the user interface"); *IEEE 100 The Authoritative Dictionary of IEEE Standards Terms* at 872 (7th ed. 2000) (defining "user interface" as "a physical interface between the operator and the system equipment" and the "part of the application that permits the user and application to communicate with each other to perform certain tasks"), Dkt. No. 82-11 at 7. Thus, "user interface" in the patents is not a nonce term.

The claims themselves also provide significant indicia of the structural nature of the claimed processors. For instance, and as set forth above in the "processor … configured to …" terms, Claim 20 of the '740 Patent recites how the user interface operates in conjunction with a processor and memory to achieve specified image-processing objectives. Given this context, Defendant has failed to overcome the presumption against application of § 112, ¶ 6.

Accordingly, the Court rejects Defendants' position and determines that the "user interface … configured to …" terms are not governed by § 112, ¶ 6 and that they have their plain and ordinary meanings without the need for further construction.

C. "a display configured to receive user input"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"a display configured to receive user input" • '450 Patent Claims 26, 32	This claim term does not invoke 35 U.S.C. § 112 ¶ 6. No construction is necessary, the term is not subject to § 112 ¶ 6, and is not indefinite.	This is a means-plus-function term under 35 U.S.C. 112 ¶ 6. Indefinite for lack of structure.

The Parties' Positions

Plaintiff submits: The presumption against application of 35 U.S.C. § 112, ¶ 6 to "a display configured to receive user input" cannot be overcome as the term "display" is plainly structural. The presumption against application of § 112, ¶ 6 is further supported by claimed and described operational associations of the "display" with other structural elements. If the Court determines

that the presumption against § 112, ¶ 6 is overcome for this term, Plaintiff "requests supplemental briefing on whether the claims disclose corresponding structure in the specification." Dkt. No. 82 at 20–22.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '450 Patent, at [57] Abstract, col.11 ll.3–6; '450 Patent File Wrapper June 2, 2017 Office Action at 3 (Plaintiff's Ex. S, Dkt. No. 82-21 at 5); U.S. Patent Application Publication No. 2003/0076408 at fig.1, ¶ [0015] (Plaintiff's Ex. R, Dkt. No. 82-20). **Extrinsic evidence**: U.S. Patent No. 10,719,927 at col.13 ll.13–15, claim 1 (Plaintiff's Ex. K, Dkt. No. 82-13); Jones Decl. ¶¶ 48–51 (Dkt. No. 82-1).

Defendants respond: The term "display" does not denote a definite structure but rather refers to a generic device with wide-ranging meaning. And the Asserted Patents do not provide any description of any structure for performing the claim-recited function of receiving user input. As such, the "a display configured to receive user input" term is governed by but fails to satisfy § 112, ¶ 6. Dkt. No. 91 at 32–33.

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence**: U.S. Patent No. 9,800,787 Patent[9] File Wrapper April 25, 2017 Reply (Defendants' Ex. 7, Dkt. No. 91-9). **Extrinsic evidence**: Villasenor Decl. ¶¶ 35–38 (Defendants' Ex. 91-1).

Plaintiff replies: Defendants have not overcome the presumption against § 112, ¶ 6. Dkt. No. 95 at 6–7.

[9] U.S. Patent No. 9,800,787 is related to the Asserted Patents through a priority claim to U.S. Patent Application No. 11/089,081. '484 Patent, at [63] Related U.S. Application Data; https://patentcenter.uspto.gov/#!/applications/15149481/continuity.

Analysis

There are two issues in dispute. First, whether "a display configured to receive user input" is governed by 35 U.S.C. § 112, ¶ 6. Second, whether this term, if governed by § 112, ¶ 6, is supported by the requisite disclosure of structure in the Asserted Patents. The term is not governed by § 112, ¶ 6 and the second issue is therefore moot.

The presumption against applying § 112, ¶ 6 to the "display …" term stands. "Display" is used in the art as a definite name for structure. *See, e.g.*, U.S. Patent No. 10,719,927 at col.5 ll.3–6 ("The electronic device 101 may include at least one of a bus 110, a processor 120, a memory 130, an input/output (IO) interface 150, a display 160, a communication interface 170, or a sensors 180."), col.6 ll.1–4 ("The display 160 includes, e.g., a liquid crystal display (LCD), a light emitting diode (LED) display, an organic light emitting diode (OLED) display, or a microelectromechanical systems (MEMS) display, or an electronic paper display."). That "display" may encompass a variety of structures does not render it a nonce term. *See, e.g.*, *Personalized Media Communs., L.L.C. v. ITC*, 161 F.3d 696, 705 (Fed. Cir. 1998) ("Even though the term 'detector' does not specifically evoke a particular structure, it does convey to one knowledgeable in the art a variety of structures known as 'detectors.' We therefore conclude that the term "detector" is a sufficiently definite structural term to preclude the application of § 112, P 6."). Given this context, Defendant has failed to overcome the presumption against application of § 112, ¶ 6.

Accordingly, the Court rejects Defendants' position and determines that "a display configured to receive user input" is not governed by § 112, ¶ 6 and that it has its plain and ordinary meaning without the need for further construction.

D. "a receiver configured to receive, from a subject of the images, a tracking signal that is transmitted from the subject and indicates a location of the subject"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"a receiver configured to receive, from a subject of the images, a tracking signal that is transmitted from the subject and indicates a location of the subject" • '484 Patent Claim 26	This claim term does not invoke 35 U.S.C. § 112 ¶ 6. No construction is necessary, the term is not subject to § 112 ¶ 6, and is not indefinite.	This is a means-plus-function term under 35 U.S.C. 112 ¶ 6. Indefinite for lack of structure.

The Parties' Positions

Plaintiff submits: The presumption against application of 35 U.S.C. § 112, ¶ 6 to "receiver configured to receive … a tracking signal …" cannot be overcome as the term "receiver" is plainly structural. The presumption against application of § 112, ¶ 6 is further supported by claimed and described operational associations of the "receiver" with other structural elements. If the Court determines that the presumption against § 112, ¶ 6 is overcome for this term, Plaintiff "requests supplemental briefing on whether the claims disclose corresponding structure in the specification." Dkt. No. 82 at 22–23.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '484 Patent col.10 ll.44–46. **Extrinsic evidence**: Jones Decl. ¶ 53 (Dkt. No. 82-1).

Defendants respond: The term "receiver" does not denote a definite structure but rather refers to a generic device with wide-ranging meaning. And the Asserted Patents do not provide any description of any structure for performing the claim-recited function of receiving a tracking signal. As such, the "a display configured to receive user input" term is governed by but fails to satisfy § 112, ¶ 6. Dkt. No. 91 at 33–34.

In addition to the claims themselves, Defendants cite the following extrinsic evidence to support their position: Villasenor Decl. ¶¶ 39–41 (Defendants' Ex. 91-1).

Plaintiff replies: Defendants have not overcome the presumption against § 112, ¶ 6. Dkt. No. 95 at 7.

Plaintiff cites further **extrinsic evidence** to support its position: Jones Decl. ¶¶ 52–54 (Dkt. No. 82-1).

Analysis

There are two issues in dispute. First, whether "a receiver configured to receive, from a subject of the images, a tracking signal that is transmitted from the subject and indicates a location of the subject" is governed by 35 U.S.C. § 112, ¶ 6. Second, whether this term, if governed by § 112, ¶ 6, is supported by the requisite disclosure of structure in the Asserted Patents. The term is not governed by § 112, ¶ 6 and the second issue is therefore moot.

The presumption against applying § 112, ¶ 6 to the "receiver …" term stands. The Federal Circuit has instructed that "[t]he term 'receiver' (i.e., the absence of the term means) presumptively connotes sufficiently definite structure to those of skill in the art." *EnOcean GmbH v. Face Int'l Corp.*, 742 F.3d 955, 959 (Fed. Cir. 2014) (citing *Personalized Media*, 161 F.3d at 703–04). *EnOcean* noted "scientific literature demonstrating that the term 'receiver' was well understood in the art." *Id*. Notably, Defendants have not presented any cases in which "receiver" in a patent claim invoked § 112, ¶ 6 or § 112(f).

Claim 26 of the '484 Patent provides further context that informs the structural nature of the "receiver":

> **26.** An apparatus, comprising:
> a recording medium configured to capture a plurality of images, wherein the images are two-dimensional photographic images;

> ***a receiver configured to receive***, from a subject of the images, a tracking signal that is transmitted from the subject and indicates a location of the subject; and
> a processor configured to:
> shift each of the plurality of images vertically and horizontally such that the subject is aligned at a same location in each of the shifted images; and
> combine the shifted images to obtain a corrected image,
> wherein the corrected image is a two-dimensional photographic image, and
> wherein, for each image point in the corrected image, a pixel value for the image point is based on pixel values in the shifted images at the image point.

'484 Patent col.14 l.64 – col.15 l.13 (emphasis added). The claim recites how the receiver operates in conjunction with a subject of the images and provides location information on that subject that is used by the processor to shift the images. Given this context, Defendant has failed to overcome the presumption against application of § 112, ¶ 6.

Accordingly, the Court rejects Defendants' position and determines that "a receiver configured to receive, from a subject of the images, a tracking signal that is transmitted from the subject and indicates a location of the subject" is not governed by § 112, ¶ 6 and that it has its plain and ordinary meaning without the need for further construction.

E. The Designating and Detecting Terms

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"designates a subject" • '484 Patent Claims 27, 28	plain and ordinary meaning, no construction necessary	identifies an object to use as a reference point for aligning images to correct blur.
"detect[ing] ... [a / the] main subject" • '484 Patent Claims 1, 5, 8, 12–13, 15, 19–20, 22–24	plain and ordinary meaning, no construction necessary	identif[y/ing] [an/the] object to use as a reference point for aligning images to correct blur

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"detect[ing] ... [a / the] location of the main subject" • '484 Patent Claim 6, 29, 30	plain and ordinary meaning, no construction necessary	identif[y/ing] [an/the] object to use as a reference point for aligning images to correct blur
"designat[e/es/ing] … a main subject" • '175 Patent Claims 1, 8, 15, 23 • '699 Patent Claims 1, 9, 17, 24	plain and ordinary meaning, no construction necessary	identif[y/ies/ing] an object to use as a reference point for aligning images to correct blur
"designat[e/ing] … a/the … subject" • '740 Patent Claims 1, 10, 20	plain and ordinary meaning, no construction necessary	identif[y/ying] [an/the] object to use as a reference point for aligning images to correct blur
"designat[e/es] … a/the … subject" • '944 Patent Claims 1, 2, 6, 7, 12, 16, 17	plain and ordinary meaning, no construction necessary	identif[y/ies] [an/the] object to use as a reference point for aligning images to correct blur

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits: The meanings of the various Designating and Detecting terms are plain without construction. Defendants' proposed constructions improperly deviate from the plain meanings by adding three limitations: "i) 'to correct blur,' ii) 'aligning images,' and iii) 'reference point.'" Designating a subject is not necessarily to "correct blur." For instance, Claims 20 and 29 of the '740 Patent are directed to combining images in such a way that a first subject is "kept blur free" while other another subject is blurred compared to the first, without reference to correcting blur. Designating a subject is not necessarily for aligning images. For instance, Claim 27 of the

'740 Patent expressly recites modifying images "such that the first subject is aligned in a same location in the plurality of images before combining the plurality of images" while other claims, such as Claim 20 of the '740 Patent, do not recite alignment, suggesting that alignment is not inherent to operation of the claims. Finally, designating a subject is not necessarily for identifying the subject as a reference point. The subject may encompass multiple points, rather than only a single point as Defendants suggest. For example, Claim 23 of the '740 Patent specifies "calculate a pixel value for each pixel in the first subject." Dkt. No. 82 at 23–29.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '484 Patent fig.9, col.3 ll.11–12, col.4 ll.4–6, col.10 ll.31–48; '699 Patent fig.11, col.10 ll.35–39, col.10 ll.43–49. **Extrinsic evidence**: U.S. Patent Application Publication 2013/0128090 at claim 1 (Plaintiff's Ex. T, Dkt. No. 82-22); U.S. Patent No. 8,941,770 at claim 4 (Plaintiff's Ex. U, Dkt. No. 82-23); Jones Decl. ¶ 63 (Dkt. No. 82-1).

Defendants respond: As described in the Asserted Patents and during prosecution, designating/detecting a subject in the claimed invention refers to identifying the subject as an alignment reference in the process of correcting image blur. Specifically, the invention is directed to correcting blur caused by relative motion between the imaging device and the subject by combining multiple images acquired at high shutter speed. As described, the high shutter speed reduces the blur but also otherwise reduces image quality. The images are combined to increase the image quality, but the images must be aligned to account for movement between image captures. The patents describe two alternatives for aligning the images: (1) using a motion sensor and (2) designating a subject in the image to use as a reference point (citing '484 Patent col.10 ll.31–48). The claims at issue are directed to using a designated subject to align the images. This

is the only "designating" described in the patents. Indeed, the claims of the '484 Patent were distinguished from the prior art during prosecution on the grounds that detecting/designating the subject in the claims "means using it as the reference point for alignment, as opposed to aligning the images in some other way." Dkt. No. 91 at 6–16.

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence**: '484 Patent col.1 ll.25–30, col.1 ll.39–47, col.9 l.28 – col.11 l.2; '699 Patent col.10 l.25 – col.11 l.2; '740 Patent, at [54] Title, [57] Abstract; '484 Patent File Wrapper March 4, 2013 Reply at 9–12 (Defendants' Ex. 1, Dkt. No. 91-3 at 10–13), May 10, 2013 Office Action at 2–3 (Defendants' Ex. 2, Dkt. No. 91-4 at 6–7), July 3, 2013 Reply at 14–15 (Defendants' Ex. 4, Dkt. No. 91-6 at 15–16), September 10, 2013 Notice of Allowance at 3 (Defendants' Ex. 5, Dkt. No. 91-7 at 4); U.S. Patent No. 5,963,675 at figs.2(a)–(c), col.6 ll.37–63 (Defendants' Ex. 3, Dkt. No. 91-5). **Extrinsic evidence**: Villasenor Decl.[10] ¶¶ 44–54, 56–64, 67–68, 72–75, 78 (Defendants' Ex. 91-1).

Plaintiff replies: There is no lexicography or disavowal that supports Defendants' proposed constructions. In fact, the section relied upon by Defendants, namely, '484 Patent col.10 ll.31–33, is expressly addressed to an embodiment and does not define, or even mention, designating a subject. The patents also teach using a motion sensor to detect movement of the subject in order to combine images and avoid blur. Such an implementation of the invention would improperly be excluded by Defendants' proposals. The prosecution history of the '484 Patent likewise does not support Defendants' narrowing constructions. Specifically, the argued distinction over the prior

[10] Declaration of John Villasenor Regarding Claim Construction for U.S. Patent Nos. 8,630,484, 9,392,175, 9,860,450, 9,154,699, 10,171,740, and 10,389,944

art was not the use of the subject as a reference point for aligning images to correct blur, but rather that the prior art did not detect a subject for any purpose. Dkt. No. 95 at 7–12.

Plaintiff cites further intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '484 Patent, at [57] Abstract, col.3 ll.55–58; '699 Patent col.10 ll.35–51, col.10 l.67 – col.11 l.2, col.11 ll.11–15; '484 Patent File Wrapper July 3, 2013 Reply at 14–15 (Defendants' Ex. 4, Dkt. No. 91-6 at 15–16). **Extrinsic evidence**: Jones Decl. ¶¶ 57, 65, 68 (Dkt. No. 82-1).

Analysis

The issue in dispute distills to whether the Designating/Detecting claims should be limited to one variant of the "third embodiment" described in the patents. They should not.

The claims provide significant context informing the meaning of the Designating and Detecting terms. For example, Claims 20, 23, 27, and 29 of the '740 Patent provide as follows:

> **20.** An imaging device for capturing and processing images, comprising:
> a user interface configured to display an image, wherein the image is a preview of the field of view of the device, and wherein the image includes a first subject and a second subject;
> a processor configured to receive user input ***designating the first subject in the image to be kept blur free***;
> a memory configured to store a plurality of images captured by the device, wherein the plurality of images include the first subject and the second subject;
> the processor further configured to combine the plurality of images to obtain a combined image, such that:
> the combined image includes the first subject and the second subject, the first subject in the combined image is blur free, and the second subject in the combined image is blurred compared to the first subject;
> the user interface further configured to display the combined image; and
> a memory configured to store the combined image.
>
> **23.** The imaging device of claim **20,** wherein the processor is further configured to ***calculate a pixel value for each pixel in the first subject*** of the combined image, based on values of the pixel of the first subject in one or more of the plurality of images.
>
> **27.** The imaging device, of claim **20,** wherein the processor is further configured to ***modify the plurality of images such that the first subject is***

> ***aligned*** ***in a same location in the plurality of images*** before combining the plurality of images to obtain the combined image.
>
> **29.** The imaging device of claim **20,** wherein the processor is further configured to ***calculate a pixel value, for each pixel not in the first subject*** of the combined image, based on pixel values in the plurality of images.

'740 Patent col.14 ll.33–52, col.15 ll.10–14, col.16 ll.6–10, col.16 ll.15–18 (emphasis added). These claims plainly state that the first subject is designated "to be kept blur free." This suggests that the claim is directed to preventing blur rather than correcting blur. Claim 27 also plainly states that images are modified "such that the first subject is aligned in a same location in the plurality of images." This suggests that alignment using the first subject as a reference is not an inherent aspect of the claim. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc) (noting that the use of the term "steel baffles" "strongly implies that the term 'baffles' does not inherently mean objects made of steel"). Claims 23 and 29 alternatively set forth calculating combined-image pixel values for pixels in the first subject and for pixels not in the first subject, respectively. This further suggests that the claims do not inherently require correction of the designated subject since not all claims require calculating combined-image pixels in the first subject.

Similarly, Claims 1 and 6 of the '699 Patent provide:

> 1. A method comprising:
> displaying an image in a viewfinder;
> receiving user input, by the viewfinder, ***designating*** ***a main subject*** in the image;
> capturing a plurality of photographic images at a recording medium, wherein the plurality of ***photographic images include the designated main subject***;
> combining by a processor, the plurality of photographic images to create a combined photographic image such that the main subject in the combined photographic image is substantially blur free and areas of the combined photographic image other than the main subject are blurred; and
> recording, in a memory, the combined photographic image.

> 6. The method of claim 1, wherein the combining comprises ***shifting the plurality of images such that the main subject is aligned in a same location*** in the plurality of images.

'699 Patent col.12 ll.41–55, col.13 ll.4–6 (emphasis added). Claim 1 is silent on whether the designated subject is aligned across the plurality of images, Claim 6 is directed to such alignment. This again suggests that alignment in not inherent to designating. Indeed, Claim 1 recites that the designated subject is necessarily included in the plurality of images, stating a purpose of designating other than aligning images.

The description of the invention also indicates that images are not necessarily corrected for blur. Notably, the patents provide: "In accordance with a third embodiment of the present invention the blurring of an image is ***prevented*** as it's being captured, as described below." '484 Patent col.9 ll.28–30 (emphasis added). It should be axiomatic that blur that is prevented need not be corrected.

The patents also do not limit the designating/detecting claims to exclude use of motion sensors, as Defendants argue. The passage that Defendants rely upon states, in context:

> As an alternative to the third embodiment, ***the reference point for aligning the higher speed images is not the imager location***, but the subject itself. In other words, higher shutter speed images can be aligned and combined such that a designated subject in a field of view is clear and sharp whereas other parts of the image may be blurred. For example, a moving subject such as a car in motion can be the designated subject. If high shutter speed images are combined such that the points of the image of the moving car are aligned, the image of the car will be clear and sharp, while the background is blurred. As a way to align a designated subject, such as the car in this example, pattern recognition and segmentation algorithms may be used that are well known to those skilled in the art, and defined in current literature. Alternatively, ***a tracking signal that is transmitted from the subject can be used to convey its position***. Alternatively, the user can indicate, such as by an indicator in a viewfinder, which object in the field of view is the designated subject to be kept blur-free.

Id. at col.10 ll.31–48 (emphasis added). This states that there are a variety of ways to align the images of a moving subject, including using location of the subject rather than the location of the imaging device. The patents also teach using motion sensors to track the location of either the

subject or the imaging device. *See, e.g.*, *id*., at col.10 ll.14–21 ("an accelerometer or other motion sensor, is attached to or incorporated within the imager … [and] indicates how much the imager moved while each of the series of images was captured"), col.10 ll.58–59 ("motion sensors, … detect[] the movement of the camera and/or the subject while the image is being captured"), col.11 ll.4–5 ("Additional sensors (not shown) can be used to detect motion of the subject ….). And the patent expressly teaches that "the different embodiments of the invention can be combined." *Id*. at col.11 ll.22–23. Taken together, these disclosures suggest using a motion sensor to track the location of a designated subject.

Finally, the prosecution history does not support Defendants' proposed constructions. The claim then at issue recites:

> 1. (Previously Presented) A method, comprising:
> capturing, at a recording medium, a plurality of sequential images, wherein the images are two-dimensional photographic images;
> ***detecting***, by a processor, ***a main subject*** in each of the images in the plurality of images, wherein the main subject is the same in each of the images;
> ***shifting***, by the processor, each of the images vertically and horizontally ***such that the main subject is aligned at a same location*** in each of the shifted images; and
> ***combining***, by the processor, the shifted images ***to obtain a corrected image***,
> wherein the corrected image is a two-dimensional photographic image, and
> wherein the combining includes determining, for each image point in the corrected image, a pixel value for the image point based on pixel values in the shifted images at the image point.

'484 Patent File Wrapper July 3, 2013 Reply at 2, (emphasis added), Dkt. No. 91-6 at 3. This claim expressly states that main subject is used to align the images to obtain a correct image. Thus, the claim expresses the limitations the Defendants seek to import into "detecting … a main subject." Again, that these limitations are expressed suggests that they are not inherent to the "detecting … a main subject" limitation. And the applicant's argument to distinguish the prior art does not suggest otherwise. Specifically, the applicant provided:

> Van Der Wal ***does not seek to create a "corrected image,"*** instead Van Der Wal seeks to smooth the transition from one frame to the next frame for video playback. Therefore, Van Der Wal teaches a method, not of identifying a main subject, but evaluating the whole frame and correlating one whole frame to another. This is confirmed by Van Der Wal at column 6, line 64 - column 7, line 9, which states as follows:
>
> > As shown in FIG. 4, a set of image correlations are performed in a hierarchical fashion to determine the amount of image motion that has occurred between the current frame F(t) and the previous frame F(t-1). To determine the amount of image motion, an image pyramid is generated from the current frame F(t). For example, the Laplacian pyramid Lz(t-1) to Lz(t-1), for example L.sub.O (t-1) to L_4 (t-1), is generated for the previous frame F(t-1) and the Laplacian pyramid Lz(t) to Lz(t), for example L.sub.O (t) to L4 (x), is generated for the current frame F(t). The correlation between the current frame F(t) and the previous frame F(t-1) are performed using a sixty four pixel value by sixty four pixel value region of the frames.
>
> The end product of ***Van Der Wal does not seek to create a corrected image***, but instead provide a less jittery video. For these reasons, Van Der Wal ***does not teach or suggest detecting "a main subject in each of the images in the plurality of images," as recited in the pending claim***. Instead, Van Der Wal merely correlates the whole frame.
>
> Secondly, ***Van Der Wal does not shift each of the images vertically and horizontally such that the main subject is aligned*** at a same location in each of the shifted images ***and combine the shifted images to obtain a corrected image.*** Instead, Van Der Wal may shift adjacent video frames such that it appears the shifted images and as if the video camera was stationary, ***there is no teaching or motivation to combine the images in Van Der Wal***. Indeed, a video such as described in Van Der Wal is a sequence of images shown or viewed subsequently. Combining subsequent images is counter to the video processing in Van Der Wal as it would create a single image that is fixed in time, rather than a video.
>
> Accordingly, Applicant submits Van Der Wal fails to teach or claim 1.

Id. at 14–15 (emphasis added), Dkt. No. 91-6 at 15–16. The applicant distinguished Van Der Wal because the reference did not meet the express detecting, shifting, and combining-to-correct limitations of the pending claim, not because the detecting limitation inherently required identifying an object to use as a reference point for aligning images to correct blur. This is not the disavowal Defendants suggest.

Ultimately, the intrinsic record does not support limiting the claims as Defendants propose. Accordingly, the Court rejects Defendants' proposed constructions in their entirety and determines that these terms have their plain and ordinary meanings without the need for further construction.

F. "blurred compared to" and "blurry compared to"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"blurred compared to" • '699 Patent Claim 3, 11, 19, 26 • '740 Patent Claims 1, 2, 4, 10, 14, 20, 24 • '944 Patent Claims 1, 2, 4, 6, 7, 9, 11, 12, 14, 16, 17, 19	plain and ordinary meaning, no construction is necessary and the term is not indefinite	indefinite
"blurry compared to" • '740 Patent Claim 12, 21, 22	plain and ordinary meaning, no construction is necessary and the term is not indefinite	indefinite

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits: The claims provide the standard by which the blur is determined: one portion of the image is blurred/blurry compared to another portion. This is not a term of degree. Dkt. No. 82 at 29–31.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '484 Patent col.10 ll.38–41, col.11 l.60 –

col.12 l.2. **Extrinsic evidence**: Jones Decl. ¶¶ 71–72 (Dkt. No. 82-1); Samsung Webpage[11] (Plaintiff's Ex. V, Dkt. No. 82-24); Samsung Webpage[12] (Plaintiff's Ex. W, Dkt. No. 82-25).

Defendants respond: The Asserted Patents do not specify how to determine whether one image is blurred compared to another. There were various methods known in the art to perform such a comparison, but because the patents do not specify which method to use, the meaning of these terms is not reasonably certain. Specifically, it is possible that for images of similar but not identical blurring, one method of measuring blur will indicate that one image is blurred compared to another but a different method of measuring blur will not indicate any difference. Dkt. No. 91 at 16–19.

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence**: '484 Patent col.10 ll.38–41, col.11 l.60 – col.12 l.2. **Extrinsic evidence**: Villasenor Decl. ¶¶ 81–88 (Defendants' Ex. 91-1).

Plaintiff replies: The claims do not need to be limited to a specific mathematical comparison to be of reasonably certain scope. And the claims are directed to a comparison between a blur free/substantially blur free image portion and a blurred portion, so Defendants' close-case hypothetical is inapt. Dkt. No. 95 at 12.

Analysis

The issue in dispute is whether it is reasonably certain what it means for an image (or portion) to be blurred or blurry compared to another image (or portion). It is.

[11] The document includes the following URL, which appears to be incomplete: https://www.samsung.com/latin_en/support/mobile-devices/when-i-try-to…

[12] The document includes the following URL, which appears to be incomplete: https://www.samsung.com/in/support/mobile-devices/why-image-quality-of-f1-5-aperture-is-wor...

In the context of the Asserted Patents, blurring refers to the effect of light from a point on the subject being spread across multiple points on the image. For example, the patents provide:

> The nature of the blur is that the light reflected from a reference point on the subject does not fall on a single point on the recording medium, but rather it 'travels' across the recording medium. Thus a spread-out, or smudged, representation of the reference point is recorded.

'484 Patent col.3 l.66 – col.4 l.3. The comparisons between images (or portions of an image) to determine if one is blurred compared to the other thus involve comparison of the spreading of the subjects in the image. An image with more spreading than another would be deemed blurry compared to the other.

The Court is not persuaded that the existence of various methods to measure blur renders these terms indefinite. It appears that the methods of measuring blur are methods of approximating an objective reality. For example, a reference of record provides that a particular measurement algorithm "gives a fairly accurate sense of image quality." Kanjar De and V. Masilamani, *Image Sharpness Measure for Blurred Images in Frequency Domain*, 64 Procedia Engineering 149, 151 (2013), Dkt. No. 91-10 at 4. The reference also notes that "[t]he proposed approach is better than JNB metric and CPBD measure as these measures fail after a certain point where with increase in the value of standard deviation of Gaussian blur kernel the image quality measure gives a higher value as we can observe from figures 5(b) and (c)." *Id*. at 153, Dkt. No. 91-10 at 6; *see also, id*. at 155 ("It is observed from figure 6(b), the CPBD measure also follows the same trend but in certain cases with high L value we see that image quality score increases, which is not accurate depiction of image quality. Similarly from figure 6(c) we infer that JNB measure also fails for certain cases."). That one measurement method is deemed "fairly accurate" and "better than" other methods which may yield measures that are "not accurate" further suggests that the level of blur itself is objective and that the differences in measurement result are due to inaccuracy in the

measurement method. But variance in the accuracy across methods of measuring an objective standard does not render the objective standard indefinite.

Accordingly, Defendants have failed to prove any claim is indefinite for including "blurred compared to" or "blurry compared to."

G. "substantially blur free"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"substantially blur free" • '699 Patent Claims 1, 9, 17, 24 • '944 Patent Claims 1, 2, 6, 7, 11, 12, 16, 17	plain and ordinary meaning, no construction is necessary and the term is not indefinite	indefinite

The Parties' Positions

Plaintiff submits: One of ordinary skill in the art would understand the meaning of "substantially blur free" in the context of digital image processing. And the Asserted Patents provide guidance regarding the degree of blurring. For instance, the patents distinguish a "clear and sharp" image from a blurred image (citing '699 Patent col.10 l.54 – 11:2). And the term "substantially" is used in a Samsung image-processing patent (U.S. Patent No. 8,964,044). Dkt. No. 82 at 31–34.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '699 Patent fig.11, col.10 ll.2–24, col.10 l.54 – col.11 l.2, col.11 ll.28–32, col.12 ll.18–23. **Extrinsic evidence**: Jones Decl. ¶¶ 76–77 (Dkt. No. 82-1); U.S. Patent No. 8,964,044 at col.2 ll.5–19, claim 1 (Plaintiff's Ex. X, Dkt. No. 82-26).

Defendants respond: The Asserted Patents do not provide sufficient guidance regarding what degree of blurring is encompassed by "substantially blur free." And the meaning of "substantially" in Samsung's image-processing patent is defined in the patent and the Samsung patent therefore

provides the requisite guidance for a term of degree, unlike the Asserted Patents. Dkt. No. 91 at 19–22.

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence**: '699 Patent col.10 l.67 – col.11 l.2. **Extrinsic evidence**: Villasenor Decl. ¶¶ 93, 95–104 (Defendants' Ex. 91-1); Ozluturk Dep.[13] at 231:15–22, 232:13 – 233:4, 235:2–4 (Defendants' Ex. 6, Dkt. No. 91-8 at 3–4); U.S. Patent No. 8,964,044 at col.2 ll.5–19, col.4 ll.21–30, claim 1 (Plaintiff's Ex. X, Dkt. No. 82-26).

Plaintiff replies: "The term is not used in a vacuum, but must be understood in contrast to the other 'blur' terms." In this context, "a designated subject in the image is substantially blur free (e.g., 'clear and sharp') relative to other areas of the image that are blurred." Dkt. No. 95 at 13–14.

Plaintiff cites further **intrinsic evidence** to support its position: '699 Patent figs.13–14.

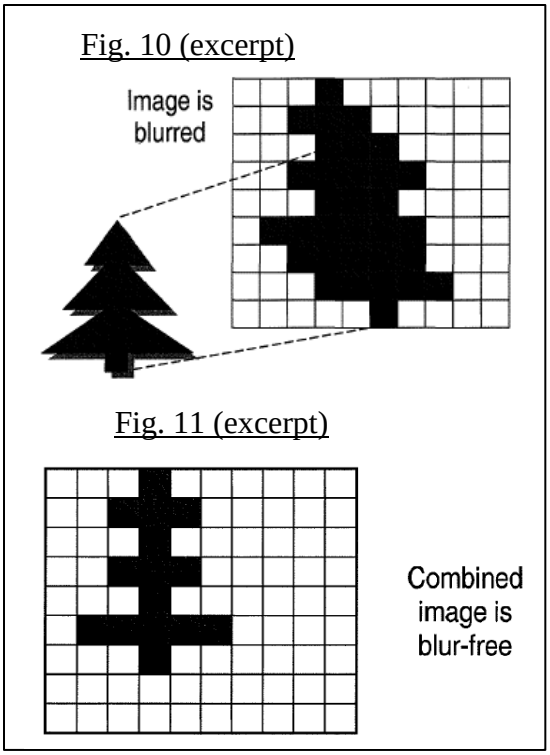
Analysis

The issue in dispute is whether it is reasonably certain what it means for an image to be "substantially blur free." It is not.

The Asserted Patents do not provide sufficient guidance for determining whether a given level of blur is "substantially blur free." Notably, both "blur free" and "substantially blur free" are used in the patents and the distinction between these two terms is not clear. For example, the patents reference Figures 10 and 11 (excerpts reproduced below) in distinguishing between a blurred and a blur-free image. '484 Patent col.9 l.38 – col.10 l.3. The patents explain that "[i]f the imager is shaken or moved while the image is being captured, the situation is equivalent to copies of the same image being captured multiple times in an overlapping fashion with an offset. The result is a

[13] Remote/Oral/Videoconference Deposition of Fatih Ozluturk (June 30, 2020).

blurred image. … This is graphically illustrated in FIG. 10." *Id*. at col.9 ll.38–44. This blur can be prevented if "[t]he multiple images can all be stored and aligned once all of them are captured, or alternatively, each image can be aligned and combined with the first image in 'real time' without the need to store all images individually. ***The blur of the resulting image is <u>substantially</u> reduced***, as depicted in FIG. 11**."** *Id*. at col.9 l.65 – col.10 l.3 (emphasis added). Thus, the image of Figure 11 is "blur-free" rather than "substantially blur free" even though the blur is only "substantially reduced" compared to the image of Figure 10. This suggests that a "substantially blur free" image means something other than an image with the blur "substantially reduced." In the same context, the patents explain that "images can be aligned and combined such that a designated subject in a field of view is clear and sharp." *Id*. at col.10 ll.34–35. This suggests that "substantially blur free" is not the same as "clear and sharp" but rather that "blur free" is "clear and sharp."



Finally, some claims are directed to "blur free" images while other claims are directed to "substantially blur free" images. For example, Claim 20 of the '740 Patent recites "the first subject in the combined image is blur free," '740 Patent col.14 ll.47–48, while Claim 24 of the '699 Patent recites "the main subject in the combined photographic image is substantially blur free," '699 Patent col.14 ll.36–37. Again, this suggests that "blur free" and "substantially blur free" are not synonymous. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc) (noting

that the use of the term "steel baffles" "strongly implies that the term 'baffles' does not inherently mean objects made of steel"). Ultimately, the patents do not provide sufficient guidance as to the meaning of "substantially blur free."

Accordingly, Defendants have proven that '699 Patent Claims 1, 9, 17, 24 and '944 Patent Claims 1, 2, 6, 7, 11, 12, 16, 17 are each indefinite.

H. "the display"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"the display" • '740 Patent Claims 1, 2, 12, 21, 22	plain and ordinary meaning, no construction is necessary and the term is not indefinite	indefinite

The Parties' Positions

Plaintiff submits: One of ordinary skill in the art "would understand the claim refers to a hardware display where the 'displaying the combined image' is shown." Dkt. No. 82 at 34–37.

In addition to the claims themselves, Plaintiff cites the following **extrinsic evidence** to support its position: Jones Decl. ¶ 88 (Dkt. No. 82-1).

Defendants respond: There is no antecedent reference for "the display" recited in the claims. Thus, the meaning of the term is not reasonably certain. Dkt. No. 91 at 22–26.

In addition to the claims themselves, Defendants cite the following **extrinsic evidence** to support their position: Villasenor Decl. ¶¶ 114–16 (Defendants' Ex. 91-1).

Plaintiff replies: The term "'the display' has antecedent basis in the earlier elements 'displaying an image in a user interface' (cl 1) and 'a user interface configured to display an image' (cl 20)." Dkt. No. 95 at 14.

Analysis

The issue in dispute is whether the meaning of "the display" is reasonably certain. It is.

The antecedent basis for "the display" is implicit in the claims. For example, Claim 1 of the '740 Patent provides:

> **1**. A method for use in an imaging device, the method comprising:
> ***displaying* *an image in a user interface of the device***, wherein the image is a preview of a field of view of the device, and wherein the image includes a first subject and a second subject;
> designating by a processor of the imaging device the first subject in the image to be kept blur free;
> capturing a plurality of images by the imaging device, wherein the plurality of images include the first subject and the second subject;
> combining the plurality of images by the processor to obtain a combined image, such that:
> the combined image includes the first subject and the second subject, the first subject in the combined image is blur free, and the second subject in the combined image is blurred compared to the first subject;
> displaying the combined image in ***the display of the device***; and
> storing the combined image in a memory of the device.

'740 Patent col.12 ll.46–65 (emphasis added). Here, the first limitation in the body requires displaying an image in a user interface of the device. This implicitly requires a "display." Thus, later recitation of "the display of the device" refers to this implicit display. *See Energizer Holdings, Inc. v. Int'l Trade Comm'n*, 435 F.3d 1366, 1370 (Fed. Cir. 2006) (holding that "an antecedent basis can be present by implication").

Accordingly, Defendants have failed to prove any claim is invalid for including "the display." The Court construes "the display" as follows:

- "the display" means "the display of the user interface."

IV. CONCLUSION

The Court adopts the constructions above for the disputed and agreed terms of the Asserted Patents. The Court further finds that '699 Patent Claims 1, 9, 17, 24 and '944 Patent Claims 1, 2, 6, 7, 11, 12, 16, 17 are each indefinite for including "substantially blur free." Furthermore, the parties should ensure that all testimony that relates to the terms addressed in this Order is constrained by the Court's reasoning. However, in the presence of the jury the parties should not

expressly or implicitly refer to each other's claim construction positions and should not expressly refer to any portion of this Order that is not an actual construction adopted by the Court. The references to the claim construction process should be limited to informing the jury of the constructions adopted by the Court.

SIGNED this 30th day of October, 2020.

ROY S. PAYNE
UNITED STATES MAGISTRATE JUDGE