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I. Background

Plaintiffs Infernal Technology LLC and Terminal Reality, Inc. brought this action against Defendant Activision Blizzard Inc. (“Activision”), alleging infringement of United States Patent Nos. 6,362,822 (the “’822 patent”) and 7,061,488 (the “’488 patent”) (together, the “asserted patents”). The application that issued as the ’488 Patent is a continuation of the application that issued as the ’822 Patent, which was filed on March 12, 1999. Each of the asserted patents is entitled “Lighting and Shadowing Method and Arrangements for Use in Computer Graphic Simulations.” The asserted patents are directed to technology for handling lighting and shadowing in computer graphics. Plaintiffs allege that certain Activision video games infringe claim 1 of the ’822 patent, and claims 1 and 27 of the ’488 patent (collectively, the “asserted claims”).¹

Activision moves for summary judgment of noninfringement and invalidity, arguing that there is no genuine dispute of material fact that the accused games do not infringe any of the asserted claims, and that all of the asserted claims are directed to patent ineligible abstract ideas under 35 U.S.C. § 101. Activision further moves to exclude the opinions of Plaintiffs’ damages expert Lance Gunderson and technical expert Dr. Daniel Aliaga. Plaintiffs move for summary judgment of no invalidity, arguing that the asserted claims are not anticipated or rendered obvious by the “RenderMan” or “PixelFlow” prior art systems, and that the asserted patents are not invalid for lack of sufficient written description or enablement. Plaintiffs also move to exclude certain invalidity opinions of Activision’s experts Dr. Scott Schaefer and Anthony J. Pelgram.

¹ Plaintiffs initially asserted claims 1, 2, 3, 4, and 7 of the ’822 patent, and claims 1, 6, 27, 28, 29 of the ’488 patent. Following the August 16, 2021, hearing on the parties’ dispositive motions and motions to strike, Plaintiffs withdrew their claims of infringement for Claims 2-4 and 7 of the ’822 Patent, and Claims 6, 28, and 29 of the ’488 Patent. *See* Notice of Withdrawal of Certain Claims, ECF No. 340.

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a. Asserted Claims

Claim 1 of the '822 patent claims the following:

[1(pre)] 1. A shadow rendering method for use in a computer system, the method comprising the steps of:

[1(a)] providing observer data of a simulated multi-dimensional scene;

[1(b)] providing lighting data associated with a plurality of simulated light sources arranged to illuminate said scene, said lighting data including light image data;

[1(c)] for each of said plurality of light sources, comparing at least a portion of said observer data with at least a portion of said lighting data to determine if a modeled point within said scene is illuminated by said light source and storing at least a portion of said light image data associated with said point and said light source in a light accumulation buffer; and then

[1(d)] combining at least a portion of said light accumulation buffer with said observer data; and

[1(e)] displaying resulting image data to a computer screen.

'822 patent, at cl. 1.

Independent claim 1 of the '488 patent is nearly identical to claim 1 of the '822 patent, with two exceptions: it omits “for use in a computer system” in the preamble, and in the final step 1(e), it requires “outputting resulting image data” instead of “displaying resulting image data to a computer screen.” Independent claim 27 of the '488 patent claims the following:

[27(pre)] 27. A computer-readable medium carrying at least one set of computer instructions configured to cause at least one processor to operatively render simulated shadows in a multi-dimensional simulated scene by performing the steps of:

[27(a)] providing observer data of a simulated multi-dimensional scene;

[27(b)] providing lighting data associated with a plurality of simulated light sources arranged to illuminate said scene, said lighting data including light image data;

[27(c)] for each of said plurality of light sources, comparing at least a portion of said observer data with at least a portion of said lighting data to determine if a modeled point within said scene is illuminated by said light source and storing

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at least a portion of said light image data associated with said point and said light source in a light accumulation buffer; and then

[27(d)] combining at least a portion of said light accumulation buffer with said observer data; and

[27(e)] outputting resulting image data.

'488 patent, at cl. 27

Relevant to this Order, this Court previously construed “observer data of a simulated multidimensional scene” to mean “data representing at least the color of objects in a simulated multidimensional scene as viewed from an observer’s perspective.” ECF No. 105 (“*Markman* Order”), at 39. The Court also previously construed “combining at least a portion of said light accumulation buffer with said observer data” to mean “combining at least a portion of the data in the light accumulation buffer with said observer data,” and construed “at least a portion of” to have its plain and ordinary meaning. *Id.* at 39–40. Finally, this Court construed “the order of the comparing, storing, and combining steps,” to mean that “the comparing and storing steps are completed before beginning the combining step.” *Id.* at 40.

b. Accused Games

Plaintiffs accuse the following 19 video games of infringing one or more of the asserted claims: Call of Duty: Black Ops 3; Call of Duty: Black Ops 4; Call of Duty: Infinite Warfare; Call of Duty: World War 2; Crash Bandicoot: N. Sane Trilogy; Destiny 1; Destiny 1: Rise of Iron; Destiny 1: The Dark Below; Destiny 1: The Taken King; Destiny 2; Destiny 2: Curse of Osiris; Destiny 2:Forsaken; Destiny 2: Warmind; Skylanders: Imaginators; Skylanders: SuperChargers; Skylanders: Swap Force; Skylanders: Trap Team; Spyro’s Reignited Trilogy; and World of WarCraft: Warlords of Draenor (collectively, the “accused games”).

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II. Legal Standard

Summary judgment is proper when there is no genuine issue as to any material fact and the movant is entitled to judgment as a matter of law. Fed. R. Civ. P. 56(a). Once the movant shows that there is no genuine issue as to any material fact, the burden shifts to the nonmoving party to produce competent evidence showing the existence of a genuine issue as to a material fact. *Celotex Corp. v. Catrett*, 477 U.S. 317, 330 (1986). The Court views all evidence in the light most favorable to the party opposing the motion. *Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1331 (Fed. Cir. 2006).

III. Analysis

a. Activision's Motion for Summary Judgment of Noninfringement and Invalidity

Activision moves for summary judgment of noninfringement, arguing that there is no material dispute that the accused games do not infringe any of the asserted claims. Activision also seeks summary judgment of invalidity, arguing that the '822 and '488 patents are invalid and are directed to patent ineligible subject matter under 35 U.S.C. § 101.

Activision contends that summary judgment of noninfringement is appropriate because the accused games do not “combin[e] at least a portion of said light accumulation buffer with said observer data,” which is a limitation in all asserted claims, and because the accused games do not perform the claimed steps in the order mandated by the claim language and the Court's claim construction. Activision alternatively argues for partial summary judgment of noninfringement because there is no evidence Activision performs the claimed method steps for the Destiny video games.

After considering the parties' briefing, arguments, the claim language, and the evidence presented, the Court concludes that summary judgment of noninfringement is warranted for all

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asserted claims because the accused games do not satisfy the “combining” limitation, and because the accused games do not perform the claimed method in the sequence required by the Court’s claim construction. Because these decisions are case dispositive, the Court does not reach the other grounds for summary judgment raised by Activision.

i. Legal Standard

In a patent case, an accused infringer moving for summary judgment of noninfringement must show that, when all reasonable factual inferences are drawn in favor of the patentee, no reasonable jury could find infringement. *Netword, LLC v. Centraal Corp.*, 242 F.3d 1347, 1353 (Fed. Cir. 2001). This determination requires a two-step analysis: (1) the claims must be properly construed by the Court to determine the scope and meaning of the claims; and (2) the allegedly infringing device or process must be compared to the construed claims. *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 861 (Fed. Cir. 2004).

ii. The accused games do not “combin[e] at least a portion of said light accumulation buffer with said observer data.”

Activision argues that the accused games do not practice “combining at least a portion of said light accumulation buffer with said observer data,” which is a limitation present in all asserted claims. Activision’s argument relies on the distinction between “observer data,” “at least a portion of said observer data,” and “said observer data,” as shown in claim elements 1(a), 1(c), and 1(d) in representative Claim 1 of the ’822 patent.²

² Because each asserted claim contains identical claim limitations requiring (a) “providing observer data . . .”, (b) “for each of said plurality of light sources, comparing at least a portion of said observer data . . .”, and (d) “combining at least a portion of said light accumulation buffer with said observer data,” the Court’s analysis regarding elements 1(a), 1(c), and 1(d) in Claim 1 of the ’822 patent applies equally to all asserted claims. The Court at times refers to these elements as the “providing,” “comparing,” and “combining,” steps, respectively.

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Activision's argument is two-fold. First, based on the plain and ordinary meaning of the claim language, Activision contends that "said observer data" used in the "combining" step (element 1(d)) refers to the same observer data from the "providing" step (element 1(a)). Put differently, Activision argues the observer data provided in 1(a) must be the same as what is combined in 1(d), and that the term "at least a portion of said observer data" in the "comparing" step (element 1(c)) refers to a subset of the observer data provided in 1(a).

Second, Activision argues, based on this interpretation, that Plaintiffs' evidence of infringement does not satisfy the combining step, because the observer data Plaintiffs' expert Dr. Aliaga identifies in the providing step consists of depth buffer and geometry buffer data, while the observer data Plaintiffs' expert identifies in the combining step consists of only a subset of geometry buffer data, namely albedo, diffuse, or other color data, depending on the accused game. In addition, Activision argues that Plaintiffs identify two different subsets of observer data for the comparing and combining steps, and thus cannot argue that the "said observer data" limitation in the combining step refers back to the "at least a portion of said observer data" limitation in the comparing step.

In their Response to Activision's Motion, Plaintiffs did not dispute the second, factual prong of Activision's argument—*i.e.*, that only a subset of the observer data from the providing step is subsequently combined. Instead, Plaintiffs argued that the asserted claims do not require that "all" the observer data from the providing step be used in the combining step. Resp. (ECF No. 258) at 24. At oral argument, Plaintiffs conceded that Dr. Aliaga describes "observer data" in the providing element 1(a) as consisting of other types of data in addition to the albedo or color data that is subsequently combined, and instead now assert a narrower infringement

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position, relying solely on albedo data as the “observer data” for purposes of the providing, comparing, and combining steps in elements 1(a), 1(b), and 1(c), respectively.

1. The Meaning of “Said Observer Data.”

As a preliminary matter, the Court will clarify the plain and ordinary meaning of “said observer data” in the comparing step (element 1(c)) and the combining step (element 1(d)).

Plaintiffs argue that Activision waived its argument by not raising the scope of “said observer data” at claim construction. During claim construction, the parties did not ask for a construction of “said observer data,” because the proposed agreed construction for the combining limitation simply recites the same “said observer data” language at issue without any additional clarification. *See Markman* Order, at 12, 40. Activision responds that it is not proposing a new construction, but instead arguing that when “said observer data” is interpreted according to its plain and ordinary meaning, it does not infringe. The Court agrees with Activision; there is no waiver, as the Court is not construing the claim language, but rather applying the plain and ordinary meaning of the term in context with the other claim language. Moreover, even if a construction were necessary, “a district court may engage in claim construction during various phases of litigation, not just in a *Markman* order.” *Conoco, Inc. v. Energy & Env’t Int’l, L.C.*, 460 F.3d 1349, 1359 (Fed. Cir. 2006).

Here, numerous canons of claim construction and the claim language indicate that, under its plain and ordinary meaning, “said observer data” in 1(d) means the same observer data as the “observer data” in 1(a), and that “at least a portion of said observer data” in 1(c) means at least a portion of that same observer data provided in 1(a).

First, words in a claim should be interpreted consistently throughout the same claim. *See, e.g., Digital Biometrics, Inc. v. Identix, Inc.*, 149 F.3d 1335, 1345 (Fed. Cir. 1998) (“[T]he same word appearing in the same claim should be interpreted consistently.”); *Phonometrics, Inc. v.*

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Northern Telecom Inc., 133 F.3d 1459, 1464 (Fed. Cir. 1998) (“A word or phrase used consistently throughout a claim should be interpreted consistently.”). Thus, absent contrary direction from the specification or the claim language, “observer data” is presumed to have the same meaning throughout the claim.

Plaintiffs point to cases suggesting that identical claim terms need not have the same meaning in all instances. Resp. at 21–22 (citing *Microprocessor Enhancement Corp. v. Texas Instruments Inc.*, 520 F.3d 1367, 1375 (Fed. Cir. 2008), and *Epcon Gas Sys., Inc. v. Bauer Compressors, Inc.*, 279 F.3d 1022, 1031 (Fed. Cir. 2002)). However, both *Microprocessor Enhancement* and *Epcon Gas* upheld the general rule that a claim term should be construed consistently in the claim, but found that in those particular cases, the specific context of the term and the specification supported different interpretations of the same term. See *Microprocessor*, 520 F.3d at 1376 (“[T]he claims’ apparent nonsensical reading under a uniform construction of [the term] is indicative of the ease of determining the appropriate meaning of each use of the term from its context.”); *Epcon Gas*, 279 F.3d at 1031 (“The phrase “substantially constant” denotes language of approximation, while the phrase “substantially below” signifies language of magnitude, i.e., not insubstantial. Because the same term was used in a different manner in these two phrases, the word “substantially” should not necessarily be interpreted to have the same meaning in both phrases.”). Here, the context of the claims—including the use of qualifying “at least a portion of” language in 1(c)—indicates that “observer data” should be interpreted consistently in 1(a) and 1(d), and Plaintiffs point to nothing warranting a contrary interpretation.

Second, the word “said” has been consistently interpreted by the Federal Circuit to reference a previous use of the same term. E.g., *Summit 6, LLC v. Samsung Elecs. Co.*, 802 F.3d 1283, 1291 (Fed. Cir. 2015) (“The use of the term ‘said’ indicates that this portion of the claim

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limitation is a reference back to the previously claimed ‘pre-processing parameters.’”); *Raylon, LLC v. Complus Data Innovations, Inc.*, 700 F.3d 1361, 1376 (Fed. Cir. 2012) (Reyna, J., concurring) (“As our cases require, ‘said’ refers back to an earlier use of that term in the claim.”); *Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1343 (Fed. Cir. 2008) (noting that the claim term “said” is an “anaphoric phrase[], referring to the initial antecedent phrase”). Thus, absent contrary direction from the specification, the phrase “said observer data” in claim 1 refers to the earlier appearance of “observer data.”

Third, limitations must be construed in context and with the claim as a whole. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (“[T]he person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.”); *ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1088 (Fed. Cir. 2003) (“While certain terms may be at the center of the claim construction debate, the context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those claims.”). This includes giving weight to qualifying language present in one claim limitation and absent in another. *Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1382 (Fed. Cir. 2008) (“[D]ifferent claim terms are presumed to have different meanings.”); *Allergan, Inc. v. Athena Cosmetics, Inc.*, 2009 WL 10700853, at *20 (C.D. Cal. Nov. 16, 2009) (“The expression of a limitation in one part of a claim implies its exclusion in another part where the limitation is not expressed.”).

Thus, the qualifying language in 1(c)—that only “at least a portion of said observer data” is used in the comparing step—suggests that other instances of “said observer data” are not so qualified, otherwise the qualification in 1(c) would be superfluous. See *Bicon, Inc. v. Straumann*

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Co., 441 F.3d 945, 950 (Fed. Cir. 2006) (“[C]laims are interpreted with an eye toward giving effect to all terms in the claim.”). Put differently, the patentee would not need to specify that 1(c) requires that only a subset of the observer data be compared if “observer data” otherwise inherently provides that less than the observer data provided in 1(a) could satisfy the limitation.

Finally, the claims should be read in view of the specification. Here, the specification provides limited support either way, as it neither specifies that the combining step requires “all” observer data, or that the combining step can be performed with some subset of the data. Instead, the combining step is simply described as being performed with “the observer data.” *E.g.*, ’822 patent, at 3:32–35 (“Once this is completed, the method includes the steps of combining at least a portion of the light accumulation buffer with the observer data, and displaying the resulting image data to a computer screen.”); *id.* at 5:10–12 (“ . . . combining at least a portion of the light accumulation buffer with the observer data”). Accordingly, the specification provides limited support for reading the claim language inconsistently with its plain and ordinary meaning described above.

Plaintiffs argue the specification “only disclose[s] combining *certain color values*, part of the ‘observer data,’ with a portion of the light accumulation buffer.” Resp. at 25. Plaintiffs point to the Abstract and Figure 4 for support, neither of which warrant departing from the plain and ordinary meaning of the claim language discussed previously. *Id.* Plaintiffs rely on a single sentence in the Abstract describing how an accumulated light image is “combined with a *camera color image* to produce a lighted camera image” for display. ’822 patent, Abstract (emphasis added). To the extent the italicized portion of the Abstract refers to the combining step in claim 1, it is weak evidence regarding the meaning of “said observer data” in that step, given that it describes combining a light image with “a camera color image”—a phrase never again

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repeated in the patent—and there is no basis to limit “camera color image” to color data or data representing red-green-blue pixel (“RGB”) values.³ Plaintiffs’ reliance on Figure 4 is similarly misplaced; Plaintiffs argue that based on Figure 4, “the Asserted Patents only contemplate combining the RGB color values in the camera view (‘observer data’) with the light accumulation buffer. . . . [A] POSITA would not understand that depth values would be combined with the light accumulation buffer to create an output image as required by the Asserted Claims.” Resp. at 26. Figure 4 does indicate that camera view pixels are combined, but nowhere does it indicate the camera view pixels consist only of RGB color values. Moreover, Plaintiffs provide no citation or support for its assertion that a POSITA would understand that depth values would not be used to create an output image.

Plaintiffs’ argument that “observer data” consists solely of color data is contradicted by other intrinsic evidence, including the plain language of the patents (discussed previously), limitations in dependent claims, and the parties’ agreed construction. For example, claim 2 of the ’822 patent—a previously asserted claim—specifies that “said observer” data includes color data *and* depth data:

2. The method as recited in claim 1, wherein said observer data includes observed color data and observed depth data associated with a plurality of modeled polygons within said scene as rendered from an observer's perspective.

’822 patent, cl.2 (emphasis added).

³ The specification refers to both “color data” and “red-green-blue (RGB) pixel data values”; RGB pixel data values are described as an example of “color data.” *E.g.*, ’822 patent, at 3:37–46 (“[T]he observer data includes observed color data and observed depth data associated with a plurality of modeled polygons within the scene as rendered from an observer's perspective. Thus, for example, the modeled polygons can be associated with a single pixel on the computer screen or a group of pixels, wherein the observed color data includes an observed red-green-blue value for the pixel(s) and the observed depth data includes an observed z-buffer value for the pixel(s).”). The specification recognizes that those skilled in the art will recognize that “other conventions and/or arrangements can also be used for storing and manipulating the data.” *Id.* at 6:64–7:3.

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In addition, during *Markman*, the parties agreed that “observer data of a simulated multidimensional scene” means “data representing *at least* the color of objects in a simulated multidimensional scene as viewed from an observer’s perspective.” *Markman* Order, at 39 (emphasis added). Thus, observer data includes, but is not limited to, color data, and may include additional data depending on Plaintiffs’ infringement theory and contentions.

Plaintiffs point to Judge Wallach’s dissent in *Harris Corp. v. Fed. Exp. Corp.*, 502 F. App’x 957 (Fed. Cir. 2013), to argue that the reference to combining “said observer data” in 1(d) does not require combining all observer data. In that case, the majority construed a method claim referring to generating aircraft data, storing aircraft data, and transmitting the generated and stored aircraft data, as requiring that all the generated and stored aircraft data be transmitted. Judge Wallach dissented, arguing that because “the term ‘all’ is nowhere to be found in the claim language . . . defining [the limitation] to require transmitting ‘all’ of the . . . data accumulated is counterintuitive within the context of the claims.” *Id.* at 971 (Wallach, J., dissenting).

However, the majority in *Harris* concluded that each reference in the claim to “aircraft data” referred to the same full set of data, as opposed to some subset. The majority reached that conclusion based on several of the same reasons analyzed here, including that claim language should be interpreted consistently within a claim, repeat use of a term refers to the earlier antecedent, and neither the claim language nor the specification suggested that any subset of the data should be used. *Harris*, 502 F. App’x at 963–64 (majority op.). If anything, this case presents a stronger case than *Harris*, given that here, the comparing step 1(c) includes qualifying language that specifies when less than the complete set of “observer data” may be used.

In sum, the qualifying claim language “at least a portion of said observer data” in the comparing step 1(c) shows that the patentee knew how to specify when a subset of the observer

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data—as opposed to the whole—could be used. The patentee could have imported the same flexibility into the combining step 1(d), but chose not to. Accordingly, under its plain and ordinary meaning, “said observer data” in the combining step 1(d) refers to the same observer data as the “observer data” in the providing step 1(a), and “at least a portion of said observer data” in the comparing step 1(c) means at least a portion of that same observer data provided in step 1(a).

2. The accused games do not “combin[e] at least a portion of said light accumulation buffer with said observer data”

Activision argues that summary judgment of noninfringement is appropriate because, although the claim language requires the same observer data be used in steps 1(a) and 1(d), for each accused game, Plaintiffs’ infringement expert Dr. Aliaga identifies only a subset of the observer data provided in 1(a) that is combined in step 1(d).⁴ See ECF No. 46, ¶¶ 14–18. Specifically, for element 1(a), Activision cites paragraphs from Dr. Aliaga’s report indicating that Plaintiffs identify as the “observer data” data that is derived from a “g-buffer, specifically ‘world normal,’ ‘vertex normal,’ ‘albedo,’ ‘diffuse,’ ‘depth,’ ‘position,’ or other ‘normal vector’ data.” *Id.* ¶ 14. But for element 1(d), the combining step, Activision cites Dr. Aliaga’s opinions that point to a subset of that observer data, namely “color data, such as ‘albedo,’ ‘diffuse color,’ ‘specular color,’ or other color data derived from a g-buffer for the ‘said observer data’ in this

⁴ As an illustrative example, regarding the accused game *Call of Duty: Black Ops 3*, Dr. Aliaga describes the “Observer Data” as including depth buffers and geometry buffers: “[t]he depth buffer contains depth data values produced by rendering the scene from the camera’s perspective, and the geometry buffers contain data such as, for example, diffuse albedo, surface normal, specular color, and glossiness values produced by rendering the scene from the camera’s perspective.” Aliaga Rep. ¶ 227, Def.’s App’x at Appx464 (ECF No. 247-1, at 11). For the 1(d) “combining” step, Dr. Aliaga identifies the function “ComputeFinalLighting” as satisfying the claim limitation, which relies on an “albedo” value. *Id.* ¶¶ 298–301 (ECF No. 247-1, at 20). Dr. Aliaga opines that the “‘albedo’ value . . . constitutes *observer data*” because it derives from a geometry buffer, “which contains diffuse color data values for objects in the scene.” *Id.* Thus, for *Call of Duty: Black Ops 3*, Plaintiffs identify “observer data” provided in 1(a) as consisting of depth and geometry buffers, but only identifies a subset of that observer data—namely, albedo data derived from geometry buffers—as the “said observer data” for purposes of 1(d).

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limitation.” *Id.* ¶ 17. Activision further argues that for element 1(c), the comparing step, Dr. Aliaga identifies “‘normal vector’ and ‘position’ data as the ‘observer data,’” which is different from the data Plaintiffs identify for element 1(d). *Id.* ¶ 16. Because the claim language requires that the “said observer data” in 1(d) be the same as that provided in 1(a), Activision contends that there is no factual dispute that Plaintiffs have not satisfied the claim element “combining at least a portion of said light accumulation buffer with said observer data” for any of the asserted games.

In their written response, Plaintiffs did not dispute the factual record put forth by Activision or point to any contrary evidence indicating that the observer data combined in element 1(d) is the same as initially provided in 1(a); instead, Plaintiffs argued that “said observer data” in 1(d) did not necessarily include “all” observer data provided in 1(a). Indeed, at oral argument, Plaintiffs conceded that Dr. Aliaga identifies more “observer data” in the providing step than the data which is subsequently combined. *E.g.*, Aug. 16, 2021, Hearing Tr. at 23:18–20 (Plaintiffs’ counsel) (“We understand Dr. Aliaga has identified more than albedo as what can be included within the wide range of observer data . . .”).

During oral argument, Plaintiffs represented to the Court that they are no longer relying on the observer data identified by Dr. Aliaga for their infringement theory. Instead, Plaintiffs now posit that the same set of “albedo” data constitutes “observer data” for purposes of the providing step 1(a), the comparing step 1(c), and the combining step 1(d). *See id.* at 27:4–9 (“So if Plaintiffs narrow their case, as we are doing, to say that observer data in Step (a) is only albedo and, therefore, albedo is also in the comparing step and, finally, albedo is in the combining step, then we absolutely meet the Court’s claim construction even in the manner in which Activision

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is interpreting it.”); *see also id.* at 26:5–6 (“[T]he infringement read that Plaintiffs are asserting is based on albedo, period.”).

The Court notes that Plaintiffs did not make this argument in their written response; indeed, the word “albedo” does not appear once in Plaintiffs’ brief in opposition to Activision’s Motion for Summary Judgment. Moreover, Plaintiffs did not respond to or rebut Activision’s recitation of facts that different subsets of observer data are compared in 1(c) than combined in 1(d). *See* ECF No. 46, ¶¶ 16–17 (noting that for 1(c), Plaintiffs rely on “normal vector” and “position” data as “at least a portion of said observer data,” but cite color data, such as “albedo,” as the observer data in 1(d)).⁵ Put differently, the only evidence properly before the Court indicates that different sets of data are used in the comparing step and the combining step, and thus the Court is aware of no evidence that the same albedo data is used in the accused games in each of the 1(a), 1(c), and 1(d) steps.

Thus, even assuming Plaintiffs are permitted to raise this new theory of infringement at oral argument, Plaintiffs have failed to show a genuine issue of material fact that all elements of the asserted claims are met. Plaintiffs do not dispute that Dr. Aliaga identifies “said observer data” in element 1(d) as constituting only a subset of the observer data provided in 1(a), contrary to the plain and ordinary meaning of “said observer data,” and to the extent there exists evidence in the record in support of Plaintiffs’ new albedo-based infringement theory, it is not properly before the Court. *Malacara v. Garber*, 353 F.3d 393, 405 (5th Cir. 2003) (“When evidence exists in the summary judgment record but the nonmovant fails even to refer to it in the response

⁵ Indeed, Plaintiffs’ own summary judgment brief cites paragraphs of Dr. Aliaga’s report identifying the “at least a portion of said observer data” used in the 1(c) comparing step as constituting something *other* than albedo data, namely position and depth data. *E.g.*, Resp. (ECF No. 258) at 13 (citing Aliaga Rep. ¶ 419, Def.’s App’x at Appx464 (ECF No. 247-1, at 54) (“[T]he ‘offPosition’ variable comprises *at least a portion of said observer data* because, for example, it derives from the ‘depthTexture’ buffer.”)).

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to the motion for summary judgment, that evidence is not properly before the district court.”); *Ragas v. Tennessee Gas Pipeline Co.*, 136 F.3d 455, 458 (5th Cir. 1998) (“The party opposing summary judgment is required to identify specific evidence in the record and to articulate the precise manner in which that evidence supports his or her claim.”); *cf. United States v. Dunkel*, 927 F.2d 955, 956 (7th Cir. 1991) (“Judges are not like pigs, hunting for truffles buried in briefs.”). Accordingly, because the accused games do not “combin[e] at least a portion of said light accumulation buffer with said observer data,” a limitation in all asserted claims, Plaintiffs have failed to raise a genuine issue of material fact that all claim elements are met, and the Court grants summary judgment of noninfringement on this basis.

iii. The accused games do not perform the claimed steps in order.

Summary judgment of noninfringement is appropriate for an additional reason. As discussed, the asserted claims each recite steps requiring, for each of a plurality of light sources, comparing light image data and storing it in a light accumulation buffer (*e.g.*, element 1(c)), and combining at least a portion of the light accumulation buffer with observer data (*e.g.*, element 1(d)). Under the Court’s agreed construction, “the comparing and storing steps are completed before beginning the combining step.” *Markman*, at 40.

Activision argues that summary judgment of noninfringement is appropriate because the accused games perform combining steps before the comparing and storing steps are completed, and thus the steps are not performed in the order required by the Court’s claim construction. Plaintiffs do not dispute the factual basis of Activision’s argument; instead, Plaintiffs contend that additional combining steps performed by the accused games out of order are irrelevant for purposes of determining infringement, “so long as there is a combination of a light accumulation buffer with the observer data occurring after the identified ‘comparing’ and ‘storing’ steps are completed for a plurality of light sources.” Resp. (ECF No. 258) at 16; *see also id.* at 30

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(“Activision’s Accused Games can perform other ‘compare,’ ‘store,’ or ‘combine’ steps not required by the claims in any order without altering the fact that those games infringe.”).

Plaintiffs argue that there is at least one final combining step that begins after each light source has been compared and stored, and thus the fact that there may be intermediate combining steps before the comparing and storing steps are completed is irrelevant.

In support of this argument, Plaintiffs primarily rely on the word “comprising” in the preamble of claim 1 of the ’822 patent and the ’488 patent, and Federal Circuit precedent that “comprising” indicates an open claim creating “a presumption that the recited elements are only a part of the device, that the claim does not exclude additional, unrecited elements.” *Crystal Semiconductor Corp. v. TriTech Microelectronics Int’l, Inc.*, 246 F.3d 1336, 1348 (Fed. Cir. 2001). Plaintiffs also point to the report of their expert, Dr. Aliaga, who opines that “only the steps used to show infringement by the Accused Games must follow the order of steps from the Asserted Patents.” Resp. (ECF No. 258) at 16.

Because Plaintiffs do not dispute the facts underlying Activision’s argument, this is a legal issue to be resolved by the Court: do the ’822 and ’488 patents require that comparing and storing be completed for each light source before any combining begins? Or, put differently, can the accused games perform other “compare,” “store,” and “combine” steps—not relied on to show infringement—in any order, without impacting whether the accused games infringe the asserted claims?

The Court concludes that because the Court’s construction requires that the comparing and storing steps are completed *before beginning* the combining step, the accused games do not infringe the asserted claims because the undisputed evidence shows that combining steps begin before the comparing and storing steps are completed for each light source.

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The Court is not persuaded that the word “comprising” in the preamble of the asserted method claims—claim 1 of the ’822 patent and claim 1 of the ’488 patent—gives Plaintiffs license to disregard other comparing, storing, and combining steps performed by the accused games when showing infringement. While “[i]t is true that a method claim with the word ‘comprising’ appearing at the beginning generally allows for additional, unclaimed steps in the accused process, . . . *each claimed step must nevertheless be performed as written.*” *David Netzer Consulting Eng’r LLC v. Shell Oil Co.*, 824 F.3d 989, 998 (Fed. Cir. 2016) (emphasis added). The Federal Circuit has stated that “comprising” “is not a weasel word with which to abrogate claim limitations,” *Spectrum Int’l, Inc. v. Sterilite Corp.*, 164 F.3d 1372, 1380 (Fed. Cir. 1998), and clarified the impact of the word “comprising” in method claims as follows:

“Comprising” appears at the beginning of the claim—“comprising the steps of”—and indicates here that an infringing process could practice other steps in addition to the ones mentioned. *Those six enumerated steps must, however, all be practiced as recited in the claim for a process to infringe.* The presumption raised by the term “comprising” does not reach into each of the six steps to render every word and phrase therein open-ended—especially where, as here, the patentee has narrowly defined the claim term it now seeks to have broadened.

Dippin’ Dots, Inc. v. Mosey, 476 F.3d 1337, 1343 (Fed. Cir. 2007) (emphasis added).

Here, “comparing,” “storing,” and “combining” are enumerated steps, recited in the claim. They are not “unrecited elements” which can be practiced in addition to the enumerated steps; they *are* the recited, enumerated steps, which the Court has construed as being performed in a specific and particular order. *See Crystal Semiconductor*, 246 F.3d at 1351 (“comprising” encompasses additional unrecited elements, “unless the written description or the prosecution history clearly limits [the claim] to its recited elements”); *Nat’l Oilwell Varco, L.P. v. Omron Oilfield & Marine, Inc.*, 2013 WL 8508579, at *7 (W.D. Tex. Aug. 30, 2013) (“[t]he open-ended transition ‘comprising’ does not free the claim from its own limitations.” (quoting *Kustom Signals, Inc. v. Applied Concepts, Inc.*, 264 F.3d 1326, 1333 (Fed. Cir. 2001))). Thus, to

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infringe, the accused games must perform the comparing, storing, and combining steps as recited in the claims and construed by the Court.

The Court’s construction is clear that “the comparing and storing steps are completed before beginning the combining step”—not that *some* of the comparing and storing steps must be completed before beginning the combining step, or that the comparing and storing steps are completed before beginning *a* combining step. To conclude that the word “comprising” in the preamble empowers Plaintiffs to pick and choose which comparing, storing, and combining steps are used to show infringement would render the Court’s construction superfluous. Moreover, such a construction would undermine the notice function of the claims, because it would preclude competitors seeking to design around Plaintiffs’ invention from knowing the actual scope of the claims, and allow Plaintiffs to benefit from the ambiguity. *See Halliburton Energy Servs., Inc. v. M-ILLC*, 514 F.3d 1244, 1253–54 (Fed. Cir. 2008).

At minimum, Plaintiffs have not shown infringement of claim 27 of the ’488 patent, which does not use the word “comprising.” Plaintiffs argue that language like “at least” in claim 27 has the same effect as “comprising” in creating an open claim, but provide no authority interpreting “at least” to have the same presumptive effect as “comprising.” Moreover, the plain text of claim 27 does not support reading “at least” to mean that the entire claim is open; on the contrary, “at least” is used only with specific claim elements (*e.g.*, “at least one set of computer instructions,” “at least one processor,” etc.), and the claim as a whole reads as though the “steps” to be performed are fixed and closed. *See* ’488 patent, cl. 27 (“A computer-readable medium . . . configured to cause at least one processor to operatively render simulated shadows . . . by performing the steps of: . . .”).

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Accordingly, because the Court's claim construction requires that the comparing and storing steps are completed for each light source before beginning the combining step, and it is undisputed that the accused games perform combining steps prior to the completion of the comparing and storing steps, the accused games do not infringe the asserted claims. Summary judgment of noninfringement is granted on this additional basis.

IV. Activision's Motion to Exclude the Opinions of Plaintiffs' Damages Expert Lance Gunderson and Technical Expert Daniel Aliaga

Activision moves to strike the expert opinions of Plaintiffs' damages expert, Lance Gunderson, and technical expert, Dr. Daniel Aliaga. Because the Court concludes that the sole damages theory put forth by Gunderson is insufficiently tied to the facts of the case, the Court grants Activision's motion to strike Gunderson's report. The Court denies the remainder of the motion as moot in light of the Court's decision to grant of summary judgment of noninfringement.

a. Legal Standard

Under Federal Rule of Evidence 702, a witness who is qualified as an expert may testify in the form of an opinion or otherwise if (1) the expert's specialized knowledge will help the trier of fact to understand the evidence or determine a fact in issue, (2) the testimony is based on sufficient facts or data, (3) the testimony is the product of reliable principles and methods, and (4) the expert has reliably applied the principles and methods to the facts of the case. When evaluating a party's challenge to an opponent's expert witness, the Court assumes the role of gatekeeper to ensure the relevance and reliability of the expert's testimony. *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 597 (1993). Reliable testimony must be grounded "in the methods and procedures of science" and signify knowledge beyond "subjective belief or unsupported speculation." *Id.* at 590. The proponent of expert testimony must establish its

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reliability by a preponderance of the evidence. *Bourjaily v. United States*, 483 U.S. 171, 174–76 (1987). However, the question of whether the expert is credible, or the opinion is correct, is generally a question for the fact finder, not the court. *See Summit 6, LLC v. Samsung Elecs. Co.*, 802 F.3d 1283, 1296 (Fed. Cir. 2015).

b. Damages Opinion of Lance Gunderson

Damages for patent infringement are governed by 35 U.S.C. § 284, which provides, in pertinent part, that “the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer.” 35 U.S.C. § 284. The patentee bears the burden of proving damages. *Dow Chem. Co. v. Mee Indus., Inc.*, 341 F.3d 1370, 1372, 1381 (Fed. Cir. 2003). “To be admissible, expert testimony opining on a reasonable royalty must ‘sufficiently [tie the expert testimony on damages] to the facts of the case. If the patentee fails to tie the theory to the facts of the case, the testimony must be excluded.’” *Exmark Mfg. Co. v. Briggs & Stratton Power Prods. Grp., LLC*, 879 F.3d 1332, 1349 (Fed. Cir. 2018) (alteration in original) (quoting *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1315 (Fed. Cir. 2011)).

Gunderson, Plaintiffs’ damages expert, opines that following a hypothetical negotiation based on an analysis of the factors articulated in *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), the parties would have agreed to a running royalty based on sales of the accused games. Gunderson provides two damages figures: one based on domestic sales of the accused games, and an alternative calculation based on foreign sales. Gunderson’s damages theory does not apportion damages on a patent-by-patent basis or between the method and apparatus claims.

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Activision moves to strike Gunderson’s reasonable royalty analysis and damages opinions on the grounds that Gunderson does not identify a nexus between the alleged infringement of the method claims and sales, does not apportion damages between the alleged infringement of the method claims and the apparatus claim, the hypothetical negotiation date is not supported by the evidence, the licensing agreements relied on by Gunderson are not comparable, and Gunderson improperly relies on privileged communications and documents not produced in discovery to reach his proposed royalty rate. Activision further argues that Gunderson’s testimony regarding foreign sales should be excluded because Plaintiffs cannot recover for sales of the accused games outside of the United States.

The Court concludes that Gunderson does not show a nexus between sales of the accused game and performance of the asserted method claims. For the method claims—claim 1 of the ’822 patent and claim 1 of the ’488 patent—Plaintiffs’ direct infringement allegations rely on internal testing of the accused games by Activision before release, and demonstrations of the accused games at public gaming events, such as conferences. *See* Gunderson Rep. ¶¶ 30–35 (Def.’s Appx6–10) (ECF No. 272). Gunderson’s opinion regarding damages relies entirely on sales of the accused games: he opines that based on the *Georgia-Pacific* factors, following a hypothetical negotiation the parties would have agreed to “a royalty rate between 1% to 2% applied to Accused Games revenue.” *Id.* ¶ 168 (Appx28).

However, “method claims are ‘not directly infringed by the mere sale of an apparatus capable of performing the claimed process.’” *Packet Intel. LLC v. NetScout Sys., Inc.*, 965 F.3d 1299, 1314 (Fed. Cir. 2020) (quoting *Joy Techs., Inc. v. Flakt, Inc.*, 6 F.3d 770, 773 (Fed. Cir. 1993)). One “cannot simply count sales of the [product] accused of infringing the [asserted] patent as sales of the method claimed.” *Id.* Instead, the damages base must be “tailored to any

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alleged internal use of the claimed methods.” *Id.*; *ResQNet.com, Inc. v. Lansa, Inc.*, 594 F.3d 860, 869 (Fed. Cir. 2010) (“[T]he damages inquiry must concentrate on compensation for the economic harm caused by infringement of the claimed invention.”).

Here, Gunderson does not analyze the economic harm of the alleged use of the claimed methods during game testing and development or during game demonstrations, and makes no effort to tie the claimed damages base to Activision’s internal use of the patented method. Instead of determining how many sales of the accused games were based on use of the method, Gunderson seemingly assumes that all sales of the accused games are attributable to Activision allegedly performing the claimed method internally during testing and demonstrations. Accordingly, Gunderson’s damages opinions are not sufficiently tied to the facts of the case, warranting exclusion.

Plaintiffs point to *Carnegie Mellon University. v. Marvell Technology Group, Ltd.*, 890 F. Supp. 2d 602, 610 (W.D. Pa. 2012), *aff’d in part, rev’d in part, vacated in part*, 807 F.3d 1283 (Fed. Cir. 2015), for the proposition that sales of a product may be an appropriate measure of damages resulting from internal use of a patented method. The Court agrees that, in some instances, it may be appropriate to base damages for internal use of a claimed method on product sales. But, as explained by the Federal Circuit in *Packet Intelligence*, to do so there must be some connection between the accused infringer’s use of the method and subsequent sales. *See* 965 F.3d at 1314.

On that point, *Carnegie Mellon* is distinguishable from the facts presented here. There, the district court acknowledged “one of the simplest ways to determine the value of an infringing use of a patented method during research is to ascertain how many sales were made based on that infringing use.” 890 F. Supp. 2d at 610. The evidence presented at summary judgment showed

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that the accused infringer infringed the claimed method by using the accused programs and chips “throughout its sales cycle,” including by providing samples to potential customers and adjusting the design internally in response to customer feedback. *Id.* at 604–05. Moreover, the accused infringer “conceded that its infringing use *is the but-for cause of [its] sales.*” *Id.* at 610 (emphasis added). Thus, in *Carnegie Mellon* there was a clear nexus between internal use of the patented method and sales, which is wholly absent here.

Plaintiffs also point to portions of Gunderson’s and Dr. Aliaga’s reports discussing the importance of Activision’s internal testing and demonstrations, which Plaintiffs posit show a connection between testing and demonstrations using the patented method of deferred rendering and sales of the accused games. *See* Pls.’ Resp. (ECF No. 288) at 13–15 (citing Gunderson Rep. ¶¶ 14, 30–35, and Aliaga Rep. ¶¶ 714–15). Plaintiffs cite Paragraphs 14 and 30–35 of Gunderson’s report, which discuss video game testing generally, and the importance of testing some of the accused games to ensure quality, compatibility with different gaming systems and consoles, and to minimize bugs and other defects. Plaintiffs also point to Paragraphs 714 and 715 of Dr. Aliaga’s report, in which he opines that “[w]ithout such testing done during development to ensure the games going out the door are polished and playable and post-production testing of the game engine, the overall success of the game would be negatively impacted as the games would present various glitches and, in some circumstances, would not even be functional.” Aliaga Rep. ¶ 714 (ECF No. 289), Appx. 101.

The Court disagrees with Plaintiffs’ argument. This evidence does not show a nexus or connection between Activision’s performance of the claimed method and sales. There is no mention in these cited paragraphs of deferred rendering, image quality, light sources, or anything relating specifically to the claimed method. At most, Plaintiffs’ evidence establishes that testing

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games before release is generally important to game development. However, Plaintiffs' evidence does not establish that testing affects sales; Gunderson's report focuses on testing as a means to ensure the quality of the games being produced, but does not tie increasing game quality to an impact on sales. And while Dr. Aliaga opines that failure to test would negatively impact a game's success, he does not state the inverse—*i.e.*, that testing positively impacts sales, and if so, how. More importantly, neither Gunderson nor Dr. Aliaga identify any connection between internal use of the claimed method specifically—be it through testing or demonstrations—and sales.

Because there is no evidence that sales were made based on infringing use of the claimed methods, Gunderson's damages model, which relies entirely on sales of the accused games, is not tailored to any alleged internal use of the claimed method. Moreover, because Gunderson presents a unitary damages theory and does not indicate which portion of his proposed royalty is based on alleged infringement of the method claims versus the asserted apparatus claim (claim 27 of the '488 patent), his entire testimony must be excluded. Because this deficiency is dispositive as to Gunderson's testimony, the Court does not reach the other deficiencies urged in Activision's Motion to Strike his testimony. Accordingly, the Court grants Activision's Motion to Exclude the Opinions of Plaintiffs' Damages Expert Lance Gunderson.

V. Conclusion

For the foregoing reasons, Activision's Motion for Summary Judgment of Noninfringement is **GRANTED**. The Court grants summary judgment that Activision does not infringe claim 1 of the '822 patent and claims 1 and 27 of the '488 patent. Summary judgment is denied on all other grounds. In addition, Activision's Motion to Exclude the Opinions of Plaintiffs' Damages Expert Lance Gunderson is **GRANTED**.

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Plaintiffs' Motion for Partial Summary Judgment of No Invalidity, Activision's Motion to Exclude the Opinions of Technical Expert Daniel Aliaga, Plaintiffs' Motion to Strike Portions of Dr. Scott Schaefer's Expert Report Regarding Invalidity, and Plaintiffs' Motion to Strike Portions of Anthony J. Pelham's Expert Report Regarding Invalidity are **DENIED AS MOOT**. All remaining deadlines in the Court's scheduling order (ECF No. 257) are vacated.

The Court will enter a separate final judgment.

SO ORDERED.

September 16, 2021.


BARBARA M. G. LYNN
CHIEF JUDGE