UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
WACO DIVISION

PARKERVISION, INC., Plaintiff, vs. INTEL CORPORATION, Defendant.	Civil Action No. 6:20-cv-00108-ADA **JURY TRIAL DEMANDED**

INTEL CORPORATION'S CLAIM CONSTRUCTION REPLY BRIEF

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I. INTRODUCTION

ParkerVision again relies on invective rather than evidence and declines to engage with the intrinsic record. But the Asserted Patents make clear that, far from being a "false narrative" as ParkerVision claims, Intel's brief is consistent with what ParkerVision itself presented to the Patent Office and the public when it obtained its patents. ParkerVision's patents explain that "the present invention" is down-converting by aliasing and disclose two modes in which aliasing may be implemented according to the purported invention: energy transfer and under-sampling. '551 patent, 2:53-65. ParkerVision's repeated accusations cannot change these words. Nor can its heavy reliance on another court's prior constructions in a dispute between ParkerVision and a third party. In fact, in many instances, ParkerVision's arguments here are inconsistent with the positions it advanced in those and other prior proceedings. ParkerVision should be held to the description of its purported inventions in the patents themselves. Intel respectfully requests that the Court construe the terms consistent with the intrinsic evidence as Intel has proposed.

II. PARKERVISION CANNOT REDEFINE ALIASING AND UNDER-SAMPLING

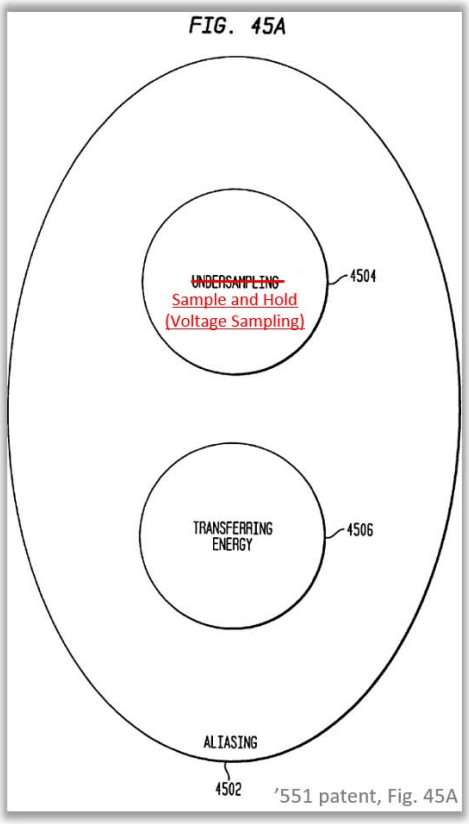
ParkerVision's arguments regarding aliasing, and the under-sampling mode of aliasing, directly contradict the intrinsic evidence. Pl. Resp. at 2-5.[1]

ParkerVision argues that "down-converting by aliasing" is not "critical to the invention." *Id.* at 5. But the Asserted Patents unequivocally state that "the present invention" is directed to "down-converting an electromagnetic signal (EM) by ***aliasing*** the EM signal"—i.e., "sampling at less than or equal to twice the frequency of the input signal." Def. Op. at 12; Def. Resp. at 8. The patents then assert that it is this down-converting by aliasing that distinguishes the invention from "conventional" prior art systems. Def. Op. at 13; Def. Resp. at 8.

[1] Plaintiff's Opening and Responsive briefs are cited as "Pl. Op." and "Pl. Resp.," respectively. Defendant's Opening and Responsive briefs are cited as "Def. Op." and "Def. Resp.," respectively.

ParkerVision also attempts to redefine the "under-sampling" mode of aliasing by asserting that it is not distinct from the "energy transfer" mode of aliasing and does not require negligible apertures. Pl. Resp. at 1-4. That is again contrary to the intrinsic evidence. The patents disclose two distinct modes of aliasing—"under-sampling" and "energy transfer"—and "distinguish" the two modes by stating that "under-sampling" uses negligible apertures while "energy transfer" uses non-negligible apertures. Def. Op. at 21-24; Def. Resp. at 19-21.

ParkerVision attempts to avoid this by asserting that in each of the hundreds of instances the specifications state that "***under-sampling***" differs from energy transfer and uses negligible apertures, the specifications are merely employing a "***naming convention***" and actually mean that "***sample and hold (voltage sampling)***" differs from energy transfer and uses negligible apertures. Pl. Resp. at 1-4. ParkerVision effectively asks the Court to rewrite the specifications as follows:



'551 patent, Fig. 45A

Down-converting by transferring energy is introduced below in an incremental fashion to distinguish it from ~~under-sampling~~. The introduction begins with further sample and hold (voltage sampling).
'551 patent, 63:35-37

instead of an under-sampling signal. Unlike ~~under-sampling~~ sample and hold (voltage sampling) signals that have negligible aperture pulses, the energy transfer signal includes a train of pulses having non-negligible apertures that tend away from zero. This provides
'551 patent, 66:36-40

controlled by an under-sampling signal. The ~~under-sampling~~ sample and hold (voltage sampling) signal includes a train of pulses having negligible apertures that tend towards zero time in duration. The negligible
'551 patent, 63:5-7

But ParkerVision cannot so easily dismiss intrinsic evidence—the specifications' descriptions dictate the proper construction. *Merck & Co. v. Teva Pharms. USA, Inc.*, 347 F.3d 1367, 1371 (Fed. Cir. 2003) ("A fundamental rule of claim construction" is that terms be "construed with the meaning with which they are presented ***in the patent document***."); *Fisher-Rosemount Sys., Inc. v. ABB Ltd*, No. 4:18-CV-00178, 2019 WL 6830806, at *11-12, 15 (S.D. Tex. Dec. 12, 2019) (using "***naming conventions***" to construe terms).

ParkerVision points to a few instances in which it asserts that the patents use "under-sampling" and "energy transfer" to describe the same down-conversion process. Pl. Resp. at 2-3. But as explained in detail below, these isolated statements appear to be typographical errors, are inconsistent with even the sections of the patents in which they appear, and are outweighed by the hundreds of statements to the contrary. *Infra* Section III.B; *Budde v. Harley–Davidson, Inc.,* 250 F.3d 1369, 1379-80 (Fed. Cir. 2001) (courts must "read all portions of the written description, if possible, in a manner that renders the patent internally consistent.").

III. DISPUTED CLAIM TERMS

A. Down-Converter Terms

ParkerVision agrees that all asserted claims require sampling. Pl. Op. at 1. ParkerVision also concedes that, consistent with Intel's proposed constructions, ***all but three*** of the claims that include the Down-Converter Terms require sampling ***at an aliasing rate***. Pl. Resp. at 24-29. The parties' remaining disputes are whether (1) the claims that expressly recite an aliasing rate are consistent with Intel's proposed constructions and (2) the Down-Converter Terms should be consistently construed across the claims to require sampling at an aliasing rate. *Id.* at 24-30.

i. The claims confirm that the Down-Converter structures perform aliasing.

ParkerVision argues that Intel's proposed language—"at an aliasing rate"—is inconsistent with the claim language. But ParkerVision concedes that—as reflected in Intel's proposed

constructions—nearly all the claims in which the Down-Converter terms appear require an "aliasing rate." Pl. Resp. at 5, 23-24. Specifically, ParkerVision agrees that each of the following claims reciting a Down-Converter Term requires sampling at an aliasing rate: '725 patent (claim 1); '513 patent (claim 19); '528 patent (claim 1); '736 patent (claims 1, 18); '673 patent (claims 1, 13); '474 patent (claim 6); and '518 patent (claim 50). Pl. Resp. at 23, 25-28.

ParkerVision attempts to avoid this by asserting that these claims allegedly tie the aliasing rate to a specific component (e.g., control signal, switch, pulse generator) other than the Down-Converter structure, and thus that the Down-Converter Terms do not require aliasing. *Id.* But the claims state that each of the components ParkerVision identifies is a component ***of the Down-Converter***, confirming that it is the Down-Converter that performs the alleged novel down-conversion. Def. Op. at 11-17; Def. Resp. at 7-10. Intel's proposed constructions are thus entirely consistent with, and supported by, the surrounding claim language.

The "aliasing module" term provides a good example. ParkerVision argues that the aliasing module does not perform aliasing but instead that it is the recited switch (in claim 1 of the '725 patent) that performs aliasing. As an initial matter, the term itself is an "***aliasing*** module," confirming that it is a module that performs aliasing. '551 patent, 2:53-65. Moreover, the switch that ParkerVision points to in its brief is a component of the aliasing module, thus confirming that the aliasing module performs aliasing. Specifically, the claim recites an "***aliasing module comprising a switching device*** and a storage module." '725 patent, claim 1. The claim then states that "the ***switching device of the aliasing module*** receiv[es] as an input a control signal … wherein said control signal operates ***at an aliasing rate***." *Id.* The claim therefore makes clear that the "switching device" is a component ***"of the aliasing module"*** and thus that the "aliasing module" down-converts the signal at an aliasing rate.

The "frequency down-conversion module" terms in claim 1 of the '673 and claim 6 of the '474 patents provide a further example. ParkerVision agrees that each claim requires down-converting at an aliasing rate but argues that the rate is tied to individual components (i.e., the "pulse generator" ('673 patent) and the "switch" ('474 patent)) and not to the "frequency down-conversion module." Pl. Resp. at 27-28. But again, the claims state that those components are part of the "frequency down-conversion module." '673 patent, claim 1 ("a ***frequency down-conversion module comprising*** … ***a pulse generator***"); '474 patent, claim 6 ("a first ***frequency down-conversion module*** [that] ***comprises a first switch***"). The claims therefore confirm that the "frequency down-conversion module" down-converts at an aliasing rate.

The same is true for each of the remaining terms/claims ParkerVision identifies. In each instance, the claim recites that the Down-Converter structure includes the component that ParkerVision concedes samples at an aliasing rate. '513 patent, claim 19 ("system for frequency down-converting … comprising … a first control signal which comprises a sampling aperture with a specified frequency"); '528 patent, claim 1 (same); '736 patent, claim 1 (same); '673 patent, claim 13 ("apparatus for down-converting … ***comprising*** a controller coupled to a switch, the controller providing a control signal with a specified frequency"); '518 patent, claim 50 ("universal frequency down-converter (UFD), ***including*** … a pulse generator … wherein said pulse generator outputs pulses to said switch at an aliasing rate"). The claims thus make clear that the Down-Converter Term is the structure that down-converts the signal at an aliasing rate; the claims merely specify the components ***of the Down-Converter structure*** that perform this down-conversion process. Far from contradicting Intel's proposed constructions, as ParkerVision contends, the surrounding claim language confirms it.

ii. The Down-Converter Terms should be construed consistently to require sampling at an aliasing rate.

ParkerVision next argues that certain claims do ***not*** require an aliasing rate, and thus that the Down-Converter Terms in those claims must not require an aliasing rate. Pl. Resp. at 27-30.

ParkerVision first argues that the "frequency down-conversion module" terms in claim 1 of the '474 patent and claim 3 of the '444 patent do not require aliasing. As an initial matter, as established above, the "frequency down-conversion module" term of the '673 and '474 patents down-converts at an aliasing rate, and it is well-settled that the same term should be construed consistently in a given patent and across related patents. *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1334 (Fed. Cir. 2003). Moreover, as explained in Intel's briefing, the '474 and '444 patents specifically describe the "frequency down-conversion module" as a structure that down-converts by sampling at an aliasing rate. *See* Def. Op. at 11-14; Def. Resp. at 9; '474 patent, 11:5-9-37, 11:65-12:4 (explaining that a "universal frequency down-conversion module (UFD)" is used to down-convert a signal by aliasing at an aliasing rate);'444 patent, 9:10-42(same).

ParkerVision next argues that claim 1 of the '902 patent recites an "energy transfer rate," which it asserts—without explanation—is not an aliasing rate, and thus that the "energy transfer module" term does not sample at an aliasing rate. Pl. Resp. at 29-30. But the patents repeatedly explain that the "energy transfer module" down-converts the signal by transferring energy ***at the aliasing rate***. Def. Op. at 11-14; Def. Resp. at 9. Thus, consistent with the disclosures and Intel's proposed construction, the "energy transfer module" likewise down-converts by sampling the signal at an aliasing rate.

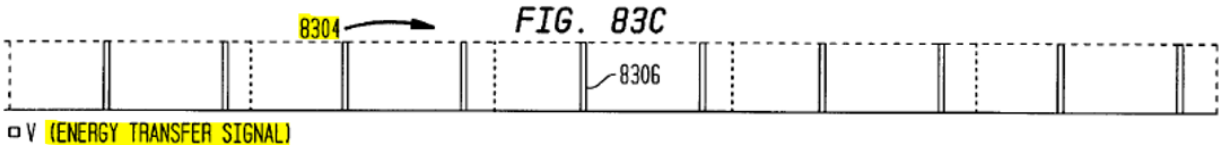
B. "under-samples"

ParkerVision argues that Intel's proposed construction of "under-samples" is wrong because, according to ParkerVision, "energy transfer systems perform under-sampling" and

therefore "under-sampling can [sic] also be performed using non-negligible apertures." Pl. Resp. at 2, 4, 20-21. This is wrong.

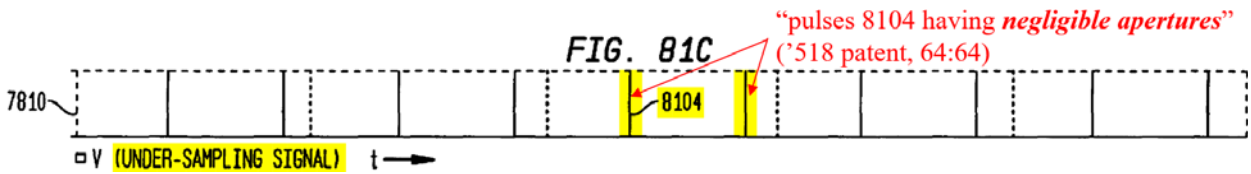
First, ParkerVision quotes the '551 patent's statement that "[w]hen a signal is sampled at less than or equal to twice the frequency of the signal, the signal is said to be under-sampled, or aliased," and concludes that under-sampling does not require "negligible apertures." *Id.* at 20 (quoting '551 patent, 19:49-51). But the specification's description of under-sampling does not end there. The specification instead goes on to expressly and repeatedly state that what distinguishes under-sampling from the other disclosed mode of aliasing (i.e., energy transfer) is that under-sampling uses negligible apertures. Def. Resp. at 19-22; '551 patent, 63:35-37 ("transferring energy is introduced … to ***distinguish*** it from under-sampling."), *id.*, 66:36-39 ("***Unlike under-sampling*** signals that have ***negligible aperture*** pulses, the energy transfer signal includes a train of pulses having nonnegligible apertures that tend away from zero."). The specification is thus consistent that under-sampling is a mode of aliasing (as reflected in the statement cited by ParkerVision) that requires the use of negligible apertures (as reflected in many specification statements that follow). *Pfizer, Inc. v. Teva Pharm., USA, Inc.*, 429 F.3d 1364, 1373 (Fed. Cir. 2005) ("[I]t is necessary to consider the specification as a whole.").

Second, ParkerVision points to two isolated instances in the thousands of pages of specifications which ParkerVision alleges show that "under-sampling" can use non-negligible (instead of negligible) apertures. Pl. Resp. at 3 n.5, 21. But these appear to be typographical errors. ParkerVision points to the '518 patent's statement that "FIG. 83C illustrates an example ***under-sampling signal*** 8304, including ***energy transfer pulses*** 8306 having non-negligible apertures." *Id.* at 20. But as shown below, Figure 83C itself refers to the signal as an "energy transfer signal," ***not*** an under-sampling signal:



'518 patent, Fig. 83C. Moreover, Figure 83C is described in a section entitled "Introduction to ***Energy Transfer***" that expressly states that it uses "an energy transfer signal ***instead of an under-sampling signal***." *Id.*, 65:56-62. And when Figure 83C is described later in the specification, it is described as using an "energy transfer signal," ***not*** an under-sampling signal. *Id.*, 97:49-50. ParkerVision's alleged support is inconsistent with even the surrounding descriptions in the specification and appears to be a typographical error.[2]

The specification also expressly identifies a different embodiment (shown in Figures 79C, 80C, and 81C) as using an "under-sampling signal" and that embodiment uses "***negligible apertures*** that tend towards zero time in duration":



'518 patent, 64:15-65:3 ("FIG. 81C illustrates an example under-sampling signal 7810, including pulses 8104 having ***negligible*** apertures that tend towards zero time in duration.").

ParkerVision also points to a portion of the specification's description of Figure 84B, which states that a frequency in an "***energy transfer system***" is "***under-sampled***." Pl. Resp. at 21. But this too is an apparent typographical error. The remainder of the section uniformly states that this embodiment uses "energy transfer," ***not*** under-sampling. '518 patent, 92:4-7 ("FIG. 84B illustrates an example ***energy transfer signal*** 8402 which includes a train of ***energy transfer pulses***

[2] The Asserted Patents contain numerous typographical errors. *See, e.g.*, '518 patent, 8:28-29 ("according to an embodiment it of the present invention"), 53:26-27 ("FIG 26A is a block diagram of a the sample and hold system"), 98:14-15 ("module 6702 includes a includes a normally open switch"); '725 patent, claim 18 ("energy transferred from the RF information signal to the storage module when is discharged from the storage module").

8403 having ***non-negligible*** apertures 8405."); *id.*, 90:29-96:27 (referring ***more than 50 times*** to "energy transfer" signals).[3]

Finally, ParkerVision accuses Intel of "misrepresent[ing]" its prior PTAB statements (Pl. Resp. at 22), but it is ParkerVision that inaccurately describes its statements. ParkerVision asserts that it was careful in the IPR to not equate under-sampling with the use of negligible apertures:

> ParkerVision was careful to use qualifying language (italics/underlined below) when discussing sample and hold systems so as not to conflate under-sampling with the use of negligible apertures. In particular, ParkerVision referred to sample and hold as 'under-sampling embodiments ***[that]*** transfer energy in negligible amounts' and 'under-sampling signals that have negligible aperture pulses.'

Id. at 22. But ParkerVision's insertion of "[that]" improperly changes the sentence. Its actual statement to the PTAB shows that it specifically distinguished under-sampling from energy transfer on the basis that under-sampling transfers only negligible amounts of energy:

> It is clear from the Specification that ***under-sampling embodiments transfer energy in "negligible" amounts***, ***whereas energy transfer embodiments transfer "non-negligible amounts of energy*** distinguishable from noise."

Ex. 3 at -6576. ParkerVision should be held to its word.

C. "the [] switch is coupled to the [] storage element at a [] node and coupled to a [] reference potential"

ParkerVision wrongly asserts that Intel attempts to limit this term to a particular embodiment. Pl. Resp. at 19. Claim 1 of the '474 patent recites components in a particular configuration—a "switch" that is coupled (1) to a "storage element" at a "node" and (2) to a "reference potential." Figure 20G is an embodiment that ***reflects*** the claim's requirements, but Intel's construction is not limited to Figure 20G. Other implementations are possible if they satisfy

[3] ParkerVision also points to claim 6 of the '474 patent and claim 97 of the '518 patent. Pl. Resp. at 3 n.5, 21. But even if ParkerVision has interpreted these claims correctly, that would at most show that they lack a sufficient written description (*see* 35 U.S.C. § 112) within the specifications, which expressly and repeatedly state that under-sampling requires negligible apertures.

the electrical relationships of the claim language. '474 patent, Fig. 25. Intel's construction simply interprets that language in view of the specification—requiring the switch to shunt (i.e., divert) current to a reference potential and not merely be connected indirectly to a reference potential, like any switch in any circuit would be.[4]

ParkerVision acknowledges that this claim describes a "specific structural orientation," but fails to identify ***what*** it believes that orientation to be. Pl. Resp. at 19. Instead, ParkerVision appears to interpret this claim to cover virtually any configuration of a switch, storage element, and reference potential. Def. Resp. at 25-27. Such a broad interpretation would improperly render meaningless the claim phrase "coupled to a reference potential" because every circuit has a reference potential; thus, every switch in every circuit would be coupled to a reference potential under that interpretation. *In re Power Integrations, Inc.*, 884 F.3d 1370, 1376 (Fed. Cir. 2018) (rejecting construction allowing every element in a circuit to be "coupled" to every other element).

D. "a capacitor that reduces a DC offset voltage in said first down-converted signal and said second down-converted signal"

ParkerVision asserts that Intel's proposed construction improperly seeks to add the word "both" to the claim. Pl. Resp. at 30. But Intel's proposed construction is necessary to prevent ParkerVision from applying the term in a way that is contrary to the plain language of the claim. The claim recites: "a capacitor that reduces a DC offset voltage in said first-down converted signal ***and*** said second down-converted signal." '444 patent, claim 4. Yet, ParkerVision asserts that this means "***one capacitor*** reduces DC offset voltage in a first down-converted signal and ***another capacitor*** reduces DC offset voltage in a second down-converted signal." Pl. Op. at 35. In other

[4] ParkerVision is wrong that Intel "limit[s] the term 'coupled to' to '*directly* coupled to." Pl. Resp. at 19 n.13. The first half of this term (requiring the switch to be "coupled to the storage element at a node") does not require a direct connection and Intel's construction properly allows for an intervening node. But the second half (requiring the switch to be "coupled to a reference potential") is, in view of the specification, a direct connection. Def. Resp. at 26.

words, ParkerVision argues that each "capacitor" need only reduce DC offset voltage in ***either*** the first ***or*** the second signal. Intel's construction makes clear that, as the claim recites, the claim requires "a capacitor" that reduces DC offset voltage in ***both*** the first "***and***" second signals.

E. "DC offset voltage"

ParkerVision argues that, because the patent's definition of "DC offset" refers to a "DC voltage," the two terms must mean different things. Pl. Resp. at 31. But the specification's definition of "DC offset" as ***"a DC voltage"*** confirms that "DC offset" is a "DC offset voltage": "***'DC offset' refers to a DC voltage level*** that is added to a signal of interest by related circuitry." '817 patent, 37:41-45. The same is true for the sentence that follows; the "DC offset voltage" in that sentence refers back to the term "the DC offset" in the prior sentence. *Id.*, 37:45-48.

ParkerVision next argues that a "DC offset voltage" cannot be "a voltage that is ***added*** to a signal" because the specification later refers to "an ***added*** DC offset voltage level." Pl. Resp. at 31 (quoting '817 patent, 37:52-54). But that reinforces that the DC offset voltage is "added to a signal of interest." Moreover, even if that phrase is redundant, as ParkerVision asserts, the patent's definition of the term must control.

Finally, ParkerVision argues that the Court should disregard ParkerVision's agreement in a prior litigation to construe this term as Intel now proposes because ParkerVision has apparently since conducted an "extensive review" of its patents. Pl. Resp. at 32. ParkerVision had more than a decade before that litigation to "review" its patents. Ex. 18 at -0622. It should not be permitted to now depart from what it earlier recognized was the patents' express definition of the term.

F. Storage Terms

ParkerVision does not dispute that the storage terms should all have the same meaning. Pl. Resp. at 5-6. Nor does ParkerVision argue that any word in Intel's construction is wrong. It cannot do so because Intel's construction comes directly from the specifications' definition of "storage

modules" as "systems that store non-negligible amounts of energy from an input EM signal." Def. Resp. at 33. ParkerVision's proposed deviations from that definition should be rejected.

First, ParkerVision attempts to limit "storage modules" to modules used in "an energy transfer system" and accuses Intel of making a "false" argument for not doing so. Pl. Resp. at 7. But the portion of the specification ParkerVision cites supports Intel's, not ParkerVision's, proposed construction. ParkerVision cites two sentences that identify a specific embodiment in which a storage module is used in an energy transfer system. '518 patent, 66:11-15 ("FIG. 82A illustrates ***an exemplary energy transfer system*** 8202 for down-converting an input EM signal 8204. ***The energy transfer system 8202 includes a switching module 8206*** and a storage module illustrated as a storage capacitance 8208."). Nothing in those sentences limits the use of a "storage module" to "an energy transfer system." The sentence that follows then defines storage module as Intel has proposed to construe the term: "***Storage modules*** and storage capacitances … ***refer to systems that store non-negligible amounts of energy from an input EM signal***." '518 patent, 66:21-23.

ParkerVision previously relied on that sentence in an IPR proceeding to propose a construction of "storage module" that is nearly identical to what Intel proposes here. Def. Resp. at 34. ParkerVision now tries to explain that away by asserting that it was merely describing the "broadest reasonable interpretation" ("BRI") of the term. Pl. Resp. at 8. But ParkerVision did not argue then that it was proposing the "broadest reasonable interpretation." It instead argued that the specification "***explicitly defines a storage module***," just as Intel argues now. Ex. 28 at -6975-6976. In any event, when a patent explicitly defines a term, the BRI and *Phillips* constructions are the same because the patent's definition controls. *In re Bass*, 314 F.3d 575, 577 (Fed. Cir. 2002).

Second, ParkerVision argues that "lexicography" requires the term to be limited to "for driving a low impedance load." Pl. Resp. at 9. But the patents' definition says nothing about "driving a low impedance load," and lexicography must be explicit. *See, e.g.*, *Spinal Concepts, Inc. v. EBI, L.P.*, No. A-02-CA-636, 2004 WL 5680799, at *4 (W.D. Tex. Apr. 13, 2004). Moreover, nothing in the specifications suggests that driving a low impedance load is a necessary aspect of a storage module.

Finally, ParkerVision alleges that Intel's "potential benefit" argument mischaracterizes the patents, which refer to "[a]nother benefit" of the energy transfer system." Pl. Resp. at 10. But it is ParkerVision that misperceives the specifications. The relevant passage—when read in full—states that "another benefit" of energy transfer system 8202 is that the storage module's non-negligible amounts of energy "***permit***" the system to "drive loads that would otherwise be classified as low impedance loads." '518 patent, 66:61-66. ***Permitting*** a system with a storage module to drive a low impedance load does not mean that such a system ***must*** drive a low impedance load. Driving a low impedance load is thus properly characterized as a potential benefit, not a defining characteristic, of a storage module.

G. "modulated carrier signal"

ParkerVision argues that Intel's construction is "incomplete" because it does not include the specifications' definition of the separate term "carrier signal." Pl. Resp. at 10. But the patents expressly define the term "modulated carrier signal," and Intel's proposed construction tracks that definition verbatim. Def. Resp. at 37. ParkerVision identifies no factual or legal reason to modify that definition merely because a different term is also defined. ParkerVision could have separately proposed to construe the term "carrier signal." Its failure to do so does not justify rewriting the patents' express definition of "modulated carrier signal."

Moreover, ParkerVision concedes that it derives its proposed construction from the "lexicography" of the different term "carrier signal." Pl. Resp. at 10. ParkerVision's construction also includes the phrase "at transmission frequency," which it draws from the definition of a third term, "carrier frequency." Pl. Op. at 18. ParkerVision's proposed construction thus departs from the lexicography of all three terms by cobbling together selected portions of each to create a combined definition that exists nowhere in the patents. *Jack Guttman, Inc. v. Kopykake Enters., Inc.*, 302 F.3d 1352, 1360-61 (Fed. Cir. 2002).

Finally, ParkerVision argues that its agreement in a prior litigation to the construction Intel now proposes should be disregarded because that construction was agreed to in the context of the '551 patent rather than the '528 patent. But as ParkerVision itself concedes (and affirmatively argues in connection with its proposed construction of "under-samples," *supra* at III.B), the '551 patent is incorporated by reference into the '528 patent. '528 patent, 1:30-34. As a result, the '551 patent's definition of "modulated carrier signal" is in, and applies equally to, the '528 patent.

H. "sampling aperture"

The parties agree that "sampling aperture" (1) refers to a period of time during which a switch is closed (i.e., on) and (2) relates to "sampling"—i.e., "reducing a continuous-time signal to a discrete-time signal." ParkerVision's only argument is that—by stating that the sampling aperture is only "part of the process" of sampling—Intel's construction "injects *ambiguity*" regarding the "other 'part[s] of the process' of sampling." Pl. Resp. at 15. But the specifications are clear that the "sampling aperture"—the time when the switch is closed—is only part of the process. Def. Op. at 39-41; Def. Resp. at 38-40. Sampling requires periods of time when the switch is closed (on) ***and*** periods of time when the switch is open (off). Intel's proposed construction does not "inject" ambiguity; it accurately reflects the specifications' explanation of this basic fact.

I. "Switch" Terms

The parties agree that these terms should be construed as a group and that they all involve "an electronic device for opening and closing a circuit." ParkerVision, however, tries to limit the term "switch" to a device that opens and closes a circuit "as dictated by an independent control input." Pl. Resp. at 12-15. This additional language is not supported by the patents. Contrary to ParkerVision's suggestion, the claims do not indicate that an "independent control input" is a necessary part of a switch. Claim 1 of the '725 patent recites a "switching device" that "receiv[es] as an input a control signal," but other claims do not recite a "control signal" without any specific "input," much less an "independent control input." *See* '518 patent, claim 50; '474 patent, claim 1; and '673 patent, claim 1.

ParkerVision's discussion of diodes also does not support its proposal. The patents state that a switch can be "***any type*** of suitable switch device"—expressly including a "diode switch." Def. Resp. at 41-42. ParkerVision now admits that a diode can act as a switch (Pl. Resp. at 13), but it ignores that the patents specifically refer to a "diode switch" as "a two lead device"—i.e., a device that has two ports, one for an input signal and one for an output signal, and thus does not have a separate port constituting an "independent control input." '551 patent, 56:60-67, 99:47-53; Dr. van der Weide Reply Declaration ("VDW Reply Decl.") ¶¶ 10-12. ParkerVision argues that a "diode switch" has an "independent control input" because Figures 28B and 28C show an under-sampling signal coupled to the diode's output. Pl. Resp. at 13. But the patents never describe that signal as an "independent" control signal, leaving ParkerVision's language both unclear and unsupported by the specifications.[5]

[5] ParkerVision suggests that "independent" means "independent from the input signal." Pl. Resp. at 13 n.11. But nothing in the patents indicate that a switch's control signal would have to be independent of the input, not the output, and a diode can be controlled by a control signal coupled to either its input or output. VDW Reply Decl. ¶¶ 12-15.

J. "a down-converted signal being generated from said sampled energy"

ParkerVision argues that Intel's proposed construction is inconsistent with the specification because it purportedly requires the down-converted signal to be generated ***only*** from sampled energy stored in the energy storage module. Pl. Resp. at 15-17. But Intel's proposed construction merely requires that "a down-converted signal" be generated from sampled energy stored in the energy storage module. Def. Op. at 43-44; Def. Resp. at 43. It does ***not*** exclude embodiments in which a down-converted signal is also generated from ***other*** sources of energy. It is instead ParkerVision's construction that excludes embodiments. ParkerVision's proposed construction requires that the down-converted signal be generated in each instance from ***both*** energy transferred from the switch and energy from the energy storage module. This excludes embodiments, such as Figure 65 of the '902 patent, in which the down-converted signal is generated from ***only*** energy stored in the energy storage module. Def. Resp. at 43-44. Indeed, ParkerVision's assertion that "the system would not work" if it only received energy from the energy storage module (Pl. Resp. at 17) is directly contradicted by Figure 65. Def. Resp. at 43-44.

ParkerVision also argues that Intel's proposed construction is inconsistent with the claims because it purportedly requires the steps of the claim to be performed in order. Pl. Resp. at 18-19. This too is wrong. Intel's proposed construction is based on the claim's use of the term "said sampled energy": the claim states that the down-converted signal is generated "from ***said*** sampled energy"; the preceding clause in the claim unequivocally states that "***said*** sampled energy" is "stored by said energy storage module." '902 patent, claim 1. Intel's proposed construction thus properly gives meaning to the phrase "said sampled energy." ParkerVision tries to avoid that language by arguing that, because the phrase "said sampled energy being stored by said energy storage module" is offset by commas, "***the language itself can be pulled out when reading the full passage***." Pl. Resp. at 18. That is wrong both as a matter of grammar and claim construction.

See, e.g., *Union Carbide Chemicals & Plastics Tech. Corp. v. Shell Oil Co.*, 308 F.3d 1167, 1180 (Fed. Cir. 2002). ParkerVision's argument highlights that its proposed construction is the one that is inconsistent with the claims.

K. Indefinite Terms

i. "the energy discharged during any given discharge cycle is not completely discharged"

ParkerVision argues that the term is not indefinite but instead simply means: "out of all of the energy stored in the storage element available for discharge (to be discharged), not all of the energy is discharged during any given discharge cycle." Pl. Resp. at 34. But that is not what the claims say. The claims state that "the energy discharged" is "not completely discharged."

ParkerVision then suggests that the Court could "correct" the term to read: "the energy [to be] discharged during any given discharge cycle is not completely discharged" *Id.* (emphasis in original). The fact that ParkerVision makes this suggestion only confirms that the term is indefinite as written. In fact, ParkerVision's proposed correction does not even resolve the claim's indefiniteness. By referring to "the energy ***to be*** discharged," ParkerVision adds new ambiguity because nothing in the patents identifies what would constitute the energy "to be" discharged.

Moreover, ParkerVision is wrong that the claim can be "corrected." ParkerVision cites the Federal Circuit's decision in *CBT Flint Partners, LLC v. Return Path, Inc.*, 654 F.3d 1353 (Fed. Cir. 2011), which held that a court can correct a patent only if "(1) the correction is not subject to reasonable debate … and (2) the prosecution history does not suggest a different interpretation …." *Id.* at 1358. Under this standard, a "court must consider any proposed correction 'from the point of view of one skilled in the art.'" *Id*. ParkerVision does not explain how it has met this standard, much less offer expert testimony to show that its correction is the only reasonable interpretation from the perspective of a person of ordinary skill in the art (POSITA). VDW Decl.

Reply ¶¶ 16-19. The Court must interpret claims as written; as written, the claims are indefinite. *Chef Am., Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1374 (Fed. Cir. 2004); *Innovative Display Techs. LLC v. Hyundai Motor Co.*, No. 2:14-CV-201, 2015 WL 2090651, at *23 (E.D. Tex. May 4, 2015) (claim indefinite where plaintiff's proposed revision "would amount to an impermissible redrafting of the claim").

ii. The Energy Discharge Percentage Terms

Claims 17-19 of the '725 patent recite an apparatus in which some percentage of "the energy transferred from the RF information signal to the storage module is discharged from the storage module." Each claim thus requires measuring two energy flows—(1) "the energy ***transferred … to*** the storage module" and (2) "the energy … ***discharged from*** the storage module"—and then evaluating the second energy flow (the energy ***discharged from***) as a percentage of the first (the energy ***transferred to***). '725 patent, claims 17-19. As Intel has explained, because this inflow and outflow of energy happens over time, measurements of these energy flows require temporal bounds: a POSITA needs to know over what periods of time to measure the energy transferred to and discharged from the storage module. Def. Op. at 47-48. The claims, however, provide no such temporal guidance and are thus indefinite.

ParkerVision argues that independent claim 1 clarifies this issue because it refers to "a portion of the transferred energy [that] is discharged during a discharging part of the cycle." Pl. Resp. at 38. According to ParkerVision, claims 17-19 refer to this "portion" of energy recited in claim 1, and the "discharge percentages" in claims 17-19 are therefore measured "during a discharging part of the cycle." *Id.* at 37. This fails for at least three reasons.

***First*,** claims 17-19 do not include language that would allow a POSITA to infer that the antecedent basis of the energy discharged in claims 17-19 is the "portion" of energy "discharged during a discharging part of the cycle" in claim 1. Claims 17-19 simply say that a certain

percentage of energy is discharged; they do not refer to "***the*** discharged energy," which would indicate that the claims intended to refer to the previously recited claim element.

Second, even if claims 17-19 did refer to the portion of energy recited in claim 1, that portion is defined as energy discharged during "a discharging part of the cycle." '725 patent, claim 1. But "a discharging part of the cycle" still does not provide any temporal bounds for the measurements required by claims 17-19. Does that language refer to the entire time when the storage module is discharging during a cycle? Or can it refer to any subpart of that time—a period that itself would be "a discharging part of the cycle"? The claims provide no answer.

Third, ParkerVision's proposed interpretation addresses only half of the indefiniteness problem. As noted, ParkerVision's argument is that the "discharge percentages" in claims 17-19 are measured "during a discharging part of the cycle." Pl. Resp. at 37. But the percentage calculations of claims 17-19 require the measurement of ***two*** energy flows—not only the numerator of the percentage calculation (the energy "discharged from the storage module") but also the denominator (the energy "transferred … to the storage module"). Defining a period during which to measure the energy ***discharged from*** the storage module does not tell a POSITA when to measure the energy ***transferred to*** the storage module. And to the extent ParkerVision tries to argue that the "transferred to" flow of energy should also be measured with reference to claim 1—so that it would be measured "during a charging part of the cycle"—that argument suffers from the same two flaws identified above regarding ParkerVision's discharge argument. Moreover, it would be inconsistent with the specification support that ParkerVision itself cites. That language refers to discharge amounts as a percentage of ***the total energy in the storage module*** at the time of discharge—***not*** as a percentage of ***the amount of energy transferred to the storage module during a charging cycle*** (or "a charging part of the cycle"). '725 patent at 50:10-13 ("During a

period of time that switching device 1608 is open (i.e., between the apertures of control signal 1646), ***a percentage of the total charge stored on capacitor*** 1604 is discharged."). To see the difference, suppose the storage module has 5 energy units at the beginning of a charging cycle and 5 units are then transferred in during the charging cycle, to create a total of 10 units. If one unit is then discharged, is the discharge 10% (1 of the 10 units stored at the time of discharge)? Or is the discharge 20% (1 of the 5 units of energy transferred into the storage module during the charging cycle)? The claims and ParkerVision provide no answer.

iii. "separate integration module"

Claim 1 of the '528 patent recites a down-converting system that comprises "a first switch," "a first energy storage element," "a second switch," and "a second energy storage element." '528 patent, claim 1. Dependent claim 17 further requires that "said portions of transferred energy from each of the first and second switch … are integrated by ***a separate integration module*** coupled to the output of each said first and second switch." *Id.*, Claim 17. It is not clear whether the "separate integration module" in claim 17 is separate from (1) another integration module; (2) the previously claimed elements in claim 1; or (3) something else entirely. Def. Op. at 49.

ParkerVision argues that "'separate' in 'separate integration module' simply means that there is an integration module for each switch"—i.e., the system comprises ***two*** integration modules, one for each switch. Pl. Resp. at 35. But the claims recite only one integration module—"a separate integration module"—not two integration modules. ParkerVision asserts that its interpretation is supported by Figures 149 and 151, which each show a single switch with its own integration module. ParkerVision places the figures next to each other in its brief—implying they are part of the same embodiment with two switches and two integration modules—and then argues that "[a]s shown in Figures 149 and 151 above, the specification discloses there is an integration module 14906, 15104 (blue) for each switch 14904, 15102 (red)." Pl. Resp. at 35. But Figures

149 and 151 are ***two different embodiments***, each of which only discloses a ***single*** switch and a ***single*** integration module. '528 patent, 131:11-18, 132:49-55. These figures do not explain how to interpret claim 17, which requires ***two*** switches and "***a*** separate integration module." Nor does ParkerVision explain why the other two potential interpretations that Intel raised are incorrect. Without any guidance from the intrinsic record, a POSITA has no way to know what the claim covers, and the claim is indefinite. *Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1371 (Fed. Cir. 2015) (claim indefinite if it "might mean several different things and no informed and confident choice is available among the contending definitions.").

iv. "substantially the same size"

Claim 5 of the '902 patent requires that "all of said field effect transistors [FETs] are substantially the same size." ParkerVision argues that the claim is not indefinite because the patent explains that FETs are "the same size" when the channel widths/lengths are equal. Pl. Resp. at 36-37. But those parameters merely indicate how to ***measure the size*** of a FET and provide no guidance for evaluating whether FETs are "***substantially*** the same size." Def. Op. at 49-50. That determination requires an objective standard—i.e., knowing whether the channel width/length parameters of different FETs are close enough in size to be considered "substantially the same size." *Id.* The patent provides no such standard, and the claims are therefore indefinite. *KLA-Tencor Corp. v. Xitronix Corp.*, Case No. A–08–CA–723–SS, 2011 WL 318123, at *3-*5 (W.D. Tex. 2011).

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Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that all counsel of record who are deemed to have consented to electronic service are being served with a copy of the foregoing document via the Court's CM/ECF system on December 11, 2020.

/s/ J. Stephen Ravel
J. Stephen Ravel