

**UNITED STATES DISTRICT COURT  
MIDDLE DISTRICT OF FLORIDA  
ORLANDO DIVISION**

PARKERVISION, INC.,

*Plaintiff,*

v.

QUALCOMM INCORPORATED,  
QUALCOMM ATHEROS, INC.,  
HTC CORPORATION, AND HTC AMERICA, INC.,

*Defendants.*

Case No. 6:14-cv-687-Orl-PBG-LRH

**DEFENDANTS' CLAIM CONSTRUCTION BRIEF REGARDING  
ADDITIONAL CLAIM CONSTRUCTION TERMS**

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## I. INTRODUCTION

Two transmitter ('940, '372) and two receiver ('907, '177) patents remain in this case.

The parties previously briefed “desired harmonics” (Dkt. 171 at 19-20), “desired signal” (Dkt. 171 at 19-20), “gating means” (Dkt. 171 at 9-14), and “said input signal”<sup>1</sup> (Dkt. 149 at 1-4, 7-10). (Dkt. 305 at 1-2 (terms that still require construction).) A copy of that briefing is provided for the Court’s convenience. (Gardner Exs. 1, 2; Dkt. 317-2.)

The parties also asked to provide additional briefing on several terms. (Dkt. 305 at 3.<sup>2</sup>) Per the Court’s scheduling order, Defendants respectfully provide the following brief.

For the terms the Patent Trial and Appeal Board (“the Board”) analyzed and construed in *inter partes* review proceedings of U.S. Patent No. 6,091,940 – “switch module” (and “switch”), “bias signal,” “harmonic” (and “harmonics”) – Defendants ask the Court to adopt the **same** claim constructions the Board entered. Those claim constructions, which are part of the intrinsic prosecution history and required under the doctrine of prosecution history disclaimer, should govern. The Court should reject ParkerVision’s improper and untimely attempt to create inconsistencies in the interpretation of the same terms in the same patent.

For the terms “to gate” (and “gating”) and “summer,” the Court should adopt Defendants’ proposed constructions, which are based on the intrinsic record and consistent with well-established physics concepts such as Kirchhoff’s voltage law and the operation of

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<sup>1</sup> Claims 10 and 19 of ParkerVision’s U.S. Patent No. 9,118,528 receiver patent were found invalid as indefinite. *ParkerVision v. Apple*, No. 3:15-CV-1477-J-39JRK, 2019 WL 4385673, at \*12 (M.D. Fla. July 15, 2019) (Davis, J.). *See also 24/7 Customer v. LivePerson*, 235 F. Supp. 3d 1102, 1108 (N.D. Cal. 2016) (“said interaction data” was indefinite).

<sup>2</sup> Defendants updated their proposed constructions for “harmonics” and “to gate” in view of the Board’s claim constructions and based on ParkerVision’s argument that the voltages are at least “substantially equal.” (PV’s Br. at 10.)

switches. ParkerVision’s attempt to run away from the *voltage-mode* transmitter for up-conversion described and claimed in its transmitter patents should be rejected.

For the “matched filtering/correlating module” term in the ‘177 receiver patent for down-conversion, the Court should reject ParkerVision’s facially unreasonable, untimely, and unsupported request to transform four words into a *94-word* proposed construction. Courts cannot re-write claims. And, as explained in Defendants’ pending motion for partial summary judgment of noninfringement (Dkt. 318 at 24-25), ParkerVision is estopped from re-litigating its receiver patent claims. *E.g., ParkerVision v. Qualcomm*, 621 F. App’x 1009 (Fed. Cir. July 31, 2015).

## II. ARGUMENT

### A. “switch module” / “switch” (‘940 patent, claims 24, 331)

This case was stayed, in part, due to *inter partes* review (“IPR”) proceedings before the Patent Office and the subsequent appeal to the Federal Circuit involving the ‘940 patent. (Dkt. 265.) That process is complete, but ParkerVision now urges this Court to re-construe terms the Patent Office construed.

In its final written decisions, the Board (composed of patent judges) construed “switch module” in the ‘940 patent to mean “**device with an input and output that can take two states, open and closed.**” (Li Ex. 8, Dkt. 317-9 at 7 (emphasis added); Li Ex. 9, Dkt. 317-10 at 7 (same); Li Ex. 11, Dkt. 317-11 at 8 (same); Li Ex. 11, Dkt. 317-12 at 8 (same); Li Ex. 12, Dkt. 317-13 at 8 (same).) In one proceeding, ParkerVision even endorsed the Board’s construction, arguing the Board should “maintain” its construction, as noted in the final written decision. (Dkt. 317-9 at 7.) ParkerVision never appealed (or challenged) the Board’s

construction of “switch module” to the Federal Circuit. *ParkerVision v. Qualcomm*, 903 F.3d 1354, 1358 (Fed. Cir. 2018).

Now, in an about-face, ParkerVision contends the Board erred, and this Court should inject new language into the construction. The new language is emphasized below:

Claim Terms	Patent Board	Defendants	ParkerVision
switch module / switch	device with an input and output that can take two states, open and closed	device with an input and output that can take two states, open and closed	device with an input and output that can take two states, open and closed, <b>as dictated by an independent control input</b> <sup>3</sup>
Claims 24, 331 (‘940 patent)			

Defendants ask the Court to enter the **same** construction the Board adopted. (Dkt. 317-9 at 7.)

The Court should reject ParkerVision’s belated bid to erroneously misconstrue the claims.

*First*, ParkerVision’s brief is devoid of any evidence or any explanation for what it means to be “*as dictated by an independent control input.*” ParkerVision offers no intrinsic or extrinsic support for requiring an “*independent control input*” to “dictate[.]” whether the claimed switch is open or closed. In fact, the phrase “independent control input” does not appear anywhere in the ‘940 patent. And, “as dictated by” is potentially ambiguous and confusing terminology, unhelpful to the trier of fact.

*Second*, ParkerVision argues that the Board’s “*broadest reasonable interpretation*” of the “switch” terms “did not include a control input,” and thus, this Court should overrule the Board. (PV’s Br. at 5 (emphasis added).) During *inter partes* review, “terms [were] given

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<sup>3</sup> Prior to the stay, ParkerVision urged a nonsensical results-based construction that it appears to have abandoned in favor of the new construction now proposed. (Li Ex. 1 at 12, Dkt. 148.)

their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure” of the ‘940 patent. (Dkt. 317-3 at 7.) Based on a detailed review of the ‘940 specification, the Board determined that “switch module” means “device with an input and output that can take two states, open and closed.” (Dkt. 317-9 at 7.) This Court should not deviate from the Board’s claim construction. *E.g.*, *Cequent Performance Prods. v. Hopkins Mfg.*, No. 13-15293, 2017 WL 371230, at \*14 (E.D. Mich. Jan. 26, 2017) (district court adopting Board’s claim construction from an IPR final written decision where the broadest reasonable construction applied).

*Third*, ParkerVision’s erroneous proposed construction conflicts with the intrinsic evidence. The specification provides: “*If* the switch is controlled by an electronic signal, it is *typically* a different signal than the signals connected to either terminal of the switch.” (‘940, 7:50-54 (emphasis added).) In other words, *if* the switch is controlled by a control signal, the control signal may be the *same signal* that is provided to either the input terminal or the output terminal. The patent recognizes that a separate control input is **not required** for the control signal. ParkerVision’s request for this Court to re-write “switch module” to always require an “independent control input” (whatever that means) conflicts with the evidence and should be rejected. *See K-2 v. Salomon*, 191 F.3d 1356, 1364 (Fed. Cir. 1999) (“Courts do not rewrite claims; instead, we give effect to the terms chosen by the patentee.”); *Tex. Instruments v. U.S. Int’l Trade Comm’n*, 988 F.2d 1165, 1171 (Fed. Cir. 1993) (“[C]ourts can neither broaden nor narrow claims to give the patentee something different than what he has set forth.”) (internal quotation marks and citation omitted).

*Fourth*, for the term “switch,” which appears only in asserted claim 331 of the ‘940

patent, ParkerVision’s argument is even further divorced from the patent. Nothing in the claim requires that the “switch” include a “control input,” much less an “independent control input.”

A separate control input is not required by the asserted ‘940 claims. (‘940, 7:54-50.)

The Court should adopt the same constructions already entered by the Board in its final written decisions.

**B. “bias signal” (‘940 patent, claims 24, 331)**

<b>Claim Term</b>	<b>Patent Board</b>	<b>Defendants</b>	<b>ParkerVision</b>
bias signal	(1) a signal having a steady, predetermined level or (2) the original baseband signal at the source	(1) a signal having a steady, predetermined level or (2) the original baseband signal at the source	(1) a signal having a steady, predetermined level; or (2) <b>the modulating baseband signal</b>
Claims 24, 331 (‘940 patent)			

Defendants ask the Court to enter the **same** construction already adopted by the Board for “bias signal” in the ‘940 patent. (Li Ex. 11, Dkt. 317-12 at 12; Li Ex. 10, Dkt. 317-11 at 12.) The Court should reject ParkerVision’s new proposed construction, under the doctrine of prosecution history disclaimer. *E.g.*, *Aylus Networks v. Apple*, 856 F. 3d 1353, 1359-60 (Fed. Cir. 2017) (“Extending the prosecution disclaimer doctrine to IPR proceedings will ensure that claims are not argued one way in order to maintain their patentability and in a different way against accused infringers.”); *Straight Path IP v. Cisco*, No. 16-3463, 2017 WL 6372971, at \*5 (N.D. Cal. Dec. 13, 2017), *aff’d*, 748 F. App’x 1027 (Fed. Cir. 2019) (rejecting patentee’s argument where the patentee “boxed” itself in to preserve validity and subsequently tried to “reimagine its claimed invention with an astonishingly overbroad theory”).

During *inter partes* review, in an attempt to avoid a prior art reference, ParkerVision argued that “bias signal” should be construed as (1) “a signal having a steady, predetermined

level” or (2) “an information signal” (Dkt. 317-11 at 10, 9; Dkt. 317-12 at 10, 9 (“‘bias signal’ can be equated with an ‘information signal’”). ParkerVision argued that the ‘940 patent “specifically and explicitly defined ‘information signal’ as the unmodulated, low-frequency source signal known as a ‘baseband signal.’” (Dkt. 317-11 at 10.)

ParkerVision informed the Patent Office that “information signal” as expressly defined by the ‘940 patent refers to “**the original baseband signal at the source.**” (Dkt. 317-11 at 10 (citing ‘940, 8:48-54); Dkt. 317-21 at 26-27 (ParkerVision bolding “**the original baseband signal at the source**” in its brief).) ParkerVision argued “the ‘940 patent consistently defines and refers to the information signal as a baseband signal, identifies it as the signal ‘generated by a source,’ and distinguishes it from the high-frequency modulated signal that is generated from the information/baseband signal and oscillating signal and then transmitted by the transmitter.” (Dkt. 317-21 at 27.)

Based on ParkerVision’s briefing, the Board concluded that ParkerVision “accepts that ‘bias signal’ should be construed, beyond its plain and ordinary meaning, to include **the original baseband signal at the source.**” (Dkt. 317-11 at 10 (emphasis added).) Relying on ParkerVision’s arguments, the Board construed “bias signal” to mean “(1) a signal having a steady, predetermined level or (2) the original baseband signal at the source.” (Dkt. 317-11 at 12; Dkt. 317-12 at 12; *Fenner Invs. v. Cellco P’ship*, 778 F.3d 1320, 1325 (Fed. Cir. 2015) (“public has the right to rely on the inventor’s statements made during prosecution”).

Now, ParkerVision wishes to run away from the statements it made to the Board. The doctrine of prosecution disclaimer prohibits this. *E.g.*, *Aylus*, 856 F. 3d at 1359-60; *Huawei Techs. v. T-Mobile US*, No. 16-52, 2017 WL 4385567, at \*3 (E.D. Tex. Sept. 9, 2017),

*report and recommendation adopted*, 2017 WL 4310161 (E.D. Tex. Sept. 28, 2017) (statements by a patentee “during an IPR proceeding” may result in “disclaimer because it constitutes a representation to the public about the scope of the patent”). Just as the Board relied upon ParkerVision’s arguments in order to construe the claims, Defendants and this Court are entitled to rely on ParkerVision’s disclaimers.

None of the arguments in ParkerVision’s brief is availing. *First*, ParkerVision lodges a lengthy argument complaining about how Defendants’ and thus the Board’s construction is “unclear” and “misleading.” (PV’s Br. at 16-19.) But the Board’s and Defendants’ proposed constructions are drawn directly from the ‘940 specification (‘940, 8:49-50) and the very bolded language in the intrinsic evidence that ParkerVision itself cited to the Patent Office during IPR claim construction proceedings. (*E.g.*, Dkt. 317-11 at 10.) This Court cannot undo the disclaimers ParkerVision made to the Patent Office, nor should the Court rewrite the specification and patent claims. *Quantum v. Rodime*, 65 F.3d 1577, 1584 (Fed. Cir. 1995) (“[I]t is well settled that no matter how great the temptations of fairness or policy making, courts do not redraft claims.”).

*Second*, ParkerVision argues that its proposed construction is allegedly “clear and correct.” (PV’s Br. at 19.) To the contrary, the patent says only “[w]hen it is intended that the information signal modulate a carrier signal, it is also referred to as the ‘modulating baseband signal.’” (‘940, 8:50-52.) A construction that construes “bias signal” as “the modulating baseband signal” would not only create more juror confusion over what constitutes a “*modulating* baseband signal,” but is legally unsupportable.

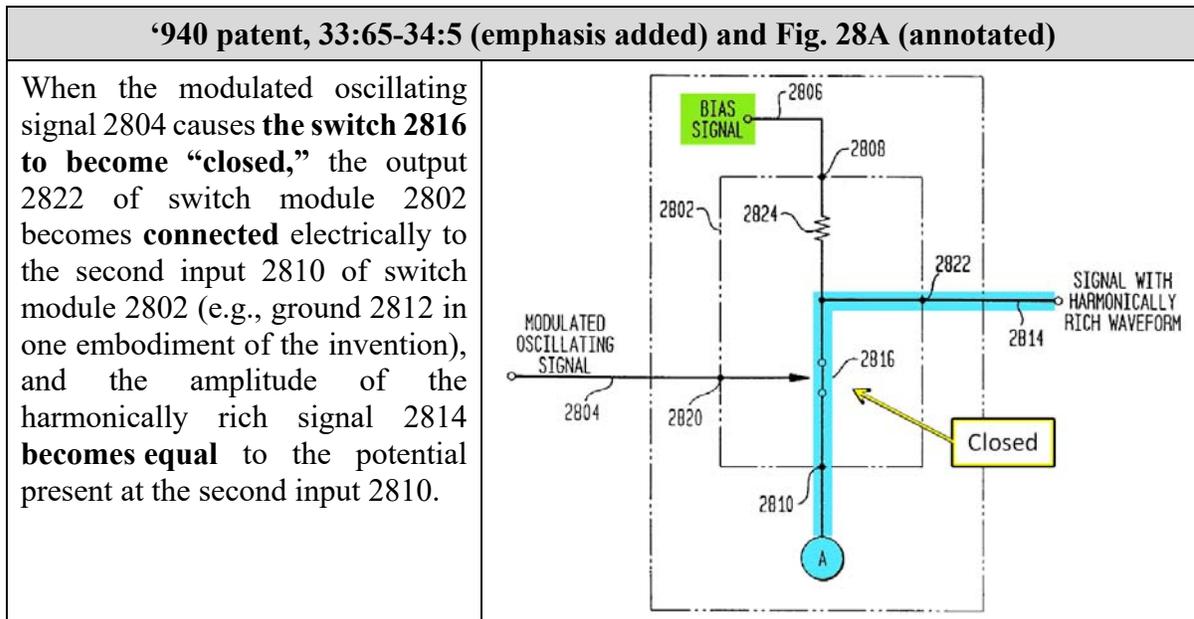
The Court should adopt the construction already adopted by the Board in its

final decisions, based on ParkerVision’s arguments to the Board.

**C. “to gate” / “gating” (‘940 and ‘372 patents)**

Claim Terms	Defendants	ParkerVision
to gate / gating	to change / changing between (i) connecting a signal at an input to an output such that the input and output have a substantially equal voltage, and (ii) disconnecting the signal from the output	to change / changing between the open and closed states of a device that can take two states, open and closed, as dictated by an independent control input
Claims 24, 25, 26, 331, 364, 365, 366, 368, 369, 373 (‘940 patent) Claims 95, 96, 99, 100, 103, 104, 107, 108, 109, 110, 126, 127 (‘372 patent)		

At the heart of ParkerVision’s transmitter patents for up-conversion is creating a “harmonically rich” signal. (Dkt. 171 at 10.) Creating a harmonically rich signal can allow a device (such as a cellphone) to use an oscillating signal operating at a *low* frequency to create signals at the *high* frequencies required for transmission. (*E.g.*, ‘940, Abstract (“a lower frequency is up-converted to a higher frequency”).) In the claimed inventions, the switch (or switch module) “gates” the bias signal (shown in green below), creating the harmonically rich signal. (*E.g.*, ‘940, Abstract (“causes the switch to gate the bias signal”).) The ‘940 patent explains that when the switch is “closed” (*i.e.*, when the switch is “on” and “connected”), the amplitude or voltage at the input and output “becomes equal”:



When the switch is “closed” (highlighted in blue above), the signal at the input and output are connected, and the input and output have a substantially “equal” voltage. When the switch is “open” (*i.e.*, the switch is off and disconnected), the output “is at substantially the same voltage level as [the] bias signal.” (*E.g.*, ‘940, 33:59-61; ‘940, 34:7-10; Dkt. 171 at 11.)

Thus, “to gate” means to change between (i) connecting a signal at an input to an output (*e.g.*, highlighted in blue above), and (ii) disconnecting the signal from the output. When the signal at the input and output are connected, the input and output have a substantially equal voltage. The Court should adopt Defendants’ proposed construction for several reasons.

*First*, the parties agree that when the switch is connected (*i.e.*, closed), the voltage at the input and output are “substantially equal.” (PV’s Br. at 10 (admitting the two voltages are “substantially equal”).) This concept is well-known to those of ordinary skill in the art, as demonstrated in popular college textbooks. When a switch is closed, it electrically connects the input and output so that both are at an equal voltage. (*E.g.*, Gardner Ex. 6

(RF Microelectronics textbook), Dkt. 171-7 at 181 (“This can be seen in the simple circuit of Fig. 6.15(a), where the output is equal to the RF input when  $S_1$  is on and zero when  $S_1$  is off.”); Gardner Ex. 5 (Krauss textbook), Dkt. 171-6 at 450 (“a switch S that is either on (with zero voltage across it) or off (with zero current through it) except for very brief periods of time during the transitions between on and off states.”); Dkt. 171 at 11.) ParkerVision does not and cannot dispute this fundamental characteristic of a switch in a “closed” state. The similarly fundamental and well-known concept of “gating” or “to gate” is undisputedly understood to mean changing between (i) connecting a signal at an input to an output, such that the input and output have a substantially equal voltage, and (ii) disconnecting the signal from the output.

*Second*, as explained above (e.g., “switch module” terms), ParkerVision’s brief is devoid of evidence explaining and supporting its request to add “as dictated by an independent control input” to the asserted ‘940 claims. ParkerVision’s attempt to rewrite the claims to require the “control input” be “independent” (whatever that means) should be rejected because it is not only unsupported, it is contradicted by the patent specification itself. (‘940, 7:54-50; *K-2*, 191 F.3d at 1364.) The Court should adopt Defendants’ proposed construction.

**D. “summer” (‘372 patent, claims 95, 99, 103)**

The parties’ claim construction dispute for “summer” (and “summing means”) boils down to whether the ‘372 patent describes and claims operating in *current* mode, as opposed to *voltage* mode.<sup>4</sup>

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<sup>4</sup> In “current mode,” a signal is transmitted through the device using variations in current. In “voltage mode,” a signal is transmitted through the device using variations in voltage.

Claim Terms	Defendants	ParkerVision
summer	a device that sums two or more signals	plain and ordinary meaning, or alternatively, circuitry that sums two or more signals
Claims 95, 99, 103 ('372 patent)		

ParkerVision did not invent, let alone describe and enable, a current-mode device in the '372 patent. *Cf. ParkerVision v. Qualcomm*, 621 F. App'x 1009, 1015 (Fed. Cir. 2015) (“the accused products are not ‘voltage-mode’ products, but are ‘current-mode’ products, in which the baseband signal is represented by variations in current, not by variations in voltage”); *id.* at 1011 (“ParkerVision’s energy sampling system uses the same circuit configuration as a voltage sampling system.”); *Retractable Techs. v. Becton, Dickinson & Co.*, 653 F.3d 1296, 1305 (Fed. Cir. 2011) (constructions must “tether the claims to what the specifications indicate the inventor actually invented”). ParkerVision’s ‘372 patent describes a transmitter that uses voltages (not current) to represent information signals, modulated signals, and harmonically rich signals. (*E.g.*, ‘372, 58:2-8.) The patent seeks to add or “sum” two signals together, but signals with two different *voltages* cannot simply be joined together. (*E.g.*, ‘372, claim 99 (reciting “a first **summer** accepting said first gated information signal and said first gated inverted information signal thereby creating an in-phase phase-modulated harmonically rich signal”) (emphasis added).)

In voltage mode, a summer must be a discrete device in order to sum the two signals. According to Kirchhoff’s voltage law, a node (or intersection of two wires) cannot be a “summer” because all inputs to a single node have the same voltage (*i.e.*, both wires have to have the same voltage). (Dkt. 171 at 25.) In contrast, in current mode, a summer can be a discrete component or simply a circuit node.

In over 280 pages of description in the specification, the word “current” appears only four times, and not once does it refer to current-mode operation. (‘372, 40:25 (DC signal); ‘372, 50:15 (“is realistically impractical with current technology”); ‘372, 78:65 (channel current); ‘372, 80:36 (current embodiment).) In stark contrast, there are numerous uses of the word “voltage” in the ‘372 patent that teach the alleged invention is based on voltage-mode operation. To take one example, when describing the summer itself, the patent explains that the switch (before the summer) and filter (after the summer) are voltage-mode devices:

the **voltage design** limit for the switch in the switch circuit;  
the harmonically rich signal coming out of the switch circuit  
may have an amplitude that exceeds the **voltage design**  
limits of the filter

(‘372, 58:3-7 (emphasis added).) Similarly, while the ‘372 patent never shows a “summer” as a node (*e.g.*, current mode), there are **ten** figures showing a discrete device for a summer.

Accordingly, consistent with the ‘372 patent specification’s description of voltage-mode devices, a summer must be construed as a discrete device that sums two or more signals. ParkerVision is not entitled to claim as its invention more than it described in its patent. *E.g.*, *On Demand Machine v. Ingram Indus.*, 442 F.3d 1331, 1340 (Fed. Cir. 2006) (“the claims cannot be of broader scope than the invention that is set forth in the specification”); *Indacon v. Facebook*, 824 F.3d 1352, 1357 (Fed. Cir. 2016) (claims “cannot be construed broader than the disclosure in the specification”); *MyMail v. Am. Online*, 476 F.3d 1372, 1376 (Fed. Cir. 2007) (specification limited the claims). Defendants also incorporate by reference its prior briefing for this term, which described support for Defendants’ proposed construction, to which ParkerVision still has no response. (Dkt. 171 at 24-26, Gardner Ex. 1.)

**E. “matched filtering/correlating module” (‘177 patent)**

The parties previously briefed the “matched filtering/correlating module” in the ‘177 receiver patent. (Gardner Ex. 1, Dkt. 171 at 2-5; Li Ex. 1, Dkt. 148 at 23-24.) Now, ParkerVision is asking the Court to rewrite and replace four words with a new, litigation-driven 94-word construction. (Dkt. 305 at 3.) The length and complexity of ParkerVision’s proposed construction should cause the Court to carefully scrutinize that proposed construction. Under such careful scrutiny, it should be clear that ParkerVision’s new proposed construction is directly contradicted by ParkerVision’s prior representations to the Court, and the patent specification. Defendants propose the same construction as before. (Dkt. 171 at 2.)

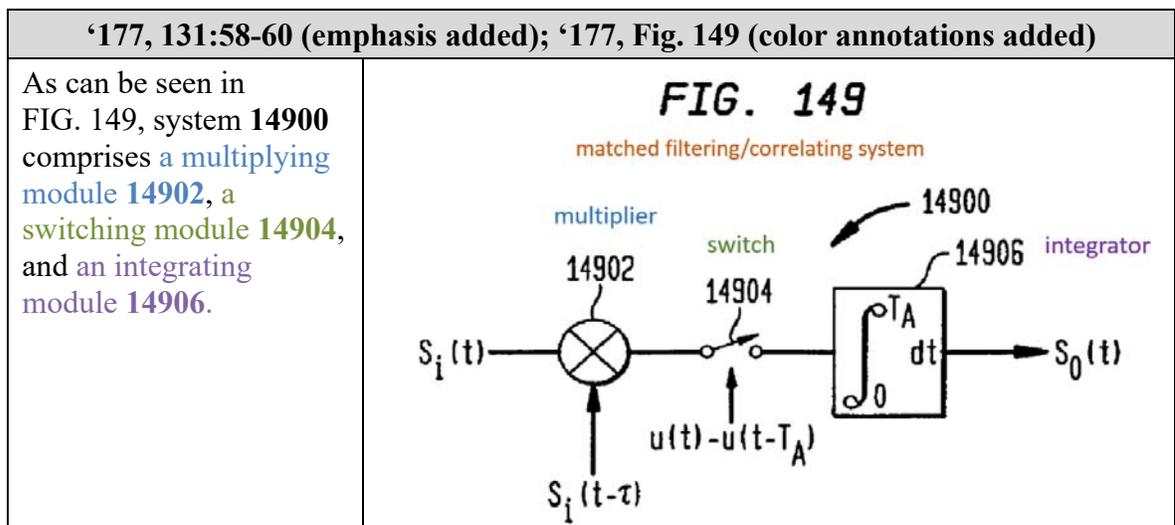
Claim Terms	Defendants	ParkerVision
matched filtering/correlating module	a multiplier, that multiplies the input signal by a time-delayed version of itself, followed by a switch and an integrator	substantially linear time-variant circuitry that samples a modulated RF (radio frequency) carrier signal at an aliasing rate using a switch with an independent control input driven by a control signal with a non-negligible, periodic aperture, such that the samples, having non-negligible available energy, are accumulated and transferred to a significant load while the switch is closed and discharged through the load while the switch is open, thereby transferring substantial available real power from the modulated RF carrier signal to the load and producing a downconverted signal with enhanced signal-to-noise power ratio
Claims 1, 2, 3, 5, 7, 8, 9, 10, 11, 12, 14 (‘177 patent)		

**1. The specification defined the claimed “matched filtering/correlating module.”**

The ‘177 specification states: “the present invention is not a traditional realization of a matched filter/correlator.” (‘177, 132:15-17 (emphasis added), Gardner Ex. 4; *Pacing Techs.*

*v. Garmin Int'l*, 778 F.3d 1021, 1024-25 (Fed. Cir. 2015) (finding disavowal where the “present invention” was used); *Retractable Tech.*, 653 F.3d at 1305 (courts cannot “allow the claim language to become divorced from what the specification conveys is the invention”).) Instead, the ‘177 patent devotes a special section, titled “1.1 High Level Description of a Matched Filtering/Correlating Characterization/Embodiment of the Invention” to describe and define the claimed “matched filtering/correlating module.” (‘177, 130:49-132:17.) That section describes **Figure 149** (reproduced below), the claimed “matched filtering/correlating system” (‘177, 10:45-46; ‘177, 131:53-54), and **Figure 148**, the method of down-converting “using a matched filtering/correlating operation” (‘177, 10:42-44, Gardner Ex. 4).

Defendants’ proposed construction honors the definition of “matched filtering/correlating module” provided in the patent specification, which requires **a multiplier**, followed by **a switch** and **an integrator**:



The specification explains the system “multiplies the modulated carrier signal,  $S_i(t)$ , by a representation of itself,  $S_i(t-\pi)$ , using **multiplication model 14902**.” (‘177, 131:61-63 (emphasis added), Gardner Ex. 4.) In other words, the multiplier multiplies the input signal by

a time-delayed version of itself. “The results of each matched filtering/correlating process are *accumulated*, for example using a **capacitive storage device** [*i.e.*, an energy storage device], and used to form a down-converted version of the electromagnetic signal.” (‘177, 130:28-31 (emphasis added); ‘177, Title (method and system for “down-converting”).) Consistent with the specification, Defendants propose “matched filtering/correlating module” be construed as “a multiplier, that multiplies the input signal by a time-delayed version of itself, followed by a switch and an integrator.”

Defendants’ proposed construction is also consistent with the claim language. (*E.g.*, ‘177, claim 1 (“first matched filtering/correlating module that receives an input signal, wherein said first matched filtering/correlating module down-converts said input signal according to a first control signal and outputs a first down-converted signal”); ‘177, claim 14 (“down converting said input signal at said first matched filtering/correlating module ...”).)

Critically, ParkerVision itself does not dispute that Figure 149 depicts the claimed “matched filtering/correlating module.” (Dkt. 317 at 22; *see also ParkerVision I* Tr. at 113:8-114:22; 116:18-117:14, Gardner Ex. 7.) Nor does ParkerVision dispute that an energy storage device is required for the “matched filtering/correlating module” to down-convert. (*E.g.*, Dkt. 317 at 27 (citing 130:28-31 (emphasizing “*accumulated*” using a “capacitive storage device”); arguing “[w]hen the switch is closed ... energy is accumulated in a storage device .... load is connected across the storage device (e.g., capacitor C or Cs)”).)

The Court should adopt Defendants’ proposed construction.

## **2. ParkerVision’s proposed construction is facially erroneous.**

Adopting ParkerVision’s 94-word proposed construction would be a mistake.

*First*, ParkerVision’s proposed construction is erroneously based on *different* un-claimed embodiments, **not** the “matched filtering/correlating module” recited in the ‘177 patent claims. ParkerVision argues that the Court should re-write “matched filtering/correlating module” to capture Figures 151 and 153. (PV’s Br. at 22-23.<sup>5</sup>) But ParkerVision’s argument is directly contradicted by the specification.

Figure 151 depicts a “finite time integrating system” (‘177, 133:22-23; ‘177, 10:50, Gardner Ex. 4) and Figure 153 depicts a “RC processing system” (‘177, 134:32; ‘177, 10:55). Figure 151 appears under a section, titled “1.2 High Level Description of a Finite Time Integrating Characterization/Embodiment of the Invention,” and Figure 153 appears under a section, titled “1.3 High Level Description of an RC Processing Characterization/Embodiment of the Invention.” (‘177, 132:18-19; ‘177, 133:41-42.) Those sections are separate from the first section, titled “1.1 High Level Description of a Matched Filtering/Correlating Characterization/Embodiment of the Invention.” (‘177, 130:49-132:17, Gardner Ex. 4.)

The patent repeatedly emphasizes that Figures 151 (and 150) and 153 (and 152) represent *different alternatives*, at “lower cost” and with “less complex circuitry,” because a matched filter/correlator “**might not always provide** an optimum solution for all applications.” (‘177, 132:20-30 (emphasis added), Gardner Ex. 4.) The patent explains “[s]ince it is **not always practical** to design a matched filtering/correlating processor with

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<sup>5</sup> ParkerVision incorrectly suggests that Qualcomm’s reference to Fig. 151 in the Prior Joint Claim Construction Statement is somehow an admission that Fig. 151 is an embodiment of a matched filtering/correlating module. (PV’s Br. at 22 (citing Dkt. 124 at 10).) To the contrary, Defendants cited Fig. 151 as well as the *ParkerVision I Markman* hearing and *Markman* Order because they all demonstrate that ParkerVision was differentiating between a “matched filtering/correlating module” in Fig. 149 and the “finite time integrating module” in Fig. 151.

passive networks, the sub-sections that follow also describe how to implement the present invention using a *finite time integrating operation* and an *RC processing operation*.” (‘177, 130:40-48 (emphasis added).) For example, “a matched filter/correlator embodiment might be too expensive or too complicated to implement for some applications.” (‘177, 132:24-27.)

The patent explains that a “matched filter/correlator” can be “approximated” using different alternatives (*see* ‘177, Sections 1.2 and 1.3, Gardner Ex. 4), but those “approximations” are **not** the claimed “matched filtering/correlating module” itself. (*E.g.*, ‘177, 132:31-38 (“a gated matched filter/correlator processor can be **approximated** .... **Such an approximation** of a gated matched filter/correlator is generally referred to as a **finite time integrator**.”) (emphasis added), Gardner Ex. 4.) The patent distinguishes between the “matched filtering/correlating module” in Figure 149 (‘177, 131:53-54), and the “finite time integrating system” in Figure 151 (‘177, 133:22-23). The patent likewise explains that while Section 1.2 “describes how a gated matched filter/correlator can be approximated with a *finite time integrator*,” Section 1.3 “describes how the *integrator portion of the finite time integrator* can be *approximated* with a *resistor/capacitor (RC) processor*,” which is “very inexpensive to implement.” (‘177, 133:43-49 (emphasis added); *see also* ‘177, 133, 55-58.) In other words, the patent consistently distinguishes between the “matched filter/correlator” and alternatives like the “RC processing system” and “a finite time integrator.” Re-writing the four words “matched filtering/correlating module” to cover a finite time integrator or a RC processing system would be legal error. *K-2*, 191 F.3d at 1364 (“Courts do not rewrite claims; instead, we give effect to the terms chosen by the patentee.”).

*Second*, ParkerVision’s argument to this Court is inconsistent with the argument

ParkerVision made to Judge Dalton in *ParkerVision I*. *ParkerVision I* involved U.S. Patent No. 7,724,845, which included an identical description of Figures 148-153 as the one found in the '177 patent-in-suit. (*Compare* Gardner Ex. 3 with Gardner Ex. 4.) In *ParkerVision I*, the parties disputed “finite time integrating” terms in the '845 patent claims.

The *ParkerVision I* claim construction order stated: “ParkerVision contends that the inventors of the patents-in-suit coined the term ‘**finite time integrating operation**’ as an **alternative solution to matched filtering/correlating processors.**” *ParkerVision v. Qualcomm*, No. 3:11-CV-719-J-37TEM, 2013 WL 633077, at \*11 (M.D. Fla. Feb. 20, 2013) (Dalton, J.) (emphasis added), Gardner Ex. 5. ParkerVision argued: “the finite time integrating operation was invented as an **alterative** to a matched filtering/correlating process.” (Gardner Ex. 6 at 14 (emphasis added).) Citing the same sentences that appear in the '177 patent, ParkerVision argued: “[m]atched filtering/correlating processors, however, are ‘not always practical to design’ see '845::128:44-45; and ParkerVision’s engineers invented a ‘finite time integrating operation’ as an alternative solution, see '845::128:45-48.” (*Id.* at 13; *see also Martek Biosciences v. Nutrinova*, 579 F.3d 1363, 1380 (Fed. Cir. 2009) (when a patentee defines a term in the patent specification, “the patentee’s definition controls”).)

During the claim construction hearing, ParkerVision emphasized the differences between “finite time integrating” shown in Figure 151, and “matched filtering/correlating” shown in Figure 149:

That’s what differentiates -- according to **figures 151 and 149**, that’s what differentiates these two operations. On the one hand, in the case of the finite time integrating operation, we’re using an approximation of the carrier. In the case of the matched filtering/correlating operation, we’re actually using the carrier itself ....

The **two are clearly different**, and ParkerVision’s construction embodies the teachings of the patent as to what the **finite integrating operation** is in the first instance; and in the second instance, how it’s **different from the matched filtering/correlating operation** ....

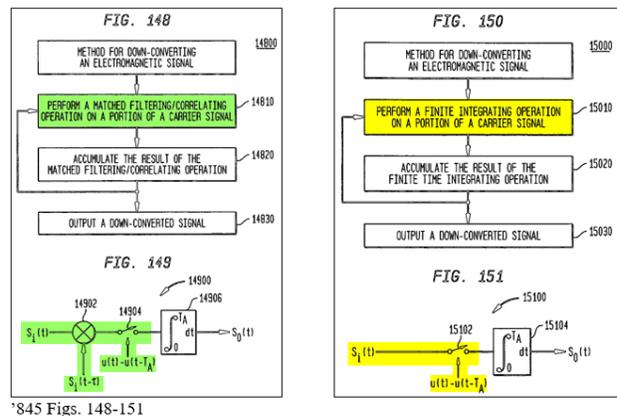
[W]e can go back to **figure 149**, which isn’t performing the finite time integrating operation. **It’s performing the different match filtering function.**

(*ParkerVision I* Tr. at 114:16-22; 115:6-11; 117:10-12 (emphasis added), Gardner Ex. 7.)

Consistent with Defendants’ construction here, ParkerVision’s counsel argued that while “matched filtering/correlating” requires multiplication of the carrier by itself, “finite time integrating” does not. (*ParkerVision I* Tr. at 113:23-114:9 (“for the finite time integrating operation ... we don’t use the carrier twice”); *id.* at 115:3-5 (“[i]t’s much simpler to implement [the finite time integrating] circuit with a switch than it is to implement [the matched filtering/correlating] circuit with a multiplication and actual replica of the carrier.”), Gardner Ex. 7.) Reproduced on the right is

**Not Identical to Matched Filtering Operation**

ParkerVision’s slide from *ParkerVision I* to the court, where ParkerVision argued “finite time integrating” is “Not Identical” to matched filtering/correlating. (Gardner Ex. 8 at 5 (showing Fig. 149 for “matched filtering/correlating” and Fig. 151 for



“finite time integrating”); *Transclean v. Jiffy Lube Int’l*, 474 F.3d 1298, 1307 (Fed. Cir. 2007) (“The doctrine of judicial estoppel prohibits a party from taking inconsistent positions in the same or related litigation.”).)

*Third*, ParkerVision’s proposed construction ignores the findings in *ParkerVision I*. The *ParkerVision I* court concluded “the ‘matched filtering/correlating’ operation and ‘finite time integrating operation’ differ”. *ParkerVision I*, 2013 WL 633077, at \*12, Gardner Ex. 5. Critically, the court found that the difference between “matched filtering/correlating” and “finite time integrating” is that “matched filtering/correlating” requires multiplying the input signal with a time-delayed version of itself:

The “matched filtering/correlating” operation and “finite time integrating operation” differ in that the first operation involves “convolving an approximate half cycle of the carrier signal with a representation of itself,” .... in other words, it involves convolving an input signal (the modulated carrier signal) with an impulse response “identical to the modulated carrier signal,  $S_i(t)$ , to be processed”

*Id.* at \*12 (internal citations omitted). Consistent with *ParkerVision I*, Defendants’ propose “matched filtering/correlating module” include “a multiplier, that multiplies the input signal by a time-delayed version of itself.”

*Fourth*, ParkerVision’s proposed construction ignores the ‘845 patent prosecution history. As explained above, the ‘845 *ParkerVision I* patent contains the same descriptions for Figures 148-153 as in the ‘177 patent-in-suit. (*Compare* Gardner Ex. 3 with Gardner Ex. 4.) During prosecution of the earlier ‘845 patent, the Patent Office rejected the patentee’s claims under the patent restriction requirement for containing three “distinct” inventions: (1) “time integration”; (2) “RC processing”; and (3) “match[ed] filtering/correlating”. (03/25/08 Office Action at 2, Gardner Ex. 9.) ParkerVision therefore elected to break-up its alleged inventions into separate patents, with the ‘845 patent claiming the “Group 1,” time integration idea. (4/23/08 Reply at 1, Gardner Ex. 9.) It would be improper to overrule the Patent Office’s

requirement to break up the alleged inventions by now combining them in litigation via claim construction of “matched filtering/correlating module” to cover “time integration” or “RC processing.” *See, e.g., Uship Intellectual Props. v. United States*, 714 F.3d 1311, 1314-15 (Fed. Cir. 2013) (statements made during prosecution of the parent application limited the child patent claims).

*Fifth*, ParkerVision’s proposed construction improperly introduces additional subjectivity and ambiguity into the claims. For example, ParkerVision uses numerous terms of degree (*e.g.*, “*substantially* linear”; “*significant* load”; “*substantial* available real power”; “*enhanced* signal-to-noise power ratio”) without any guidance or support for how to measure or apply those terms of degree. This is improper. *E.g., Berkheimer v. HP*, 881 F.3d 1360, 1364 (Fed. Cir. 2018) (finding term “minimal redundancy” indefinite); *Liberty Ammunition v. United States*, 835 F.3d 1388, 1396 (Fed. Cir. 2016) (“claims having terms of degree will fail for indefiniteness unless they ‘provide objective boundaries for those of skill in the art’ when read in light of the specification and the prosecution history”); *Datamize v. Plumtree Software*, 417 F.3d 1342, 1351 (Fed. Cir. 2005) (“When a word of degree is used the district court must determine whether the patent’s specification provides some standard for measuring that degree.”) (internal quotations and citation omitted).<sup>6</sup> ParkerVision’s proposed construction would create later confusion for the trier of fact and more disputes about whether and how to properly and consistently apply the construction.

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<sup>6</sup> *Datamize* invalidated claims as indefinite under the earlier “insolubly ambiguous” standard, but remains good law. *E.g., HZNP Medicines v. Horizon Pharma USA*, No. 2017-2149, --- F.3d ----, 2019 WL 5079271, at \*11 (Fed. Cir. Oct. 10, 2019) (citing *Datamize*; claims indefinite); *Interval Licensing v. AOL*, 766 F.3d 1364, 1371-73 (Fed. Cir. 2014) (same).

*Sixth*, ParkerVision once again inserts the requirement of an “*independent control input*” without any support for this language. Nothing in the claims or the patent require a “matched filtering/correlating module” use a switch with an independent control signal. (*E.g.*, ‘177, 63:33-37 (teaching that “[a]ny device with switching capabilities could be used to implement the switch modules”).)

*Finally*, ParkerVision imports requirements from other sections of the ‘177 patent into its proposed construction without justification. For example, ParkerVision inserts the requirement that the “matched filtering/correlating module” be comprised of “linear time-variant circuitry.” (PV’s Br. at 24 (citing column 172).) But the quoted portion of column 172 merely states that “[e]mbodiments of the present invention *can be modeled* as linear time-variant circuitry,” not that it is a requirement of the “matched filtering/correlating module.” In addition, ParkerVision attempts to insert “aliasing rate” into its proposed construction allegedly based on a discussion in column 26 of the ‘177 patent without any explanation of how the discussion relates to “matched filtering/correlating module.” ParkerVision’s 94-word proposed construction is nothing more than an attempt to lard up “matched filtering/correlating module” with what ParkerVision perceives are its validity and infringement arguments. But ParkerVision fails to provide any reasoned and supported analysis for doing so. ParkerVision’s erroneous proposed construction should be rejected.

F. “harmonic” / “harmonics” (‘940 and ‘372 patents)

Claim Term	Patent Board	Defendants	ParkerVision
harmonic / harmonics	frequency or tone that, when compared to its fundamental or reference frequency or tone, is an integer multiple of it ... [and] includes the fundamental frequency as the first harmonic	frequency or tone that, when compared to its fundamental or reference frequency or tone, is an integer multiple of it and including the fundamental frequency as the first harmonic	frequency or tone that, when compared to its fundamental or reference, is an integer multiple including $n=1$ /the fundamental
Claims 24, 25, 26, 331, 364, 365, 366, 368, 369, 373 (‘940 patent)			
Claims 95, 96, 99, 100, 103, 104, 107, 108, 109, 110, 126, 127 (‘372 patent)			

Defendants have updated their proposed construction to ask the Court to enter the construction the Board adopted in its final decisions. (Li Ex. 8, Dkt. 317-9 at 7; Li Ex. 12, Dkt. 317-13 at 13; Li Ex. 9, Dkt. 317-10 at 7; Li. Ex. 10, Dkt. 317-11 at 13; Li Ex. 11, Dkt. 317-12 at 12.) The Board construed “**harmonic**” in the ‘940 patent as “**a frequency or tone that, when compared to its fundamental or reference frequency or tone, is an integer multiple of it ... [and] includes the fundamental frequency as the first harmonic.**” (*E.g.*, Dkt. 317-10 at 7 (emphasis added).) During trial, ParkerVision endorsed the Board’s construction. (Dkt. 317-10 at 7 (ParkerVision asking the Board to “maintain” its construction); Dkt. 317-9 at 7 (same); Dkt. 317-12 at 12 (Board stating “ParkerVision agrees with our construction”).)

To the extent ParkerVision intends its proposed construction to depart from the Board’s construction, it offers no basis for doing so. Nor could it. *Cordis v. Bos. Sci.*, 658 F.3d 1347, 1357 (Fed. Cir. 2011) (finding patentee’s argument was “foreclosed” based on statements made to the Patent Office); *Aylus*, 856 F. 3d at 1359-60; *Biovail Corp. Int’l v. Andrx Pharms.*, 239 F.3d 1297, 1301 (Fed. Cir. 2001) (claims “must be read consistently” with the “patent’s applicable prosecution history”).

The Court should adopt the construction the Board entered in its final decisions.

### III. CONCLUSION

For the reasons stated herein, and in Defendants' prior claim construction briefing, Defendants request the following claim constructions:

Claim Term	Claim Construction
switch module / switch	device with an input and output that can take two states, open and closed
bias signal	(1) a signal having a steady, predetermined level or (2) the original baseband signal at the source
harmonic / harmonics	frequency or tone that, when compared to its fundamental or reference frequency or tone, is an integer multiple of it and including the fundamental frequency as the first harmonic
to gate / gating	to change / changing between (i) connecting a signal at an input to an output such that the input and output have a substantially equal voltage, and (ii) disconnecting the signal from the output
gating means <sup>7</sup>	<u>Function</u> : gating <u>Structure</u> : a device with an input and an output that can take two states, open and closed, and when closed electrically connects its input and output such that the input and output have an equal voltage as shown and described in '372 patent at Figs 28A, 29A, 30A, 31A, 32A, 33A, 53, 54A, 55-57A-C, 66-70
summer	a device that sums two or more signals
summing means	<u>Function</u> : summing said in-phase phase-modulated harmonically rich signal and said quadrature-phase phase-modulated harmonically rich signal ('372 Patent, claim 99); summing said in-phase phase-and-amplitude modulated harmonically rich signal and said quadrature-phase phase-and-amplitude-modulated harmonically rich signal ('372 patent, claim 103) <u>Structure</u> : Figs. 70 (summer 7085) and 71 (summer 7126)
matched filtering/ correlating module	a multiplier, that multiplies the input signal by a time-delayed version of itself, followed by a switch and an integrator

<sup>7</sup> Construing "means-plus-function" claim terms requires identifying the "claimed function," and "what structure, if any, disclosed in the specification corresponds to the claimed function." *Williamson v. Citrix Online*, 792 F.3d 1339, 1351 (Fed. Cir. 2015) (*en banc*).

Claim Term	Claim Construction
desired harmonics	a plurality of harmonic frequencies that are desired to be transmitted and that have sufficient amplitude for accomplishing the desired processing
desired signal	a frequency that is desired to be transmitted and that has sufficient amplitude for accomplishing the desired processing
said input signal <sup>8</sup>	indefinite

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<sup>8</sup> If the Court grants Defendants’ motion for summary judgment of noninfringement of the receiver patents, then the Court would not need to reach this claim construction dispute.

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**CERTIFICATE OF SERVICE**

I hereby certify that a true and correct copy of the above and forgoing document has been served on all counsel of record via the Court's ECF system on October 11, 2019.

*/s/ Eamonn Gardner*

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