UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
WACO DIVISION

PARKERVISION, INC., Plaintiff, v. INTEL CORPORATION, Defendant.	Case No. 6:20-cv-00108 JURY TRIAL DEMANDED

PLAINTIFF PARKERVISION'S
OPENING CLAIM CONSTRUCTION BRIEF

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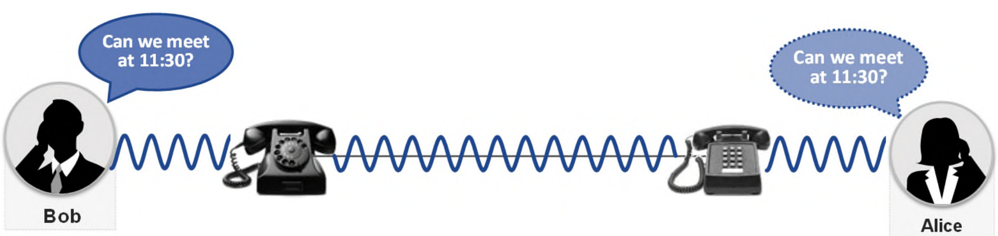
I. Introduction.

The patents-in-suit relate to how wireless devices (e.g., cell phones) process radio signals. Though the patents discuss two technologies for processing signals, the claims are directed to only *one* of these technologies – *energy transfer* (i.e., *energy* sampling). Indeed, the claims include terms specifically *reserved* by the patentees to connote energy transfer. ParkerVision's constructions track the intrinsic evidence and draw a distinction between these technologies. Intel, however, seeks constructions that ignore the intrinsic record and conflate these two distinct technologies to protect its invalidity and non-infringement cases. ParkerVision's constructions should be adopted, and Intel's constructions and indefiniteness arguments should be rejected.

II. Technology background.

A. Wired communications.

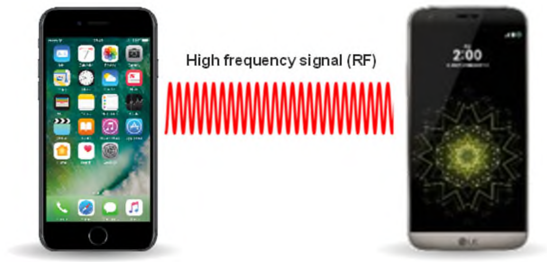
Traditional wired communications networks transmit audio signals over wire lines by converting audio signals to electrical signals and back to audio signals.



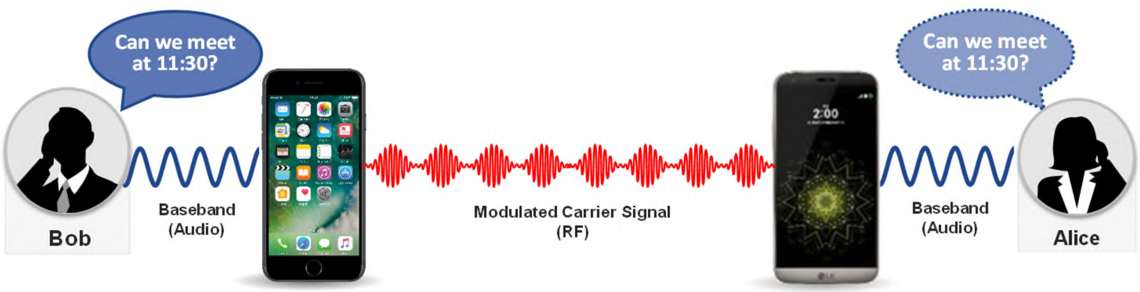
When Bob speaks into a phone, Bob's phone converts his voice (low frequency audio signals) into electrical signals. Electrical signals are transmitted over wires to Alice's phone, which converts the electrical signals back into audio signals so that Alice can hear Bob's voice.

B. Wireless Communications.

Similar to wired communications, in wireless communications, low frequency audio signals are converted into electrical signals. But instead of travelling through wires, the signals are transmitted through air as radio waves (electromagnetic (EM) waves).



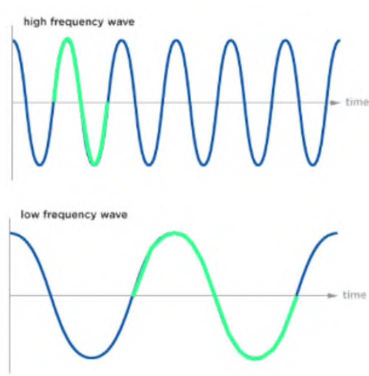
As shown above, wireless devices use high frequency signals (e.g., radio frequency (RF) (red)) because higher frequency signals can carry more information and high frequency antennas can fit within a cell phone.



In a wireless communication, when Bob speaks into his cell phone, Bob's cell phone converts his voice (low frequency audio signals) into high frequency RF signals. The RF signals are transmitted over the air to Alice's cell phone. Alice's cell phone then converts the RF signals back into low frequency audio signals and Alice can hear Bob's voice.

C. Frequency.

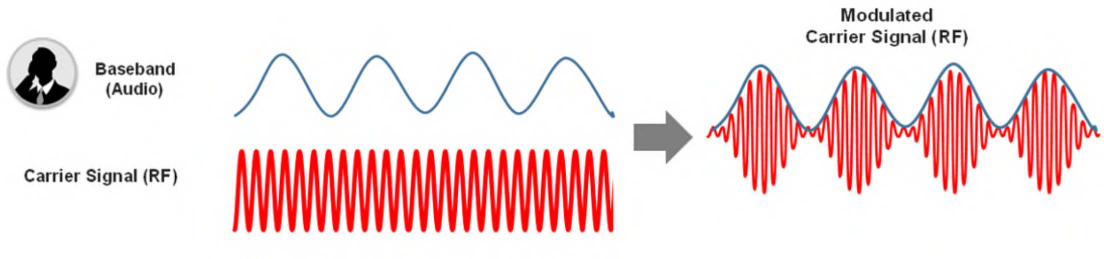
Frequency is the number of cycles of a wave per unit time (second).



As shown above, a high frequency signal has more cycles of a wave (green) per second than a low frequency signal. Notably, the frequency of an audio wave can be one thousand cycles per second whereas the frequency of a radio wave can be one billion cycles per second.

D. Up-conversion.

In order to transmit an audio signal over air, a wireless device must transform the audio signal to an RF signal. Since the RF signal is used to carry the information in the audio signal, the RF signal is referred to as a "carrier signal." And since audio waves are at a low frequency, they are referred to as "baseband," a "baseband signal" or at a "baseband frequency."



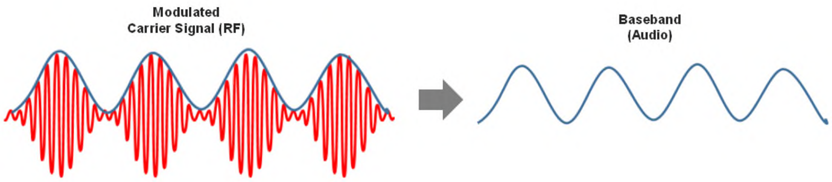
In order to transport the baseband (audio) signal, the transmitting wireless device (e.g., Bob's cell phone) modifies the carrier (RF) signal. As shown above, the baseband signal is impressed upon the carrier signal (above left), thereby modulating/changing the shape of the carrier signal to approximate the shape of the baseband (audio) signal (above right).[1] The modified signal is referred to as a "modulated carrier signal." The process is referred to as "up-conversion" because the low frequency signal is being up-converted to a high frequency signal.

E. Down-conversion.

In order for the receiving wireless device (e.g., Alice's cell phone) to recover the baseband (audio) signal from the modulated carrier signal, the receiving wireless device must

[1] This type of modification is referred to as amplitude modulation. It should be noted that other types of modulation can be used, which involve modifying other properties of the carrier signal.

transform the modulated carrier signal back to an audio signal. This process is referred to as "down-conversion" because a high frequency signal is being down-converted to a low frequency signal.



As shown above, "down-conversion" is the process by which the baseband (audio) signal is recovered from the carrier signal. Down-conversion is the subject of the patents-in-suit.[2]

III. The patents-in-suit.

The patents-in-suit[3] disclose two systems for down-conversion: (1) *energy* transfer (i.e., *energy* sampling) and (2) sample and hold (i.e., *voltage* sampling).[4] But the *claims* of the patents are directed to *energy* transfer because they use terms the patentees *reserved* specifically to connote energy transfer. For example, a number of the claims recite "storage" modules/devices/elements. The patents draw a sharp contrast between "storage" modules/devices/elements, which connote energy transfer, and "holding" modules/devices/elements, which connote sample and hold. *See, e.g.,* '518 patent, 66:15-23.

Indeed, as discussed below, energy transfer and sample/hold are distinctly different

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[2] While Section II provides an overview of the technology in connection with voice/audio signals, it should be understood that this is for illustrative purposes only. The technology of the patents-in-suit can be used to down-convert any type of electromagnetic signal that carries information, such as video, web, and other types of data.
[3] The patents-in-suit are U.S. Patent Nos. 6,266,518; 6,580,902; 7,110,444; 7,539,474; 8,588,725; 8,660,513; 9,118,528; 9,246,736; and 9,444,673.
[4] Since the '518, '902, '513, '528, '736 and '673 patents have the same disclosure regarding down-conversion and the '444, '474 and '725 patents specifically incorporate such disclosure by reference, all citations in this brief will reference the '518 patent unless otherwise noted.

technologies. In energy transfer, the down-converted signal is generated directly from the *energy*[5] of the RF signal; in sample/hold, the down-converted signal is generated from reading discrete points of *voltage* of the RF signal. *Compare id.* at 65:56 - 67:39 (describing an energy transfer system) *with id.* at 54:10-36 (describing a sample and hold system). And while energy transfer and sample/hold both result in down-converted signals, an energy transfer system results in a higher quality baseband signal and, therefore, allows for wireless devices with fewer components, reduced size and cost, and increased battery life. *Id.* at 62:14-17; 65:57- 66:10.

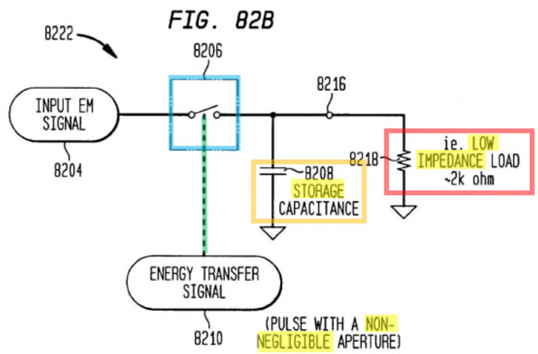
As disclosed in the patents-in-suit and in more detail below, the following table identifies key features that distinguish energy transfer (i.e., energy sampling) from sample and hold (i.e., voltage sampling).

Energy Transfer (*Energy* Sampling)	**Sample and Hold (*Voltage* Sampling)**
Non-negligible sampling aperture	Negligible sampling aperture
"*Storage*" module	"*Holding*" module
Low impedance load	*High* impedance load
Down-converted signal formed from *energy* transferred to the load	Down-converted signal formed from discrete *voltage* measurements

A. Energy transfer (*energy* sampling).

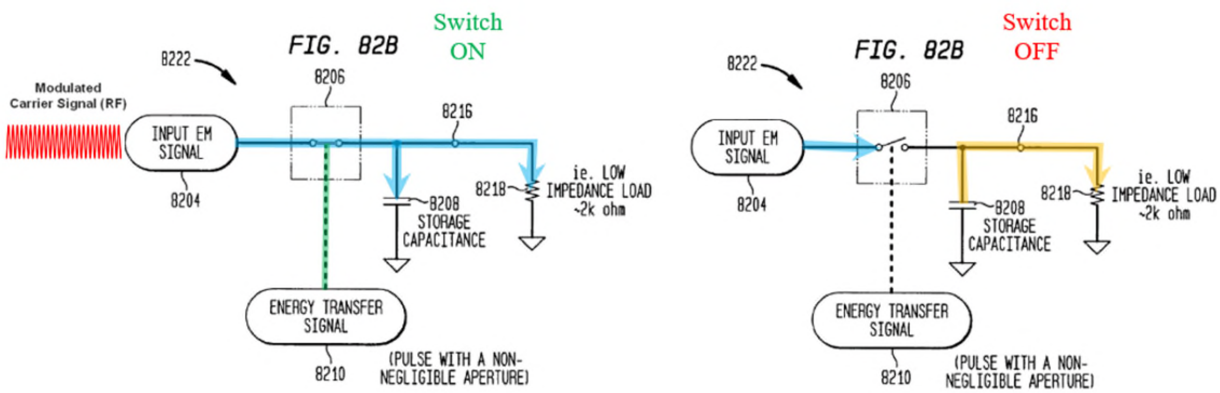
Figure 82B of the '518 patent (below) illustrates an *energy* transfer (*energy* sampling) system, which would be incorporated into a transceiver chip of a wireless device.

[5] Energy and voltage are not the same thing. Energy is the product of voltage multiplied by current multiplied by time (i.e., energy = voltage x current x time).

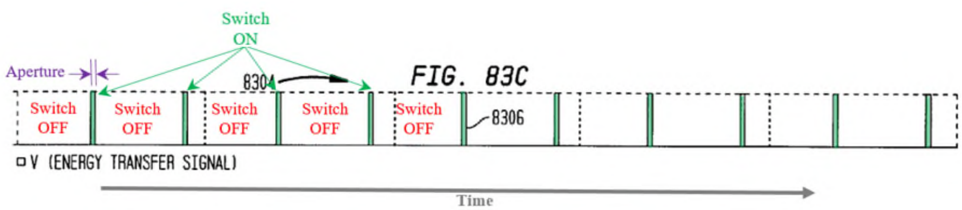


The system includes a switch 8206 (blue), a control signal 8210 (green) for controlling the switch, a "*storage*" capacitor 8208 (orange) for storing *and discharging* energy, and a *low* impedance load (red). Notably, there are several *key* features (yellow highlights) that distinguish an energy transfer system from sample and hold. In particular, an energy transfer system uses (1) a control signal having a pulse with a *non*-negligible aperture/duration, and (2) a "*storage*" capacitor for storing *and discharging non*-negligible amounts of energy for driving a *low* impedance load.[6] Indeed, *low* impedance is what enables a "storage" capacitor to discharge its energy when the switch is OFF (open). If the impedance were high, the "storage" capacitor could *not* discharge sufficient energy for the system to perform energy transfer (energy sampling) and form a down-converted signal from energy transferred to the low impedance load.

[6] Unlike a battery that produces energy, a load is an electrical component (e.g., resistor) that consumes energy (similar to how a light bulb consumes energy). Impedance refers to the opposition that a component presents to the flow of electrical current. A low impedance load is an electrical component that consumes energy and provides low resistance to the flow of current.



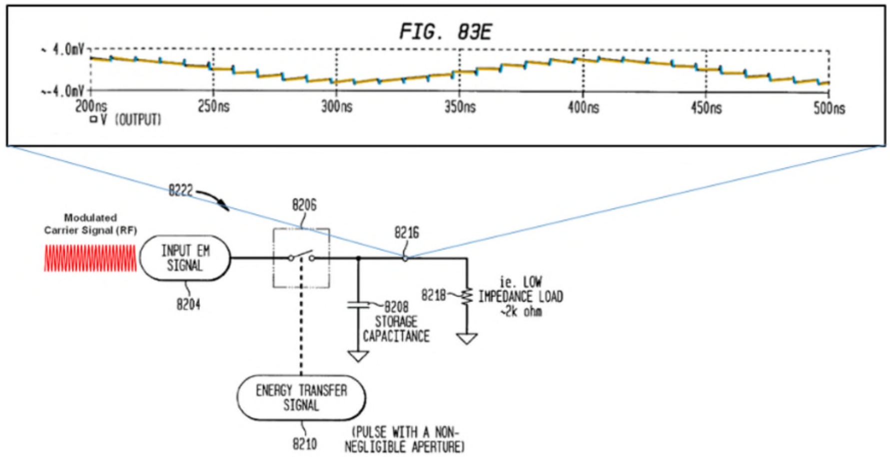
The annotations in Figure 82B above illustrate how an energy transfer system down-converts a high frequency input EM signal 8204 (e.g., modulated carrier signal (red)) to a baseband signal. In particular, down-conversion occurs by repetitively opening and closing the switch 8206.



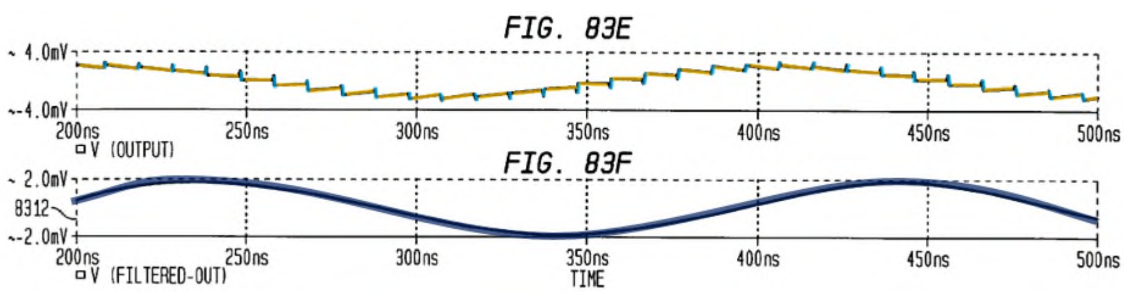
As shown in Figure 83C above, the switch is turned ON (closed) by sending a pulse 8306 (green) to the switch. The switch is kept ON (kept closed) for the duration of the pulse (i.e., a *non*-negligible aperture (purple) of the pulse). As shown by the repetitive pulses 8306, this opening and closing of the switch repeats continuously over time.

As shown in Figure 82B above (left), when the switch is ON (during the aperture), a portion of the input EM signal 8204 (blue) passes to the "storage" capacitor 8208 and the low impendence load 8218. When the pulse 8306 (green) stops, the switch is turned OFF (opened), and the input EM signal is prevented from passing through the switch. Since the load is *low* impedance, when the switch is OFF (opened), as shown in Figure 82B above (right), energy (orange) stored in the "storage" capacitor 8208 is discharged to the low impedance load 8218.

For this reason, the "storage" capacitor is said to "drive the load." '518 patent, 66:66 – 67:3.



The repetitive opening and closing of the switch results in the waveform (blue/orange) shown above in Figure 83E at terminal 8216. The waveform is made up of energy (blue) from the EM signal and discharged energy (orange) from the "storage" capacitor. Indeed, the discharged energy (orange) from the "storage" capacitor is essential. Without the discharged energy, the waveform of Figure 83E would be incomplete (the orange portions would be missing), thereby producing a degraded and/or unusable signal that could not be properly processed by a receiving wireless device.



As shown above, the waveform of Figure 83E is filtered to created a smooth waveform (dark blue) as shown in Figure 83F. The smooth waveform is the baseband (audio) signal that was sent from the transmitting wireless device (e.g., Bob's cell). The baseband signal can be processed by the receiving wireless device (e.g., Alice's cell) and Alice can hear Bob's voice.

The figures below illustrate a close-up view of another embodiment of a down-converted signal in an energy transfer system.

FIG. 57E

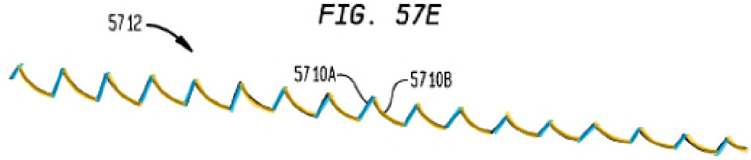


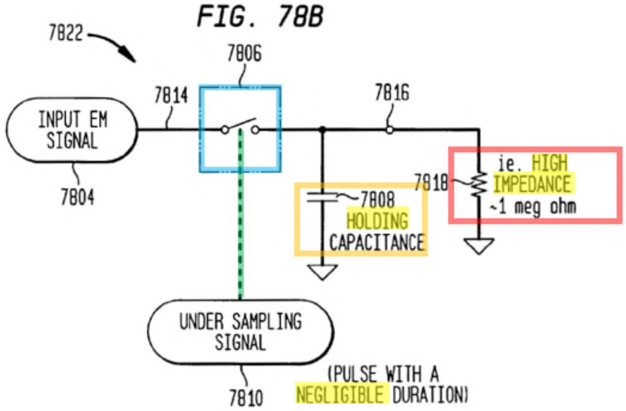
FIG. 57F

Figures 57E shows a segment 5712 of the down-converted signal 5716 of Figure 57F. The down-converted signal of Figure 57E is made up of *two* portions - portion 5710A (i.e., energy (blue) from the EM signal) and portion 5710B (i.e., discharged energy (orange) from the "storage" capacitor).

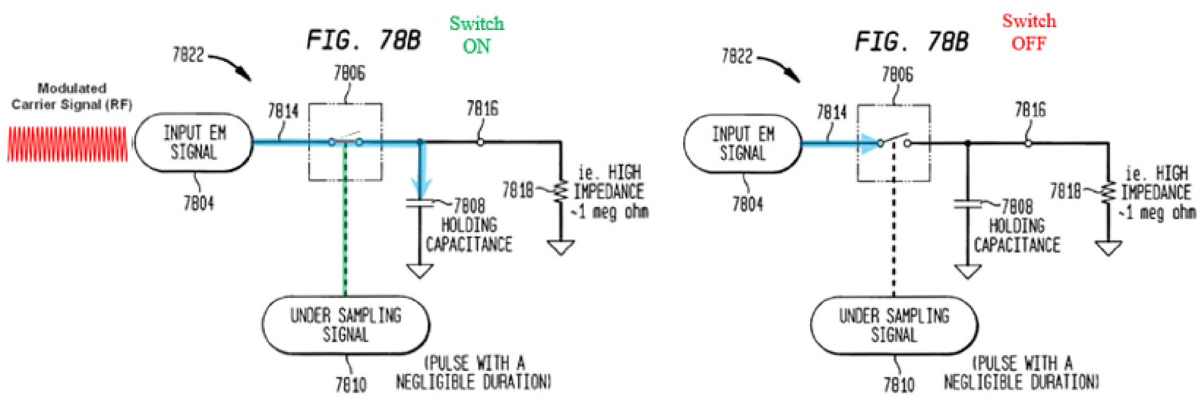
B. Sample and hold (*voltage* sampling).

Figure 78B of the '518 patent illustrates a sample and hold (*voltage* sampling) system.

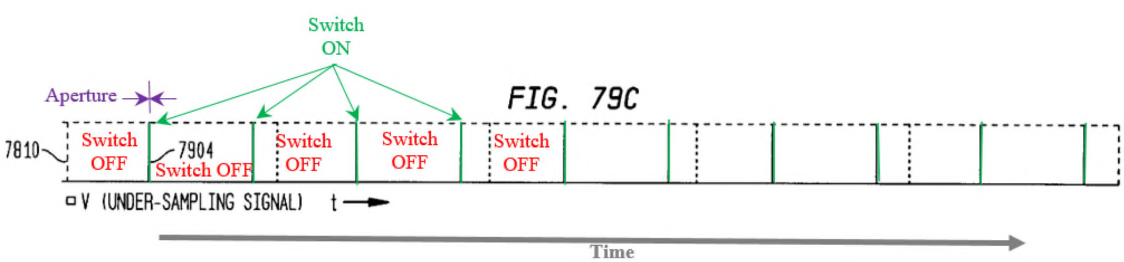
FIG. 78B



The system includes a switch 7806 (blue), a control signal 7810 (green) for controlling the switch, a "holding" capacitor 7808 (orange) for *holding* a voltage across the capacitor, and a *high* impedance load (red). Unlike an energy transfer system, a sample and hold system uses (1) a control signal having a pulse with a *negligible* aperture/duration, (2) a "holding" capacitor for *holding* a constant voltage across the capacitor and (3) a *high* impedance load (yellow highlights). The capacitor is referred to as a "holding" capacitor because, unlike the "storage" capacitor in an energy transfer system, a "holding" capacitor does not discharge any significant energy to the load. Indeed, the *high* impedance load is specifically included to *prevent* the holding capacitor from discharging energy, which would degrade the discrete voltage measurements and adversely affect the system performing sample and hold (voltage sampling).

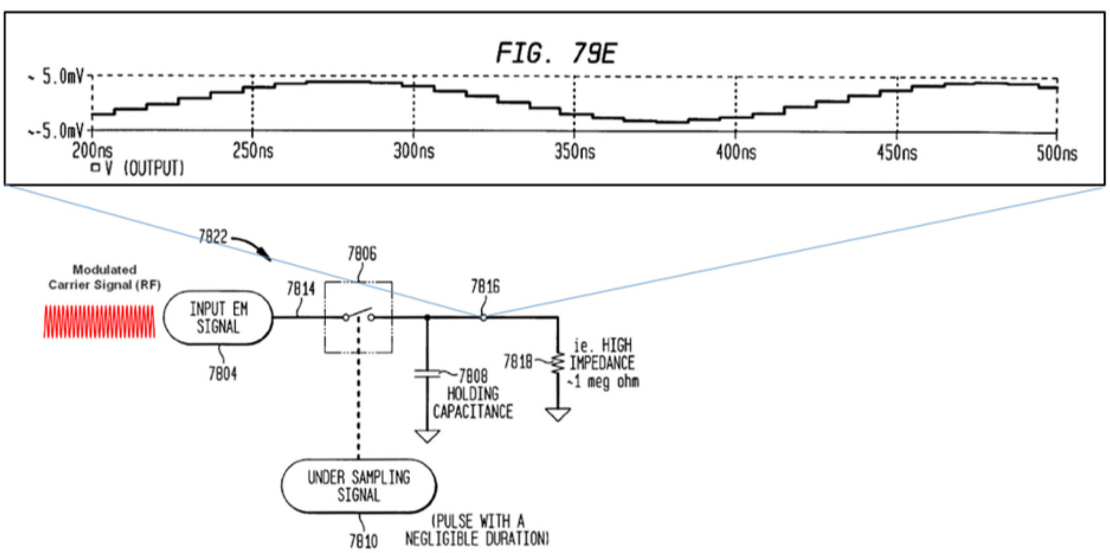


The annotations in Figure 78B illustrate how a sample and hold system down-converts a high frequency input EM signal 7804 (e.g., modulated carrier signal (red)) to a baseband signal.

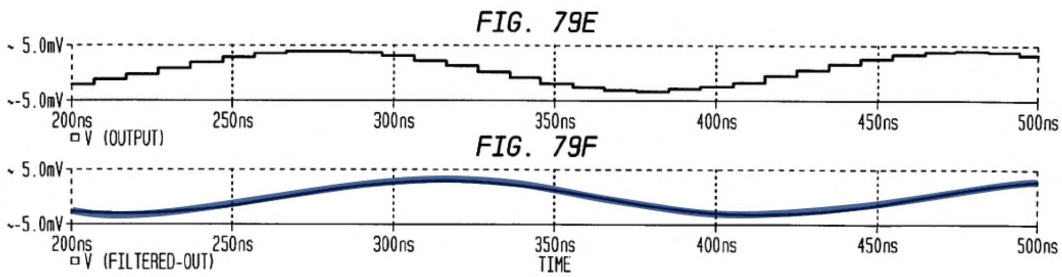


As shown in Figure 79C, the switch is turned ON (closed) by sending a pulse 7904 (green vertical line) of an extremely short/negligible duration to the switch. Thus, the aperture (purple) of a pulse is referred to as a *negligible* aperture because the pulse width "tend[s] toward zero time." '518 patent, col. 63:1-3. As shown by the repetitive pulses 7904, this opening and closing of the switch repeats continuously over time.

As shown in Figure 78B above, when the switch is ON (closed) (during the aperture), the EM signal 8204 (blue) is sent to the "holding" capacitor 7808. When the pulse 7904 (green) stops, the switch is turned OFF (opened). But unlike energy transfer (energy sampling), since sample and hold uses a *high* impedance load, when the switch is OFF (opened), there is *high* resistance to the flow of current and, thus, the "holding" capacitor holds a constant voltage value. Because there is no significant energy discharge between pulses, the terminal 7816 maintains a constant voltage value until the next pulse. '518 patent, 63:44-49. The voltage value serves as the "sample" of a discrete voltage value that the system uses to recover the baseband signal. In particular, the system uses each discrete change (increase/decrease) in the *voltage* value over time to recover the baseband. This is unlike energy transfer (energy sampling) which uses the *energy* from the input EM signal provided to a low impedance load to recover the baseband.



As shown in Figure 79E, sample and hold produces a voltage wave with a stair step pattern. The vertical part of the step represents the "sample" of the voltage value which occurs at the time of pulse 7904. The horizontal portion of the step represents the "holding" of that voltage value until the next pulse when the next sample of voltage is taken. *Id.* at 63:49-55.



As shown above, the waveform of Figure 79E is filtered to create a smooth waveform (dark blue) as shown in Figure 79F. The smooth waveform is the baseband (audio) signal that was sent from the transmitting wireless device (e.g., Bob's cell). The baseband signal can be processed by the receiving wireless device (e.g., Alice's cell) and Alice can hear Bob's voice.

IV. Disputed terms for construction.

A. Energy "storage" module/element/device terms.

Claim Terms	ParkerVision's Construction	Intel's Construction
"energy storage element" '528 patent, claim 1	"an element of an energy transfer system that stores non-negligible amounts of energy from an input electromagnetic signal for driving a low impedance load"	"an element that stores a non-negligible amount of energy from an input electromagnetic (EM) signal"
"energy storage module" '902 patent, claim 1	"a module of an energy transfer system that stores non-negligible amounts of energy from an input electromagnetic signal for driving a low impedance load"	"a module that stores a non-negligible amount of energy from an input electromagnetic (EM) signal"
"energy storage element" '513 patent, claim 19 '736 patent, claims 1, 11	"an element of an energy transfer system that stores non-negligible amounts of energy from an input electromagnetic signal for driving a low impedance load"	"an element that stores a non-negligible amount of energy from an input electromagnetic (EM) signal"

"energy storage device" '673 patent, claim 13	"a device of an energy transfer system that stores non-negligible amounts of energy from an input electromagnetic signal for driving a low impedance load"	"a device that stores a non-negligible amount of energy from an input electromagnetic (EM) signal"
"storage element" '444 patent, claim 3 '474 patent, claim 1	"an element of an energy transfer system that stores non-negligible amounts of energy from an input electromagnetic signal for driving a low impedance load"	"an element that stores a non-negligible amount of energy from an input electromagnetic (EM) signal"
"storage module" '725 patent, claim 1	"a module of an energy transfer system that stores non-negligible amounts of energy from an input electromagnetic signal for driving a low impedance load"	"a module that stores a non-negligible amount of energy from an input electromagnetic (EM) signal"

An energy "storage" module/element/device[7] is a term reserved exclusively for a component of an energy transfer (*energy* sampling) system. On the other hand, a "holding" module/element/device[8] is a term reserved exclusively for a component of a sample and hold (*voltage* sampling) system. As such, an energy "storage" module must be construed in a way that distinguishes it from a "holding" module. *See Apple Inc. v. Andrea Elecs. Corp.*, 949 F.3d 697, 708, (Fed. Cir. 2020) ("As we have held, '[when] the patent describes multiple embodiments, every claim does not need to cover every embodiment. This is particularly true [when] the plain language of a limitation of the claim does not appear to cover that embodiment.'"); *see also Baran v. Med. Device Techs., Inc.*, 616 F.3d 1309, 1315 (Fed. Cir. 2010) ("It is not necessary that each patent claim read on every embodiment. It is often the case that different claims are directed to and cover different disclosed embodiments"). And as discussed below, the distinctions between a "storage" module in an energy transfer system and a "holding" module in a sample and hold system are spelled out in the patent specification.

[7] "Storage module" will be used as shorthand for a "storage" element, module, or device.
[8] "Holding module" will be used as shorthand for a "holding" element, module, or device.

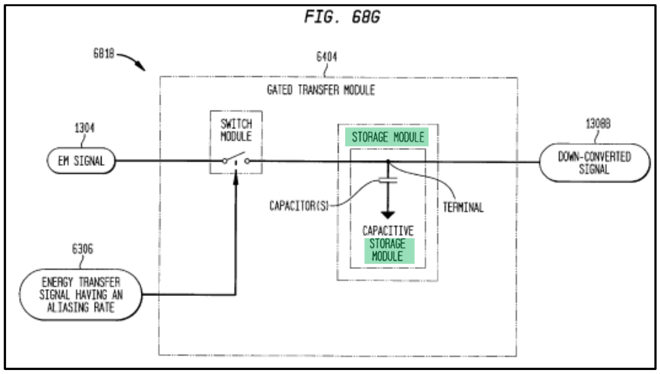
The parties *agree* that an energy "storage" module "stores a non-negligible amount of energy from an input electromagnetic (EM) signal." But this feature alone does ***not*** distinguish a "storage" module of an energy transfer system from a "holding" module of a sample and hold system. There are two additional key distinguishing features – (1) the "storage" module is part of an *energy* ***transfer*** system, and (2) the "storage" module discharges energy to drive a *low* impedance load. ParkerVision's construction accounts for both of these features.

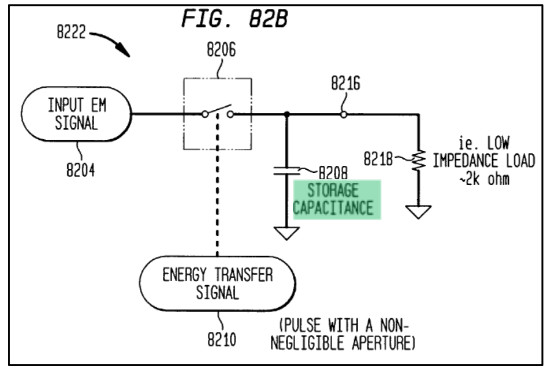
With regard to feature (1), the specification is clear that the term "storage" module is specific to an "*energy* ***transfer*** *system*" and a "holding" module, as the name implies, is specific to a sample and *hold* system. As discussed in Section III above, whereas a "storage" module stores and *transfers/discharges* energy, a "holding" module is "*holding* a voltage value."

> The *energy transfer system* 8202 includes a switching module 8206 and a ***storage module*** illustrated as a storage capacitance 8208. The terms *storage module and storage capacitance*, as used herein, are ***distinguishable*** from the terms *holding module and holding capacitance*, respectively. *Holding modules and holding capacitances*, as used above, identify systems that store negligible amounts of energy from an under-sampled input EM signal with the ***intent of 'holding' a voltage value***. *Storage modules and storage capacitances, on the other hand*, refer to systems that store non-negligible amounts of energy from an input EM signal.[9]

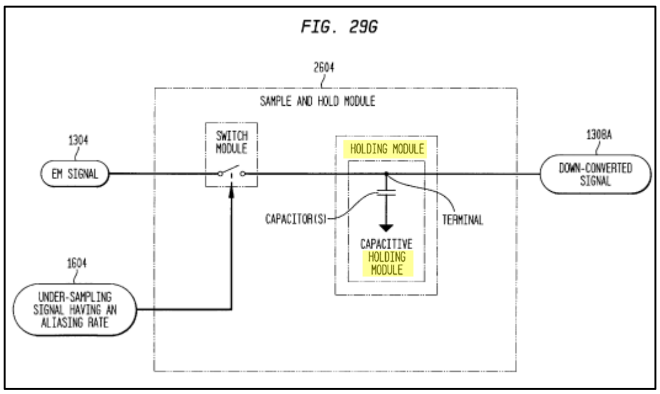
'518 patent, 66:12-23. *See also id.* at 53:24 – 58:29 (discussing sample and hold systems); 65:56 – 67:39, 97:14 – 101:67 (discussing energy transfer systems).

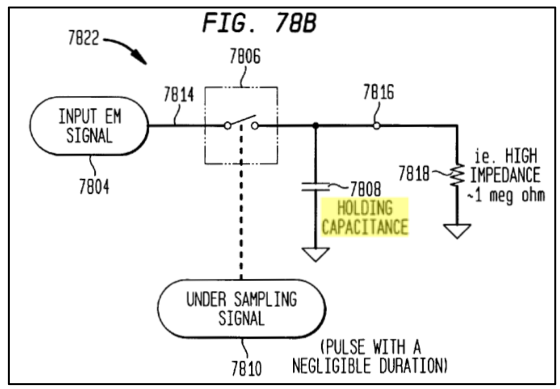
[9] Unless otherwise indicated, all emphasis has been added.





Energy transfer system





Sample and hold system

This difference between "storage" and "holding" modules is also apparent in the figures. For example, as shown in Figures 68G and 82B above, when discussing an energy transfer system, the specification uses the term "storage" module/capacitance (green). *See also id.* at Figs. 65, 68A-G, 74, 82A, 82B, 95. On the other hand, as shown in Figures 29G and 78B above, when discussing a sample and hold system, the specification uses the term "holding" module/capacitance (yellow). *See also id.* at Figs. 24A, 27, 29A-G, 42, 65, 78A, 78B. As such, ParkerVision's construction recites that the energy "storage" module is part of an "energy transfer system."

With regard to feature (2), the specification is clear that a *low* impedance load is *fundamental* to the operation of an energy transfer system. Indeed, a *low* impedance load is what makes a module a "storage" module as opposed to a "holding" module. As discussed in Section III above, a *low* impedance load provides little resistance to electrical current and, thus, energy can be transferred/discharged from a "storage" module. This unique feature of an energy transfer system is what enables the "storage" module to drive a low impedance load. But if a load is *high* impedance, there would be high resistance to current and the module would "hold" a voltage.[10] In other words, with a *high* impedance load, the module would be a "holding" module, *not* a "storage" module. Indeed, the specification specifically calls out driving a low impedance load as a "benefit" of an energy transfer system.

> *Another* *__benefit__* *of the* *__energy transfer system__* *8202* is that the *non-negligible amounts of transferred energy permit the energy transfer system 8202 to effectively* *__drive loads__* *that would otherwise be classified as* *__low impedance loads__* in under-sampling systems and conventional sampling systems. In other words, the non-negligible amounts of transferred energy ensure that, even for lower impedance loads, the *storage capacitance 8208 accepts and maintains sufficient energy or charge to* *__drive the load__* *8202.*

Id. at 66:61 – 67:3. Without a "storage" module driving a *low* impedance load, sufficient energy could ***__not__*** be transferred/discharged from the "storage" module in order to recover a down-converted signal from an input EM signal. In such a case, the module would be a "holding" module. As such, ParkerVision's construction recites that the energy in an energy "storage" module is used "for driving a low impedance load."

Intel, on the other hand, tries to avoid putting too fine a point on the features that distinguish a "storage" module from a "holding" module. This is no accident. Intel provides a bare bones construction to give itself flexibility for its invalidity case. Indeed, Intel is seeking a

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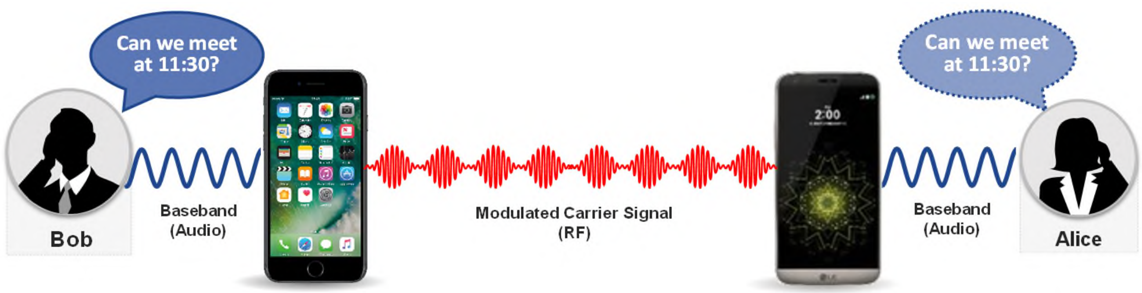
[10] In a sample and hold system, the *high* impedance load is intended to prevent discharge of the "holding" module when the switch is OFF (open) in order to maintain a constant voltage value until the next time the switch is ON (closed).

construction that, contrary to everything in the specification, it can attempt to use to encompass prior art sample and hold systems. Intel's invalidity contentions cite to sample and hold systems with a capacitor that purportedly stores a non-negligible amount of energy. Intel's gamesmanship should be rejected and ParkerVision's construction should be adopted.

B. "modulated carrier signal" ('528 patent, claims 1, 5, 14)

ParkerVision's Construction	Intel's Construction
"electromagnetic signal at transmission frequency having at least one characteristic that has been modulated by a baseband signal"	"a carrier signal that is modulated by a baseband signal"

The parties' constructions are similar. The main difference is that ParkerVision seeks to clarify the meaning of "carrier signal" whereas Intel wants to remain silent. Yet again, Intel is seeking flexibility for its invalidity case.

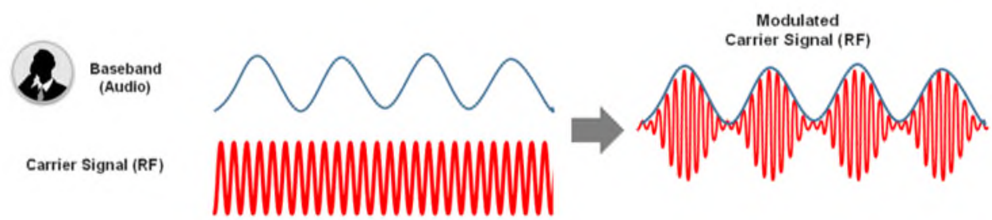


The meaning of "modulated carrier signal" should not be controversial. As discussed in Section II.B and shown above, a modulated carrier signal is the high frequency electromagnetic (EM) signal (red) that carries a baseband signal over air.

ParkerVision's construction[11] captures this concept and comes directly from the

[11] It is notable that in litigation ParkerVision brought against Qualcomm in the U.S. District Court for the Middle District of Florida involving the same patent disclosure, Qualcomm, a highly sophisticated party and the industry leader in wireless chip technology, *agreed* to the construction ParkerVision proposes in this case. Ex. 1, Order dated July 15, 2019 at p. 28.

specification: "[t]he term modulated carrier signal, when used herein, refers to a[n] earlier signal that is modulated by a baseband signal." '528 patent, 20:58-60. The earlier signal being modulated is the high frequency carrier signal (electromagnetic (EM) signal) that is used for *transmission* over air. As such, a modulated carrier signal must be an electromagnetic signal at *transmission* frequency (*e.g.*, a center frequency of a transmission signal). *Id.* at 21:33-35 ("The term *carrier frequency*, when used herein, refers to the frequency of a carrier signal. Typically, it is the center *frequency of* a *transmission signal* that is generally modulated.").



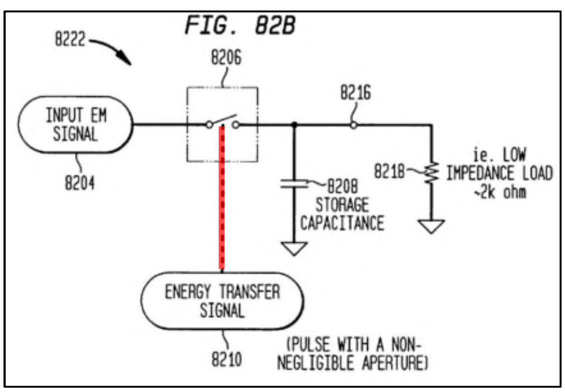
As discussed in Section II.D above and shown above, a modulated carrier signal is a signal created by impressing information from the baseband signal onto a higher frequency carrier signal: "Modulation refers to a variety of techniques for impressing information from the baseband signals onto the higher frequency carrier signals. The resultant signals are referred to herein as *modulated carrier signals.*" *Id*. at 2:18-22. Further, the specification states: "The term carrier signal, when used herein, refers to an *EM wave* [i.e., *electromagnetic signal*] having *at least one characteristic that may be varied by modulation*, that is capable of carrying information via modulation." *Id.* at 21:33-35. In view of the patent specification's foregoing disclosures, ParkerVision's construction is "electromagnetic signal at transmission frequency having at least one characteristic that has been modulated by a baseband signal."

Intel yet again prefers obscurity and seeks to avoid putting too fine a detailed point on the construction of the term, opting to leave "carrier signal" undefined. Whereas a modulated carrier signal is a signal that is created *before* being transmitted over the air, Intel wants to keep ambiguity so that it can point to a signal that does not travel through air but, instead, is created within the receiving wireless device from the carrier signal. Intel's gamesmanship should be rejected and ParkerVision's construction should be adopted.

C. "switch" ('528 patent, claims 1, 5, 17; '444 patent, claim 3; '474 patent; claim 1; '513 patent, claim 19; '518 patent, claim 50; '736 patent, claims 1, 11; '673 patent, claims 1, 13); "switching device" ('725 patent, claim 1; '528 patent, claim 8); "switching module" ('902 patent, claim 1)

ParkerVision's Construction	Intel's Construction
"an electronic device for opening and closing a circuit as dictated by an independent control input"	"an electronic device for opening and closing a circuit"

The parties' construction are similar. The difference is the language that the opening and closing of the switch is "dictated by an independent control input" as set forth in ParkerVision's construction. Again, this language should not be controversial. Indeed, as discussed below, another court has considered ParkerVision's patented technology and adopted this language. According to the specification, a control signal is transmitted from a source external to the switch, thereby making opening and closing a circuit dictated by an independent control input.



For example, the *independent* control input (red) is shown at the switch 8206 of the energy transfer system of Figure 82B (above). *See also, e.g.*, '518 patent, Figs. 73, 74, 76A-E, 82A-B, 95; 66:24-26 ("The energy transfer system 8202 ***receives*** an *energy transfer signal 8210,* ***which controls*** *the switch module 8206*."); 106:16-18 ("An *energy transfer signal 9442* ***controls a switch 9414***. When the energy transfer signal 9442 ***controls*** *the switch 9414* ***to open and close*** . . . ."); 107:9-11 ("*Since the switch 8206 is* ***controlled by*** *the energy transfer signal 8210*, the impedance at point 8214 can be varied by controlling the aperture width of the energy transfer signal . . . .").

Though the Court will make its own determination regarding the meaning of "switch," "switching device" and "switching module," there is prior litigation history related to these terms that ParkerVision would like to bring to the Court's attention. In a case ParkerVision brought against Qualcomm in the U.S. District Court for the Middle District of Florida (*Jacksonville* division) (Case No. 3:15-cv-1477), the parties agreed to the construction of "switch" with regard to the '528 patent (one of the patents-in-suit in this case): "an electronic device for opening and closing a circuit." Ex. 1, Order dated July 15, 2019 at p. 28. The Jacksonville court adopted the agreed construction. Subsequently, in a separate litigation against Qualcomm in the Middle District of Florida (*Orlando* division) (Case No. 6:14-cv-687), the parties *disputed* the meaning of the term "switch" and "switch module" with regard to U.S. Patent No. 6,091,940. The '940 patent discloses the same type of down-conversion technology as set forth in the patents-in-suit. Unlike the Jacksonville court, in the Orlando case, the parties briefed the issue and had oral arguments. On April 29, 2020, the Orlando court construed "switch" and "switch module," which includes that opening and closing of a switch is "as dictated by an independent control input." Ex. 3, Order dated April 29, 2020 at p. 32. In the case before this Court, ParkerVision incorporated this language into its construction[12] because, unlike the Jacksonville court, the Orlando court considered the parties' arguments and issued a Markman order with a detailed analysis. Before this Court, just as Qualcomm did in the Orlando case, Intel is seeking to exclude "as dictated by an independent control input." Intel's attempt to exclude this language should be similarly rejected. For the foregoing reasons, ParkerVision's construction should be adopted.

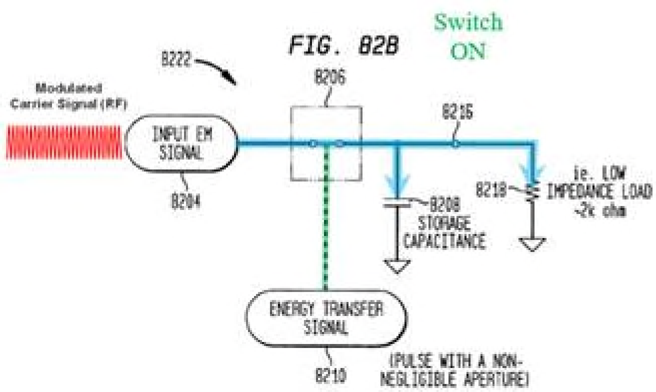
D. "sampling aperture" ('528 patent, claim 1)

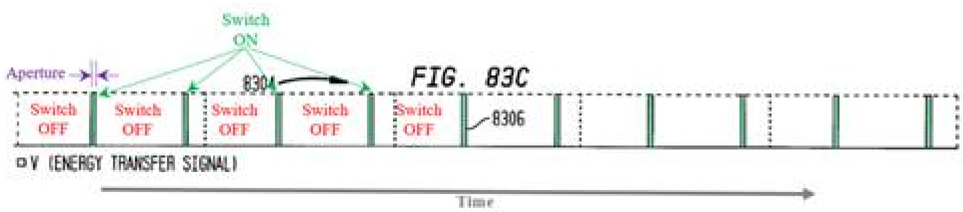
ParkerVision's Construction	Intel's Construction
"a period of time during which the claimed switch is in its closed (on) state, thereby reducing a continuous-time signal to a discrete-time signal"	"a period of time during which the switch is in its closed (i.e., on) state as part of the process of reducing a continuous-time signal to a discrete-time signal"

The parties' constructions are close. Indeed, the parties agree that (1) an "aperture" is "a period of time during which the switch is in its closed (on) state" and (2) "sampling" means "reducing a continuous-time signal to a discrete-time signal." The construction is a simple combination of these concepts, as ParkerVision proposes. Intel, however, purposefully seeks to create ambiguity with its language - "as part of the process."

---

[12] In order to reduce the issues for the Court to consider and focus the dispute on the language "as dictated by an independent control input," ParkerVision proposed a construction that includes Intel's construction. ParkerVision, however, believes that the Orlando court's construction is a proper construction: "device with an input and output that can take two states, open and closed, as dictated by an independent control input." *Id*. at 32.





As discussed in Section III and illustrated in Figures 82A and 83C above, a switch 8206 is turned ON (closed) by sending a pulse 8306 (green) to the switch. The switch is kept ON (kept closed) for the duration of the pulse (i.e., during the aperture (purple)). The input EM signal (modulated carrier signal/radio frequency) 8204 is a *continuous-time signal*. During the aperture, a portion of the input EM signal is transferred to the capacitor 8202 and load 8218. This portion of signal is a *discrete-time signal*. In other words, it is the occurrence of an aperture that causes the switch to reduce a continuous-time signal to a discrete-time signal. ParkerVision's construction captures this meaning.

ParkerVision's construction is straightforward and keeps the focus on the operation of the switch, which is the component that reduces a continuous-time signal to a discrete-time signal.[13]

[13] It is notable that in litigation ParkerVision brought against Qualcomm in the U.S. District Court for the Middle District of Florida involving the same patent disclosure, Qualcomm, a

Intel's construction, on the other hand, is purposefully ambiguous and open-ended. Intel's construction provides no bounds and begs the questions - what is meant by "part of the process" and what are the other "parts" of the process. This ambiguity is no accident. In order to protect one of its non-infringement theories, Intel seeks to create an opening in the construction through which it can drive the proverbial truck through later on in the case. Intel will argue that operation of components other than the switch are "part of the process" and then have its expert argue that Intel's wireless chips do not perform the process. Intel's gamesmanship should be rejected and ParkerVision's construction should be adopted.

E. "a down-converted signal being generated from said sampled energy" ('902 patent, claim 1)

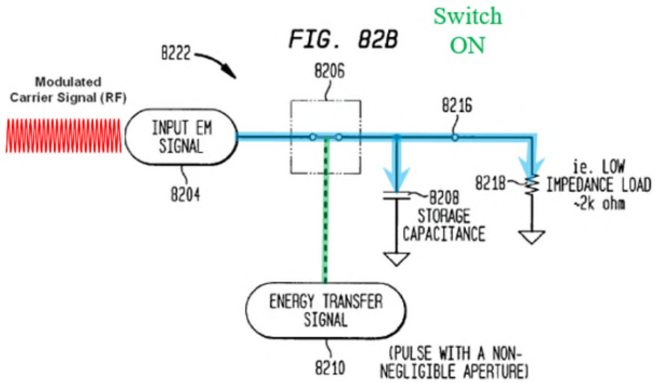
ParkerVision's Construction	Intel's Construction
"a lower frequency signal formed from sampled energy transferred from the electromagnetic signal when the switch module is closed and from sampled energy discharged from the storage module when the switch module is open"	Plain and ordinary meaning Alternatively, "a down-converted signal being created from sampled energy stored in the energy storage module"

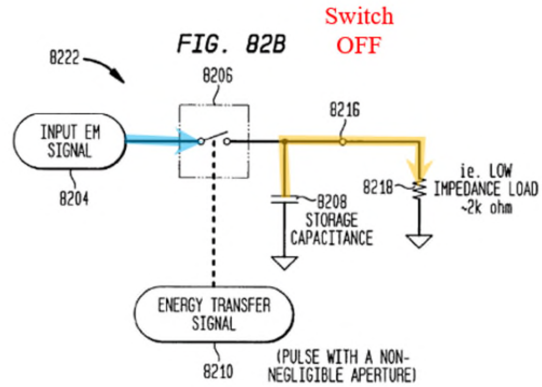
There is no plain and ordinary meaning for this term. Indeed, how a down-converted signal is generated from energy goes to the heart of the invention. As Section III.A above demonstrates, it is not straightforward or plain and ordinary as Intel contends.

Claim 1 of the '902 patent discloses an "*energy transfer* module" (system). As set forth in Section III.A above, in an energy transfer system, a down-converted signal is formed from *both*: (1) energy from the input EM signal (carrier (RF) signal) when the switch is ON (closed) and (2)

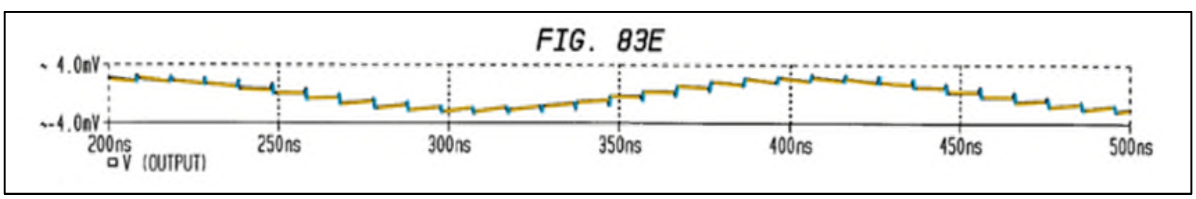
highly sophisticated party and the industry leader in wireless chip technology, *agreed* to the construction ParkerVision proposes in this case. Ex. 1, Order dated July 15, 2019 at p. 28.

energy discharged from the energy "storage" module (capacitor) when the switch is OFF (open). ParkerVision's construction captures this. Without both portions, the system would *not* work.



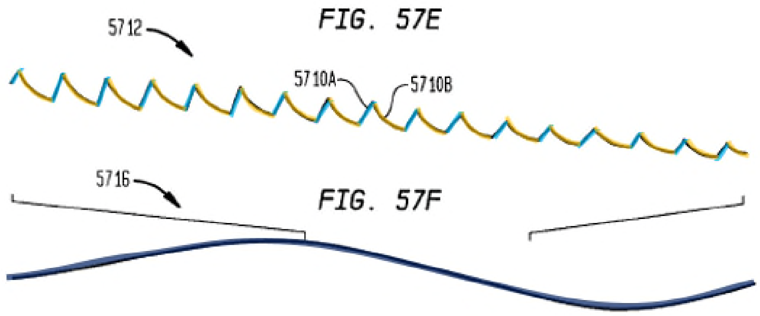


Indeed, the language of claim 1 in the '902 patent tracks the energy transfer system shown in Figure 82B above. In particular, claim 1 recites "an *energy transfer* module having a switch module [8206] and an energy storage module [8208], said energy transfer module sampling the electromagnetic signal [8204] at an energy transfer rate, according to an energy transfer signal [8210], to obtain sampled energy [blue], said sampled energy being stored by said energy storage module [8208], a down-converted signal [blue/orange wave, below] being generated from said sampled energy." '902 patent, claim 1.



As shown in Figure 83E above, the down-converted signal from the system of Figure 82B is made up of (1) energy (blue) from the input EM signal (carrier (RF) signal) and (2) discharged energy (orange) from the energy "storage" module (capacitor).

ParkerVision's construction is further supported by Figures 57A-F of the '902 patent, which disclose another embodiment of down-converting a signal in an energy transfer system.



Figures 57E shows a segment 5712 of the down-converted signal 5716 of Figure 57F. Consistent with ParkerVision's construction, the down-converted signal of Figure 57E is made up of *two* portions 5710A (blue) and 5710B (orange):

> The *demodulated baseband signal 5712 [i.e., the down-converted signal]*[14] *includes portions 5710A . . . and portions 5710B. . . . Portions 5710A represent energy transferred from the analog AM carrier signal 516 to a storage device,* while simultaneously driving an output load. *The portions 5710A occur when a switching module is closed* by the energy transfer pulses 5707. *Portions 5710B represent energy stored in a storage device* continuing to drive the load. *Portions 5710B occur when the switching module is opened* after energy transfer pulses 5707.

'902 patent, 89:46-56.

Though Intel's alternative construction is close to ParkerVision's construction, Intel's construction is *inaccurate* and is *incomplete* technically. *First*, Intel's construction has a technical flaw. A portion of a down-converted signal is formed from the *discharge* of energy stored in an energy storage module, *not* from the mere storage of energy as Intel's construction implies. Indeed, until the energy is discharged, the energy does not form part of a down-converted signal. *Second*, Intel's construction is incomplete because it ignores the portion of the down-converted signal that is from the energy that comes from the input EM signal to the load

[14] *See* '902 patent, 89:37-38 ("FIG. 57E illustrates a demodulated baseband signal 5712, which is generated by the *down-conversion* process.")

when the switch in ON (closed), which is described in the specification disclosure above. The down-converted signal in an energy transfer system includes *both* energy provided to the load when the switch is ON (closed) as well as the energy discharged from an energy "storage" module when the switch is OFF (open). For the foregoing reasons, ParkerVision's construction should be adopted.

F. "the [] switch is coupled to the [] storage element at a [] node and coupled to a [] reference potential" ('474 patent, claim 1)

ParkerVision's Construction	Intel's Construction
Plain and ordinary meaning	"the switch shunts (i.e., diverts) current to a point held at a constant reference voltage"

The claim language is straightforward and no construction is necessary. The language simply describes the structural coupling relationship between a switch, storage element and reference potential (e.g., ground).

In particular, claim 1 of the '474 patent recites a "first frequency down-conversion module compris[ing] a first switch and a first storage element, wherein *the first switch is coupled to the first storage element at a first node and coupled to a first reference potential*."[15] There is nothing unclear about this language. Yet, Intel seeks to rewrite the claim language. In doing so, Intel removes the structural relationships between recited components and improperly changes the claim language to what purportedly occurs as a *result* of the structural relationships. *See, e.g., Toro Co. v. White Consol. Indus., Inc.*, 266 F.3d 1367, 1371 (Fed. Cir. 2001) ("An invention claimed in purely structural terms generally resists functional limitation." (citing *EcoLab, Inc. v. Envirochem, Inc.*, 264 F.3d 1358, 1367 (Fed. Cir. 2001))). For the foregoing reasons, ParkerVision's construction should be adopted.

[15] Claim 1 repeats the same language for a "second frequency down-conversion module."

G. "under-samples" ('444 patent, claim 2; '474 patent, claim 6)

ParkerVision's Construction	Intel's Construction
"sampling at an aliasing rate" "sampling at less than or equal to twice the frequency of the input signal"	"samples at less than or equal to twice the frequency of the input signal using negligible apertures (i.e., pulse widths) that tend towards zero time in duration"

Under-sampling is the rate (referred to as an "aliasing rate" in the patents) at which an input signal is sampled. The patentees provided lexicography for the term "under-samples." In the sections of the '444 and '474 patents discussing "under-samples," the specification specifically incorporates by reference the disclosure of U.S. Patent No. 6,061,551 (App. No. 09/176,022) ("the '551 patent"). *See* '444 patent, 9:32-38; '474 patent, 11:28-32. The '551 patent, in turn, states that unlike "[c]onventional signal processing techniques," "[w]hen a signal is <u>*sampled at less than or equal to twice the frequency of the signal*</u>*, the signal is said to be* <u>*under-sampled*</u>, or aliased." '551 patent, 19:45-54. This ends the inquiry. Intel's attempt to tack on additional language to the patentee's clear lexicography should be rejected.

Though the Court will make its own determination regarding the meaning of "under-samples," there is prior litigation history related to this term that ParkerVision would like to bring to the Court's attention. ParkerVision's constructions of "under-samples" adopts the constructions of the U.S. District Court for the Middle District of Florida (Jacksonville division) (Case No. 3:11-cv-00719), which previously construed "under-samples" in the context of the same disclosure as the patents-in-suit. Ex. 2, Order dated Feb. 20, 2013 at p. 10. In reaching its construction, the Jacksonville court recognized the lexicography related to "under-sample" as set forth above. While the Jacksonville court construed the term to mean "sampling at an aliasing rate," the court used the language "at an aliasing rate" because the parties already agreed that "aliasing rate" meant "sampling at a rate that is less than or equal to twice the frequency of the signal," which reflected the lexicography for "under-sample." *Id*. As such, in the case before this Court, ParkerVision provides an alternative construction as set forth in the table above.

Notably, the defendant's (Qualcomm) construction in the Jacksonville case attempted to add the same language that Intel seeks to add here – "using negligible apertures." *Id*. at 7. The Jacksonville court rejected Qualcomm's construction. *Id*. at pp. 7-8. Intel's construction should be similarly rejected. For the foregoing reasons, ParkerVision's construction should be adopted.

H. Preamble terms

Claim Terms	ParkerVision's Construction	Intel's Construction
"system for frequency down-converting" '513 patent, claim 19; '528 patent, claim 1; '736 patent, claim 1	Plain and ordinary meaning	"a system that down-converts a modulated carrier signal at an aliasing rate (i.e., by sampling at less than or equal to twice the frequency of the modulated carrier signal)"
"apparatus for down-converting" '673 patent; claim 13	Plain and ordinary meaning	"an apparatus that down-converts a modulated carrier signal at an aliasing rate (i.e., by sampling at less than or equal to twice the frequency of the modulated carrier signal)"

Intel seeks construction of these terms in order to improperly narrow the claims by inserting the concept of a specific "aliasing rate," that is "by sampling at less than or equal to twice the frequency of the modulated carrier signal." But these terms appear in the preamble of the claims identified in the chart above. No construction is necessary. The claims themselves define the scope of these terms. For the foregoing reasons, Intel's gamesmanship should be rejected and ParkerVision's construction should be adopted.

Indeed, as discussed below in Sections I, J, K and L, Intel improperly is trying to add the language "at an aliasing rate (i.e., by sampling at less than or equal to twice the frequency of the modulated carrier signal)" into as many claim terms as possible. It does so to protect one of its non-infringement theories. But, as discussed below, Intel's constructions are wrong.

I. Frequency down-conversion terms

Claim Terms	ParkerVision's Construction	Intel's Construction
"frequency down-conversion module" '444 patent, claims 2, 3; '474 patent, claim 1	Plain and ordinary meaning	"a module that down-converts an input signal at an aliasing rate (i.e., by sampling at less than or equal to twice the frequency of the input signal)"
"frequency down-conversion module" '673 patent, claim 1	Plain and ordinary meaning	"a module that down-converts an input modulated carrier signal at an aliasing rate (i.e., by sampling at less than or equal to twice the frequency of the input modulated carrier signal)"

A "frequency down-conversion module" is simply a module that down-converts an input signal. The claims in which the term appears already state this and provide additional details regarding the module. As such, no construction is necessary.

Intel, however, seeks to improperly add a specific "aliasing rate" into the claims. For this reason alone, Intel's constructions should be rejected. But further, Intel's constructions are simply wrong.

1. '444 patent

Intel's language – "down-converts an input [modulated carrier] signal" – is repetitive to the claim language. Claims 2 and 3 of the '444 patent recite: "a [] *frequency down-conversion module <u>to down-convert the input signal</u>*, wherein said [] frequency down-conversion module down-converts said input signal according to a [] control signal and outputs a first down-converted signal."

With regard to claim 2, Intel's language – "at an aliasing rate" – is also repetitive of the claim language. As discussed in Section IV.G above, "under-sampling" is the rate at which an input signal is sampled. The patents refer to that rate as an "aliasing rate." Claim 2 of the '444 patent already includes "under-sampling" (and, thus, aliasing rate): "wherein said [] frequency down-conversion module *under-samples said input signal* according to said [] control signal." With regard to claim 3, the patentees specifically chose not to include "under-sampling" (aliasing rate). As such, it is improper to add "aliasing rate" or a specific rate to claims 2 and 3.

2. '474 patent

Intel's language – "down-converts an input [modulated carrier] signal" – is repetitive of the claim language. Claim 1 of the '474 patent recites: "a [] frequency down-conversion module that receives an input signal, wherein the [] *frequency down-conversion module down-converts the input signal* according to a [] control signal and outputs a [] down-converted signal." Moreover, by including "at an aliasing rate" in its construction, Intel is also improperly seeking to import a limitation from the dependent claim 6 into the independent claims. *See, e.g.*, *Hill-Rom Serv. v. Stryker Corp.*, 755 F.3d 1367, 1374 (Fed. Cir. 2014) ("[T]he presence of a dependent claim that adds a particular limitation raises a presumption that the limitation in question is not found in the independent claim." (quoting *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 904 (Fed. Cir. 2004))). In particular, dependent claim 6 recites: "the [] switch *under-samples the input signal* according to the first control signal." As such, it is improper to include "aliasing rate" or a specific rate into claim 1.

3. '673 patent

Claim 1 of the '673 patent provides the structure and operation of the "frequency down-conversion module." For this reason alone, the term does not require construction. Nevertheless, Intel's language, reciting a specific "an aliasing rate," is inconsistent with the claim language. Claim 1 recites:

> a frequency down-conversion module comprising:
> a switch,

> a capacitor coupled to said switch, and
> a pulse generator coupled to said switch;
> said *pulse generator outputting pulses to said switch at a* *rate* *that is a function of a frequency of the modulated carrier signal and a frequency of the demodulated baseband signal determined according to: (the frequency of the modulated carrier signal +/- a frequency of the demodulated baseband signal) divided by N, where N is any integer including 1*.

As shown by the italics above, claim 1 sets forth a specific formula for the rate at which the switch is opened/closed. As such, Intel is seeking to redefine what the claim already says explicitly about the rate.

For the foregoing reasons, Intel's gamesmanship should be rejected and ParkerVision's construction should be adopted.

J. "universal frequency down-converter" ('518 patent, claim 50)

ParkerVision's Construction	Intel's Construction
"circuitry that generates a down-converted output signal from an input signal"	"a down-converter that down-converts a carrier signal at an aliasing rate (i.e., by sampling at less than or equal to twice the frequency of the carrier signal)"

The inclusion of the word "universal" may serve to confuse a jury and, thus, this term should be construed. The term simply refers to a circuity that can down-convert a number of different frequencies. But, at bottom, a "universal frequency down-converter" is just circuitry that generates a down-converted output signal from an input signal.

In its *third* attempt, Intel seeks construction of this term in order to improperly narrow claim 50 of the '518 patent by adding the concept of a specific "aliasing rate" into the claim. Again, Intel's language is inconsistent with the claim language. Claim 50 of the '518 patent recites:

> a universal frequency down-converter (UFD), including a switch, an integrator coupled to said switch, and a pulse generator coupled to said switch; and
> a reactive structure coupled to said UFD;

> wherein said *pulse generator outputs pulses to said switch at an aliasing rate that is determined according to: (a frequency of the carrier signal +/- a frequency of the lower frequency signal) divided by N*;

As shown in italics above, claim 50 specifically recites an "aliasing rate" and sets forth a specific formula for the "aliasing rate." Again, like claim 1 of the '673 patent above, Intel is seeking to redefine what the claim already explicitly says about the "aliasing rate."

Though the Court will make its own determination regarding the meaning of "universal frequency down-converter," there is prior litigation history related to this term that ParkerVision would like to bring to the Court's attention. ParkerVision's construction of "universal frequency down-converter" adopts the construction of the U.S. District Court for the Middle District of Florida (Jacksonville division) (Case No. 3:11-cv-00719), which previously construed "universal frequency down-converter" in the context of similar down-conversion technology. Ex. 2, Order dated Feb. 20, 2013 at pp. 37-38.

For the foregoing reasons, Intel's gamesmanship should be rejected and ParkerVision's construction should be adopted.

K. "energy transfer module" ('902 patent, claim 1)

ParkerVision's Construction	Intel's Construction
Plain and ordinary meaning	"a module that down-converts an electromagnetic signal by transferring energy at an aliasing rate (i.e., by sampling at less than or equal to twice the frequency of the electromagnetic signal)"

An "energy transfer module" is already well defined – both structurally (italics below) and functionally (non-italics) – within claim 1 of the '902 patent:

> an *energy transfer module having a switch module* and *an energy storage module*, said energy transfer module sampling the electromagnetic signal at an energy transfer rate, according to an energy transfer signal, to obtain sampled energy, said sampled energy being stored by said energy storage module, a down-converted signal being generated from said sampled energy, wherein said *energy*

> *transfer module further comprises*:
> *transistors coupled together*, said *transistors having a common first port, a common second port*, *and a common control port*, wherein the electromagnetic signal is accepted at said common first port and said sampled energy is present at said common second port, and further wherein said common control port accepts said energy transfer signal, said energy transfer signal having a control frequency that is substantially equal to said energy transfer rate, and wherein *each of said transistors has a drain, a source, and a gate*, and said *common first port couples together drains of said transistors, said common second port couples together sources of said transistors, and said common control port couples together gates of said transistors*.

For this reason alone, Intel's construction should be rejected. "Energy transfer module," in the context of the claim in its entirety, has a plain and ordinary meaning.

In any event, Intel's construction is wrong. Intel's language – "down-converts an electromagnetic signal by transferring energy" – is repetitive to the claim language. Claim 1 recites: "a down-converted signal being generated from said sampled [i.e., transferred] energy."

Moreover, in its *fourth* attempt, Intel seeks to improperly add the concept of a specific "aliasing rate." But Intel's language is inconsistent with the claim language, which already uses the term "energy transfer rate" instead of "aliasing rate": "energy transfer module *sampling the electromagnetic signal <u>at an energy transfer rate</u>*, according to an energy transfer signal." As such, it is improper to add "aliasing rate" or a specific rate in claim 1.

For the foregoing reasons, Intel's gamesmanship should be rejected and ParkerVision's construction should be adopted.

L. "aliasing module" ('725 patent, claim 1)

ParkerVision's Construction	**Intel's Construction**
Plain and ordinary meaning	"a module that down-converts an RF information signal at an aliasing rate (i.e., by sampling at less than or equal to twice the frequency of the RF information signal)"

An "aliasing module" is already well defined – both structurally (italics below) and functionally (non-italics) – within claim 1 of the ’725 patent:

> an *aliasing module comprising a switching device and a storage module*, the aliasing module receiving as an input an RF information signal, and the aliasing module providing as an output a down-converted signal;
> *the switching device* of the aliasing module receiving as an input a control signal that controls a charging and discharging cycle of the *storage module* by controlling the switching device so that a portion of energy is transferred from the RF information signal to the *storage module* during a charging part of the cycle and a portion of the transferred energy is discharged during a discharging part of the cycle, wherein said control signal operates at an aliasing rate selected so that energy of the RF information signal is sampled and applied to the *storage module* at a frequency that is equal to or less than twice the frequency of the RF information signal; and
> wherein the *storage module* generates said down-converted signal from the alternate charging and discharging applied to the *storage module* using said control signal.

For this reason alone, Intel’s construction should be rejected. As above, the claim language in its entirety makes the meaning of “aliasing module” plain and ordinary.

Nevertheless, Intel’s construction is wrong. Intel’s language – “down-converts an RF information signal” – is repetitive to the claim language. Claim 1 recites: “the aliasing module providing as an output a down-converted signal”

Indeed, so blinded by its desire to inject a specific aliasing rate into as many terms as possible, Intel overlooks the fact that its language is already included in claim 1 of the ’725 patent which recites: “an aliasing rate selected so that energy of the RF information signal is sampled and applied to the storage module at a frequency that is equal to or less than twice the frequency of the RF information signal.” For the foregoing reasons, ParkerVision’s construction should be adopted.

M. “a capacitor that reduces a DC offset voltage in said first down-converted signal and said second down-converted signal” (’444 patent, claim 4)

ParkerVision’s Construction	Intel’s Construction
Plain and ordinary meaning	“a capacitor that reduces a DC offset voltage in both said first down-converted signal and

	said second down-converted signal"

The language of the term is straightforward. There are no words that are unclear and, thus, the term does not require construction. Instead, Intel merely attempts to insert the word "both" into the term in order to rewrite the language of the claim to protect one of its non-infringement theories. In doing so, Intel improperly reads the term out of context, isolated from the claim language in which it appears, to *exclude* an embodiment disclosed in the specification.

Independent claim 3 of the '444 patent recites an apparatus having: "first and said second frequency down-conversion modules *each comprise* . . . *a storage element*." Dependent claim 4 further recites: "said *storage elements comprises* a capacitor that reduces a DC offset voltage in said first down-converted signal and said second down-converted signal." In context and *consistent with the specification* discussed below, the language simply means that there is a capacitor for each storage element – 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. Contrary to Intel's construction, the term does not mean that a *single* capacitor must reduce DC offset voltage in *both* first and second down-converted signals. Such a position is contrary to the specification and *reads out* an embodiment.

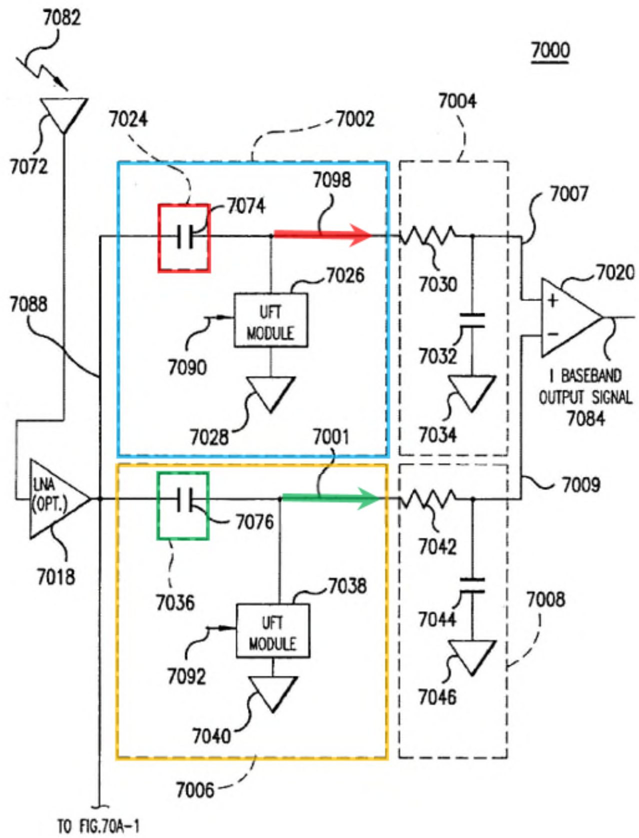


FIG.70A

As shown above and consistent with the language of claim 3, Figure 70A of the '444 patent discloses an apparatus 7000 having a first frequency down-conversion module 7002 (blue box) and second frequency down-conversion module 7006 (orange box). '444 patent, 35:37-46. The first frequency down-conversion module 7002 (blue box) has a first storage module/element 7024 (red box) with a first capacitor 7074; the second frequency down-conversion module 7036 has a second storage module/element 7036 (green box) with a second capacitor 7076. Consistent with the language of claim 4, the specification then states that (1) the *first* capacitor 7074 of the first storage element 7024 (red box) reduces a DC offset voltage from appearing on the *first* down-converted signal (i.e., I output signal 7098) (red arrow) and (2) the *second* capacitor 7076 of the second storage element 7036 (green box) reduces a DC offset voltage from appearing on the *second* down-converted signal (i.e., inverted I output signal 7001) (green arrow). *See id.* at 36:14-18, 50-54. As such, consistent with the specification, the disputed term should be given its plain and ordinary meaning.

Intel's construction seeks to exclude the embodiment of Figure 70A. By including the word "both" in its construction, Intel effectively changes the meaning of the claim language so that *each* capacitor must reduce a DC offset voltage in the first down-converted signal *and* the second down-converted signal. Not only is this not the language of the claim but it is inconsistent with the specification. For the foregoing reason, ParkerVision's construction should be adopted.

N. "DC offset voltage" ('444 patent, claim 4)

ParkerVision's Construction	Intel's Construction
"a deviation of DC voltage from a reference voltage"	"a DC voltage level that is added to a signal of interest by related circuitry"

"DC offset voltage" is simply an offset from a *reference* voltage i.e., a deviation of DC voltage from a reference voltage. As set forth in the specification, "A *DC reference voltage* 7113 is applied to terminal 7111 and is uniformly distributed to the UFT [universal frequency translation] modules 7124 and 7128. The distributed DC voltage 7113 prevents any *DC offset voltages* from developing between the UFT modules . . . ." '444 patent, 42:59-63.

ParkerVision's construction is straightforward. Intel's construction, on the other hand, is ambiguous and will only serve to confuse a jury as to what is meant by a "signal of interest" and "related circuity." Intel's construction appears to come from a discussion of "DC offset" (***not*** "DC offset *voltage*") in another ParkerVision patent – U.S. Patent No. 6,879,817 ("the '817 patent") – that was incorporated by reference into the '444 patent. Regardless, the incorporation language does not say that "DC offset voltage" is being described in the '817 patent. Instead, the incorporation language specifically refers to incorporating "additional embodiments" related to "DC offset" from the '817 patent: "*Additional embodiments relating to addressing DC offset* and re-radiation concerns, applicable to the present invention, are described in co-pending patent application Ser. No. 09/526,041. . . which is herein incorporated by reference in its entirety." '444 patent, 38:46-52; 41:1-4. As such, Intel is seeking to improperly limit the term "DC offset voltage" in the '444 patent to the type of "DC offset" (different term) discussed in the "additional embodiments" described in the incorporated '817 patent. For the foregoing reason, ParkerVision's construction should be adopted.

O. Terms alleged to be indefinite.

Claim Terms	ParkerVision's Construction
"the energy discharged during any given discharge cycle is not complete discharged" '528 patent, claim 9; '736 patent, claims 1, 11	Plain and ordinary meaning
"separate integration module" '528 patent, claim 17	Plain and ordinary meaning
"substantially the same size" '902 patent, claim 5	Plain and ordinary meaning
"between six and fifty percent of the energy transferred from the RF information signal to the storage module is discharged from the storage module" '725 patent, claim 17	Plain and ordinary meaning
"between six and twenty-five percent of the energy transferred from the RF information signal to the storage module when is discharged from the storage module" '725 patent, claim 18	Plain and ordinary meaning
"between ten and twenty percent of the energy transferred from the RF information signal to the storage module discharged from the storage module" '725 patent, claim 19	Plain and ordinary meaning

ParkerVision is unclear as to the basis for Intel's indefiniteness argument with regard to these terms. ParkerVision does not believe that these terms are indefinite. To the contrary, the terms are straightforward and, thus, do not require construction. Since Intel has the burden of proving indefiniteness by clear and convincing evidence, ParkerVision will respond to Intel's arguments in ParkerVision's responsive brief. As set forth in ParkerVision's Disclosure of Extrinsic Evidence served on Intel and pursuant to the Court's OGP, ParkerVision may rely on the testimony of Dr. Michael Steer to rebut Intel's allegations of indefiniteness.

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