

**UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
WACO DIVISION**

PARKERVISION, INC.,

Plaintiff,

v.

MEDIATEK INC. AND MEDIATEK USA
INC.,

Defendants.

Case No. 6:23-cv-00732-ADA

JURY TRIAL DEMANDED

**PLAINTIFF PARKERVISION, INC.'S
RESPONSIVE CLAIM CONSTRUCTION BRIEF**

Table of Exhibits

Exhibit 1	6:20-cv-00108-ADA – <i>ParkerVision, Inc. v. Intel Corporation</i> – ParkerVision’s Opening Claim Construction Brief
Exhibit 2	6:20-cv-00562-ADA - <i>ParkerVision, Inc. v. Intel Corporation</i> – ParkerVision’s Opening Claim Construction Brief
Exhibit 3	6:20-cv-00870-ADA - <i>ParkerVision Inc. v. Hisense Co., Ltd. et al.</i> – ParkerVision’s Responsive Claim Construction Brief
Exhibit 4	6:20-cv-00945-ADA – <i>ParkerVision Inc. v. TCL Industries Holdings Co., et al.</i> – ParkerVision’s Responsive Claim Construction Brief
Exhibit 5	6:20-cv-00870-ADA – <i>ParkerVision, Inc. v. Hisense Co., Ltd. et al.</i> – Declaration of Dr. Michael Steer
Exhibit 6	6:20-cv-00945-ADA – <i>ParkerVision Inc. v. TCL Industries Holdings Co., et al.</i> – Declaration of Dr. Michael Steer

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I. INTRODUCTION

Whereas ParkerVision’s constructions are grounded in the intrinsic record, MediaTek’s are not. MediaTek’s constructions are wrong.

First, for one of the disputed terms, MediaTek ignores the Court’s prior construction of that term. Indeed, MediaTek’s proposed construction is fundamentally the same as a proposed construction (and relies on the same flawed arguments) that this Court already *rejected* in a prior ParkerVision litigation. Second, for other claim terms, MediaTek argues for indefiniteness but, in doing so, MediaTek simply ignores the patent’s ample disclosure regarding the meaning of the terms. Third, MediaTek’s assertion that an entire dependent claim is essentially meaningless is wrong. The claim is not merely stating a result or intended purpose. Finally, for yet another term, MediaTek seeks to rewrite the term in order to improperly narrow its scope. But, once again, MediaTek ignores the disclosure in the patent specification and its construction is inconsistent with the claim language that includes the disputed term.

For the foregoing reasons, the Court should adopt ParkerVision’s constructions.

II. TECHNOLOGY BACKGROUND

On multiple occasions, the Court has considered the cellular/wireless technology set forth in the patents-in-suit.¹ As such, ParkerVision does not repeat its discussion of the technology here. These discussions are set forth in ParkerVision’s Opening Claim Construction Brief in Case Nos. 6:20-cv-00108, 6:20-cv-00562, and ParkerVision’s Responsive Claim Construction Brief (and accompanying Expert Declaration) in Case Nos. 6:20-cv-00870, 6:20-cv-00945. *See* Ex. 1 (“PV 108 Op. Br.”) at Sections II, III; Ex. 2 (“PV 562 Op. Br.”) at Section III; Ex. 3 (“PV 870 Op. Br.”) at Sections II, III; Ex. 4 (“PV 945 Op. Br.”) at Sections II, III; Ex. 5 (“Steer 870

¹ The patents-in-suit in this case are U.S. Patent Nos. 7,050,508; 7,929,638; and 8,498,593.

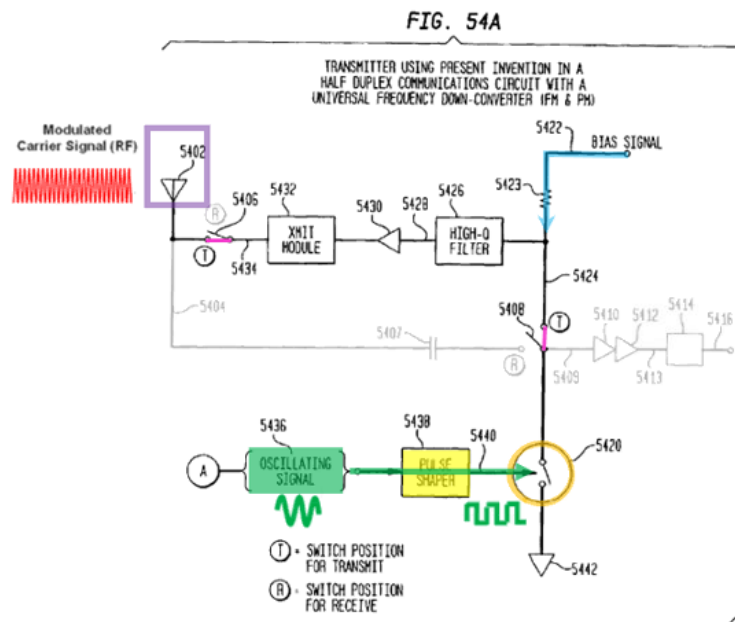
Decl.”); Ex. 6 (“Steer 945 Decl.”).

III. THE PATENTS-IN-SUIT

A. U.S. Patent No. 7,050,508

Figure 54A of the '508 patent (below) illustrates components of an exemplary up-conversion system, which would be incorporated into a transceiver chip of a wireless device.²

The up-conversion system includes a switch 5420 (orange), a control signal (green), a bias signal 5422 (blue) and an antenna 5402 (purple).

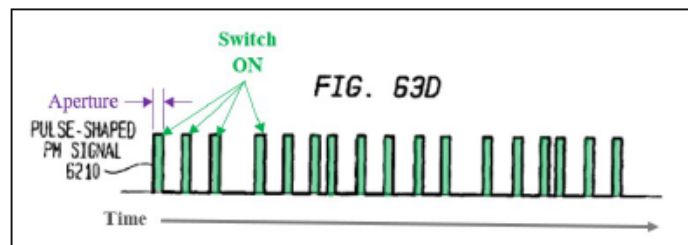
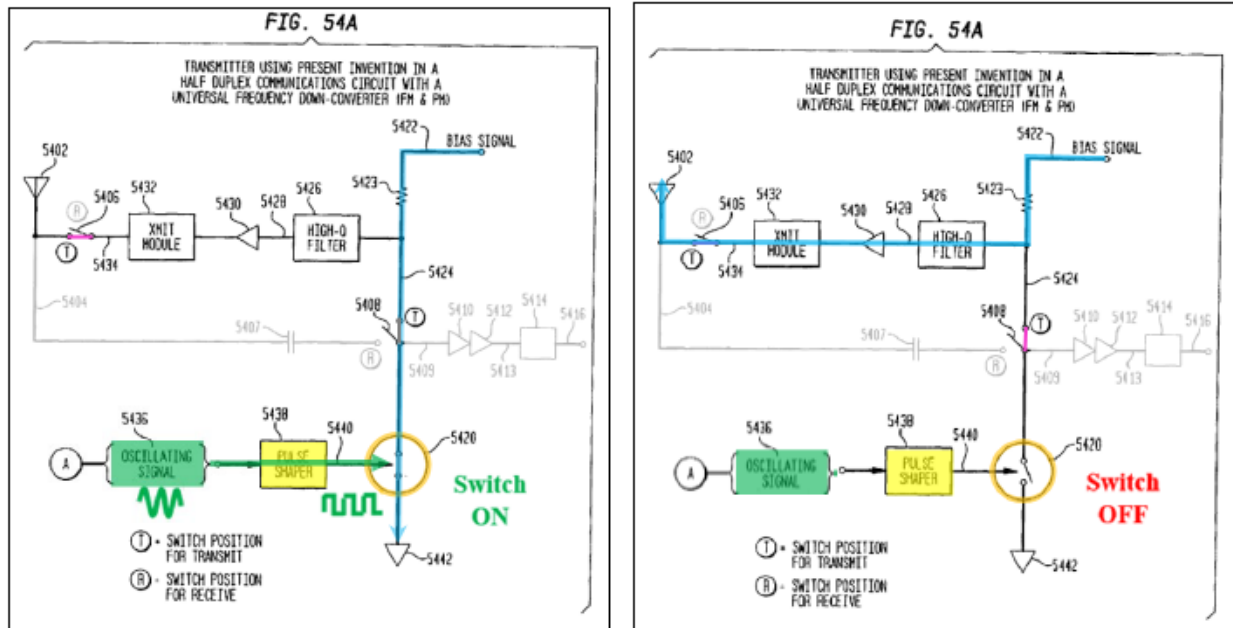


As shown above, in the transmit mode, the switches 5406 and 5408 are positioned as shown by the pink lines.³ An oscillator (not shown) generates an oscillating (sinusoidal) signal

² Figure 54A illustrates components of both up-conversion (transmission) and down-conversion (reception) systems. The down-conversion (reception) system components are grayed out as they are not relevant to a discussion of the up-conversion (transmission) system.

³ Figure 54A uses the symbol (T) to represent the switch position for signal transmission and the symbol (R) to represent the switch position for signal reception. The switches are positioned towards the (T) during transmission and towards the (R) during reception.

5436 (green sinusoidal wave form), which is transmitted to and shaped by the pulse shaper 5438 (yellow) into a string of pulses 5440 (green square wave form). The string of pulses 5440 controls the opening and closing of the switch 5420 (orange).



The annotations in Figure 54A above illustrate how information (baseband/low frequency signals) is up-converted to a high frequency RF signal (modulated carrier signal). In particular, up-conversion occurs by repetitively turning the switch 5420 ON (closed) and OFF (opened).

As shown in Figure 63D above, the switch is turned ON (closed) by sending a pulse (green) to the switch. The switch is kept ON (kept closed) for the duration of the pulse (i.e., during a *non-negligible* aperture (purple) of the pulse). As shown by the repetitive string of pulses, this opening/closing of the switch continues over time.

As shown in Figure 54A (above left), when the switch is ON (closed) during the aperture, the bias signal 5422 (blue) passes to ground 5442. As shown in Figure 54A (above right), when the energy pulse stops, the switch is turned OFF (opened) and the bias signal 5422 (blue) is sent to the antenna 5402.

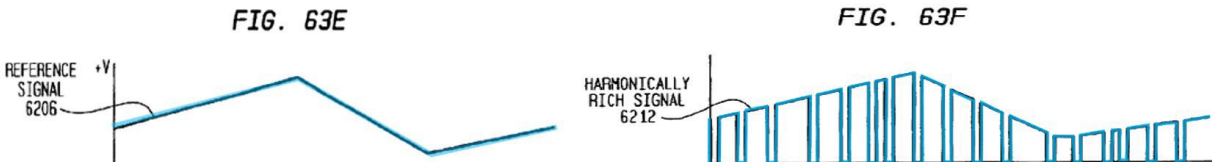
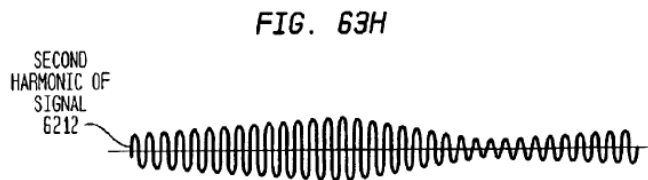
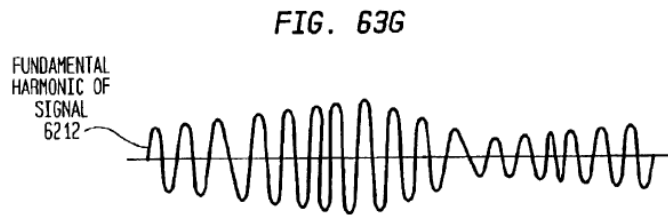
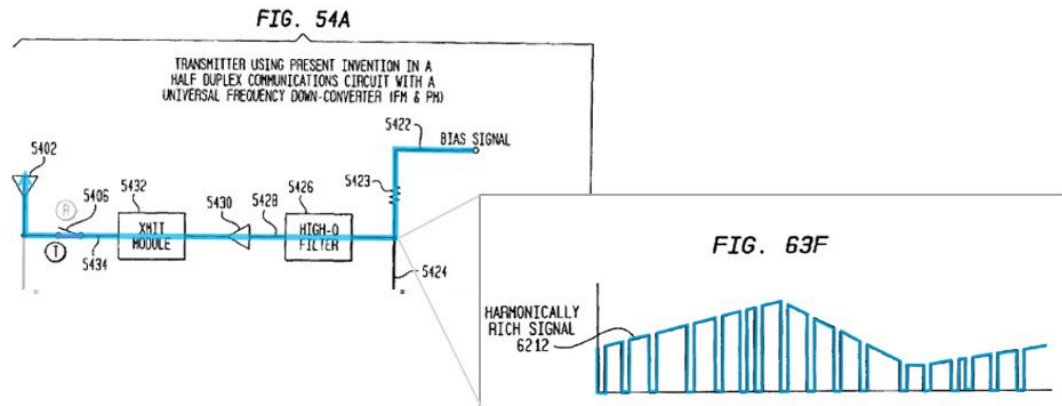


Figure 63E above (left) illustrates an exemplary reference (bias) signal 6206. As shown in Figure 63F above (right), repetitively turning the switch ON (closed) and OFF (open) affects the shape of reference (bias) signal 6206, resulting in a square wave signal 6212. The valleys in the signal 6212 are created when the switch is turned ON (closed) and portions of the reference (bias) signal passes to ground 5422. The peaks in the signal 6212 are created when the switch is turned OFF (opened).



The signal 6212 (Figure 63F) is referred to as a harmonically rich signal because the signal 6212 is actually made up of numerous sinusoidal signals (harmonics) such as those signals

shown above in Figures 63G and 63H. The combination of sinusoidal signals (harmonics) form the signal 6212.



As shown above, the harmonically rich signal 6212 (Figure 63F) passes through a filter 5426 on its way to the antenna 5402. The filter 5426 filters out certain harmonics so that only a subset of all harmonics is transmitted from the antenna 5402. This filtering produces a clean signal that can carry the information over the air.

B. U.S. Patent No. 7,929,638

The '638 patent relates to a wireless modem used in a wireless local area network (WLAN) and, in particular, a wireless modem capable of down-converting and up-converting a wireless signal. '638 patent, Abstract; 2:7-10, 26-32, 35-38, 40-43. The wireless modem includes a universal frequency translation (UFT) module for translating one frequency into another frequency. Id., 2:7-10, 47-48. The UFT enables direct frequency conversion. Id., 2:51-53.

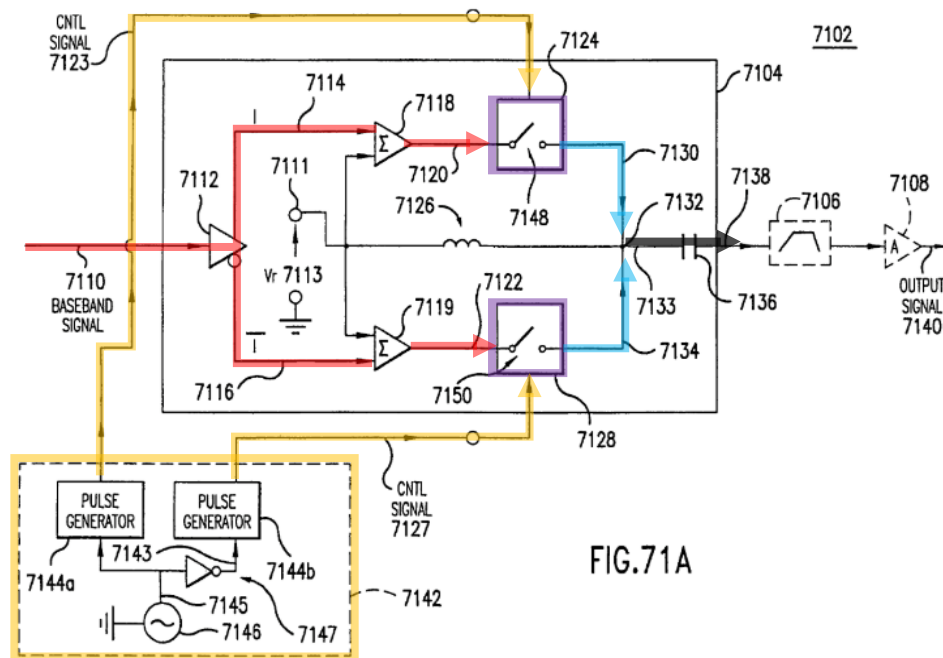


FIG.71A

Figure 71A illustrates a transmitter 7102 which up-converts a baseband signal 7110 (red) to produce an output signal 7140. Id. 40:50-59. The transmitter includes a control signal generator 7142 (blue) that sends control signals 7123, 7127 (pink) to switches 7148, 7150 in UFT modules 7124, 7128 (orange), respectively. The modulator 7104 receives the baseband signal 7110 and samples the baseband signal in order to generate a harmonically rich signal 7138 (purple). Id. Specifically, the UFT modules 7124, 7128 samples the signals 7120, 7122 according to control signals 7123, 7127 to generate a harmonically rich signal 7130, 7134, respectively. Id., 42:54-59, 43:16-21.

C. U.S. Patent No. 8,498,593

The '593 patent relates to a power supply that includes a switching device and aperture generator and control module. '593 patent, Abstract. The patent relates to efficiency in power amplification, modulation, and transmission systems. *Id.*, 1:24-27, 3:30-32. In particular, the patented technology pertains to reducing the power requirements of wireless devices. *Id.*, 1:29-43.

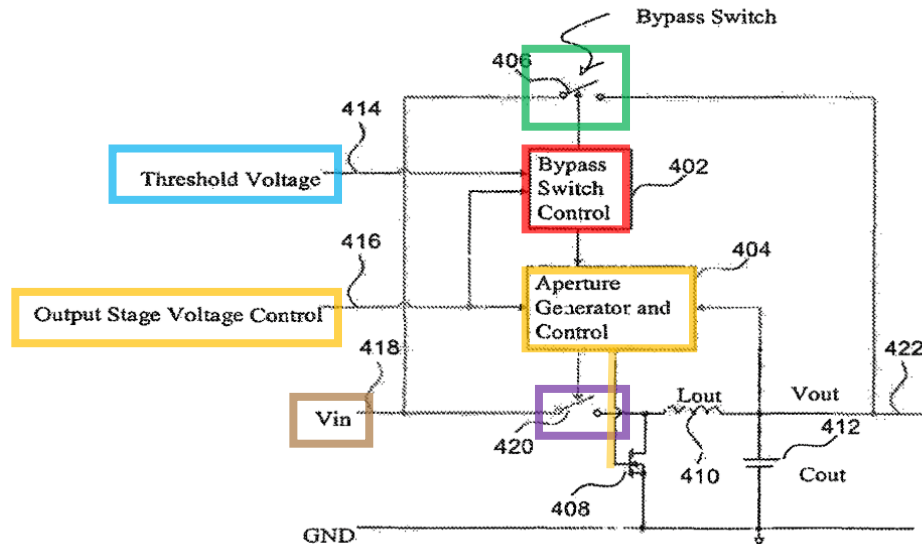
400

Figure 4 above illustrates an exemplary step down switching power supply 400 having a bypass switch architecture. *Id.*, 6:36-37. Power supply 400 includes Bypass Switch Control 402 (red box), Aperture Generator and Control module 404 (orange box), Bypass Switch 406 (green box), input switch 420 (purple box), switching transistor 408, and an output LC circuit that includes inductor L_{OUT} 410 and capacitor C_{OUT} 412.

Aperture Generator and Control module 404 is configured to control input switch 420 to couple input voltage signal V_{IN} 418 to the collector/drain of switching transistor 408. As such, V_{IN} 418 provides a bias voltage for the collector/drain of switching transistor 408. Aperture Generator and Control module 404 is also configured to control the base/gate voltage of switching transistor 408, effectively controlling the point of operation and subsequently the gain of switching transistor 408.

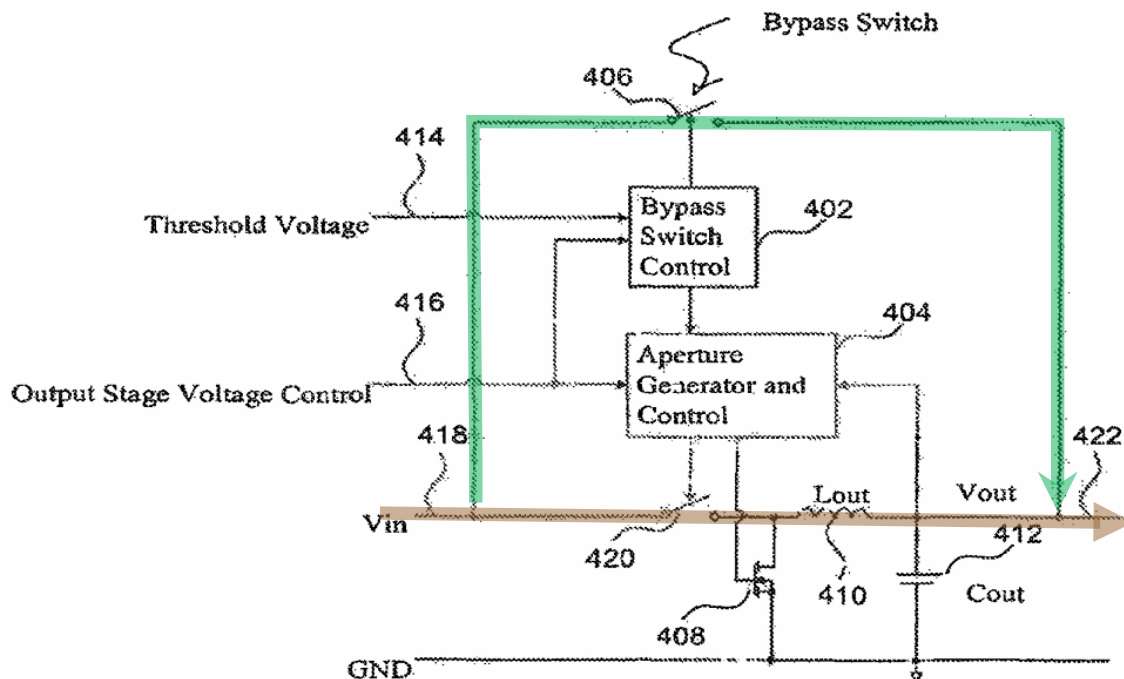
Power supply 400 operates in two modes: normal mode and bypass mode. *Id.*, 7:9-10.

In normal mode, bypass switch control module 402 causes switch 420 to close and switch

406 to open so that V_{in} 418 is received at (coupled to) switch 420. Switch 420 is controlled by aperture generator/control 404. *Id.* 7:11-13. The generator/control 404 couples V_{in} 418 to the switching transistor 408 and controls the operation of the transistor 408. *Id.*, 7:14-31. There is an LC circuit at the output of the transistor 408. *Id.*, 39-45. As such, power supply 400 outputs a voltage V_{out} 422 (pink box) which is a DC voltage. *Id.*

In bypass mode, V_{out} 422 is directly coupled to the power supply output node. *Id.*, 7:4-48.

Control module 402 cause switch 420 to open and switch 406 to close, which couples V_{in} 418 to the power supply output node. *Id.*, 7:62-65. In particular, control module 402 causes control module 404 to open switch 420, thereby, decoupling V_{in} from the transistor 408 (shutting off transistor 408). *Id.*, 7:65-8:3. In this way, control module 402 bypasses the power supply when the output power exceeds a pre-determined threshold. *Id.*, 8:4-8.



As show above, the brown arrow illustrates the path of current in “normal” mode and the

green arrow illustrates the path of current in “bypass” mode.

IV. DISPUTED CLAIM TERMS.

A. “string of multiple pulses” (’508 patent, claim 11)

ParkerVision’s Construction	MediaTek’s Construction
Plain and ordinary meaning	“a sequence of pulses containing at least $n+1$ pulses for every cycle of said string of pulses”

The Court has already construed this term in ParkerVision’s litigation against Intel involving the same patent. *See ParkerVision, Inc. v. Intel Corporation*, 6:20-cv-00562-ADA, Dkt. 61, at 13 (holding that “generating a string of multiple pulses from said string of pulses” in claim 1 should be given its “plain and ordinary meaning”). MediaTek offers no explanation as to why the Court’s prior construction was wrong. Instead, MediaTek proposes a construction that closely mirrors the one proposed by Intel and relies on the same flawed arguments the Court has already rejected. *Compare* MediaTek Op. Br. at 11–12 with *ParkerVision, Inc. v. Intel Corporation*, 6:20-cv-00562-ADA, Dkt. 41, at 36–40 (proposing the construction, “generating a signal with multiple the number of pulses as said string of pulses”) and *Id.*, Dkt. 44 at 30–32.

Just like Intel, MediaTek seeks to exclude an embodiment expressly disclosed in the specification by importing a numerical limitation—specifically, that a “string of multiple pulses” must contain “at least $n+1$ pulses for every cycle of said string of pulses.” But MediaTek’s limitation appears nowhere in the claim language and contradicts how the patent uses the term.

Claim 11 of the ’508 patent recites “shaping a string of pulses from a reference signal” and “generating a string of multiple pulses from said string of pulses.” The plain meaning of “string of multiple pulses” simply refers to a signal made up of more than one pulse.

FIG. 78

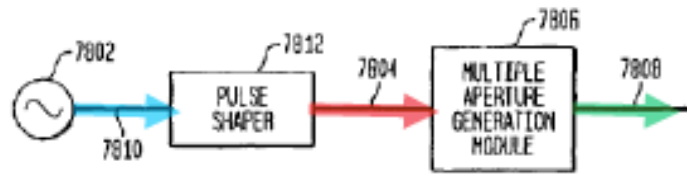


Figure 78 of the '508 patent (above) illustrates circuitry that performs the steps in claim 11. As shown above, a local oscillator 7802 generates an oscillating signal 7810 (blue). '508 patent, 49:46–53. A pulse shaper 7812 receives this signal (the claimed “reference signal”) and outputs the claimed “string of pulses” 7804 (red). *Id.* The multiple aperture generation module 7806 then receives the string of pulses and generates a “string of multiple pulses” (green), which serves as a control signal for a switch. *Id.*

FIG. 80

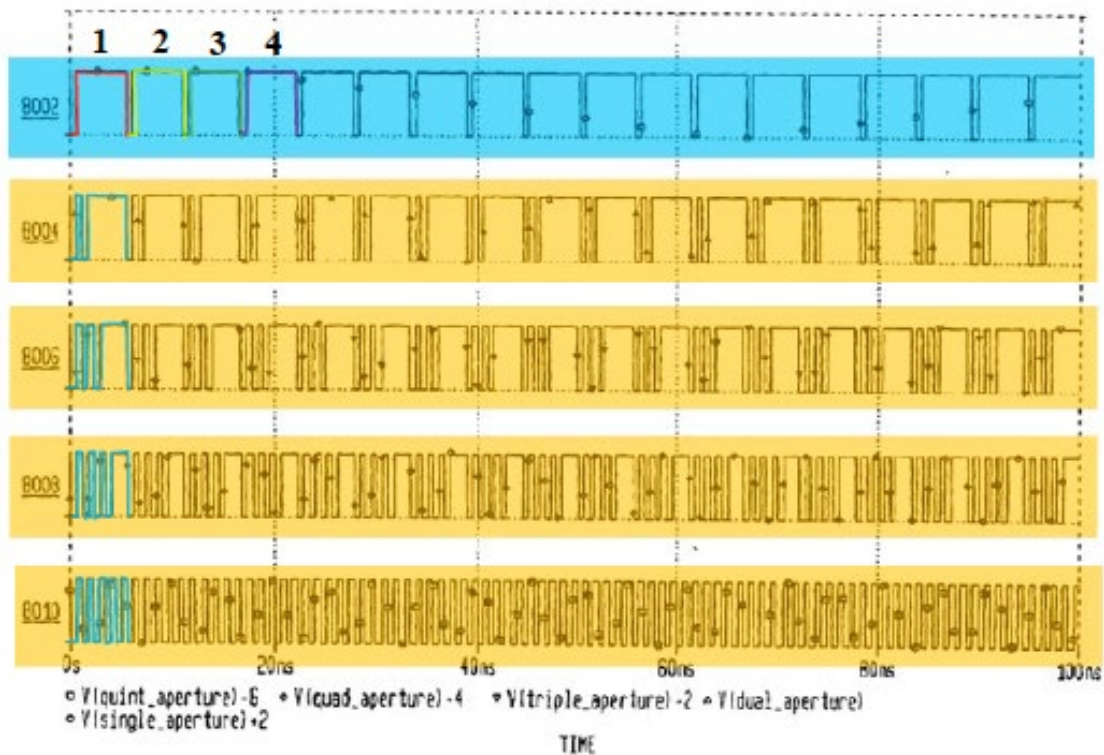


Figure 80 above illustrates different types of pulse trains (each a “string of multiple pulses”) that are outputted by the aperture generation module 7806. Specifically, the aperture generation module 7806 can output *either* pulse train 8002, 8004, 8006, 8008, or 8010 (shown above highlighted in blue and orange). *Id.* at 50:6-22.

Pulse train 8002 (blue highlight) includes “a string of *multiple* pulses” as claimed – the first pulse (red line), the second pulse (yellow line), the third pulse (green line), the fourth pulse (purple line). Pulse train 8002 has *one* pulse for *each* pulse of the string of pulses from the pulse shaper 7812. *Id.* at 50:6-7. As shown in Figure 80 above, pulse trains 8004, 8006, 8008, and 8010 (orange highlights) are different. As shown by the blue lines, pulse trains 8004, 8006, 8008, and 8010 include two, three, four, or five pulses, respectively, for each pulse of the string of pulses. *Id.* at 50:6-22.

MediaTek improperly seeks to exclude pulse train 8002. Thus, MediaTek has effectively *re-written* the language “multiple pulses” to be “at least $n+1$ pulses for every cycle of said string of pulses.” *See* Op. Br., 10-11. Whereas pulse train 8002 has “multiple pulses” as claimed, pulse train 8002 does not contain more than one pulse for every cycle of the string of pulses. Only pulse trains 8004, 8006, 8008 and 8010 satisfy MediaTek’s artificial constraint. But nothing in the claims or the specification supports rewriting the term to exclude the embodiment of pulse train 8002.

MediaTek attempts to justify its construction by pointing to one *embodiment* in the specification in which a NOR gate combines “ n ” delayed versions of the string of pulses to create an output with $n+1$ pulses per cycle. *See* Op. Br., at 11. But importing imitations from a single embodiment into the claims is improper. *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004) (“Even when the specification describes only a single embodiment, the

claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope.”). The specification treats pulse train 8002 no differently than the other pulse trains and, thus, pulse train 8002 should be covered by the disputed term.

MediaTek’s construction also introduces ambiguity by requiring “at least $n+1$ pulses for every cycle” without defining what “ n ” means or how it is determined. And If $n = 0$, then a string with one pulse per cycle—like pulse train 8002—would satisfy the construction anyway, undermining MediaTek’s own argument. MediaTek’s proposed construction is thus not only unsupported, but logically inconsistent.

Furthermore, MediaTek’s argument that “string of multiple pulses” is not defined in any IEEE technical journal nor IEEE’s Dictionary of Electrical and Electronic Terms is irrelevant. Op. Br., 10-11. The claim term does not require any specific technical knowledge to understand its meaning as it consists of commonly used words the jury can readily understand. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (“In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words.”). Requiring the claim term to be a term of art to be capable of construction is not the law and doing so would require straying from its true and intended meaning. *Brown v. 3M*, 265 F.3d 1349, 1352 (holding that the claims did “not require elaborate interpretation.”).

For the foregoing reasons, the Court should reject MediaTek’s attempt to rewrite the claim term and should instead maintain its prior construction.

B. “the first control signal and the second control signal are configured to improve energy transfer to a desired harmonic” (’638 patent, claim 17)

ParkerVision’s Construction	MediaTek’s Construction
Plain and ordinary meaning	Indefinite

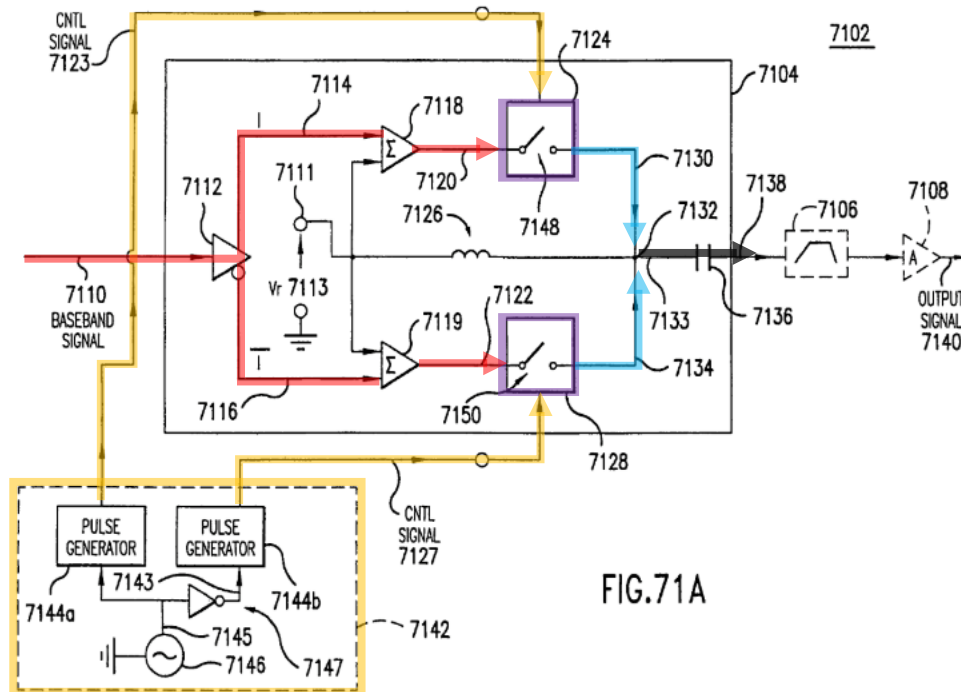
Contrary to MediaTek’s position, the term is not indefinite. Claim 16 of the ’638 patent recites “sampling said [baseband/inverted baseband] signal according to a [first/second] control signal to generate a [first/second] harmonically rich signal,” and “combining said first harmonically rich signal and said second harmonically rich signal to generate a third harmonically rich signal.” Claim 17, which depends from claim 16, further recites “*the first control signal and the second control signal are configured to improve energy transfer to a desired harmonic* of the third harmonically rich signal.”

A POSITA would understand that the phrase “configured to improve energy transfer to a desired harmonic” refers to designing the control signals to direct more energy to a selected frequency component (i.e., the “desired harmonic”) of the output. Importantly, the ’638 patent provides detailed guidance on how this is accomplished—namely, by adjusting the pulse width (or aperture) of the control signals and selecting the harmonic number of interest.

The Federal Circuit has made clear that functional claim language is not indefinite if the specification provides guidance for achieving the claimed function. *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1381, 1383-1384 (Fed. Cir. 2015). Here, the ’638 patent teaches both the goal (concentrating energy at a selected harmonic) and the means (selecting a pulse width T_A and harmonic number n to optimize the spectrum using the disclosed equations and models).

As shown, for example, in Figure 71A of the ’638 patent below, a control signal generator 7142 (orange box) includes an oscillator 7146, pulse generators 7144a and 7144b, and

inverter 7147. '638 patent, 42:19-21. Oscillator 7146 generates a master clock signal 7145, which serves as the timing reference for both control signals. Pulse generator 7144a receives the master clock signal and outputs control signal 7123. *Id.* at 42:26-27. Inverter 7147 provides an inverted master clock signal to pulse generator 7144b, which then outputs control signal 7127. As the patent explains, “both control signals 7123 and 7127 have the same period T_S as the master clock signal 7145, but have a pulse width (or aperture) of T_A .” *Id.* at 42:7-9.



As shown above, control signals 7123, 7127 (orange arrows) are used to drive switches 7148, 7150 (purple boxes), respectively, which sample signals 7120, 7122 (red arrows) to generate harmonically rich signals 7130, 7134 (blue arrows). *Id.* at 41:30-47. Harmonically rich signals 7130, 7134 are combined at node 7132 to generate a third harmonically rich signal 7133 (black arrow) that contains multiple frequency components (“images”) that repeat at harmonics of the sampling frequency ($1/T_S$). *Id.* at 43:30-35; *see also* FIG. 71C.

The '638 specification makes clear that the pulse width (T_A) of the control signals directly determines the distribution of energy across various harmonics of the output signal. Specifically, the patent states that “the relative amplitude of the frequency images [of the harmonically rich signal] is generally a function of the harmonic number and the pulse width T_A . As such, the relative amplitude of a particular harmonic . . . can be increased (or decreased) by adjusting the pulse width T_A of the control signal.” *Id.* at 42:65-43:3. The patent further explains: “[i]n general, shorter pulse widths of T_A shift more energy into the higher frequency harmonics, and longer pulse widths of T_A shift energy into the lower frequency harmonics.” *Id.* at 43:3-6.

The patent even provides an exemplary mathematical formula—Equation 1—that shows that the energy (represented as amplitude) at any given harmonic of the output signal is a function of the ratio T_A/T_S and the harmonic number n :

$$I_c(t) = \sum_{n=1}^{\infty} \left(\frac{4 \sin\left(\frac{n\pi T_A}{T_S}\right) \cdot \sin\left(\frac{n\pi}{2}\right)}{n\pi} \right) \cdot \sin\left(\frac{2n\pi t}{T_S}\right).$$

Equation 1

where:
 T_S =period of the master clock **7145**
 T_A =pulse width of the control signals **7123** and **7127**
 n =harmonic number

Id. at 44:45-56. The patent explains that “[t]he T_A/T_S ratio can be optimized in order to maximize the amplitude of the frequency image at a given harmonic.” *Id.* at 44:61-63.

The patent provides an example using a system clock at 200 MHz; to maximize energy transfer at the fifth harmonic (i.e., 1 GHz), the control signal’s pulse width should be set to 500 picoseconds (i.e., one-half the period of the 1 GHz signal, or π radians). This configuration ensures that $\sin(5\pi T_A/T_S)$ is maximized (i.e., equals 1), as shown in Equations 2 and 3 of the

specification. *Id.* at 45:1-16. This design choice results in a signal that concentrates energy at the fifth harmonic while minimizing energy at other frequencies.

This example is illustrated in Figure 72J below, which compares two control signals having different pulse widths: control signal 7128 having an aperture $T_A = 500$ picoseconds; and control signal 7220 having an aperture $T_A = 5,000$ picoseconds. Both control signals 7128, 7220 are synchronized to a 200 MHz clock. *Id.* at 45:58-60.

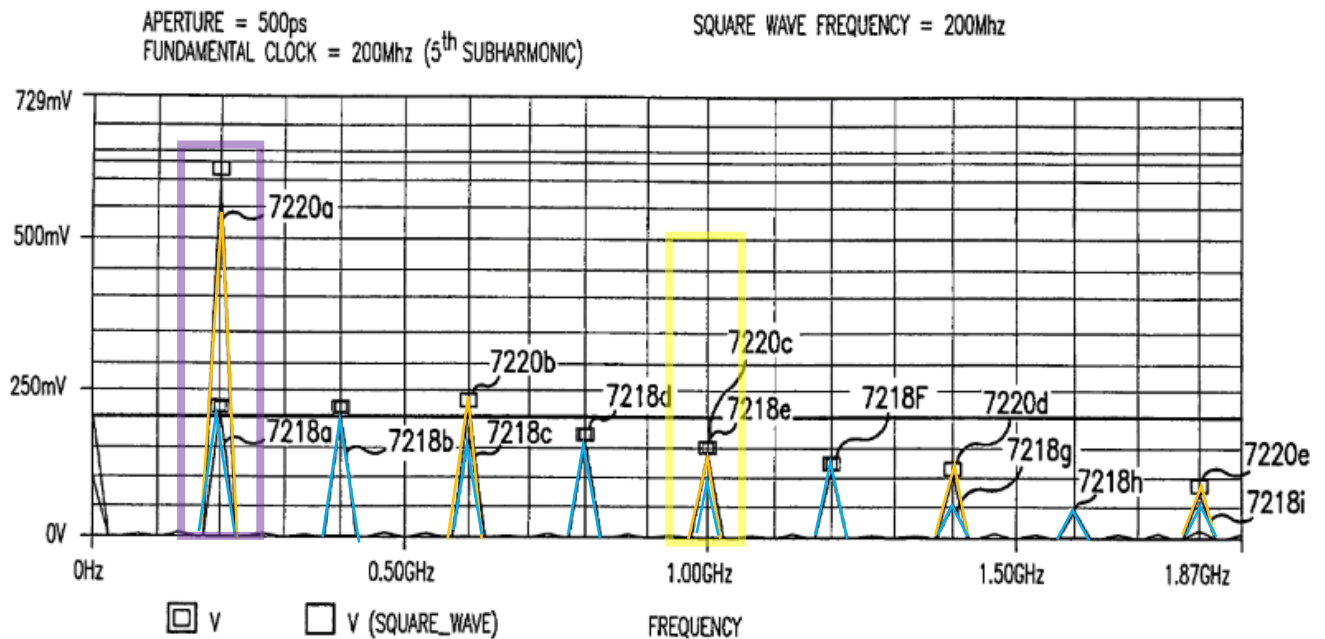


FIG.72J

As shown above, both control signals 7218, 7220 produce energy at the 1 GHz harmonic (shown in the yellow box) but signal 7218 does so more efficiently. It produces similar energy at 1 GHz while generating significantly less energy at the 200 MHz fundamental (highlighted in purple). As the patent explains, signal 7218 “wastes less energy” at undesired frequencies. *Id.* at 46:11-14. Thus, control signal 7128 “improve[s] energy transfer to a desired harmonic,” as claimed.

This analysis requires no guesswork. The Fourier series provides a direct formula for the

spectral content of the output signal based on T_A and harmonic number. The patent explains that this equation allows the designer to set $T_A = \frac{1}{2}$ the period of the harmonic of interest (n), and thereby maximize energy at that harmonic. 45:40-44.

MediaTek asserts the term is indefinite because the patent fails to specify a technique of measurement or an objective baseline. Not so. The measurement is simply the amplitude of the desired harmonic, which can be readily determined using Fourier analysis. The baseline is any unoptimized signal, and improvement is achieved when more energy is directed to the target harmonic or when less energy is wasted at undesired frequencies. Figure 72J illustrates this.

Accordingly, the Court should reject MediaTek's indefiniteness argument and give this term its plain and ordinary meaning.

- C. “a pulse width of the first control signal and the second control signal is configured to improve energy transfer to a desired harmonic” (‘638 patent, claim 18)**

ParkerVision's Construction	MediaTek's Construction
Plain and ordinary meaning	Indefinite

For the same reasons set forth in Section III.B above, MediaTek's indefiniteness arguments should be rejected and the Court should give this term its plain and ordinary meaning.

- D. “wherein the relative amplitude of a particular harmonic image of said plurality of harmonic images can be adjusted by adjusting a pulse width of the first control signal and the second control signal” (‘638 patent, claim 20)**

ParkerVision's Construction	MediaTek's Construction
Plain and ordinary meaning	“the wherein clause is not limiting” Alternatively, indefinite.

The phrase is unambiguous. It requires that the claimed system has to have the capability of adjusting a harmonic amplitude using a corresponding adjustment in control signal apertures. Thus, the “wherein” clause is not indefinite and recites a limiting condition. MediaTek's arguments to the contrary are flawed.

In particular, MediaTek contends that the “wherein” clause is not limiting because, in its view, it “adds nothing of patentable weight” and is merely “optional.” Op. Br., at 14. Not so. Courts have repeatedly recognized that a “wherein” clause can and often does add a substantive limitation, particularly when the clause sets forth how or under what conditions the prior limitations operate. *See Griffin v. Bertina*, 285 F.3d 1029, 1033-34 (Fed. Cir. 2002) (holding a wherein clause limiting when it elaborates the meaning of other claim language).

Here, the “wherein” clause does far more than merely recite an intended outcome—it recites a technical relationship between signal characteristics. The language defines a capability of the system: that by modifying pulse widths, the relative amplitude of a particular harmonic image can be varied. There is not a mere result, intended use, or purpose.

MediaTek’s reliance on *In re Johnston*, 435 F.3d 1381 (Fed. Cir. 2006), and *Texas Instruments Inc. v. U.S. Int’l Trade Comm’n*, 988 F.2d 1165 (Fed. Cir. 1993), is misplaced. In *Johnston*, the clause at issue included explicitly permissive language (e.g., “may be smooth, corrugated, or profiled”), which signaled the optional nature of the feature. No such permissive language exists here. Further, the *TI* case concerned a “whereby” clause that stated a result of the claimed structure, which the court found added no substantive limitation. Again, that is not the case here. The clause here describes how the claimed signals interact and must be capable of operating.

MediaTek’s fallback position—that the clause is indefinite if limiting—is legally untenable. A claim is indefinite only if it fails to “inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014). But MediaTek’s own ability to analyze the clause and argue it is “not limiting” disproves its assertion that the clause is too unclear to be construed. As the Federal Circuit has

explained, “[a] claim is indefinite when it contains words or phrases where the meaning is unclear...”. This is not the case here.

Moreover, the ’638 specification provides supporting disclosure. As explained in Section IV.B above, the patent expressly explains that the pulse width of control signals can be used to modify the harmonic content of an output signal the amplitude of a particular harmonic of a sampled signal may be maximized by, “setting $TA=1/2$ the period (or π radians) at the harmonic of interest.” ’638 patent at 45:43-45.

The claim term clearly states limiting actions, therefore, for the foregoing reasons, the Court should construe the term to have its plain and ordinary meaning and to not be indefinite.

E. “power efficiency” (’593 patent, claim 9)

ParkerVision’s Construction	MediaTek’s Construction
Plain and ordinary meaning	“the output power of the power supply compared to its input power”

The term “power efficiency” is straightforward and does not require a construction.

MediaTek improperly attempts to narrow the scope of the claim. Specifically, MediaTek asserts that “power efficiency” should be construed “to encompass indirect measurements of power efficiency such as output current or voltage,” and “should not be interpreted to require a direct measurement of power efficiency.” Op. Br., 15. But this is not a construction of “power efficiency.” Rather, it is a veiled attempt to improperly rewrite the claim scope based on system-level implementations and design choices. But nothing in the claim language or the specification redefines “power efficiency” to mean or include “indirect measurements.”⁴

⁴ To the extent MediaTek argues that a system may implement threshold comparisons based on voltage or current as an approximation of power efficiency, this is not a proper basis for claim construction. *SRI Int’l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1118 (Fed. Cir. 1985) (finding that, “claims are not construed ‘to cover’ or ‘not to cover’ the accused device...[i]t is only after

To the contrary, the specification consistently distinguishes between voltage, current, and power, and confirms that power efficiency is a function of power—not voltage or current standing alone. For example, the specification states:

The efficiency of a power supply directly affects the efficiency of the power amplification system using the power supply. ... [V]oltage and current requirements of the radio frequency (RF) transmitter used in the devices are largely determined by the power amplifier technology and system requirements. As such, the power supply efficiency not only affects the efficiency of the power modulation and amplification system but also the efficiency of the mobile device using the power amplification system.

'593 patent at 1:29–39.

The patent goes on to describe scenarios that explicitly calculate power efficiency as a ratio of power output to power input:

To highlight this problem, consider, for example, a scenario where the battery voltage (power supply input voltage, V_{IN}) is 3.6 V and the output voltage (power supply output voltage, V_{OUT}) is 3.16 V, and where the power supply drives a power amplifier that is 50% efficient generating a +30 dBm output power.. ... [T]his results in a power supply efficiency of approximately 94%.

Id. at 4:35–43.

The analysis culminates in a calculation of system efficiency as the product of amplifier efficiency and power supply efficiency—e.g., “ $0.5 \times 0.94 = 0.47$ or 47%.” *Id.* These passages confirm that the specification uses the term “power efficiency” according to its plain and ordinary meaning: the ratio of output power to input power.

In fact, MediaTek’s own construction (“output power of the power supply compared to its input power”) confirms that “power efficiency” retains this ordinary meaning. Yet MediaTek paradoxically argues that “power efficiency” should be interpreted to include indirect

the claims have been construed without reference to the accused device that the claims, as so construed, are applied to the accused device to determine infringement.”)

measurements like current or voltage. These positions are incompatible. A ratio of output power to input power is a direct relationship. It cannot simultaneously be defined by a different physical quantity like voltage or current, which—although related—are not substitutes for power.

MediaTek’s construction is also inconsistent with the claim language itself. In particular, claim 9 recites deactivating a switching device “in response to a power efficiency of the power supply...exceeding a predetermined threshold.” It does not say how that efficiency must be measured—let alone that it must be estimated using indirect inputs like voltage or current. Even if an implementation estimates efficiency using those signals, that practical engineering choice has no bearing on the meaning of the term. As the Federal Circuit has made clear, “[t]he patentee is free to choose a broad term and expect to obtain the full scope of its plain and ordinary meaning unless the patentee explicitly redefines the term or disavows its full scope.” *Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1367 (Fed. Cir. 2012); *see also IQRIS Techs. LLC v. Point Blank Enters.*, 130 F.4th 998 (Fed. Cir. 2025) (asserting, “it is the claims, not the preferred embodiments, that define the metes and bounds of the patentee’s invention.”).

Finally, MediaTek improperly invokes claim differentiation, arguing that because dependent claims recite using current or voltage to control switching behavior (e.g., using load current at the output node or comparing voltages), the independent claim must encompass such indirect methods. But this logic misapplies the doctrine.

Claim differentiation is a rebuttable presumption and cannot override the intrinsic evidence. As this Court has recognized: “claim differentiation is not a hard and fast rule and will be overcome by a contrary construction dictated by the written description or prosecution history.” *Pisony v. Commando Constr., Inc.*, No. W-17-CV-00055-ADA, 2019 U.S. Dist. LEXIS 31524, at *10 (W.D. Tex. 2019) (quoting *Marine Polymer Techs., Inc. v. HemCon, Inc.*, 672

F.3d 1350, 1369 (Fed. Cir. 2012)).

Here, the intrinsic record demonstrates that “power efficiency” is used consistently with its plain meaning and is never redefined to mean voltage, current, or any other proxy. The dependent claims merely reflect specific implementations of how switching may be triggered—they do not redefine “power efficiency.”

For the foregoing reasons, the Court should reject MediaTek’s attempt to rewrite the claim and instead apply the plain and ordinary meaning of “power efficiency”.

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Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of the foregoing document was served to counsel of record for Defendant via electronic mail on May 8, 2025.

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