

IPR2024-00697
IPR2024-00698

*Apple Inc. v.
Resonant Systems, Inc.*

U.S. Patent No. 8,093,767

Patent Owner's Demonstratives

Challenged Claims

'767 Patent:

US008093767B2

(12) **United States Patent**
Pepin et al.

(10) **Patent No.:** **US 8,093,767 B2**
(45) **Date of Patent:** **Jan. 10, 2012**

(54) **LINEAR-RESONANT VIBRATION MODULE**

(76) **Inventors:** **Brian Marc Pepin**, Oakland, CA (US);
Robin Elenka, Seattle, WA (US)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** **12/782,697**

(22) **Filed:** **May 18, 2010**

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US 2010/0289346 A1 Nov. 18, 2010

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(60) Provisional application No. 61/179,109, filed on May 18, 2009.

(51) **Int. Cl.**
H02K 33/00 (2006.01)
H02K 41/02 (2006.01)
H02K 41/00 (2006.01)
H02K 7/00 (2006.01)

(52) **U.S. Cl.** **310/15, 310/12.15, 310/13, 310/14, 310/19**

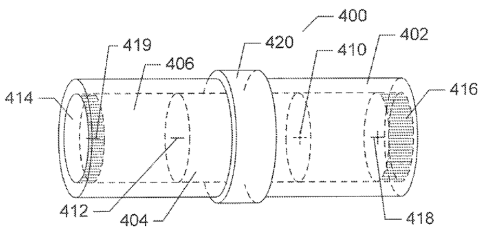
(58) **Field of Classification Search** **310/15-15, 310/19, 12.15**
See application file for complete search history.

(56) **References Cited**
U.S. PATENT DOCUMENTS
5,955,799 A * 9/1999 Amaya et al. 310/36
6,323,568 B1 * 11/2001 Zahar 310/17
6,326,706 B1 * 12/2001 Zhang 310/12.31

FOREIGN PATENT DOCUMENTS
JP 10164869 A 6/1998
JP 11018393 A 1/1999
WO 9819383 A1 5/1998
* cited by examiner

ABSTRACT
Various embodiments of the present invention comprise linear-resonant vibration modules that can be incorporated in a wide variety of appliances, devices, and systems to provide vibrational forces. The vibrational forces are produced by linear oscillation of a weight or member, in turn produced by rapidly alternating the polarity of one or more driving electromagnets. Feedback control is used to maintain the vibrational frequency of linear-resonant vibration module at or near the resonant frequency for the linear-resonant vibration module. Linear-resonant vibration modules can be designed to produce vibrational amplitude/frequency combinations throughout a large region of amplitude/frequency space.

5 Claims, 15 Drawing Sheets



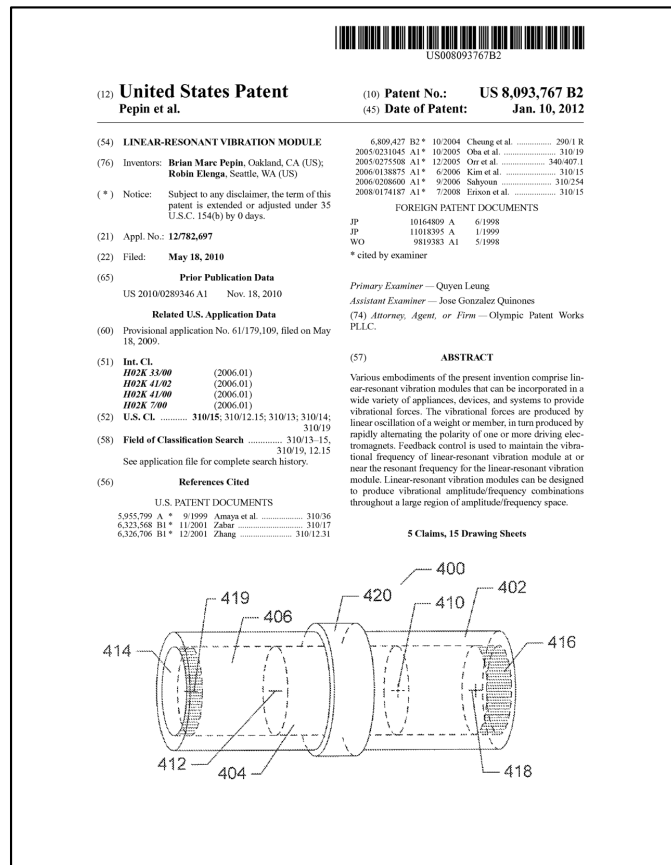
1. A linear resonant vibration module comprising:
a housing;
a moveable component;
a power supply;
a driving component that drives the moveable component in each of two opposite directions; and
a control component that includes a microprocessor and that controls supply of power from the power supply to the driving component to cause the moveable component to linearly oscillate, the control component including, in addition to the microprocessor,

IPR2024-00697, Ex. 1001

IPR2024-00698, Ex. 1001

Challenged Claims

'767 Patent:



IPR2024-00697, Ex. 1001

IPR2024-00698, Ex. 1001

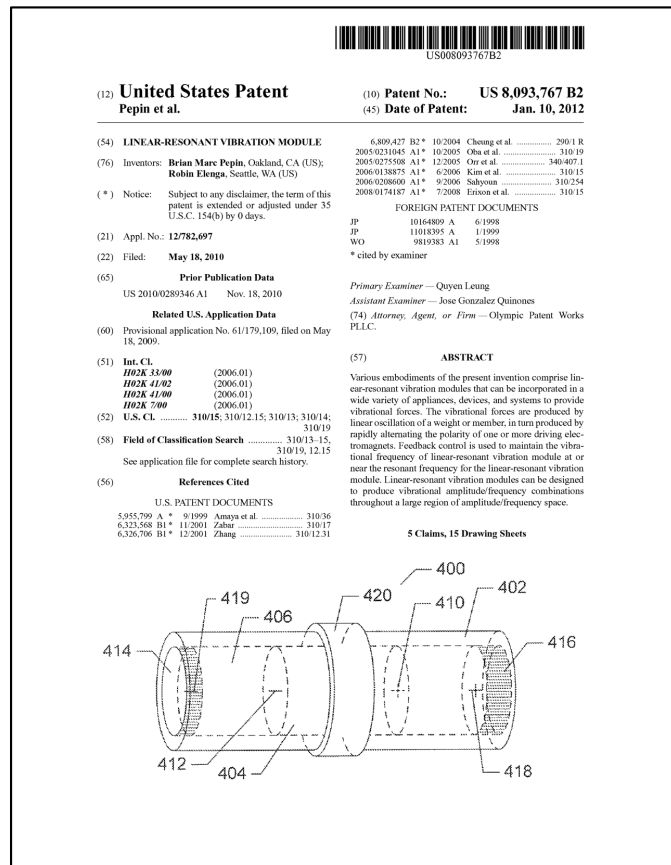
a control program, stored in one of a separated electronic memory or within the processor, that is executed by the microprocessor to control operation of the linear resonant vibration module, and

a switch that receives a directional signal d from the processor and that selects a corresponding direction of the two opposite directions in which the driving component drives the moveable component,

the control component receiving output signals from sensors within the linear resonant vibration module during operation of the linear resonant vibration module and adjusting one or more operational control outputs of the control component according to the received output signals from the sensors in order that subsequent operation of linear resonant vibration module produces desired outputs from the one or more sensors corresponding to one or more operational control parameters.

Challenged Claims

'767 Patent:



IPR2024-00697, Ex. 1001

IPR2024-00698, Ex. 1001

2. The linear resonant vibration module of claim 1 wherein the switch comprises:

a directional-signal d input;

a voltage input;

a directional-signal splitter/inverter that generates two complementary internal signals, d and $\bar{d}$, corresponding to directional-signal d; and

two pairs of solid-state switches, a first switch of each pair controlled by internal signal d and a second switch of the pair controlled by internal signal $\bar{d}$, that apply the input voltage in a first direction to the driving component when the d is in a first voltage state and that apply the input voltage in a second direction to the driving component when the d is in a second voltage state.

3. The linear resonant vibration module of claim 2 wherein the linear resonant vibration module further includes a vibration sensor; and

wherein the control program continuously monitors output from the vibration sensor in order to adjust the frequency at which the control program changes the voltage state of the directional signal d.

Claim Construction

Board's Constructions from Institution Decisions

Term	Boards's Construction
Preamble (claim 1)	Preamble is limiting
"driving component"	Function: drives the moveable component in each of two opposite directions Corresponding structure: coils 420, 514, 626, 1202, 1204, 1302, 1304, 1412, 1414, 1510 (also shown in Figs. 16–17); electromagnets shown in Figs. 10–11; and equivalents thereof.
"control component"	Not a means-plus-function term

Reply did not address claim construction at all.
The Board should adopt these constructions.

IPR2024-00697, ID 10–11, POR 6–9

IPR2024-00698, ID 10–11, POR 6–9

Board's Constructions from Institution Decisions

Term	Boards's Construction
Preamble (claim 1)	Preamble is limiting
"driving component"	Function: drives the moveable component in each of two opposite directions Corresponding structure: coils 420, 514, 626, 1202, 1204, 1302, 1304, 1412, 1414, 1510 (also shown in Figs. 16–17); electromagnets shown in Figs. 10–11; and equivalents thereof.

For both of these terms, the Board's constructions are based upon agreed constructions in district court. Differences in "driving component" construction from that in Petitions not material to this IPR.

IPR2024-00697, ID 10–11, POR 7–8, Ex. 3001 at 10–11

IPR2024-00698, ID 10–11, POR 7–8, Ex. 3001 at 10–11

Board's Constructions from Institution Decisions

Term	Boards's Construction
"control component"	Not a means-plus-function term

As the Board found in the Institution Decision:

"Given the context provided by claim 1 as a whole, a person having ordinary skill in the art would have understood the "control component" as identifying a specific structure (requiring a microprocessor, control program, and switch as claim 1 recites)."

Reply did not address claim construction at all.

Difference from construction in
Petitions not material to this IPR.

IPR2024-00697, ID 10–11, POR 6–9

IPR2024-00698, ID 10–11, POR 6–9

No Motivation to
Combine (-00697,
all grounds)

No Motivation to Combine (-00697 IPR)

'767 patent field of endeavor, according to Apple:

TECHNICAL FIELD

The present invention is related to vibration-generating devices and, in particular, to vibration modules that can be incorporated into a wide variety of different types of electro-mechanical devices and systems to produce vibrations of selected amplitudes and frequencies over a wide range amplitude/frequency space.

IPR2024-00697, Reply 3, Ex. 1001, 1:10–16, Sur-Reply 2

No Motivation to Combine (-00697 IPR)

Cosper field of endeavor, according to Apple:

[0002] 1. Field

[0003] This application generally relates to systems and methods for control of a mass and bias (e.g., “elastomeric members”) subassembly, including oscillating mechanical systems, that operate in an oscillatory mode at or near their mechanical resonant frequency. In one example, the systems are described for use with illumination systems including an oscillating resonant engine.

IPR2024-00697, Reply 3, Ex. 1009, ¶ [0003], Sur-Reply 3

No Motivation to Combine (-00697 IPR)

Aldrich field of endeavor:

actuator, this system repeatedly estimates the resonance frequency and alters the excitation frequency as needed to keep it at or near the resonance frequency. In the

resonance. The ESC algorithm is not capable of coarse resonance tracking, but is capable of fine resonance tracking once the estimates of parameters generated by the hill-climbing algorithm have converged sufficiently. On the basis of the

IPR2024-00697, POR 14–15, Ex. 1021, 1–2, Sur-Reply 6

No Motivation to Combine (-00697 IPR)



Prof. Blake Hannaford
Petitioner's Expert

Q: And so for a mechanical resonant system – saying that it has a high Q is equivalent to saying that it has a low bandwidth, and vice versa, saying it has a low Q is saying it has a high bandwidth?

A: Yes.

IPR2024-00697, Ex. 2020, Sur-Reply 5

No Motivation to Combine (-00697 IPR)

Shahoian is directed to low-Q, high-bandwidth:

vibrotactile sensations. Both the frequency and amplitude of the vibrations can be controlled using bi-directional control, and features such as the elastic material and flexures contribute to a high quality and **high bandwidth vibration** force output.

range by adjusting the magnitude of the waveform. The controller can also **adjust the frequency of the drive waveform independently of the amplitude** to adjust the frequency of vibration. This allows different frequency vibrations to be output independently of the magnitude of those vibrations.

IPR2024-00697, POR 10–11, Ex. 1004, 4:56–60, 7:41–45, Sur-Reply 4

No Motivation to Combine (-00697 IPR)

Shahoian is directed to low-Q, high-bandwidth:

magnitude is held constant). This gain at higher frequencies is due primarily to the vibration occurring at the resonance frequency of the mechanical system including actuator, foam, housing, etc., and, if desired, can be compensated for in other embodiments to obtain a more flat response by providing compensating frequencies that will provide the desired response (e.g. from a look-up table or firmware).

IPR2024-00697, POR 11, Ex. 1004, 7:54–62

No Motivation to Combine (-00697 IPR)

Cosper is directed to high-Q, low-bandwidth:

[0007] Driving a mechanical resonant system for low loss, and a high Q, at or near its resonant frequency using an external frequency references may require a highly stable frequency source. It may also require that the resonant frequency of the mass and spring mechanism itself be very stable. The frequency of the two systems, one mechanical, and one electronic, will typically drift apart over time. Even relatively small variations in frequency between the two systems may cause the amplitude of the mechanical oscillations to decrease significantly.

IPR2024-00697, POR 13, Ex. 1009, ¶ [0007], Sur-Reply 4

No Motivation to Combine (-00697 IPR)

Cosper is directed to high-Q, low-bandwidth:

bly and adjust or modulate the driving force over time to maintain the subassembly at or near resonant frequency. Fur-

logic of control circuit 12, and a control output from the control logic to drive the moveable subassembly at or near resonance via force transducer 20.

spot 101 shown in FIG. 1A. The mirror and bias (or mirror subsystem) may be moved in a very energy-efficient manner by driving them at or near resonance.

IPR2024-00697, Ex. 1009, ¶¶ [0009], [0049], [0067], Sur-Reply 4

No Motivation to Combine (-00697 IPR)



Prof. Keith Goossen
Patent Owner's Expert

88. Thus, Shahoian's high bandwidth (low Q) haptic feedback device and Cosper's low bandwidth (high Q) scanning light source device belong to different fields of endeavor. Cosper's techniques for "driving . . . and maintaining oscillations . . . at a resonant frequency"⁵² apply to a high Q system, where "even relatively small variations in frequency" from resonance must be avoided.⁵³ They are not pertinent to any problem Shahoian is involved with, given its high bandwidth, intentional operation at multiple frequencies and relatively flat frequency response. There also would be no motivation for applying Cosper's techniques for maintaining the oscillations at the resonant frequency to Shahoian.

IPR2024-00697, POR 14–15, Ex. 2009, ¶ 88, Sur-Reply 5

No Motivation to Combine (-00697 IPR)



Prof. Keith Goossen
Patent Owner's Expert

Operation at resonance is not specifically desirable in the Shahoian system, which instead must operate over a range of frequencies. Even when operating in the vicinity of resonance, there is no particular importance in Shahoian to maintaining the oscillation specifically at resonance, as Cosper teaches, because the gain in Shahoian's low Q, high bandwidth system is not highly sensitive to small variations in frequency.

IPR2024-00697, POR 14–15, Ex. 2009, ¶ 88, Sur-Reply 5

No Motivation to Combine (-00697 IPR)



Prof. Keith Goossen
Patent Owner's Expert

89. The addition of the Aldrich reference to the combinations in Grounds 2A and 2B does not change the situation. Like Cosper, Aldrich addresses the problem of keeping the frequency “at or near the resonance frequency,” through its teaching of “fine resonance tracking.”⁵⁴ Like Cosper, Aldrich is not in the same field of endeavor as Shahoian, is not pertinent to problems Shahoian is involved with, and a POSITA would not have been motivated to apply its “fine resonance tracking” to the devices taught by Shahoian.

IPR2024-00697, POR 14–15, Ex. 2009, ¶ 89, Sur-Reply 5

Failure to satisfy
limitation [1.5.3]
(-00698, all grounds)

Failure to Satisfy Limitations [1.5.3] (-00698)

Element [1.5.3]:

a switch that receives a directional signal **d** from the processor and that selects a corresponding direction of the two opposite directions in which the driving component drives the moveable component,

Alleged disclosure in *Izumi*:

22A to 22E. The alternating voltage output part **61** of **FIG. 22A** is constituted by a series circuit of switching elements **Q1** and **Q4** each of which is a NPN transistor connected

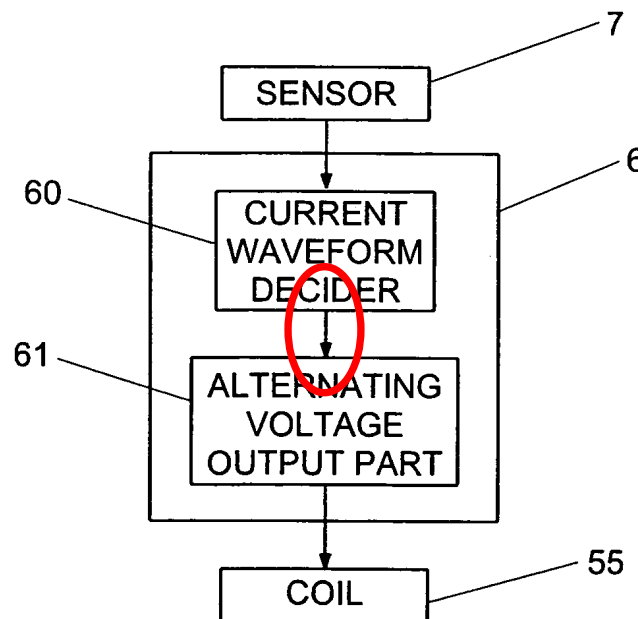
and **Q3**. The switching elements **Q1** to **Q4** are controlled by control signals **S1** to **S4**, respectively, which are inputted into the base terminals by the current waveform decider **60**.

IPR2024-00698, Ex. 1001, claim 1, Ex. 1005, [0060], Pet. 28, POR 10

Failure to Satisfy Limitations [1.5.3] (-00698)

Alleged “directional signal d from the processor” in *Izumi*:

FIG. 2



IPR2024-00698, Ex. 1005, [0060], Pet. 28, POR 10-11

Failure to Satisfy Limitations [1.5.3] (-00698)

Sole mention of a processor or “CPU” in *Izumi*:

[0063] Although each of the ON-time and the OFF-time of the voltage is controlled in order to form the intended current waveform in this embodiment, in the actual real time control, it can be difficult to perform complicated control at every half-cycle or one cycle of the moving element 1 due to a constraint of the control device, such as CPU speed, ROM capacity, etc. So, the controller may control a ratio of the ON-time (T1) to the OFF-time (T2), namely a duty ratio (T1/T2), while keeping the sum of the ON-time and the OFF-time (T3=T1+T2) constant. That is, the controller may use a so-called PWM control method. In this case, the controller 6 can form an intended current waveform without using a complex control system.

IPR2024-00698, Ex. 1005, [0063], POR 11

Failure to Satisfy Limitations [1.5.3] (-00698)



Prof. Keith Goossen
Patent Owner's Expert

98. While this mentions a CPU, it does not mention a directional signal d that is “from the [CPU].” Rather, it suggests that any CPU would not be a signal “from” the CPU, because implementing such a “complex control system” on the CPU would run into constraints of “CPU speed” or “ROM capacity.” Instead, this paragraph suggests that the controller form the waveform using “PWM control.”⁶⁴

IPR2024-00697, POR 12, Ex. 2009, ¶ 98, Sur-Reply 3–4

Failure to Satisfy Limitations [1.5.3] (-00698)



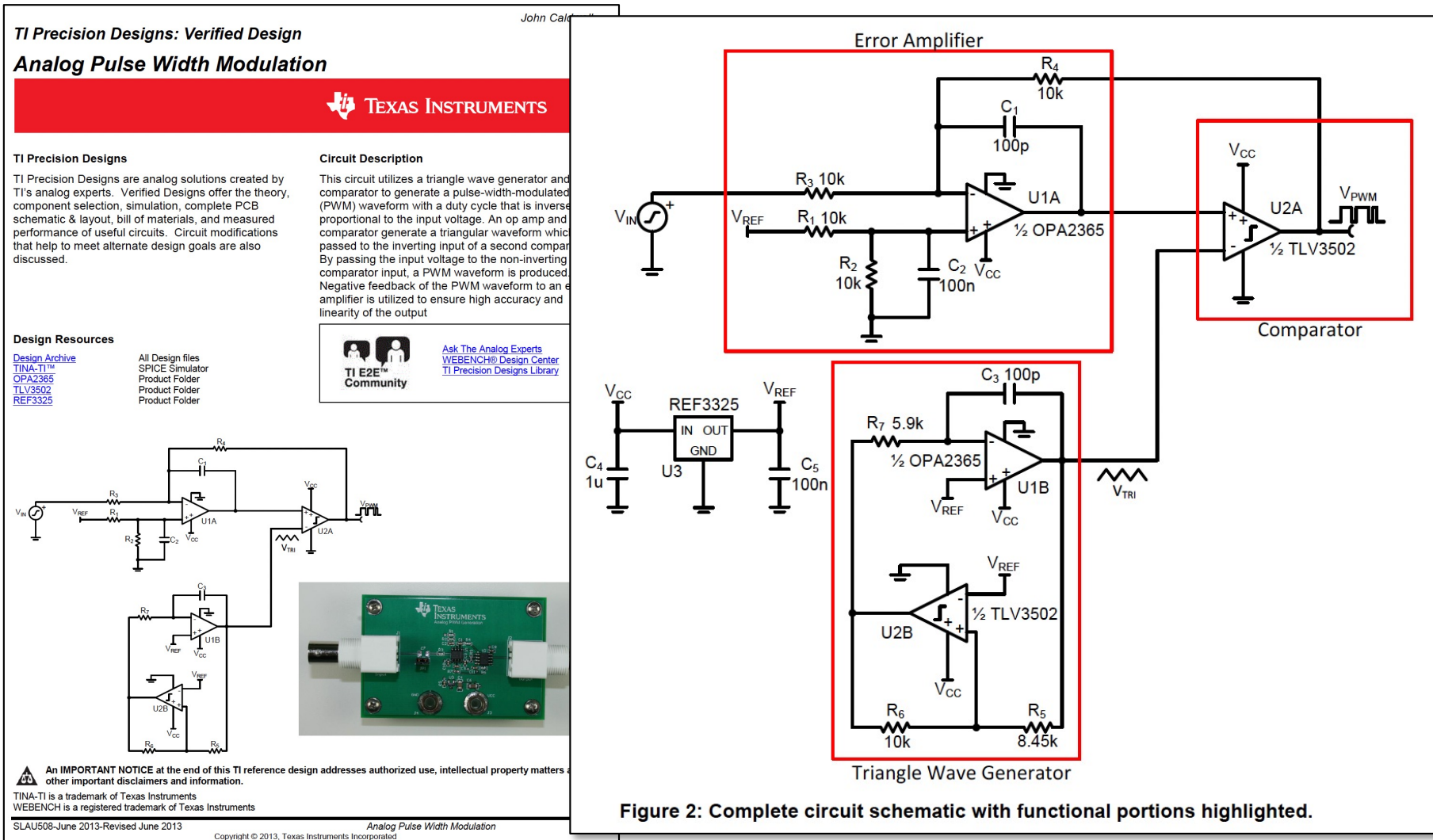
Prof. Keith Goossen
Patent Owner's Expert

99. A POSITA would understand that “PWM control” would not require that the directional signal itself be generated by, or otherwise be “from,” a processor. Indeed, a POSITA would understand that pulse width modulation (PWM) can readily be performed by entirely analog circuit, such as the following circuit from a Texas Instruments reference design, taking an analog voltage V_{IN} as its input⁶⁵:

IPR2024-00697, POR 12, Ex. 2009, ¶ 99, Sur-Reply 3–4

Failure to Satisfy Limitations [1.5.3] (-00698)

PWM Circuit:



IPR2024-00697, Ex. 2017, POR 13,

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resonant Systems | IPR2024-00697, -00698 | SLIDE 27

Failure to Satisfy Limitations [1.5.3] (-00698)



Prof. Keith Goossen
Patent Owner's Expert

efficiently utilized the microprocessor of the combined system.”⁶⁶ But as explained above, Izumi’s only teachings that mention a CPU are describing the “constraints” that stand in the way of implementing a “complex control system” on the CPU. Neither the petition nor Dr. Hannaford point to any motivation a POSITA would have had to disregard these teachings and utilize “a directional signal d from the processor” anyway.

IPR2024-00697, POR 13–14, Ex. 2009, ¶ 100, Sur-Reply 3–4

Failure to Satisfy Limitations [1.5.3] (-00698)

Reply seeks to rely on Ibuki for [1.5.3] (Grounds 1C, 1D):

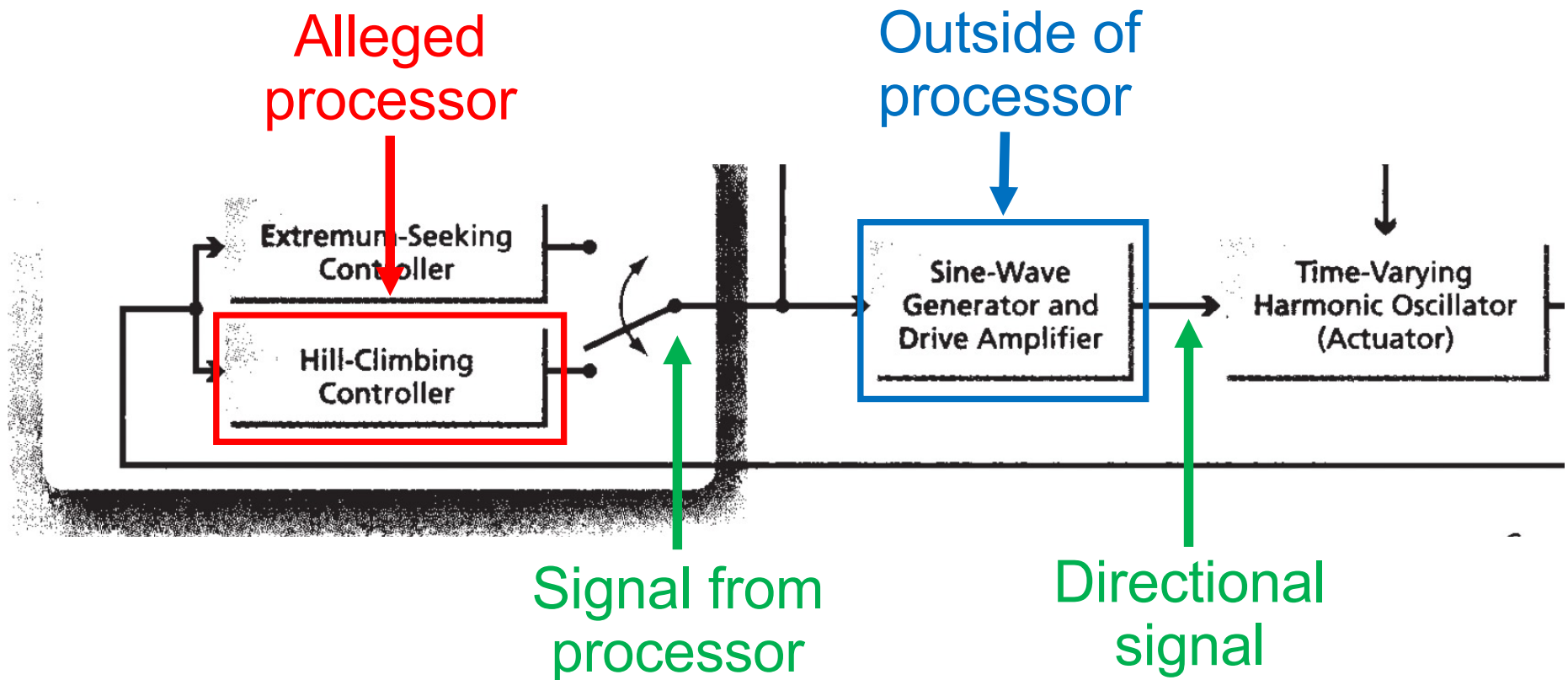
[0021] The controller 13 detects the ON/OFF signals outputted from the main switch 11 and the mode switch 12, and outputs a control signal to the driving unit 7 to control the operation of the driving unit 7 depending on the status of the ON/OFF signals outputted from the main switch 11 and the mode switch 12. The controller 13 comprises, for example, a CPU (Central Processing Unit), a ROM (Read Only Memory), and a RAM (Random Access Memory), and controls the operation of the driving unit 7, as the CPU

No teaching in Ibuki of a directional signal from the CPU

IPR2024-00698, Ex. 1038, [0021], Reply 9, Sur-Reply 4

Failure to Satisfy Limitations [1.5.3] (-00698)

Aldrich teaches directional signal generated **outside controller** (Grounds 2A, 2B):



IPR2024-00698, Ex. 1021, 3, Pet. 57, Reply 10–11, Sur-Reply 4

Failure to satisfy
limitations [2.3] and [2.4]
(both IPRs, claims 2–5)

Failure to Satisfy Limitations [2.3] and [2.4]

[2.3] a directional-signal splitter/inverter that generates ***two complementary internal signals, d and $\bar{d}$*** , corresponding to directional-signal d ; and

[2.4] ***two pairs of solid-state switches, a first switch of each pair controlled by internal signal d and a second switch of the pair controlled by internal signal $\bar{d}$, ...***

There must be one “internal signal $\bar{d}$ ” controlling the second switches of the pairs

IPR2024-00697, Ex. 1001, claim 2, POR 15–16, Sur-Reply 7–8

IPR2024-00698, Ex. 1001, claim 2, POR 14–15, Sur-Reply 5–6

Failure to Satisfy Limitations [2.3] and [2.4]

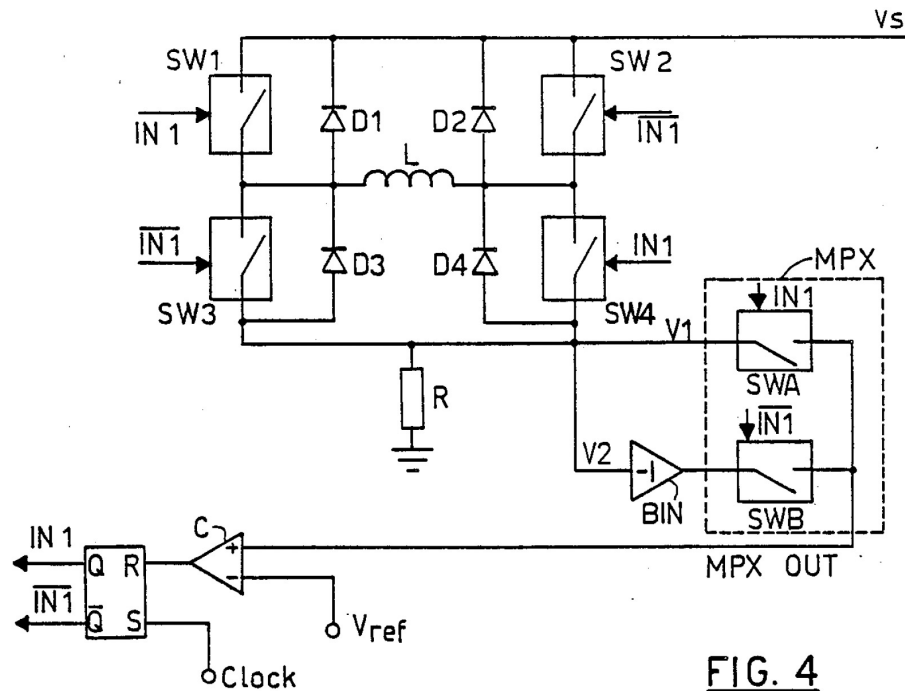


FIG. 4

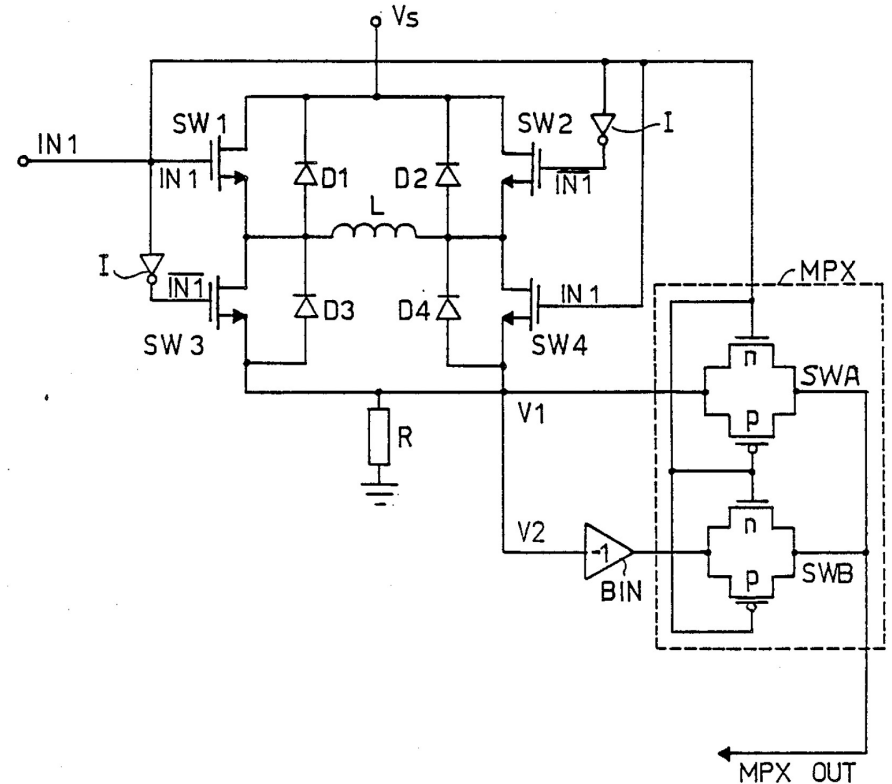


FIG. 6

The Rossi figures cited in the Petitions either are silent on how signals to SW2 and SW3 generated or show two inverters

IPR2024-00697, Ex. 1020, Figs. 4, 6, Sur-Reply 9–10

IPR2024-00698, Ex. 1020, Figs. 4, 6, Sur-Reply 7–8

Failure to Satisfy Limitations [2.3] and [2.4]

Petitions are clear that they are relying on Figure 6 structure of splitting and then inverting each split:

“As described in Rossi, the “inverter I” ***inverts each split*** of the driving signal IN1 to generate the complementary internal signals.”

The switch to Rossi’s Figure 1 embodiment is an impermissible new theory on reply.

IPR2024-00697, Pet. 40–41, Sur-Reply 10

IPR2024-00698, Pet. 40–41, Sur-Reply 8

Failure to Satisfy Limitations [2.3] and [2.4]



“35 U.S.C. § 312(a)(3) [requires] IPR petitions to identify ‘with particularity ... the evidence that supports the grounds for the challenge to each claim’”

Harmonic Inc. v. Avid Tech., Inc., 815 F.3d 1356, 1363 (Fed. Cir. 2016)

“We see no error in the Board’s rejection of Ariosa’s reliance, in its Reply submissions, on previously unidentified portions of a prior-art reference to make a meaningfully distinct contention.”

Ariosa Diagnostics v. Verinata Health, Inc., 805 F.3d 1359, 1367 (Fed. Cir. 2015)

“[Petitioner] waited until its reply to present what in substance is an argument that it would have been obvious to a relevant artisan to modify [prior art]. This argument was a ‘meaningfully distinct contention’ We thus see no abuse of discretion in the Board’s decision not to consider the new argument.”

Yita LLC v. MacNeil IP LLC, 69 F.4th 1356, 1367 (Fed. Cir. 2023)

IPR2024-00697, Sur-Reply 10–11; IPR2024-00698, Sur-Reply 8–9

Failure to satisfy claim 3 (both IPRs)

Failure to Satisfy Claim 3 (both IPRs)

Element [1.6]:

the control component receiving output signals from sensors within the linear resonant vibration module during operation of the linear resonant vibration module and adjusting one or more operational control outputs of the

Element [3.1]:

3. The linear resonant vibration module of claim 2 wherein the linear resonant vibration module further includes a vibration sensor; and

IPR2024-00697, Ex. 1001, claims 1,3, POR 17–18

IPR2024-00698, Ex. 1001, claims 1,3, POR 16–17

Failure to Satisfy Claim 3 (both IPRs)

[3.1] The linear resonant vibration module of claim 2 wherein the linear resonant vibration module further includes a vibration sensor; and

The Shahoian-Cosper-Rossi combination's LRVM includes a vibration sensor (accelerometer) in addition to the sensors associated with "position" and "velocity" that are used as part of the feedback control. *Supra*, ¶V.A.3 (Shahoian-

[3.1] The linear resonant vibration module of claim 2 wherein the linear resonant vibration module further includes a vibration sensor; and

The Izumi-Cosper-Rossi combination includes a vibration sensor (accelerometer in accordance with Cosper) in addition to the sensors associated with "position" and "velocity" that are used as part of the feedback control. *Supra*,

IPR2024-00697, Pet. 45, POR 17–18

IPR2024-00698, Pet. 45, POR 16–17

Failure to Satisfy Claim 3 (both IPRs)

Teaching in Cosper:

etc.), and may detect any appropriate parameter that may correlate the position of the subassembly (e.g., from which the motion of the subassembly may be derived). For example, one or more sensors 14 may detect position, velocity, acceleration, etc. for the subassembly (e.g., of bias 16 and/or mass 18). In some variations, a sensor 14 is connected to a driver associated with force transducer 20, and senses the load or driving force applied to the subassembly. Sensors 14 may include electrical sensors, electromagnetic sensors, optical sensors, induction sensors, photosensors, or the like (classes

IPR2024-00697, Ex. 1001, claims 1,3, POR 17–18

IPR2024-00698, Ex. 1001, claims 1,3, POR 16–17

Failure to Satisfy Claim 3 (both IPRs)



Prof. Keith Goossen
Patent Owner's Expert

110. The petition also fails to explain why a POSITA would have been motivated to add a separate accelerometer for adjusting frequency, in addition to the sensors already being used for the feedback control in the mapping of claim 1. While Cosper speaks generically of “one or more sensors,”⁸⁰ it never mentions an accelerometer, let alone an accelerometer in combination with other sensors measuring position and velocity. The petition and Dr. Hannaford fail to explain why a POSITA would be motivated to use this particular combination of sensors, in a way that would satisfy claim 3, either to achieve the oscillation near resonance desired in Cosper or for any other reason. For these reasons, each petition fails to show that a combination satisfying limitation [3.1] would have been obvious.

IPR2024-00697, POR 18–19, Ex. 2009, ¶ 110

IPR2024-00698, POR 17–18, Ex. 2009, ¶ 110

Failure to Satisfy Claim 3 (both IPRs)

Apple's own evidence:

*The New Penguin Dictionary of
Civil Engineering*

David Blockley



PENGUIN BOOKS

accelerometer A sensor for measuring acceleration used e.g. to measure the response of the ground or a structure to an earthquake. They are typically silicon

IPR2024-00697, Ex. 1051, 1, 3, Sur-Reply 12

IPR2024-00698, Ex. 1051, 1, 3, Sur-Reply 10

Failure to Satisfy Claim 3 (both IPRs)

Apple's own evidence:

 **Collins** • DICTIONARY

Electronics

DEFINITIONS FOR THE DIGITAL AGE

accelerometer a device that senses or measures the ACCELERATION applied to it, usually with an electrical output.

IPR2024-00697, Ex. 1052, 1, 3, Sur-Reply 13

IPR2024-00698, Ex. 1052, 1, 3, Sur-Reply 10–11

Failure to Satisfy Claim 3 (both IPRs)



Prof. Blake Hannaford
Petitioner's Expert

Q: Now, if I wanted to measure an acceleration of an object, are there ways that I can measure the acceleration of that object without using a sensor that is, itself, experiencing that same acceleration?

...

A: So, for example, is it possible to measure the acceleration of an object by bouncing a beam of light off of it? And that sensor would not be located on the object itself. . . .

IPR2024-00697, Ex. 2020, 22:10–23:15, Sur-Reply 14

IPR2024-00698, Ex. 2020, 22:10–23:15, Sur-Reply 12

Failure to Satisfy Claim 3 (both IPRs)



Prof. Blake Hannaford
Petitioner's Expert

Q: And so using the phenomenon of Doppler shift, you could measure how the wavelength of light reflected off the object differed from the wavelength of light that was -- before it reflected off the object, and based on that difference, you could figure out the relative velocity of the object; correct?

...

And if you imagined that you measured the change in that wavelength shift as a function of time, would that tell you how the object was accelerating?

A: Again, without taking the time to form a formal opinion, the change in velocity can give you the acceleration if you -- if -- in conjunction with the time interval over which that change occurs.

IPR2024-00697, Ex. 2020, 23:23–24:18, Sur-Reply 14

IPR2024-00698, Ex. 2020, 23:23–24:18, Sur-Reply 12

Failure to Satisfy Claim 3 (both IPRs)



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Harmonic Inc. v. Avid Tech., Inc., 815 F.3d 1356, 1363 (Fed. Cir. 2016)

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IPR2024-00697, Sur-Reply 14–15; IPR2024-00698, Sur-Reply 12–13

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resonant Systems, IPR2024-00697, Ex. 2022
Apple v. Resonant Systems, IPR2024-00698 SLIDE 46