

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SONY INTERACTIVE ENTERTAINMENT INC. and
SONY GROUP CORPORATION,
Petitioners,

v.

RESONANT SYSTEMS, INC.,
Patent Owner.

Case No. IPR2024-00569
U.S. Patent No. 8,860,337

PATENT OWNER'S PRELIMINARY RESPONSE

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Case No. IPR2024-00569

U.S. Patent No. 8,860,337

PATENT OWNER'S EXHIBIT LIST

<i>Exhibit No</i>	<i>Description</i>
2001	Statutory disclaimer of claims 1, 4, and 5 of U.S. Patent No. 8,860,337
2002	P.R. 4-5 Joint Claim Construction Chart (<i>Resonant Systems, Inc. v. Sony Group Corp.</i> , Case No. 2:22-cv-00424-JRG-RSP, Dkt. 69)
2003	Plaintiff Resonant Systems, Inc.'s Opening Claim Construction Brief (<i>Resonant Systems, Inc. v. Sony Group Corp.</i> , Case No. 2:22-cv-00424-JRG-RSP, Dkt. 62)

I. INTRODUCTION

The Sony Petitioners based their Petition on an incorrect and legally deficient claim construction. Specifically, they correctly contend that the claim term “control component” is a means-plus-function term, governed by 35 U.S.C. § 112 ¶ 6. But they then incorrectly contend that this term can be satisfied by a generic “microprocessor,” without any requirement that the microprocessor be programmed with an algorithm disclosed in the specification of the patent. This is contrary to well-established Federal Circuit precedent.

Petitioners purport to adopt this erroneous construction from Patent Owner’s claim construction briefing in district court litigation against Samsung, asserting patents related to the ’337 patent by continuation. As explained below, Petitioners misrepresent what Patent Owner’s claim construction position is in that briefing. More importantly, both Patent Owner and Petitioners in their district court litigation—as well as Patent Owner and Samsung in their parallel district court litigation—agree that the proper construction of “control component” must require a microprocessor satisfying the limitation be programmed with an algorithm disclosed in the ’337 patent, including a step of “provid[ing] a corresponding output to the power supply.”

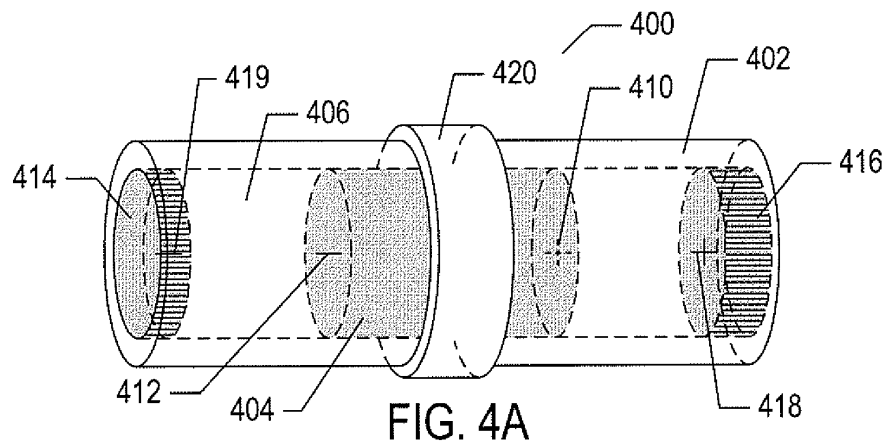
None of the prior art cited in the Petition contains or suggests a power supply that would accept such an output or that could receive such an output

as part of the “control component” performing its claimed function. To the extent that Petitioners wished to argue that their cited art could be modified to satisfy this term, under any correct construction, they were obligated to present that modification and argue for why one skilled in the art would have been motivated to make it, in their Petition. They failed to do so, and as a result their Petition must fail.

II. BACKGROUND

A. Background to the '337 Patent

Many electronic devices such as mobile phones and game controllers make use of components that produce vibrational forces. The '337 patent teaches and claims improved vibration modules with features suitable for such applications:



(Ex. 1001 at 6.) Compared to prior art solutions, the inventions of the '337 patent offer greater durability, greater efficiency, an ability to generate useful

vibrations over a range of frequencies, and more desirable patterns of vibration.

B. Related Litigation, Statutory Disclaimer, and PTAB Proceedings

The '337 patent and related patents are asserted in litigation against Sony and in parallel litigation against Samsung and Apple.

On January 23, 2024, before the present petition was filed, Patent Owner filed a statutory disclaimer disclaiming claims 1, 4, and 5 of the '337 patent. (Ex. 2001.) With this disclaimer, Ground 1 of the Petition is moot, as is the portion of Ground 4 relating to claim 4. However, as discussed below, these grounds also fail on the merits and would not be a basis for institution in any event.

The '337 patent is related by continuation to U.S. Patent Nos. 9,369,081 and 9,941,830. The Petitioners have filed IPR2024-00568 and IPR2024-00570 challenging these two patents. These IPR petitions raise invalidity grounds similar to those raised in the present Petition. Patent Owner's preliminary responses to those petitions make arguments similar to arguments in the present preliminary response.

The Board has instituted IPRs filed by Samsung challenging the 9,369,081 patent and the 9,941,830 patent, IPR2023-00992 and IPR2023-00993. Patent Owner has filed its patent owner responses in those two IPRs.

Samsung's IPRs present different grounds with different prior art, but there are claim construction issues that are common to Sony's and Samsung's IPRs, including the proper construction of the "control component" terms discussed below.

Apple has filed a number of IPR petitions challenging the '337 patent or related patents. IPR2024-00697; IPR2024-00698; IPR2024-00806; IPR2024-00807; IPR2024-00808; IPR2024-00983. These cases are at an early stage, and Patent Owner's preliminary responses are not yet due.

III. LEVEL OF ORDINARY SKILL IN THE ART

Patent Owner believes that a POSITA at the time of the invention would have had (1) a bachelor's degree in electrical engineering, mechanical engineering, or a comparable field of study, and (2) at least two years of professional experience with electro-mechanical control systems, or other similarly relevant industry experience. Additional relevant industry experience may compensate for lack of formal education or vice versa.

Petitioners offer a similar level of ordinary skill in the art. Patent Owner does not believe that any of the arguments herein would change if the Board were to adopt Petitioners' definition for the level of ordinary skill rather than Patent Owner's.

IV. LEGAL STANDARDS

The petitioner has the burden to clearly set forth the basis for its challenges in the petition. *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312 (a)(3) as “requiring IPR petitions to identify ‘with particularity ... the evidence that supports the grounds for the challenge to each claim’”). A petitioner may not rely on the Board to substitute its own reasoning to remedy the deficiencies in a petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018) (“Congress chose to structure a process in which it’s the petitioner, not the Director, who gets to define the contours of the proceeding.”); *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016) (rejecting the Board’s reliance on obviousness arguments that “could have been included” in the petition but were not, and holding that the Board may not “raise, address, and decide unpatentability theories never presented by the petitioner and not supported by the record evidence”); *Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1367 (Fed. Cir. 2015) (holding that “a challenge can fail even if different evidence and arguments might have led to success”); *Wasica Finance GMBH v. Continental Auto. Systems*, 853 F.3d 1272, 1286 (Fed. Cir. 2017) (holding that new arguments in a reply brief are “foreclosed by statute, our precedent, and Board guidelines”).

The Board “may reject even uncontroverted expert testimony when it is intrinsically unpersuasive.” *Granite Constr. Co. v. United States*, 962 F.2d 998, 1006 (Fed. Cir. 1992). The petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *Magnum*, 829 F.3d at 1380.

An obviousness determination requires finding that a POSITA would have been motivated to modify or combine teachings in the prior art. *In re Stepan Co.*, 868 F.3d 1342, 1345–46 (Fed. Cir. 2017). Obviousness concerns “whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention.” *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015). The “mere fact that these possible arrangements existed in the prior art” does not provide a motivation to substitute the arrangement in one prior art embodiment with the arrangement in another.” *Virtek Vision International ULC v. Assembly Guidance Systems, Inc.*, 2024 WL 1292734, at *3 (Fed. Cir. Mar. 27, 2024). Because a motivation to modify or combine is part of the *prima facie* case for obviousness that must be set forth in the petition, a petitioner should not be permitted to present “an entirely new rationale to explain why one of skill in the art would have been motivated to combine” in its reply.

Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd., 821 F.3d 1359, 1370 (Fed. Cir. 2016).

“An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.” 35 U.S.C. § 112 ¶ 6. Even where a claim does not utilize the word “means,” § 112 ¶ 6 will apply if “the claim term fails to recite sufficiently definite structure or else recites function without reciting sufficient structure for performing that function.” *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015).

V. CLAIM CONSTRUCTION

Petitioners contend that several phrases involving the terms “driving component” and “control component” are means-plus-function limitations subject to 35 U.S.C. section 112, paragraph 6, under *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2014). (Paper 1 at 8–9.) Patent Owner agrees that the “driving component...” and “control component...” terms are subject to § 112 ¶ 6.

Patent Owner does not believe that the phrase involving a “driving component” needs to be construed in order to decide whether to institute this IPR.

However, as discussed further below, a proper construction of the “control component” terms should lead the Board to deny institution.

A. “control component...”

For the “control component...” term of Claim 1, Petitioners identify the corresponding structure as “oscillator circuit; microcontroller with internal or external memory; processor; CPU; microprocessor; and equivalents thereof.” (Paper 1 at 9.) They purport to base this construction on Patent Owner’s opening claim construction brief in its lawsuit asserting the ’081 and ’830 patents (both related by continuation to the ’337 patent) against Samsung. (Paper 1 at 9, citing Ex. 1004.)

Petitioner’s IPR construction misstates Patent Owner’s claim construction position from the Samsung litigation, and invites a legally erroneous outcome. Patent Owner’s opening claim construction brief sets forth the parties’ positions in the following table, with Patent Owner’s proposed construction on the left:

- H. “control component that controls supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by [user input received from the user-input features / one or more stored values]” (’081 and ’830 patents, claim 1)

RevelHMI’s Proposal	Samsung’s Proposal
Subject to 35 U.S.C. § 112 ¶ 6.	Subject to 35 U.S.C. 112 ¶ 6.
Function: controlling supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude	Function: controlling supply of power from the power supply to the driving component to cause the moveable component to

RevelHMI’s Proposal	Samsung’s Proposal
specified by [user input received from the user-input features / one or more stored values]	oscillate at a frequency and an amplitude specified by [user input received from the user-input features / one or more stored values]
Structures: oscillator circuit; microcontroller with internal or external memory; processor; CPU; microprocessor; and equivalents thereof	Structures: Processor
[if an algorithm is required] Where the corresponding structure is a processor, CPU, or microprocessor, the processor/CPU/microprocessor is programmed with an algorithm comprising the following steps: (a) set the mode and strength to [default values or] values representing selections made by user input to the user input features; and (b) provide a corresponding output to the power supply so that the power supply provides a corresponding output to the driving component	programmed with an algorithm to perform the following steps: (1) set the mode and strength to [default values or] values represented by selections made by user input to the user input features, (2) provide a corresponding output to the power supply, and (3) provide a corresponding output to the driving component. ’081 Patent at 7:10-24, 8:10-20, Figs. 7A, 7C. ’081 Patent at 7:10-24, 8:10-20, Figs. 7A, 7C; ’830 Patent at 7:20-34, 8:20-30, Figs. 7A, 7C
See, e.g., ’081 patent at 7:10-24, 8:10-20, Figs. 7A, 7C; ’830 patent at 7:20-34, 8:20-30, Figs. 7A, 7C	
In the alternative, if the Court finds that a three-step algorithm is necessary, then RevelHMI proposes that the following three-step algorithm (which Samsung proposed in its IPR petitions) be adopted by the Court: (1) set the mode and strength to [default values or] values represented by selections made by user input to the user input features, (2) provide a corresponding output to the power supply, and (3) provide a corresponding output to an H-bridge switch.	

(Ex. 1004 at 14–15.)

As this table makes clear, both Patent Owner and Samsung proposed constructions that include an algorithm as part of the corresponding structure. Samsung proposed a single corresponding structure of a “processor” programmed with a three-step algorithm. Patent Owner proposed that there were several alternative structures disclosed in the ’081 and ’830 patents: “oscillator circuit; microcontroller with internal or external memory; processor; CPU; microprocessor.” For the structures where an algorithm was required, Patent Owner proposed a two-step algorithm and, as an alternative, a three-step algorithm. (Ex. 1004 at 15.)

While the bracketed text in the table excerpted above reads “if an algorithm is required,” the text that immediately follows make clear that applies “[w]here the corresponding structure is a processor, CPU, or microprocessor.” (Ex. 1004 at 15.) The body of Patent Owner’s brief further explains this. Specifically, the brief explains that no specific algorithm is required when the corresponding structure is the “oscillator circuit” or the “microcontroller.” (Ex. 1004 at 18.) In contrast, for the “processor,” “CPU,” and “microprocessor” structures, Patent Owner agreed with Samsung that an algorithm disclosed in the ’081 and ’830 patent specifications (and thus in ’337 patent specification) was required as part of the corresponding structure. Ex. 1004 at 19 (“With respect to the disclosed ‘processor,’ ‘microprocessor,’ and ‘CPU’

corresponding structures, the parties disagree as to what steps the algorithm must include in order to perform the claimed function.”) Patent Owner’s position was further illustrated in the left-hand column of the following table:

RevelHMI’s Algorithm Steps	Samsung’s Algorithm Steps
Processor/CPU/microprocessor programmed to: (a) set the mode and strength to [default values or] values representing selections made by user input to the user input features; and (b) provide a corresponding output to the power supply so that the power supply provides a corresponding output to the driving component	Processor programmed to: (1) set the mode and strength to [default values or] values represented by selections made by user input to the user input features, (2) provide a corresponding output to the power supply, and (3) provide a corresponding output to the driving component.

(Ex. 1004 at 20.)

As this table makes clear, both Patent Owner and Samsung agreed that at least so long as the structure of the “control component” is a processor or microprocessor, it must be programmed with an algorithm including at least the step “provide a corresponding output to the power supply” (Ex. 1004 at 20.)

In the time since the Petition in this IPR was filed, Patent Owner and Petitioners have submitted claim construction briefing in the district court litigation where Patent Owner has asserted the ’337 patent against Sony. Pursuant to the court’s local patent rules, the parties submitted a joint claim

construction chart following that briefing which set forth the parties' respective claim construction positions. (Ex. 2002.) Their respective positions for the "control component" terms are as follow:

Asserted claim of the '337 Patent	Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction	Court's Construction
2. A linear vibration module comprising: a housing; a moveable component ¹ ; a power supply; user-input features; a driving component that drives the moveable component in each of two opposite directions within the housing; and a control component that controls supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by	Preamble. '337 Patent, Claim 2	The preamble is not limiting.	The preamble is limiting.	
	"a driving component that drives the moveable component in each of two opposite directions within the housing" '337 Patent, claim 2	AGREED	AGREED	Subject to 35 U.S.C. § 112 ¶ 6. <u>Function:</u> driving the moveable component in each of two opposite directions within the housing <u>Structures:</u> one or more coils or electromagnets; and equivalents thereof
	"vibration module" '337 Patent, claim 2	No construction necessary; plain and ordinary meaning	"vibrating device"	
	"a control component that controls supply of	Subject to 35 U.S.C. § 112 ¶ 6	Subject to 35 U.S.C. § 112 ¶ 6	

Asserted claim of the '337 Patent	Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction	Court's Construction
user input received from the user-input features, wherein the control component drives simultaneous oscillation of the moveable component at two or more frequencies to generate complex vibration modes.	power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by user input received from the user-input features" '337 Patent, claim 2	Function: "controlling supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by user input received from user-input features" Structures: oscillator circuit; microcontroller with internal or external memory; processor; CPU; microprocessor; and equivalents thereof [if an algorithm is required] Where the corresponding structure is a processor, CPU, or microprocessor, the processor / CPU / microprocessor is programmed with an algorithm comprising the following steps: (a)	Function: "controlling supply of power from the power supply to the driving component to cause the moveable component to oscillate at a frequency and an amplitude specified by user input received from user-input features" Structures: an oscillator circuit, a microcontroller with internal or external memory, a processor, a CPU, or a microprocessor contained within the vibrating device where the microcontroller, processor, CPU, or microprocessor are programmed with an algorithm comprising the following steps: (a) set the mode and strength to values representing selections	

Asserted claim of the '337 Patent	Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction	Court's Construction
		set the mode and strength to [default values or] values representing selections made by user input to the user input features; and (b) provide a corresponding output to the power supply so that the power supply provides a corresponding output to the driving component	made by user input to the user input features; and (b) provide a corresponding output to the power supply so that the power supply provides a corresponding output to the driving component and equivalents thereof	

(Ex. 2002 at 3–5.)

As this table shows, the disputes between Patent Owner and Sony are narrower than those between Patent Owner and Samsung. Patent Owner and

Sony agree that the corresponding structures include “oscillator circuit; microcontroller with internal or external memory; processor; CPU; microprocessor.” (Ex. 2002 at 4–5.) They agree that a processor, CPU, or microprocessor requires a corresponding algorithm, and they agree that an oscillator circuit does not require an algorithm. (*Id.*) A principal dispute between Patent Owner and Sony is whether the “microcontroller” structure requires an algorithm. (*Id.*) Patent Owner’s opening claim construction brief in the Sony case explained the situation as follows:

The first dispute is whether a microcontroller-based embodiment of the claimed invention requires an algorithm to perform the claimed function. It does not. Sony acknowledges that the specification discloses a microcontroller as corresponding structure but wrongly asserts that it should be treated just like the disclosed processor, CPU, and microprocessor, for purposes of 35 U.S.C. § 112 ¶ 6.

(Ex. 2003 at 7.)

In other words, both Patent Owner and Sony agree that where the corresponding structure is a processor or microprocessor, it must be programmed with an algorithm disclosed in the specification (or its equivalents). They fur-

ther agree that one of the steps required in that algorithm is to “provide a corresponding output to the power supply so that the power supply provides a corresponding output to the driving component.” (Ex. 2002 at 4–5.)

As this discussion has shown, all of the parties in the district court claim construction briefing cited by Petitioners and in the district court claim construction briefing between the Petitioners and Patent Owner (i.e., Patent Owner, Sony, and Samsung) agree that where the claimed “control component” is a processor or microprocessor, it must be programmed with an algorithm that includes the step to “provide a corresponding output to the power supply.”

The Board should likewise require that a microprocessor that satisfies the “control component” limitation be programmed with an algorithm that includes the set of providing a corresponding output to the power supply. Most importantly, the microprocessor structure must be construed to include a disclosed algorithm. *WMS Gaming, Inc. v. International Game Technology*, 184 F.3d 1339, 1349 (Fed. Cir. 1999) (“In a means-plus-function claim in which the disclosed structure is a computer, or microprocessor, programmed to carry out an algorithm, the disclosed structure is not the general purpose computer, but rather the special purpose computer programmed to perform the disclosed

algorithm.”) The construction applied in the Petition, permitting a generic processor without any requirement as to an algorithm, must be rejected. (Paper 1 at 9.)

Both Petitioners and Patent Owner base their algorithms for the “control component” in the district court litigation on the following text from the ’337 patent specification:

FIG. 7C provides a control-flow diagram for the routine “control,” called in step **716** in FIG. 7A. This routine is invoked when a change in the user controls has occurred. In step **760**, the variables mode and strength are set to the currently selected mode and vibrational strength, represented by the current states of control features in the user interface. Next, in step **762**, the routine “control” computes an output value *p* corresponding to the currently selected strength, stored in the variable strength, and outputs the value *p* to the power supply so that the power supply outputs an appropriate current to the coil.

Ex. 1001 at 8:10–20. This text relates to the following figure:

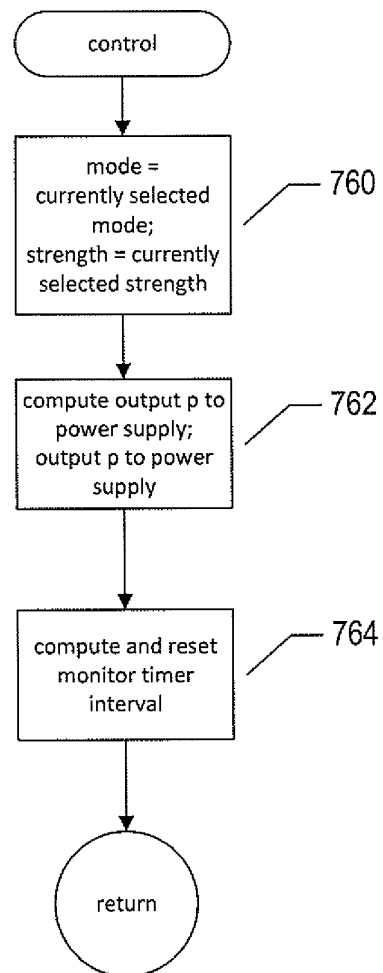


FIG. 7C

Ex. 1001, Fig. 7C. A proper construction of the “control component” limitations should require that a processor or microprocessor satisfying the limitations include steps corresponding to steps 760 and 762, including in particular a step to “provide a corresponding output to the power supply.”

VI. OBVIOUSNESS

A. Ground 1: Houston and Goldenberg (claim 4)

The Petition fails to show that the combination of Houston and Goldenberg discloses or renders obvious the claimed “power supply” and “control component” to satisfy limitations 4[c] and 4[f], under a proper construction of the term “control component.”

As discussed above, the term “control component” in claim 4 of the ’337 patent is properly construed as a means-plus-function term governed by 35 U.S.C. § 112 ¶ 6. Both Petitioners and Patent Owner agree on this point.

For the corresponding structures involving a processor, CPU, or microprocessor, both Petitioners and Patent Owner agree in their district court briefing that these structures must include an algorithm and that this algorithm must include at least the step of “provide a corresponding output to the power supply so that the power supply provides a corresponding output to the driving component.” (Ex. 2002 at 4–5.) In other words, the “power supply” of limitation 4[c] in each patent must be capable of being provided an output, and the

“control component” of limitation 4[f] must be capable of providing such an output to the power supply.

The Petition identifies a microprocessor in Houston as satisfying the “control component” limitation. (Paper 1 at 34 (“Thus, Houston teaches that vibration controller 623 is a microprocessor thereby satisfying the structural requirement of this means-plus-function limitation.”).) The Petition does not point to any structure other than a microprocessor in Goldenberg to satisfy the “control component” limitation. (Paper 1 at 41–43.) Accordingly, under a correct construction of “control component,” this prior art would need to have this microprocessor perform the algorithmic step of “provid[ing] a corresponding output to the power supply.” The Petition fails to show that this is disclosed or rendered obvious by the combination of Houston and Goldenberg.

As the Petition notes, Goldenberg mentions a “power supply.” (Paper 1 at 29, citing Ex. 1006 at [0034].) But nothing about this mention of a “power supply” inherently suggests that the power supply is capable of being provided an output from a processor. This is illustrated by the declaration of Petitioners’ expert Dr. Welch. He points to the *N64 Rumble Pak Manual* as “describing power supply including ‘two AAA batteries.’” (Ex. 1003, ¶ 160.) The Rumble

Pak Manual does not expressly mention a “power supply,” but Dr. Welch appears to be referring to the following description:

N64 RUMBLE PAK OPERATION

After completing the setup for the N64 Control Deck, Controller and Game Pak as shown in the N64 Instruction Booklet, continue with the following instructions:

1. Remove the battery cover on the back of the Rumble Pak and insert two AAA batteries as shown in Illustration 1. Make sure to use only fresh alkaline batteries. **Do not use nickel-cadmium batteries (rechargeable type).**

Caution: When inserting the batteries, make sure that the positive (+) and negative (-) ends are facing in the correct directions (see illustration 1).

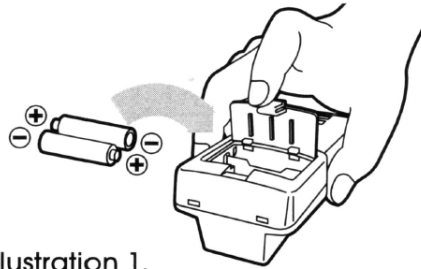


Illustration 1.

When the power is low, the vibrations from the Rumble Pak will become weak. When this happens, replace the batteries with two fresh ones immediately. Leaving used batteries in the Rumble Pak may result in damage to the unit.

(Ex. 1031 at 2.)

While Dr. Welch refers to the Rumble Pak power supply as “including” two AAA batteries, there is no disclosure of anything beyond the AAA batteries themselves that forms part of the “power supply.” As show in Illustration 1 of the Rumble Pak manual, each AAA-size battery has two terminals, + and –, through which it supplies voltage and current. It has no input to receive an output from a processor.

Likewise, nothing in Goldenberg itself suggests that its power supply has an input to receive an output from a processor. The Petition cites the following statement from Goldenberg:

Power supply **120** can optionally be included in or coupled to device **104**, and can be coupled to actuator interface **124** and/or actuators **120** and **122** to provide electrical power to the actuators.

(Ex. 1006, ¶ [0034], quoted by Paper 1 at 29.)

This description in Goldenberg is itself unclear, as for example the same number 120 is used to refer to both the “power supply” and one of the “actuators.” The figures in Goldenberg shed little further light on the question. Figure 4 contains a “Small ERM [eccentric rotating mass] Motor”—apparently one of the “actuators”—labeled with number 120:

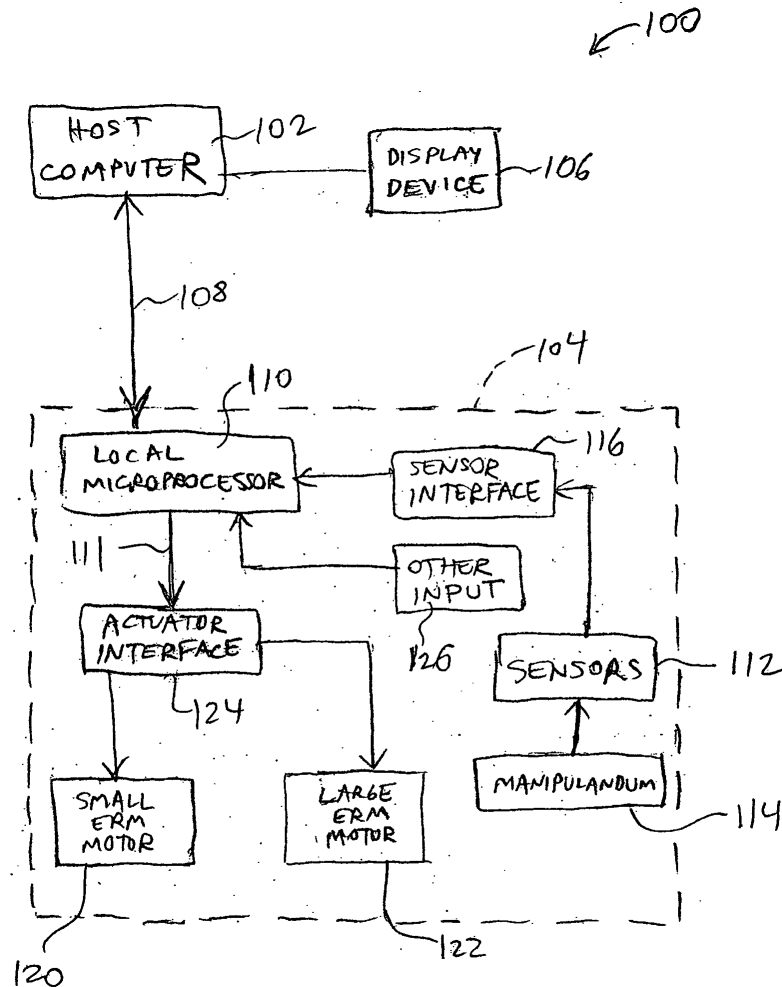


FIG. 4

(Ex. 1006, Fig. 4.) The figure does not appear to depict a power supply, and it does not provide any indication of an output being provided from a processor to a power supply.

Turning to Houston itself, we find even less information about the power supply and less indication that it receives an output from the microprocessor. The Petition and supporting declaration simply assert that “[a] POSITA would

reasonably read Houston to understand that the haptic interface 624 implicitly includes a power supply to ‘provide the necessary power to actuators[.]’” (Paper 1 at 28; Ex. 1003, ¶ 157.) Petitioners do not state where in the haptic interface they believe the power supply would be located or how it would be connected to other components. They certainly do not cite to evidence that it has any sort of input or receives any output from the control component.

In other words, Petitioners have failed to show that the prior art teaches—or that a POSITA would have modified the prior art to contain—a power supply that satisfies the requirements of limitations 4[c] and 4[f], under any proper construction of “control component.”

B. Ground 2: Houston, Goldenberg, and Tierling (claim 2)

For claim 2 under Ground 2, the Petition simply refers back to the Ground 1 discussions of limitations 4[c] and 4[f] for its analysis of the prior art and how that art allegedly renders corresponding limitations 2[c] and 2[f] obvious. It does not point to any disclosures in the additional Tierling reference as allegedly satisfying the “power supply” limitation. Nothing in the Petition suggests that the mapping for the “power supply” and for the “control component” step of “provid[ing] a corresponding output to the power supply . . .” would be different for this claim 2 under Ground 2 than for claim 4 under Ground 1. (Paper 1 at 44–47.)

C. Ground 3: Houston, Goldenberg, Tierling, and Fukumoto (claim 3)

Claim 3 depends from claim 2 and thus requires elements 2[c] and 2[f] be satisfied. For Ground 3, the Petition relies entirely on the discussion of Ground 2, claim 2, to show elements 2[c] and 2[f] are met and does not point to any disclosures in the additional Fukumoto reference as allegedly satisfying the “power supply” limitation. Nothing in the Petition suggests that the mapping for the “power supply” and “control component” would be different for these claims and grounds than for claim 4 under Ground 1. (Paper 1 at 47–52.)

D. Ground 4: Fukumoto and Barton (claims 2 and 4)

The Petition fails to show that the combination of Fukumoto and Barton discloses or renders obvious the claimed “power supply” and “control component” to satisfy limitations 2[c] and 2[f] or limitations 4[c] and 4[f], under a proper construction of the term “control component.”

As discussed above, the term “control component” in claims 2 and 4 of the ’337 patent is properly construed as a means-plus-function term governed by 35 U.S.C. § 112 ¶ 6. Both Petitioners and Patent Owner agree on this point.

For the corresponding structures involving a processor, CPU, or micro-processor, both Petitioners and Patent Owner agree in their district court briefing that these structures must include an algorithm and that this algorithm

must include at least the step of “provide a corresponding output to the power supply so that the power supply provides a corresponding output to the driving component.” (Ex. 2002 at 4–5.) In other words, the “power supply” of limitation 2[c] and 4[c] in each patent must be capable of being provided an output, and the “control component” of corresponding limitations 2[f] and 4[f] must be capable of providing such an output to the power supply.

For claim 2, the Petition identifies the “CPU” 113 of Fukumoto as the “control component.” (Paper 1 at 60–61 (“Thus, Fukumoto’s CPU 113 satisfies the structural requirement of this means-plus-function limitation”).) The Petition does not point to any structure in Barton as satisfying the “control component,” instead suggesting that “Barton’s vibration application” could be utilized with “Fukumoto’s CPU 113.” (Paper 1 at 68–69.) Accordingly, under a correct construction of “control component,” this prior art would need to have this microprocessor perform the algorithmic step of “provid[ing] a corresponding output to the power supply.” The Petition fails to show that this is disclosed or rendered obvious by the combination of Fukumoto and Barton.

As the Petition notes, Barton mentions “a power supply 116, which may be implemented as one or more batteries” and “might further include an external power source, such as an AC adaptor or a powered docking cradle that supplements or recharges the batteries.” (Paper 1 at 56–57, citing Ex. 1007 at

[0023].) But nothing about this discussion of a “power supply” inherently suggests that the power supply is capable of being provided an output from a processor. This is illustrated by the declaration of Petitioners’ expert Dr. Welch. He points to the *N64 Rumble Pak Manual* as “describing power supply including ‘two AAA batteries.’” (Ex. 1003, ¶ 160.) As show in Illustration 1 of the Rumble Pak manual and as discussed above in connection with Ground 2, each AAA-size battery has two terminals, + and –, through which it supplies voltage and current. It has no input to receive an output from a processor. (Ex. 1031 at 2.)

To the extent that the Petition discusses a connection between the CPU or processor and the power supply in the combination of Fukumoto with Barton, the connection is to allow the power supply to power the CPU, not for the power supply to receive anything from the CPU:

Based on the teachings of Barton, it would have been obvious to a POSITA to include a power supply in Fukumoto’s PDA to provide power to the PDA’s hardware components. *Declaration*, ¶225. A POSITA would have understood that Fukumoto’s PDA would have required a power supply to be powered on and function as described because the PDA’s hardware components, including the CPU and actuator, would have required electrical power to operate. *Id.*

(Paper 1 at 57.)

Turning to Fukumoto itself, we find even less information about the power supply and less indication that it receives an output from the CPU. The Petition simply asserts that a power supply is implicit in Fukumoto’s reference to “main power” and to “power consumption.” Petitioners cite to no evidence that this implicit power supply has any sort of input or receives any output from the control component. (Paper 1 at 55–56, 60–64.)

In other words, Petitioners have failed to show that the combination of Fukumoto and Barton teaches—or that a POSITA would have modified the prior art to contain—a power supply that satisfies the requirements of limitations 2[c] and 2[f], under any proper construction of “control component.”

For claim 4 under Ground 4, the Petition simply refers back to the claim 2 discussions of limitations 2[c] and 2[f] for its analysis of the prior art and how that art allegedly renders corresponding limitations 4[c] and 4[f] obvious. Thus, Petitioners have likewise failed to show that the combination of Fukumoto and Barton renders claim 4 obvious.

E. Ground 5: Fukumoto, Barton, Tierling, and Grant (claim 3)

Claim 3 depends from claim 2 and thus requires elements 2[c] and 2[f] be satisfied. For Ground 5, the Petition relies entirely on the discussion of Ground 4, claim 2, to show elements 2[c] and 2[f] are met and does not point to any disclosures in the additional Tierling and Grant references as allegedly

satisfying the “power supply” limitation. Nothing in the Petition suggests that the mapping for the “power supply” and “control component” would be different for these claims and grounds than for claim 2 under Ground 4. (Paper 1 at 72–76.)

Thus, the Petition fails to show that claims 2, 3, and 4 are obvious over the combinations in these grounds and fails to show that any of the challenged claims is unpatentable.

VII. CONCLUSION

For the reasons set forth above, the Petition fails to show that Petitioners would have a reasonable likelihood of prevailing on any of the challenged claims, and Resonant Systems respectfully requests that the Board deny institution of the Petition.

Case No. IPR2024-00569
U.S. Patent No. 8,860,337

Dated: June 21, 2024

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CERTIFICATE OF WORD COUNT

I certify that there are 4,513 words in this paper, excluding the portions exempted under 37 C.F.R. § 42.24(a)(1), according to the word count tool in Microsoft Word.

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Case No. IPR2024-00569
U.S. Patent No. 8,860,337

CERTIFICATE OF SERVICE

I hereby certify that “Patent Owner’s Preliminary Response” was served on

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