UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

RESONANT SYSTEMS, INC., d/b/a RevelHMI, Plaintiff, v. SAMSUNG ELECTRONICS CO., LTD., SAMSUNG ELECTRONICS AMERICA, INC., Defendants.	Case No. 2:22-cv-00423 **JURY TRIAL DEMANDED**

DEFENDANTS' INVALIDITY CONTENTIONS

Pursuant to the Local Patent Rules and the Court's Scheduling Order, Defendants Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively, "Defendants") respectfully submit these Invalidity Contentions with respect to the Asserted Claims of U.S. Patent Nos. 9,369,081 (the "'081 Patent") and 9,941,830 (the "'830 Patent") (collectively, the "Asserted Patents") identified by Plaintiff Resonant Systems, Inc., ("Resonant" or "Plaintiff") in its infringement Contentions.[1]

The currently Asserted Claims, as reflected in Plaintiff's Infringement Contentions, are:

- Claims 1-8 and 17 of the '081 Patent; and
- Claims 1-8 and 17 of the '830 Patent.

[1] Plaintiff served infringement contentions on March 5, 2023 and amended P.R. 3-1(c) charts on April 25, 2023. Plaintiff's infringement contentions as amended are referred to herein as the "Infringement Contentions."

As detailed further below, the Asserted Claims of the Asserted Patents are anticipated by, or obvious in view of, one more of the prior art references produced at SAMRES_00013881–SAMRES_00014035, SAMRES_00014707–SAMRES_00014808, SAMRES_00014824–SAMRES_00015884, SAMRES_00016264–SAMRES_00016885, SAMRES_00016901–SAMRES_00016919, BB000001 – BB010830, LEN-RESON-0000001 – LEN-RESON-0003739, ORAL-B_000001 – ORAL-B_000103, PANASONIC_NA_00000001 – PANASONIC_NA_00000207, PHILIPS_00000001 – PHILIPS_00000180, and SPB-USX-000001 – SPB-USX-000108. The '081 Patent is invalid pursuant to pre-AIA 35 U.S.C. §§ 102 and/or 103, as well as invalid under 35 U.S.C. §§ 101 and/or 112. The '830 patent is invalid under either pre-AIA or AIA 35 U.S.C. §§ 102 and/or 103, as well as invalid under 35 U.S.C. § 112.[2]

I. PRELIMINARY STATEMENT

These Invalidity Contentions are based on Defendants' current knowledge, understanding, and belief of the Asserted Patents and prior art, of Plaintiff's infringement theories (inasmuch as they can be inferred from its Infringement Contentions), and of the facts and other information available as of the date of these Invalidity Contentions. Defendants' investigation, discovery, and analysis of information related to this action is ongoing. Additional discovery, elucidation of Plaintiff's impermissibly vague Infringement Contentions, and/or orders of the Court may require Defendants to amend or supplement these Invalidity Contentions, and Defendants expressly reserve the right to do so as the case proceeds. These Invalidity Contentions represent Defendants' good-faith effort to provide a comprehensive identification of prior art relevant to this case, but

[2] The '830 Patent was examined under the AIA, but Plaintiff contends in its infringement contentions that both of the Asserted Patents are entitled to the same priority date, May 18, 2009.

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Defendants reserve the right to modify or supplement their prior art list and Invalidity Contentions at a later time with, or based upon, pertinent information that may be subsequently discovered.

A. No Waiver

Nothing in these Invalidity Contentions is intended, nor should be construed, as a waiver of any noninfringement position or argument under 35 U.S.C. §§ 101 and/or 112. Defendants' statements herein (including the accompanying claim charts) reflect Defendants' present understanding of the purported scope of the claims as alleged by Plaintiff in its Infringement Contentions (as best those contentions can be understood in light of their present deficiencies).

The patent claims have yet to be construed. As a result, Defendants have based these Invalidity Contentions upon their knowledge and understanding of the potential scope of the Asserted Claims at this time, and, in part, upon the apparent interpretations of the Asserted Claims advanced by Plaintiff in its Infringement Contentions. Defendants may disagree with Plaintiff's interpretation of the meaning of many terms and phrases in the Asserted Claims. Defendants have provided these Invalidity Contentions based in part on their present understanding of Plaintiff's apparent constructions and interpretations of the Asserted Claims. These Invalidity Contentions do not represent Defendants' agreement or view as to the proper interpretation of any claim term contained therein. Any similarity between any apparent claim interpretation in any of Defendants' charts of prior art reference(s) and Plaintiff's Infringement Contentions is not an admission or agreement with Plaintiff about the meaning of any claim term, but rather a reflection of the fact that the subject matter Plaintiff believes is claimed is present in the prior art, or that the claims are otherwise invalid. These Invalidity Contentions are made in the alternative, and should not be interpreted to rely upon, or in any way affect, the non-infringement arguments Defendants may assert in this case. Defendants reserve the right to amend, supplement, or materially modify their Invalidity Contentions as the case proceeds. Defendants also reserve the right to amend,

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supplement, or materially modify their Invalidity Contentions based on any infringement and/or additional claim construction positions that Plaintiff may take in this case.

Defendants also reserve the right to amend, supplement, or materially modify their Invalidity Contentions in response to any claim construction or interpretation positions that Plaintiff may take. Defendants also reserve the right to assert that a claim is indefinite, not enabled, fails to claim what the applicants' regarded as their invention, or fails to meet the written description requirement of 35 U.S.C. § 112 based on any claim construction or interpretation position Plaintiff may take in this case or based on any claim construction the Court may further adopt in this case.

B. No Admission

Nothing disclosed herein is an admission or acknowledgement that any product accused of infringement by Plaintiff in its Infringement Contentions (the "Accused Products"), or any of Defendants' other products or services, infringes any of the Asserted Claims.

Defendants further note that Plaintiff appears to rely upon overly broad interpretations of the Asserted Claims. At the same time, Plaintiff's Infringement Contentions are in most places too general and vague to discern Plaintiff's infringement theories and how exactly Plaintiff contends each Accused Product meets or practices each element of the Asserted Claims. For example, as explained in Defendants' April 5, 2023, letter, Plaintiff's Infringement Contentions served on March 4, 2023 failed to clearly identify the aspects or features of the Accused Products that Plaintiff contends meet the elements of the Asserted Claims. Plaintiff's amended P.R. 3-1(c) charts served on April 25, 2023 continue to fail to clearly identify the aspects or features of the Accused Products that Plaintiff contends meet the elements of the Asserted Claims. As a result, Defendants have been prejudiced in their ability to prepare these Invalidity Contentions. In addition, Plaintiff's Infringement Contentions, in many cases, continue to fail to put Defendants on notice of Plaintiff's

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interpretation of the Asserted Claims, further prejudicing Defendants' ability to identify relevant prior art. To the extent that Plaintiff is later permitted by the Court to amend its Infringement Contentions to cure the deficiencies of its current contentions or to pursue any currently undisclosed doctrine of equivalents theories, Defendants expressly reserve the right to supplement or amend these Invalidity Contentions to account for such amendments.

To the extent that any of the prior art references disclose the same functionality or feature of any of the Accused Products, Defendants reserve the right to argue that said feature or functionality does not practice any element of any of the Asserted Claims, and to argue, in the alternative, that if said feature or functionality is found to practice any element of any of the Asserted Claims, then the prior art reference demonstrates that the element is not novel, is obvious, and/or is otherwise not patentable.

Attached hereto are representative claim charts that identify where the elements of the Asserted Claims of the Asserted Patents may be found in the prior art and further identifying why those elements are not novel or non-obvious. The references cited in the attached claim charts may disclose the limitations of the Asserted Claims expressly and/or inherently. The suggested obviousness combinations may be presented in conjunction with or in the alternative to Defendants' contentions regarding anticipation. These obviousness combinations should not be construed to suggest that any reference included in any combination is not anticipatory in its own right. Further, to the extent that Plaintiff contends that any of the references identified do not constitute prior art under 35 U.S.C. § 102, Defendants reserve the right to rely upon other prior art references in the same patent family with substantially identical disclosures as evidence of invalidity based on the same theories as those disclosed below.

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C. Reservation of Rights

Prior art not currently included in this disclosure may become relevant. Defendants are currently unaware of the extent, if any, to which Plaintiff will contend that limitations of the Asserted Claims are not disclosed in the prior art identified by Defendants. Defendants reserve the right to identify other references that would have made the addition of the allegedly missing limitation to the disclosed device or method obvious or show that the allegedly missing limitation would have been known or readily apparent to one of ordinary skill in the art at the time of the invention in light of the disclosure of the prior art at issue. Defendants further reserve the right to rely on any of the references produced at SAMRES_00013881 – SAMRES_00016919, BB000001 – BB010830, LEN-RESON-0000001 – LEN-RESON-0003739, ORAL-B_000001 – ORAL-B_000103, PANASONIC_NA_00000001 – PANASONIC_NA_00000207, PHILIPS_00000001 – PHILIPS_00000180, and SPB-USX-000001 – SPB-USX-000108 in order to demonstrate the state of art at the alleged times of invention and as evidence of the knowledge of one of ordinary skill in the art[3] in support of any motivations to modify or combine the charted prior art references with other references or knowledge.

Plaintiff may also be aware of additional prior art that is not known to Defendants. To the extent that Plaintiff produces additional prior art responsive to Defendants' discovery requests after these contentions are served, Defendants may supplement their Invalidity Contentions with prior art contained in such production once they have had a fair opportunity to review, analyze, and chart such prior art. Defendants reserve the right to amend their Invalidity Contentions with any additional potential prior art known by Plaintiff but not yet disclosed to Defendants.

[3] For purposes of these Invalidity Contentions, the term "general knowledge" includes the common knowledge and common sense of a POSITA as well as the general knowledge of POSITAs in the field.

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Defendants provide these Invalidity Contentions only for the claims that have been asserted by Plaintiff, but reserve the right to seek invalidation of all claims in each of the Asserted Patents.

D. Ongoing Investigation

Defendants' investigation is ongoing, and Defendants expressly reserve the right to amend their Invalidity Contentions and document production to account for evidence uncovered as their investigation continues. Such amendments include identifying and relying on additional references that may result from Defendants' further search and analysis. Defendants reserve the right to supplement these Invalidity Contentions in light of any additional prior art of which Plaintiff is aware and did not disclose to Defendants in discovery, or that might be subsequently disclosed by Plaintiff in response to Defendants' discovery requests. Defendants have issued subpoenas to third parties believed to have knowledge, documentation and/or corroborating evidence concerning some of the prior art listed herein and/or additional prior art. Defendants further anticipate issuing subpoenas to third parties believed to have knowledge, documentation and/or corroborating evidence concerning some of the prior art listed herein and/or additional prior art. These third parties include, but are not limited to, the authors, employers of authors, inventors, assignees, or former or current employees of assignees or previous assignees, of the references identified in these invalidity contentions. For example, Defendants have issued subpoenas, and may issue additional subpoenas, to potential prior artists including but not limited to individuals and entities responsible for the development of prior art systems. Defendants reserve the right to supplement these Invalidity Contentions in light of any newly discovered information produced by these or other individuals or entities from which Defendants may seek discovery.

E. Incorporation by Reference

Defendants herein incorporate by reference all arguments made in the IPR petitions filed in IPR2023-00992, IPR2023-00993, IPR2023-01025, as well as any other IPR petitions

challenging any of the Asserted Patents. The IPR petitions and associated exhibits are attached hereto.

II. PRIORITY DATE OF THE ASSERTED PATENT CLAIMS

Plaintiff contends in its Infringement Contentions that the priority date for the Asserted Claims is May 18, 2009, which is the date that Provisional Application No. 61/179,109 ("'109 Application) was filed.

It is Plaintiff's burden to show entitlement to its asserted priority date, and Defendants assert that Plaintiff has failed to meet that burden. Plaintiff has further failed in its obligations to disclose "the priority date to which each asserted claim allegedly is entitled" (P.R. 3-1(e)), at least because it is qualified with the phrase "no later than." To the extent Plaintiff attempts to rely on a date earlier than the priority listed above, Defendants reserve the right to supplement these contentions.

A. '081 Patent

Defendants contend that the Asserted Claims of the '081 Patent are not entitled to the May 18, 2009 priority date Plaintiff asserts—and instead, at the earliest, would be entitled to a May 18, 2010 priority date—because the '109 application does not disclose at least the following exemplary limitations of the only asserted independent claim, as well as related limitations in the asserted dependent claims.

- "user-input features" (claim 1)
- "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 user input received from the user-input features" (claim 1)

B. '830 Patent

As to the '830 Patent, Defendants contend that the Asserted Claims are not entitled to a priority date prior to the filing of the original claims in the application that led to the issuance of

the ’830 Patent on June 13, 2016. Specifically, the Asserted Claims are each directed to a generic “vibration module.” *See, e.g.*, claim 1 (“A vibration module comprising”); claims 2-4, 7-8, and 17 (“The vibration module of claim 1 …”); claims 5 and 6 (“The vibration module of claim 4 …”). However, the applications in the priority chain prior to June 13, 2016 do not provide written description support for the genus “vibration module.” *See, e.g., Chester v. Miller*, 906 F.2d 1574, 1577 (Fed. Cir. 1990) (“[A]lthough a patent might contain a disclosure satisfying the written description requirement with respect to the claims in that patent, it could still be section 102(b) prior art as to broader claims of a subsequent application although not containing a disclosure satisfying the section 112 description requirement with respect to the anticipated broader claims.”). Instead, the only written description support for the Asserted Claims of the ’830 Patent is the original claims filed in the application that led to the issuance of the ’830 Patent filed on June 13, 2016. *See, e.g.*, *ScriptPro LLC v. Innovation Assocs., Inc.*, 833 F.3d 1336, 1341 (Fed. Cir. 2016) (“As we have explained, original claims are part of the specification and in many cases will satisfy the written description requirement.”) (quotations omitted).

Further, even if the Asserted Claims of the ’830 Patent were entitled to an earlier priority date than June 13, 2016 (they are not), Defendants contend that the Asserted Claims of the ’830 Patent are not entitled to the May 18, 2009 priority date Plaintiff asserts—and instead, at the earliest, would be entitled to a May 18, 2010 priority date—because the ’109 application does not disclose at least the following exemplary limitations of the only asserted independent claim, as well as related limitations in the asserted dependent claims.

- “user-input features” (claim 1)
- “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 one or more stored values” (claim 1)

III. TERMS CONSTRUED UNDER 35 U.S.C. § 112, ¶ 2 (MEANS PLUS FUNCTION)

The following terms of the Asserted Patents may be construed pursuant to 35 U.S.C. § 112 ¶ 6, which allows for drafting claims that recite means or a step for performing a specified function without the recital of structure material, or acts in support thereof. In such cases, "the 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. If a claim does not recite the term "means," there is a rebuttable presumption that § 112 ¶ 6 does not apply. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015). However, this presumption may be overcome, e.g., when the claims recite non-structural generic placeholders that invoke § 112 ¶ 6; one such generic placeholder is the term "component for." *See* MPEP § 2181; *Umbanet, Inc. v. Epsilon Data Mgmt., LLC*, No. 2:16-CV-00682-JRG, 2017 WL 3508771, at *8 (E.D. Tex. Aug. 16, 2017), aff'd, 745 F. App'x 168 (Fed. Cir. 2018) (term "document-encoding component" governed by § 112 ¶ 6 because the "'encoding component' described in the patent does not refer to a known structure in the art"). The following terms in each of the Asserted Claims, as well as their analogues in dependent claims, may be governed by § 112 ¶ 6:

A. '081 Patent

1. "moveable component"

Limitation (Function Underlined)	Corresponding Structure
Claim 1: "moveable component" (i.e., a component that moves)	A moving weight. *E.g.*, '081 Patent, Figs. 4A-4G (weight 404), Fig. 6 (oscillating mass 634).

2. "driving component"

Limitation (Function Underlined)	Corresponding Structure
Claim 1: "a driving component that drives the moveable component in each of two opposite directions within the housing"	One or more electromagnetic coils. *E.g.*, '081 Patent, Figs. 4A-4G (coil 420); Fig. 6 (coil 626); Fig. 13 (first coil 1302 and second coil 1304).

3. "control component"

Limitation (Function (or Additional Function for Dependent Claims) Underlined)	Corresponding Structure
Claim 1: "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 user input received from the user-input features"	Processor and H Bridge Switch, where processor is programmed with an algorithm to perform the following steps: (1) set the mode and strength to 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 H-bridge switch. '081 Patent, 7:10–24, 8:10–20, Fig. 7A, Fig. 7C.
Claim 3: "wherein the control component receives output signals from sensors within the linear vibration module during operation of the linear vibration module and adjusts one or more operational control outputs of the control component according to the received output signals from the sensors"	Claim 1 structure with the processor further programmed with an algorithm to perform the following steps: (1) convert the received output signal into an integer, (2) compare that integer to a specific value, (3) adjust one or more operational control outputs based on that comparison. '081 Patent, 7:13–18, 7:32–8:9, Figs. 7A, 7B.
Claim 4[4]: "wherein the control component adjusts the 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 the linear vibration module produces desired outputs from the one or more sensors corresponding to one or more operational control parameters"[5]	Claim 1 structure with the processor further programmed with the same claim 3 algorithm.

B. '830 Patent

1. "moveable component"

Limitation (Function Underlined)	Corresponding Structure
Claim 1: "moveable component" (i.e., a component that moves)	A moving weight. *E.g.*, '830 Patent, Figs. 4A-4G (weight 404), Fig. 6 (oscillating mass 634).

[4] Defendants contend that claims 4-6 are indefinite, as described below.

[5] Claims 5 and 6 depend from claim 4 and recite additional limitations related to "the one or more operational control parameters" and "the one or more operational control outputs."

2. "driving component"

Limitation (Function Underlined)	Corresponding Structure
Claims 1: "a driving component that drives the moveable component to oscillate within the housing"	One or more electromagnetic coils. *E.g.*, '830 Patent, Figs. 4A-4G (coil 420), Fig. 6 (coil 626), Fig. 13 (first coil 1302 and second coil 1304).

3. "control component"

Limitation (Function (or Additional Function for Dependent Claims) Underlined)	Corresponding Structure
Claim 1: "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 one or more stored values "	Processor and H Bridge Switch, where processor is 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 H-bridge switch. '830 Patent, 7:20-34, 8:20-30, Fig. 7A, Fig. 7C.
Claim 3: "wherein the control component receives output signals from sensors within the vibration module during operation of the vibration module and adjusts one or more operational control outputs of the control component according to the received output signals from the sensors"	Claim 1 structure with the processor further programmed with an algorithm to perform the following steps: (1) convert the received output signal into an integer, (2) compare that integer to a specific value, (3) adjust one or more operational control outputs based on that comparison. '830 Patent, 7:24-29, 7:42-8:19, Figs. 7A, 7B.
Claim 4[6]: "wherein the control component adjusts the 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 the vibration module produces desired outputs from the one or more sensors corresponding to one or more operational control parameters"[7]	Claim 1 structure with the processor further programmed with the same claim 3 algorithm.

[6] Samsung contends that claims 4-6 are indefinite, as described below.

[7] Claims 5 and 6 depend from claim 4 and recite additional limitations related to "the one or more operational control parameters" and "the one or more operational control outputs."

IV. THE ASSERTED PATENTS ARE INVALID OVER PRIOR ART

A. Identification of Prior Art

Defendants contend that the prior art references charted in Exhibits A-1 through A-42, A-System-1 through A-System-8, and/or described below anticipate and/or render obvious, alone or in combination, one or more of the Asserted Claims of the ’081 Patent, and that the prior art references charted in Exhibits B-1 through B-44, B-System-1 through B-System-8, and/or described below anticipate and/or render obvious, alone or in combination, one or more of the Asserted claims of the ’830 Patent.

Defendants identify the following references as anticipating and/or rendering obvious one or more of the Asserted Claims of ’081 and ’830 Patents under 35 U.S.C. §§ 102 and/or 103. The table of prior art references below is exemplary, and it does not constitute an admission that any reference not listed below does not also anticipate and/or render obvious the Asserted Claims of the Asserted Patents. Further, Defendants contend that any prior art reference in the attached charts that is charted for each limitation of any given claim, anticipates and/or renders obvious that claim, regardless of whether that prior art reference is listed in the following tables.

1. Prior Art Patents and Applications

Number	Filing Date	Published/Issued Date	Short Name	Exhibit Numbers
US 5,955,799	Feb. 25, 1998	Sep. 21, 1999	Amaya	A-1, B-1
US 2010/0096936	Oct. 22, 2009	Apr. 22, 2010	Bae	A-2, B-2
US 2009/0176635	Jan. 9, 2008	Jul. 9, 2009	Brinson	A-37, B-37
US 7,085,585	Mar. 31, 2003	Aug. 1, 2006	Camarillo	A-3, B-3
US 2008/0174187	Sep. 20, 2007	Jul. 24, 2008	Erixon	A-4, B-4
US 2010/0188327	Jan. 27, 2009	Jul. 29, 2010	Frid	A-5, B-5

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Number	Filing Date	Published/Issued Date	Short Name	Exhibit Numbers
US 7,292,227	Feb. 14, 2002	Nov. 6, 2007	Fukumoto	A-6, B-6
US 2008/0001484	Jul. 3, 2006	Jan. 3, 2008	Fuller	A-7, B-7
US 2008/0133648	Mar. 20, 2007	Jan. 5, 2008	Grant ’648	A-8, B-8
US 2006/0284849	Dec. 8, 2002	Dec. 21, 2006	Grant ’849	A-9, B-9
US 2010/0153845	Dec. 16, 2008	Jun. 17, 2010	Gregorio	A-10, B-10
US 2010/0306934	Nov. 18, 2008	Dec. 9, 2010	Headstrom	A-11, B-11
US 8,384,316	Feb. 18, 2011	Feb. 26, 2013	Houston	A-12, B-12
US 2002/0101125	Jan. 25, 2002	Aug. 1, 2002	Ibuki	A-13, B-13
JPH11187087A	Dec. 17, 1997	Jul. 9, 1999	Inoki	A-14, B-14
US 2010/0148944	Dec. 17, 2009	Jun. 17, 2010	Kim	A-37, B-37
US 7,495,358	Jan. 12, 2006	Feb. 24, 2009	Kobayashi	A-15, B-15
US 2005/0184601	Jun. 21, 2004	Aug. 25, 2005	Kweon	A-16, B-16
US 2011/0133577	Aug. 18, 2009	Jun. 9, 2011	Lee	A-17, B-17
US 2008/0055028	Aug. 31, 2006	Mar. 5, 2008	Mask	A-18, B-18
JPH11-19589A	Jun. 30, 1997	Jan. 26, 1999	Masuda	A-19, B-19
JPH11-168869	Oct. 14, 1997	Jun. 22, 1999	Nakasaki	A-20, B-20
US 2009/0295739	May 27, 2008	Dec. 3, 2009	Nagara	A-21, B-21
JPH08196053A	Jan. 12, 1995	Jul. 30, 1996	Ogusu	A-22, B-22
US 2005/0285453	Oct. 13, 2004	Dec. 29, 2005	Oh	A-23, B-23

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Number	Filing Date	Published/Issued Date	Short Name	Exhibit Numbers
US 2008/0294984	Apr. 1, 2008	Nov. 27, 2008	Ramsay	A-24, B-24
US 7,554,224	Feb. 22, 2006	Jun. 30, 2009	Roberts	A-37, B-37
US 6,429,846	Jan. 19, 2000	Aug. 6, 2002	Rosenberg	A-25, B-25
US 7,449,803	Mar. 21, 2005	Nov. 11, 2008	Sahyoun	A-37, B-37
US 7,006,641	Apr. 12, 2000	Feb. 28, 2006	Saiki	A-26, B-26
US 2008/0036308	Mar. 29, 2007	Feb. 14, 2008	Schlesinger	A-37, B-37
US 2007/0145832	Feb. 5, 2007	Jun. 28, 2007	Shimizu	A-27, B-27
US 2008/0036303	Jun. 15, 2006	Feb. 14, 2008	Stevens	A-28, B-28
US 2009/0081049	Oct. 13, 2008	Mar. 26, 2009	Tian	A-29, B-29
US 2005/0134561	Dec. 2, 2004	Jun. 23, 2005	Tierling	A-30, B-30
US 2004/0169480	Jul. 15, 2003	Sep. 2, 2004	Ueda	A-31, B-31
US 2007/0256428	May 5, 2006	Nov. 8, 2007	Unger	A-32, B-32
US 5,909,068	Dec. 23, 1997	Jun. 1, 1999	Wakiwaka	A-37, B-37
US 7,005,811	Nov. 19, 2003	Feb. 28, 2006	Wakuda	A-33, B-33
US 2008/0155415	Dec. 21, 2007	Jun. 26, 2008	Yoon ’415	A-34, B-34
US 2008/0153554	Dec. 18, 2007	Jun. 26, 2008	Yoon ’554	A-35, B-35
US 6,323,568	Jan. 13, 2000	Nov. 27, 2001	Zabar	A-36, B-36
US 2006/0248183	Apr. 28, 2005	Nov. 2, 2006	Barton	A-38, B-38

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[redacted]

Number	Filing Date	Published/Issued Date	Short Name	Exhibit Numbers
US 2002/0177471	Jan. 31, 2002	Nov. 28, 2002	Kaaresoja	A-39, B-39
US 2002/0142701	Mar. 30, 2001	Oct. 3, 2002	Rosenberg ’701	A-40, B-40
KR0807738	May 2, 2007	Feb. 28, 2008	Yoon	A-41, B-41
CN101488697	Feb. 20, 2009	Jul. 22, 2009	Dong	A-42, B-42
US 8,860,337	Jan. 6, 2012	Oct. 14, 2014	’337 Patent	B-43
US 2012/0133308	Jan. 6, 2012	May 31, 2012	’308 Publication	B-44

2. Prior Art Systems

On information and belief, the systems identified below were in public use, on sale, or otherwise available to the public before the priority dates of the Asserted Patents. Defendants’ further investigation and/or subsequent discovery from Plaintiff or third parties with knowledge regarding prior art systems may reveal additional relevant prior art system and/or further information regarding the systems identified below, or other relevant prior art systems. Defendants reserve the right to supplement these Invalidity Contentions, based on subsequent investigation and discovery, including from third parties.

System	Public Availability Date	Short Name	Exhibit Numbers
Philips Sonicare Elite	2002	Sonicare Elite	A-System-1; B-System-1
Blackberry Pearl 8220	[redacted]	Blackberry Pearl	A-System-2; B-System-2
Motorola Rokr E8	[redacted]	Rokr	A-System-3; B-System-3

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[redacted]

System	Public Availability Date	Short Name	Exhibit Numbers
Samsung T919 Behold[8]	November, 2008	Samsung Behold	A-System-4; B-System-4
Oral-B Pulsonic S15	[redacted]	Oral-B S15	A-System-5; B-System-5
Oral-B Sonic Complete S18	[redacted]	Oral-B S18	A-System-6; B-System-6
Oral-B Professional Care D19	[redacted]	Oral-B D19	A-System-7; B-System-7
Oral-B Professional Care Triumph D25	[redacted]	Oral-B D25	A-System-8; B-System-8

Defendants additionally identify systems from the following third parties:

- Motorola, including the following:
  - Pagers:
    - Talkabout
    - Tango
    - Pagewriter
  - Phones:
    - Blaze
    - DEFY
    - XT701
    - E11
- Panasonic, including the following toothbrushes:
  - EW1000
  - EW1013
  - EW1045
  - EW-DS11
  - EWDJ10
  - EW-DE42
- Philips, including the following:
  - Toothbrushes:
    - Sonicare Crest IntelliClean
  - Pagers:
    - PagesMart
    - EasyReach
    - Air Page (various models)
- Spectrum Brands, including the following toothbrushes:
  - Ultrasonex
- Blackberry

[8] A sample of the Samsung Behold can be made available for inspection with advance notice at Arnold & Porter's Washington, DC office.

Resonant Systems, Inc., Ex. 2004
Samsung v. Resonant, IPR2023-00993

Defendants additionally identify any other Resonant prototypes, models, or systems, including but not limited to any Revel Body products or products incorporating TrueSonic Technology, including those evidenced by documents produced at SAMRES_00015884-SAMRES_00016263 and SAMRES_00016886- SAMRES_00016900.

Defendants additionally identify and rely on any system, product, or public knowledge or use that embodies or otherwise incorporates any of the prior art patents and publications listed above. Defendants reserve the right to identify and rely on systems that represent different versions or are otherwise related variations of the identified systems. Defendants also incorporate by reference any and all other prior art systems identified in any other case brought by Plaintiff and/or involving the Asserted Patents or a related patent.

B. The Asserted Patents are Anticipated by the Prior Art

Some or all of the Asserted Claims of the ’081 Patent and ’830 Patent are invalid as anticipated under 35 U.S.C. § 102 in view of each of the prior art references identified in the claim charts included in Exhibits A-1 through A-42, B-1 through B-44, A-System-1 through A-System-8, and B-System-1 through B-System-8, which identify specific examples of where each limitation of the Asserted Claims is found in the prior art references. As explained above, the cited portions of prior art references identified in the attached claim charts are exemplary in nature and representative of the content and teaching of the prior art references, and should be understood in the context of the reference as a whole and as they would be understood by a person of ordinary skill in the art.

To the extent any item of prior art cited above is deemed not to disclose, explicitly or inherently, any limitation of an asserted claim of the Asserted Patents, Defendants contend that any difference between that prior art and the corresponding patent claim would have been either inherent in the art or obvious to a person of ordinary skill in the art, even if Defendants have not

specifically denoted that the art is to be combined with the knowledge of a person of ordinary skill in the art.

C. The Asserted Patents are Obvious Over the Prior Art

To the extent Plaintiff argues that any limitation of the Asserted Claims is not explicitly disclosed by an item of prior art identified above and in Exhibits A-1 through A-42, B-1 through B-44, A-System-1 through A-System-8, and B-System-1 through B-System-8, any purported differences are such that the claimed subject matter as a whole would have been obvious to one skilled in the art at the time of the alleged invention, in view of the state of the art and knowledge of those skilled in the art. The item of prior art would, therefore, render the relevant claims invalid as obvious under 35 U.S.C. § 103.

Furthermore, it would have been obvious to combine any of the prior art in Exhibit A-1 through A-42 and A-System-1 through A-System-8, and Exhibits B-1 through B-44 and B-System-1 through B-System-8 with each other, respectively, at least because all of these references relate to linear vibration motors, vibration motors, and controls for said motors. Further, all of the references are either directed towards use of the vibration motors in user devices, i.e., devices meant to transmit vibrations to a human user, or are at the very least agnostic regarding the intended use of the vibration motor and controls. For example, U.S. Patent No. 7,292,227 B2 ("Fukumoto") teaches an electronic device, such as a PDA, personal computer, ATM, or mobile phone, with an oscillatory actuator that generates vibration when an input to a touch panel or operation key is received. Fukumoto, Abstract, 1:13–19, 16:29–36. Fukumoto further teaches user controls, such as a touch panel and a key input, as well as a CPU and drive generation circuitry to actuate a movable weight through the use of alternating current. *Id.*, 13:54–14:26, 14:57–60.

Furthermore, U.S. Patent Publication No. 2010/0188327 ("Frid") teaches "various illustrative techniques for providing haptic feedback to a user of an electronic device, such as an

electronic book (eBook) reader device, to confirm receipt of user input, to notify the user of a system event, or otherwise convey information to the user." Frid, ¶ 11. Frid teaches a haptic feedback device comprising "an electric field generator … selectively activatable to drive [a] mass to generate a vibration" by "applying voltage across [a] coil [to] generate[] an electromagnetic field that attracts or repels [a] magnetic mass." Frid, ¶ 32. The haptic feedback device is controlled by a drive circuit, a device driver, a software module stored in memory, or as firmware. *Id.*, ¶ 27.

Furthermore, U.S. Publication No. 2008/0174187 ("Erixon") teaches an "electromagnetic vibrator for use in a portable communication device" to provide "tactile stimuli to a user." Erixon, Abstract, ¶ 1. The electromagnetic vibrator comprises a housing, a track fitted with a permanent magnet, and a coiling around the track designed to receive electric voltage to move the permanent magnet "in dependence of the electric voltage as supplied to the coiling." *Id.*, ¶ 11.

Furthermore, U.S. Patent Publication No. 2007/0256428 ("Unger") teaches "a linear, freely reciprocating, prime mover coupled to and driving a reciprocating mass of a driven machine in a reciprocation at a driving frequency." Unger, Abstract. The system has a resonant frequency of operation, as well as a "driving frequency range over which the driven machine operates at an acceptable efficiency." *Id.* Unger further teaches sensing a "parameter of operation … and the prime mover is driven in response to the sensed parameter." *Id.*

Furthermore, U.S. Patent Publication No. 2008/0001484 ("Fuller") teaches a "non-rotary electromagnetic vibrator having a movable magnet that oscillates axially" that is "particularly well suited for use in portable electronic devices such as cell phones, toys, games, personal massage devices and the like." Fuller, ¶¶ 1, 25. Fuller discloses field coils "oriented such that they apply push and pull forces to [a] movable magnet." *Id.*, ¶ 35. A pickup coil monitors the position of the

movable magnet, inducing electrical signals that a picked up "a sensor circuit and used to control the operation of a field coil driver circuit." *Id.*, ¶ 33.

Furthermore, U.S. Patent Publication No. 2004/0169480 ("Ueda") teaches "a motor driving apparatus and, more particularly, [] a motor driving apparatus for driving a linear vibration motor having a mover and a spring member supporting the mover." Ueda, ¶ 1. Ueda further discloses its linear vibration motor and driving apparatus implemented in a phone to inform a user of incoming calls or the like. E.g., Ueda at ¶¶ 339-340. An order output determining unit determines a target output on the basis of at least one operating condition, and a driving frequency determination unit determines a driving frequency of the linear vibration motor on the basis of the order output. *Id.*, ¶¶ 64, 67. Thus the output of the linear vibration motor is controlled "by adjusting the frequency of the AC voltage applied" to it. *Id.*, ¶ 74.

Furthermore, U.S. Patent Publication No. 2008/0036303 ("Stevens") teaches "a linear (non-rotating) motor for use in generating and imparting vibrations to a supported body." Stevens, ¶ 2. Stevens's linear motor "comprises a moving portion that includes at least one magnet that responds to a magnetic field imposed by passing a current through adjacent coils." *Id.*, ¶ 14. "The linear motor … is controllable by manipulation of the frequency and voltage applied to the coil assembly." *Id.*, ¶ 15. Both the frequency and amplitude of the vibration may be controllably adjustable by the user. *Id.*, ¶ 43.

Furthermore, Japanese Unexamined Patent Application Publication H8-196053 ("Ogusu") teaches a "magnet-type vibration actuator having low loss and high efficiency." Ogusu, ¶ 1. Ogusu teaches using its vibration actuator in pagers. *Id.*, ¶ 3. Its vibration actuator comprises two coils through which alternating current is sent to cause a magnet to move along a rail between them and create a vibration. *E.g.*, *id.*, Abstract, ¶ 37. Ogusu further teaches that "various vibrations can be

switched at the user's choice," *id.*, ¶ 43, which the pager's control unit effects by "selecting the current waveform supplied to the coil," *id.*, ¶ 50.

Furthermore, U.S. Patent Publication No. 2009/0295739 ("Nagara") teaches a "haptic system [] adapted to generate tactile feedback [] to a user," the haptic system being included in any number of user devices such as a touch screen. *Id.*, ¶ 15. The haptic system comprises a controller 14, which "is adapted to receive an information signal 21, analyze the information signal 21, and transmit a control signal 20 to the haptic system." *Id.*, ¶16. Nagara teaches, for example, a touch screen window slider where, "[a]s the user moves his/her finger across the slides 30, the tactile sensation 25 of the user interface 16 varies in response to the slider 30 motion." *Id.*, ¶ 19. Thus, "the user has control of the desired 'feeling' they would like to receive from the haptic devices." *Id.*, ¶ 21.

Furthermore, U.S. Patent Publication No. 2010/0153845 ("Gregorio") teaches a system that drives linear resonant actuator ("LRA") to generate "vibrotactile haptic feedback on a user interface or other area of a device." Gregorio, ¶ 11. Such user devices may be "a handheld device, such as a cellular phone, PDA, computer tablet, etc. or may be any other type of device that provides a user interface and includes a haptic effect system that includes one or more LRAs." *Id.*, ¶ 16. Gregorio's system comprises a processor that outputs control signals to a drive circuit for the LRA. *Id.*, ¶ 14. The system monitors the resonant frequency of the LRA during a monitoring period and drives signal pulses to be applied to the LRA during a drive period. *Id.*, ¶ 20.

Furthermore, U.S. Patent Publication No. 2008/0055028 ("Mask") teaches "an inline electromagnetic tool actuator, and more specifically to an improved tattoo machine." Mask, ¶ 1. The inline electromagnetic tool actuator comprises "an actuator housing, an elongated armature, a tool assembly, spaced-apart return magnets, at least one drive magnet, and at least one magnet

wire." *Id.*, ¶ 9. "The magnet wire is coiled about the armature. When electrically charged with an alternating current, the wire creates an alternating magnetic field causing the drive magnet to bounce back and forth between repelling forces of the return magnets." *Id.* Mask further teaches having "user controls … to adjust the frequency of oscillation, amplitude, duty cycle, and wave shape of the alternating signal." *Id.*, ¶ 42.

Furthermore, U.S. Patent Publication No. 2006/0284849 ("Grant '849") teaches "providing customized 'haptic messaging' to use of a handheld communication devices." Grant '849 at Abstract. Grant '849 teaches selecting a control signal for an actuator of a handheld communication device, the control signal causing the actuator to output a haptic effect associated with an event. *Id.*, ¶ 25. "[A] collection of haptic effects is provided, each haptic effect being associated with a control signal." *Id.*, ¶ 26. Grant '849 further teaches its haptic effect being "customized or personalized to convey information to the user about various events of interest." *Id.*, ¶ 34.

Furthermore, U.S. Patent Publication No. 2008/0294984 ("Ramsay") teaches "enabling a regular user of an end user device, such as a cellular telephone, to customize parameters associated with haptic effects applied to the user by the end user device." Ramsay, Abstract. Ramsay teaches allowing "a user to create and/or modify the parameters associated with haptic feedback on the target device itself through on-device means." *Id.*, ¶ 15. More specifically, "modifying the amplitude values applied to the LRA results in a change of vibration or pulse frequency." *Id.*, ¶ 26.

Furthermore, Japanese Unexamined Patent Application Publication No. H11-19589 ("Masuda") teaches a "vibration generation device for use in a game machine operating device or the like." Masuda, ¶ 1. The vibration generation device comprises a drive unit and a vibration

generation unit, the vibration generation unit comprising a cylindrical guide portion, a coil of conducting wire, and a yoke composed of magnetic material. Masuda, ¶¶ 18-21. The drive unit

Accordingly, because each of the identified references are directed to similar devices in the similar field of endeavor, a person of ordinary skill in the art would be motivated to combine the teachings of two or more references together because both references disclose very similar systems that solve the same problems in similar ways. Thus, it would have been obvious to one of ordinary skill in the art to combine any of the foregoing references and would have expected such a combination to be successful.

Furthermore, to the extent that it is determined that any of the above references do not disclose a "housing" as claimed, it would further have been obvious to modify the teachings of that reference to include this feature in view of the following exemplary teachings: Erixon at Figs. 2-7, Abstract, ¶¶ 56, 58, 81, 91, 94, 102, 64 ("In FIG. 3, the electromagnetic vibrator, as schematically disclosed, comprises a linear housing 30, a permanent magnet 32 and a magnet support 34, 36. The magnet 32 and the magnet support 34,36 together form the magnet assembly."); Fuller at Fig. 2, ¶¶ 41, 28, ("FIG. 2 includes the optional tubular hollow enclosure 30. The enclosure can be cylindrical as illustrated, or can be square or can have other cross sectional shape. Preferably, the enclosure 30 is made of a lightweight polymeric material such as polycarbonate."); Mask at ¶¶ 33-35, Figs. 2-4, Abstract ("An inline electromagnetic tool actuator incorporates an actuator housing, an elongated armature, a tool assembly, spaced-apart return magnets, at least one drive magnet, and at least one magnet wire. The elongated armature is located inside the housing, and is adapted for reciprocating linear movement along a notional assembly axis. The tool assembly is operatively attached to the armature. The return magnets are located inside the housing, and are coaxially aligned with the armature."); Fukumoto at Figs. 1, 3, 12,

Abstract, 15:55-16:3, ("the movable weight 122 (permanent magnet) and the coil 121 are housed inside the case 115a in advance"); Kazutaka at Fig. 2, Abstract, ¶¶ 4, 11 ("as shown in FIG. 2, the coils 3 are arranged around the cylindrical body 2 and the mass body 4 by the permanent magnet is moved into the cylindrical body 2. It is configured so that it can be housed as much as possible…"); Frid at Figs. 1, 3, ¶¶ 17, 35, 30 ("one surface of the haptic feedback device 300 is affixed to a sub-frame of the back of the housing 102 of the electronic device 100 to impart the haptic feedback to the back of the housing 102. An opposite face and remaining surfaces of the haptic feedback device 300 may be encapsulated in rubber, or other damping material, to help isolate the vibrations to the housing 102."); Grant '849 at ¶¶ 22, 33, 55, 21 ("Device 100 includes a device body including a housing 110 and a user-interface 112; a processor 120; at least one actuator 130 in communication with processor 120; and a memory 140 in communication with processor 120."); Ramsay at ¶ 22 ("End user device 10, according to the embodiment of FIG. 1, includes input/output devices 12, processor 14, memory 16, and haptic actuating device 18. End user device 10 further comprises a bus 20 or other suitable communication interface allowing input/output devices 12, processor 14, memory 16, and haptic actuating device 18 to communicate with each other."); Bae at Fig. 1, ¶¶ 29-30, 28 ("Referring to FIG. 1, the vibration motor according to the first embodiment of the present invention includes a housing 10, first and second resilient members 21 and 25, first and second vibrators 31 and 35, a magnetic body 40, and a coil 50. The housing 10 provides a space in which the elements are accommodated."); Amaya at 5:14-23, Fig. 7.

Furthermore, to the extent that it is determined that any of the above references do not disclose a "power supply" as claimed, it would further have been obvious to modify the teachings of that reference to include this feature in view of the following exemplary teachings: Unger at

Figs. 4, 6, ¶¶ 53-54, 55 ("A variable frequency, variable amplitude power source 111 is used as an engine output frequency controller and its AC output terminals are connected to the alternator 102. Such power sources are commercially available and are therefore not described further."); Ueda at Figs. 1, 2, 9, 14, ¶¶ 146, 342 ("The driving unit 90 b converts an output voltage Vp of a battery 10 a incorporated in the handy phone 212"); Bae at ¶¶ 61-62, 59 ("A battery 129 is coupled to all the elements in the device 1354 to supply power."); Masuda at Fig. 1, ¶¶ 11, 7 ("Furthermore, emitters of the power transistors 36a, 36c are both connected to a power supply E, and emitters of the power transistors 36b, 36d are both connected to ground."); Fukumoto at 14:57-15:4, 49:32-38 ("On the other hand, the electrode 802 of the movable weight 802 is supplied with an AC voltage (drive signal) alternating between a plus and minus state from the outside of the oscillatory actuator 800 through an amplifier 810."); Kobayashi at 4:40-45 ("electric toothbrush 100 includes a housing 31, a vibratory linear actuator 30 which is constructed per the foregoing embodiments, a battery 32 as a power source, a control circuit 33 for providing alternating current to the winding wire 4 of the vibratory linear actuator 30, and a brush 34 for brushing teeth."); Lee at Abstract, ¶¶ 15, 33, 41, 45, 48, 50, 159, 106 ("A power supply is a component that supplies power to the coils. Unlike a structure in which a coil is fixedly coupled to a case, a vibration device, in which a coil is coupled to a mass to perform a horizontal reciprocal motion together with the mass as in the present invention, requires an additional power supply.").

Furthermore, to the extent that it is determined that any of the above references do not disclose "user-input features" as claimed, it would further have been obvious to modify the teachings of that reference to include this feature in view of the following exemplary teachings: Frid at Fig. 1, ¶¶ 17-18, 31, 34, 49, 14("Haptic feedback may be provided in response to, among other things, user input via a button, joystick, knob, thumb wheel, lever, touch screen, or other user

interface mechanism.”); Fukumoto at Figs. 1, 2, 12, 31:12-29, 38:48-55, 13:41-14:13 (“A user inputs operation instructions to the PDA 10 by touching the touch panel 102 by his or her fingertip.); Stevens at Fig2. 1, 5, ¶¶ 24, 43 (“FIG. 5 is an illustration of one embodiment of display panel (see element 5 in FIG. 1) for the WBV machine having the linear motor of the present invention. The frequency of vibration of the platform 20 may be controllably adjustable, for example, within the range from 20 to 60 Hz, displacement amplitude may be controllably adjustable from 0.5 mm to 6 mm and the time typically from 1 minute to 20 minutes.”); Mask at Fig. 1, ¶¶ 8, 41, 42 (“Preferably, the circuits have user controls 61, 62, and 63 (indicated in FIG. 1) to adjust the frequency of oscillation, amplitude, duty cycle, and wave shape of the alternating signal.”); Grant ’849 at Fig. 1, ¶¶ 21, 26, 55. 57. 58, 22 (“Further, user-interface 112 may include one or more user-interface members. As used herein, a user-interface member includes, without limitation, a key pad having one or more keys, one or more buttons, a touch screen or touch pad, a scroll wheel, a direction pad, a trackball, a knob, a miniature joystick, or other user-interface means known in the art.”); Rosenberg at Figs. 1, 2, 3:63-4:5,5:41-55, 8:61-9:12,16:35-44, 3:39-63 (“Computer 10 may include the various input and output devices as shown, including a display device 12 for outputting graphical images to the user, a keyboard 14 for providing character or toggle input from the user to the computer, and a touchpad 16 of the present invention.”); Ramsay at Figs. 1, 2, ¶¶ 23-24, 22 (“End user device 10, according to the embodiment of FIG. 1, includes input/output devices 12”); Gregorio at Figs. 1, 2, ¶¶ 12, 15, 16 (“System 10 may be a handheld device, such as a cellular telephone, PDA, computer tablet, etc. or may be any other type of device that provides a user interface and includes a haptic effect system that includes one or more LRAs.”); Saiki at 18:31-36 (“The vibration characteristics can easily be changed by changing the waveform of the input signal. Thus, it is possible to alert the user of an incoming call with various

vibrations, whereas various melodies are currently used as ringing tones. For example, it is possible to employ different vibration modes for different callers."); Brinson at Fig. 6, ¶¶ 52-57, 25 ("A user may depress or enable the switch to cause the device to vibrate. In the preferred embodiment, the control panel 12 also includes a knob or several buttons which may be used to indicate the frequency of the vibration."); Houston at Figs. 37, 38, 4:62-5:7, 28:48-61 ("The user 606 can input commands to the haptic interface 604 that are transmitted as user commands back to the system controller 602. The user commands can be input through pressing buttons, moving joysticks, squeezing the haptic interface at various level forces, moving the haptic interface, applying force and torque onto the haptic interface and through other means.").

Furthermore, to the extent that it is determined that any of the above references do not disclose a "driving component" as claimed, it would further have been obvious to modify the teachings of that reference to include this feature in view of the following exemplary teachings: Fukumoto at Figs. 2-3, 82-83, Abstract, 49:32-38, 49:66-50:13, 14:57-15:4 ("The movable weight 122 linearly reciprocates in the vertical direction in the figure by the magnetic force generated from the coil 121 when an AC (alternating) current (drive signal) is applied to the coil 121."); Erixon at Figs. 2-3, Abstract, ¶¶ 54-58, 74, 76, 78, 56 ("A coiling 22 is would around the circular housing, which coiling is supplied with an electric voltage over the connectors 24… On supplying an electric voltage over the coiling 22 at the connectors 24, a magnetic field is created within and around the coiling 22."); Ueda at Figs. 1, 9, 14, Abstract, ¶¶259, 342-345, 341 ("A linear vibration motor 95 is constituted by the magnet 93 a fixed to the weight member 93, and the coil 94 a embedded in the stator 94. In this linear vibration motor 95, the weight member 93 reciprocates in the expansion direction of the spring member 92 due to an electromagnetic power generated between the coil 94 a and the magnet 93 a"); Stevens at Figs. 2, 3B, ¶¶ 25, 26, 28-30, Abstract

(The linear motor comprises one or more pairs of generally aligned coils for producing electromagnetic responses in one or more magnets, each disposed generally intermediate a pair of coils. Current is intermittently passed through the coils to produce vibrations within a desirable frequency range in the platform."); Fuller at Figs. 1, 2, ¶¶ 25, 27, 31, 33, 35, 36, Abstract ("A field coil surrounds the movable magnet….When an alternating current is provided in the field coil, the movable magnet oscillates linearly in the axial direction"); Mask at Figs. 2-4, ¶¶ 36-38, 41-42, Abstract ("The magnet wire is coiled about the armature. When electrically charged with an alternating current, the wire creates an alternating magnetic field causing the drive magnet to bounce back and forth between repelling forces of the return magnets"); Bae at Figs. 1, 7, Abstract, ¶¶ 28, 29, 33, 53, 61, 35 ("if a current is applied to the coil 50, which is positioned in a magnetic field created by the magnetic body 40, and the magnetic field in direction "B" shown in FIG. 1, current will flow through the coil 50 in direction "I". Then, a force is generated in direction "F" and the first vibrator 31 moves in the direction "F" corresponding to the generated force. Moreover, when an alternating current is applied to the coil 50, the first vibrator 31 vibrates upward and downward due to the force based on the above-described mechanism and the resilient force provided by the first resilient member 21."); Gregorio at Figs. 1, 2, ¶¶ 14, 17 ("In operation, when current flows thru coil 28 a magnetic field forms around coil 28 which in interaction with the magnetic field of magnet 27 pushes or pulls on magnet 27."); Unger at ¶¶ 12, 30, 50, 53, 54, 33 ("As shown widely in the prior art, the linear motor has a reciprocating set of magnets that are located to reciprocate within a stationary armature winding. The magnets are driven in reciprocation by an alternating magnetic field generated by an alternating current applied to the armature winding."); Masuda at Figs. 1, 2, 8, d ¶¶ 4, 9, 10,19, 25("When the vibration generation unit 2 is formed according to such a configuration and a square drive current is supplied to the coil

13 by switching the conduction direction, the yoke 15 supported by the first coil spring 14 and the second coil spring 17, which are the support members, moves up and down with respect to the coil 13 due to electromagnetic action."); Ogusu at Fig. 1, ¶¶ 19, 32, 17 ("When an electric current is sent to the coil in this magnetic circuit, thrust is generated in the yoke on which the magnet is provided as a reaction to the thrust generated in the coil, and the yoke moves in the axial direction of the spindle via the holding means. If the current supplied to the coil is an alternating current, the yoke and base part vibrate according to the waveform of the current."); Sahyoun at Figs. 1-3, 7, 5:50-67, 4:62-66 ("Additionally, wound around the outside of tube 10 are two electrically conductive coils 16 (i.e., inductors) each spaced apart from the longitudinal center of tube 10 substantially the same selected distance (i.e., spaced apart from each other around the longitudinal center of tube 10)."); Kobayashi at Figs. 1, 2, Abstract, 2:61-3:3 ("The stator 2 is composed of a coil member made by winding wire 4 (a winding wire 4, hereinafter) around a coil bobbin 3 and cylindrical stationary parts 5,5 provided on both sides of the coil bobbin 3.").

Furthermore, to the extent that it is determined that any of the above references do not disclose a "control component" as claimed, it would further have been obvious to modify the teachings of that reference to include this feature in view of the following exemplary teachings: Fukumoto at 13:41-14:25, 30:48-55, 31:12-29, 17:20-40 ("Next, the CPU 113 outputs the waveform data read from the memory 112 to the drive signal generation circuit 114. At the same time, the CPU 113 instructs the drive signal generation circuit 114 to generate a drive signal (step S103). In response to the processing of step S103, the drive signal generation circuit 114 generates a drive signal using the waveform data supplied from the CPU 113. Next, the CPU 113 resets the count value for counting the time for the drive signal to be applied (step S104). Further, the CPU 113 instructs the drive signal generation circuit 114 to initiate applying the drive signal (step S105).

At the same time, the CPU 113 starts counting the time for application (step S106). When instructed by the CPU 113 to start application, the drive signal generation circuit 114 applies the drive signal to the oscillatory actuator 115 for the period until the cessation of application is instructed by the CPU 113."); Frid at Figs. 2, 4-6, Abstract, ¶¶ 14, 17, 23-29, 42, 43, 45, 46, and 48-59, 25 ("the memory 202 may also store one or more haptic profiles 214 that define different patterns, durations, and/or intensities of haptic feedback to be used in response to different user inputs or other events. These different patterns, durations, and/or intensities of haptic feedback are referred to herein as 'haptic signatures.'"); Ueda at Figs. 2, 9, 14, Abstract, ¶¶ 61-64, 70, 73-74, 259, 341-346, 67 ("The driving frequency determining unit 2 determines a driving frequency of the linear vibration motor 100 on the basis of the order output indicated by the output order signal Oop, i.e., the motor output required of the linear vibration motor 100, which is determined by the order output determining unit 3, and then outputs a driving frequency signal Ifr indicating the determined driving frequency to the motor driver 1."); Stevens at Figs. 2, 3B, ¶¶ 15, 16, 24, 41, 43-45, 40 ("This DC is then fed to a high side driver and a low side driver within the invertor that conditions and delivers, in harmony, the positive and negative electrical phase components, respectively, to produce a modified AC wave form fed to the linear motor. The power to the linear motor is varied by control of the voltage, and the frequency of the vibrations produced by the linear motor is varied by control of the frequency of the conditioned AC fed to the linear motor. The current wave form that exits the invertor is in effect a sine wave."); Fuller at ¶¶ 12, 13, 26, 29, 33, 35, 38, 36 ("Preferably, the alternating current applied to the field coils 28 has a frequency selected to match a mechanical resonance frequency of the movable magnet 20. Alternatively, the alternating current applied to the field coils has a range of frequencies that includes the mechanical resonance frequency of the movable magnet."); Grant '849, 1, 2, 4, ¶¶ 21-24, 26, 39, 51, 52, 57,

34 ("the aforementioned haptic effects can be used as haptic ringers (e.g., counterparts to auditory ring tones) that are customized or personalized to convey information to the user about various events of interest"); Amaya at Figs. 4, 7, Abstract, 1:36-55, 4:44-59, 5:12-23, 8:55-67 ("Hence, a frequency variation Af in dependence on the current variation ΔI may be predicted, and the fixed frequency f2 may be adjusted in accordance with the predicted frequency variation to thereby produce a frequency f3 (=f2 +Δf) for driving the coil 11."); Gregorio at Fig. 3, ¶¶ 15, 18-19, 21, 23, 20 ("A drive signal cycle includes a drive period where drive signal pulses are applied to LRA 18, and a monitoring period where the back electromagnetic field ("EMF") of the moving mass 27 is received and used to determine the resonant frequency of the LRA."); Masuda at Fig. 1, ¶¶ 12, 27, 28, 30, 35, 37, 32 (The first drive current control circuit 9 receives the first timing pulse TP1 from the first timing circuit 7, conducts power transistors 36a, 36d of the drive unit 36 during the high-level period TX of the first timing pulse TP1, and controls the size of the drive current based on the current control signal Sc from the control signal generation circuit 5. Similarly, the second drive current control circuit 10 also receives the second timing pulse TP2 from the second timing circuit 8, conducts power transistors 36c, 36d of the drive unit 36 during the high-level period TX of the second timing pulse TP2, and controls the size of the drive current based on the current control signal SC from the control signal generation circuit 5"); Houston at 25:31-39 ("A system 500 having a controller for one or more vibration devices that use linear motion vibration actuators is shown in FIG. 31. Vibration device controller 502 specifies the desired vibration effect and one or more driver circuit(s) 504 a, 504 b, . . . , 504 N provide the necessary power to actuators 506 a, 506 b, . . . , 506 N. While each actuator 506 is shown as being powered by a separate driver circuit 504, it is possible for multiple actuators 506 to be driven by one driver circuit 504."); Tian at Fig. 7, ¶¶ 47, 57 ("The bridge circuit 107 uses switching devices 411 and 412 to commutate current of

reversing polarity through compressor stator winding 33. The other end of the stator winding is connected to the junction of two series connected capacitors which are also connected across the DC power Supply.”).

Furthermore, to the extent that it is determined that any of the above references do not disclose a “control component” receiving “output signals from sensors…and adjust[ing] one or more operational control outputs of the control component according to the received output signals from the sensors” as claimed, it would further have been obvious to modify the teachings of that reference to include this feature in view of the following exemplary teachings: Fukumoto at Figs. 16, 17, 55, 56, 25:16-33, 40:1-22 (“Further, the CPU 904 performs vibration analysis using as parameters the positional relationship between the touched position and each of the oscillatory actuators 115 a to 115 d, the material of the liquid crystal display panel 501 where the oscillatory actuators 115 a to 115 d are placed, the elasticity of the damper 503, and others…. Further, the CPU 904 calculates the phase of a drive signal to be applied to each of the oscillatory actuators”); Ueda at Figs. 3a, 4a, ¶¶ 28, 32, 90, 97 104, 105, 164, 165, 25 (“the motor driving apparatus according to claim 2 further includes an output detection unit for detecting the motor output of the linear vibration motor; and the driving frequency determining unit determines the driving frequency so that a difference between the detected motor output and the determined target output becomes zero. Therefore, output control for the linear vibration motor becomes feedback control in which the motor output required of the linear vibration motor is the target output, whereby output control for the linear vibration motor or stroke control for the mover can be performed with stability and accuracy.”); Stevens at ¶¶ 44, 43 (“A feedback controller in the control means receives the measurement from the displacement sensor and adjusts the electrical current feed to the linear motor to achieve the desired displacement amplitude sought by the user.”); Fuller at Fig.

2, ¶¶ 12, 36, 38, 33 ("The vibrator can have a pickup coil 29 for monitoring the position of the movable magnet 20. Electrical signals induced in the pickup coil by the movable magnet 20 are detected by a sensor circuit and used to control the operation of a field coil driver circuit."); Gregorio at Figs. 1[f], 3, ¶¶ 23-24, 26-27, 21 ("during the drive period (approximately 90%) of the drive cycle, a drive pulse in the form of a square wave is applied to LRA 18, and during the monitoring period (approximately 10%) of the drive cycle, drive circuit 16 "listens" or monitors and receives magnetic back EMF (i.e., the voltage generated by the internal motion inside LRA 18) from LRA 18"), 25 ("At 308, it is determined if the desired amplitude is greater than the present amplitude. Decision block 308 also is provided as input the polarity status from 302. Based on the decision at 308, functionality proceeds to forward drive mode at 312 because the amplitude of the mass needs to be increased, or braking mode at 310 because the amplitude of the mass needs to be decreased."); Unger at Figs. 4, 6, ¶¶ 51-52, 56, 42-43, 45, 50 ("A sensor 56 senses a parameter of main machine operation, such as the top dead center (TDC) or piston position of one of the moving masses 52 and motor current and voltage are also detected. These signals are applied to a signal conditioner 58 and applied as a feedback signal to the summing junction 60 of a feedback control system…A reference value is also applied to the summing junction 60 to provide an error signal that is applied to a transfer function and develop a control signal in accordance with well known feedback control system principles. For controlling the linear motor 50, the control signal is applied to a variable frequency inverter duty cycle generator circuit 64 that generates a square wave for which both the duty cycle and the frequency of the square wave can be controllably varied); Ibuki at Figs. 1, 2, Abstract, ¶¶ 67, 72, 84, 68 ("As the movable element 2 linearly oscillates, the magnetic flux of the sensing magnet 61 crosses the coil 62 and induces current or voltage in the coil 62. Then, the detector 7 receives the induced current or voltage, and detects

position, velocity and/or acceleration of the movable element 2. Thus, based on the position, velocity and/or acceleration, the controller 5 controls the timing, pulse, and direction of the current to the electromagnet 11. By controlling the magnetization of the electromagnet 11 as such, magnetic attraction and repulsion are created between the electromagnet 11 and the permanent magnet 20, thereby oscillating the movable element 2 linearly with respect to the stator 1.”).

V. THE ASSERTED PATENTS ARE INVALID UNDER 35 U.S.C. § 112

A. Invalidity Based on 35 U.S.C. § 112, ¶ 1 (Enablement and Written Description)

1. The ’081 Patent

Based on Defendants’ present understanding of Plaintiff’s asserted scope of the claims of the ’081 Patent, to the extent such positions can be understood from Plaintiff’s Infringement Contentions, Defendants assert that the Asserted Claims of the ’081 Patent are invalid for failure to provide a written description that enables the full scope of the Asserted Claims based on at least the following claim terms, phrases, or limitations, regardless of priority date:

- “The linear vibration module of claim 1 wherein the control component is one of: an variable oscillator circuit with additional control circuitry” (claim 2)
- “wherein the one or more operational control outputs is a frequency at which the control component drives the moveable component to linearly oscillate, the control component dynamically adjusting the power supplied to the driving component to produce linear oscillation of the movable component at a resonant frequency for the linear vibration module” (claim 5)
- “wherein the one or more operational control parameters include both a strength of vibration produced by the linear oscillation of the moveable component and a current operational mode” (claim 6)
- “wherein the one or more operational control outputs is a control output that determines a current supplied by the power supply to the driving component and a frequency at which the control component drives the moveable component to linearly oscillate” (claim 6)
- “one or more electromagnetic coils that generate magnetic fields parallel to the direction in which the movable component is driven” (claim 7)

Moreover, to the extent that Plaintiff asserts that the Asserted Claims are entitled to a May 18, 2009 priority date, Defendants assert that the Asserted Claims of the ’081 Patent are invalid for failure to provide a written description that enables the full scope of the Asserted Claims based on at least the following exemplary claim terms, phrases, or limitations and related limitations in the dependent claims:

- “user-input features” (claim 1)
- “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 user input received from the user-input features” (claim 1)

Based on Defendants’ present understanding of Plaintiff’s Infringement Contentions and apparent interpretation of the scope of the Asserted Claims, at least one or more of these claim terms, phrases, and limitations are not described in the specification of the Asserted Patents and do not enable a person of ordinary skill in the art to practice the claimed invention without undue experimentation.

2. The ’830 Patent

Based on Defendants’ present understanding of Plaintiff’s asserted scope of the claims of the ’830 Patent, to the extent such positions can be understood from Plaintiff’s Infringement Contentions, Defendants assert that the Asserted Claims of the ’830 Patent are invalid for failure to provide a written description that enables the full scope of the Asserted Claims based on at least the following claim terms, phrases, or limitations, regardless of priority date:

- “The vibration module of claim 1 wherein the control component is one of: an variable oscillator circuit with additional control circuitry” (claim 2)
- “wherein the one or more operational control outputs is a frequency at which the control component drives the moveable component to oscillate, the control component dynamically adjusting the power supplied to the driving component to produce oscillation of the movable component at a resonant frequency for the vibration module” (claim 5)

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- "wherein the one or more operational control parameters include both a strength of vibration produced by the oscillation of the moveable component and a current operational mode" (claim 6)

- "wherein the one or more operational control outputs is a control output that determines a current supplied by the power supply to the driving component and a frequency at which the control component drives the moveable component to oscillate" (claim 6)

- "one or more electromagnetic coils that generate magnetic fields parallel to the direction in which the movable component is driven" (claim 7)

Moreover, to the extent that Plaintiff asserts that the Asserted Claims are entitled to a May 18, 2009 priority date, Defendants assert that the Asserted Claims of the '830 Patent are invalid for failure to provide a written description that enables the full scope of the Asserted Claims based on at least the following exemplary claim terms, phrases, or limitations and related limitations in the dependent claims:

- "user-input features" (claim 1)

- "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 one or more stored values" (claim 1)

Moreover, to the extent that Plaintiff claims that the Asserted Claims of the '830 Patent are entitled to a priority date prior to the filing of the original claims in the application that led to the issuance of the '830 Patent on June 13, 2016, the Asserted Claims are each invalid for failure to provide a written description that enables the full scope of the Asserted Claims. Specifically, the Asserted Claims are each directed to a generic "vibration module." *See, e.g.*, claim 1 ("A vibration module comprising"); claims 2-4, 7-8, and 17 ("The vibration module of claim 1 …"); claims 5 and 6 ("The vibration module of claim 4 …"). However, the applications in the priority chain prior to June 13, 2016 do not provide written description support for the genus "vibration module." *See, e.g., Chester v. Miller*, 906 F.2d 1574, 1577 (Fed. Cir. 1990) ("[A]lthough a patent might contain a disclosure satisfying the written description requirement with respect to the claims in that patent,

it could still be section 102(b) prior art as to broader claims of a subsequent application although not containing a disclosure satisfying the section 112 description requirement with respect to the anticipated broader claims."). Instead, the only written description support for the Asserted Claims of the '830 Patent is the original claims filed in the application that led to the issuance of the '830 Patent filed on June 13, 2016. *See, e.g.*, *ScriptPro LLC v. Innovation Assocs., Inc.*, 833 F.3d 1336, 1341 (Fed. Cir. 2016) ("As we have explained, original claims are part of the specification and in many cases will satisfy the written description requirement.") (quotations omitted).

Based on Defendants' present understanding of Plaintiff's Infringement Contentions and apparent interpretation of the scope of the Asserted Claims, at least one or more of these claim terms, phrases, and limitations are not described in the specification of the Asserted Patents and do not enable a person of ordinary skill in the art to practice the claimed invention without undue experimentation.

B. Invalidity Based on 35 U.S.C. § 112, ¶ 2 (Indefiniteness)

1. The '081 Patent

Based on Defendants' present understanding of Plaintiff's asserted scope of the claims of the '081 Patent, to the extent such positions can be understood from Plaintiff's Infringement Contentions, Defendants assert that the Asserted Claims of the '081 Patent are invalid for reciting at least the following claim terms, phrases, or limitations:

- "The linear vibration module of claim 1 wherein the control component is one of: an variable oscillator circuit with additional control circuitry" (claim 2)
- "The linear vibration module of claim 1" (claim 4, 5, 6)
- "the one or more operational control outputs of the control component" (claims 4, 5, 6)
- "the received output signals from the sensors" (claim 4, 5, 6)
- "the sensors" (claim 4, 5, 6)

- "the one or more sensors" (claim 4, 5, 6)
- "the linear oscillation of the moveable component" (claim 5)
- "wherein the one or more operational control outputs is a frequency at which the control component drives the moveable component to linearly oscillate" (claim 5)
- "wherein the one or more operational control outputs is a frequency at which the control component drives the moveable component to linearly oscillate, the control component dynamically adjusting the power supplied to the driving component to produce linear oscillation of the movable component at a resonant frequency for the linear vibration module" (claim 5)
- "the linear oscillation of the moveable component" (claim 6)
- "wherein the one or more operational control parameters include both a strength of vibration produced by the linear oscillation of the moveable component and a current operational mode" (claim 6)
- "wherein the one or more operational control outputs is a control output that determines a current supplied by the power supply to the driving component and a frequency at which the control component drives the moveable component to linearly oscillate" (claim 6)
- "one or more electromagnetic coils that generate magnetic fields parallel to the direction in which the movable component is driven" (claim 7)

These claim terms, phrases, and limitations, as apparently construed by Plaintiff, violate the definiteness requirements of 35 U.S.C. § 112.

Based on Defendants' present understanding of Plaintiff's Infringement Contentions, at least one or more of these claim terms, phrases, and limitations are indefinite because they are inconsistent with and broader than the alleged invention disclosed in the specification and during prosecution, and given Plaintiff's apparent constructions of the claims, any person of ordinary skill in the art at the time of the invention would not understand what is claimed with reasonable certainty, even when the claims are read in light of the specification and prosecution history.

2. The ’830 Patent

Based on Defendants’ present understanding of Plaintiff’s asserted scope of the claims of the ’830 Patent, to the extent such positions can be understood from Plaintiff’s Infringement Contentions, Defendants assert that the Asserted Claims of the ’830 Patent are invalid for reciting at least the following claim terms, phrases, or limitations:

- “The vibration module of claim 1 wherein the control component is one of: an variable oscillator circuit with additional control circuitry” (claim 2)
- “The vibration module of claim 1” (claim 4, 5, 6)
- “the one or more operational control outputs of the control component” (claims 4, 5, 6)
- “the received output signals from the sensors” (claim 4, 5, 6)
- “the sensors” (claim 4)
- “the one or more sensors” (claim 4, 5, 6)
- “wherein the one or more operational control outputs is a frequency at which the control component drives the moveable component to oscillate” (claim 5)
- “wherein the one or more operational control outputs is a frequency at which the control component drives the moveable component to oscillate, the control component dynamically adjusting the power supplied to the driving component to produce oscillation of the movable component at a resonant frequency for the vibration module” (claim 5)
- “wherein the one or more operational control parameters include both a strength of vibration produced by the oscillation of the moveable component and a current operational mode” (claim 6)
- “wherein the one or more operational control outputs is a control output that determines a current supplied by the power supply to the driving component and a frequency at which the control component drives the moveable component to oscillate” (claim 6)
- “one or more electromagnetic coils that generate magnetic fields parallel to the direction in which the movable component is driven” (claim 7)

These claim terms, phrases, and limitations, as apparently construed by Plaintiff, violate the definiteness requirements of 35 U.S.C. § 112.

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Based on Defendants' present understanding of Plaintiff's Infringement Contentions, at least one or more of these claim terms, phrases, and limitations are indefinite because they are inconsistent with and broader than the alleged invention disclosed in the specification and during prosecution, and given Plaintiff's apparent constructions of the claims, any person of ordinary skill in the art at the time of the invention would not understand what is claimed with reasonable certainty, even when the claims are read in light of the specification and prosecution history.

C. Invalidity of the Asserted Claims of the '830 Patent Based on 35 U.S.C. § 112, ¶ 2 (Failure to Claim What the Applicants Regarded as Their Invention)

Applicants plainly regarded their invention as directed to linear vibration modules. *See, e.g.,* '830 Patent, Abstract ("The current application is directed to various types of linear vibrational modules …"); *id.,* 3:9-13 ("Summary … The current application is directed to various types of linear vibrational modules …"). However, the Asserted Claims of the '830 Patent are each directed to a generic "vibration module." *See, e.g.*, claim 1 ("A vibration module comprising"); claims 2-4, 7-8, and 17 ("The vibration module of claim 1 …"); claims 5 and 6 ("The vibration module of claim 4 …"). In addition to the preambles—which are limiting—indicating that the Asserted Claims are directed to generic "vibration modules," the remaining limitations indicate that the Asserted Claims are directed to generic "vibration modules." In this regard, it should be noted that the Asserted Claims of the '830 Patent delete all references to "linear" relative to the earlier-issued Asserted Claims of the '081 Patent. To illustrate this, a comparison of the Asserted Claims of the '081 Patent and the Asserted Claims of the '830 Patent is below.

> 1. A ~~linear~~ vibration module comprising:
> a housing;
> a moveable component;
> a power supply;
> user-input features;
> a driving component that drives the moveable component ~~in each of two opposite directions~~to oscillate within the housing; and

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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 ~~user input received from the user-input features~~one or more stored values.

2. The ~~linear~~ vibration module of claim 1 wherein the control component is one of:
an variable oscillator circuit with additional control circuitry; and
a control component that includes
a microprocessor,
a control program, stored in an electronic memory within, or separate from, the microprocessor, the control program executed by the microprocessor to control 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~~the one or more stored values.

3. The ~~linear~~ vibration module of claim 1 wherein the control component receives output signals from sensors within the ~~linear~~ vibration module during operation of the ~~linear~~ vibration module and adjusts one or more operational control outputs of the control component according to the received output signals from the sensors.

4. The ~~linear~~ vibration module of claim 1 wherein the control component adjusts the 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 the ~~linear~~ vibration module produces desired outputs from the one or more sensors corresponding to one or more operational control parameters.

5. The ~~linear~~ vibration module of claim 4 wherein the one or more operational control parameters is a strength of vibration produced by the ~~linear~~ oscillation of the moveable component; and
wherein the one or more operational control outputs is a frequency at which the control component drives the moveable component to ~~linearly~~ oscillate, the control component dynamically adjusting the power supplied to the driving component to produce ~~linear~~ oscillation of the movable component at a resonant frequency for the ~~linear~~ vibration module.

6. The ~~linear~~ vibration module of claim 4
wherein the one or more operational control parameters include both a strength of vibration produced by the ~~linear~~ oscillation of the moveable component and a current operational mode; and
wherein the one or more operational control outputs is a control output that determines a current supplied by the power supply to the driving component and a frequency at which the control component drives the moveable component to ~~linearly~~ oscillate.

7. The ~~linear~~ vibration module of claim 1 wherein the driving component comprises one or more electromagnetic coils that generate magnetic fields parallel to the directions in which the moveable component is driven by the driving component.

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> 8. The ~~linear~~ vibration module of claim 1
> wherein the housing is a ~~linear~~ tube, capped at both ends by movable-component-repelling components selected from one of mechanical springs and magnets;
> wherein the movable component is a magnet shaped to slide within the ~~linear~~ tube; and
> wherein the driving component is an electromagnetic coil.
>
> 17. The ~~linear~~ vibration module of claim 1 wherein the control component 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 that are independently specified by user input received from the user-input features.

'830 Patent, Claims 1-8 and 17 (language in red deleted relative to the Asserted Claims of the '081 Patent; language in blue added relative to the Asserted Claims of the '081 Patent) .

Accordingly, the Asserted Claims of the '830 Patent are each invalid under 35 U.S.C. § 112, ¶ 2 for failure to claim what the applicants regarded as their invention. *See, e.g.*, *Allen Eng'g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1349 (Fed. Cir. 2002) ("Where it would be apparent to one of skill in the art, based on the specification, that the invention set forth in a claim is not what the patentee regarded as his invention, we must hold that claim invalid under § 112, paragraph 2.").

VI. INVALIDITY OF THE '081 PATENT UNDER 35 U.S.C. § 101 FOR STATUTORY DOUBLE PATENTING

Under Section 101 of the Patent Act, a patentee is limited to a single patent on an invention. 35 U.S.C.A. § 101 (a party "may obtain *a* patent"—emphasis added). "'[I]nvention' here means what is defined by the claims, whether new or old, obvious or unobvious; it must not be used in the ancient sense of 'patentable invention,' or hopeless confusion will ensue. By 'same invention' we mean identical subject matter." *Application of Vogel*, 422 F.2d 438, 441 (C.C.P.A. 1970). "A good test, and probably the only objective test, for 'same invention,' is whether one of the claims could be literally infringed without literally infringing the other. If it could be, the claims do not define identically the same invention." *Id.*; *General Foods Corp. v. Studiengesellschaft Kohle mbH*, 972 F.2d 1272, 1275 (Fed. Cir. 1992) (applying *Vogel*). "If it is determined that the same

invention is being claimed twice, 35 U.S.C. § 101 forbids the grant of the second patent, regardless of the presence or absence of a terminal disclaimer." *Vogel*, 422 F.2d at 441*; accord In re Hallman*, 655 F.2d 212, 216 (C.C.P.A. 1981).

Claim 17 of the '081 Patent is invalid for statutory double patenting (i.e., "same invention") over claim 4 of U.S. Patent No. 8,860,337 ("'337 Patent"). Under the "same invention" test, claim 17 of the '081 Patent could not be literally infringed without also literally infringing claim 4 of the '337 Patent. To illustrate this, a comparison of claim 17 of the '081 Patent and claim 4 of the '337 Patent is below:

'337 Patent, Claim 4	**'081 Patent, Claim 17 (depends from Claim 1)**
4. A linear vibration module comprising:	1. A linear vibration module comprising:
[4] a housing;	[1] a housing;
[4] a moveable component;	[1] a moveable component;
[4] a power supply;	[1] a power supply;
[4] user-input features;	[1] user-input features;
[4] a driving component that drives the moveable component in each of two opposite directions within the housing; and	[1] a driving component that drives the moveable component in each of two opposite directions within the housing; and
[4] 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 that are independently specified by user input received from the user-input features.	[1] 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 user input received from the user-input features. 17. The linear vibration module of claim 1 wherein the control component 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 that are independently specified by user input received from the user-input features.

As reflected above, claim 4 of the ’337 Patent and claim 17 of the ’081 Patent each have the following identical limitations:

- “A linear vibration module comprising” (’337 Patent, Claim 4; ’081 Patent, Claim 17)
- “a housing” (’337 Patent, Claim 4; ’081 Patent, Claim 17)
- “a moveable component” (’337 Patent, Claim 4; ’081 Patent, Claim 17)
- “a power supply” (’337 Patent, Claim 4; ’081 Patent, Claim 17)
- “user-input features” (’337 Patent, Claim 4; ’081 Patent, Claim 17)
- “a driving component that drives the moveable component in each of two opposite directions within the housing” (’337 Patent, Claim 4; ’081 Patent, Claim 17)

Further, the last limitation in claim 4 of the ’337 Patent has an identical scope to the last limitation of claim 17 of the ’081 Patent because both limitations require that the control component “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 that are independently specified by user input received from the user-input features”:

- “a control component that <u>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 that are independently specified by user input received from the user-input features</u>” (’337 Patent, Claim 4)
- “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 user input received from the user-input features, [17] wherein the control component <u>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 that are independently specified by user input received from the user-input features</u>” (’081 Patent, Claim 17)

Thus, it is not possible for claim 17 of the ’081 Patent to be literally infringed without also literally infringing claim 4 of the ’337 Patent (and vice versa). Therefore, claim 17 in the later-issued ’081 Patent is invalid under 35 U.S.C. § 101.

VII. OTHER RELEVANT REFERENCES

Defendants reserve the right to rely on the prior art references identified in connection with one of the Asserted Patents in connection with any other of the Asserted Patents. In addition, Defendants hereby cite the following additional references as being relevant to the subject matter claimed in the Asserted Patents. Defendants reserve the right to rely on one or more of the following references as anticipatory references under 35 U.S.C. § 102, as further evidence of obviousness under 35 U.S.C. § 103, as background references demonstrating the state of the art, as a limitation upon the doctrine of equivalents, or for any other purpose. Based on further investigation and discovery, based on positions that Plaintiff may take regarding the scope of the asserted claims, and/or based on the Court's claim construction, Defendants reserve the right to revise these contentions and to rely on these references to prove the invalidity of the Asserted Patents in a manner consistent with this Court's Rules and with the Federal Rules of Civil Procedure.

a) Prior Art Patents and Applications

Number	Filing Date	Published/Issued Date	Short Name
US 3,919,616	Dec. 6, 1972	Nov. 11, 1975	Allison
US 2011/0144426	Jun. 16, 2009	Jun. 16, 2011	Blenk
US 2007/0261185	May 11, 2007	Nov. 15, 2007	Guney
US 8,917,486	Jul. 26, 2011	Dec. 23, 2014	Masahiko

b) Prior Art Publications

Author or Publisher	Title	Publication/Use Date
Friedman, Herbert	*99 Electronics Projects*	1976

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Author or Publisher	Title	Publication/Use Date
L298	Dual Full-Bridge Driver	January, 2000
Exar	Exar Databook	September 1985
Jung, Walter	*IC Op-Amp Cookbook*	1974
Millman, Jacob	*Microelectronics, Digital and Analog Circuits and Systems*	1979
Horowitz, Paul and Hill, Winfield	*The Art of Electronics*	1980

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CERTIFICATE OF SERVICE

I certify that I caused the foregoing document to be transmitted to counsel for Plaintiff via electronic service on June 16, 2023.

/s/ Christopher Marando
Christopher Marando

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