

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NINTENDO CO., LTD., and
NINTENDO OF AMERICA INC.,
Petitioners,

v.

AMERICAN GNC CORPORATION,
Patent Owner

IPR2024-00668
U.S. Patent No. 6,671,648 B1

PATENT OWNER AMERICAN GNC'S SUR-REPLY

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EX2002	Brochure, American GNC Corporation
EX2003	Webpage, AGNC Founder, <i>available at</i> https://www.americangnc.com/ceo/Founder.htm (accessed June 6, 2024)
EX2004	Excerpts from Ching-Fang Lin, “Modern Navigation, Guidance, and Control Processing,” Prentice Hall, 1991
EX2005	Excerpts from Inventor Notebook of Hiram McCall, Feb. 6, 1999 to Dec. 14, 1999
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EX2008	Declaration of Professor Lawrence Larson, Ph.D. under 37 C.F.R. § 1.68 in support of Patent Owner's Preliminary Responses in IPR2024-00667 & -00668.
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EX2010	Marco Cassis, “Intelligent Sensing: Enabling the Next ‘Automation Age,’” ISSCC 2022, Feb. 21, 2022
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EX2012	Complaint in <i>American GNC Corporation v. OnePlus Technology (Shenzhen) Co., Ltd. et al.</i> , No. 6:20-cv-00171-ADA, D.I. 1 (W.D. Tex. Mar. 4, 2020)
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EX2018	Transcript of Telephonic Call with Board – October 15, 2024
EX2019	Declaration of Professor Lawrence Larson, Ph.D. in support of Patent Owner's Response in IPR2023-00697 and -00698
EX2020	Deposition Transcript of Dr. Darrin Young – December 13, 2024
EX2021	Exhibit 6 from Deposition of Dr. Darrin Young – U.S. Patent No. 8,634,924
EX2022	Exhibit 7 from Deposition of Dr. Darrin Young – Image of Laser Ring Gyroscope
EX2023	Declaration of Hiram McCall in support of Patent Owner's Response in IPR2023-00697 and -00698
EX2024	Excerpts from Weekly Status Reports of Hiram McCall
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I. Introduction and Summary

During this proceeding, American GNC's '648 Patent passed its 25-year anniversary from its priority application filing date. During that time, its inventions found success in the commercial market, were cited by others in the industry many times, were successfully licensed, and have been proven foundational in the practical application of MEMS-based Inertial Measurement Units. American GNC and the surviving inventor of the '648 Patent are proud of their inventive work so many years ago, and are honestly perplexed at a procedure that could retroactively invalidate their long-held and now expired invention rights as “obvious”—on nothing more than the conclusory say-so of a paid expert and argument from an accused infringer.

The basis by which the Board must uphold the challenged claims is straightforward—and is well supported by the law, the undisputed facts, and the testimony concerning the '648 Patent and the state of the art when it was filed. The Board, like the District Court, correctly found that the challenged claims require MEMS accelerometer and gyroscope technology. *See, e.g.*, Paper 10 at 21-24; EX2017, 2, 7, 11; Response, 19-24.

This construction is dispositive of the Petition because none of the base Inertial Measurement Unit references in Nintendo's Grounds (*Smith*, *Tingleff*, or *Yamawaki*) use MEMS accelerometer or gyroscope technology. Nintendo finds

MEMS only in separate component-level references, that it asserts only for the proposition that MEMS accelerometer (*Chan*) or gyroscope (*Bernstein*) component technology *existed*. Response, 28-29.

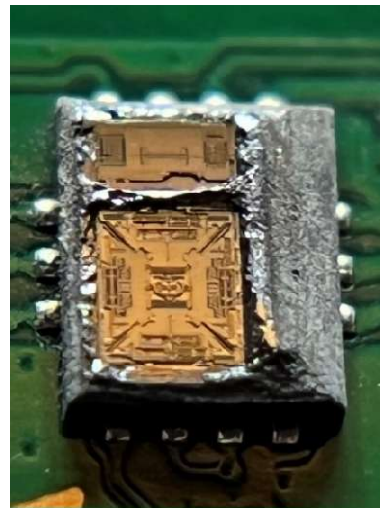
This is a proposition admitted in the '648 Patent itself. EX1001, 2:47-51. It is also a proposition insufficient to invalidate claims. *See, e.g., Virtek Vision International ULC v. Assembly Guidance Systems, Inc.*, 97 F. 4th 882, 887-88 (Fed. Cir. 2024) (“That is an error as a matter of law. It does not suffice to simply be known. A reason for combining must exist”).

As shown in American GNC’s Response, Nintendo has failed in its burden to demonstrate obviousness. Nothing offered by Nintendo in Reply mediates or corrects this failure of proof.

First, a person of ordinary skill twenty five years ago would not have been motivated to make, and would not have been capable of performing without significant effort, the admittedly complex technology substitution of a MEMS gyroscope—with its different circuitry, mechanical design, and manufacturing process—for a ring laser or conventional gimbal gyroscope. Response, 7-8, 29-41. Designing with MEMS gyroscopes was difficult, and not obvious to ordinary engineers at the time. *See, e.g.,* EX2019 (Professor Larson), ¶¶76-80; EX2023 (Inventor McCall), ¶¶24-25 (“Changing one sensor technology for another is not less work than designing from scratch with a MEMS sensor.”); EX2020

(Professor Young), 33:2-35:19 (“I worked on it for about ten years”).

MEMS gyroscopes and ring laser or gimbal gyroscopes are completely different technologies—admittedly requiring different design, control circuitry, manufacturing, and assemblies. EX2020, 73:7-21. They are not obviously interchangeable even today. *See, e.g.*, EX2019, ¶¶76-80; EX2023, ¶¶24-25; *see also* EX2022 (image of laser ring gyroscope); EX2025 (MEMS gyroscope in ST Microelectronics IMU chip from disassembled Nintendo Switch product):



In Reply Nintendo offers vague additional testimony from Dr. Young about his own early work—ignoring his cross-examination testimony about two relevant MEMS design projects, begun *after* the '648 Patent issued, that required as many as ten years of work by his team of professors and graduate students. Reply, 7; EX2020, 31:24-36:2, 66:22-70:3, 77:7-81:13.

And in Reply, Nintendo points to new alleged background art—that it inexplicably failed to include in its Petition, and that is improper to assert for the first time in Reply. Reply, 7-8, EX1045, ¶45. None of this new testimony or background art shows that the wholesale gyroscope technology substitution required by each of Nintendo’s grounds would have been easy, and thus obvious for a person of ordinary skill. It would not, and it was not. *See, e.g.*, EX2020, 76:25-80:3 (“I don’t think I said that person could have easy time with it; right?”); EX1002, ¶99 (“would have required a change in the manufacturing processes” and “a change to the signal conditioning electronics”).

Second, American GNC presented significant objective evidence of non-obviousness, including in the form of corroborated and unrebutted testimony from Mr. Hiram McCall. American GNC achieved technical success where other, highly resourced, research groups at MIT Draper Labs and NASA Jet Propulsion Labs had yet to succeed. EX2023, ¶¶8, 10-12, 21-23; EX1046 (Larson Tr.), 27:3-15 (“So I believe that the inertial navigation [MEMS] people were still maybe struggling more in the research phase at this time”). American GNC also achieved *commercial* success with IMU products including these inventions. EX2023, ¶¶19-20; *see also* EX2019, ¶¶52-55; Response, 2-4, 39. The ’648 Patent was also highly cited and successfully licensed. Response, 4, 39; EX1048 (McCall Tr.), 37:18-38:16.

In Reply, Nintendo simply denies this evidence with argument. Reply, 16. But American GNC *did* show a product embodying, and coextensive with, the challenged claims. EX2023, ¶¶15-20 (“successfully implemented in American GNC’s coremicro IMU product”); EX2024, 16 (“MEMS Provisional patent” and “MEMS Micro IMU Development”); EX2002, 2. The coremicro IMU product is described in the ’648 Patent using the language of the claim elements. EX1001, 17:37-42 (“the micro IMU of the present invention”), 23:42-24:21 (claim 1), Fig 17:

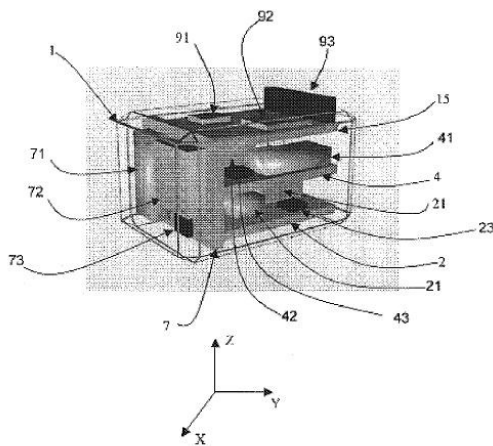


Figure 17



American GNC *is* entitled to a presumption of nexus, because the coremicro IMU product “*is* the invention disclosed and claimed.” *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988). Nintendo has offered no evidence to rebut this presumption. *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1072 (Fed. Cir. 2018) (“a patent challenger

cannot successfully rebut the presumption with argument alone—it must present evidence”). American GNC’s non-obviousness considerations evidence provides further compelling reasons to uphold the challenged claims here.

As detailed in American GNC’s Response and herein, Nintendo’s Grounds each fail its burden of proof concerning alleged obviousness. The challenged claims are valid and should be upheld.

II. Claim Construction

A. “A micro inertial measurement unit” of the preamble is a structural limitation, and requires MEMS elements

Nintendo’s Reply fails to provide any reason to overturn the preliminary construction of the Board, the preliminary construction of the District Court, or the careful analysis of the claims, specification, and other evidence in American GNC’s Response—each defining “a micro inertial measurement unit” as “requiring the IMU to implement the structures recited in the claims as MEMS.” *See, e.g.*, Paper 10 at 21-24; EX2017, 2, 7, 11 (“the Court accepts Plaintiff’s plausible construction”); Response, 19-24. The “micro inertial measurement unit” is a structure, and the preamble recites a structural limitation. Response, 21-22; EX1001, ’648 Patent, Fig 17. The Board’s preliminary construction of this element was correct.

B. “angular rate electrical signals” and “angular rate voltage signals” directly measure and reflect angular rate

As American GNC explained in its Response, the claim language and specification make clear that the “angular rate electrical signals” produced by an “angular rate detecting unit”—as well as the “angular rate voltage signals” that are “directly proportional to angular rates of a carrier”—must reflect angular rate. Response 24-26; EX1001, 23:43-24:21 (claim 1), 24:36-44 (claim 4). The Board, describing the patent, recognized that the specification teaches the outputs of the angular rate producers “are directly proportional to angular rates.” Paper 10 at 4; EX1001, 16:54-59 (“These [Coriolis] forces are proportional to the applied angular rate, which then can be measured.”). This further supports the plain meaning of the claim language that the “angular rate electrical signals” reflect a measure of angular rate.

Nintendo was required to propose and support in its Petition any claim construction it wished to rely on. *See, e.g.*, 37 C.F.R. § 42.104(b)(3). It did not. Petition, 6. In Reply, Nintendo offers only its experts’ conclusory new interpretation of the claims. Reply, 3; EX1045, ¶49 (“the specification discloses...” and “in my view...”). This testimony, in addition to being improperly late, lacks support and is ineffective to change the meaning of the claim language.

Expert testimony is “less significant than the intrinsic record” in claim construction. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1317 (Fed. Cir. 2005) (en banc). An expert “may not be used to ‘contradict claim meaning that is unambiguous in light of the intrinsic evidence.’” *Profectus Tech. LLC v. Huawei Techs. Co.*, 823 F.3d 1375, 1380 (Fed. Cir. 2016). This is even more important when only the unsupported say-so of the expert is presented. EX1045, ¶¶46-47 (“In my opinion...”); *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 146 (1997) (courts not required to “admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert.”); Response, 61.

Nintendo’s assertion that the “claims don’t require any particular relationship between the angular rate electrical signals and the angular rate” is self-evidently false. Not only does claim 1 call these “angular rate” electrical signals, it requires that they come from an “angular rate detecting unit.” EX1001, 23:43-24:21. “Angular rate electrical signals” from an “angular rate detecting unit” must reflect angular rate. *Id.* The pulses from the laser ring gyroscopes of *Smith* do not. Response, 43-44.

III. Petitioner failed to prove that the challenged claims are obvious over *Smith*, *Tingleff*, or *Yamawaki* in combination with *Chan* and *Bernstein*

A. The gyroscope technology substitution required by the combination would not have been obvious, routine, or likely to succeed for a person of ordinary skill

In Reply, Nintendo does not dispute that *Smith* (Grounds 1 and 2), *Tingleff*

(Ground 3), and *Yamawaki* (Ground 4), each use different accelerometer and gyroscope technologies, and do not teach MEMS technology. *See, e.g.*, EX1003, Fig. 2 (“LASER GYRO”). Response, 28, 46, 50.

Nintendo’s alleged basis, motivating the alleged combination to substitute MEMS technology, is repeated in Reply (at 6, citing EX1002, ¶¶101-104). It is nothing more than the generalized advantages of MEMS technology discussed in background to the ’648 Patent. *See, e.g.*, EX1002, ¶¶102-103 (“As noted, the Background of the ’648 patent acknowledges the known benefits of MEMS sensors...”). But “the inventor’s own path itself never leads to a conclusion of obviousness; that is hindsight.” *Univ. of Strathclyde v. Clear-Vu Lighting LLC*, 17 F.4th 155, 165 (Fed. Cir. 2021). American GNC’s description of its own inventions’ advantages can only support obviousness in impermissible hindsight.

And as American GNC noted in Response, similar “conclusory statements of generalized advantages” in prior art also don’t provide a sufficient motivation. *In re Beasley*, 117 Fed. Appx. 739, 743-44 (Fed. Cir. 2004). Nintendo’s references mention size and cost reduction in praise of their *own approach*, not to suggest a wholesale redesign into a completely different technology. Response, 40-41, 51.

In the end, Nintendo’s allegations concerning obviousness, motivation, and likelihood of success come down to its conclusory, unsupported statement—in a

single paragraph of Dr. Young’s declaration—that redesigning Nintendo’s IMU references to use MEMS sensors would be “straightforward” and could be done “without undue experimentation.” Reply, 6-7; EX1002, ¶¶99. But Nintendo mischaracterizes American GNC’s opposition to this testimony. Response, 28-41.

Professor Larson worked in and was familiar with the MEMS field at the time of the patent. EX2019, ¶¶15, 42-44, 53-55. He testified about the state of the art, and testified that the redesign contemplated by Dr. Young “was a difficult challenge beyond the capabilities of one of only ordinary skill,” and that Dr. Young “severely underestimates the knowledge, skill, and level of re-design that would be required to make this substitution of sensor technology type.” *Id.*, ¶¶76-80.

Nintendo’s attempted rebuttal of this testimony was to put the *cover sheet* of an article in front of Professor Larson in a video deposition and ask if he recognized it. Reply, 7; EX1043. Nintendo does not mention that they tried this with four cover sheets, and that the other three seemed familiar or were work from practitioners he knew from the time. EX1046, 31:12-35:14. Given the 25-year time gap, Professor Larson performed remarkably well on Nintendo’s unfair prior art memory test. *Id.* Nintendo failed to present anything to call into question his credentials, relevant experience, or analysis.

Hiram McCall also testified about the state of the art and the challenges

faced by practitioners at the time—including researchers at MIT Draper Labs and NASA Jet Propulsion Laboratories who were working on the same MEMS integration problems. EX2023, ¶¶5-23; EX1048, 18:8-15. Mr. McCall’s notebook and work logs from the time show that he was in contact with these groups of researchers, corroborating his knowledge of the state of their art. EX2024, 1 (“Draper”), 4 (“JPL”); EX2005, 3 (“JPL”). Mr. McCall’s fact testimony is consistent with and further corroborates Professor Larson’s account—and completely undermines Dr. Young’s unsupported statement that this work was “a routine implementation well within the skill of a POSITA” at the time. EX1002, ¶¶99, 138.

And finally, Dr. Young himself testified on cross-examination about a project—begun *seven or eight years after* the ’648 Patent invention—integrating “commercially-available MEMS sensors, accelerometers, gyroscopes” into a navigation prototype. EX2020, 31:24-36:2. This was a project done by Dr. Young, a professor specializing in MEMS and allegedly well above ordinary skill (EX1002, ¶15), and his graduate students, who presumably met his definition of persons of ordinary skill (*id.*, ¶14).¹ They “worked on it for about ten years.”

¹ Professor Larson considered and applied the lower level of ordinary skill suggested by Nintendo, and opined that his conclusions applied under that level.

EX2020, 33:2-35:19; *see also id.*, 66:22-70:3, 77:7-81:13. In other words, designing with MEMS gyroscopes was not “routine” and “conventional” even a decade after the ’648 Patent—and Dr. Young’s lived experience self-rebutts his conclusory and unsupported testimony to the contrary.

It bears repeating that Nintendo has the burden of proof on this issue. Response, 8-9. The Board noted conflicting expert testimony and identified this as an area for evidentiary development at trial. Paper 10, 34. American GNC offered further testimony from Professor Larson (EX2019), corroborated factual testimony from Mr. McCall (EX2023), and cross-examination testimony rebutting Nintendo’s expert, as discussed above and in Response.

In Reply, Dr. Young enters a new declaration primarily dedicated to stating positions and disagreeing, but with little to no additional evidence. EX1045, ¶¶20 (“As I discussed in my opening declaration, I disagree.”), 21 (“I disagree”), 24 (claiming, without citation, that “a substantial body of research on MEMS technology existed”).

Dr. Young then attempts to re-characterize his own long MEMS integration projects as “training” projects with funding problems. *Id.*, ¶¶26-27. But this does not change the admitted facts—that this work was integrating “commercially-

EX2019, ¶61.

available MEMS sensors, accelerometers, gyroscopes”; that it took place more than ten years after the ’648 Patent priority date; that five or six people were funded on it for four or five years; that Dr. Young, well above ordinary skill, ultimately “worked on it for about ten years”; and that the work didn’t make it into “product form.” EX2020, 32:10-36:2. This testimony is completely incompatible with Dr. Young’s “routine implementation” argument.

Dr. Young’s opinion that substituting MEMS gyroscopes for ring laser or gimbal gyroscopes would somehow be a matter of “routine,” was too conclusory and unsupported to be accepted by the Board *even before* Dr. Young described his own similar work. *See, e.g.,* Response, 61-62.

Finally, Nintendo and Dr. Young attempt to introduce new references, allegedly showing MEMS IMUs. EX1045, ¶45.

Nintendo and Dr. Young completely fail to mention, however, that the Minor reference they point to states that: “Because of the relative immaturity of the technology, MEMS inertial sensors have low precision in comparison to inertial sensors of larger size used in existing tactical missile navigation systems,” and that “given the current state of MEMS technology, providing navigation adequate for [the application] is very challenging.” EX1038, 602; *see also id.* at 603 (“there were no gyros found which had the measurement ranges necessary”). The *Minor* reference is actually about *modeling* of a hypothetical system based on

“specifications obtained from the [unspecified] MEMS sensor vendors.” *Id.* It supports the testimony of Mr. McCall and Professor Larson about the immature state of, in particular, MEMS gyroscope technology at the time.

The *Hulsing* reference newly mentioned by Nintendo and Dr. Young describes a single-axis accelerometer and rate sensor that was in development for six years and still pre-production at the end of 1998—months before Mr. McCall began his work at American GNC. EX1047, 17; EX2005 (“2/6/99”).

In Reply, improperly raising new evidence, Nintendo and Dr. Young are *still* only claiming what the ’648 Patent already teaches—that certain MEMS sensors existed, but that they presented challenges for integration into viable IMU solutions like those claimed in the ’648 Patent. EX1001; 6:6-43 (“difficulties” of “building a micro IMU” with MEMS sensors), 17:19-36 (“insufficient accuracy, sensitivity, and stability”); EX2019, ¶¶51-55, 73-76; EX2023, ¶¶3, 7-8, 10-12, 24-25. The overwhelming weight of the evidence shows that Nintendo’s proposed prior art technology substitution would have been unduly difficult and not obvious, and Nintendo has failed its burden to show otherwise.

B. Objective evidence of non-obviousness has been presented and was not rebutted by Petitioner

In addition to all the reasons given above, the challenged claims are non-obvious on consideration of the evidence presented by American GNC of

commercial success, technical success (including where others had not), as well as citation by and licensing by others of the '648 Patent.

As discussed in Section I above and in Response, the '648 Patent challenged claims were embodied in, and are coextensive with, American GNC's "coremicro" IMU product. *See, e.g.*, Response, 21-22; EX2023, ¶¶15-20 ("successfully implemented in American GNC's coremicro IMU product"). They were developed together. EX2024, 16 ("MEMS Provisional patent" and "MEMS Micro IMU Development"); EX2002, 2. And the '648 Patent describes the product. EX1001, 17:37-42 ("the micro IMU of the present invention"), 23:42-24:21 (claim 1), Fig 17, Fig. 19. The description of the coremicro IMU product in the '648 Patent illustrates that the product embodied and was coextensive with the claims:

<u>EX1001, 17:37-54</u>	<u>EX1001, 23:42-24:21 (claim 1)</u>
As shown in FIG. 17 and FIG. 18, which are a perspective view and a sectional view of the <u>micro IMU of the present invention</u> as shown in the block diagram of FIG. 1., the micro IMU comprises a first circuit board 2, a second circuit board 4, a third circuit board 7, and a control circuit board 9 arranged inside a metal cubic case 1. The first circuit board 2 is connected with the third circuit board 7 for producing X axis angular sensing signal and Y axis acceleration sensing signal to the control circuit board 9.	1. A <u>micro inertial measurement unit</u>, comprising: an angular rate producer comprising a X axis angular rate detecting unit which produces a X axis angular rate electrical signal, ...; an acceleration producer comprising a X axis accelerometer which produces a X axis acceleration electrical signal, ...; and an angular increment and velocity increment producer, which is electrically connected with said X axis, Y axis and Z axis angular rate detecting units and said X axis, Y

... The control circuit board 9 is connected with the first circuit board 2 and then the second circuit board 4 through the third circuit board 7 for processing the X axis, Y axis and Z axis angular sensing signals and the X axis, Y axis and Z axis acceleration sensing signals from the first, second and control circuit board to produce digital angular increments and velocity increments, position, velocity, and attitude solution	axis and Z axis accelerometers, receiving said X axis, Y axis and Z axis angular rate electrical signals and said X axis, Y axis and Z axis acceleration electrical signals from said angular rate producer and said acceleration producer respectively, wherein said X axis, Y axis and Z axis angular rate electrical signals and said X axis, Y axis and Z axis acceleration electrical signals are converted into are digital angular increments and digital velocity increments respectively.
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This evidence from the '648 Patent, along with the inventor notebook and weekly reports, each corroborates Mr. McCall's testimony that the '648 Patent was implemented in American GNC's "coremicro" IMU product. The coremicro IMU product "is the invention disclosed and claimed," and American GNC has shown it is entitled to a presumption of nexus for its evidence of, *e.g.*, commercial success and the failure of others. *Demaco*, 851 F.2d at 1392; *Polaris Indus.*, 882 F.3d at 1072 ("When the patentee has presented undisputed evidence that its product is the invention disclosed in the challenged claims, it is error for the Board to find to the contrary without further explanation.").

Nintendo cannot rebut American GNC's evidence of, *e.g.*, commercial success and failure of others with argument alone—as it attempts to do, *see* Reply, 16—"it must present evidence." *Polaris Indus.*, 882 F.3d at 1072. Mr.

McCall’s un rebutted and corroborated testimony—about beating MIT Draper Labs and NASA JPL to technical success, as well as American GNC’s resulting commercial success and licensing success—is tethered to the claims because the successful coremicro IMU product embodied and was coextensive with the claims. *See, e.g.*, EX2023, ¶¶8, 10-12, 21-23; EX1046, 27:3-15 (technical success before others); *see also* EX2023, ¶¶19-20; EX2019, ¶¶52-55; Response, 2-4, 39 (commercial success); Response, 4, 39; EX1048, 37:18-38:16 (successful enforcement and licensing).

Nintendo has not shown, and indeed cannot show, contrary evidence. It attempts to disparage Mr. McCall’s testimony as “subjective.” Reply, 16-17. Mr. McCall does indeed have a subjective opinion about Nintendo’s obviousness assertions concerning decades-old work for which he received many patents and is justifiably proud. EX2023, ¶3 (“In truth, I find this suggestion somewhat insulting.”). But his testimony about that work, American GNC’s technical and commercial success, and the efforts of others of which he was aware, is all objective, un rebutted fact testimony. *Id.* (“But I understand that I am not being asked for my personal or expert opinion on this matter. Instead, I confine my testimony to the factual context of the inventive work.”).

In addition to all of the reasons that a person of ordinary skill would not be motivated to, or reasonably capable of, the complex technology substitution

involved in each of Nintendo's Grounds, American GNC's un rebutted objective evidence of non-obviousness provides additional reasons that the challenged claims must be upheld.

IV. Petitioner failed to prove that the alleged combinations teach or suggest multiple elements of the claims

As shown in American GNC's Response, MEMS accelerometers and gyroscopes are not the only claim elements lacking any teaching or suggestion in Nintendo's references.

A. Petitioner failed to show that *Smith*, *Tingleff*, or *Yamawaki* disclose or render obvious "angular rate electrical signals" according to the challenged claims

In Ground 1 of its Petition, Nintendo relied solely on alleged disclosures of *Smith* for the "angular rate electrical signals" element. Petition, 18-20. Nintendo's suggestion in Reply that it relied on *Bernstein* with respect to this element is demonstrably false. Reply, 5. Switching from a single reference argument in the Petition, to a combination for a claim limitation on Reply, violates the particularity requirements of the IPR statute, Board rules, and precedents. *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (rejecting Reply relying on a combination when Petition had relied on a single reference for the limitation); *see also Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1329–31 (Fed. Cir. 2019); *Wasica Fin. GmbH v. Cont'l Auto. Sys., Inc.*, 853 F.3d 1272, 1286 (Fed. Cir. 2017). Nintendo's

arguments concerning *Bernstein* here are improper for the first time in Reply, and should be disregarded.

As discussed above in Section II.B., and in Response, the claimed “angular rate electrical signals,” properly understood in light of the plain claim language and specification disclosures, are signals that directly reflect angular rate. Response, 24-26. The laser ring gyroscopes of *Smith* instead output a signal for which the “**pulse repetition rate**” is proportional to the angular rate, requiring additional derivation to extract the rate. *Id.*, 42-44.

Nintendo does not dispute this operation in Reply, but merely asserts that the angular rate is “encoded” in the pulse repetitions. Reply, 4-5. But that is just another way of saying that the signal does not directly reflect the angular rate. Nintendo has failed its burden to show teaching or suggestion of these elements, properly construed, in *Smith*. The challenged claims must be upheld over Nintendo’s Grounds 1 and 2 for this additional reason

In Ground 3 of its Petition, Nintendo relied solely on alleged disclosures of *Tingleff* for the “angular rate electrical signals” element. Petition, 47-48, 53. Nintendo pointed only to wires from one block to another in Figure 1. *Id.* In Reply, Nintendo improperly changes its theory, citing to *Bernstein* and *Irwin* for the first time for this element. Reply, 11. It would be error to credit this new theory raised for the first time in Reply, as American GNC has not been afforded

a fair opportunity to respond.

But Nintendo also does not address its failure of proof on this element, given that *Tingleff* provides no identified details about the alleged signals between its block diagram box 24 and box 26. EX1004, Fig. 1; Response, 48. Nintendo hasn't explained whether these are "angular rate electrical signals" properly construed—that is, whether they directly reflect angular rate, or whether, like the signal outputs of *Smith's* laser ring gyroscopes, they reflect something else requiring more derivation to obtain angular rate. The challenged claims must be upheld over Nintendo's Ground 3 for this additional reason.

Similarly, in Ground 4 of its Petition, Nintendo relied solely on alleged disclosures of *Yamawaki* for the "angular rate electrical signals" element. Petition, 60-61 (identifying output of "3D gyroscope 13" box). Similarly, Nintendo also improperly changes its theory in Reply, citing to *Bernstein* and *Irwin* for the first time for this element. Reply, 13-14.

Nintendo offers nothing from *Yamawaki* to explain what sort of signals are output from the identified block. Reply, 13 ("electrical signals"). As discussed above, not all gyroscopes output signals that are "angular rate electrical signals" properly construed. Nintendo has failed its burden to show teaching or suggestion of these elements in *Yamawaki*. Response, 55. The challenged claims must be upheld over Nintendo's Ground 4 for this additional reason.

B. Petitioner failed to show that the *Yamawaki* and *Saubolle* combination discloses or renders obvious “digital velocity increments” according to the challenged claims

American GNC explained in its Response how *Yamawaki* admittedly fails to disclose or suggest “digital velocity increments.” American GNC also explained how the alleged combination with *Saubolle*—an analog device that beeps when a diver ascends too fast—would not be undertaken, and does not render the elements obvious. Response, 52-54.

In Reply, Nintendo reduces *Saubolle* to merely a suggestion to “monitor the rate of ascent” while diving. Reply, 15. But the claim element in question is the real-time output of “digital velocity increments.” *Saubolle* does not do this, it is a simple analog threshold detector. EX1011, Abstract, Fig. 3. *Yamawaki* admittedly does not do this. Petition, 68. The combination of two references that do not output “digital velocity increments” cannot be properly credited as rendering obvious what neither one does.

Nintendo has failed its burden to show obviousness, or a motivation to combine, here. The challenged claims must be upheld over Nintendo’s Ground 4 for this additional reason.

V. The Petition should be dismissed as time barred

With its Preliminary Response and Response, American GNC introduced evidence that STMicroelectronics N.V. and STMicroelectronics S.R.L., who were

long ago “served with a complaint alleging infringement of the patent” here, should have been named as real parties in interest by Nintendo. 35 U.S.C § 315(b); Response, 63-66.

To the extent that the Board does not uphold the challenged claims as non-obvious—which it should, for all of the reasons given above—the Board should allow for discovery and consider this issue. *See, e.g., Semiconductor Components Industries, LLC v. Greenthread, LLC*, IPR2023-01242, Decision on Director Review, Paper 94 (P.T.A.B. April 24, 2025).

American GNC appreciates the Panel’s May 9, 2025 Order authorizing it to file a Motion for Discovery into the factual basis for this RPI issue, and the guidance provided therein. Paper 37. As requested by the Board, American GNC will also brief the 315(b) interpretation question of first impression raised by Nintendo—specifically, whether being a named co-defendant on a Complaint, with a customer who is accused of infringement, meets the statutory text of section 315(b), and serves the statutory purpose of incentivizing parties with notice to timely bring any challenges. *See, e.g.,* Response, 64.

Nintendo’s Reply argues facts based on statements by Nintendo’s own lead counsel. Reply, 25 (*citing* EX2018, 13:13-14: “STMicro has not agreed to indemnify us”). These statements confirm that relevant communications have taken place. Discovery will illuminate why the agreement, and surrounding

communications, show a RPI relationship. *See, e.g., Samsung Electronics Co., Ltd. v. Netlist, Inc.*, IPR2022-00615, Paper 40, 2023 WL 9787488 (P.T.A.B. Feb. 3, 2023) (“any indemnification agreements and related communications ... related to the [] litigation and this proceeding are likely to help clarify whether Samsung is representing Google’s interest (*see* RPX, Paper 128, 8) or filed the Petition on Google’s behalf (*see* Ventex, Paper 148, 9)”).

Similarly, discovery will illuminate the lack of basis behind Nintendo’s arguments about different STMicro entities. *See* Reply at 23-25. STMicroelectronics N.V.—which is “commonly referred to as ST or STMicro,” *see, e.g.,* <https://en.wikipedia.org/wiki/STMicroelectronics>—is the global parent entity for “STMicro,” and is one of the alleged RPIs here.

As with obviousness, Nintendo has the burden of proof on this issue. *Ventex Co., Ltd. v. Columbia Sportswear North America, Inc.*, 2019 WL 764130, *2-6 (P.T.A.B. Jan. 24, 2019) (*designated precedential*, April 16, 2019) (noting that the “burden [is] on IPR petitioners to demonstrate that its petitions are not time-barred”); *Semiconductor Components Industries*, IPR2023-01242, Paper 94 at 3 (“whether Petitioner has met its burden of demonstrating it is not time-barred under § 315(b)”). American GNC has presented evidence—and will present more if discovery is permitted—to support its argument that STMicro should have been

named as a real party in interest or privy, and has put the issue into dispute. *Id.*;
Response 63-66.

VI. Conclusion

As detailed above, and in American GNC's Response, Nintendo failed its burden to show obviousness of elements of all challenged claims.

For all of these reasons, the challenged claims must be upheld.

Dated: May 13, 2025

Respectfully submitted,

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37 C.F.R. §42.24(d) CERTIFICATION

The undersigned hereby certifies that this submission, excluding the tables of contents, certificate of word count, exhibit list, and certificate of service, contains 5,030 words, as determined using the standard word counting feature of the Microsoft Word program.

Dated: May 13, 2025

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CERTIFICATE OF SERVICE

Petitioner has consented to e-mail service in this proceeding. Pursuant to 37 C.F.R. §42.6, the undersigned certifies that on May 13, 2025, a copy of the foregoing document was served by email upon the following counsel at the below email addresses:

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