

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMERICAN MEGATRENDS, INC., MICRO-
STAR INTERNATIONAL CO., LTD, MSI COMPUTER CORP.,
GIGA-BYTE TECHNOLOGY CO., LTD., and G.B.T., INC.,
Petitioners,

v.

KINGLITE HOLDINGS INC.,
Patent Owner.

Case IPR2015-01094
Patent 6,401,202 B1

Before TREVOR M. JEFFERSON, BRIAN J. McNAMARA, and
J. JOHN LEE, *Administrative Patent Judges*.

JEFFERSON, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
37 C.F.R. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

On November 6, 2015, we instituted *inter partes* review of claims 1, 9–11, 19–21, 29–31, 39, and 40 of U.S. Patent No. 6,401,202 B1 (Ex. 1001, “the ’202 patent”). Paper 16 (“Dec.”). Patent Owner, Kinglite Holdings Inc., filed a Patent Owner Response, Paper 28 (“PO Resp.”), to the Corrected Petition (Paper 9, “Pet.”) filed by American Megatrends, Inc., Micro-Star International Co., Ltd, MSI Computer Corp., Giga-Byte Technology Co., Ltd., and G.B.T., Inc. (collectively “Petitioner”). Petitioner filed a Reply. Paper 36 (“Pet. Reply”). Patent Owner filed a Contingent Motion to Amend (Paper 29, “Mot. to Amend”), and Petitioner filed an Opposition to Patent Owner’s Motion to Amend (Paper 35, “Pet. Opp. Amend”). Patent Owner filed a Motion to Exclude. Paper 24 (“PO Mot. to Exclude”). Petitioner also filed a Motion to Exclude. Paper 39 (“Pet. Mot. To Exclude”). A transcript of an oral hearing held on August 1, 2016 (Paper 47, “Tr.”) has been entered into the record.

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. §318(a). We base our decision on the preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

Having reviewed the full record, we conclude that Petitioner has demonstrated by a preponderance of the evidence that the challenged claims are unpatentable for the reasons set forth below. For the reasons discussed below, we also deny Patent Owner’s Motion to Amend and both Patent Owner’s Motion to Exclude and Petitioner’s Motion to Exclude.

A. *Related Proceedings*

The parties state that the ’202 patent has been asserted in *Kinglite Holdings Inc. v. Giga-Byte Techn. Co. Ltd.*, Case No. 1:14-cv-04989 (C.D.

Cal.); *Kinglite Holdings Inc. v. Micro-Star International Co. Ltd.*, Case No. 1:14-cv-03009 (C.D. Cal.); *Kinglite Holdings, Inc. v. EliteGroup Comput. Sys. Co., Ltd. et al.*, Case No. 3:16-cv-00912 (N.D. Cal.); *Kinglite Holdings, Inc. v. Giga-Byte Tech. Co., Ltd.*, Case No. 2:15-cv-009615 (C.D. Cal.); and *Kinglite Holdings, Inc. v. Micro-Star Int'l. Co., Ltd.*, Case No. 2:15-cv-009612 (C.D. Cal.). Paper 32, 2; Paper 11, 1.

B. The '202 Patent

The '202 patent discloses “a method and apparatus to perform multitasking in a basic input and output system (BIOS).” Ex. 1001, Abstract. “Interrupt signals are enabled at predetermined interrupt times” such that “[a] first task is performed in response to the interrupt signals at the interrupt times” and “[a] second task is performed between the successive interrupt times.” *Id.* Figure 5, provided below, “illustrat[es] an architecture to perform multitasking in a [BIOS].” *Id.* at 2:22–23.

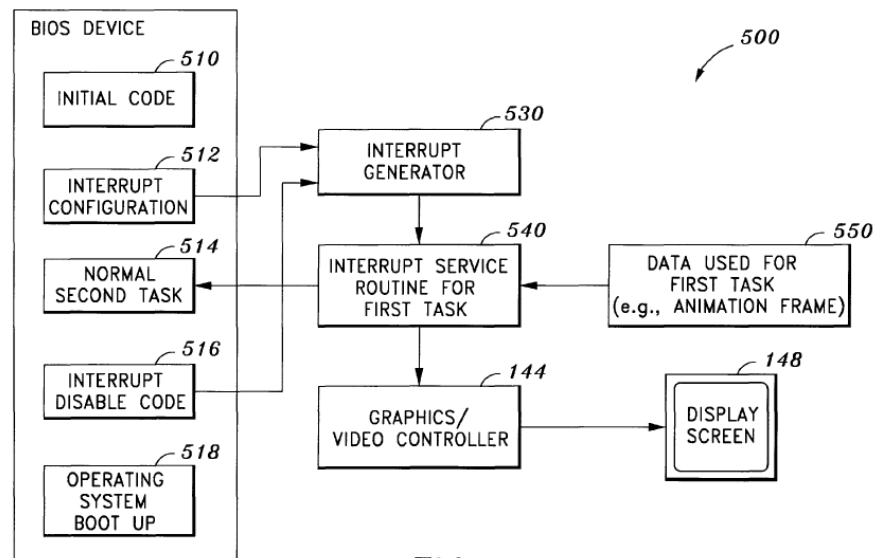


FIG. 5

Figure 5 shows architecture 500 to perform multitasking in a BIOS, interrupt generator 530, first task interrupt service routine (ISR) 540, and

first task data 550. *Id.* at 11:10–27. “BIOS includes an initial code 510, and interrupt configuration 512, a normal second task 514, an interrupt disable code 516, and an operating system (OS) boot-up code 518.” *Id.* at 11:17–20.

The Specification states further that

[t]he ISR 540 is executed each time the interrupt generator 530 generates an interrupt signal such as when the timer reaches a specified value. When the ISR 540 is complete, the program control is returned to the normal second task 514 which will continue to perform the normal second task in the BIOS. The ISR 540 may use data provided by the first task data 550. The ISR 540 may operate upon the graphics engine in performing the first task. For example, the first task may be a graphics animation that display[s] animated sequence of banners and/or advertisements.

Id. at 12:2–12.

C. Illustrative Claims

Independent claims 1, 11, 21, and 31 are reproduced below (Ex. 1001, 14:33–42, 15:1–12, 15:45–57, 16:23–34):

1. A method to perform multitasking in a basic input and output system (BIOS) by a processor, the method comprising:
 - enabling interrupt signals at predetermined interrupt times;
 - performing a first task in response to the interrupt signals at the interrupt times; and
 - performing a second task between the successive interrupt times.
11. A computer program product comprising:
 - a computer usable medium having computer program code embodied therein to perform multitasking in a basic input and output system (BIOS) by a processor, the computer program product having:

- computer readable program code for enabling interrupt signals at predetermined interrupt times;
- computer readable program code for performing a first task in response to the interrupt signals at the interrupt times; and
- computer readable program code for performing a second task between the successive interrupt times.

21. A computer data signal embodied in a carrier wave comprising:

- a multitasking code segment to perform multitasking in a basic input and output system (BIOS) by a processor, the multitasking code segment having:
 - an interrupt enable code segment for enabling interrupt signals at predetermined interrupt times;
 - a first task code segment for performing a first task in response to the interrupt signals at the interrupt times; and
 - a second task code segment for performing a second task between the successive interrupt times.

31. A system comprising;

- a processor; and
- a memory coupled to the processor, the memory containing a program code, the program code when executed by the processor causing the processor to:
 - enable interrupt signals at predetermined interrupt times,
 - perform a first task in response to the interrupt signals at the interrupt times, and
 - perform a second task between the successive interrupt times.

D. Grounds of Unpatentability Instituted

We instituted *inter partes* review on following grounds of unpatentability (Dec. 18–19):

Claims 1, 9–11, 19–21, 29–31, 39, and 40 of the '202 patent under 35 U.S.C. § 102 as anticipated by AMIBIOS¹; and

Claims 1, 9–11, 19–21, 29–31, 39, and 40 of the '202 patent under 35 U.S.C. § 102 as anticipated by Pearce².

II. ANALYSIS

A. *Claim Interpretation*

In the Decision to Institute, we applied the following claim constructions.

We determined that “*task*” does not require further construction, but as recited in the '202 patent claims does not exclude “the functions of setting up a programmable timer and determining which task to run.” Dec. 7.

We determined that “interrupt controller” is construed as “a circuit or other device that generates or handles interrupts.” *Id.* at 8.

The parties do not dispute these constructions, and we adopt them in this Decision for the reasons given in the Decision to Institute. *Id.* at 7–8.

B. *Level of Skill in the Art*

Petitioner contends that a person of ordinary skill in the art would be “a person holding a Bachelor of Science degree or its equivalent in electrical engineering or a related technical field such as computer science or software engineering, having at least one year of experience in computer programming.” Pet. 7. Patent Owner does not object to Petitioner’s

¹ American Megatrends, AMIBIOS 98 TECHNICAL REFERENCE (1998) (Ex. 1003, “AMIBIOS”).

² U.S. Patent No. 5,694,582 to Pearce, filed Jan. 26, 1996, and issued Dec. 2, 1997 (Ex. 1005, “Pearce”).

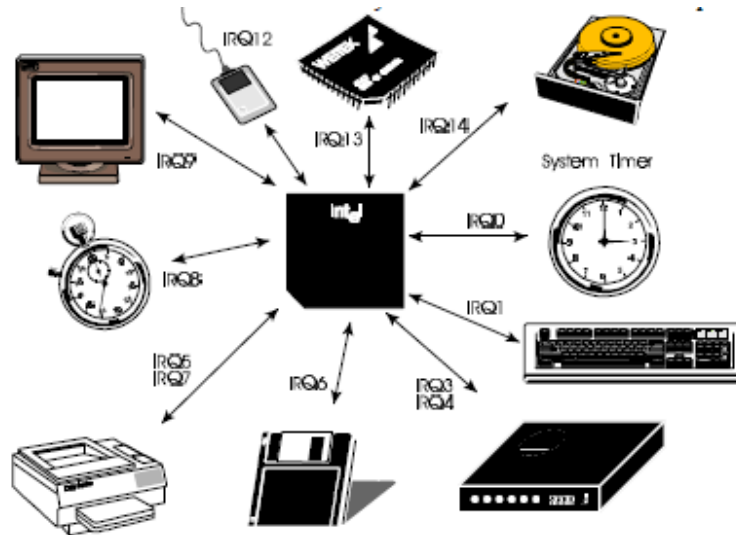
contention. Prelim. Resp. 4–5. We agree with Petitioner regarding the applicable level of ordinary skill.

C. Anticipation by AMIBIOS (Ex. 1003)

1. AMIBIOS (Ex. 1003)

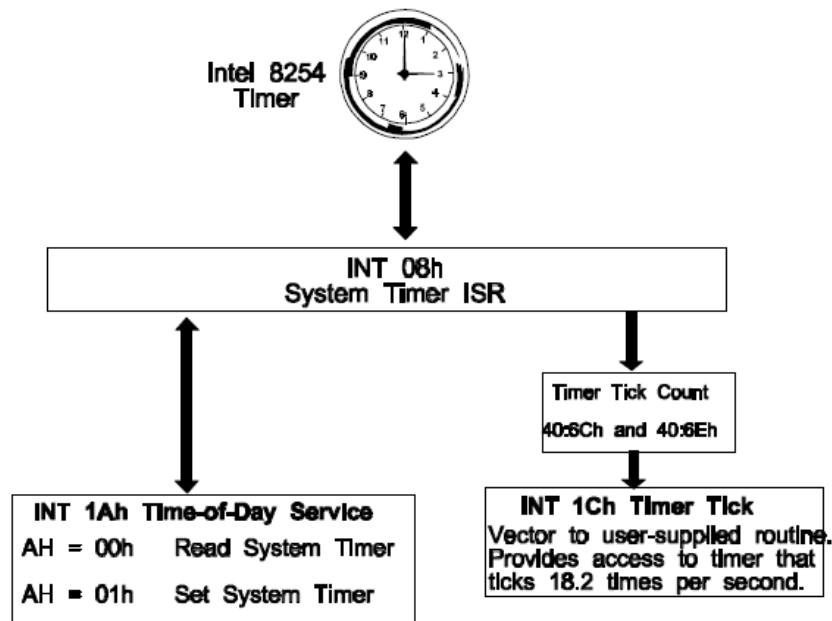
AMIBIOS is a technical manual that describes the technical details of “BIOS (Basic Input/Output System)[, which] is a collection of routines between the hardware and the systems software. The BIOS ROM contains hard disk utilities, device drivers, interrupt service routines, and other code and data between the system hardware and the systems software.” Ex. 1003, 7. AMIBIOS states that “BIOS is the software layer between the systems software and the hardware” and “works in two directions.” *Id.* at 8. “One part of the BIOS receives and processes requests from programs to perform the standard BIOS I/O services” where the “mechanism for these requests is called an interrupt.” *Id.* “Interrupts are invoked by software programs.” *Id.* “The other side of the BIOS communicates with the hardware (video display, disk drives, keyboard, serial and parallel ports, and so on) in the language and codes used by each device. This side of the BIOS also handles any hardware device-generated interrupts.” *Id.*

The AMIBIOS “Type of Interrupts” Figure is reproduced below. *Id.* at 89.



The Type of Interrupts Figure above depicts various interrupts that are reserved in BIOS. *Id.*

The Types of Interrupts Figure shows various hardware interrupts, such as a keyboard interrupt (IRQ1). *Id.* AMIBIOS discloses that “every time a key is pressed on the keyboard, the keyboard hardware generates a hardware interrupt (IRQ)” that are “vectored to Interrupt Service Routines (ISRs) that generally reside in the BIOS.” *Id.* The Types of Interrupts Figure also shows System Timer IRQ0 as an interrupt. The “Timer Interrupt (IRQ0)” Figure is depicted below. *Id.* at 102.



The Timer Interrupt (IRQ0) Figure depicts how the system timer is used with the BIOS. *Id.*

The Time Interrupt (IRQ0) Figure illustrates how the Intel 8254 Timer is used with the BIOS and INT 08h. *Id.* "INT 08h can be used to measure time increments independent of the system clock frequency. INT 08h is called approximately 18.2 times per second." *Id.* "INT 08h increments the system time count . . . every time it is called." *Id.* In addition, AMIBIOS states that "[p]rogrammers can revector INT 1Ch to their own routines and use the clock feature for timed events." *Id.*

2. Printed Publication and Patent Owner's Motion to Exclude

Patent Owner objected to AMIBIOS on evidentiary grounds (Paper 21), but now seeks exclude AMIBIOS because it does not qualify as a printed publication and cannot form the basis of a challenge to the patentability of the claims under 35 U.S.C. § 102(b) (PO Mot. to Exclude

2).³ Patent Owner contends that Petitioner’s evidence is insufficient to support the date of publication and public accessibility of the reference. PO Mot. to Exclude 2–4. Furthermore, Patent Owner states that the Petitioner’s supplemental exhibits and Declaration of S. Shankar (Ex. 1015) should be excluded as improper supplemental information based on the timing of the submission. *Id.* at 7–8. In addition, Patent Owner contends that the proprietary information marking that limited further distribution of AMIBIOS is “mutually exclusive with the AMI reference as prior art” and cannot be relied on as a “body of knowledge held by the hypothetical person of skill in the art.” PO Resp. 2–3 (citing *Motionless Keyboard Co. v. Microsoft Corp.*, 486 F.3d 1376 (Fed. Cir. 2007)). Accordingly, Patent Owner contends that there is no evidence in the record supporting a publication date and public accessibility of AMIBIOS prior to June 18, 1998, the application date of the ’202 patent. PO Mot. to Exclude 4–5. At best, Patent Owner avers, “[t]he earliest shipment [of AMIBIOS] to an AMI ‘customer’ reflected on Exhibit B to Mr. Shankar’s declaration (Ex. 1015) was August 26, 1998.” PO Mot. to Exclude 3.

³ Although Patent Owner objected to AMIBIOS on the basis of its authenticity (Paper 21, 4–5), the substance of Patent Owner’s Motion to Exclude addresses whether AMIBIOS is a printed publication. Patent Owner improperly attempts to raise new arguments regarding this issue in Patent Owner’s Motion to Exclude (Paper 24) that should have been included in the Patent Owner Response. PO Resp. 2 (stating that “[f]or the reasons set forth in Kinglite’s motion to exclude, there are evidentiary issues surrounding the AMIBIOS reference as a prior art publication”). Nonetheless, as explained herein, even if we consider Patent Owner’s improperly raised arguments, we conclude that AMIBIOS qualifies as a prior art printed publication and is admissible evidence.

For AMIBIOS to qualify as a printed publication, the document “must have been sufficiently accessible to the public interested in the art.” *In re Lister*, 583 F.3d 1307, 1311 (Fed. Cir. 2009). “A given reference is ‘publicly accessible’ upon a satisfactory showing that such document has been disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, can locate it.” *SRI Int’l, Inc. v. Internet Sec. Sys., Inc.*, 511 F.3d 1186, 1194 (Fed. Cir. 2008) (quoting *Bruckelmyer v. Ground Heaters, Inc.*, 445 F.3d 1374, 1378 (Fed. Cir. 2006)); see *Kyocera Wireless Corp. v. Int’l Trade Comm’n*, 545 F.3d 1340, 1350 (Fed. Cir. 2008) (stating that a reference is publicly accessible “upon a satisfactory showing that such document has been disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, can locate it.”)

Petitioner did not file an opposition to Patent Owner’s Motion to Exclude, but addresses this issue in its Reply to the Patent Owner Response, where the issue also is raised. PO Resp. 2–3; Pet. Reply 18–23. Petitioner responds, and we agree, that the evidence cited in Exhibit 1015 supports that AMIBIOS was publically accessible at least as early as June 1998. *Id.* at 20. Petitioner’s declarant, Subramonian Shankar, provides credible and convincing evidence establishing that 300 copies of AMIBIOS were printed for distribution, that AMIBIOS was made available to customers and the interested public, and that it was distributed on June 5, 9, and 15 of 1998. Ex. 1015 ¶¶ 2, 4, 12. Patent Owner’s arguments based on the sale of the AMIBIOS on August 25, 1998 do not undermine the testimony and evidence that AMIBIOS was checked out of AMI’s stockroom and distributed to

customers. Ex. 1015 ¶¶ 7, 12, (stating that AMIBIOS was checked out of the stockroom as part of the shipping process). Thus, contrary to Patent Owner's contentions (PO Mot. to Exclude 3), we are persuaded that Petitioner's evidence supports the contention that AMIBIOS was publicly accessible and distributed in June 1998.

Also, Patent Owner's arguments focus on actual dissemination of AMIBIOS and fail to address Petitioner's evidence that AMIBIOS was made available to the public to the extent that persons interested and ordinarily skilled in the subject matter could locate it. *See SRI Int'l*, 511 F.3d at 1194; *Kyocera Wireless*, 545 F.3d at 1350. We determine that Petitioner's declarant and supporting evidence provides convincing support by a preponderance of the evidence that AMIBIOS was made available to the interested public as of at least June 1998.

We are also not persuaded by Patent Owner's argument based on the testimony of Mr. Sartori that the proprietary markings on AMIBIOS indicate it was subject to nondisclosure agreements. PO Resp. 2–3⁴; *see* Ex. 2006, 26:16–27:7 (Deposition of Gabriele Sartori). We determine that Mr. Sartori's testimony that “normally we receive those documents [with a proprietary information notice] on the NDA [non-disclosure agreement]” is insufficient to support a finding that AMIBIOS was not publically accessible. Mr. Sartori also testified that such documents were normally disclosed to the public, stating “it's not a guarantee that inside the document [is] information that you cannot disclose to third parties . . . it's also true that

⁴ This argument was raised in the Patent Owner Response and not in the Motion to Exclude. PO Resp. 2–3. We address Patent Owner's arguments here as they relate to the printed publication status of AMIBIOS.

we'll produce those document[s] normally." Ex. 2006, 26:23–27–4. Instead, we credit the testimony of Mr. Shankar, president and founder of AMI, that AMI did not restrict the availability of AMIBIOS and that it was accessible without such an agreement. Ex. 1015 ¶¶ 1, 3, 4.

We are equally unpersuaded by Patent Owner's argument that the timing of Petitioner's submission of supplemental information and its effect on the publication date of AMIBIOS warrants the remedy of exclusion Patent Owner seeks. PO Mot. to Exclude 7. With respect to timing, we note that Patent Owner's motion fails to provide any citations establishing the allegedly untimely service of Petitioner's evidence in response to Patent Owner's Objections to Evidence Pursuant to 37 C.F.R. § 42.64(b)(1) (Paper 21). PO Mot. to Exclude 2, 7–8. As such, Patent Owner has not shown that Petitioner's evidence served in response to Patent Owner's objection is untimely. *See id.* Petitioner served the Shankar Declaration (Ex. 1015) in response to Patent Owner's objections (Paper 21). Patent Owner subsequently noticed the deposition of Mr. Shankar (Paper 38), deposed him (Ex. 2010), and submitted a Motion for Observations on Cross Examination of Mr. Shankar (Paper 41). Patent Owner also acknowledges that the supplemental evidence served by Petitioner was in response to Patent Owner's objection regarding the admissibility of AMIBIOS. PO Mot. to Exclude 2, 7–8. We find that Petitioner has offered insufficient basis for us to exclude Petitioner's evidence based on its timing or substance.

For the above reasons, we deny Patent Owner's motion to exclude AMIBIOS and Mr. Shankar's Declaration (Exhibit 1015). We also determine that Petitioner has shown by a preponderance of the evidence that AMIBIOS is a printed publication under 35 U.S.C. § 102(b).

3. Analysis of Prior Art Challenge based on AMIBIOS

Petitioner contends that AMIBIOS anticipates claims 1, 9–11, 19–21, 29–31, 39, and 40. Pet. 13–18. Petitioner provides citations to the Declaration of Gabriele Sartori⁵ (Ex. 1010) to support its contention that AMIBIOS discloses the limitations of the challenged claims. *Id.* at 16–24 (citing Ex. 1010 ¶¶ 45, 91, 93–94, 96, 98, 102, 105, 107, 113, 161, 164). Petitioner also provides claim charts showing the limitations of claims 1, 9, 10, 11, 19, 20, 21, 29, 30, 31, 39, and 40, and the corresponding disclosures of AMIBIOS. Pet. 18–23.

Petitioner contends that AMIBIOS discloses “enabling interrupt signals at predetermined interrupt times,” as recited in claim 1, via the INT 08h interrupt. Pet. 14–15. Similar limitations are found in independent claims 11, 21, and 31. Petitioner argues persuasively that the system disclosed in AMIBIOS enables the interrupts, performs a task during the interrupt, and returns to normal BIOS operations for the second task involving the CPU. Pet. 14–18.

Petitioner provides sufficient support for its contention that AMIBIOS discloses “performing a first task in response to the interrupt signals at the

⁵ We are unpersuaded by Patent Owner’s argument that we should ignore information in the Declaration of Dr. Sartori not discussed by Petitioner because they are improper incorporation by reference in violation of 37 C.F.R. § 42.6(a)(3). PO Resp. 3–4. First, we note that Patent Owner has not provided any examples or references to Dr. Sartori’s testimony that allegedly exceeds the Petition’s arguments. We also note that on the full record before us, Patent Owner had the opportunity to cross-examine Dr. Sartori on the full scope of his Declaration. See Ex. 2006. Accordingly, we decline Patent Owner’s request that we ignore citations to Dr. Sartori’s Declaration not explicitly discussed by Petitioner.

interrupt times” as recited in claim 1 and related claims 11, 21, and 31. Pet. 16–17. Similarly, Petitioner provides sufficient supporting evidence that AMIBIOS discloses “performing a second task between the successive interrupt times.” Pet. 17; Ex. 1001, 14:40–41. Petitioner acknowledges that the ’202 patent describes the second task as “any normal BIOS operation.” Pet. 17 (citing Ex. 1001, 11:35–38). Petitioner identifies multiple BIOS-related tasks that are performed between the successive INT 08h interrupts. Pet. 18 (citing Ex. 1003, 10, 89; Ex. 1010 ¶¶ 96, 161).

With respect to claims 9, 19, and 29, Petitioner has shown persuasively that AMIBIOS discloses “[t]he method of claim 1 wherein enabling the interrupt signals comprises: configuring an interrupt controller to generate the interrupt signals at the predetermined interrupt times,” as recited in claim 9 and related claims 19 and 29. Pet. 15, 20–22; Pet. Reply 10. Petitioner has provided convincing evidence and testimony that the Intel 8254 Programmable Interrupt Timer described in AMIBIOS discloses the limitations of dependent claim 9. Pet. 15, 20 (citing Ex. 1010 ¶ 98). We also find that Petitioner has provided persuasive evidence that dependent claims 10, 20, 30, 39, and 40 are disclosed in the AMIBIOS periodic scheduling of INT 08h. Pet. 20–23.

For the reasons above, we find that Petitioner has presented convincing evidence and argument to show by a preponderance of the evidence that AMIBIOS discloses claims 1, 9–11, 19–21, 29–31, 39, and 40 of the ’202 patent, as set forth in the Petition and Petitioner’s Reply. We address Patent Owner’s contentions regarding these challenged claims below.

Patent Owner argues that the preamble of the claims are limiting for independent claims 1, 11, and 21, and require “the performance of ‘multitasking in a basic input and output system (BIOS) *by a processor.*’” PO Resp. 4. Patent Owner further argues that AMIBIOS fails to anticipate an interrupt that is generated or processed by the CPU as recited in the preamble. *Id.* at 5. Specifically, Patent Owner argues that INT 08h in AMIBIOS is generated by hardware devices and is not a processor based interrupt, because “[w]hen a hardware device or program needs the processor, it sends a signal or instruction to the processor, requesting a certain service or task.” PO Resp. 5 (quoting Ex. 1003, 89).

We agree with Patent Owner that the preamble of claim 1, which recites “multitasking in a basic input and output system (BIOS) by a processor” is limiting. We determine that, when read in the context of the claims and the patent Specification the preamble of claim 1 “give[s] life, meaning, and vitality” to the claims, “indicat[ing] a reliance on both the preamble and the claim body to define the invention.” *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (citing *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257 (Fed. Cir. 1989)); *see also Boehringer Ingelheim Vetmedica, Inc. v. Schering-Plough Corp.*, 320 F.3d 1339, 1345 (Fed. Cir. 2003) (stating that preamble language limits claim when it recites “the essence of the invention without which performance of the recited steps is nothing but an academic exercise”).

With respect to the processor limitations in independent claims 1, 11, and 21, we agree with Petitioner that AMIBIOS discloses that INT 08H is enabled by a processor. Pet. Reply 3–4. We agree with Petitioner that

AMIBIOS discloses “a system timer hardware interrupt (IRQ0) from a system timer to the Intel processor” that is vectored to “Interrupt Service Routines (ISRs) that generally reside in the BIOS.” Pet. Reply 3–4 (citing Ex. 1003, 89) (emphasis omitted). We also credit the testimony of Patent Owner’s witness, Dr. Shahin Nazarian, who testified that the hardware interrupts and ISRs in AMIBIOS are executed in the processor. Ex. 1016, 25:8–10 (agreeing that ISRs are code executed by the processor), 150:2–13 (same), 161:15–163:17 (agreeing that “the processor would execute the INT 08h system timer ISR” and that the hardware interrupts prompts the processor to execute tasks in BIOS). Accordingly, Petitioner has shown by a preponderance of the evidence that AMIBIOS discloses to a person of ordinary skill in the art that the hardware interrupt prompts the processor to execute tasks in BIOS, and discloses enabling “by a processor.” See Ex. 1016, 161:15-163:18; Ex. 2006, 32:2–7; Pet. 14.

In contrast to the preamble of independent claims 1, 11, and 21, claim 31 does not recite “BIOS” or “multitasking” in either the preamble or the body of the claim. Dec. 13–14; see Ex. 1001, 14:33–42, 15:1–12, 15:45–57, 16:23–34. At the oral hearing, Patent Owner admitted that claim 31 has a fatal deficiency as it does not recite the BIOS and multitasking limitations. Tr. at 24:14–19 (stating that “[claim 31] ha[s] a fatal deficiency of not specifying the BIOS. So [Patent Owner is] limiting our argument today to 1, 11, and 21). We agree with Patent Owner’s admission that claim 31, which is not limited to BIOS, is anticipated by AMIBIOS. Accordingly, based on Patent Owner’s admission, we find that independent claim 31 and its dependent claims, 39 and 40, are anticipated by AMIBIOS.

Patent Owner further argues that Petitioner has failed to show that AMIBIOS discloses “performing a first task in response to the interrupt signals at the interrupt timers” as recited in independent claims 1, 11, 21, and 31. PO Resp. 5–7. Specifically, Patent Owner contends that “[t]he subject claims require that a first task be performed in response to the interrupt signals—not that the [INT 08h] signal itself performs such task.” PO Resp. 6.

We are not persuaded by Patent Owner’s arguments, which fail to address the four tasks Petitioner describes that meet the “first task” as recited in the claims. Pet. Reply 5–6 (citing Pet. 16–17). For example, we agree with Petitioner that AMIBIOS discloses incrementing the system timer and running user-supplied routines as first tasks in response to the interrupt. *See* Pet. 16, 17 (citing Ex. 1003, 102); Ex. 1016, 122:15–22, 127:21–128:7, 158:2–5. Patent Owner’s arguments are based on a requirement that AMIBIOS disclose *directly* “performing a first task in response to the interrupt signals at the interrupt timers,” such that there are no intermediate steps between the interrupt and the performance of the task. Tr. 38:7–39:11, 40:1–42:3. We disagree that “performing a first task” as claimed is so limited. Indeed, Patent Owner admits the claim requires “that a first task be performed *in response* to the interrupt signals.” PO Resp. 6. We find that Petitioner has convincingly shown that AMIBIOS discloses tasks performed *in response* to an interrupt signal. Specifically, Petitioner demonstrates by a preponderance of the evidence that the INT 08h interrupt vectors to user-supplied routines and increments a timer, both of which disclose the claimed “first task” limitation of claims 1, 11, 21, and 31. Pet. Reply 6–7, 11–12; Pet. 17; Ex. 1003, 102; Ex. 1004, 1; Ex. 1010 ¶ 93; Ex. 1016, 163:4–17.

Contrary to Patent Owner's arguments, we also do not understand Petitioner to assert that tasks associated with setting up the timer in AMIBIOS are the claimed "first task." Petitioner argues instead that setting up the timer discloses "enabling interrupt signals at predetermined times" as recited in the claims. Pet. Reply 5. We agree with Petitioner on this point, finding persuasive the cross examination testimony of Patent Owner's witness, Dr. Nazarian, that supports the argument that AMIBIOS discloses "enabling interrupt signals at predetermined times," as recited in the challenged independent claims, because it discloses a programmable interval timer that generates system timer hardware interrupt IRQ0. Ex. 1016, 160:15–24 (interval timer programmed by CPU), 170:15–172:4 (interval timer generating hardware interrupts).

We are also not persuaded by Patent Owner's argument that "housekeeping tasks" that are "unalterable, mandatory and uninterruptable" are not the claimed "first tasks." PO Resp. 7. Patent Owner's argument is neither persuasive nor commensurate with the scope of the claims, which broadly recite tasks and do not exclude the type of tasks run based on such attributes.

Petitioner has also presented convincing argument and evidence that AMIBIOS discloses "performing a second task between successive interrupt times" as recited in independent claims 1, 11, and 21. Pet. 17–20; Ex. 1003, 89; Ex. 1010 ¶ 96; Reply 9–10. We note that a preferred embodiment in the '202 patent describes the second task as "normal BIOS operations." Ex. 1001, 11:35.⁶ Patent Owner's expert agrees that POST (Power On Self

⁶ Specifically, the '202 patent states that:

Test)⁷ is a normal BIOS operation that takes place before loading the operating system, and is disclosed in AMIBIOS. Ex. 1016, 185:22–186:3; Pet. Reply 9. Thus, Petitioner has shown by a preponderance of evidence that AMIBIOS discloses “the performing a second task” limitation of the challenged claims.

With respect to dependent claims 10, 20, 30 and 40, which recite “wherein enabling the interrupt signals comprises scheduling an interval timer to generate the interrupt signals at the predetermined interrupt times” (Ex. 1001, 14:64–67), Patent Owner contends that the hardware interrupt is unalterable and is not scheduled or configured by AMIBIOS (PO Resp. 7–8). We disagree, finding that Patent Owner misreads the requirements of dependent claims 10, 20, 30 and 40. These dependent claims do not require that the hardware interrupt is alterable or configurable. Based on the record, we find that Petitioner has provided persuasive evidence that AMIBIOS schedules an interval timer (e.g., Intel 8254) to generate interrupt signals at the predetermined interrupt time of 18.2 times per second. Ex. 1003, 102; Ex. 1010 ¶ 100; Ex. 1016, 158:14–159:6; Ex. 2006, 32:5–7. The

The normal second task 514 includes code to perform the normal BIOS operations. These normal BIOS operations usually take longer to complete than the initial BIOS operations performed by the initial code 510. Examples of these normal BIOS operations include complete memory tests, initialization of peripheral devices such as mass storage controllers, communication interface devices.

Ex. 1001, 11:34–40.

⁷ The '202 patent states that “Power On Self Test (POST) refers to the instructions that are executed to configure and test the system hardware prior to loading an OS.” Ex. 1001, 3:26–28.

preponderance of the evidence also shows that AMIBIOS uses a predetermined value of 18.2 times per second to schedule the interrupt. Ex. 1003, 102; Ex. 1010 ¶ 100; Ex. 1016, 158:14–159:6; Ex. 2006, 32:5–7; *see also* Ex. 2002 ¶ 27 (Patent Owner’s declarant stating that “AMIBIOS 8 teaches the periodic interval timer INT 1Ch can be configured by BIOS to enable or configure interrupt signals at predetermined interrupt times”); Ex. 1016, 161:15–162:8 (testifying that AMIBIOS teaches the INT 08H being responsive to the Intel 8254 interval timer).

4. Conclusion

Based on the full record and in consideration of the arguments presented, we find that Petitioner has established by a preponderance of the evidence that claims 1, 9–11, 19–21, 29–31, 39, and 40 are unpatentable under 35 U.S.C. § 102 as anticipated by AMIBIOS.

D. Anticipation by Pearce (Ex. 1005)

1. Pearce

Pearce is a U.S. patent titled “Operation System Independent Polled Interface for Extension BIOS (XBIOS) Operations.” Ex. 1005, at [54]. Pearce discloses a system management mode (SMM) that provides a polled interface that is activated periodically by a timer. *Id.* An application makes a call to extension basic input output system (XBIOS) by leaving a notification in a specific storage location. *Id.* at 1:65–2:5. During SMM activation while an application is running, the system checks the storage location periodically for any XBIOS requests. *Id.* Pearce discloses that:

When an XBIOS request is posted, SMM processes the requested XBIOS command and leaves a response from the XBIOS call in the storage. The application program, which continually loops, monitors the storage and detects replacement of the XBIOS

request by the XBIOS result to realize completion of an XBIOS call.

Id. at 2:6–11.

2. Analysis of Prior Art Challenge based on Pearce

Petitioner contends that Pearce anticipates claims 1, 9–11, 19–21, 29–31, 39, and 40. Pet. 24–31. Petitioner cites SMM operation 320, which is periodically invoked by interrupts from a standard timer, as the first task. *Id.* at 24. Petitioner relies on application program 310 run by the operating system that makes XBIOS requests as the second task recited in the challenged claims. *Id.* at 24–25. Petitioner cites the Sartori Declaration in support of its contentions. *Id.* at 25, 26–31 (citing Ex. 1010 ¶¶ 117–119, 121, 123–124, 126–127, 138, 140, 144, 146).

Patent Owner argues that “[c]laims 1, 11, and 21, all expressly require that the claimed steps be performed *in BIOS*”, specifically prior to “boot[ing] up [the] operating system.” PO Resp. 8 (emphasis added) (citing Ex. 1001, Fig. 6). Patent Owner contends that the preamble and limitations of claims 1, 11, and 21, require that “all” claimed “tasks” are performed prior to disabling the interrupt generator (step 650) and booting up the operating system (step 655) as shown in Figure 6 of the ’202 patent. PO Resp. 8–9 (citing Ex. 1001, Fig. 6). Because the interrupt generator is disabled in the final step, Patent Owner contends that no interrupt signals are sent during the functions of the operating system, which is then booted as the final step of Figure 6. PO Resp. 9. Patent Owner argues that Pearce discloses running one program in XBIOS and another program in the operating system as interrupted by the SMM Handler, and that this is not

executing multiple tasks “in BIOS” as required by independent claims 1, 11, and 21. PO Resp. 10–11.

Petitioner disputes Patent Owner’s reading of the claim limitations, arguing that under the broadest reasonable interpretation, “multitasking in BIOS” as recited in the claims is accomplished when at least one task is multitasked in BIOS. Pet. Reply 14–15. Comparing independent claim 11 with dependent claim 18, Petitioner argues that dependent claim 18 expressly recites that the “second task is part of the BIOS,” which is narrower than independent claim 11. *Id.* (citing Ex. 1001, 15:1–5, 15:31–32, comparing claim 11 to claim 18). Thus, Petitioner contends that under “the doctrine of claim differentiation, the base claims (independent claims 1, 11, and 21) would not require the second task to be part of the BIOS.” Pet. Reply 14 (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (en banc) (stating “the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim”). With respect to Pearce, Petitioner argues that Pearce describes a first task (the task of monitoring registers that use SMM operations 320) and a second task (the tasks related to the application program running in the operating system). Pet. 24; Pet. Reply 16–17.

Based on the complete record, we agree with Patent Owner that claims 1, 11, and 21, require the first and second task to be “in BIOS.” Although the ’202 patent Specification discusses BIOS run-time services that are post-operating system services, this discussion is part of the background that goes on to discuss BIOS boot-up operations as being the problem to be addressed by multitasking in BIOS. Ex. 1001, 1:44–63.

Accordingly, we do not agree with Petitioner's characterization that BIOS run-time operations are described as part of the possible embodiments of the '202 patent. Instead, the plain meaning of the claim requires the recited "task" to be run "in BIOS."

Based on this claim interpretation, Petitioner's argument and evidence fails to show that the application program in Pearce discloses the second task performed in BIOS. Pet. 24; Pet. Reply 16–17. We are also not convinced by Petitioner's assertion that the XBIOS request made by an application program in Pearce "shows a second task performed in the BIOS at specific times." Pet. Reply 17. Petitioner fails to present persuasive evidence that an XBIOS request discloses a second task to a person of ordinary skill in the art. Ex. 1005, 5:44–47.

For the reasons discussed above, we are not persuaded that Pearce discloses that the processor performs "multitasking in a basic input output system (BIOS)." See Pet. Reply 17–18; Pet. 24. Accordingly, Petitioner has not demonstrated that Pearce anticipates the claim limitations of independent claims 1, 11, and 21. With respect to independent claim 31, however, as discussed above, Patent Owner admits that the scope of this claim does not limit the tasks to be performed in BIOS or limit the claims to multitasking. Tr. 48:12–18. Because the BIOS and multitasking limitations are not present in independent claim 31 or its related dependent claims 39 and 40, upon review of the complete record, we determine that Petitioner has shown by a preponderance of the evidence that claims 31, 39, and 40 are anticipated by Pearce, as set forth in the Petition. See Pet. 24–31; Pet. Reply 16–18.

3. Conclusion

Based on the foregoing, we find that Petitioner has not shown by a preponderance of the evidence that claims 1, 9–11, 19–21, 29, 30 are unpatentable under 35 U.S.C. § 102 as anticipated by Pearce. Petitioner has shown by a preponderance of the evidence that claims 31, 39, and 40 are unpatentable under 35 U.S.C. § 102 as anticipated by Pearce.

III. PETITIONER MOTION TO EXCLUDE

Petitioner moves to exclude the deposition testimony of Mr. Satori (Ex. 2006) on the basis that Patent Owner's counsel, George Summerfield, had not been admitted *pro hac vice* before cross examining Mr. Satori. Pet. Mot. To Exclude 2. Petitioner filed motions to exclude the cross-examination deposition testimony taken by Patent Owner's counsel, Mr. Summerfield, in related cases before the Board based on this issue. *See, e.g., America Megatrends, Inc., et al. v. Kinglite Holdings, LLC*, IPR2015-01079, slip op. at 25–29 (PTAB October 27, 2016)(Paper 49). Although the deponents and exhibits differ in each proceeding, the facts and circumstances are largely the same and not disputed by the parties. Accordingly, for the same reasons discussed in IPR2015-01079, we deny Petitioner's motion to exclude the deposition testimony of Mr. Satori (Ex. 2006), determining that the parties' conduct in this case does not warrant excluding Mr. Satori's deposition transcript from evidence.

IV. CONTINGENT MOTION TO AMEND

Patent Owner filed a Contingent Motion to Amend seeking to cancel claims 1, 9, 11, 19, 21–30, 31, and 39, and substitute new amended claims 41–46 for dependent claims 2, 10, 12, 20, 32, and 40, in the event that the

challenged claims of the '202 patent were found to be unpatentable. Mot. to Amend 3. Petitioner opposed the contingent motion. Pet. Opp. Amend 1–18. Having determined above that the challenged claims are unpatentable, we address Patent Owner’s contingent motion below.

A. Principles of Law—Motion to Amend

In an *inter partes* review, a patent owner may file a motion to amend to propose a reasonable number of substitute claims for each challenged claim. 35 U.S.C. § 316(d)(1)(B); 37 C.F.R. § 42.121(a)(3). Among other requirements, a patent owner must show support in the original disclosure of the patent for each claim that is added or amended. 37 C.F.R.

§ 42.121(a)(b)(1). Furthermore, the proposed substitute claims in an *inter partes* review “may not enlarge the scope of the claims of the patent.”

35 U.S.C. § 316(d)(3); 37 C.F.R. § 42.121(a)(2)(ii).

The moving party, Patent Owner, also has the burden to establish it is entitled to the requested relief. 37 C.F.R. § 42.20(c); *MasterImage 3D, Inc. v. RealD Inc.*, Case IPR2015-00040, slip op. at 4 (PTAB July 15, 2015)(Paper 42) (precedential) (indicating a patent owner, as movant, bears “the ultimate burden of persuasion . . . to demonstrate the patentability of the amended claims”); see *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1306 (Fed. Cir. 2015) (indicating 37 C.F.R. § 42.20(c) is “plainly applicable to motions to amend filed during [*inter partes* reviews]”); but see *In re Aqua Products*, 833 F.3d 1335, 1335–36 (Fed. Cir. 2016) (order granting rehearing *en banc* to address burdens of persuasion and production regarding motions to amend under 35 U.S.C. § 316(d) and vacating *In re Aqua Products*, 823 F.3d 1369 (Fed. Cir. 2016)).

B. Proposed Substitute Claims and Party Contentions

Patent Owner seeks to cancel claims 1, 9, 11, 19, 21–30, 31, and 39, leaving unchanged dependent claims 3–8, 13–18, and 33–38. Mot. to Amend 3–7. Specifically, Patent Owner seeks to cancel original dependent claim 2, which depends from independent claim 1, and substitute new independent claim 41. Substitute claim 41 incorporates the limitations of original claims 1 and 2. Proposed substitute claim 41 recites:

41. A method to perform multitasking in a basic input and output system (BIOS) by a processor, the method comprising:
enabling, interrupt signals at predetermined interrupt times;
performing a first task in response to the interrupt signals at the interrupt times;
performing a second task between the successive interrupt times; and
disabling the first task after the second task is completely performed.

Mot. to Amend 4–5 (emphasis showing text added to original claim 2 from original claim 1). Substitute claim 41 adds the limitation “disabling the first task after the second task is completely performed” from original claim 2. A similar limitation was incorporated to substitute claims 43 and 45.

Patent Owner also seeks to cancel original dependent claim 10, which depended from original claim 1, and substitute dependent claim 42, which amends the limitations of original claim 10. Proposed substitute claim 42 recites:

42. The method of claim 41 wherein enabling the interrupt signals comprises:
either configuring an interrupt controller to generate the interrupt signals at the predetermined interrupt times, or

scheduling an interval timer to generate the interrupt signals at the predetermined interrupt times.

Id. at 5 (emphasis showing text added to original claim 10, which depended solely from original claim 1). Substitute claim 42 adds a conditional limitation stating that enabling the interrupt comprises “*either* configuring an interrupt controller . . . , *or* scheduling an interval timer.” *Id.* (emphasis added). Substitute claims 43, 44, 45, and 46 replace canceled claims 12, 20, 32, and 40 respectively.

Patent Owner contends that its amendments are supported by the ’202 patent specification and provides conclusory arguments that Petitioner have failed to show that AMIBIOS or Pearce disclose the amended limitations of substitute claims 41–46. Mot. to Amend 9–12.

Petitioner argues (Pet. Opp. Amend 2–3), and we agree, that Patent Owner attempts to use the amendment procedure to address grounds of unpatentability not subject to this trial. Specifically, Patent Owner amends claim 43, which is a substitute for claim 12, by limiting the term “computer usable medium” to be “non-transitory.” Mot. to Amend 5–6. We agree that Patent Owner’s proposed amendment is not responsive to any ground of patentability at issue in this proceeding, and instead addresses patentability under 35 U.S.C. § 101 regarding transitory media. *See Global Tel*Link Corp. v. Securus Tech., Inc.*, IPR2014-01278 at 34 (PTAB Jan. 21, 2016) (Paper 34) (holding that correcting a claim dependency error is not responsive to a ground of unpatentability); *In re Nuijten*, 500 F.3d 1346, 1353 (Fed. Cir. 2007) (transitory media as ineligible subject matter). Petitioner also asserts that Patent Owner’s proposed cancellation and substitution of claims fails to respond to a ground of unpatentability

involved in the trial because claims, 2, 12, and 32 were not at issue in the instituted trial. *Microsoft Corp.*, 789 F.3d at 1308 (stating that “Section 42.121(a)(2)(i) simply requires that a patentee's amendment be made in order to ‘respond to a ground of unpatentability involved in the trial,’ and not for some other reason.”). Patent Owner has not made a showing that Patent Owner’s amendment substituting independent claims 41, 43, and 45 for claims 2, 12, and 32 respond to a ground of unpatentability involved in the present trial.

We also agree with Petitioner that Patent Owner’s conditional limitation in substitute claims 42, 44, and 46, requiring “either” one limitation “or” another limitation, invokes alternatives that potentially broaden the scope of substitute claims 42, 44, and 46 by eliminating an original limitation of the claims 10, 20, and 40. Pet. Opp. Amend 3–4 (discussing either/or as broadening the scope of the original claim). Thus, we find that the conditional limitations of claims 42, 44, and 46 improperly broaden the scope of the claims they replace. 35 U.S.C. § 316(d)(3); 37 C.F.R. § 42.121(a)(2)(ii).

Finally, we also find that Patent Owner has not carried the burden of showing that all the proposed substitute claims 41–46 are patentably distinct over the prior art of record and prior art known to Patent Owner. *See Idle Free Sys., Inc. v. Bergstrom, Inc.*, Case IPR2012-00027 at 7 (PTAB June 11, 2013) (Paper 26) (informative); *MasterImage 3D, Inc. v. RealD Inc.*, Case IPR2015-00040 at 2 (PTAB July 15, 2015) (Paper 42) (precedential). Patent Owner’s analysis provides conclusory statements that neither AMIBIOS nor Pearce teach or disclose the limitations added to substitute claims 41–46. Mot. to Amend 9–11. For example, Patent Owner fails to address or discuss

the materiality of prior art references asserted in the Petition (but not instituted), such as Stanley (Ex. 1006), Thayer (Ex. 1007), and Jurgens (Ex. 1004), or material art of record in any other proceeding before the Office involving the '202 patent. Indeed, Patent Owner's motion is silent as to any references other than Pearce and AMIBIOS. Mot. to Amend 9–11. When given the opportunity at the oral hearing to address Petitioner's opposition to Patent Owner's motion to amend that raised these deficiencies in Patent Owner's motion to amend, Patent Owner rested on its briefs. Tr. 51:13–22.

Upon consideration of Patent Owner's motion to amend and associated evidence and argument, we conclude that Patent Owner failed to carry its burden. Accordingly, we deny Patent Owner's motion to amend.

V. CONCLUSIONS

For the foregoing reasons, we conclude that Petitioner has demonstrated by a preponderance of the evidence that claims 1, 9–11, 19–21, 29–31, 39, and 40 are unpatentable as anticipated under 35 U.S.C. § 102 by AMIBIOS, and claims 31, 39, and 40 are unpatentable as anticipated by Pearce under 35 U.S.C. § 102. We also deny Patent Owner's motion to amend and motion to exclude and Petitioner's motion to exclude.

VI. ORDER

Accordingly, it is

ORDERED that claims 1, 9–11, 19–21, 29–31, 39, and 40 of the '202 patent are unpatentable under 35 U.S.C. § 102 as anticipated by AMIBIOS,

and claims 31, 39, and 40 of the '202 patent are unpatentable under 35 U.S.C. § 102 as anticipated by Pearce.

FURTHER ORDERED that Patent Owner's Motion to Amend is *denied*;

FURTHER ORDERED, that Petitioner's Motion to Exclude is *denied*;

FURTHER ORDERED, that Patent Owner's Motion to Exclude is *denied*; and

FURTHER ORDERED, that because this is a final written decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

Case IPR2015-01094
Patent 6,401,202 B1

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