

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 IPR2015-01488
Patent 7,185,189 B2

Before GLENN J. PERRY, TREVOR M. JEFFERSON, and
BRIAN J. McNAMARA, *Administrative Patent Judges*.

JEFFERSON, *Administrative Patent Judge*.

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

I. INTRODUCTION

American Megatrends, Inc., Micro-Star International Co., Ltd, MSI Computer Corp., Giga-Byte Technology Co., Ltd., and G.B.T., Inc. (collectively “Petitioner”) filed a Petition (Paper 7, “Pet.”) to institute an *inter partes* review of claims 1–50 of U.S. Patent No. 7,185,189 B2 (Ex. 1001, “the ’189 patent”) pursuant to 35 U.S.C. § 311 *et seq.* Patent Owner, Kinglite Holdings Inc., filed a Preliminary Response to the Petition (Paper 11, “Prelim. Resp.”). On January 21, 2016, we instituted *inter partes* review of claims 1–50 of the ’189 patent. Paper 15 (“Dec. to Inst.”). Patent Owner filed a Patent Owner Response (Paper 21, “PO Resp.”) and Petitioner filed a Reply (Paper 21, “Reply”). Petitioner also filed a Motion to Exclude. Paper 24 (“Pet. Mot. To Exclude”). Patent Owner filed an Opposition to Petitioner’s Motion to Exclude (Paper 25, “Opp. Mot. Exclude”), and Petitioner filed a reply (Paper 26, “Pet. Mot. Reply”). A transcript of an oral hearing held on October 17, 2016 (Paper 28) 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 1–50 of the ’189 patent are unpatentable for the reasons set forth below. For the reasons discussed below, we also deny Petitioner’s Motion to Exclude.

A. Related Proceedings

The parties state that the '189 patent has been asserted in *Kinglite Holdings Inc. v. Giga-Byte Technology Co. Ltd.*, Case No. 1:14-cv-04989 (C.D. Cal.), and *Kinglite Holdings Inc. v. Micro-Star International Co Ltd.*, Case No. 1:14-cv-03009 (C.D. Cal.). Paper 6, 1; Paper 9, 1.

B. The '189 Patent

The '189 patent is titled “Method of Storing BIOS Modules and Transferring Them to Memory for Execution.” Ex. 1001, at [54]. The '189 patent discloses a “[m]ethod [] for processing basic input output system (BIOS) modules of a computer to initialize the computer.” *Id.* at [57]. The '189 patent states that “[s]elected BIOS modules required for operation of the computer are transferred from the critical nonvolatile storage device, and optionally a protected area of the secondary nonvolatile storage device, to system memory and executed to initialize the computer.” *Id.*

Figure 2, depicted below, illustrates an embodiment of the '189 patent.

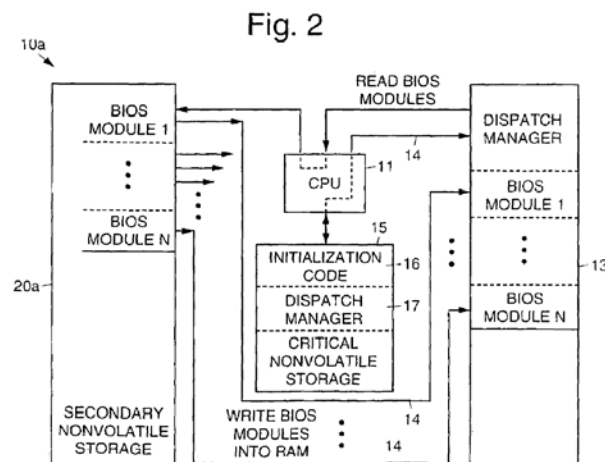


Figure 2 illustrates computer 10a that stores BIOS modules in a protected area, transfers selected BIOS modules to system memory 13 and executes selected BIOS modules. *Id.* at 4:52–60. A first portion of nonvolatile storage device 15 stores initialization code 16 that is operative to initialize CPU 11 and system memory 13. *Id.* at 5:9–11. A second portion of “nonvolatile storage device 15 stores a dispatch manager 17 that contains a list of tasks, which must execute to fully initialize the computer 10a.” *Id.* at 11–14. Dispatch manager 17 selectively loads and iteratively executes a number of tasks relating to complete initialization of the computer. *Id.* at 14–17.

The '189 patent also states that

In operation, when the computer 10a is turned on, the initialization code 16 is run to initialize the CPU 11 and the system memory 13. The dispatch manager 17 is then loaded 20 into the system memory 13. The dispatch manager 17 executes the list of tasks contained therein to cause all required BIOS modules to be loaded into the system memory 13 [that] must be executed.

Id. at 5:18–24.

Figure 6, depicted below, illustrates method 50 used to store BIOS modules in a computer protected area.

Fig. 6

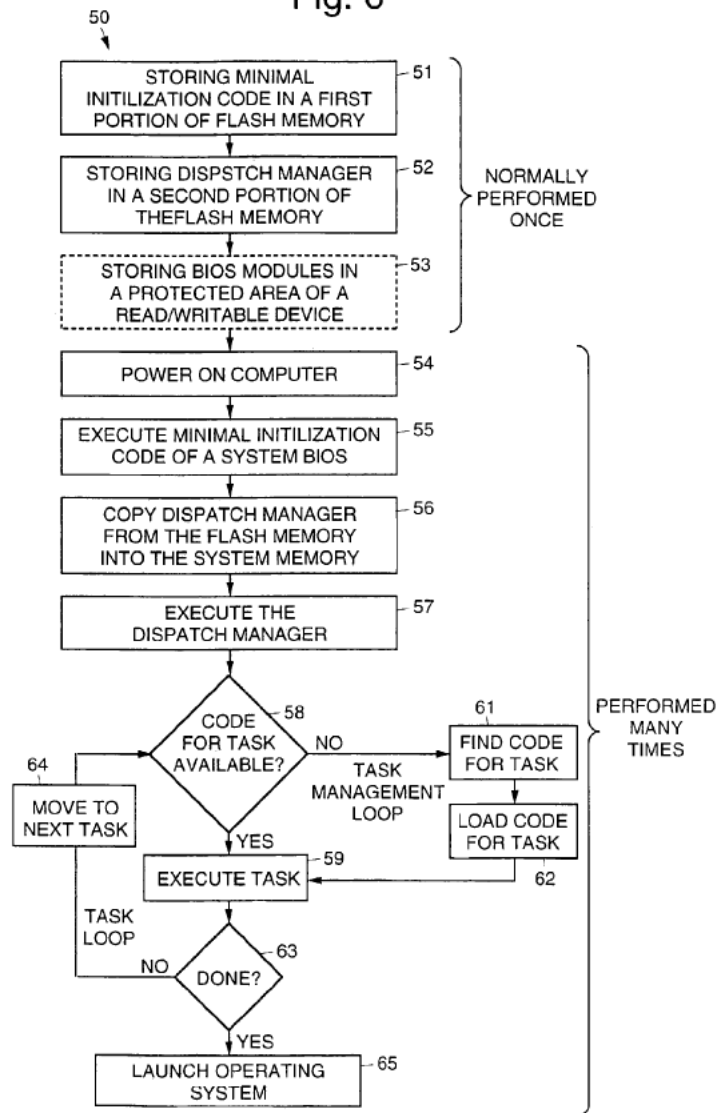


Figure 6 provides a flow diagram depicting in step 51 that minimal initialization code 16 corresponding to a small portion of the computer system BIOS is stored in a first portion of nonvolatile storage device 15. *Id.* at 8:20–35. In step 52, dispatch manager 17 containing tasks relating to configuring the computer 10a is stored in a second portion of nonvolatile storage device 15. *Id.* A plurality of BIOS modules are stored in step 53 in

a protected area of a secondary nonvolatile storage device. *Id.* Storage device 15 “may comprise a hard disk drive, a compact disk ROM, a flash memory, a floppy disk drive, a Zip drive, or a SuperDisk drive, for example.” *Id.* at 8:35–38.

Once the computer is turned on in step 54, minimal initialization code is executed in step 55. In step 56, the dispatch manager 17 is copied in step 56 from the critical nonvolatile storage device 15 into the system memory 11, and executed in step 57. *Id.* at 8:40–44. Steps 58 and 59 execute tasks that are already loaded into memory or find the code necessary to execute the tasks if not already loaded into memory. *Id.* at 8:44–53. The operating system of the computer is launched in step 65 once all the tasks are loaded and executed. *Id.* at 8:53–57.

C. Illustrative Claims

Independent claims 1 and 14 are illustrative and reproduced below (Ex. 1001, 9:1–24, 10:33–54):

1. A computer program product comprising: a computer usable medium having computer program code embodied therein to process basic input output system (BIOS) modules of a computer, said computer having a central processing unit (CPU), a system memory and a nonvolatile storage device, the computer usable medium having:
 - computer readable program code for storing a predetermined amount of BIOS initialization code in a first portion of the nonvolatile storage device;
 - computer readable program code for storing a dispatch manager in a second portion of the nonvolatile storage device that is operative to selectively load and

iteratively execute a predetermined number of tasks relating to initialization of the computer;

computer readable program code for executing the predetermined amount of BIOS initialization code to initialize the CPU and the system memory;

computer readable program code for copying the dispatch manager from the nonvolatile storage device to the system memory; and

computer readable program code for executing the dispatch manager to execute the predetermined number of tasks to initialize the computer.

14. A system for processing basic input output system (BIOS) modules comprising:

a processor;

a nonvolatile storage device coupled to the processor; and

a memory coupled to the processor, said memory containing instruction sequences which, when executed by the processor, cause the processor to:

store a predetermined amount of BIOS initialization code in a first portion of the nonvolatile storage device that is operative to initialize the processor and a system memory,

store a dispatch manager in a second portion of the nonvolatile storage device that is operative to selectively load and iteratively execute a predetermined number of tasks relating to complete initialization,

execute the predetermined amount of BIOS initialization code to initialize the processor and the system memory,

copy the dispatch manager from the nonvolatile storage device to the system memory, and

execute the dispatch manager to execute said predetermined number of tasks.

D. Grounds of Unpatentability Instituted

We instituted *inter partes* review on the following grounds of unpatentability (Dec. to Inst. 24–25):

Reference(s)	Basis	Claims Challenged
Shipman ¹	35 U.S.C. § 103(a)	1 and 14
Shipman and Harmer ²	35 U.S.C. § 103(a)	2–5, 7–13, 15–18, 20–30, 32–42, and 44–50
Shipman, Harmer, and Patel ³	35 U.S.C. § 103(a)	6, 19, 31, and 43

II. ANALYSIS

A. Claim Interpretation

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016). Under this standard, we interpret claim terms using “the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description

¹ U.S. Patent No. 5,671,413 to Shipman et al., filed Oct. 31, 1994, and issued Sep. 23, 1997 (Ex. 1005, “Shipman”).

² U.S. Patent No. 5,835,760 to Harmer, filed Oct. 13, 1995, and issued Nov. 10, 1998 (Ex. 1003, “Harmer”).

³ U.S. Patent No. 5,999,989 to Patel, filed Jun. 17, 1997, and issued Dec. 7, 1999 (Ex. 1007, “Patel”).

contained in the applicant's specification." *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997).

In the Decision to Institute, we applied the following claim constructions. Dec. to Inst. 10–12. We determined that “BIOS initialization code” as recited in claims 1, 14, 27, and 39 as “predetermined amount of BIOS initialization code” does not require further construction. *Id.* at 11. We also determined that “dispatch manager” as recited in claims 1–4, 14–17, 27–29, and 39–41, is construed as a program that handles the locating, loading and executing of task code. *Id.* at 12. Finally, we adopted the parties' agreed construction of “system memory” as “random access memory (RAM).” *Id.* As neither Petitioner's nor Patent Owner's arguments persuade us to revise our interpretations of “BIOS initialization code,” “dispatch manager,” or “system memory,” we adopt as final our determinations of the broadest reasonable interpretations of those terms. Dec. to Inst. 10–12.

B. Level of Skill in the Art

Petitioner contends that a person of ordinary skill in the art for the '189 patent would be “a person having at least a Bachelor of Science degree in computer science or software engineering or a Bachelor of Science degree in a technical field requiring computer science or software engineering courses and at least one year of industry experience in computer science or engineering related to firmware.” Pet. 10 (citing Ex. 1013 ¶ 15). Patent Owner does not dispute this proposed level of skill in the art. Based on the full record, we agree with Petitioner.

C. Claims 1 and 14: Shipman (Ex. 1005)

1. Shipman (Ex. 1005)

Shipman discloses that BIOS services for a computer “are implemented via a number of independently executable service components.” Ex. 1005, [57]. The BIOS uses a decompression dispatcher for decompressing and dispatching the service components into RAM of the computer for execution. *Id.* When the service components are no longer needed, the decompression dispatcher also removes the service components and stores them in a compressed state. *Id.*

Shipman discloses that “different . . . (BIOS) functions are split into components, or objects, and selected ones of the components are stored in a compressed state and these compressed components are only decompressed and executed when needed.” *Id.* at 1:47–51. Shipman further states that

[t]he BIOS stored in a read only memory (ROM) is organized into a set of components, each being dispatched as an independent executable object after being copied to a shadow memory portion of a random access memory (RAM). Three types of components are defined, initialization components, runtime components and functional components. The initialization components are dispatched during a Power On Self Test (POST) cycle *such that the initialization components are active during initialization.*

Id. at 1:60–2:1 (emphasis added).

Figure 1 below depicts a block diagram of a computer system that embodies the invention disclosed by Shipman.

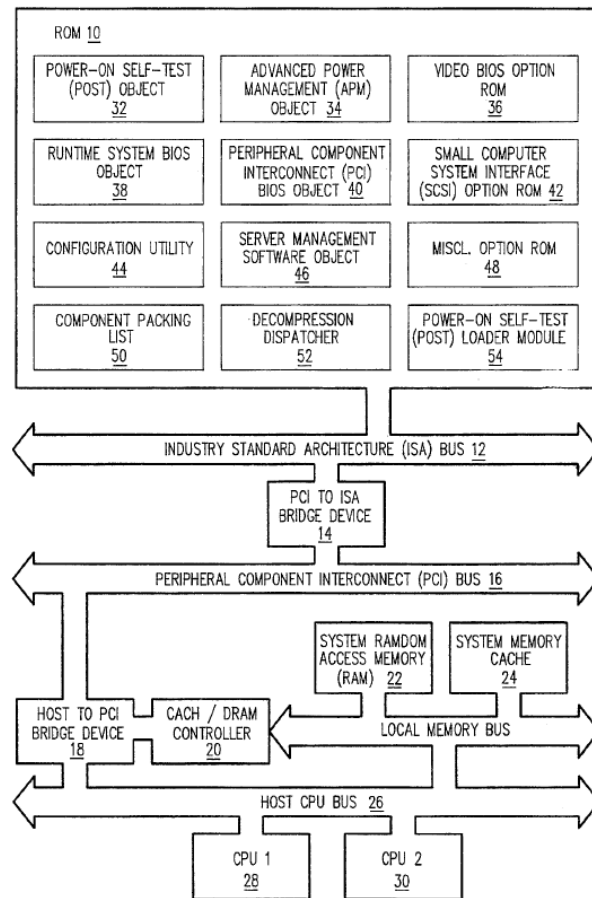


FIG. 1

Figure 1 of Shipman shows read only memory (ROM) 10, dynamic random access memory (DRAM) 22, memory cache 24, controller 20, and central processing units (CPUs) (28, 30). *Id.* at 2:63–3:1. The modularized BIOS in ROM 10 facilitates transfer of data and instructions between the CPUs and peripheral devices. *Id.* at 3:2–5. The BIOS is organized into components (32 through 54) that each perform a certain task or function and are capable of being dispatched as independent executable objects. *Id.* at 3:6–12. The BIOS components fall into three types: initialization components, runtime components, and functional components. *Id.*

2. Analysis

Petitioner contends that Shipman renders claims 1 and 14 obvious. Pet. 14–31. Petitioner provides claim charts and citations to the Declaration of Michael Perla (Ex. 1013) to support its contentions. *Id.* (citing Ex. 1013 ¶¶ 58, 61, 66, 68, 69, 71, 73, 75–79, 84–91, 96, and 97).

Petitioner contends that the BIOS components and objects used with the decompression dispatcher in Shipman disclose the BIOS modules, BIOS initialization code, nonvolatile storage, and dispatch manager of claims 1 and 14. Pet. 14–15. Petitioner contends that to the extent Shipman does not expressly disclose “executing the predetermined amount of BIOS initialization code to initialize the CPU and the system memory” as recited in the challenged claims, Shipman’s disclosure of beginning instructions of testing and initializing the memory controller in Figure 2 (Ex. 1005, Fig. 2, step 202) renders the limitation obvious. Pet. 15–16.

Petitioner provides detailed evidence and argument showing that Shipman discloses a computer program with BIOS modules (Pet. 16–18), code for storing a predetermined amount of BIOS initialization code in storage (*id.* at 18–20), a dispatch manager that selectively loads and iteratively executes tasks related to initialization (*id.* at 20–23), code for executing the BIOS initialization code (*id.* at 23–25), and code for copying the dispatch manager from storage memory to system memory and executing the dispatch manager to execute the tasks (*id.* at 25–26).

Patent Owner contends that Petitioner’s declarant testimony from Mr. Perla should be disregarded (PO Resp. 3–5) and that Mr. Perla’s testimony

fails to show that Shipman discloses that the dispatch manager “selectively load[s] and iteratively execute[s] a predetermined number of tasks relating to complete initialization of the computer” as recited in claims 1 and 14 (PO Resp. 7–8).

With respect to Mr. Perla’s testimony, Patent Owner contends that Mr. Perla’s declaration testimony (Ex. 1013 ¶ 56) is contradicted and undermined by his deposition testimony that shows him scrambling and leading counsel “on a wild goose chase” to support his declaration (PO Resp. 3–5⁴ (citing Ex. 2010, 28:7–8, 29:7–23, 32:20–33:6, 33:15–20, 33:21–34:14; 35:7–36:25, 46:1–12)). Patent Owner argues that Mr. Perla’s testimony should be ignored because he “fabricates an aspect of modularity” in the Harmer reference to combine it with the modularity contemplated in the Shipman reference. PO Resp. 3–5. We disagree, finding that the deposition testimony cited by Patent Owner concerning “portions of BIOS” as contrasted with “BIOS modules” does not support the conclusion that Mr. Perla’s testimony should be disregarded in its entirety or given no weight. Considered in its entirety (Ex. 2010 and Ex. 1013), we find sufficient support and explanation for Mr. Perla’s testimony regarding modularity of Harmer and Shipman. In addition, Patent Owner’s deposition questions are

⁴ We note that Patent Owner’s citations to the testimony of Mr. Perla (PO Resp. 3–5) do not support Patent Owner’s contentions. For example, the Patent Owner response quotes Mr. Perla’s testimony (PO Resp. 3–4), but the deposition exhibit citations (Ex. 2010, 28:7–8, 28:10–12, 28:13–16), do not contain the quoted language and do not support Patent Owner’s contentions. In the absence of accurate citations to the record, we have considered Mr. Perla’s testimony in its entirety (*see* Ex. 2010).

narrowly drawn and fail to support Patent Owner's contentions that Mr. Perla fabricated his testimony regarding the modular teachings of the Harmer reference. PO Resp. 3–5 (citing Ex. 2010, 28:7–8, 29:7–23, 32:20–33:6, 33:15–20, 33:21–34:14; 35:7–36:25, 46:1–12). Accordingly, we do not disregard the testimony of Mr. Perla.

With respect to the merits of the Shipman disclosure, Patent Owner contends that Mr. Perla's testimony shows that Shipman offers only a binary choice to load either all class components or one class component, but fails to show selectively loading less than all class components. PO Resp. 7–8 (citing Ex. 2010, 22:22–24, 22:25–30, 25:16–26:23). In sum, Patent Owner asserts that Shipman does not disclose “selectively loading” as recited in claims 1 and 14, arguing that the claims require the option of loading more than one, but less than all, components. PO Resp. 7–8.

We are not persuaded by Patent Owner's contentions. Petitioner provides persuasive evidence that Figure 5 of Shipman (a flowchart depicting how components are dispatched) is used with the “packing list” to determine which modules to load and execute. Pet. 20–21; Reply 1–2. We agree with Petitioner that Mr. Perla's testimony (Ex. 2020, 26:22–28:3) supports the disclosure evidenced in Shipman that the packing list allows for selection of a smaller amount of the available modules. We find that steps 502 and 504 in Figure 5 of Shipman disclose that not all components in a class may be loaded and expressly branch to step 512 to refer to the packing list to load selected components of a class. *See* Ex. 1005, 12:49–56. Thus, we agree with Petitioner that Figure 5 of Shipman “refer[s] to step 512 (get

packing information), step 514 (uncompress and place in RAM), step 516 (check if there are more components to uncompress), and if yes proceed to step 518 (decrement counter and get packing list information as stated in step 512).” Reply 1. Based on complete record, we find that Figure 5 of Shipman discloses that less than all components, but more than one component, of a class may be loaded. Ex. 1005, Fig. 5 (steps 504, 512, 514, 516, and 518).

We also note that even if Shipman were limited to loading one or all class components, “the selectively load” limitation of claim 1 is disclosed in the packing list used in Shipman to select which modules are needed even if the choice was limited one component or all components. Thus, we are not persuaded by Patent Owner’s argument that “selectively load and iteratively execute a predetermined number of tasks relating to complete initialization of the computer” requires more than one but less than all components to disclose selectively loading. PO Resp. 7–8. We find that Shipman’s “decompression dispatcher” is operative to execute a predetermined number of tasks. “When dispatching components the decompression dispatcher works from a Packing List provided in the ROM image by the BIOS build process.” Ex. 1005, 5:27–29. The packing list in Shipman “provides a detailed description of the packing as well as other important pieces of information regarding the types of components.” *Id.* at 5:31–34. Consistent with the teachings of Shipman, we agree with Petitioner’s argument and testimony from Mr. Perla that a person of ordinary skill in the art would

understand that a packing list specifies a predetermined number of tasks.
Pet. 21–22; Ex. 1013 ¶ 78.

Patent Owner also contends that Shipman differs from the '189 patent which “depicts [in Figure 6] that a minimum degree of BIOS initialization code must be executed (step 55) in order for both the processor and system memory to be ready for the operation of the dispatch manager (steps 56–57). PO Resp. 8–9. Patent Owner argues that the opposite process occurs in Shipman where “the system cannot be initialized unless the decompression dispatcher decompresses and dispatches the main POST component.” *Id.* at 9. Patent Owner asserts that

unlike the teachings of the '189 Patent, where the operation of the BIOS initialization code is executed before the operation of the dispatch manager, the component charged with the initialization of the memory in Shipman, i.e., POST component (32), comes into play only after the operation of the decompression dispatcher (52).

Id. at 9–10. Thus, Patent Owner argues that Shipman does not disclose “BIOS initialization code” or the “dispatch manager” of the '189 patent because the dispatch manager must be operating on initialized memory. *Id.* at 9–10 (citing Ex. 2010, 71:11–23).

We are not persuaded by Patent Owner’s arguments, which conflate the POST Loader and POST disclosed in Shipman. Petitioner relies on the POST Loader to disclose the “BIOS initialization code” limitations. Pet. 18–20, 27; Reply 3–5. Shipman describes the process of dispatching its modular BIOS in Figure 2. Ex. 1005, Fig. 2, 2:32–33. We find that Figure 2 of Shipman discloses the initialization of memory controller related

components in step 202 before the initialization of the decompression dispatcher (dispatch manager) and execution of POST. Ex. 1005, 12:8–13, Fig. 2 (steps 202, 204, and 206). Petitioner relies on the POST Loader as the code in step 202 of Figure 2 as the BIOS initialization code that leads to the dispatch manager being copied and executed. Pet. 19; Reply 4; Ex. 1013

¶ 73. Patent Owner’s arguments are not commensurate with the scope of the Shipman reference, which discloses code that initializes the memory to copy and execute the dispatch code. Ex. 1005, 6:49–59, 12:10–16; Ex. 1013

¶¶ 71, 86. Once initialized, Shipman includes BIOS modules like POST that is handled by the dispatch manager to initialize the rest of the system. Ex. 1005, 4:53–54, 6:61–67, 12:12–16, Fig. 2 (steps 204, 206).

We are not persuaded by Patent Owner’s argument that Shipman fails to disclose “BIOS initialization code” or the “dispatch manager” as recited in claims 1 and 14. We credit and adopt Petitioner’s evidence and argument showing that the POST Loader discloses the “BIOS initialization code” limitations and the “decompression dispatcher” discloses the dispatch manager limitation. Reply 3–5; Pet. 18, 20; Ex. 1013 ¶¶ 75–76; Ex. 1005, 4:37–40; 6:50–59.

Based on the full record, Petitioner has provided sufficient evidence and argument that Shipman teaches the limitations of claims 1 and 14. Thus, we determine that Petitioner has shown by a preponderance of the evidence that claims 1 and 14 are unpatentable as obvious under 35 U.S.C § 103(a) over Shipman.

D. Claims 2–5, 7–13, 15–18, 20–30, 32–42, and 44–50:

Shipman (Ex. 1005) and Harmer (Ex. 1003)

1. Harmer (Ex. 1003)

Harmer (Ex. 1003) is cited and discussed in the '189 patent as background prior art. Ex. 1001, 1:63–2:9. The '189 patent states that in Harmer “[t]he host computer executes instructions contained in the first portion of the BIOS and reads the second portion of the BIOS (i.e., the entire BIOS) from the protected area of the hard disk drive into the system RAM.” Ex. 1001, 1:56–60 (discussing Harmer). Harmer discloses a method where a portion of the BIOS used to start and initialize a host computer is stored within the mass memory storage rather than stored within ROM. Ex. 1003, [57].

Harmer states that “[a] first portion of the BIOS (initialization code) is stored in a read only memory (ROM) which is not a flash memory, and a second portion of the BIOS is stored in a protected area of a mass memory storage peripheral computer device (hard disk) rather than in ROM.” Ex. 1001, 1:45–49. “[T]he second portion of the BIOS may be expansion BIOS associated with a particular peripheral computer device or system BIOS associated with the host computer.” *Id.* at 1:50–53.

2. Analysis

Petitioner contends that Shipman and Harmer render claims 2–5, 7–13, 15–18, 20–30, 32–42, and 44–50 obvious. Pet. 31–57. Petitioner provides claim charts (Pet. 44–56) and citations to the prior art and testimony in support of its contention. Petitioner also provides an articulated

reason with a rational underpinning to support why a person of ordinary skill in the art would be motivated to combine the decompression dispatcher in Shipman with the distribution of BIOS to different memory devices of Harmer. Pet. 32. Petitioner contends that the combination of Harmer and Shipman would be a combination of familiar elements according to known methods that would yield predictable results. Pet. 33 (citing *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 416 (2007)).

Petitioner provides citations to the art of record and testimony of Mr. Perla to support its contentions that the BIOS modules stored in nonvolatile memory disclosed in Shipman, combined with Harmer's usage of storing BIOS in secondary nonvolatile storage devices, teaches the limitations of independent claims 27 and 39 and dependent claims 2–5, 7–13, 15–18, 20–26, 28–30, 32–38, 40–42, and 44–50. Pet. 33–57. The challenged claims are directed to storing BIOS modules in a protected area of secondary nonvolatile storage while the dispatch manager and BIOS initialization code are stored in the nonvolatile storage device. Thus, Petitioner asserts that Shipman, which discloses storing all components in a read-only memory (Ex. 1005, Fig. 1 (ROM 10)), in combination with Harmer's teaching of storing BIOS in secondary nonvolatile storage devices renders the challenged claims obvious.

Based on the full record, Petitioner has provided sufficient evidence and argument that Shipman and Harmer teach the limitations of claims 2–5, 7–13, 15–18, 20–30, 32–42, and 44–50 by a preponderance of the evidence. Pet. 31–57. Accordingly, we agree with and adopt Petitioner's analysis.

Pet. 31–57; Reply 5–14. Patent Owner challenges the motivation to combine Shipman and Harmer, selected limitations general to all challenged claims, and dependent claims 7, 20, 32, and 44. We address Patent Owner’s contentions below.

Patent Owner contends that there is no motivation to combine the Harmer and Shipman references because there is no support for the testimony of Mr. Perla that Harmer contemplates modular BIOS. PO Resp. 3–5, 11–13. As discussed above, we disagree with Patent Owner’s argument that Mr. Perla’s deposition testimony shows there is no support for his opinion that a skilled artisan would have been motivated to combine Harmer and Shipman given that both deal with BIOS modularity because “Harmer’s purported BIOS modularity was fiction.” PO Resp. 11. Considering Mr. Perla’s testimony in its entirety, Mr. Perla’s deposition testimony is consistent with his declaration testimony that Harmer’s teachings of expansion BIOS are similar to the teachings in Shipman relied upon by Petitioner. *Compare* Ex. 1013 ¶ 56, *with* Ex. 2010, 30:3–11. We do not find that Mr. Perla’s deposition testimony undermines the testimony regarding what Harmer teaches a person of ordinary skill in the art. Petitioner relies on Harmer to establish that it was known, prior to the time of invention of the ’189 patent, to store BIOS modules in a protected area of a secondary nonvolatile storage device to reduce the cost of the ROM by relocating BIOS components to the mass memory storage of peripheral computer devices. Reply 9–10; Ex. 1013 ¶¶ 110–111; Ex. 1003, 4:63–67; Pet. 32–33. We are not persuaded by Patent Owner’s argument based solely on the

deposition testimony of Mr. Perla that there is no support for Mr. Perla's opinion regarding the applicability of Harmer to modular BIOS. PO Resp. 11.

We also find unavailing Patent Owner's argument that we should not credit Mr. Perla's testimony because he did not encounter Shipman and Harmer at the time of invention of the '189 patent. PO Resp. 12. Patent Owner cites no case law or support for the contention that Mr. Perla's testimony should be disregarded because he lacked familiarity with a reference. The proper inquiry is what the references, which are presumed to be available, teach a person of ordinary skill in the art at the time of invention. *See In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998) ("[The law] presumes that all prior art references in the field of the invention are available to this hypothetical skilled artisan."); *Custom Accessories, Inc. v. Jeffrey-Allan Indus.*, 807 F.2d 955, 962 (Fed. Cir. 1986) ("The person of ordinary skill is a hypothetical person who is presumed to be aware of all the pertinent prior art."). Accordingly, Patent Owner's arguments about Mr. Perla's awareness of Harmer or Shipman are not well founded and unavailing.

We also disagree with Patent Owner's contention that Shipman is limited to operating on primary storage and excludes use of secondary storage. PO Resp. 12–13 (citing Ex. 2011 ¶¶ 3–4; Ex. 1005, 3:32–40, Fig 1 (items 36, 42, and 48)). Patent Owner's evidence does not show that Shipman purposefully excludes the possibility of using secondary storage. We do not credit Patent Owner's declarant's conclusory statement limiting

Shipman to primary storage and excluding secondary storage, as that testimony lacks a citation to evidence or support. Instead, we agree with and credit Petitioner's evidence that Shipman and Harmer teach use of PCI (Peripheral Components Interconnect) that would support expansion ROM for PCI devices for use during initialization or boot functions. Ex. 1003, 1:43–47, 4:27; Ex. 1013 ¶¶ 108–109; Ex. 1009 § 6.3. We also agree with Petitioner that Shipman discloses use of Option ROM indicating that Shipman contemplates use of non-primary, nonvolatile storage during BIOS module component loading. Ex. 1005, Fig. 5 (item 520), 3:3–5, 10:35–58; Ex. 1017, 51:5–52:21; Reply 13.

Based on the full record, Petitioner has provided articulated reasons with rational underpinnings to support the combination of Shipman, which teaches use of nonvolatile storage for BIOS modules, with Harmer, which teaches storing BIOS in secondary nonvolatile storage devices.

Patent Owner also contends that Mr. Perla's discussion of "secondary nonvolatile storage device" in Shipman is baseless and should be ignored. PO Resp. 13–14 (citing Ex. 1013 ¶¶ 116, 117, 131); Ex. 2010, 47:11–19, 48:1–21; 49:4–6.

Petitioner responds that "secondary nonvolatile storage device" as recited in the challenged claims is disclosed in Harmer, which states: "A second portion of the expansion BIOS associated with the particular peripheral computer device is stored within the mass memory storage of the mass memory storage peripheral computer device[.]" Ex. 1003, 5:42–45; Reply 7. We agree that Harmer teaches secondary nonvolatile storage

device. *Id.* Harmer also teaches dividing the BIOS into a first portion and a second portion (expansion BIOS akin to BIOS modules), each stored in separate memory devices. Ex. 1003, 5:42–45. Indeed, the '189 patent also admits that BIOS distribution to secondary nonvolatile memory (mass memory storage) is known in the art. Ex. 1001, 1:44–48; *see* Ex. 1013 ¶¶ 33–34; Ex. 1003, 12:34–59. Based on the foregoing, we find that Petitioner has shown that Harmer and Shipman teach a “secondary nonvolatile storage device” as recited in the challenged claims.

We also agree with Petitioner that Shipman and Harmer disclose storing modules in a protected area of the “secondary nonvolatile storage device.” Patent Owner’s argument that Shipman is incompatible with secondary storage device (PO Resp. 15) fails to address the combination of the references cited by Petitioner, wherein Harmer teaches a person of ordinary skill in the art to store BIOS modules in a protected area of memory storage such as a portion of a hard disk drive that is not user accessible (Ex. 1003, 1:16, 15:18–24; Ex. 1013 ¶¶ 121–122, 159) and Shipman teaches storing BIOS modules in a protected area (Ex. 1013 ¶ 120). *See* Pet. 31–32; Reply 8.

Patent Owner also contends that Shipman fails to disclose “BIOS initialization code,” arguing that the initialization code identified by Mr. Perla in his deposition testimony would initialize more than the CPU and system memory, because it would also initialize the dispatch manager. Thus, Patent Owner asserts that the “executing the predetermined small amount of BIOS initialization code” limitation would be conflated with

“executing the dispatch manager” limitation. PO Resp. 16. As discussed above in Section II.C.2, Shipman in Figure 2 shows POST Loader code in step 202 that is distinct from the dispatch manager in step 204. We find that Shipman teaches executing a POST Loader to configure enough system memory, then activating the decompression dispatcher once the system memory is configured to allow the decompression dispatcher to execute POST and initialize the remainder of the system. Ex. 1005, 6:51–64, Fig. 2. Accordingly, we are not persuaded that Petitioner’s declarant conflates “executing the predetermined small amount of BIOS initialization code” limitation with “executing the dispatch manager.” Petitioner’s evidence and argument are consistent with the disclosure in Shipman.

Dependent claims 7, 20, 32, and 44 recite the protected BIOS module “area comprises a formatted area created using Protected Area Run-Time Interface Extensions Services (PARTIES) technology” (claims 7 and 20) “and industry standard specification” (claims 32 and 44). Petitioner argues that Mr. Perla’s unrebutted testimony establishes that the use of PARTIES technology is within the general knowledge of a person of ordinary skill in the art. Pet. 42–43; Ex. 1013 ¶¶ 175, 177. In particular, Petitioner argues that a person of ordinary skill in the art “would know that PARTIES is a standardized way of implementing the protected area” of the storage device that Harmer teaches. Ex. 1013 ¶¶ 174–175; Reply 17.

Patent Owner does not challenge Petitioner’s reliance on the general knowledge of PARTIES but instead challenges that the PARTIES reference is not a published prior art printed publication. PO Resp. 5–6. Patent

Owner's arguments are misplaced. We note that the PARTIES specification cited by Petitioner appears in the '189 patent which acknowledges the existence of a PARTIES standard.⁵ Ex. 1001, 5:63, 6:38–40. The '189 patent describes PARTIES as an existing standard known in the art.⁶ *Id.*

Patent Owner has failed to dispute Petitioner's argument and evidence that PARTIES technology would have been within the general knowledge of a person of ordinary skill in the art. Thus, Patent Owner has waived any dispute with respect to such general knowledge of PARTIES technology. 37 C.F.R. §§ 42.23, 42.120 ("Oppositions and replies must comply with the content requirements for motions" and "[a] patent owner response is filed as an opposition."); Paper 16 (Scheduling Order), 3 ("The patent owner is

⁵ The '189 patent refers to "NCITS D1367 (PARTIES)" (Ex. 1001, 5:63) and "ANSI PARTIES specification" (*id.* at 6:38–39), and indicates that PARTIES is "Protected Area Run-Time Interface Extensions Services" (*id.* at 6:14–15). Petitioner notes that PARTIES indicates that it is a document prepared by ANSI. Ex. 1012, 1; Pet. 42. Exhibit 1012 bears a working document number, i.e., "T13 D1367," "Revision 0," and the date "August 23, 1999." Ex. 1012, 1. Additionally, PARTIES indicates that it was made available for review and comment, that permission is granted to reproduce the document for the purposes of standardization, and that it was printed on August 27, 1999. *Id.* 1, 4.

⁶ Patent Owner's counsel acknowledged that their argument in the present case was "coextensive with the arguments counsel made in the 2015-1141 IPR." Tr. 14: 21:24. In the oral argument for IPR2015-01141, Patent Owner's counsel acknowledged that PARTIES technology was known to one of ordinary skill in the art. *See American Megatrends, Inc. v. Kinglite Holdings, LLC*, Case IPR2015-01141, Paper 36, 40:7–17 (PTAB Sept. 12, 2016) (stating that anything described in the background section describing prior art, including PARTIES, was known to the hypothetical person of skill in the art).

cautioned that any arguments for patentability not raised in the response will be deemed waived.”).

Based on the present record, we find that Petitioner has provided sufficient argument and evidence that the subject matter of claims 7, 20, 32, and 44 would have been obvious in view Shipman, Harmer and the general knowledge of a person of ordinary skill in the art. Pet. 42. We are not persuaded by Patent Owner’s argument that Petitioner’s reliance on Ex. 1012, which expressly discusses the PARTIES specification recited in the claims, is inapplicable because it is not shown to be prior art. Petitioner has provided sufficient and un rebutted evidence that PARTIES as described in the background of the ’189 patent and Exhibit 1012 is within the knowledge of a person of ordinary skill in the art, in light of the teachings of Harmer that some mechanism must be used to protect the area of the storage device (Ex. 1003, 15:15–24).

Based on the full record, we find that Petitioner has provided sufficient evidence and argument by a preponderance of the evidence that Shipman and Harmer disclose the limitations of claims 2–5, 7–13, 15–18, 20–30, 32–42, and 44–50 as set forth in the Petition (Pet. 31–57). See Reply 5–14.

*E. Claims 6, 19, 31, and 43: Shipman (Ex. 1005),
Harmer (Ex. 1003), and Patel (Ex. 1007)*

Claims 6, 19, 31, and 43 each recite that the hard disk comprises “a vendor protected area, a user area, and said protected area.” Petitioner contends Patel, which shows that hard disks have vendor areas separate from

user data (Ex. 1007, 9:11–15), in combination with Shipman and Harmer, discloses this limitation. Pet. 57. Petitioner argues that a person of ordinary skill in the art would understand that the vendor area disclosed in Patel is protected from writing by the user. Pet. 57. Petitioner contends that it would be obvious to include vendor protected areas following conventional practices based on Patel, which shows system devices that store 32-bit values unique to a device, and Harmer, which discloses the user area and protected area. Pet. 57–58; Ex. 1007, 9:11–15; Ex. 1013 ¶¶ 186–188.

Patent Owner argues that Mr. Perla admitted that Patel does not contemplate locating the 32-bit value on the disk drive as required in claims 6, 19, 31, and 43. PO Resp. 16–17 (citing Ex. 2010, 59:7–60:6, 60:20–61:11). We are not persuaded by Patent Owner’s argument, which is based on Mr. Perla acknowledging the lack of an explicit reference to a hard drive in a narrow portion of Patel (Ex. 1007, 9:11–15). Examining the Patel reference as whole for what it teaches a person of ordinary skill in the art, we credit Mr. Perla’s testimony that Patel teaches devices, including peripheral disk drives that include vendor protected areas containing unique identifiers. Ex. 1007, 2:22–23, 9:11–15; Ex. 1013 ¶¶ 188, 189. Thus, we agree with and adopt Petitioner’s evidence in Patel regarding the use of a vendor protected area in commercially available hard disks to allow a vendor to specify a unique identity. Pet. 57–58.

Based on the full record, we find that Petitioner has shown by a preponderance of the evidence that the combination of Harmer, Shipman, and Patel discloses “the hard disk drive comprises a vendor protected area, a

user area and said protected area” as recited by claims 6, 19, 31, and 43 of the ’189 patent.

III. PETITIONER’S MOTION TO EXCLUDE

Petitioner moves to exclude the deposition testimony of Mr. Perla (Ex. 2010) on the basis that Patent Owner’s counsel, George Summerfield, had not been admitted *pro hac vice* before cross examining Mr. Perla. Pet. Mot. 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., Am. Megatrends, Inc. v. Kinglite Holdings, LLC*, Case IPR2015-01079, slip op. at 25 (PTAB Oct. 27, 2016). 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. Perla (Ex. 2010), determining that the parties’ conduct in this case does not warrant such an exclusion.

IV. CONCLUSION

For the foregoing reasons, we conclude that Petitioner has demonstrated by a preponderance of the evidence that:

claims 1 and 14 are unpatentable as obvious under 35 U.S.C. § 103(a) over Shipman;

claims 2–5, 7–13, 15–18, 20–30, 32–42, and 44–50 are unpatentable as obvious under 35 U.S.C. § 103(a) over Shipman and Harmer; and

claims 6, 19, 31, and 43 are unpatentable as obvious under 35 U.S.C. § 103(a) over Shipman, Harmer, and Patel.

We also deny Petitioner's Motion to Exclude.

V. ORDER

Accordingly, it is

ORDERED that claims 1–50 of the '189 patent are unpatentable;

FURTHER ORDERED, that Petitioner'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.

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