Trials@uspto.gov
571-272-7822

Paper 43
Entered: March 19, 2018

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

PAPST LICENSING GMBH & CO. KG,
Patent Owner.

Case IPR2016-01839
Patent 6,470,399 B1

Before JONI Y. CHANG, JAMES B. ARPIN, and
MIRIAM L. QUINN, *Administrative Patent Judges.*

CHANG, *Administrative Patent Judge.*

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

I. INTRODUCTION

Apple Inc. ("Petitioner") filed a Petition requesting an *inter partes* review of claims 1, 3, 5, 11, and 14 ("the challenged claims") of U.S. Patent No. 6,470,399 B1 (Ex. 1001, "the '399 patent") and a Declaration of Erez Zadok, Ph.D. (Ex 1003). Paper 2 ("Pet."). Papst Licensing GmbH & Co., KG ("Patent Owner"), filed a Preliminary Response. Paper 12 ("Prelim. Resp."). We instituted the instant *inter partes* review as to the challenged claims. Paper 15 ("Dec."). Subsequent to institution, Patent Owner filed a Patent Owner Response (Paper 17, "PO Resp.") and a Declaration of Thomas Gafford (Ex. 2002). Petitioner filed a Reply. Paper 22 ("Reply"). A transcript of the oral hearing held on January 16, 2018, has been entered into the record as Paper 41 ("Tr.").[1]

This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a). For the reasons that follow, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 1, 3, 5, 11, and 14 of the '399 patent are unpatentable.

A. Related Matters

The parties indicate that the '399 patent is involved in *Papst Licensing GmbH & Co. KG v. Apple Inc.*, Case No. 6-15-cv-01095 (E.D. Tex.) and other proceedings. Pet. 2–3; Paper 11, 2–5. The '399 patent also is involved in Cases IPR2016-01864 and IPR2017-00714. This Final Written Decision

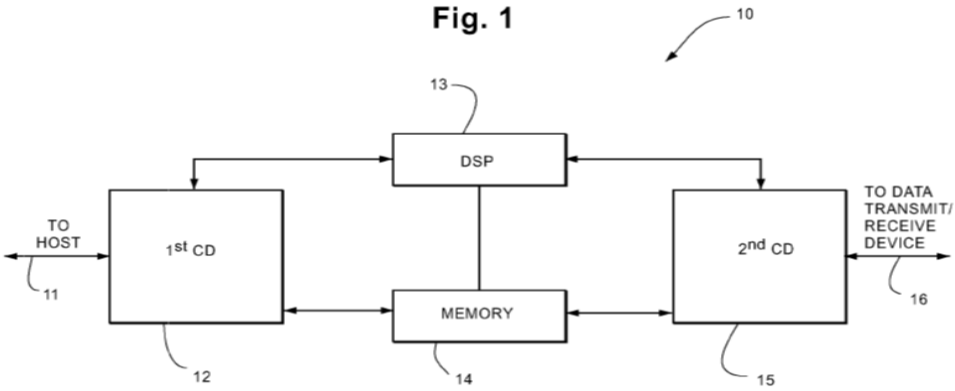
[1] This was a consolidated hearing with the following related cases: IPR2016-01842, IPR2016-01863, and IPR2016-01864. *See* Tr.

is entered concurrently with the Final Written Decisions in Cases IPR2016-01864 and IPR2017-00714.

B. The '399 Patent

The '399 patent describes interface devices for communication between a computer host device and a data transmit/receive device (e.g., a multi-meter, transmitting measured data to a computer). Ex. 1201, 1:9–13, 1:48–51. According to the '399 patent, using a specific driver to match very closely to an individual host system would achieve high data transfer rates across the interface, but the specific driver cannot be used with other host systems. *Id*. at 1:65–2:12. Several solutions to this problem were known in the art. *Id*. at 2:16–3:21. For example, IOtech introduced an interface device for laptops, using a plug-in card for converting the personal computer memory card association ("PCMCIA") interface into a known standard interface ("IEEE 1284"). *Id*. at 2:19–24. The plug-in card provided a printer interface for enhancing data transfer rates. *Id*. at 2:24–28. In another example, a floppy disk drive interface was used for connecting a host device to a peripheral device. *Id*. at 3:6–10. The interface appeared as a floppy disk drive to the host, allowing a floppy disk drive and another peripheral device to be connected to the host device. *Id*. at 3:13–15.

The '399 patent indicates that its "invention is based on the finding that both a high data transfer rate and host device-independent use can be achieved if a driver for an input/output device customary in a host device" is utilized. *Id*. at 4:23–27. Figure 1 of the '399 patent, reproduced below, illustrates a block diagram of an interface device.



As shown in Figure 1, interface device 10 connects to a host device via host line 11, and to a data transmit/receive device via output line 16. *Id*. at 5:47–63. Interface device 10 includes first connecting device 12, second connecting device 15, digital signal processor 13, and memory means 14. *Id*. In a preferred embodiment, the interface device is attached to a host device via a multi-purpose interface—e.g., a small computer systems interface ("SCSI")—which includes both an interface card and the driver for the interface card. *Id*. at 4:40–46, 8:29–32. According to the '399 patent, SCSI interfaces were known to be present on most host devices or laptops. *Id*. at 8:29–32. By using a standard interface of a host device and by simulating an input/output device to the host device, the interface device "is automatically supported by all known host systems without any additional sophisticated driver software." *Id*. at 12:23–29.

C. Illustrative Claim

Of the challenged claims, claims 1, 11, and 14 are independent. Each of claims 3 and 5 depends directly from claim 1. Claim 1 is illustrative:

> 1. An interface device for communication between a host device, which comprises drivers for input/output devices customary in a

host device and a multi-purpose interface, and a data transmit/receive device, the data transmit/receive device being arranged for providing analog data, comprising:

a processor;

a memory;

a first connecting device for interfacing the host device with the interface device via the multi-purpose interface of the host device; and

a second connecting device for interfacing the interface device with the data transmit/receive device, the second connecting device including a sampling circuit for sampling the analog data provided by the data transmit/receive device and an analog-to-digital converter for converting data sampled by the sampling circuit into digital data,

wherein the interface device is configured by the processor and the memory to include a first command interpreter and a second command interpreter,

wherein the first command interpreter is configured in such a way that the command interpreter, when receiving an inquiry from the host device as to a type of a device attached to the multi-purpose interface of the host device, sends a signal, regardless of the type of the data transmit/receive device attached to the second connecting device of the interface device, to the host device which signals to the host device that it is an input/output device customary in a host device, whereupon the host device communicates with the interface device by means of the driver for the input/output device customary in a host device, and

wherein the second command interpreter is configured to interpret a data request command from the host device to the type of input/output device signaled by the first command interpreter as a data transfer command for initiating a transfer of the digital data to the host device.

Ex. 1001, 12:42–13:12.

D. Prior Art Relied Upon

Petitioner relies upon the prior art references listed below.

Kawaguchi	JP H4-15853	Jan. 21, 1992	(Ex. 1006)[2]
Murata	US 5,506,692	Apr. 16, 1996	(Ex. 1008)

Friedhelm Schmidt, THE SCSI BUS AND IDE INTERFACE PROTOCOLS, APPLICATIONS AND PROGRAMMING, (J. Michael Schultz trans., Addison-Wesley Publishing Company 1995) (Ex. 1007, "Schmidt").

MICROSOFT COMPUTER DICTIONARY (3rd ed. 1997) (Ex. 1014).

Paul Horowitz, THE ART OF ELECTRONICS 246–47, 254–55, 421 (Cambridge University Press 1980) (Ex 1017, "Horowitz").

Principles of Data Acquisition and Conversion, Burr-Brown Application Bulletin (1994) (Ex. 1021, "Burr-Brown").

Principles of Data Acquisition and Conversion, Intersil Application Note (1986) (Ex. 1022, "Intersil").

Sample-and-Hold Amplifiers, Analog Devices MT-090 Tutorial (2009) (Ex. 1023, "MT-090").

Alan V. Oppenheim and Ronald W. Schafer, Discrete-Time Signal Processing (Prentice-Hall 1989) (Ex. 1025, "Oppenheim").[3]

---

[2] Petitioner filed a certified English translation (Ex. 1005) of Kawaguchi. Patent Owner also submitted another translation (Ex. 2004), but does not identify specifically any purported errors in the Petitioner's translation or any meaningful differences between the translations. PO Resp. 12. Rather, Patent Owner merely states that it "believes the proposed ground of rejection fails irrespective of the translation of Kawaguchi applied." *Id*. Petitioner notes that none of the Patent Owner's arguments rely on any differences between the translations, and, therefore, "any differences between the two translations do not affect the outcome of this proceeding." Reply 25−26 (citing Ex. 1033, 61:20−62:20). Based on our review of the translations and parties' arguments, we do not find differences between the translations that would affect our substantive analysis and determination below.

[3] Petitioner relies upon Horowitz, Burr-Brown, Intersil, MT-090, and

E. Instituted Ground of Unpatentability

We instituted this review based solely on the ground that claims 1, 3, 5, 11, and 14 are unpatentable under § 103(a)[4] as obvious over the teachings of Kawaguchi in view of those of Schmidt and the "sampling circuit" references.[5] Dec. 28.

II. DISCUSSION

A. Claim Construction

Claims of an *expired* patent are given their ordinary and customary meaning in accordance with *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc) ("*Phillips*"). *See Wasica Fin. GmbH v. Cont'l Auto. Sys., Inc.*, 853 F.3d 1272, 1279 (Fed. Cir. 2017) (applying the *Phillips* standard to construe the claims of an expired patent in an *inter partes* review).

Here, Patent Owner indicated that it believes the '399 patent expired on March 3, 2018 (20 years from the '399 patent's March 3, 1998 filing date, Ex. 1001 at [22]). Paper 14, 2. In the Decision on Institution (Dec.

Oppenheim for their teachings of a sampling circuit and a digital signal processor. Pet. 26–29, 47. In this Decision, we refer these references collectively as the "sampling circuit" references, unless otherwise indicated.

[4] Because the claims at issue have a filing date prior to March 16, 2013, the effective date of the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), we apply the pre-AIA version of § 103.

[5] For clarity, we included the "sampling circuit" references in the statement of the instituted ground because they are relied upon by Petitioner and discussed in its analysis (Pet. 26–29, 47). Dec. 6−7, n.4. Patent Owner does not object to this modification in the statement. *See generally* PO Resp.

7−9), we noted that the U.S. Court of Appeals for the Federal Circuit (the "Federal Circuit") has construed certain terms under the *Phillips* standard in connection with a previous District Court proceeding involving the '399 patent. *In re Papst Licensing GmbH & Co. KG Litig. v. Fujifilm Corp.*, 778 F.3d 1255 (Fed. Cir. 2015); Ex. 1016 ("*Papst*" or the "*Papst* Decision"). We also applied those claim constructions set forth in the Federal Circuit Decision (reproduced in the table below). *Cf. Power Integrations, Inc. v. Lee*, 797 F.3d 1318, 1327 (Fed. Cir. 2015) ("There is no dispute that the board is not generally bound by a prior judicial construction of a claim term.").

After institution, Patent Owner agrees with those Federal Circuit claim constructions, and submits the District Court Claim Construction Order issued on March 7, 2017, in another related proceeding involving the '399 patent. PO Resp. 9−10; Ex. 2003. Patent Owner does not urge us to adopt any of those District Court claim constructions. Nor does Patent Owner assert that those constructions have any impact on this proceeding.

We have considered the District Court Claim Construction Order, but determine that we need not further supplement the Federal Circuit's claim constructions that we adopted in the Institution Decision, except for the claim term "input/output device customary in a host device," to resolve the issues before us. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that "we need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy'") (citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

The Federal Circuit Claim Constructions

The following table summarizes the claim constructions set forth in the Federal Circuit Decision in *Papst*, 778 F.3d at 1261–70 (Ex. 1016), which we adopt.[6]

Claim term	District Court Construction	Federal Circuit Construction
"interface device"	may not be "a permanent part of either the data transmit/receive device or the host device/computer." *Papst*, 778 F.3d at 1262.	"is not limited to… a device that is physically separate and apart from, and not permanently attached to, a data device (or a host computer)." *Id*.
"second connecting device"	"a physical plug or socket for permitting a user readily to attach and detach the interface device with a plurality of dissimilar data transmit/receive devices." *Id*. at 1264.	does not require "a physical plug, socket, or other structure that permits a user to readily attach and detach something else." *Id*. at 1265.

[6] The Federal Circuit treated the preamble of each claim as a claim limitation. *Id*. at 1266. Because the parties in the instant *inter partes* review do not dispute that the preamble of each challenged claim is limiting, we likewise treated the preamble of each claim as a claim limitation.

Claim term	District Court Construction	Federal Circuit Construction
"data transmit/ receive device"	"a device that is capable of either (a) transmitting data to or (b) transmitting data to and receiving data from the host device when connected to the host device by the interface device." *Id*. at 1265.	"need not be capable of communicating 'when connected to the host device by the interface device.'" *Id*. at 1266.
"virtual files"	"files that appear to be but are not physically stored; rather they are constructed or derived from existing data when their contents are requested by an application program so that they appear to exist as files from the point of view of the host device." *Id*. at 1267.	not limited to a file "whose content is stored off the interface device, though it includes such files." *Id*. at 1268.
"input/output device customary in a host device"	"data input/output device that was normally present within the chassis of most commercially available computers at the time of the invention." *Id*. at 1270.	not limited to a device "'normally present *within the chassis*' of a computer." *Id*. (emphasis in original).

"an input/output device customary in a host device"

Patent Owner does not propose any claim construction expressly in the claim construction section of its Response. PO Resp. 8–10. Nonetheless, in its obviousness argument section of the Response, Patent Owner argues for the first time that the claim term "an input/output device

customary in a host device" should be interpreted restrictively, requiring the "input/output device" to have both read *and* write capabilities by interpreting "/" as "and." *Id*. at 19−31. Patent Owner's implicit construction, however, is inconsistent with the claim language and Specification, as well as the claim construction set forth in the Federal Circuit Decision (Ex. 1016) and District Court Claim Construction Order (Ex. 2003). Patent Owner's construction also conflates the *actual* data device type with the *simulated* data device type. To the extent that Patent Owner's implicit construction attempts to import a negative limitation—requiring no more than one "input/output device" by interpreting "an" to mean "no more than one"—we also decline to adopt that negative limitation.

Turning first to the claim language, the claims themselves do *not* require the identification of the *actual* data device type. In fact, claims 1 and 11 recite "send[ing] a signal, *regardless of the type of the data transmit/receive device* attached to the second connecting device of the interface device, to the host device which signals to the host device that it is an input/output device customary in a host device." *See, e.g.*, Ex. 1001, 12:64−13:8 (emphasis added). Claim 14 recites a similar limitation.

Next, we turn to the Specification and prosecution history of the '399 patent to assess the scope of the claim language. Indeed, the Specification describes that the interface device "*simulates*, both in terms of hardware and software, the way in which *a conventional input/output device functions*, preferably that of a *hard disk drive*" because support "for *hard disks* [was] implemented as standard in all commercially available host system" at the time of the invention. Ex. 1001, 4:65−5:32 (emphases added); 5:6−32.

Applicant, during the prosecution history of the ’399 patent, also asserted that the interface device “lies to the host computer as to the real nature of the data transmit/receive device.” Ex. 1002, 256. The Federal Circuit also noted in its claim construction decision for the ’399 patent that, “[b]y answering in that manner, the interface device induces the host to treat it—and, indirectly, data devices on the other side of the interface device, no matter what type of devices they are—like the device that is already familiar to the host.” *Papst*, 778 F.3d at 1259 (citing Ex. 1001, 3:25−5:32). And the Federal Circuit further explained that the ’399 patent describes “the use of a host-native driver for obtaining access to data even when the data is not actually on a device of the type for which that driver was designed—in the featured example, not actually on a hard drive.” *Id*. at 1268.

In short, in the context of the ’399 patent, the recited “input/output device customary in a host device” is not the *actual* data device type, but rather a *simulated* data device type, allowing the host device to communicate with the interface device using a driver that is normally on the host system (e.g., a driver for a hard disk). Accordingly, the claims do not require the data accessed by the host to be actually from a storage device that is “customary in a host device,” as Patent Owner alleges.

Additionally, Patent Owner’s construction, interpreting “/” as “and”—requiring the “input/output device” to have both read *and* write capabilities—is inconsistent with the claim language, the Federal Circuit Decision, the District Court Claim Construction Order, and its own declarant’s testimony. Significantly, claims 1, 11, and 14 only require *reading* data to the host device—“initiating a transfer of the digital data to

the host device"—but *not writing* data from the host device. Ex. 1001, 13:5−8. The Federal Circuit stated that "a data transmit/receive device is a device that may transmit or receive data." *Papst*, 778 F.3d at 1266. The District Court likewise held that the "/" in "data transmit/receive device" to mean "and/or," not limiting each data device to have *both* transmitting and receiving capabilities. Ex. 2003, 36. Moreover, during cross-examination, Patent Owner's declarant, Mr. Gafford, conceded that "the use of the term 'input/output' in the art is one or other or both for a particular device," and that the limitation "an input/out device customary in a host device," may be met by a device that is an *input-only* device. Ex. 1033, 93:20−94:9.

Furthermore, the Specification confirms that "[d]rivers for input/output devices customary in a host device which are found in practically all host devices are, for example, drivers for hard disks, for graphics devices or for printer devices." Ex. 1001, 4:27−30. As noted in the Federal Circuit Decision, "the sentence clearly means that, notably, a printer device is an example of an 'input/output device customary in a host device.'" *Papst*, 778 F.3d at 1270. A printer device is not capable of both input and output for a printer only prints (outputs) documents that a host device transmits to the printer. The Specification further discloses a driver for CD-ROM drives as another alternative of a driver for an input/output device customary in a host device. Ex. 1001, 4:36−39. A CD-ROM is read-only storage memory device, not capable of both input and output, as data can only be read from the CD-ROM. During cross-examination, Mr. Gafford confirmed that customary input/output devices at the time of the

invention included *input-only* devices. Ex. 1033, 89:3−94:9 (referring also to an analog-to-digital converter and scanner as "input only" devices).

For the reasons stated above, we decline to interpret the claim term to require each "input/output device" to have both input and output capabilities.

We also decline to interpret "an" in the term "an input/output device" to mean "no more than one." Each of the claims contains the transitional phrase "comprising." Our reviewing "court has repeatedly held that 'a,' when used in a 'comprising' claim, means one or more." *KCJ Corp. v. Kinetic Concepts, Inc.*, 223 F.3d 1351, 1356 (Fed. Cir. 2000). "That 'a' or 'an' can mean 'one or more' is best described as a rule, rather than merely as a presumption or even a convention. The exceptions to this rule are extremely limited: a patentee must evince[ ] a clear intent' to limit 'a' or 'an' to 'one.'" *Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342 (Fed. Cir. 2008). Patent Owner does not explain persuasively how the claims, Specification, or prosecution history of the '399 patent would necessitate a departure from that rule. In fact, an ordinarily skilled artisan would have recognized that a SCSI interface device, as described in the '399 patent, supports more than one data device. Ex. 1001, 9:29−33; Ex. 1007, 79 (noting that "[u]p to eight devices can be addressed using the SCSI bus").

In sum, we decline to construe "an input/output device customary in a host device" restrictively, as suggested by Patent Owner. Rather, in light of the claim language, Specification, and prosecution history of the '399 patent, as well as the claim construction set forth in the Federal Circuit Decision and District Court Claim Construction Order, we interpret the claim term "an

input/output device customary in a host device" as "an input *and/or* output device customary in a host device," not excluding input-only devices or output-only devices. We also do not import a negative limitation—requiring no more than one input/output device.

B. Principles of Law

A patent claim is unpatentable under § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc*., 550 U.S. 398, 406 (2007).
The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness.[7] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

C. Level of Ordinary Skill in the Art

In determining the level of ordinary skill in the art, various factors may be considered, including the "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field." *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995)

[7] Patent Owner does not present arguments regarding objective evidence of nonobviousness in this proceeding.

(internal quotation and citation omitted). In that regard, Dr. Zadok testifies that a person with ordinary skill in the art at the time of the invention "would have had at least a four-year degree in electrical engineering, computer science, computer engineering, or related field of study, or equivalent experience, and at least two years' experience in studying or developing computer interfaces or peripherals and storage related software." Ex. 1003 ¶ 29. Dr. Zadok further testifies that such an artisan also would have been "familiar with operating systems (e.g., MS-DOS, Windows, Unix), their associated file systems (e.g., a FAT, UFS, FFS), device drivers for computer components and peripherals (e.g., mass storage device drivers), and communication interfaces (e.g., SCSI, USB, PCMCIA)." *Id*.

In its Preliminary Response, Patent Owner confirmed that Petitioner's statements regarding the level of ordinary skill in the art are partially consistent with Patent Owner's view, but, nonetheless, contended that an ordinarily skilled artisan would have at least three years of experience, or, alternatively, five or more years of experience without a bachelor's degree. Prelim. Resp. 7. After institution, Patent Owner agrees that there are no meaningful differences between the parties' definitions. PO Resp. 8.

We find Dr. Zadok's testimony persuasive as it is presents more than just the educational level of a person of ordinary skill in the art. Petitioner's assessment is more helpful as it identifies the familiar features of the technology used by a person of ordinary skill at the time of the invention: operating systems (e.g., MS-DOS, Windows, Unix) and their associated file systems (e.g., a FAT file system), device drivers for computer components and peripherals (e.g., mass storage device drivers), and communication

interfaces (e.g., SCSI and PCMCIA interfaces). Ex. 1003 ¶ 29. Petitioner's assessment also appears consistent with the level of ordinary skill in the art at the time of the invention as reflected in the prior art in the instant proceeding. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Our analysis is supported by either assessment, but, to the extent necessary, we maintain our adoption of Petitioner's assessment.

D. Obviousness over Kawaguchi in view of Schmidt and the "Sampling Circuit" References

Petitioner asserts that claims 1, 3, 5, 11, and 14 are unpatentable under § 103(a) as rendered obvious over the teachings of Kawaguchi in combination with those of Schmidt and the "sampling circuit" references. Pet. 12–62. Petitioner provides detailed explanations as to how the combination teaches or suggests each limitation and articulates a reason to combine the prior art teachings, citing to Dr. Zadok's testimony for support. *Id*.; Ex. 1003. Patent Owner counters that the combination does not disclose the limitation "send[ing] a signal . . . to the host device which signals to the host device that it is an input/output device customary in a host device," as recited in each of claims 1, 11, and 14, and that the teachings of "Kawaguchi and Schmidt would not be combined in the manner Petitioner suggests," relying on Mr. Gafford's testimony for support. PO Resp. 10–31; Ex. 2002.

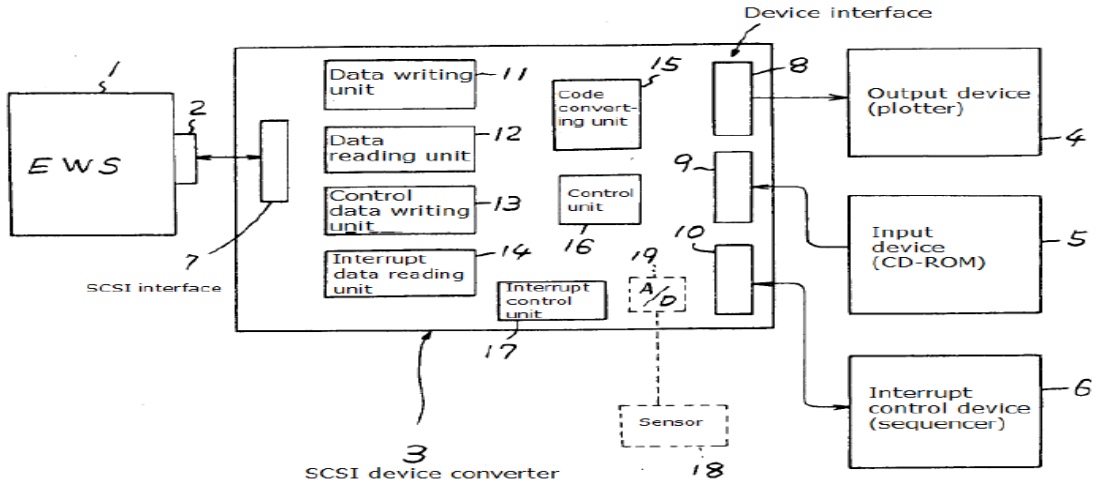
We have considered the parties' contentions and supporting evidence in this entire trial record. Based on the evidence before us, we determine that Petitioner has established by a preponderance of the evidence that the teachings of Kawaguchi, in combination with those of Schmidt and the "sampling circuit" references, render the challenged claims obvious. We

begin our discussion below with an overview of prior art references, and we then address the parties' contentions in turn.

Overview of Kawaguchi

Kawaguchi discloses a SCSI device converter for connecting a plurality of peripheral devices to an engineering workstation. Ex. 1005, 2. Figure 1 of Kawaguchi is reproduced below.

FIG. 1



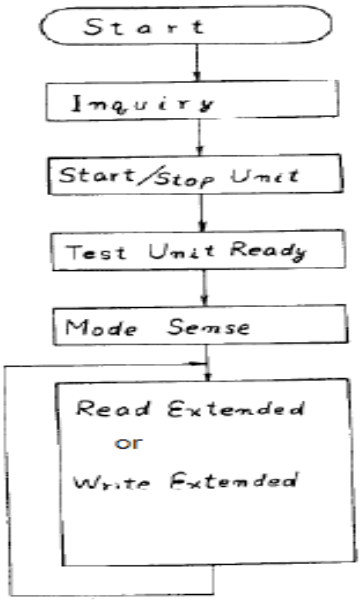
As shown in Figure 1 of Kawaguchi, SCSI device converter 3 includes: SCSI interfaces 2 and 7 for connecting to engineering workstation 1 ("EWS"); personal computer input/output bus interfaces 8, 9 for connecting to output device (plotter) 4 and input device (CD-ROM) 5, respectively; and bi-directional parallel bus interface 10 for connecting to interrupt control device (sequencer) 6. SCSI device converter 3 may be adapted to accommodate any other type of device interface, including analog-to-digital converter 19 to receive analog data from analog sensor 18. *Id*. at 5. SCSI device converter 3 also implements data writing unit 11, data reading unit 12, control data writing 13, interrupt data reading unit 14, code

converting unit 15, control unit 16, and interrupt control unit 17, by using a microcomputer, ROM, and RAM. *Id*.

EWS 1 has SCSI interface 7 "as standard equipment for connecting with the hard disk." *Id*. at 5. According to Kawaguchi, "the SCSI device converter is able to input and output data to a SCSI interface of an EWS using the same standards as SCSI interface for a hard disk." *Id*. at 4. The SCSI driver of EWS 1 is used as a driver for connecting a hard disk, performing operations in accordance with the SCSI standards. *Id*. at 7.

Figure 2 of Kawaguchi is reproduced below.

FIG. 2



As shown in Figure 2 of Kawaguchi, the processing procedure includes an initialization process which includes: "Inquiry" that represents reporting of attribute information of a target and logical units (identification code of a device type); "Start/Stop Unit" that represents start/stop of the logical unit; "Test Unit Ready" that represents testing whether or not the

logical unit is available; and "Mode Sense" that represents reporting of various parameter values (data format and storage medium configuration). *Id*. at 7. After the initialization process, EWS 1 "performs writing to or reading from the writing units and reading units." *Id*.

Overview of Schmidt

Schmidt describes the SCSI bus and IDE (Integrated Drive Electronics) interface, which both are ANSI (American Nation Standards Institute) standards. Ex. 1007, Preface. According to Schmidt, these interfaces are two of the most important interfaces for computer peripherals in use at that time, and almost all computers at that time, from PCs to workstations to mainframes, were equipped with a SCSI interface. *Id*. The SCSI bus is designed for hard drives, as well as tape drives, CD-ROM, scanners, and printers. *Id*.

Overview of the "sampling circuit" references

Petitioner relies upon Horowitz (Ex. 1017), Burr-Brown (Ex. 1021), Intersil (Ex. 1022), MT-090 (Ex. 1023), and Oppenheim (Ex. 1025) for their teachings of a sampling circuit and a digital signal processor. Pet. 26–29, 47. In particular, Petitioner asserts that, in view of these "sampling circuit" references, one of ordinary skill in the art would have understood that analog-to-digital converters typically include a sampling circuit. *Id*. For example, MT-090 discloses that "[t]he sample-and-hold amplifier, or SHA is a critical part of most data acquisition systems[, capturing] an analog signal and hold[ing] it during some operation (most commonly analog-digital conversion)," and "[w]hen the SHA is used with an ADC (either externally

or internally), the SHA performance is critical to the overall dynamic performance of the combination." Ex. 1023, 1. Oppenheim describes that "the conversion is not instantaneous, and for this reason a high-performance A/D system typically includes a sample and hold" circuit. Ex. 1025, 114.

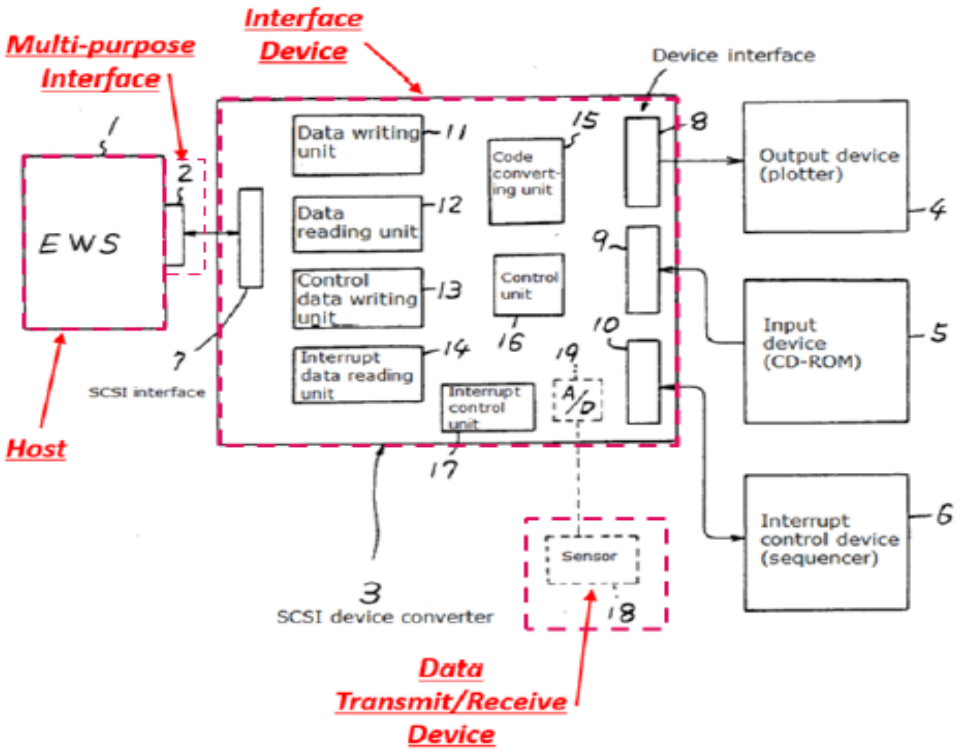
Claims 1, 11, and 14

Interface device, host device, and data transmit/receive device

Claims 1, 11, and 14 require an interface device for communication between a host device and data transmit/receive device. *See, e.g.*, Ex. 1001, 12:42–13:12. These claims also require: (1) the *interface device* to include a processor, memory, first connecting device, second connecting device, first command interpreter, and second command interpreter; (2) the *host device* to include a multi-purpose interface; and (3) the *data transmit/receive device* being arranged for providing analog data. *Id*. The claims further require the following "sampling circuit" limitations: (4a) "a sampling circuit for sampling the analog data provided by the data transmit/receive device," and (4b) "an analog-to-digital converter for converting data sampled by the sampling circuit into digital data." *Id*.

Petitioner asserts that the teachings of Kawaguchi, in combination with those of Schmidt and the general knowledge of a person of ordinary skill in the art regarding sampling circuits, as evidenced by the "sampling circuit" references, teaches or suggests these limitations. Pet. 12–45. In particular, Petitioner avers that Kawaguchi describes a SCSI device converter (interface device) for communication between the EWS (host device) and an analog sensor (data transmit/receive device). *Id*. at 18–20.

Petitioner's annotated Figure (reproduced below) maps the claim limitations to Kawaguchi's system.



Annotated Figure 1 of Kawaguchi above shows Petitioner's assertion that: SCSI device converter 3 discloses an interface device; EWS 1 discloses a host device; and analog sensor 18 discloses a data transmit/receive device; and SCSI interface 2 discloses a multi-purpose interface. *Id*. at 18; Ex. 1005, 5, Fig. 1. Petitioner also asserts that Kawaguchi's implementation of various modules of SCSI device converter 3 discloses a microcomputer (a processor), ROM, and RAM (memory). Pet. 24; Ex. 1005, 5. Petitioner avers that SCSI interface 7 in SCSI device converter 3 teaches a "first connecting device" (Pet. 24), and analog-to-digital converter 19 suggests a "second connecting device" (*id*. at 26–27). Ex. 1005, 5.

With respect to first and second command interpreters, Petitioner notes that Kawaguchi's SCSI device converter 3 includes a code converting unit 15 that converts the data format between SCSI standards and device interface bus standards. Pet. 31−45 (citing Ex. 1005, 5, 7). Petitioner submits that Kawaguchi does not explicitly disclose the code converting unit as a command interpreter. *Id*. Nevertheless, Petitioner notes that Schmidt teaches that SCSI interface devices, such as Kawaguchi's SCSI device converter, must be able to receive, understand, and respond to SCSI INQUIRY and SCSI READ commands. *Id*. (citing Ex. 1007, 137−138, 164). Petitioner asserts that, in view of Schmidt, it would have been obvious to an ordinarily skilled artisan to implement a first command interpreter and a second command interpreter in Kawaguchi's SCSI device converter to interpret and respond to the SCSI INQUIRY and READ commands, as Kawaguchi discloses that it "uses a procedure as provided in the SCSI standards." *Id*. (citing Ex. 1005, 7, Fig. 2; Ex. 1003 ¶¶ 34, 99, 110).

Thus, we are persuaded by Petitioner's showing and articulated reason to combine the teachings of Kawaguchi and Schmidt, in that one with ordinary skill in the art would have implemented first and second command interpreters in Kawaguchi's SCSI device converter to interpret and respond to the SCSI INQUIRY and READ commands, as Kawaguchi teaches using "a procedure as provided in the SCSI standards" to perform a "Inquiry" for reporting attribute information of a target and logical units, and a "Read Extended" for reading data. Ex. 1005, 7, Fig. 2.

As to the "sampling circuit" limitations, Petitioner admits that Kawaguchi does not disclose explicitly that the analog-to-digital converter

includes a sampling circuit. *Id*. at 27. Nevertheless, Petitioner asserts that one of ordinary skill in the art would have understood that analog-to-digital converters typically include a sampling circuit, and that it would have been obvious to such an artisan to include a sampling circuit as part of Kawaguchi's analog-to-digital converter for improving the efficiency of the conversion process. *Id*. at 27–29 (citing Ex. 1003 ¶¶ 84–85; Ex. 1025, 114; Ex. 1021, 1, 2; Ex. 1022, 1, Fig. 1; Ex. 1023; Ex. 1017, 421, Fig. 9.47). Petitioner cites to Dr. Zadok's testimony (Ex. 1003 ¶¶ 84–85), as well as five prior art references—namely, Horowitz (Ex. 1017), Burr-Brown (Ex. 1021), Intersil (Ex. 1022), MT-090 (Ex. 1023), and Oppenheim (Ex. 1025)—to show that using a sampling circuit with, or in, an analog-to-digital converter was well-known at the time of the invention. For instance, citing to Oppenheim (Ex. 1025, 114), Petitioner contends that an ordinarily skilled artisan would have understood that analog-to-digital converters typically included a sampling circuit and that using a sampling circuit is beneficial in that the conversion of an analog voltage to a quantized binary code does not take place instantaneously—"the sampling circuit holds the voltage at a single value for a short time period to allow conversion to complete before converting the next value." Pet. 27–28 (citing Ex. 1025, 114; Ex. 1003 ¶¶ 84–85). Dr. Zadok testifies that an analog-to-digital system typically "includes not only an analog-to-digital converter but also a sample and hold circuit, which are included to help improve the operations of the analog-to-digital converter," by providing the "constant input voltage (or current) required by the A/D converter." Ex. 1003 ¶ 84; Ex. 1025, 115.

We determine that Petitioner has shown sufficiently that an ordinarily skilled artisan would have added a sampling circuit to Kawaguchi's analog-to-digital converter, in view of the "sampling circuit" references, for improving the efficiency of the analog-to-digital conversion process. We also conclude that Petitioner has articulated a rationale to implement a sampling circuit in Kawaguchi's SCSI device converter, which is supported by Dr. Zadok's testimony (Ex. 1003 ¶¶ 84–85) and the prior art references. *See* Ex. 1023, 1 (explaining that "[t]he sample-and-hold amplifier, or SHA is a critical part of most data acquisition systems[, capturing] an analog signal and holds it during some operation (most commonly analog-digital conversion)," and "[w]hen the SHA is used with an ADC (either externally or internally), the SHA performance is critical to the overall dynamic performance of the combination"); Ex. 1025, 114 (observing that "the conversion is not instantaneous, and for this reason a high-performance A/D system typically includes a sample and hold" circuit).

Thus, we determine that Petitioner has demonstrated by a preponderance of the evidence that the teachings of Kawaguchi, in combination with those of Schmidt and the "sampling circuit" references, teach or suggest: (1) an *interface device* having a processor, memory, first connecting device, second connecting device, first command interpreter, and second command interpreter; (2) a *host device* having a multi-purpose interface; (3) a *data transmit/receive device* being arranged for providing analog data; and (4) the second connecting device including a *sampling circuit* and an analog-to-digital converter, as recited in claims 1, 11, and 14.

In its Response, Patent Owner did not advance any arguments as to these limitations. Rather, Patent Owner argues that the prior art combination fails to teach sending a signal to the host device in response to an inquiry, as required by the claims, and that one with ordinary skill in the art would not have been motivated to combine Kawaguchi's reading and writing units as a single hard drive. PO Resp. 17−25. We address below the disputed limitation, Petitioner's showing, and each of Patent Owner's arguments in turn.

An inquiry and a responding signal

Claims 1, 11, and 14 require the interface device to receive *an inquiry* from the host device as to a type of a device attached to the multi-purpose interface of the host device, and to send *a signal* indicating to the host device that "it is an input/output device customary in a host device." *See, e.g.*, Ex. 1001, 12:64–13:8. The claims also require the host device to communicate with the interface device using "the driver for the input/output device customary in a host device." *Id.* For example, claim 1 recites:

> wherein the first command interpreter is configured in such a way that the command interpreter, when *receiving an inquiry from the host device* as to a type of a device attached to the multi-purpose interface of the host device, *sends a signal, regardless of the type of the data transmit/receive device* attached to the second connecting device of the interface device, to the host device which signals to the host device that *it is an input/output device customary in a host device*, whereupon the host device communicates with the interface device by means of *the driver for the input/output device customary* in a host device.

Id. (emphases added).

Petitioner takes the position that the teachings of Kawaguchi, in combination with those of Schmidt and the "sampling circuit" references, teach or suggest this "inquiry and response" claim limitation. Pet. 12–16, 29–38. In particular, Petitioner asserts that Kawaguchi describes "a procedure as provided in the SCSI standards" for connecting a SCSI device converter (interface device) to a SCSI interface (multi-purpose interface) of a EWS (host device), so that the SCSI device converter emulates a hard disk (input/output device customary in a host device), and the EWS uses a driver for connecting a hard disk to communicates with the SCSI device converter. *Id*. at 31–38 (citing Ex. 1005, 7, Fig. 2). Kawaguchi's procedure includes sending an "inquiry" that "represents reporting of attribute information of a target and logical units (identification code of a device type)," and a "Read Extended or Write Extended" operation, which require communication between the EWS and the SCSI device converter. Ex. 1005, 7, Fig. 2.

Petitioner acknowledges that Kawaguchi does not disclose specific details of the "inquiry" step. Pet. 31. Nevertheless, Petitioner explains that, as evidenced by Schmidt, the SCSI standard provides a number of mandatory commands including the INQUIRY command. *Id*. at 32; Ex. 1007, 79, 138, Table 12.10. Specifically, Schmidt discloses that an initiator (host) sends a SCSI INQUIRY command to request information regarding parameters of the SCSI target (the interface device) and its data devices; in response to the INQUIRY command, the target provides a response including a five-bit device class or device type (e.g., disk drives). Pet. 16, 33–38; Ex. 1007, 88, 132–33, 139–40, Table 12.1.

Petitioner further asserts that, in light of Schmidt, an ordinarily skilled artisan would have recognized that Kawaguchi's "inquiry" step includes a SCSI INQUIRY command issued from the EWS, and that it would have been obvious to such an artisan that, in response to the INQUIRY command, the SCSI device converter would respond as a hard disk. Pet. 31–36. Petitioner also avers that "[t]he combination of Kawaguchi and Schmidt is therefore nothing more than an application of a known technique (SCSI signaling as in Schmidt) to a known device (Kawaguchi's SCSI device converter) to yield predictable results (the device converter identifies and acts as a SCSI hard disk)." *Id*. at 15.

Upon consideration of the entire trial record, we determine that Petitioner has established sufficiently that the teachings of Kawaguchi in view of those of Schmidt suggest the aforementioned "inquiry and response" limitation.

Patent Owner counters that Kawaguchi does not disclose an interface device "that can be represented to the EWS as being an input/output device customary in a host device," citing Mr. Gafford's testimony for support. PO Resp. 19−24 (citing Ex. 2002 ¶¶ 51−55, 64−75). According to Patent Owner, because Kawaguchi's reading and writing data units may only read *or* write data, but cannot do both, "Kawaguchi's interface device could only be capable of representing that a portion/unit of it has partial capabilities of a hard drive." *Id*. Patent Owner contends that Kawaguchi "does not describe how or whether it identifies itself as a hard disk." *Id*. Patent Owner also avers that the data units were not "customary" at the time of the invention. *Id*. In Patent Owner's view, the data units cannot emulate a hard drive, as

each unit has its own ID number, and none of the units at a given device ID can both read and write data. *Id*.

Given the record in this proceeding, we do not find that Patent Owner's arguments and Mr. Gafford's testimony overcome Petitioner's arguments and supporting evidence. At the outset, Patent Owner's arguments and Mr. Gafford's testimony are not commensurate with the scope of the claims, as they are predicated upon Patent Owner's implicit construction for the claim term "an input/output device customary in a host device," requiring (1) the "input/output device" to have both read and write capabilities by interpreting "/" as "and"; and (2) no more than one "input/output device" by interpreting "an" to mean "no more than one." *In re Self*, 671 F.2d 1344, 1348 (CCPA 1982) (noting that limitations not appearing in the claims cannot be relied upon for patentability). As discussed above in Section II.A., we decline to adopt that construction, but rather interpret the claim term to mean "an input *and/or* output device customary in a host device." Significantly, the claims merely require transferring data to the host device—i.e., reading data—*not* writing from the host device, much less requiring both reading *and* writing. Moreover, during cross-examination, Mr. Gafford admitted that "the use of the term 'input/output' in the art is one or other or both for a particular device," and that the limitation "an input/out device customary in a host device," may be met by a device that is an *input-only* device. Ex. 1033, 93:20−94:9. In short, the claims do not require an "input/output device customary in a host device" to have both read and write capabilities.

Significantly, Kawaguchi discloses that the "SCSI device converter is able to *input and output data* to a SCSI interface of [a] EWS using the same standard as SCSI interface for *a hard disk*." Ex. 1005, at 4 (emphases added). Kawaguchi also discloses that "[t]he SCSI driver of the EWS has been developed as *a driver for connecting a hard disk*." *Id*. at 7 (emphasis added). The EWS "can identify, in appearance, the data writing unit (11), the data reading unit (12), the control data writing unit (13), and the interrupt data reading unit (14) as four hard disk devices." *Id*. According to Kawaguchi, the EWS reads data from the reading units, using the same method as that for hard disks. *Id*.

It is undisputed that a hard disk is "an input/output device customary in a host device." The Specification confirms that "[d]rivers for input/output devices customary in a host device which are found in practically all host devices are, for example, drivers for *hard disks*." Ex. 1001, 4:27−30 (emphasis added). In short, Kawaguchi's SCSI device converter, which "operates in a manner emulating the hard disk" to transmit data from a reading unit to the EWS, teaches "an input/output device customary in a host device," as required by claims 1, 11, and 14. Ex. 1005, 7. Furthermore, Kawaguchi's EWS (host), which communicates with the SCSI device converter (interface device) using a SCSI driver "developed as a driver for connecting a hard disk," teaches "the host device communicates with the interface device by means of the driver for the input/output device customary in a host device," as required by the challenged claims. *Id*.

Patent Owner's arguments and Mr. Gafford's testimony incorrectly assume that the reading units in Kawaguchi are read-only devices and the

writing units are write-only devices. PO Resp. 20−23; Ex. 2002 ¶¶ 51−52, 55. In fact, Kawaguchi discloses that the reading units may be *written to*, storing data from an input device, such as a CD-ROM. Ex. 1005, 6. And the data stored in the data writing units can be *read by* the control unit, so that the data can be sent to an output device, such as a plotter. *Id*. Kawaguchi explains that "control unit (16) controls the input and output of data to the peripheral devices" and "data written to the data writing unit (11) is outputted to an output device (4) such as a plotter, [and] data read from an input device (5) such as a CD-ROM is inputted to the data reading unit (12)." *Id*. In short, each data unit is capable of both reading *and* writing.

An ordinarily skilled artisan would have recognized that the "data reading" and "data writing" labels merely identify how "[t]he control unit (16) controls the input and output of data to the peripheral devices" at the application level, not an indication that the data units can only read or write, as Patent Owner implies. *Id*. Furthermore, Dr. Zadok testifies (Ex. 1032 ¶¶ 12−15, 49−50) and both Schmidt (Ex. 1007, 132−133, Table 12.1, 144) and the SCSI Specification (Ex. 1012, 119, 150, 195) confirm that one with ordinary skill in the art would have recognized that the SCSI "Disk drives" device class also supports data devices that have both reading and writing capabilities, as well as those data devices that are write-protected or read-protected. *See Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013) (noting that "as part of the obviousness analysis, the prior art must be viewed in the context of what was generally known in the art at the time of the invention"); *see also Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1365 (Fed. Cir. 2015) (explaining that the Board must consider

the prior art reference and evidence that "serve to document the knowledge that skilled artisans would bring to bear in reading the prior art identified as producing obviousness").

For these reasons, Patent Owner's arguments and Mr. Gafford's testimony (PO Resp. 17−24, Ex. 2002 ¶¶ 51−52, 55, 64−72) that "Kawaguchi's interface device could only be capable of representing that a portion/unit of it has partial capabilities of a hard drive" as Kawaguchi's data units may only read or write data, but cannot do both, are unavailing.

We also do not find Patent Owner's argument that Kawaguchi "does not describe how or whether it identifies itself as a hard disk" convincing. PO Resp. 20. Non-obviousness cannot be established by attacking references individually where, as here, the ground of unpatentability is based upon a combination of references. *In re Keller*, 642 F.2d 413, 426 (CCPA 1981). Rather, the test for obviousness is whether the combination of references, taken as a whole, would have suggested the claimed subject matter to one of ordinary skill in the art. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). In the context of the '399 patent, such an artisan would have the general knowledge with the SCSI standard and SCSI interfaces. Ex. 1003 ¶ 29; Dec. 10−11; PO Resp. 7−8; Ex. 1007; Ex. 1012.

As Petitioner notes (Pet. 31−38), the SCSI driver of the EWS, in Kawaguchi, "has been developed as a driver for connecting a hard disk." Ex. 1005, 7, Fig. 2. The SCSI device converter emulates a hard disk using the SCSI standard. *Id*. The flowchart shown in Figure 2 of Kawaguchi (reproduced previously) illustrates this emulation process. *Id*.

Specifically, the flowchart sets forth the steps for an initialization process for a hard disk. *Id*. The Inquiry step "represents reporting of attribute information of a target and logical units (identification code of a device type)." *Id*. The Start/Stop Unit step "represents start/stop of the logical unit." *Id*. The Test Unit Ready step "represents testing whether or not the logical unit is available, and the Mode Sense step "represents reporting of various parameter values (data format, storage medium configuration)." *Id*. After the initialization process, EWS performs writing to or reading from writing units and reading units 11−14. *Id*. The Read Extended step "represents reading data from a designated block, i.e., the data reading unit (12) or the interrupt data reading unit (14)." *Id*. The Write Extended step "represents writing data to a designated block, i.e., the data writing unit (11) or the control data writing unit (13)." *Id*.

As Schmidt confirms, the SCSI standard has a number of mandatory commands, including those described in Kawaguchi. Ex. 1007, 79, 138. Petitioner's annotated Figure maps Kawaguchi's Figure 2 (left) to Schmidt's SCSI command table (right, *id*.), and is reproduced below. Pet. 32.

FIG. 2

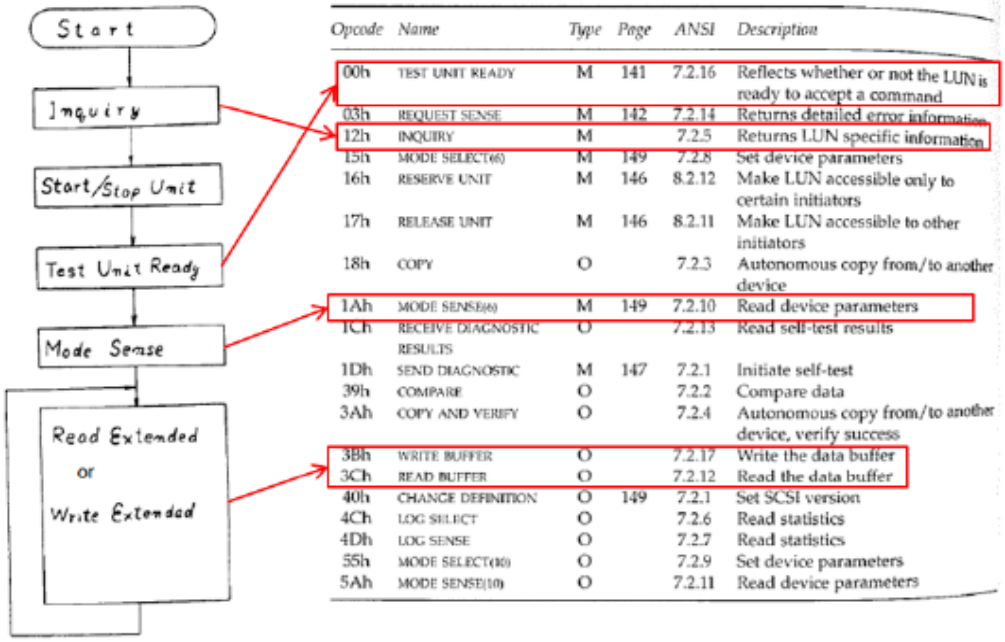


Table 12.10 Commands for all devices.

Opcode	Name	Type	Page	ANSI	Description
00h	TEST UNIT READY	M	141	7.2.16	Reflects whether or not the LUN is ready to accept a command
03h	REQUEST SENSE	M	142	7.2.14	Returns detailed error information
12h	INQUIRY	M		7.2.5	Returns LUN specific information
15h	MODE SELECT(6)	M	149	7.2.8	Set device parameters
16h	RESERVE UNIT	M	146	8.2.12	Make LUN accessible only to certain initiators
17h	RELEASE UNIT	M	146	8.2.11	Make LUN accessible to other initiators
18h	COPY	O		7.2.3	Autonomous copy from/to another device
1Ah	MODE SENSE(6)	M	149	7.2.10	Read device parameters
1Ch	RECEIVE DIAGNOSTIC RESULTS	O		7.2.13	Read self-test results
1Dh	SEND DIAGNOSTIC	M	147	7.2.1	Initiate self-test
39h	COMPARE	O		7.2.2	Compare data
3Ah	COPY AND VERIFY	O		7.2.4	Autonomous copy from/to another device, verify success
3Bh	WRITE BUFFER	O		7.2.17	Write the data buffer
3Ch	READ BUFFER	O		7.2.12	Read the data buffer
40h	CHANGE DEFINITION	O	149	7.2.1	Set SCSI version
4Ch	LOG SELECT	O		7.2.6	Read statistics
4Dh	LOG SENSE	O		7.2.7	Read statistics
55h	MODE SELECT(10)	O		7.2.9	Set device parameters
5Ah	MODE SENSE(10)	O		7.2.11	Read device parameters

The annotated Figure above, indeed, shows Kawaguchi's Inquiry, Test Unit Ready, Mode Sense, Read, and Write Steps having counterpart commands in the SCSI standard. *Compare* Ex. 1005, Fig. 2, *with* Ex. 1007, 138, Table 12.10. Schmidt describes that the SCSI INQUIRY command is used for obtaining the device type and the name of the device. Ex. 1007, 138. Specifically, the initiator (host) sends a SCSI INQUIRY command to request information regarding parameters of the target (interface device) and its data devices; and in response to the SCSI INQUIRY command, the target provides a response including a five-bit device class or device type. Ex. 1007, 88, 132–33, 139–40.

Notably, Mr. Gafford's testimony that "it is not mandatory for a SCSI target such as Kawaguchi to respond with inquiry data or with particular inquiry data" (Ex. 2002 ¶ 74) is not consistent with Kawaguchi's disclosure.

As discussed above, Kawaguchi discloses an initialization process for emulating a hard disk, using "a procedure as provided in the SCSI standards," and the process includes the Inquiry step that "represents reporting of attribute information of a target and logical units (identification code of a device type)." Ex. 1005, 7, Fig. 2. As Dr. Zadok testifies, in light of Kawaguchi and Schmidt, an ordinarily skilled artisan would have recognized that Kawaguchi's Inquiry step includes the transmission of the SCSI INQUIRY command from the EWS and that, in response to the INQUIRY command, Kawaguchi's SCSI device converter, which "operates in a manner emulating the hard disk," would respond with information that includes a device class identifier, signaling the EWS that it is a hard disk. Ex. 1003 ¶¶ 90−91. We credit the testimony of Dr. Zadok over that of Mr. Gafford, as Dr. Zadok's testimony is consistent with Kawaguchi and Schmidt (Ex. 1005, 7, Fig. 2; Ex. 1007, 79, 88, 132−33, 138−40). *See Elbit Sys. of Am., LLC v. Thales Visionix, Inc.*, 881 F.3d 1354, 1358 (Fed. Cir. 2018) (holding that "[t]he PTAB is entitled to weigh the credibility of the witnesses") citing *Trs. Of Columbia Univ. v. Illumina, Inc.*, 620 F. App'x 916, 922 (Fed. Cir. 2015); *Inwood Labs., Inc. v. Ives Labs., Inc.*, 456 U.S. 844, 856 (1982) ("Determining the weight and credibility of evidence is the special province of the trier of facts.").

For the reasons stated above, we determine that Petitioner has established sufficiently that the teachings of Kawaguchi, in combination with those of Schmidt and the "sampling circuit" references, suggest a SCSI device converter "configured in such a way that . . . when receiving an inquiry from the host device as to a type of a device attached to the

multi-purpose interface of the host device, sends a signal . . . to the host device which signals to the host device that it is an input/output device customary in a host device," as required by claims 1, 11, and 14. Patent Owner's argument that Kawaguchi "does not describe how or whether it identifies itself as a hard disk" is untenable.

We further do not find Patent Owner's argument that Kawaguchi's data units are not devices "customary in a host device" convincing, because Patent Owner incorrectly assumes that each data unit is either a read-only or write-only unit. PO Resp. 19−24; Ex. 2002 ¶¶ 51−56. As discussed above, each of the data units in Kawaguchi is capable of reading and writing data.

Patent Owner also conflates the *actual* data device type with the *simulated* data device type. As discussed above in Section II.A., the claims do not require the *actual* data device to be a device "customary in a host device." Notably, the Specification describes a multi-meter as an example of a data device for an interface device. Ex. 1001, 1:48−54. The multi-meter is configured to transfer measured data to the computer, and, thus, it is not an input *and* output device, let alone a device that is "customary in a host device" (e.g., a hard disk). *Id*. Moreover, Applicant, during the prosecution history of the '399 patent, submitted that the interface device "lies to the host computer as to the real nature of the data transmit/receive device." Ex. 1002, 256. The Federal Circuit also noted that, "[b]y answering in that manner, the interface device induces the host to treat it—and, indirectly, data devices on the other side of the interface device, no matter what type of devices they are—like the device that is already familiar to the host." *Papst*, 778 F.3d at 1259.

More importantly, as discussed above, a hard disk is "an input/output device customary in a host device" at the time of the invention. Ex. 1001, 4:27−30. Kawaguchi's EWS communicates with the SCSI device converter using a SCSI driver "developed as a driver for connecting a *hard disk*," and the SCSI device converter "operates in a manner *emulating the hard disk*." Ex. 1005, 7 (emphases added). Therefore, Patent Owner's argument that the data units in SCSI device converter are not a device "customary in a host device" is inapposite.

We also do not find Patent Owner argument and Mr. Gafford's testimony that Kawaguchi's data units cannot emulate a hard drive convincing, as they incorrectly assume that each data unit has its own SCSI ID number, and none of the units at a given device SCSI ID can read and write data. PO Resp. 19−24; Ex. 2002 ¶¶ 51−55, 64−75. Significantly, Kawaguchi discloses that the data units located physically in the SCSI device converter "are assigned ID numbers (or *the same ID number but different unit numbers*) . . . so that the EWS (1) can identify, in appearance, the data [units] as four *hard disk devices*." Ex. 1005, 6 (emphases added). As discussed above, each of Kawaguchi's data units can read and write data. *Id*. "The SCSI driver of the EWS has been developed as a driver for connecting a hard disk." *Id*. at 7. The SCSI interface in the EWS "is designed to connect up to eight hard disks" and the EWS "writes or reads data to each writing unit or from each reading unit using the same method as that for four hard disks." *Id*. at 6. The SCSI device converter "operates in a manner emulating the hard disk." *Id*. at 7. According to Kawaguchi, the "SCSI device converter is able to *input and output data* to a SCSI interface

of an EWS using the same standard as SCSI interface for a hard disk." *Id*. at 4, 6 (emphasis added).

Patent Owner also conflates SCSI ID numbers with logical unit numbers. As Dr. Zadok testifies (Ex. 1032 ¶¶ 5−9, 23), an ordinarily skilled artisan would have recognized that a SCSI interface, such as Kawaguchi's SCSI device converter, is a "device independent I/O bus, allowing a variety of devices to be linked to a computer system using a single bus," and "devices connected to a SCSI bus share the same physical medium of communication and can be addressed through the same SCSI bus." Ex. 1007, 79−91, 131. "Up to eight devices can be addressed using the SCSI bus," and "[t]he SCSI address is referred to as the SCSI ID." *Id*. Each peripheral device is viewed as a logical unit with its own logical unit number ("LUN"). *Id*. Further, Figure 10.2 of Schmidt (reproduced below with blue annotation added) shows a SCSI controller supporting multiple devices.

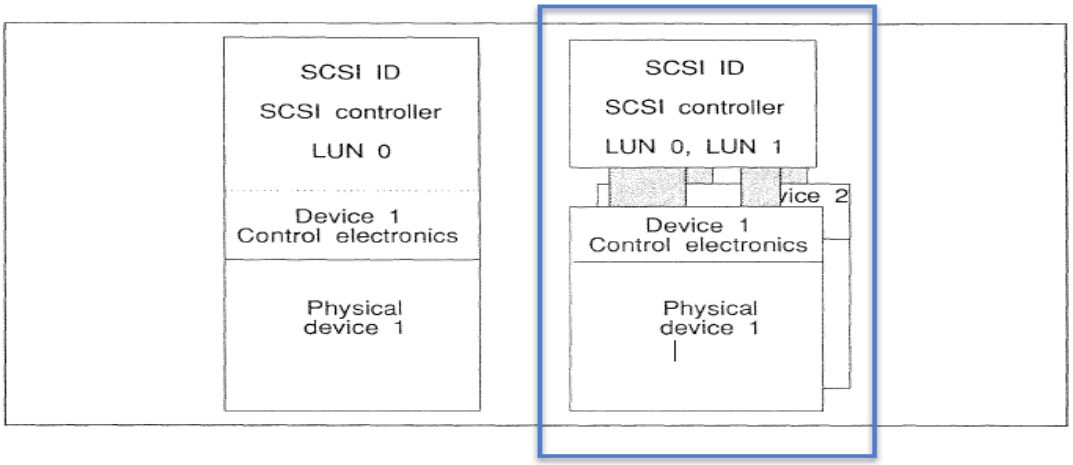


Figure 10.2 Embedded SCSI and bridge controllers.

Figure 10.2 of Schmidt (right side highlighted with a blue box) shows a single SCSI controller supporting a plurality of data devices, using the same SCSI ID with different LUNs. *Id*.

Patent Owner and Mr. Gafford have not explained convincingly that Kawaguchi's data units must have different SCSI ID numbers (PO Resp. 19−24; Ex. 2002 ¶¶ 51−55, 64−75)—when, instead, the teachings of Kawaguchi and Schmidt suggest that Kawaguchi's data units use the same SCSI ID with different LUNs. Ex. 1005, 6; Ex. 1007, 79−91, 131, Fig. 10.2. Hence, Patent Owner's argument that Kawaguchi data units cannot emulate a hard drive is conclusory, and not supported by Kawaguchi or Schmidt.

To the extent that Patent Owner argues that Kawaguchi is not enabling, prior art publications and patents are presumed to be enabled. *In re Antor Media Corp.*, 689 F.3d 1282, 1287–88 (Fed. Cir. 2012); *Impax Labs., Inc. v. Aventis Pharm., Inc.*, 545 F.3d 1312, 1316 (Fed. Cir. 2008); *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1355 (Fed. Cir. 2003). Patent Owner does not proffer persuasive evidence to support that argument. Nor does Patent Owner explain adequately the basis for its non-enablement argument. In sum, Patent Owner's non-enabling argument is deficient. *Cf. In re Morsa*, 713 F.3d 104, 110 (Fed. Cir. 2013) ("Once an applicant makes a non-frivolous argument that cited prior art is not enabling, however, the examiner must address that challenge."). More importantly, as discussed above, there is no dispute that the SCSI "Disk drives" device class supports data devices that are capable of reading and writing. Ex. 1007, 132−133, Table 12.1. In addition, Dr. Zadok testifies (Ex. 1032 ¶¶ 12−15, 49−50) and both Schmidt (Ex. 1007, 132−133, Table 12.1, 144) and the SCSI Specification (Ex. 1012, 119, 150, 195) confirm that one with ordinary skill would have recognized that the SCSI "Disk drives" device class also supports data devices that are write-protected or read-protected.

For the reasons stated above, we do not find Patent Owner's argument and Mr. Gafford's testimony that Kawaguchi's data units cannot emulate a hard drive convincing. Rather, we have determine that Petitioner has established by a preponderance of the evidence that Kawaguchi, in view of Schmidt, suggests the "inquiry and response" limitation, as recited in claims 1, 11, and 14.

Rationale to combine Kawaguchi with Schmidt

Petitioner asserts and Dr. Zadok testifies that, in light of Schmidt, an ordinarily skilled artisan would have recognized that Kawaguchi's "inquiry" step includes a SCSI INQUIRY command issued from the EWS (host), and that it would have been obvious to such an artisan that, in response to the INQUIRY command, the SCSI device converter of Kawaguchi would respond as a hard disk. Pet. 31–36; Ex. 1003 ¶¶ 90−91. Petitioner also avers that "[t]he combination of Kawaguchi and Schmidt is therefore nothing more than an application of a known technique (SCSI signaling as in Schmidt) to a known device (Kawaguchi's SCSI device converter) to yield predictable results (the device converter identifies and acts as a SCSI hard disk)." Pet. 15; Ex. 1003 ¶¶ 90−91. We agree with Petitioner.

Citing to Mr. Gafford's testimony, Patent Owner counters that "Kawaguchi and Schmidt would not be combined by one skilled in the art." PO Resp. 25−30 (citing Ex. 2002 ¶¶ 45−48, 51−56). In particular, Patent Owner argues that "[b]ecause none of the individual devices/units of Kawaguchi (at a SCSI device ID) can both read and write, it would be impossible for any of them to emulate a hard drive individually" and "it

would render the Kawaguchi invention inoperable if the interface device of Kawaguchi responded to any Inquiry in the context of the SCSI standard." *Id*. Patent Owner contends one of ordinary skill in the art would not have been motivated to combine four separate reading and writing units to a single device because "Kawaguchi's teaching of separate reading and writing units having different IDs is critical to his invention," it would change the principle of operation of Kawaguchi, and Kawaguchi would no longer achieve the intended purpose of the invention. *Id*. Patent Owner also argues that the data units "act merely as relays," not as hard disks. *Id*. at 15−17, 29.

Based on this record, we do not find Patent Owner's arguments and Mr. Gafford's testimony convincing, as they rest on the assumptions that (1) the data units in Kawaguchi are read-only or write-only devices, and (2) the data units must use the same SCSI ID number, conflating SCSI ID numbers with logical unit numbers.

As discussed above, each of Kawaguchi's reading and writing units is capable of both reading and writing. Ex. 1005, 6. There is no dispute that the SCSI "Disk drives" device class supports data devices that are capable of reading and writing. Ex. 1007, 132−133, Table 12.1. Moreover, as Dr. Zadok testifies (Ex. 1032 ¶¶ 12−15, 49−50) and both Schmidt (Ex. 1007, 132−133, Table 12.1, 144) and the SCSI Specification (Ex. 1012, 119, 150, 195) confirm, one with ordinary skill would have recognized that the SCSI "Disk drives" device class also supports data devices that are write-protected or read-protected.

Patent Owner and Mr. Zadok also incorrectly assume that Kawaguchi's data units *must have different SCSI ID numbers*, conflating SCSI ID numbers with logical unit numbers. As discussed above, Kawaguchi discloses that the data units located physically in the SCSI device converter "are assigned ID numbers (or *the same ID number but different unit numbers*) . . . so that the EWS (1) can identify, in appearance, the data [units] *as four hard disk devices*." Ex. 1005, 6 (emphases added). Indeed, Schmidt confirms that a SCSI interface device may support multiple data devices using the same SCSI ID with different LUNs, as Kawaguchi suggests. Ex. 1007, 79−91, 131, Fig. 10.2.

Therefore, Patent Owner's and Mr. Gafford's assertions—(1) "Kawaguchi's teaching of separate reading and writing units having different IDs is critical to his invention" (PO Resp. 15, 29; Ex. 2002 ¶ 46); (2) "Kawaguchi's separate reading and writing units having different IDs is principle of operation of Kawaguchi's SDC" (PO Resp. 15, 29−30; Ex. 2002 ¶¶ 45−48); and (3) "none of the individual device/units of Kawaguchi (at a SCSI device ID) can both read and write" and "it would be impossible for any of them to emulate a hard drive individually" (PO Resp. 27−28; Ex. 2002 ¶ 56)—mischaracterize Kawaguchi, ignoring Kawaguchi's teaching that the data units appear "as four hard disk devices" to the EWS and are assigned "the same ID numbers with different unit numbers." Ex. 1005, 6.

Hence, Patent Owner's argument that "it would render the Kawaguchi invention inoperable if the interface device of Kawaguchi responded to any Inquiry in the context of the SCSI standard" is conclusory, not supported by

Kawaguchi or Schmidt. Furthermore, Patent Owner's argument that one of ordinary skill in the art would not have combined four data units as one single device is misplaced. Petitioner did not propose such a combination. Nor does Petitioner need to make such a combination to render the challenged claims obvious. According to Kawaguchi, the "SCSI device converter is able to input and output data to a SCSI interface of an EWS using the same standards as SCSI interface for a hard disk." Ex. 1005, 6, 7.

In addition, Patent Owner's and Mr. Gafford's assertion that Kawaguchi's data units "act merely as relays," not hard disks (PO Resp. 29; Ex. 2002 ¶ 45), fails to consider Kawaguchi as a whole, which repeatedly and consistently describes using the SCSI standard and interfaces to represent the data units to the EWS as *hard disks*. Ex. 1005, 6−7, Fig. 2. For example, Kawaguchi discloses: (1) "[a] SCSI device converter comprising: a SCSI interface connected to a SCSI interface in an engineering workstation (EWS) for connecting a hard disk" (*id*. at 2); (2) the "EWS includes, as a standard interface, a SCSI interface used to connect hard disks" (*id*. at 3); (3) "it is an object of the present invention to provide a general SCSI device converter . . . to be easily connected to the SCSI interface on a EWS designed to connect a hard disk" (*id*. at 3); (4) the "SCSI device converter is able to input and output data to a SCSI interface of an EWS using the same standards as SCSI interface for a hard disk" (*id*. at 4); (5) "[t]he SCSI interface in the EWS (1) is designed to connect up to eight hard disks" and the EWS "writes or reads data to each writing unit or from each reading unit using the same method as that for four hard disks" (*id*. at 6); (6) "[t]he SCSI driver of the EWS has been developed as a driver for

connecting a hard disk" and "the apparatus in the present invention operates in a manner emulating the hard disk" (*id*. at 7); and (7) "steps from 'Start' to 'Mode Sense' represent an initialization process for a hard disk" and this procedure "uses a procedure as provided in the SCSI standards" (*id*.). In view of Kawaguchi as a whole, Patent Owner's argument that the data units merely act as relays is without merit.

For the foregoing reasons, we determine that Petitioner has articulated a rationale to combine the prior art teachings. We agree with Petitioner (Pet. 12−16, 29−38; Ex. 1003 ¶¶ 66, 90−97) that, in view of the teachings of Schmidt which discloses the SCSI standard, one of ordinary skill in the art would have been motivated to have Kawaguchi's SCSI device converter signals to the EWS that it is a hard disk (an input/output device customary in a host device), in response to a SCSI INQUIRY command, as required by claims 1, 11, and 14, to achieve the benefit of having the SCSI device converter appeared as a SCSI hard disk and Kawaguchi's stated goal that "the apparatus in the present invention operates in a manner emulating the hard disk," easily connecting a peripheral device to a SCSI interface on the EWS (Ex. 1005, 2, 7). *See KSR*, 550 U.S. at 417 (noting that, "if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill").

Remaining claim limitations

We also have considered fully Petitioner's detailed explanations and supporting evidence as to the remaining claim limitations. Pet. 17−45; Ex. 1003; Ex. 1005; Ex. 1007. Patent Owner does not submit separate, specific arguments for the remaining claim limitations. PO Resp. 10−30.

Based on the entirety of the record before us, we determine that Petitioner provides sufficient evidence to show that the asserted prior art combination teaches or suggests the remaining claim limitations recited in claims 1, 11, and 14. For example, claims 1, 11, and 14 additionally require interpreting a data request command from the host device as a data transfer command for initiating a transfer of the digital data to the host device. *See, e.g.*, Ex. 1001, 12:42–13:12. With respect to this limitation, Petitioner asserts that Kawaguchi, in combination with Schmidt and the "sampling circuit" references, suggests a data request command in that, after the initialization process for a hard disk, Kawaguchi's EWS "performs writing to or reading from the writing units and reading units" of the SCSI device converter. Pet. 39−41 (citing Ex. 1005, 7). Petitioner notes that Kawaguchi describes the Read Extended step as representing "reading data from a designated block, i.e., the data reading unit (12) or the interrupt data reading unit (14)." *Id*. (citing Ex. 1005, 7). Dr. Zadok testifies that the SCSI READ command, as described in Schmidt, constitutes a data request command because it requests a certain number of logical blocks from a target. Ex. 1003 ¶ 106 (citing Ex. 1007, 164−165, 137). Dr. Zadok further testifies and Petitioner asserts that one with ordinary skill in the art would have implemented Kawaguchi's Read Extended step to include a SCSI READ

command because Kawaguchi discloses that it "uses procedure as provided in the SCSI standards." Pet. 40−41; Ex. 1003 ¶ 106.

Although Kawaguchi does not explicitly describe transferring data from an analog sensor device, Petitioner further notes that the SCSI device converter includes "a control unit for managing the transmitting/receiving of data between the EWS and the peripheral device via the data writing unit and reading unit," in that data read from an input device is input to the data reading unit, which enables the EWS to read data from each reading unit using the same method as that for hard disks. Pet. 41−45 (citing Ex. 1005, 3−4, 6). Petitioner explains that, when the SCSI device converter is adapted to accommodate an A/D converter, the process of reading data from the analog sensor device via the A/D converter would follow the disclosed process of reading data from the input device, which input the data to the data reading unit and transfer the data to the EWS in response to a READ command. *Id*. Petitioner asserts and Dr. Zadok testifies that, in view of Kawaguchi's data transfer process, an ordinarily skilled artisan would have used Kawaguchi's SCSI device converter to interpret a READ command "as a data transfer command for initiating a transfer of the digital data to the host device," as required by claims 1, 11, and 14. *Id*.; Ex. 1003 ¶¶ 108−109. We agree with Petitioner's explanations and Dr. Zadok's testimony as they are consistent with the teachings of Kawaguchi and Schmidt.

Thus, we determine that Petitioner has demonstrated by a preponderance of the evidence that the teachings of Kawaguchi, in combination with those of Schmidt and the "sampling circuit" references, teach or suggest "the second command interpreter is configured to interpret a

data request command from the host device to the type of input/output device signaled by the first command interpreter as a data transfer command for initiating a transfer of the digital data to the host device," as required by claims 1, 11, and 14. In its Response, Patent Owner did not advance any arguments as to this limitation.

For the foregoing reasons, we determine that Petitioner has demonstrated by a preponderance of the evidence that the teachings of Kawaguchi, in combination with those of Schmidt and the "sampling circuit" references, teach or suggest all of the limitations recited in claims 1, 11, and 14, and articulated reasons to combine the prior art teachings, rendering these claims obvious.

Claim 3

Claim 3 depends directly from claim 1, and further recites "wherein the memory means comprises a buffer to buffer data to be transferred between the data transmit/receive device and the host device." Ex. 1001, 13:18−22. In regard to this limitation, the Specification discloses that "the memory means 14 can have an additional buffer for synchronizing data transfer from the data transmit/receive device to the interface device 10 and data transfer from the interface device 10 to the host device." Ex. 1001, 7:26−31. The Specification further discloses that "the buffer is implemented as a fast random access memory or RAM buffer." *Id*.

Petitioner asserts that the teachings of Kawaguchi, in combination with those of other prior art references, teach or suggest the limitation expressly recited in claim 3. Pet. 45−46 (citing Ex. 1003 ¶¶ 108−109,

113−115; Ex. 1005, 5). Upon consideration of Petitioner's contentions and supporting evidence, we are persuaded by Petitioner's showing. Patent Owner does not address claim 3 with separate, specific arguments, but rather relies upon its arguments in connection with claim 1. PO Resp. 24−25. We have addressed those arguments in our analysis above regarding claim 1, and determine those arguments are likewise unavailing here.

At the outset, we agree with Petitioner (Pet. 45, n.6) that "the memory means" refers to the recited "memory" of claim 1. *See Microprocessor Enhancement Corp. v. Texas Instruments Inc.*, 520 F.3d 1367, 1379 n.8 (Fed. Cir. 2008) (noting the definite article "the" is a word of limitation, particularizing the subject which it precedes). Further, although "the memory means" also uses the word "means" which triggers a rebuttable presumption that § 112, ¶ 6 applies, the claim element also recites "memory" and "buffer." *TriMed, Inc. v. Stryker Corp.*, 514 F.3d 1256, 1259 (Fed. Cir. 2008). One of ordinary skill in the art would have understood that "memory" and "buffer" provide sufficient structure to perform the general function of buffering data during a data transfer. As such, we agree with Petitioner that the term "the memory means" does not invoke § 112, ¶ 6. *Id.* (noting that the presumption can be overcome if "the claim recites sufficient structure for performing the described functions in their entirety.").

More importantly, as Petitioner notes, Kawaguchi discloses that the SCSI device converter implements a data reading unit, code converting unit, and other modules "by using a microcomputer, ROM and RAM." Ex. 1005, 5. The code converting unit converts the data format between SCSI standards and device-interface bus standards. *Id.* Kawaguchi's control unit

in the SCSI device converter "controls the data transmission/reception between the EWS and the peripheral devices which is performed by relaying the data writing units and reading units." *Id*. The EWS reads data from the reading unit by performing the Read Extended step, which "represents reading data from a designated block, i.e., the data reading unit." *Id*. at 7.

Dr. Zadok testifies that, based on an ordinarily skilled artisan's understanding of a buffer (Ex. 1018, 113) and Kawaguchi's description of the data transfer process (Ex. 1005, 5, 7), such an artisan would have recognized that Kawaguchi's reading unit, which includes ROM and RAM, also acts as a buffer to buffer data between the analog sensor device (data transmit/receive device) and EWS (host device), as required by claim 3. Ex. 1003 ¶¶ 112−115. Indeed, a buffer was known at the time of the invention as "a device in which data are stored temporarily, in the course of transmission from one point to another; used to compensate for a difference in the flow of data, or time of occurrence of events, when transmitting data from one device to another." *See* THE IEEE STANDARD DICTIONARY OF ELECTRICAL AND ELECTRONICS TERMS, 6th ed. (1996), Ex. 1018, 113. An ordinarily skilled artisan would have appreciated the benefit of having a buffer for transferring data from the data unit to the EWS. *Id*.; *see also Ariosa Diagnostics*, 805 F.3d at 1365 (explaining that the Board must consider the prior art reference and evidence that "serve to document the knowledge that skilled artisans would bring to bear in reading the prior art identified as producing obviousness"). We credit Dr. Zadok's testimony as it is consistent with other evidence in this record, and we adopt his analysis as our own. Ex. 1005, 5, 7; Ex. 1018, 113.

For the reasons discussed above, we determine that Petitioner has demonstrated by a preponderance of the evidence that Kawaguchi, in combination with Schmidt and the "sampling circuit" references, renders claims 3 obvious.

Claim 5

Claim 5 depends directly from claim 1, and further recites "wherein the processor is a digital signal processor." Ex. 1001, 13:26–27. Petitioner asserts that the prior art combination teaches or suggests this limitation. Pet. 46−47. Upon consideration of Petitioner's contentions and supporting evidence, we are persuaded by Petitioner's showing. Patent Owner does not address claim 5 with separate, specific arguments, but rather relies upon its arguments in connection with claim 1. PO Resp. 24−25. We have addressed those arguments in our analysis above regarding claim 1, and determine those arguments are likewise unavailing here.

Notably, Petitioner explains that Kawaguchi's code converting unit, which is implemented using a microcomputer, "converts the data format between SCSI standards and device-interface bus standards." Pet. 46−47 (citing Ex. 1005, 5). Petitioner confirms that Kawaguchi does not disclose expressly that its microcomputer includes a digital signal processor. *Id*. Nevertheless, Petitioner contends that one with ordinary skill in the art would have utilized a digital signal processor to process the digital signal in Kawaguchi because digital signal processors were known to be optimized for processing digital signals. *Id*. (citing Ex. 1014, 145; Ex. 1025, 6).

Dr. Zadok testifies that a person with ordinary skill in the art would have understood that digital signal processors "could often process digital signals *faster and more cost effectively* than general purpose CPUs." Ex. 1003 ¶¶ 116−119 (emphasis added). Indeed, at the time of the invention, "digital signal processor" is defined as an "integrated circuit design for *high-speed data manipulation* and used in audio, communications, image manipulation, and other data acquisition and data control applications." Ex. 1014, 145 (emphasis added). As Dr. Zadok further explains, Oppenheim discloses that "by the mid-1980s integrated circuit technology had advanced to a level that permitted the implementation of *very fast fixed-point and floating-point* microcomputers with architectures specially designed for implementing discrete-time signal processing algorithms." Ex. 1025, 6 (emphasis added). We credit Dr. Zadok's testimony as it is consistent with other evidence in this record, and we adopt his analysis as our own. Ex. 1014, 145; Ex. 1025, 6.

Accordingly, we are persuaded that Petitioner has articulated a sufficient reason why an ordinarily skilled artisan would have substituted Kawaguchi's teaching of a microcomputer with a digital signal processor—to obtain "optimized computational performance of digital processing algorithms"—and that Petitioner has provided sufficient explanation and evidence to support its rationale. Consequently, we determine that Petitioner has established by a preponderance of the evidence that the teachings of Kawaguchi, in combination with those of Schmidt and the "sampling circuit" references, teach or suggest using a digital signal processor in

Kawaguchi's SCSI device converter, as recited in claim 5, rendering the claim obvious.

Conclusion on Obviousness

For the foregoing reasons, we conclude that Petitioner has established by a preponderance of the evidence that claims 1, 3, 5, 11, and 14 are unpatentable under § 103(a) as obvious over the teachings of Kawaguchi, in combination with those of Schmidt and the "sampling circuit" references.

III. PROCEDURAL ISSUES

Patent Owner asserts that the Petitioner's Reply exceeds the proper scope in accordance with 37 C.F.R. § 42.23(b), which states "[a] reply may only respond to arguments raised in the corresponding opposition or patent owner response." Paper 27. Pursuant to our authorization (*id*.), Patent Owner filed an Itemized Listing of the Petitioner's Reply arguments and evidence that Patent Owner alleges to be improper. Paper 30. Petitioner filed a Responsive Itemized Listing, identifying the specific portions of Patent Owner's Response and/or expert declaration, to which each allegedly improper argument/evidence is provided as a response. Paper 32.

We have considered the parties' listings. We do not agree that all of the arguments and evidence identified by Patent Owner are beyond the proper scope of a reply under 37 C.F.R. § 42.23(b). *See Ariosa Diagnostics*, 805 F.3d at 1365; *see also Belden Inc., v. Berk-Tek LLC*, 805 F.3d 1064, 1078−80 (Fed. Cir. 2015) (holding that the Board may rely on new evidence submitted with a reply because the evidence was legitimately responsive to patent owner's arguments and not needed for petitioner's showing of

obviousness). In any event, in rendering this Final Written Decision, we do not rely on any allegedly improper arguments presented in Petitioner's Reply, nor evidence that supports those arguments.

Patent Owner also objects to the constitutionality of *inter partes* review based on pending review of that issue by the United States Supreme Court. PO Resp. 30 (citing *Oil States Energy Services, LLC v. Greene's Energy Group, LLC*, No. 16-712 (U.S. Nov. 23, 2016, cert. granted June 12, 2017)). As of the date of this Decision, the Supreme Court has not issued a decision in *Oil States*. *See Oil States Energy Servcs., LLC v. Greene's Energy Grp., LLC*, 639 F. App'x 639 (Fed. Cir. 2016), *cert. granted*, 137 S. Ct. 2239; *see also MCM Portfolio LLC v. Hewlett-Packard Co.*, 812 F.3d 1284, 1288–1293 (Fed. Cir. 2015) (holding that *inter partes* review does not violate Article III or the Seventh Amendment). Consequently, any decision on our own Constitutionality here is unnecessary in view of existing decisions by our reviewing court or premature.

IV. CONCLUSION

For the foregoing reasons, Petitioner has demonstrated by a preponderance of the evidence that claims 1, 3, 5, 11, and 14 of the '399 patent are unpatentable under § 103(a) as obvious over the combined teachings of Kawaguchi, Schmidt, and the "sampling circuit" references.

V. ORDER

Accordingly, it is

ORDERED that claims 1, 3, 5, 11, and 14 of the ’399 patent are unpatentable; 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.

For PETITIONER:

Lori A. Gordon
Steven W. Peters
Tyler Dutton
Michael D. Specht
STERNE, KESSLER, GOLDSTEIN & FOX
lgordon-ptab@skgf.com
speters-ptab@skgf.com
tdutton-ptab@sternekessler.com
mspect-ptab@sternekessler.com

For PATENT OWNER:

Gregory s. Donahue
Minghui Yang
DiNOVO PRICE ELLWANGER & HARDY LLP
gdonahue@dpelaw.com
myang@dpelaw.com
docketing@dpelaw.com

Michael R. Fleming
IRELL & MANELLA LLP
mfleming@irell.com

Anthony Meola
Jason. A. Murphy
Victor J. Baranowshi
Arlen L. Olsen
SCHMEISER, OLSEN & WATTS, LLP
ameola@iplawusa.com
jmurphy@iplawsa.com
vbaranowski@iplawusa.com
aolsen@iplawusa.com