

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD., and
SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioner,

v.

PAPST LICENSING GMBH & CO. KG,
Patent Owner.

Case IPR2017-00714¹
Patent 6,470,399 B1

Before JONI Y. CHANG, JENNIFER S. BISK, and JAMES B. ARPIN,
Administrative Patent Judges.

CHANG, *Administrative Patent Judge.*

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

¹ Case IPR2017-01808 has been joined with this proceeding.

I. INTRODUCTION

ZTE (USA) Inc. and ZTE Corporation (collectively, “ZTE”) filed a corrected Petition requesting an *inter partes* review of claims 1–3, 5, 6, 11, 14, and 15 (“the challenged claims”) of U.S. Patent No. 6,470,399 B1 (Ex. 1001, “the ’399 patent”) and a Declaration of Kevin Almeroth, Ph.D. (Ex. 1003). Paper 9 (“Pet.”). Papst Licensing GmbH & Co., KG (“Patent Owner”) filed a Preliminary Response. Paper 8 (“Prelim. Resp.”). We instituted the instant *inter partes* review as to claims 1–3, 5, 6, 11, 14, and 15. Paper 10 (“Dec.”).

Subsequent to institution, we granted the Motion for Joinder filed by Olympus Corporation and Olympus America Inc. (collectively, “Olympus”), and Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively, “Samsung” or “Petitioner”), joining Case IPR2017-01808 with the instant proceeding. Paper 16. We also granted a Joint Motion to Terminate with respect to ZTE (Paper 28) and a Joint Motion to Terminate with respect to Olympus (Paper 23).

Patent Owner filed a Response (Paper 15, “PO Resp.”) and a Declaration of Thomas Gafford (Ex. 2001). Petitioner filed a Reply. Paper 20 (“Reply”). A transcript of the telephonic oral hearing held on February 13, 2018, has been entered into the record as Paper 31 (“Tr.”).

This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a). For the reasons that follow, Petitioner has demonstrated by a preponderance of the evidence that claims 1–3, 5, 6, 11, 14, and 15 of the ’399 patent are unpatentable.

A. Related Matters

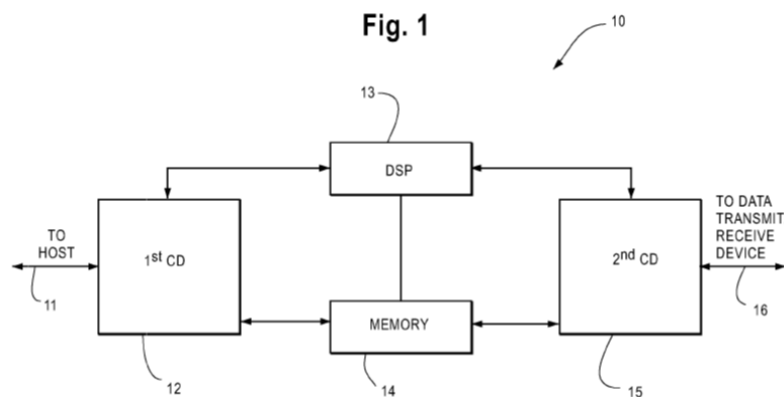
The parties indicate that the '399 patent is involved in *Papst Licensing GmbH & Co. KG v. Huawei Technologies Co., Ltd.*, Case No. 6:15-cv-01115 (E.D. Tex.) and other proceedings. Pet. 4–6; Paper 4, 2–5. The '399 patent also is involved in Cases IPR2016-01839 and IPR2016-01864. This Final Written Decision is entered concurrently with the Final Written Decisions in Cases IPR2016-01839 and IPR2016-01864.

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. 1001, 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 1:65–2:13. 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 9:32–33. 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. Claims 1 and 11 recite interface devices, and claim 14 recites a method for communicating between a host device and a data transmit/receive device via an interface device. Each of claims 2–3, 5, and 6 depends directly or indirectly from claim 1. Claim 15 depends directly from claim 14. Claim 1 is illustrative and is reproduced below with disputed limitations emphasized:

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 (emphasis added).

D. Applied References

Petitioner relies upon the references listed below.

Lin US 6,522,432 B1 Feb. 18, 2003 (Ex. 1007)

Aytac US 5,758,081 May 26, 1998 (Ex. 1005)

Aytac's source code in U.S. Patent Application No. 08/569,846 (Ex. 1020, 77–527, "Aytac's source code").

AMERICAN NATIONAL STANDARDS INSTITUTE, INC., *American National Standard for Information Systems – Small Computer System Interface-2*, ANSI X3.131-1994 (1994) (Ex. 1006, "the SCSI Specification").²

² Citations to the SCSI Specification refer to the original page numbers.

Admitted Prior Art disclosed in the '399 patent (*see, e.g.*, Ex. 1001, 4:23–30, 4:42–44, 5:10–13, 5:64–67, 6:7–19, 6:22–32, 6:28–32, 9:32–38, 11:9–22).

E. Instituted Ground of Unpatentability

We instituted this trial based on the sole ground that each of claims 1–3, 5, 6, 11, 14, and 15 is unpatentable under § 103(a)³ as obvious over the combined teachings of Aytac, Lin, the SCSI Specification, and the Admitted Prior Art in the '399 patent (Ex. 1001). Dec. 21.

II. DISCUSSION

A. Claim Construction

Patent Owner 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]). Prelim. Resp. 18. 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).

In the Decision on Institution (Dec. 7–8), we noted that the U.S. Court of Appeals for the Federal Circuit (the “Federal Circuit”) has construed

³ 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.

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. 1008 (“*Papst*” or the “*Papst Decision*”). We adopted those claim constructions set forth in the Federal Circuit *Papst Decision* (reproduced in the table below).

After institution, Patent Owner agrees with those Federal Circuit claim constructions, and directs our attention to the District Court Claim Construction Order issued on March 7, 2017, in another related proceeding involving the '399 patent. PO Resp. 18–19; Ex. 2004. 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 terms discussed below, 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)). For example, as Patent Owner notes (PO Resp. 28, 30), whether the term “input/output device customary in a host device” includes “at the time of the invention” is not pertinent to this proceeding. We also note that the patentability of the challenged claims is determined based on prior art that is available before or at the time of the invention.

1. *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. 1008), which we adopt.⁴

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.” <i>Papst</i> , 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).” <i>Id.</i>
“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.” <i>Id.</i> at 1264.	does not require “a physical plug, socket, or other structure that permits a user to readily attach and detach something else.” <i>Id.</i> at 1265.

⁴ 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 (see, e.g., Pet. 28–41), we likewise treat 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.” <i>Id.</i> at 1265.	“need not be capable of communicating ‘when connected to the host device by the interface device.’” <i>Id.</i> 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.” <i>Id.</i> at 1267.	not limited to a file “whose content is stored off the interface device, though it includes such files.” <i>Id.</i> 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.” <i>Id.</i> at 1270.	not limited to a device “‘normally present <i>within the chassis</i> ’ of a computer.” <i>Id.</i> (emphasis in original).

2. *“whereupon the host device communicates with the interface device by means of the driver for the input/output device customary in a host device” or “the specific driver for the multi-purpose interface”*

Claim 1 recites “whereupon the host device communicates with the interface device by means of the driver for the input/output device customary in a host device.” Ex. 1001, 13:5–8. Claim 11 recites “whereupon the host device communicates with the interface device by means of the specific driver for the multi-purpose interface.” *Id.* at 14:12–15. Claim 14 recites “whereupon the host device communicates with the interface device by means of the usual driver for the input/output device [customary in a host device].” *Id.* at 14:55–57. For convenience, we refer to these claim elements as the “communication” limitations in our analysis below.

In connection with the recited drivers and multi-purpose interface, the Specification describes that “[d]river 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,” and that “[d]rivers for other storage devices such as floppy disk drives, CD-ROM drives or tape drives could also be utilized.” Ex. 1001, 4:27–39. Claim 2 depends from claim 1 and further requires the drivers for input/output devices customary in a host device to comprise a “hard disk driver.” *Id.* at 13:13–17. Therefore, the term “driver for the input/output device customary in a host device” encompasses a hard disk driver.

The Specification also explains that “the interface device according to the present invention is to be attached to a host device by means of a

multi-purpose interface of the host device which can be implemented, for example, as an SCSI interface or as an enhanced printer interface.” *Id.* at 4:40–44. The Specification further describes that “communication between the host device and the multi-purpose interface can take place . . . also via specific interface drivers which, in the case of SCSI interfaces, are known as multi-purpose interface ASPI (advanced SCSI programming interface) drivers, . . . is normally included by the manufacturer of the multi-purpose interface.” *Id.* at 11:9–19. Claim 13 depends from claim 11, and further recites that “the multi-purpose interface is an SCSI interface, and wherein the specific driver for the multi-purpose interface is an ASPI manager.” *Id.* at 14:29–31. As such, the term “multi-purpose interface” encompasses a SCSI interface, and the term “specific driver for the multi-purpose interface,” as recited in claim 11, encompasses an ASPI driver. The parties do not dispute these constructions. PO Resp. 7, 39; Pet. 31–32, 62–65; Reply 6, n.5.

For the first time in this proceeding, however, Patent Owner proposes a construction for the “communication” limitations that would import a negative limitation from the Specification into the claims, *prohibiting* the use of other software at any point in the communication process for additional unclaimed functionalities. PO Resp. 21–25, 36–37. In particular, Patent Owner argues that the challenged claims require “that the host device communicates with the interface device without resort to specialized software.” *Id.* In Patent Owner’s view, “[a]n important feature of the invention of the ’399 patent is that communications between the host

computer and the interface device are accomplished by customary drivers normally present on a host computer, and without resorting to specialized, non-customary software that would need to be loaded by a user.” *Id.* at 21. Patent Owner also argues that the Federal Circuit’s explanation as to “its understanding of Tasler’s interface device” (*id.* at 24), i.e., “[t]he interface device of the invention thus *does not require* that a ‘specially designed driver’ for the interface be loaded into a host computer” (*Papst*, 778 F.3d at 1259 (emphasis added)), supports its contentions.

However, even if we were to import a “without requiring” limitation from the Specification that is consistent with the Federal Circuit’s purported “understanding of Tasler’s interface device,” such a negative limitation would not *prohibit* the use of other software at any point in the communication process for additional unclaimed functionalities. *See Celsis In Vitro v. CellzDirect, Inc.*, 664 F.3d 922, 926–27 (Fed. Cir. 2012) (holding that the negative limitation “without requiring” does not mean “prohibiting”). As the Federal Circuit explained in *Celsis*, the claim term “‘without requiring’ means simply that the claim does not require the [recited] step,” and “performance of that step does not preclude a finding of infringement.” *Id.* Therefore, we do not interpret the “communication” limitations of claims 1, 11, and 14 to require that the host device to communicate with the interface device *solely* by means of the recited driver, as suggested by Patent Owner (PO Resp. 37).

Tellingly, U.S. Patent 8,966,144 B2 (“the ’144 patent”), which shares the same Specification with the ’399 patent, includes claims that *explicitly*

recite a file transfer process between the host device and the interface device “*without requiring* any user-loaded file transfer enabling software to be loaded on or installed in the computer at any time.” *See, e.g.*, Ex. 3003, 12:24–36 (emphasis added). This indicates that the sole named inventor of both the ’399 patent and the ’144 patent understood how to claim different features of his disclosed invention.

As our reviewing court has explained, “each claim does not necessarily cover every feature disclosed in the specification,” and “it is improper to limit the claim to other, unclaimed features.” *Ventana Med. Sys., Inc. v. BioGenex Labs., Inc.*, 473 F.3d 1173, 1181 (Fed. Cir. 2006). Furthermore, the court “has repeatedly cautioned against limiting the claimed invention to preferred embodiments or specific examples in the specification.” *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1346–47 (Fed. Cir. 2015); *Superguide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004) (noting that “it is important not to import into claim limitations that are not a part of the claim”). “[I]t is the *claims*, not the written description, which define the scope of the patent right.” *Williamson*, 792 F.3d at 1346–47; *see also Phillips*, 415 F.3d at 1312 (noting that “[i]t is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude”).

More importantly, it is undisputed that the *plain and ordinary meaning* of the claim language does not include any negative limitation, much less require *all* communication between the host device and interface device to occur *solely* by means of the recited driver *without involvement of*

any other software. Id. at 21–25, 36–37; Reply 7. In fact, neither the Federal Circuit Decision (Ex. 1008) nor the District Court Claim Construction Order (Ex. 2004), interpreting claim terms of the ’399 patent, sets forth such a negative limitation for any of the “communication” limitations. As Petitioner also points out (Reply 7), the plain meaning of the claim term “by means of” is “[w]ith the use of: owing to.” WEBSTER’S II NEW COLLEGE DICTIONARY, 678 (1995) (Ex. 1024, 3). Each of the claims also contains the transitional phrase “comprising.” In short, the plain and ordinary meaning of the claim language does *not prohibit* the presence of other software that may in some way be involved in the communication, so long as the recited driver is used in the communication. As such, we do not interpret “by means of” as “*solely* by means of.”

Patent Owner’s proposed claim construction also is inconsistent with the Specification. Notably, the Specification teaches using other software to facilitate the communication between the host device and interface device. *See, e.g.*, Ex. 1001, 5:64–67 (“Communication between the host system or host device and the interface device is based on known standard access commands as supported by all known operating systems (e.g. DOS, Windows, Unix).”), 6:55–7:37 (“the user can also create a configuration file, whose entries automatically set and control various functions of the interface device,” including sampling time and volume data to be acquired), 8:18–22 (systems having software that “perform, e.g. mail functions or monitor processes which run continuously, for example, in multi-tasking environments”), 9:23–28 (an interface device having software to perform

optional data compression “of the data to be transferred from the data transmit/receive device to the host device”).

For the reasons stated above, we decline to adopt Patent Owner’s proposed claim construction that requires *all* communication between the host device and interface device to occur *solely* by means of the recited driver. To be clear, we do not import a negative limitation and we do not interpret “by means of” as “solely by means of,” as prohibiting the use of any software other than the recited driver, at any point in the communication process for additional unclaimed functionalities.

3. “*data transmit/receive device*”

Patent Owner argues that the term “data transmit/receive device” as used in the ’399 patent is “a device that is capable of either (a) transmitting data or (b) transmitting data and receiving data.” PO Resp. 25–27. However, as Patent Owner points out (*id.*), the District Court Claim Construction Order expressly sets forth that “[i]n the context of the claims and the specification [of the ’399 patent], the ‘/’ in ‘data transmit/receive device’ can be readily understood as meaning ‘and/or.’” Ex. 2004, 36. In view of the Specification and claims, we agree with the District Court Claim Construction Order as to the term “data transmit/receive device.” Therefore, we construe the claim term “data transmit/receive device” to include a data transmit device (a device that is capable of transmitting data), a data receive device (a device that is capable of receiving data), or a data transmit and receive device (a device that is capable of both transmitting and receiving data).

B. Principles of Law

A patent claim is unpatentable under 35 U.S.C. § 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.⁵ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)

C. Level of Ordinary Skill in the Art

In assessing 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) (citation omitted). Dr. Almeroth testifies that a person having 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, or related field of study

⁵ Neither party proffers objective evidence of nonobviousness in this proceeding.

. . . and would also have either a master's degree, or at least two years of experience in one of the relevant fields, computer science, computer systems, or peripheral devices.” Ex. 1003 ¶ 47. Patent Owner confirms that Petitioner's assessment of the level of ordinary skill in the art are partially consistent with Patent Owner's view, but, nonetheless, Patent Owner contends 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, citing the Declaration of Mr. Gafford for support. Prelim. Resp. 17; PO Resp. 17–18 (citing Ex. 2005 ¶ 18). Patent Owner presents no argument as to why Petitioner's assessment is erroneous or why Patent Owner's assessment is more appropriate for this proceeding. More importantly, no argument presented hinges on whether either party's assessment of the level of ordinary skill in the art is adopted.

We do not discern a meaningful difference between the parties' assessments of a person of ordinary skill in the art. Moreover, Dr. Almeroth appears to satisfy either assessment. Ex. 1003 ¶¶ 48, 49; *see* Ex. 1004. Our analysis in this Decision is supported by either assessment. We, therefore, determine that Petitioner's assessment of the level of ordinary skill in the art is appropriate. We further note that the prior art in the instant proceeding is consistent with this level of ordinary skill in the art at the time of the invention. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1354–55 (Fed. Cir. 2001).

D. Obviousness over Aytac in view of Lin, the SCSI Specification, and the Admitted Prior Art in the '399 Patent

Petitioner asserts that claims 1–3, 5, 6, 11, 14, and 15 are unpatentable under § 103(a) as obvious over the teachings of Aytac in combination with those of Lin, the SCSI Specification, and the Admitted Prior Art in the '399 patent, which supply additional information concerning sampling circuits in a scanner and the SCSI standard not made explicit in Aytac. Pet. 7, 26–73. Petitioner also provides detailed explanations as to how the prior art combination teaches or suggests each limitation and articulated reasoning to combine the prior art teachings, citing Dr. Almeroth's testimony for support. *Id.*; Ex. 1003.

Patent Owner counters that Aytac does not teach an interface device with which a host device communicates without using specialized software on the host device. PO Resp. 35–50. Patent Owner also argues generally that “the Petition fails to provide a proper obviousness analysis” and “contains numerous unsupported arguments that fail to support a conclusion of obviousness, including statements regarding the prior art, common knowledge, and the understanding of a [person of ordinary skill in the art] without any evidentiary support,” without specific explanations. *Id.* at 30–34 (noting that “Papst does not attempt to address every evidentiary failing of the Petition in this response”).

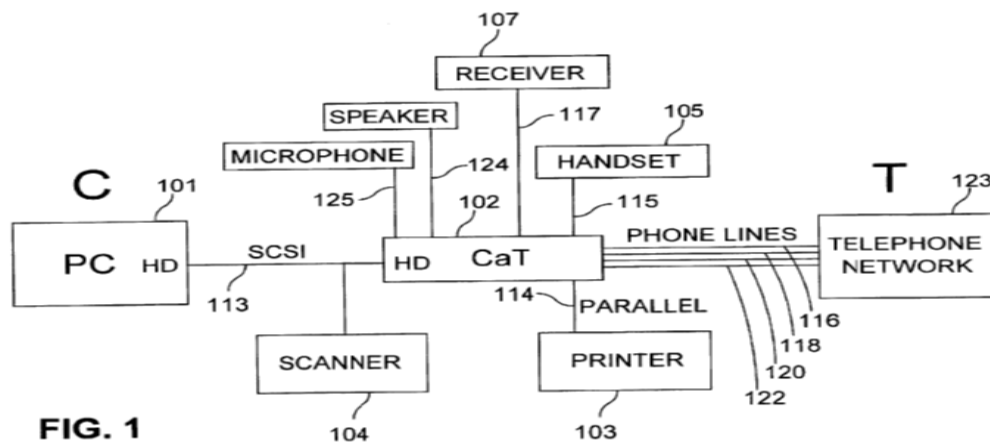
Upon consideration of the parties' contentions and supporting evidence, we determine that Petitioner has demonstrated by a preponderance of the evidence that the teachings of Aytac, in combination with those of the SCSI Specification and Admitted Prior Art, renders obvious the challenged

claims. In our discussion below, we begin with a brief overview of the prior art, and then we address the parties' contentions in turn.

Overview of Aytac

Aytac discloses an interface device (CaTbox) that is connected to a host personal computer ("PC") and a plurality of peripheral devices.

Ex. 1005, Abstract. Figure 1 of Aytac is reproduced below.



As illustrated in Figure 1 of Aytac, CaTbox 102 connects to host PC 101 via SCSI bus 113 and telephone network 123 via phone lines 116, 118, 120, 122. *Id.* at 8:63–9:4. CaTBox 102 is an interface device between host PC 101 and peripheral devices, including printer 103, scanner 104, telephone handset 105, receiver 107, speaker 124, and microphone 125. *Id.* According to Aytac, CaTbox runs an operating system, CaTOS, and contains a hard disk accessible to the PC, as a SCSI disk called CaTdisc. *Id.* at Abstract. Thus, scanner 104 on SCSI bus 113 may be driven by CaTbox to scan documents to store on CaTdisc. *Id.*

Overview of Lin

Lin describes an image scanner with automatic signal compensation.
Ex. 1007, Abstract. Figure 2 of Lin is reproduced below.

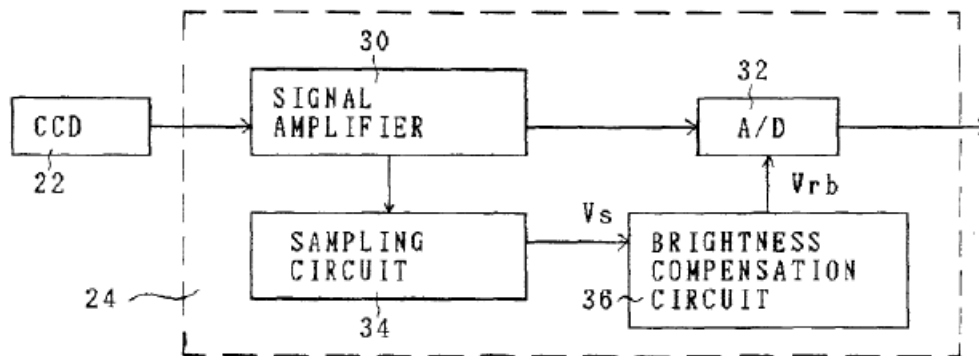


Figure 2 of Lin illustrates a block diagram of signal compensation circuit 24 attached to charged coupled device (“CCD”) line image sensor 22. *Id.* at 2:56–58. Signal compensation circuit 24 comprises signal amplifier 30 for amplifying the image signal and brightness signal from line image sensor 22 to an appropriate voltage level, analog-to-digital (“A/D”) converter 32, sampling circuit 34 for sampling the brightness signal and generating a sample voltage V_s , and brightness compensation circuit 36. *Id.* at 3:14–24.

Overview of the SCSI Specification

The SCSI Specification is a technical specification published by the American National Standard for Information Systems setting forth the SCSI standards. According to the SCSI Specification, the SCSI protocol “is designed to provide an efficient peer-to-peer I/O bus with up to 16 devices, including one or more hosts.” Ex. 1005, Abstract. The primary objective of the SCSI interface is “to provide host computers with device independence

within a class of devices.” *Id.* at 6. The SCSI-2 “standard defines an input/output bus for interconnecting computers and peripheral devices.” *Id.* at 1. “It includes the necessary specification of the mechanical, electrical, and functional characteristics of the interface to allow interoperability of conforming devices.” *Id.* “SCSI-2 includes command sets for magnetic and optical disks, tapes, printers, processors, CD-ROMs, scanners, medium changers, and communications devices.” *Id.* at Abstract. “The command set definitions allow a sophisticated operating system to obtain all required initialization information from the attached SCSI-2 devices.” *Id.* at 6

Overview of the Admitted Prior Art

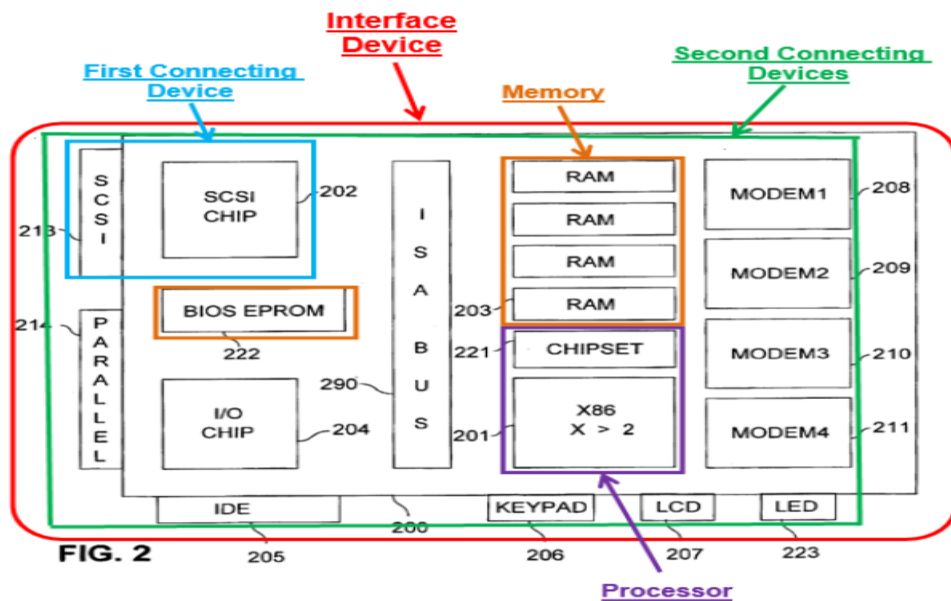
As we noted in the Institution Decision (Dec. 13–14), the ’399 patent describes “[d]rivers for input/output devices customary in a host device which are found in practically all host devices are, for example, drivers for hard disks.” Ex. 1001, 4:23–30, 5:10–13, 11:9–12:23. The ’399 patent indicates that SCSI interfaces and SCSI drivers were known in the art at the time of the invention. *Id.* at 9:32–38, 11:13–15. According to the ’399 patent, SCSI interfaces were present on most host devices or laptops, and SCSI drivers were “normally included by the manufacturer of the multi-purpose interface.” *Id.* at 4:42–44, 9:32–33, 11:9–22. Moreover, certain standard access commands, including the SCSI INQUIRY command, were “supported by all known operating systems (e.g., DOS, Windows, Unix).” *Id.* at 5:64–67, 6:7–19, 6:22–32. The ’399 patent further discloses that it was known to those skilled in the art that a virtual boot sequence

includes “the drive type, the starting position and the length of the file allocation table (FAT), the number of sectors.” *Id.* at 6:28–32.

Claims 1, 11, and 14

Interface device, host device, multi-purpose interface, and data transmit/receive device

Petitioner provides explanations to account for each of the claim limitations recited in claims 1, 11, and 14, and articulates rationale to combine the teachings of Aytac, Lin, the SCSI Specification, and the Admitted Prior Art in the '399 patent, citing Dr. Almeroth's Declaration for support. Pet. 26–73; Ex. 1003. In support of its contentions, Petitioner also provides the following annotated version of Aytac's Figure 2.



As shown in the annotated Figure 2, Petitioner takes the position that Aytac, in combination of Lin, the SCSI Specification, and the Admitted Prior Art in the '399 patent, teaches or suggests an interface device that includes a processor, memory, a first connecting device, and a second

connecting device, as required by claims 1, 11, and 14. Pet. 39–48, 50–52 (citing Ex. 1005, 9:5–15). In particular, Petitioner asserts that Aytac’s CaTbox (shown in the annotated red box) discloses the claimed *interface device*, and that X86 processor 201 and its associated chipset 221 (shown in the annotated purple box) disclose the claimed *processor*. *Id.* Petitioner also contends that Aytac’s RAM 203 and/or BIOS EPROM 222 (shown in the annotated brown boxes) disclose the claimed *memory*. *Id.* Petitioner further notes that Aytac’s SCSI connector 213, SCSI protocol chip 202, and associated circuitry (shown in the annotated blue box) disclose the claimed *first connecting device*. *Id.*

As to a “second connecting device,” Petitioner notes that Aytac discloses scanner 104 (shown in Figure 1, reproduced previously), and Lin teaches that a typical scanner includes a CCD, an A/D converter, and a sampling circuit. *Id.* (citing Ex. 1005, 9:5–15; Ex. 1007, 2:54–3:24, Fig. 2). Petitioner asserts that Aytac’s I/O chip 204 and the connectors to which it is coupled, ATA/IDE hard disk connector 205, ISA bus 290, X86 processor 201, processor’s chipset 221, SCSI interface and chip 201/213, RAM 203 (shown in the annotated green box) as well as scanner 104, which is a typical scanner that includes an A/D converter and a sampling circuit, collectively disclose the claimed *second connecting device*. *Id.*

Petitioner takes the position that the CCD of the scanner is a “data transmit/received device being arranged for providing analog data,” as required by claims 1, 11, and 14. *Id.* at 51–52. Petitioner also asserts that Aytac’s CaTbox is an interface device for communication between the host

PC and scanner 104. *Id.* at 28–41, 47–48. Figure 1 of Aytac (reproduced previously) shows the link between host PC 101 and CaTbox 102 is SCSI cable 113. Ex. 1005, 7:57–62, 8:63–66. Petitioner contends that a device tied into the SCSI bus would be required to have a SCSI interface and, therefore, CaTbox 102 is connected to host PC 101 via a SCSI interface (a multi-purpose interface). Pet. 29–30 (citing Ex. 1005, Abstract, 8:63–66).

Upon consideration of Petitioner’s detailed explanations, the cited prior art disclosures, and other supporting evidence, we determine that Petitioner has established sufficiently that the teachings of Aytac in view of those of Lin, the SCSI Specification, and the Admitted Prior Art in the ’399 patent teach or suggest an interface device, a host device, a multi-purpose interface, and a data transmit/receive device, as required by claims 1, 11 and 14. We address Patent Owner’s arguments regarding the disputed limitations and reasons to combine the prior art teachings below.

Host communicates with the interface device by means of the recited driver

Petitioner also asserts that the combined teachings of Aytac with those of Lin, the SCSI Specification, and Admitted Prior Art in the ’399 patent teach or suggest that “the host device communicates with the interface device by means of the driver for the input/output device customary in a host device,” as recited in claims 1 and 14, and the “the host device communicates with the interface device by means of the specific driver for the multi-purpose interface,” as recited in claim 11. Pet. 31–32, 62–65. Petitioner notes that Aytac discloses the host PC uses the ASPI drivers

(ASPI2DOS.SYS and ASPIDISK.SYS) to communicate with the CaTbox. *Id.* (citing Ex. 1005, 10:53–66; Ex. 1003 ¶¶ 103–04, 106).

Patent Owner does not dispute that Aytac’s ASPI drivers (ASPI2DOS.SYS and ASPIDISK.SYS) disclose a “driver for the input/output device customary in a host device” and a “specific driver for the multi-purpose interface.” PO Resp. 35–50. Patent Owner’s arguments mainly rest on whether the claims *prohibit* the use of Aytac’s other software—CATSYNC.VXD, CATCAS.EXE, and CATSER.VXD—in *all* communication between the host device and the interface device. *Id.*

In particular, Patent Owner argues that the host device in Aytac uses “numerous additional, non-customary and non-multi-purpose interface drivers,” including CATSYNC.VXD, CATCAS.EXE, CATSER.VXD, in combination with the ASPI drivers (ASPI2DOS.SYS and ASPIDISK.SYS) to communicate with the CaTbox, citing Mr. Gafford’s testimony for support. *Id.* (citing Ex. 2005 ¶¶ 35–70). According to Patent Owner, “Aytac neither discloses nor suggests that the host computer can communicate with the CaTbox *solely* by means of the driver for a storage device customary in a host device or by means of the specific driver for the multi-purpose interface.” *Id.* at 37 (emphasis added). Patent Owner avers that “Aytac does not purport to achieve the numerous stated communicative functions of the CaTbox without requiring specialized software on the host device beyond the ASPIDISK.SYS and ASPI2DOS.SYS drivers.” *Id.* at 38–40. Patent Owner further contends that “CaTbox uses and requires specialized software installed on the host PC to be a multitasking device to

solve the problem of integrating operation of multiple devices with a PC and to enable communications therewith.” *Id.* at 39–43. In Patent Owner’s view, Aytac and the other applied art do not teach or suggest that Aytac’s specialized software is optional or should be removed. *Id.* at 46–50.

Upon review of the parties’ contentions and supporting evidence, we determine that Petitioner has shown sufficiently that the teachings of Aytac, in combination with those of Lin, the SCSI Specification, and the Admitted Prior Art in the ’399 patent, teach or suggest that the host device communicates with the interface device *by means of* the recited driver, as required by claims 1, 11, and 14. Ex. 1003 ¶¶ 103–105, 139–141, 144. Given the cited prior art disclosure and Dr. Almeroth’s testimony (*id.*), which we credit and adopt as our own, we do not find Patent Owner’s arguments undermine Petitioner’s obviousness showing.

At the outset, Patent Owner’s arguments and Mr. Gafford’s supporting testimony rest on Patent Owner’s proposed claim construction that improperly imports a negative limitation into the claims, requiring *all* communication between the host device and interface device to occur *solely* by means of the recited driver. PO Resp. 35–50; Ex. 2005 ¶¶ 35–70. As discussed above in our claim construction analysis in Section II.A.2., we decline to adopt Patent Owner’s proposed claim construction, as it is inconsistent with the Specification and the plain and ordinary meaning of the claim language. Notably, the Specification of the ’399 patent teaches using other software to facilitate the communication between the host device and interface device. *See, e.g.*, Ex. 1001, 5:64–67, 6:55–7:37, 8:18–22,

9:23–28. We decline to interpret “by means of” as “*solely* by means of,” contrary to the plain meaning of the term, to prohibit the use of other software at any point in the communication process for additional unclaimed functionalities. In short, neither the Specification nor the plain and ordinary meaning of the claim language prohibits the presence of other software that may in some way be involved in the communication, so long as the recited driver is used in the communication.

More importantly, there is no dispute that Aytac teaches using ASPI drivers in the communication between the host PC and the CaTbox. PO Resp. 39 (noting “Aytac discloses that ASPI2DOS.SYS ‘provides the SCSI interface layer to all LUNs on CaTbox’ and ‘ASPIDISK.SYS ‘provides the disk driver’”); Ex. 1005, 4:49–53 (“CaTbox look like a SCSI disk to the PC”), 5:44–45, 5:58–61 (“The PC may not even have a hard disk: it could use the CaTdisc as a hard disk”), 6:16–21, 9:55–10:63. Patent Owner acknowledges that Aytac’s CaTbox appears to the host as a SCSI disk. Prelim. Resp. 36 (“Aytac’s CaTbox . . . appear[s] to the host computer as a SCSI disk”); *see also* Ex. 1005, 10:28–29 (“CaTbox 102 is seen by the PC 101 as a SCSI disk . . .”). Mr. Gafford admits that Aytac’s “CaTbox would reliably transfer good data without using CATSYNC.VXD” when acting as “a remote hard disc for the PC.” Ex. 2005 ¶ 59.

Indeed, as Petitioner points out (Pet. 62–64), Aytac discloses that an “*ASPI driver* such as ASPI2DOS.SYS 521 from Adaptec [Corporation] provides the SCSI interface layer to all LUNs on CaTbox 102 SCSI node, as well as other SCSI nodes.” Ex. 1005, 10:53–56 (emphasis added). Aytac

further discloses that “[a]nother driver from Adaptec Corporation, such as ASPIDISK.SYS 522 provides the *disk driver*.” *Id.* at 10:56–68 (emphasis added). As discussed above in our claim construction analysis (Section II.A.2.), it is undisputed that a *hard disk driver* is a “driver for the input/output device customary in a host device,” and that an *ASPI driver* for the SCSI interface is a “specific driver for the multi-purpose interface.” Ex. 1001, 4:27–44, 11:9–19, 13:14–15, 14:29–31; PO Resp. 7, 39; Reply 6 n.5. According to the ’399 patent, SCSI interfaces were present on most host devices or laptops, and SCSI drivers were “normally included by the manufacturer of the multi-purpose interface,” and drivers for hard disks are “[d]rivers for input/out devices customary in a host device which are found in practically all host devices.” Ex. 1001, 4:23–44, 5:10–13, 9:32–33, 11:15–19. Moreover, the ’399 patent explains that “multi-purpose interface ASPI (advanced SCSI programming interface) drivers” are specific drivers for SCSI interfaces, which are “normally included by the manufacturer of the multi-purpose interface.” *Id.* at 11:9–19.

In short, Aytac’s ASPI drivers (ASPI2DOS.SYS and ASPIDISK.SYS) disclose a “driver for the input/output device customary in a host device” and a “specific driver for the multi-purpose interface.” One of ordinary skill in the art would have understood that the host PC in Aytac communicates with the CaTbox (an interface device) by means of the recited drivers, as required by claims 1, 11, and 14.

For the reasons stated above, we do not find the following Patent Owner arguments convincing: (1) the host device in Aytac uses “numerous

additional, non-customary and non-multi-purpose interface drivers,” in combination with the ASPI drivers to communicate with the CaTbox (PO Resp. at 35–37); and (2) “Aytac neither discloses nor suggests that the host computer can communicate with the CaTbox *solely* by means of the driver for a storage device customary in a host device or by means of the specific driver for the multi-purpose interface” (*id.* at 37 (emphasis added)). We further are not convinced by Mr. Gafford’s supporting testimony (Ex. 2005 ¶¶ 35–70) as that testimony is based on Patent Owner’s improper claim construction. *See Homeland Housewares, LLC v. Whirlpool Corp.*, 865 F.3d 1372, 1378 (Fed. Cir. 2017) (noting that “we must disregard the testimony of an expert that is . . . based on an incorrect understanding of the claim[s]” (citations and internal quotation marks omitted)).

In addition, Patent Owner’s arguments that “Aytac does not purport to achieve the numerous stated communicative functions of the CaTbox without requiring specialized software on the host device beyond the ASPIDISK.SYS and ASPI2DOS.SYS drivers” (*id.* at 38–40), and that “CaTbox uses and requires specialized software installed on the host PC to be multitasking device to solve the problem of integrating operation of multiple devices with a PC and to enable communications therewith” (*id.* at 39–43), are unavailing. The claims do not require those additional functions. Patent Owner again relies upon its proposed claim construction that improperly imports a negative limitation into the claims, requiring *all* communication between the host device and interface device *solely* by means of the recited driver. As discussed above, the claims do not prohibit

the use of other software, at any point in the communication process for additional unclaimed functionalities. The other software (CATSYNC.VXD, CATCAS.EXE, and CATSER.VXD) merely provide additional functionalities—e.g., synchronization, cache clearing/disabling, enhanced reliability, and multitasking. Ex. 1005, 10:58–11:64. Nothing in the claims requires those additional functionalities. The claims do not speak to reliability. It is well established that limitations not appearing in the claims cannot be relied upon for patentability. *See In re Self*, 671 F.2d 1344, 1348 (CCPA 1982).

Furthermore, Patent Owner’s argument that Petitioner admits that Aytac’s specialized software facilitates communications between the CaTbox and the host computer is inapposite. PO Resp. 43–45. The portions of Dr. Almeroth’s cross-examination testimony cited by Patent Owner do not support Patent Owner’s contentions. *Id.* Notably, although Dr. Almeroth confirmed that the claim term “communication” is “fairly broad,” Dr. Almeroth did not admitted that the claims require *all* communication between the host device and interface device to occur *solely* by means of the recited driver. Ex. 2006, 101:22–102:18; 106:6–7. As discussed above, neither the Specification of the ’399 patent nor the plain and ordinary meaning of the claim language prohibits the presence of other software that may in some way be involved in the communication, so long as the recited driver is used in the communication.

Significantly, it is well established that a broad claim, as here, is unpatentable “if the prior art discloses a species falling within the claimed

genus.” *In re Slayter*, 276 F.2d 408, 411 (CCPA 1960). Mr. Gafford acknowledges that Aytac’s “CaTbox would reliably transfer good data without using CATSYNC.VXD” when acting as “a remote hard disc for the PC.” Ex. 2005 ¶ 59. Additionally, neither CATSER.VXD nor CATCAS.EXE is used in that situation where the CaTbox transfers data from the CaTdisc, acting as a SCSI hard disk to the host PC. CATCAS.EXE merely “implements the *remote CAS modem function*” and CATSER.VXD “implements the *remote modem (CaTmodem) function*.” Ex. 1005, 11:6–7, 11:38–39 (emphases added). Nothing in the claims here requires those additional “remote modem” functionalities. Therefore, Aytac clearly teaches at least one situation where the communication between the host PC and CaTbox (interface device) occurs by means of the ASPI drivers (ASPI2DOS.SYS and ASPIDISK.SYS), without resorting to the allegedly specialized software (CATSYNC.VXD, CATCAS.EXE, or CATSER.VXD).

Patent Owner’s reliance on the certain portions of the file record of a related proceeding, and Dr. Almeroth’s cross-examination testimony regarding CATSER.VXD and CATCASE.EXE, also is misplaced. PO Resp. 43–45. The portions of the file record of a related proceeding cited by Patent Owner do not support Patent Owner’s contentions. PO Resp. 43–45 (citing Case IPR2017-00713, Paper 3, 24–26, 51–52; Ex. 1003 ¶ 59). The claims in U.S. Patent 6,895,499, the challenged patent in the related proceeding, Case IPR2017-00713, explicitly recite additional functionalities that are not recited in the challenged claims of the ’399 patent, here. In

addition, Patent Owner acknowledges (PO Resp. 44) and Dr. Almeroth testifies that CATCASE.EXE and CATSER.VXD merely “implement the functionality provided by the CaTmodem” (Ex. 2006, 72:16–73:22, 74:10–75:4, 78:6–16, 42:3–7), consistent with Aytac’s disclosure that “CATCAS.EXE 524 implements the *remote CAS modem* function,” and “CATSER.VXD 525 implements the *remote modem (CaTmodem)* function.” Ex. 1005, 11:6–7, 11:38–39. However, the challenged claims of the ’399 patent also does not require those additional “remote modem” functionalities.

Lastly, we are not convinced by Patent Owner’s argument that Aytac and the other applied art do not teach or suggest that Aytac’s specialized software is optional or should be removed. PO Resp. 46–50. Petitioner did not propose to remove Aytac’s other software (CATSYNC.VXD, CATSER.VXD, and CATCAS.EXE). Patent Owner’s argument is based on the assumption that such modification is needed for rendering the challenged claims obvious. Patent Owner once again relies upon its improper proposed claim construction to prohibit the use of other software at any point in the communication process for additional unclaimed functionalities. As discussed above, there is no dispute that Aytac’s ASPI drivers (ASPI2DOS.SYS and ASPIDISK.SYS) teaches a “driver for the input/output device customary in a host device” and a “specific driver for the multi-purpose interface.” Further, Aytac’s CaTbox uses these ASPI drivers to transfer data from the CaTdisc, acting as a SCSI hard disk to the host PC. Indeed, Mr. Gafford acknowledges that Aytac’s “CaTbox would reliably

transfer good data without using CATSYNC.VXD” when acting as “a remote hard disc for the PC.” Ex. 2005 ¶ 59. Neither CATSER.VXD nor CATCAS.EXE is used in that situation where the CaTbox transfers data from the *CaTdisc*, acting as a SCSI hard disk to the host PC.

For the foregoing reasons, we determine that Petitioner has established by a preponderance of the evidence that the combined teachings of Aytac with those of Lin, the SCSI Specification, and Admitted Prior Art in the ’399 patent teach or suggest that “the host device communicates with the interface device by means of the driver for the input/output device customary in a host device,” as recited in claims 1 and 14, and the “the host device communicates with the interface device by means of the specific driver for the multi-purpose interface,” as recited in claim 11.

Reason to combine the prior art teachings.

Patent Owner further argues that Petitioner does not sufficiently explain why an ordinarily skilled artisan would have had reason to combine the teachings of Aytac, Lin, the SCSI Specification, and Admitted Prior Art in the ’399 patent to achieve the devices and methods recited in the challenged claims. PO Resp. 30–34. According to Patent Owner, “without identification of the limitations missing from Aytac, Petitioner’s rationale is conclusory and grounded in hindsight.” *Id.* at 33. In Patent Owner’s view, the “Petition also contains numerous unsupported arguments that fail to support a conclusion of obviousness, including statements regarding the prior art common knowledge, and the understanding of a [person of ordinary skill in the art] without any evidentiary support.” *Id.* at 33–34.

However, Petitioner has provided detailed and persuasive explanations in its Petition, supported by Dr. Almeroth's testimony and prior art disclosures, of how it would have been obvious to a person of ordinary skill in the art to combine the prior art teachings, and why such an artisan would have had reason to apply the teachings of Lin, the SCSI Specification, and the Admitted Prior Art to the teachings of the devices described by Aytac. Pet. 26–52; Ex. 1003 ¶¶ 87–95. For instance, Dr. Almeroth testifies that Aytac expressly describes CaTbox as including and operating in accordance with the SCSI Specification. Ex. 1003 ¶ 87 (citing Ex. 1005, 4:49–53). Indeed, Aytac describes that the CaTbox would look like a SCSI hard disk to the PC, referencing the SCSI Specification. Ex. 1005, 4:49–53. According to Dr. Almeroth, one of ordinary skill in the art “would have been motivated to combine the detailed teachings of the SCSI Specification with the teachings of CaTbox in Aytac,” because such an artisan “would have viewed as important to the CaTbox functioning as a SCSI hard disk,” achieving one of the stated goals of Aytac. Ex. 1003 ¶ 87; Ex. 1005, 4:49–53, 5:43–45 (explaining that the term “CaTdisc” is used “to emphasize that CaTbox has a hard disk that looks like a SCSI disk to the PC”). The Admitted Prior Art in the '399 patent confirms that the “communication between the host system or host device and the interface device is based on known standard access commands as supported by all known operating systems (e.g. DOS, Windows, [and] Unix),” including the SCSI INQUIRY command and the response to such a command. Ex. 1003 ¶¶ 62–83, 88–89.

In addition, Dr. Almeroth acknowledges that Aytac does not provide explicit details of the construction of the scanner that is connected to the CaTbox, but, nevertheless, he explains that Lin teaches a typical scanner having a sampling circuit for sampling the analog data provided by the data transmit/receive device and an analog-to-digital converter (Ex. 1007, 2:54–3:24). Ex. 1003 ¶ 92. Dr. Almeroth testifies that an ordinarily skilled artisan would have been motivated to use the teachings of Lin for a better understanding of Aytac’s system. *Id.* Indeed, a person of ordinary skill in the art would have known that an analog-to-digital converter “periodically measures (samples) the analog signal and converts each measurement to the corresponding digital value.” Ex. 3001, 19. We credit Dr. Almeroth’s testimony, as it is consistent with the prior art disclosures and the general knowledge of an ordinarily skilled artisan. *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 the reasons stated above, we are persuaded that Petitioner has articulated reasoning with rational underpinning, supported by Dr. Almeroth’s testimony and prior art disclosures, to combine the teachings

of Aytac with those of Lin, the SCSI Specification, and the Admitted Prior Art in the '399 patent to achieve the recited devices and methods.

Remaining claim limitations

We also have considered fully Petitioner's detailed explanations and supporting evidence as to the remaining claim limitations. Pet. 26–65; Ex. 1001; Ex. 1003; Ex. 1005; Ex. 1006; Ex. 1007. Upon review of the cited prior art disclosures and other Petitioner's supporting evidence, we determine that Petitioner has provided sufficient evidence to show that the asserted prior art combination teaches or suggests the remaining limitations recited in claims 1, 11, and 14.

Patent Owner argues that Petitioner's contentions are conclusory and unsupported, but provides no specific argument to the contrary. PO Resp. 34. We disagree with Patent Owner.

For example, claims 1, 11, and 14 require the interface device to be configured to include a first command interpreter so 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, it sends *a signal* indicating “it is an input/output device customary in a host device,” regardless of the type of the data transmit/receive device attached. *See, e.g.*, Ex. 1001, 13:4–5 (claim 1). Petitioner asserts that Aytac, in view of the SCSI Specification and the Admitted Prior Art in the '399 patent, teaches or suggests these limitations that are related to a device-type recognition process. Pet. 52–62 (citing Ex. 1003 ¶¶ 62–83). As support, Petitioner directs our attention to Aytac's teaching that the CaTbox looks like a SCSI hard disk to the host PC and

communicates with the host PC using a SCSI interface and cable. Ex. 1005, 4:49–53, 5:44–46, 6:16–21, 7:61–62. Petitioner contends that the SCSI standard was known in the art at the time of the invention, providing “an effective specification for automatic recognition of external devices when they are connected to host devices.” Pet. 55. Indeed, Aytac specifically references to the SCSI Specification. Ex. 1005, 4:49–53. Although Aytac does not teach explicitly the process for automatic recognition of the interface device, the SCSI Specification teaches that, during the automatic recognition process, upon receiving a SCSI INQUIRY command from the initiator, the target (a SCSI device) is required to respond with information about its device type (e.g., disk drives would return the code type “direct-access device”). *Id.* at 57–59 (citing Ex. 1006, 30–33, 111, 123–127; Ex. 1003 ¶ 148).

In support of Petitioner’s contentions, Dr. Almeroth testifies that, when the SCSI connector of the CaTbox is interfaced operatively with the SCSI interface of the host PC via a SCSI bus, the host PC acquires identification and file system information from the CaTbox by engaging in the automated SCSI protocol. Ex. 1003 ¶¶ 148–151 (citing Ex. 1005, 4:49–53, 7:61–62). Dr. Almeroth also testifies that, in response to the INQUIRY command from the host PC, processor 201 of CaTbox causes a signal to be sent through SCSI bus 113 to the host PC, indicating that it is a SCSI hard disk, regardless of the type of data transmit/receive device attached to the CaTbox. *Id.* ¶¶ 62–72, 152–154 (citing Ex. 1005, 6:16, 12:6–10). Dr. Almeroth further testifies that a person of ordinary skill in the

art would have understood that Aytac's CaTbox would include and utilize a "first command interpreter" that would interpret a SCSI command such as the INQUIRY command and transmit data in response to the command. *Id.* We credit Dr. Almeroth's testimony, as it is consistent with the teachings of the applied art, and we adopt his analysis as our own. Ex. 1005, 4:49–53, 6:16, 7:61–62, 12:6–10; Ex. 1006, 30–33, 111, 123–127.

In light of the teachings of the applied art and Dr. Almeroth's testimony, we conclude that Petitioner has established by a preponderance of the evidence that the teachings of Aytac, in view of those of Lin, the SCSI Specification, and the Admitted Prior Art in the '399 patent, teach or suggest an interface device configured to include a first command interpreter, so 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, it sends a signal indicating "it is an input/output device customary in a host device," regardless of the type of the data transmit/receive device attached, as recited in claims 1, 11, and 14. *See, e.g.,* Ex. 1001, 13:4–5 (claim 1).

As another example, claims 1, 11, and 14 additionally require a second command interpreter configured to interpret 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., id.* at 13:9–13 (claim 1). With respect to this limitation, Petitioner notes that Aytac's "CaTbox processor processes SCSI READ commands arriving from the host device by executing the SCSI interrupt service routine, SCSIISR, to 'translate[s] hard disk SCSI read/write calls to local INT 13h calls to CaTdisc'" in order to

perform the request read on the CaTbox's disk drive, CaTdisc. Pet. 64–65. Petitioner also explains that the SCSI protocol “includes a data request command that, when received, will result in the target (i.e., that CaTbox 102) sending data to the initiator (i.e., the host 101).” *Id.* (citing Ex. 1003 ¶¶ 62–83; Ex. 1005, 6:16–18, 10:8–13, 12:7–9, 18:52–61; Ex. 1006, 123–27). We are persuaded by Petitioner's explanations, supported by Dr. Almeroth's testimony and prior art disclosures. Accordingly, we determine that Petitioner has demonstrated by a preponderance of the evidence that the teachings of Aytac, in combination with those of Lin, the SCSI Specification, and the Admitted Prior Art in the '399 patent, 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 recited in claims 1, 11, and 14.

For the foregoing reasons, we determine that Petitioner has demonstrated by a preponderance of the evidence that the teachings of Aytac, in combination with those of Lin, the SCSI Specification, and the Admitted Prior Art in the '399 patent, teach or suggest all of the limitations recited in claims 1, 11, and 14, and articulate reasons that a person of ordinary skill in the art would have had to combine the teachings of the applied art, rendering these claims obvious.

Claims 2 and 15

Claim 2 directly depends from claim 1, and claim 15 directly depends from claim 14. Each of these dependent claims further requires the drivers for input/output devices customary in a host device to comprise a “hard disk driver.” Ex. 1001, 13:13–17, 14:62–65. Claim 2 also requires that “the signal indicates to the host device that the host device is communicating with a hard disk.” *Id.* at 13:13–17.

Petitioner asserts that the teachings of Aytac, in combination with those of Lin, the SCSI Specification, and the Admitted Prior Art, teach or suggest these limitations expressly recited in claims 2 and 15. Pet. 66–68. Patent Owner alleges that Petitioner’s contentions are conclusory and unsupported, but provides no specific argument to the contrary. PO Resp. 34. Upon review of the Petitioner’s detailed explanations and supporting evidence, we are persuaded by Petitioner’s showing.

In particular, Petitioner explains that, as discussed in the analysis regarding independent claims 1, 11, and 14, Aytac’s ASPI drivers teaches a “hard disk driver,” as recited in claims 2 and 15. Pet. 66–68 (citing Ex. 1005, 10:52–58). Indeed, Aytac discloses that an “*ASPI driver* such as ASPI2DOS.SYS 521 from Adaptec [Corporation] provides the SCSI interface layer to all LUNs on CaTbox 102 SCSI node, as well as other SCSI nodes.” Ex. 1005, 10:52–56 (emphasis added). Aytac further discloses that “[a]nother driver from Adaptec Corporation, such as ASPIDISK.SYS 522 provides the *disk driver*.” *Id.* at 10:56–68 (emphasis added). As noted above, it is not disputed that a *hard disk driver* is a “driver for the

input/output device customary in a host device,” and that an *ASPI driver* for the SCSI interface is a “specific driver for the multi-purpose interface.” Ex. 1001, 4:27–44, 11:9–19, 13:14–15, 14:29–31; PO Resp. 7, 39; Reply 6 n.5. Accordingly, we agree with Petitioner’s contention that Aytac’s teachings, in view of those of the other applied art, suggest “the drivers for input/output drivers customary in a host device comprise a hard disk driver,” as recited in claim 2, and “the drivers for input/output devices customary in a host device comprise a driver for a storage device and in particular for a hard disk drive,” as recited in claim 15.

For the claim limitation “the signal indicates to the host device that the host device is communicating with a hard disk,” recited in claim 2, Petitioner avers that, in light of the SCSI Specification, one of ordinary skill in the art would have understood that Aytac’s CaTbox, upon receiving the SCSI INQUIRY command from the host PC, would send to the host PC an INQUIRY response that includes information identifying the CaTbox as a SCSI hard disk. Pet. 66–68 (citing Ex. 1005, 4:49–53). We agree with Petitioner. As discussed above, Dr. Almeroth testifies that, in response to the INQUIRY command from the host PC, processor 201 of CaTbox causes a signal to be sent through SCSI bus 113 to the host PC, indicating that it is a *SCSI hard disk*, regardless of the type of data transmit/receive device attached to the CaTbox. Ex. 1003 ¶¶ 62–72, 152–154 (citing Ex. 1006, 123–125).

For the foregoing reasons, we determine that Petitioner has demonstrated by a preponderance of the evidence that the teachings of

Aytac, in combination with those of Lin, the SCSI Specification, and the Admitted Prior Art in the '399 patent, teach or suggest the additional limitations recited in claims 2 and 15, rendering those 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.” *Id.* at 7:26–31.

Petitioner asserts that the teachings of Aytac, in combination with those of the other applied art, teach or suggest the additional limitation expressly recited in claim 3. Pet. 68–70. Having reviewed 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. 50. We have addressed those arguments in our analysis above regarding claim 1, and determine those arguments are likewise unavailing here.

At the outset, we note 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” uses the word “means” which triggers a rebuttable presumption that § 112, ¶ 6, applies, the claim element also recites “memory” and “buffer.”⁶ *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. See MICROSOFT COMPUTER DICTIONARY at 66 (3rd ed. 1997) (Ex. 3004) (defining “buffer” as a “region of memory reserved for use as an intermediate repository in which data is temporarily held while waiting to be transferred between two location, as between an application’s data area and an input/output device”). As such, we conclude that the term “the memory means” does not invoke § 112, ¶ 6. *Id.* (noting that the presumption may be overcome if “the claim recites sufficient structure for performing the described functions in their entirety.”).

As noted above in our analysis for claim 1, Petitioner asserts that Aytac’s CaTbox includes RAM memory. Pet. 42. Petitioner also notes (*id.* at 68–70) that Aytac teaches that the CaTbox’s hard disk (CaTdisc) is made accessible to a host across the SCSI interface, and appears as a SCSI disk drive to the host PC. Ex. 1005, Abstract, 5:43–45, 6:19–21. Aytac also

⁶ We note that neither party argues that “memory means” should be interpreted as a means-plus-function limitation under 35 U.S.C. § 112, ¶ 6. See Pet. 12–14, 68–70; Prelim. Resp. 18–24; PO Resp. 18–30; Reply 26.

discloses that a scanner on the SCSI bus may be driven by CaTbox via keypad to scan documents to store on CaTdisc. *Id.* Dr. Almeroth testifies that, under this configuration, CaTdisc may be used for buffering data in file transfers between the peripheral devices and the host PC. Ex. 1003 ¶ 169. We credit Dr. Almeroth’s testimony as it is consistent with other evidence in this record. Ex. 1005, Abstract, 5:43–45, 6:19–21; Ex. 3004.

For the reasons discussed above, we determine that Petitioner has demonstrated by a preponderance of the evidence that the teachings of Aytac, in combination with those of Lin, the SCSI Specification, and the Admitted Prior Art in the ’399 patent, render 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. 70–71. 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. 50. We have addressed those arguments regarding claim 1 in our analysis above, and determine those arguments are likewise unavailing here.

Notably, Petitioner asserts that the processor of Aytac’s CaTbox (interface device) “is a digital signal processor,” as recited in claim 5. Pet. 70 (citing Ex. 1005, 9:5–15). Aytac describes that the CaTbox includes an “X86 processor 201 and its associated chipset 221,” as shown in Figure 2 of

Aytac. Ex. 1005, 9:8–9, Fig. 2. Dr. Almeroth testifies that “[t]he X86 is commonly known to be a family of backward compatible digital signal processors based on the Intel 8086 CPU, and its Intel 8088 variant,” and, thus, a person of ordinary skill in the art would have understood that Aytac’s X86 processor was a “digital signal processor.” Ex. 1003 ¶ 173.

Accordingly, we determine that Petitioner has established by a preponderance of the evidence that the teachings of Aytac, in combination with those of Lin, the SCSI Specification, and the Admitted Prior Art in the ’399 patent, teach or suggest that the processor in Aytac’s CaTbox is “a digital signal processor,” as recited in claim 5, rendering that claim obvious.

Claim 6

Claim 6 indirectly depends from claim 1. Petitioner avers that the teachings of Aytac, in combination with those of the other applied art, teach or suggest “wherein the data to be transferred from the data transmit/receive device to the host device in the interface device is formatted in a suitable format for a hard disk present in the host device,” as recited in claim 6. Pet. 71–72. We agree.

As Petitioner notes (*id.*), Aytac’s CaTdisc looks like a SCSI hard disk to the PC host (Ex. 1005, 6:15–20), and the CaTbox processor processes SCSI READ commands arriving from the host device by executing the SCSI interrupt service routine, SCSIISR, to “translate hard disk SCSI read/write calls to local INT 13 h calls to CaTdisc” (*id.* at 12:7–9) in order to perform the request read on the CaTbox’s disk drive, CaTdisc (*id.* at 6:16–18). Dr. Almeroth testifies that the CaTbox’s disk drive appears as a SCSI hard

disk to the host to enable it to perform read/write calls, and provide data in a format that is suitable for a SCSI disk present in the host PC. Ex. 1003

¶ 178. Indeed, Aytac explains that the term “CaTdisc” is used “to emphasize that CaTbox has a hard disk that looks like a SCSI disk to the PC,” and the “PC may not even have a hard disk: it could use the CaTdisc as a hard disk.” Ex. 1005, 5:43–45, 5:58–60.

For these reasons, we determine that Petitioner has established by a preponderance of the evidence that the teachings of Aytac, in combination with those of the other applied art, teach or suggest “wherein the data to be transferred from the data transmit/receive device to the host device in the interface device is formatted in a suitable format for a hard disk present in the host device,” as recited in claim 6, rendering that claim obvious. Moreover, we note that Patent Owner does not dispute the asserted combination with regard to this claim limitation, but rather relies upon its arguments in connection with claim 1. PO Resp. 50. We have addressed those arguments regarding claim 1 in our analysis above, and determine those arguments are likewise unavailing here.

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 1–3, 5, 6, 11, 14, and 15 of the ’399 patent are unpatentable under § 103(a) as obvious over the teachings of Aytac, in combination with those of Lin, the SCSI Specification, and Admitted Prior Art in the ’399 patent.

IV. ORDER

In light of the foregoing, it is

ORDERED that claims 1–3, 5, 6, 11, 14, and 15 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.

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