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Paper No. 13
Filed: January 27, 2017

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HYUNDAI MOTOR COMPANY, HYUNDAI MOTOR AMERICA, HYUNDAI MOTOR MANUFACTURING ALABAMA, LLC, KIA MOTORS CORPORATION, KIA MOTORS AMERICA, INC., and KIA MOTORS MANUFACTURING GEORGIA, INC.,
Petitioner,

v.

BLITZSAFE TEXAS, LLC,
Patent Owner.

Case IPR2016-01477
Patent 7,489,786 B2

Before JAMESON LEE, MIRIAM L. QUINN, and KERRY BEGLEY, *Administrative Patent Judges*.

BEGLEY, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314(a), 37 C.F.R. § 42.108

Hyundai Motor Company, Hyundai Motor America, Hyundai Motor Manufacturing Alabama, LLC, Kia Motors Corporation, Kia Motors America, Inc., and Kia Motors Manufacturing Georgia, Inc. (collectively,

"Petitioner") filed a Petition requesting *inter partes* review of claims 1, 5–8, 10, 14, 23, 24, 57, 60–62, 64, and 65 ("challenged claims") of U.S. Patent No. 7,489,786 B2 (Ex. 1001, "the '786 patent"). Paper 1 ("Pet."). Blitzsafe Texas, LLC ("Patent Owner") filed a Preliminary Response to the Petition. Paper 11 ("Prelim. Resp.").

Pursuant to 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless "the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." Having considered the Petition and the Preliminary Response, we determine that the information presented does not show that there is a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of any of the challenged claims of the '786 patent. Accordingly, we deny institution of an *inter partes* review.

I. BACKGROUND

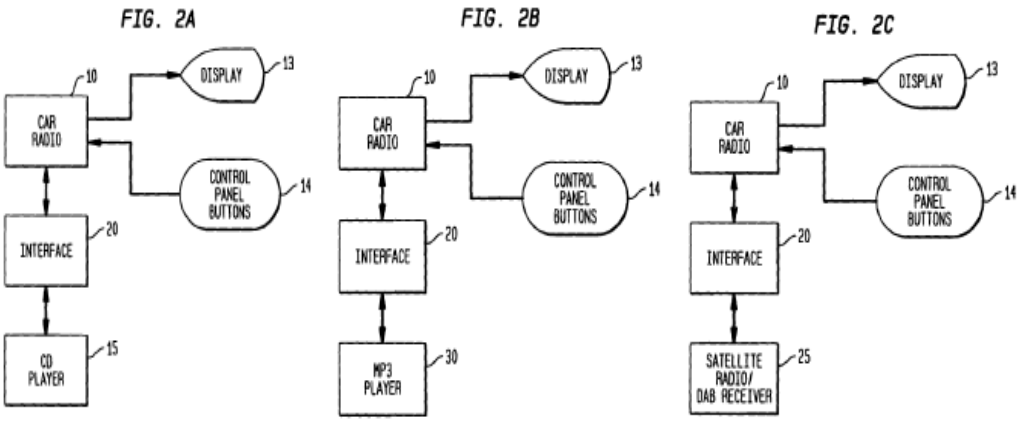
A. RELATED MATTERS

The parties represent that the '786 patent is the subject of five ongoing infringement actions before the U.S. District Court for the Eastern District of Texas and was previously the subject of two infringement actions before the U.S. District Court for the District of New Jersey. Paper 8, 1–2; Pet. 2. In addition, the '786 patent is or was previously the subject of several *inter partes* review proceedings before the Office, namely IPR2016-00421, IPR2016-00422, IPR2016-01448, and IPR2016-01472. Paper 8, 2; *see* Pet. 2. Related U.S. Patent No. 8,155,342 B2 is or was previously involved in IPR2016-00118, IPR2016-00418, IPR2016-00419, IPR2016-01445, IPR2016-01449, IPR2016-01473, IPR2016-01476, IPR2016-01533, IPR2016-01557, and IPR2016-01560. *See* Paper 8, 2.

B. THE '786 PATENT

The '786 patent explains that integrating an after-market audio system with an existing car stereo, such as a stereo from an original equipment manufacturer ("OEM"), presents a problem because signals generated by both systems are in a "proprietary format" and "are not capable of being processed" or recognized by the other system. Ex. 1001, 1:36–42; *see id.* at 2:26–29. Thus, "in order to integrate after-market systems with car stereos, it is necessary to convert signals between such systems." *Id.* at 1:42–44.

The '786 patent is directed to an audio device integration system that allows after-market audio devices to be integrated for use with an existing car stereo system, such that control commands can be issued at the car stereo for execution by the audio device and data from the audio device can be displayed on the car stereo. *Id.* at [57], 2:12–42. More specifically, control commands generated at the car stereo are received, converted into a format recognizable by the after-market audio device, and dispatched to the device for execution. *Id.* at [57], 2:35–40. In addition, information from the audio device, such as track, channel, song, and artist information, is received, processed, converted into a format recognizable by the car stereo, and dispatched to the stereo for display. *Id.* at [57], 2:40–47. The audio device could, for example, comprise a "CD player, CD changer, MP3 player, satellite receiver, [or] digital audio broadcast (DAB) receiver." *Id.* at 4:28–30; *see id.* at [57], 2:23–26. Figures 2A–2C are reproduced below:



Figures 2A–C illustrate embodiments in which a car stereo is integrated with a CD player (Figure 2A), an MP3 player (Figure 2B), and a satellite radio or DAB receiver (Figure 2C). *Id.* at 3:14–23.

In addition, an audio device as well as auxiliary input sources may be integrated with a car stereo. *Id.* at [57], 2:53–56. A user then "can select between the external audio device and the auxiliary input using the controls of the car stereo." *Id.* at 2:56–57. Figure 1 is reproduced below:

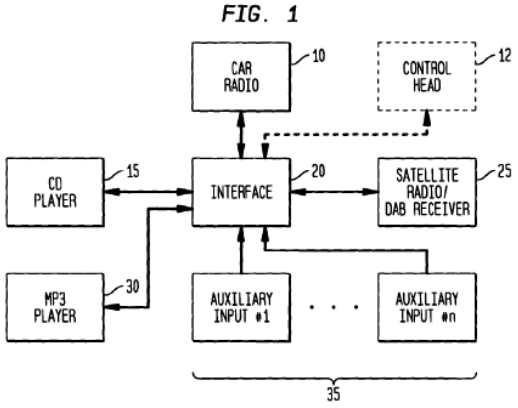


Figure 1 illustrates an embodiment integrating a car stereo with a CD player, a MP3 player, and a satellite radio or DAB receiver, as well as a number of auxiliary input sources. *Id.* at 3:12–13, 5:14–27.

As shown in the above figures, central to the '786 patent is an "interface" positioned between the car stereo and the audio device(s) and auxiliary input(s). *See, e.g.*, *id.* at Fig. 1, 2A–C, 5:33–36. The interface

allows for the integration of the audio devices and auxiliary inputs with the OEM or after-market car stereo. *Id.* at 5:33–36.

C. ILLUSTRATIVE CLAIM

Of the challenged claims, claims 1 and 57 of the '786 patent are independent. Claim 1, reproduced below, is illustrative:

> 1. An audio device integration system comprising:
> a first connector electrically connectable to a car stereo;
> a second connector electrically connectable to an after-market audio device external to the car stereo;
> a third connector electrically connectable to one or more auxiliary input sources external to the car stereo and the after-market audio device;
> an interface connected between said first and second electrical connectors for channeling audio signals to the car stereo from the after-market audio device, said interface including a microcontroller in electrical communication with said first and second electrical connectors, said microcontroller pre-programmed to execute:
> a first pre-programmed code portion for remotely controlling the after-market audio device using the car stereo by receiving a control command from the car stereo through said first connector in a format incompatible with the after-market audio device, processing the received control command into a formatted command compatible with the after-market audio device, and transmitting the formatted command to the after-market audio device through said second connector for execution by the after-market audio device;
> a second pre-programmed code portion for receiving data from the after-market audio device through said second connector in a format incompatible with the car stereo, processing the received data into formatted data compatible with the car stereo, and transmitting the formatted data to the car stereo through said first connector for display by the car stereo; and

a third pre-programmed code portion for switching to one or more auxiliary input sources connected to said third electrical connector.

Ex. 1001, 21:31–64.

D. ASSERTED PRIOR ART

The Petition relies upon the following asserted prior art references:

U.S. Patent No. 5,794,164 (issued Aug. 11, 1998) (Ex. 1007, "Beckert '164");

U.S. Patent No. 6,009,363 (issued Dec. 28, 1999) (Ex. 1008, "Beckert '363");

U.S. Patent No. 7,085,710 B1 (filed Jan. 7, 1998) (issued Aug. 1, 2006) (Ex. 1006, "Beckert '710");

Clarion AutoPC 310C Owner's Manual (1998) (Ex. 1009, "AutoPC Manual");

Universal Serial Bus Device Class Definition for Audio Data Formats (Release 1.0 1998) (Ex. 1011, "USB ADF");

Sony Corporation, FM/MW/LW Cassette Car Stereo (1999) (Ex. 1012, "Sony XR-C5120R Manual"); and

Universal Serial Bus Specification (Rev. 2.0 2000) (Ex. 1010, "USB 2.0").

In addition to these references, the Petition supports its contentions with the Declaration of Chris Kyriakakis, Ph.D. (Ex. 1003).

E. ASSERTED GROUNDS OF UNPATENTABILITY

Petitioner asserts the following grounds of unpatentability. Pet. 8–9.

Challenged Claim(s)	Basis	References
1, 10, 14, 23, and 24	§ 103[1]	Beckert '710 and Beckert '164

[1] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112–29, 125 Stat. 284, 287–88 (2011), revised 35 U.S.C. § 103, effective March 16, 2013. Because the patent application resulting in the '786 patent was filed before the effective date of the AIA, we refer to the pre-AIA version of § 103 throughout this Decision.

5	§ 103	Beckert '710, Beckert '164, AutoPC Manual, and USB 2.0
6	§ 103	Beckert '710, Beckert '164, and Beckert '363
7	§ 103	Beckert '710, Beckert '164, and AutoPC Manual
8	§ 103	Beckert '710, Beckert '164, and Sony XR-C5120R Manual
57, 60, 64, and 65	§ 103	Beckert '710, Beckert '164, and USB ADF
61	§ 103	Beckert '710, Beckert '164, USB ADF, and AutoPC Manual
62	§ 103	Beckert '710, Beckert '164, USB ADF, and Sony XR-C5120R Manual

II. ANALYSIS

A. LEVEL OF ORDINARY SKILL IN THE ART

We begin our analysis by addressing the level of ordinary skill in the art. We determine that in this case, no express articulation of the level of ordinary skill is necessary and that the level of ordinary skill in the art is reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978).

B. CLAIM CONSTRUCTION

The Board interprets claims terms of an unexpired patent using the "broadest reasonable construction in light of the specification of the patent." 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016). Under this standard, we presume a claim term carries its "ordinary and customary meaning," which "is the meaning that the term would have to a person of ordinary skill in the art" at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). A claim term will be interpreted more narrowly than its ordinary and

customary meaning only where: (1) the "patentee sets out a definition and acts as [its] own lexicographer," or (2) the "patentee disavows the full scope of a claim term either in the specification or during prosecution." *Aventis Pharma S.A. v. Hospira, Inc.*, 675 F.3d 1324, 1330 (Fed. Cir. 2012).

1. *"device presence signal"*

Independent claim 57 and dependent claim 6 each recite a "device presence signal." Ex. 1001, 22:13–15, 26:23–27. Specifically, claim 57 requires that a microcontroller within an interface be pre-programmed to execute "a first pre-programmed code portion for generating a *device presence signal* and transmitting the signal to the car stereo to maintain the car stereo in an operational state." *Id.* at 26:17–27 (emphasis added). Similarly, claim 6, which depends directly from independent claim 1, requires that the "interface generates a *device presence signal* for maintaining the car stereo in a state responsive to processed data and audio signals." *Id.* at 22:13–15 (emphasis added).

Petitioner states that in a prior Institution Decision in IPR2016-00421, the Board construed the term "device presence signal" as: "a signal indicating that an audio device (claim 57) or video device (claim 86) or portable audio device (claim 92), other than the car stereo, is connected to the interface." Pet. 17–18 (quoting *Toyota Motor Corp. v. Blitzsafe Texas, LLC*, Case IPR2016-00421, slip op. at 18 (PTAB July 7, 2016) (Paper 13) ("IPR2016-00421 Inst. Dec.")) (emphasis omitted). Petitioner represents that it adopts and applies this construction in the Petition. *Id.* at 18. Patent Owner also adopts this construction of the term. Prelim. Resp. 3.

Having reconsidered the issue, we maintain our construction of the term "device presence signal" from the Institution Decision in

IPR2016-00421 for the reasons given in that decision. IPR2016-00421 Inst. Dec. 16–18. We repeat the relevant analysis below.

A description of a "device presence signal" is contained in the specification of the '786 patent in the discussion of an embodiment that is for connecting a CD player to the car stereo:

> Beginning in step 110, a signal is generated by the present invention indicating that a CD player/changer is present, and the signal is continuously transmitted to the car stereo. *Importantly, this signal prevents the car stereo from shutting off, entering a sleep mode, or otherwise being unresponsive to signals and/or data from an external source*.

Ex. 1001, 12:29–35 (emphasis added). All other disclosed embodiments, whether they are for connecting an MP3 player or an auxiliary device to the car stereo, refer back to this description of the device presence signal. *Id.* at 13:15–18, 13:62–65, 14:48–51, 15:35–38, 16:12–15, 16:57–60.

As we explained in IPR2016-00421, continuous transmission of a signal is not necessary to accord meaning to "device presence signal." IPR2016-00421 Inst. Dec. 17. The manner of transmission simply reflects how the signal is transmitted and does not change what the signal was generated and intended to accomplish, and actually accomplishes. *Id.* The specification also does not put continuous transmission in the same category of importance as the requirements in the italicized portion of the above-quoted text. *Id.*

Moreover, in claims 6 and 57, the device presence signal is generated and transmitted by the interface that is connected between the first and second electrical connector, where the first electrical connector is connectable to a car stereo and the second electrical connector is connectable to an after-market audio device (claim 6) or portable MP3 player (claim 57).

See Ex. 1001, 21:30–44, 22:13–15, 26:13–27; IPR2016-00421 Inst. Dec. 17–18. Claim 6, based on its dependency from claim 1, recites that the interface is for "channeling audio signals to the car stereo from the after-market audio device." Ex. 1001, 21:38–44. Claim 57 recites that the interface is for "transmitting audio from a portable MP3 player to a car stereo." *Id.* at 26:17–22. In the context of these claims, the device the presence of which is signaled by the interface is the device that connects to the interface to communicate with the car stereo.

Accordingly, for purposes of this Decision, we adopt our previous construction of "device presence signal" from IPR2016-00421 and adjust this construction to reflect the relevant challenged claims in this proceeding: *a signal indicating that an audio device (claim 6) or portable MP3 player (claim 57), other than the car stereo, is connected to the interface.*

2. *Other Claim Terms*

Based on our review of the record and the dispositive issues in our determination of whether to institute *inter partes* review on the asserted grounds of unpatentability, we need not address the construction of any other claim terms. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (holding that only claim terms that "are in controversy" need to be construed and "only to the extent necessary to resolve the controversy"); Pet. 14–18; Prelim. Resp. 3–5.

C. ALLEGED OBVIOUSNESS OVER BECKERT '710 AND BECKERT '164

Petitioner argues claims 1, 10, 14, 23, and 24 of the '786 patent are unpatentable as obvious over Beckert '710 and Beckert '164. Pet. 8, 18–45.

1. *Beckert '710*

Beckert '710 discloses a vehicle computer system, implementing an audio entertainment system, that is designed to support multiple audio

sources, such as radio, CD, and auxiliary inputs. Ex. 1006, [57], 1:5–9, 1:60–63, 12:57–61. The disclosed vehicle computer system 20 includes three modules: (1) faceplate module 80, (2) support module 82, and (3) computer module 84. *Id.* at 1:63–65, 5:34–37, Fig. 3. Beckert '710 explains that support module 82 and computer module 84 typically reside in a stationary base unit that is mounted in the dashboard of a vehicle, whereas faceplate module 80 resides on a faceplate to the base unit. *Id.* at 5:55–58, 6:48–49, 6:62–63, Fig. 1. Figure 3 is reproduced below.

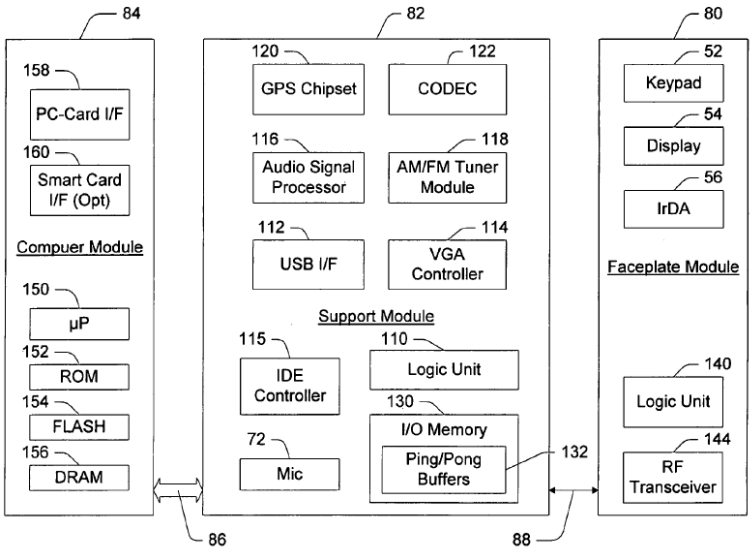


Fig. 3

Figure 3 depicts one implementation of the vehicle computer system disclosed in Beckert '710. *Id.* at 3:34–36.

Beckert '710 explains that support module 82 includes logic unit 110, which "performs many of the functions for the audio entertainment system." *Id.* at 1:65–67, 5:55–58, 7:49–54. Logic unit 110 can be implemented as a "field programmable gate array (FPGA), application specific integrated circuit (ASIC), customized processor, or the like." *Id.* at 1:67–2:3; *see id.* at 5:64–6:4. Support module 82 also features hardware interfaces, including universal serial bus ("USB") interface 112, which connects support

module 82 to various USB peripheral devices, such as a CD-ROM changer and a TV tuner. *Id.* at 5:44–54, 6:5–11.

Beckert '710 discloses that computer module 84 features microprocessor 150, which runs an operating system. *Id.* at 2:6–9, 6:62–65. According to Beckert '710, "computer module 84 is operatively connected to the support module 82 via a multi-bit bus 86," which is preferably a peripheral component interconnect ("PCI") bus. *Id.* at 5:37–40; *see id.* at 2:9–11. In addition, faceplate module 88 is attached to support module 82 through a "detachable connector." *Id.* at 6:48–53.

Beckert '710 explains that "[a] more detailed explanation of the three modules in the vehicle computer system is provided in" the patent application that resulted in Beckert '164 and "[a] detailed description of one implementation of the logic unit 110 is provided in" the patent application that resulted in Beckert '363. *Id.* at 7:19–25, 7:37–47; Ex. 1007, [21]; Ex. 1008, [21]. Beckert '710 "incorporate[s]" these applications "by reference." Ex. 1006, 7:19–25, 7:37–47.

In addition, Beckert '710 discloses that "computer system 20 implements an audio manager API (application program interface) to enable applications running on the computer to control the various audio sources without knowing the hardware and implementation details of the underlying sound system." *Id.* at 12:65–13:2; *see id.* at [54], 2:64–3:1. Figure 8 of Beckert '710 is reproduced below.

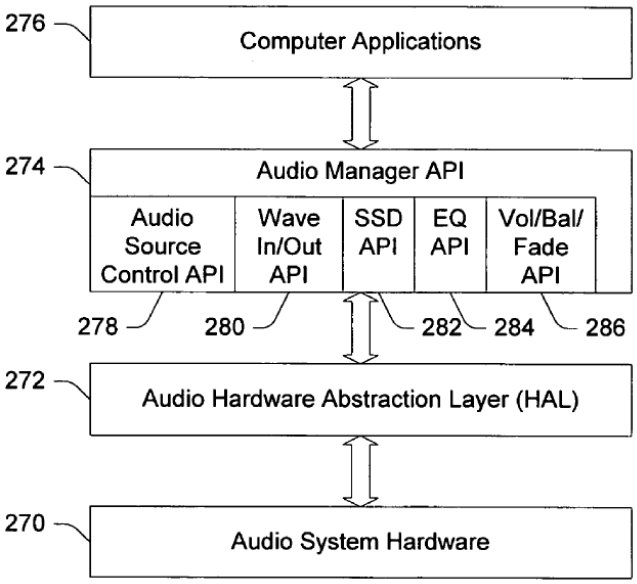


Figure 8 illustrates the "application-to-hardware architecture" discussed in Beckert '710. *Id.* at 13:7; *see id.* at 3:44–45. Audio hardware 270 forms the lowest level of the architecture. *Id.* at 13:8–9. Audio hardware abstraction layer ("HAL") 272, in turn, "defines a basic interface layer between the audio related drivers for the hardware 270 and the audio manager API layer 274." *Id.* at 13:9–12. Next, audio manager API 274—which has five core components, audio source control API 278, wave-in and wave-out API 280, surround sound decoder API 282, equalization API 284, and volume/balance/fade API 286—"defines the APIs to access and control the underlying audio system." *Id.* at 13:14–18. "[A]udio manager API 274 communicates with the audio device drivers for specific devices via the audio HAL interface 272" and "transfers calls made by the applications to the appropriate device driver(s)." *Id.* at [57], 3:4–6, 13:5–6, 14:38–40. Finally, "[a]top the audio manager API 274 are the applications 276." *Id.* at 13:13–14.

Beckert '710 further explains that "[d]ifferent APIs control different aspects of the audio system." *Id.* at 13:19–20. For example, wave-out

API 280 controls foreground audio sources, whereas audio source control API 278 "control[s]" and "is used to select" background audio sources, including the "AM/FM tuner, CD player, auxiliary inputs, and other sources from the USB." *Id.* at 13:22–32, 13:39–47.

2. *Beckert '164*

Similar to Beckert '710, Beckert '164 discloses a vehicle computer system with three modules, namely a computer module, support module, and faceplate module. Ex. 1007, [57], 1:4–5, 1:65, 2:22–42. Computer module 64 includes a processor that runs the operating system "to support the vehicle-related applications," including "navigation, security, diagnostics, communications, and entertainment systems." *Id.* at [57], 2:21–30, 3:14–17, 8:34–39.

3. *Discussion*

A patent claim is unpatentable as obvious 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." 35 U.S.C. § 103(a). As the Supreme Court explained in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), an invention "composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *Id.* at 418. Rather, "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *Id.* In other words, "there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Id.* (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). Accordingly, the U.S.

Court of Appeals for the Federal Circuit has made clear that a petitioner in an *inter partes* review proceeding cannot "satisfy its burden of proving obviousness" by "employ[ing] mere conclusory statements" and "must instead articulate specific reasoning, based on evidence of record" to support an obviousness determination. *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380–81 (Fed. Cir. 2016).

a. Independent Claim 1

Independent claim 1 of the '786 patent recites that the "microcontroller," included in the "interface," is "pre-programmed to execute: a first pre-programmed code portion for:"

> remotely controlling the after-market audio device using the car stereo by receiving a control command from the car stereo through said first connector in a format incompatible with the after-market audio device,
> processing the received control command into a formatted command compatible with the after-market audio device, and
> transmitting the formatted command to the after-market audio device through said second connector for execution by the after-market audio device.

Ex. 1001, 21:38–54 (line breaks added). Accordingly, the claim requires that the recited microcontroller perform a format conversion of a control command received from the car stereo, specifically converting the command from a format incompatible with the after-market audio device to one compatible with the after-market audio device.

Relevant to this claim requirement, Petitioner identifies support module 82 of Beckert '710 as the recited "interface," a customized processor implementing logic unit 110 of Beckert '710 as the recited "microcontroller," and computer module 84 of Beckert '710 and corresponding computer module 64 of Beckert '164 as the recited "car

stereo." *See* Pet. 22–24, 29–31. Specifically regarding the recited "first pre-programmed code portion for . . . processing the received control command into a formatted command compatible with the after-market audio device," the Petition argues, and Dr. Kyriakakis opines, that audio manager API 274 and hardware abstraction layer 272 of Beckert '710 perform the required format conversion. *Id.* at 32–35; Ex. 1003, 40–43; *see* Pet. 31–32; Ex. 1003, 39–40. The Petition and Dr. Kyriakakis's declaration represent that in Beckert '710, "commands issued by the car stereo (e.g., from the Computer Applications 276) . . . are converted through the Audio Manager API and the hardware abstraction layer to be able to communicate with a connected USB audio hardware device." Pet. 35; Ex. 1003, 43. According to Petitioner, Beckert '710 describes using the hardware abstraction layer "to process received commands from the car stereo into formatted commands for transfer to the audio system hardware." Pet. 33; Ex. 1003, 41. Petitioner relies exclusively on these alleged teachings of Beckert '710 and does not refer to Beckert '164 for the "first pre-programmed code portion" limitation. *See* Pet. 31–35; Ex. 1003, 39–43.

Patent Owner contests Petitioner's arguments that Beckert '710 teaches the "first pre-programmed code portion" limitation, asserting that Petitioner merely "make[s] general allegations regarding an 'API,'" but the API of Beckert '710 "does not receive commands in an incompatible format, or translate commands." Prelim. Resp. 12–13. Patent Owner argues that Beckert '710 instead refers to "several other components involved in the command structure including device 'drivers' as well as the hardware itself." *Id.* at 13. According to Patent Owner, Beckert '710 expressly states only that the API "'transfers calls made by the applications to the appropriate device drivers'" and does not "describe the format that commands are

relayed from an API to a device driver and then subsequently to the devices." *Id.* (quoting Ex. 1006, 2:64–3:6). Moreover, Patent Owner faults Petitioner for failing to "allege the location of the API with any further specificity" than Beckert '710 itself, which states merely that the API is within the "vehicle computer system." *Id.* Therefore, according to Patent Owner, Petitioner's allegations are insufficient to demonstrate that Beckert '710's teaches the claim limitation because the vehicle computer system contains not only the component Petitioner identifies as the alleged "interface" but also the components Petitioner identifies as the alleged "car stereo" and "after-market audio device." *Id.* Moreover, with regard to the hardware abstraction layer, Patent Owner asserts that Petitioner does "not map the hardware abstraction layer to the conversion limitations" and does "not explain where the . . . [l]ayer is located or how it represents 'pre-programmed' code." *Id.*

We agree with Patent Owner that Petitioner has not sufficiently explained and supported its position that Beckert '710 teaches or suggests claim 1's requirement that a microcontroller "process[] the received control command into a formatted command compatible the after-market audio device." *See id.* Nor has Petitioner adequately supported and explained its supporting assertion that this recitation is performed by audio manager API 274 and hardware abstraction layer 272, as opposed to, for example, the device drivers for specific audio devices. Moreover, even if this functionality is covered by audio manager API 274 and hardware abstraction layer 272, it is not explained adequately why or how either one maps to a "microcontroller" performing those functions.

With regard to hardware abstraction layer 272, Petitioner's citation to Figure 8 and the accompanying general disclosure that "audio hardware

abstraction layer . . . 272 defines a basic interface layer between the audio related drivers for the hardware 270 and the audio manager API layer 274" fails to specify and show adequately that the hardware abstraction layer, rather than the device drivers of the audio devices, perform the format conversion of control commands required by claim 1. Ex. 1006, 13:9–12, Fig. 8; *see* Pet. 33–34 (citing Ex. 1006, 13:7–15, Fig. 8); Ex. 1003, 41–42 (citing Ex. 1006, 13:7–15, Fig. 8).

The relevant citations to Beckert '710 regarding audio manager API 274 fare no better. Although Petitioner proffers citations to disclosures of Beckert '710 that audio manager API 274 "enable[s] applications running on the computer to control the various audio sources without knowing the hardware and implementation details of the underlying sound system" and similarly, "defines the APIs to access and control the underlying audio system," these general statements regarding "control" of audio sources do not show that audio manager API 274, in particular, converts a command into a format compatible with the relevant audio source device. Ex. 1006, [57], 2:64–3:1, 12:65–13:2, 13:14–15; *see* Pet. 32–34 (citing Ex. 1006, 2:64–3:6, 13:7–15); Ex. 1003, 40–42 (citing Ex. 1006, 2:64–3:6, 13:7–15). Moreover, the cited discussion in Beckert '710 explaining that audio source control 278, a component of audio manager API 274, "control[s]" and "is used to select" background audio sources, such as "sources from the USB," similarly lacks detail sufficient to demonstrate that audio manager API 274 performs the recited format conversion. Ex. 1006, 13:16–18, 13:28–31, 13:39–41, Fig. 9; *see* Pet. 32, 34–35 (citing Ex. 1006, 13:22–31, 13:37–42, Fig. 9); Ex. 1003, 40, 42–43 (citing Ex. 1006, 13:22–31, 13:37–42, Fig. 9).

In more particularly addressing the function of audio manager API 274, Beckert '710 explains that its role is to "*communicate[] with the*

audio device drivers for specific devices via the audio HAL interface 272" and "*transfer[] calls* made by the applications *to the appropriate device driver(s).*" Ex. 1006, [57], 3:2–6, 13:2–6, 14:37–40 (emphases added); *see* Pet. 32–34 (citing Ex. 1006, 2:64–3:6); Ex. 1003, 40–42 (citing Ex. 1006, 2:64–3:6). Petitioner has not explained or demonstrated sufficiently, with adequate record support, that a person of ordinary skill in the art would have understood the function of audio manager API 274, including transferring calls to device drivers for audio devices through the hardware abstraction layer, to involve the recited format conversion of control commands.

Petitioner also fails to address or provide explanation as to why it is not the device driver(s) for each specific audio device that perform such a conversion of a control command into a format compatible with the particular device. We find Petitioner's failure in this regard particularly problematic given that device drivers were known in the art at the relevant time period to perform functionality consistent with the required format conversion. *See* Ex. 3001 (MICROSOFT COMPUTER DICTIONARY (5th ed. 2002)), 155 (explaining that a "device driver" is "[a] software component that permits a computer system to communicate with a device" and performs "data translation"); Ex. 1001, [22]. Moreover, it is unclear why the individual device drivers for particular audio devices in Beckert '710 would be necessary, and what function they would perform, if audio manager API 274 or hardware abstraction layer 272 converts control commands into a format compatible with the relevant audio device before the drivers receive the command.

In addition, Petitioner has not addressed or shown that the device drivers in Beckert '710 are part of the customized processor implementing logic unit 110 in support module 82, which Petitioner identifies as the

"microcontroller" of the "interface" recited in claim 1. *See* Pet. 29–35; Ex. 1003, 37–43; *see also, e.g.*, Ex. 1006, [57], 3:2–3, 13:2–3 ("Different audio devices and their drivers control different functionality of the audio system . . . ."); *id.* at 13:10–12 ("audio related drivers for the hardware 270"); *id.* at 14:37–41 ("audio device drivers for specific devices"). Therefore, we are not persuaded that there is adequate basis in the record to conclude that Beckert '710 teaches, suggests, or otherwise would have conveyed a "microcontroller," within an "interface," "pre-programmed to execute: a first pre-programmed code portion for . . . processing the received control command into a formatted command compatible the after-market audio device," as claim 1 requires.

With specific regard to Dr. Kyriakakis's stated opinion in his declaration that one of ordinary skill in the art would have understood that in Beckert '710, commands issued by computer applications are "converted through the Audio Manager API and the hardware abstraction layer to be able to communicate with" an "audio hardware device," and that "command translation is at the core of HAL functionality," these representations lack sufficient explanation and evidentiary support. Ex. 1003, 41, 43; *see* Prelim. Resp. 18 (arguing Dr. Kyriakakis's declaration should be afforded no weight because it "fails to disclose the underlying facts [on] which it bases its obviousness conclusions . . . ; neglects to show how a person of ordinary skill in the art would understand . . . the references; and merely amounts to broad conclusory statements"). In particular, for the reasons explained above, Dr. Kyriakakis's representations that hardware abstraction layer 272 and audio manager API 274 perform the recited format conversion of control commands are not supported adequately by the disclosures in the cited passages of Beckert '710. Dr. Kyriakakis does not address or offer any

explanation as to why one of ordinary skill in the art would not have understood the device drivers in Beckert '710 to perform the format conversion of control commands. In addition, Dr. Kyriakakis's representations are particularly unconvincing and of minimal probative weight given that they generally repeat verbatim the precise statements in the claim chart of the Petition, with the mere addition of phrases like "it is my opinion that" and a single new sentence. *Compare* Pet. 32–35, *with* Ex. 1003, 40–43. Therefore, we are not persuaded by and do not credit these conclusory and unexplained representations as to what the cited disclosures of Beckert '710 would have conveyed to a person of ordinary skill. *See* 37 C.F.R. § 42.65(a); *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) (explaining that "the Board has broad discretion" to weigh declarations and "conclude that the lack of factual corroboration warrants discounting the opinions expressed"); *Rohm & Haas Co. v. Brotech Corp.*, 127 F.3d 1089, 1092 (Fed. Cir. 1997) ("Nothing in the [federal] rules [of evidence] or in our jurisprudence requires the fact finder to credit the unsupported assertions of an expert witness."); *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985) ("Lack of factual support for expert opinion going to factual determinations . . . may render the testimony of little probative value . . . .").

Accordingly, for the reasons given above, Petitioner has not supported sufficiently its argument that Beckert '710 teaches or suggests claim 1's requirement that a microcontroller "process[] the received control command into a formatted command compatible the after-market audio device," and Petitioner's supporting representation that this recitation is performed by audio manager API 274 and hardware abstraction layer 272, rather than the device drivers. In addition, even if we assume Petitioner had shown

sufficiently that audio manager API 274 and hardware abstraction layer 272 of Beckert '710 perform the recited format conversion of control commands, as it contends, Petitioner still would not have demonstrated adequately that Beckert '710 teaches or suggests that this functionality is performed by a "microcontroller," within an "interface," as claim 1 requires. In particular, we agree with Patent Owner that the Petition, as well as Dr. Kyriakakis's supporting declaration, has not alleged or shown adequately *where* within the disclosed computer system any relevant code of audio manager API 274 and hardware abstraction layer 272 is executed, particularly whether any such code is executed by the processor within logic unit 110 of support module 82, which Petitioner identifies as the "microcontroller." *See* Prelim. Resp. 13; Pet. 31–35; Ex. 1003, 39–43. The closest Petitioner comes to addressing this location is providing, without any supporting analysis or argument, a block quotation of Beckert '710's statement that "logic unit 110 in support module 82 performs *many* of the functions for the audio entertainment system." Ex. 1006, 7:50–52 (emphasis added); *see* Pet. 32–33 (quoting Ex. 1006, 7:49–54); Ex. 1003, 40–41 (quoting Ex. 1006, 7:49–54). Many functions, however, are not all. Petitioner has not provided sufficient argument or explanation to support that a person of ordinary skill in the art would have understood that customized processor of logic unit 110 performs the particular relevant functionality, specifically executing any code for format conversion of control commands for audio manager API 274 and hardware abstraction layer 272. For example, we note that computer module 84, which Petitioner identifies as the recited "car stereo," also contains a processor, processor 150, which runs the computer system's operating system and supports all vehicle applications. *See* Ex. 1006, 2:6–9,

7:1–5. Petitioner, however, fails to address why this other processor would not have executed any such code.

Nor do the cited disclosures of Beckert '710 specify the precise location of code for audio manager API 274 and hardware abstraction layer 272. Rather, as Patent Owner argues, Beckert '710, in addressing the location of the API, states only that "computer system 20 implements an audio manager API." *Id.* at 12:65–66; *see id.* at [57], 2:64–65; Prelim. Resp. 13. Yet Beckert '710's vehicle computer system 20 includes computer 22, featuring both computer module 84 ("car stereo") and support module 82 ("interface"), as well as peripheral devices. *See* Ex. 1006, 1:60–64, 3:59–65, 5:34–37, Fig. 1; Pet. 22–23, 29–30. As to hardware abstraction layer 272, Beckert '710, as noted above, explains only that this layer "defines a basic interface layer between the audio related drivers for the hardware 270 and the audio manager API layer 274." Ex. 1006, 13:9–12, Fig. 8; *see id.* at 14:37–40; Pet. 34 (quoting Ex. 1006, 13:7–15). Thus, Beckert '710 describes audio manager API 274 and hardware abstraction layer 272 as abstractions and does not limit their functionalities to a specific location within the disclosed computer system or more particularly, to logic unit 110 of support module 82. Accordingly, for the additional reason that Petitioner has not shown sufficiently that the processor within logic unit 110 ("microcontroller") executes any relevant code of audio manager API 274 and hardware abstraction layer 272—which Petitioner contends performs the recited format conversion—Petitioner's assertions and evidence are inadequate to show that Beckert '710 teaches or suggests claim 1's requirement that a "microcontroller," within an interface, is "pre-programmed to execute" a format conversion of a control command.

For the reasons given, Petitioner has not made a sufficient showing, with adequate record support, that Beckert '710 and Beckert '164 teach, suggest, or otherwise would have conveyed to one of ordinary skill "said microcontroller pre-programmed to execute: a first pre-programmed code portion for . . . processing the received control command into a formatted command compatible the after-market audio device," as recited in claim 1 of the '786 patent.

b. Dependent Claims 10, 14, 23, and 24

Claims 10, 14, 23, and 24 of the '786 patent depend, directly or indirectly, from independent claim 1. *See* Ex. 1001, 22:28–67. Accordingly, the deficiencies discussed above with respect to Petitioner's showing regarding the "first pre-programmed code portion" limitation of independent claim 1 carry through to these claims. Petitioner's specific arguments directed to the additional limitations of these dependent claims do not cure the deficiencies. *See* Pet. 39–45.

c. Conclusion

For the reasons given, we determine that the Petition does not show a reasonable likelihood that Petitioner would prevail in showing that Beckert '710 and Beckert '164 render obvious claims 1, 10, 14, 23, and 24 of the '786 patent.

D. ALLEGED OBVIOUSNESS OVER BECKERT '710, BECKERT '164, AND USB ADF

Petitioner contends claims 57, 60, 64, and 65 of the '786 patent are unpatentable as obvious over Beckert '710, Beckert '164, and USB ADF. Pet. 9, 60–66.

1. *Independent Claim 57*

a. *"second pre-programmed code portion"*

Independent claim 57 includes a "second pre-programmed code portion" limitation that is very similar to the "first pre-programmed code portion" limitation of independent claim 1, with the main difference being that the "second pre-programmed code portion" limitation of claim 57 recites an "MP3 player" rather than the more general "after-market audio device" recited in claim 1. *See* Ex. 1001, 22:44–54, 26:27–38. In this asserted ground, the Petition's analysis of the "second pre-programmed code portion" limitation of claim 57 consists only of an internal cross-reference to the claim charts for the corresponding limitations of claim 1 in the asserted ground of obviousness over Beckert '710 and Beckert '164. *See* Pet. 63–64; *see also id.* at 31–35. Accordingly, for substantially the same reasons given above in our analysis of the asserted ground challenging claim 1 as obvious over Beckert '710 and Beckert '164 that the Petition fails to show sufficiently that these references teach, suggest, or otherwise would have conveyed to a person of ordinary skill in the art the "first pre-programmed code portion" limitation of claim 1, we likewise are not persuaded that Petitioner has demonstrated adequately that these references teach, suggest, or otherwise would have conveyed to one of ordinary skill the "second pre-programmed code portion" limitation of claim 57.

b. *"first pre-programmed code portion"*

Claim 57 recites "a first pre-programmed code portion for generating a *device presence signal* and transmitting the signal to the car stereo to maintain the car stereo in an operational state." Ex. 1001, 26:23–27 (emphasis added). The Petition's analysis of this limitation features only an internal cross-reference to its discussion of a limitation of claim 1 in the

asserted ground of obviousness over Beckert '710 and Beckert '164. *See* Pet. 62–63 ("*See* discussion of claim limitation 1[f] in Ground 1."); *id.* at 30–31 (analysis of limitation that the Petition refers to as limitation 1[f]).

Independent claim 1, however, does not recite a "device presence signal." Ex. 1001, 21:31–64. Thus, the Petition's analysis of claim 1, including the particular cross-referenced limitation, does not address or explain how Beckert '710 and Beckert '164 teach, suggest, or otherwise would have conveyed to one of ordinary skill in the art a "device presence signal"—i.e., a signal indicating that a portable MP3 player, other than the car stereo, is connected to the interface—and a code portion for generating and transmitting such a signal, as claim 57 requires. *See* Pet. 22–39. Moreover, based on our review of the portions of Beckert '710 and Beckert '164 cited in the Petition's analysis of claim 1, they are insufficient to demonstrate that these references would have conveyed such a teaching or suggestion to a person of ordinary skill in the art.

Therefore, the Petition does not make a sufficient showing that Beckert '710, Beckert '164, and USB ADF would have rendered obvious a "a first pre-programmed code portion for generating a device presence signal and transmitting the signal to the car stereo to maintain the car stereo in an operational state," as recited in claim 57.

2. *Dependent Claims 60, 64, and 65*

Claims 60, 64, and 65 of the '786 patent depend, directly or indirectly, from independent claim 57. *See* Ex. 1001, 26:43–63. Accordingly, the deficiencies discussed above with respect to Petitioner's showing regarding the "first pre-programmed code portion" and "second pre-programmed code portion" limitations of independent claim 57 also apply to these claims.

Petitioner's specific arguments directed to the additional limitations of these dependent claims do not cure the deficiencies. *See* Pet. 64–66.

3. *Conclusion*

Based on our analysis above, we determine that the Petition does not demonstrate a reasonable likelihood that Petitioner would prevail in showing that claims 57, 60, 64, and 65 of the '786 patent would have been obvious over Beckert '710, Beckert '164, and USB ADF.

E. OTHER ASSERTED GROUNDS

In addition to the asserted grounds of obviousness relying on Beckert '710 and Beckert '164 as well as Beckert '710, Beckert '164, and USB ADF, addressed above, Petitioner asserts six other obviousness grounds challenging dependent claims 5–8, 61, and 62 of the '786 patent. *See* Pet. 8–9, 45–59, 66–69.

Dependent claims 5–8 each depend directly from independent claim 1. Ex. 1001, 22:8–23. As addressed above, Petitioner challenges independent claim 1 as obvious over Beckert '710 and Beckert '164. Petitioner argues that dependent claims 5–8 would have been obvious over these two references in addition to the AutoPC Manual and USB 2.0 for claim 5; Beckert '363 for claim 6; the AutoPC Manual for claim 7; and the Sony XR-C5120R Manual for claim 8. *See* Pet. 8–9, 45–59. The Petition's analysis of dependent claims 5–8 and specific arguments directed to the additional limitations of these claims do not cure the deficiencies outlined above in Petitioner's showing that Beckert '710 and Beckert '164 teach, suggest, or otherwise would have conveyed the "first pre-programmed code portion" limitation of independent claim 1, from which these claims depend. *See id.* at 45–49. The Petition does not rely on the additional asserted references—AutoPC Manual, USB 2.0, Beckert '363, and Sony XR-C5120R

Manual—to address this limitation. *See id.* Accordingly, for the reasons given above in our analysis of independent claim 1, we determine that the Petition does not show a reasonable likelihood that Petitioner would prevail in showing that dependent claims 5–8 of the '786 patent are unpatentable.

In addition, dependent claims 61 and 62 each depend indirectly from independent claim 57. Ex. 1001, 26:44–55. Petitioner asserts that claim 57 would have been obvious over Beckert '710, Beckert '164, and USB ADF, as addressed in our analysis above. Petitioner argues that dependent claims 61 and 62 would have been obvious over these three references in addition to the AutoPC Manual for claim 61 and the Sony XR-C5120R Manual for claim 62. *See* Pet. 9, 66–69. The Petition does not rely on the additional asserted references, AutoPC Manual and Sony XR-C5120R Manual, to address the "first pre-programmed code portion" and "second pre-programmed code portion" limitations of independent claim 57, from which claims 61 and 62 depend. *See id.* at 66–69. Moreover, the specific arguments directed to the additional limitations of claims 61 and 62 do not cure the deficiencies outlined above in Petitioner's showing that Beckert '710, Beckert '164, and USB ADF teach, suggest, or otherwise would have conveyed to one of ordinary skill in the art these limitations of independent claim 57. *See id.* Therefore, for the reasons given above in our analysis of independent claim 57, we determine that the Petition does not show a reasonable likelihood that Petitioner would prevail in showing that dependent claims 61 and 62 of the '786 patent are unpatentable.

III. CONCLUSION

For the reasons given, we determine that the information presented in the Petition does not establish a reasonable likelihood that Petitioner would prevail in showing that any of the challenged claims of the '786 patent,

claims 1, 5–8, 10, 14, 23, 24, 57, 60–62, 64, and 65, are unpatentable. Therefore, we do not institute an *inter partes* review of any of the challenged claims on any of the asserted grounds.

IV. ORDER

For the reasons given, it is:

ORDERED that pursuant to 35 U.S.C. § 314(a), the Petition is *denied*, and no trial is instituted with respect to any claim of U.S. Patent No. 7,489,786 B2.

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