

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Hyundai Motor Company Ltd., Hyundai Motor America, Hyundai Motor
Manufacturing Alabama, LLC, Kia Motors Corporation, Kia Motors America, Inc.,
and Kia Motors Manufacturing Georgia, Inc.,
Petitioners

v.

Blitzsafe Texas, LLC,
Patent Owner

U.S. Patent No. 7,489,786
Filing Date: December 11, 2002
Issue Date: February 10, 2009
Title: Audio Device Integration System

Inter Partes Review No.: (Unassigned)

**PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 7,489,786
UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. §§ 42.1-100, ET SEQ.**

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EXHIBIT LIST

Exhibit No.	Description
1001	U.S. Patent No. 7,489,786 (“’786 patent”)
1002	File History of U.S. Patent No. 7,489,786
1003	Declaration of Chris Kyriakakis, Ph.D.
1004	Joint Claim Construction Chart from <i>Blitzsafe Texas, LLC v. Honda Motor Co., Ltd. et al.</i> , 2:15-cv-01274 (E.D. Tex.)(lead case)
1005	Plaintiff’s Disclosure Of Asserted Claims And Infringement Contentions (with Appendices A-D) from <i>Blitzsafe Texas, LLC v. Honda Motor Co., Ltd. et al.</i> , 2:15-cv-01274 (E.D. Tex.)(lead case)
1006	U.S. Patent No. 7,085,710 (“Beckert ’710”)
1007	U.S. Patent No. 5,794,164 (“Beckert ’164”)
1008	U.S. Patent No. 6,009,363 (“Beckert ’363”)
1009	Clarion AutoPC 310C Owner’s Manual, Clarion Co. Ltd. 1998 (“AutoPC Manual”)
1010	Universal Serial Bus Specification - Rev. 2.0, April 27, 2000 (“USB 2.0”)
1011	Universal Serial Bus Device Class Definition for Audio Data Formats - Release 1.0, March 18, 1998 (“USB ADF”)
1012	Sony XR-C5120 FM/AM Cassette Car Stereo Operating Instructions Manual (“Sony XR-C5120 Manual”)
1013	Minagawa et al., <i>Open Architectural Car Multimedia Platform</i> , Clarion Co., Ltd., Convergence 98 Int’l Congress on Transportation Elec’s., October 19-21, 1998 (“Minagawa,” Ex. 1013)
1014	Decision Instituting <i>Inter Partes</i> Review, Case IPR2015-00421, Paper No. 13 (July 7, 2016)

I. INTRODUCTION

Pursuant to 35 U.S.C. §§ 311-319 and 37 C.F.R. § 42, Petitioners Hyundai Motor Company (“HMC”), Hyundai Motor America (“HMA”), Hyundai Motor Manufacturing Alabama, LLC (“HMMA”), Kia Motors Corporation (“KMC”), Kia Motors America, Inc. (“KMA”), and Kia Motors Manufacturing Georgia, Inc. (“KMMG”) (collectively, “Hyundai and Kia” or “Petitioners”) respectfully request *Inter Partes* Review of claims 1, 5-8, 10, 14, 23, 24, 57, 60-62, and 64-65 of U.S. Patent 7,489,786 (Ex. 1001, the “’786 patent”), which is currently assigned to Blitzsafe Texas LLC (“Blitzsafe”) according to the US Patent and Trademark Office assignment records. There is a reasonable likelihood that Petitioners will prevail with respect to at least one of the claims challenged herein.

II. COMPLIANCE WITH FORMAL REQUIREMENTS

A. Mandatory Notices Under 37 C.F.R. §§ 42.8(b)(1)-(4)

1. Real Parties-In-Interest

Hyundai Motor Company (“HMC”), Hyundai Motor America (“HMA”), Hyundai Motor Manufacturing Alabama, LLC (“HMMA”), Kia Motors Corporation (“KMC”), Kia Motors America, Inc. (“KMA”), and Kia Motors Manufacturing Georgia, Inc. (“KMMG”) (collectively, “Hyundai and Kia” or “Petitioners”) are the real parties-in-interest.

2. Related Matters

The '786 patent is subject to the following pending actions: *Blitzsafe Texas, LLC v. Toyota Motor Corp. et al.*, 2:15-cv-01277 (E.D. Tex.); *Blitzsafe Texas, LLC v. Honda Motor Co., Ltd. et al.*, 2:15-cv-01274 (E.D. Tex.); *Blitzsafe Texas, LLC v. Hyundai Motor Co. et al.*, 2:15-cv-01276 (E.D. Tex.); and *Blitzsafe Texas, LLC v. Volkswagen Group of Am., Inc. et al.*, 2:15-cv-01278 (E.D. Tex.); IPR2016-00421 and IPR2016-00422. The '786 Patent was previously asserted in the following matters: *Marlowe Patent Holdings LLC v. DICE Elecs., LLC et al.*, 3:10-cv-01199 (D. NJ) and *Marlowe Patent Holdings LLC v. Ford Motor Co.*, 3:10-cv-07044 (D. NJ).

3. Lead and Backup Counsel

Lead counsel is Paul R. Steadman, Reg. No. 43,932, of DLA Piper LLP (US), 203 North LaSalle Street, Suite 1900, Chicago, Illinois 60601-1293; paul.steadman@dlapiper.com, 312.368.2135 (phone), 312.251.2850 (fax). Backup counsel is Matthew D. Satchwell, Reg. No. 58,870, of DLA Piper LLP (US), 203 North LaSalle Street, Suite 1900, Chicago, Illinois 60601-1293; matthew.satchwell@dlapiper.com, 312.368.4000 (phone), 312.236-7516 (fax); Gianni Minutoli, Reg. No. 41,198, of DLA Piper LLP (US), 11911 Freedom Drive, Suite 300; Reston, VA 20190; gianni.minutoli@dlapiper.com, 703-773-4045 (phone), 703-773-5200 (fax);

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4. Service Information

Service information for lead and back-up counsel is provided in the designation of lead and back-up counsel above.

B. Proof of Service on the Patent Owner

As identified in the attached Certificate of Service, a copy of this Petition in its entirety is being served to the Patent Owner's attorney of record at the address listed in the USPTO's records by overnight courier pursuant to 37 C.F.R. § 42.6.

C. Power of Attorney

Powers of attorney are being filed with designation of counsel in accordance with 37 C.F.R. § 41.10(b).

D. Standing

In accordance with 37 C.F.R. §42.104(a), Petitioners certify that the '786 patent is available for *inter partes* review and that Petitioners are not barred or estopped from requesting an *inter partes* review challenging the patent claims on the grounds identified in this Petition.

E. Fees

The undersigned authorizes the Director to charge the fee specified by

37 C.F.R. § 42.15(a) and any additional fees that might be due in connection with this Petition to Deposit Account No. 50-3266.

III. STATEMENT OF PRECISE RELIEF REQUESTED

A. Prior Art Patents and Publications

The claims of the '786 patent have an effective filing date no earlier than Dec. 11, 2002, which is the filing date of the application that issued as the '786 patent. Petitioners rely upon the following patents and publications, all of which are prior art to the claims of the '786 patent:

- U.S. Patent No. 7,085,710 to Beckert et al. (“Beckert ’710”, Ex. 1006) was filed on Jan. 7, 1998 and issued on Aug. 1, 2006. Beckert ’710 is prior art to the '786 patent under at least 35 U.S.C. §§ 102(a) and (e) (pre-AIA).
- U.S. Patent No. 5,794,164 to Beckert et al. (“Beckert ’164”, Ex. 1007) was filed on Nov. 29, 1995 and issued on Aug. 11, 1998. Beckert ’164 is prior art to the '786 patent under at least 35 U.S.C. § 102(b) (pre-AIA).
- U.S. Patent No. 6,009,363 to Beckert et al. (“Beckert ’363”, Ex. 1008) was filed as a continuation-in-part of Beckert ’164 on June 24, 1996 and issued on Dec. 28, 1999. Beckert ’363 is prior art to the '786 patent under at least 35 U.S.C. § 102(b) (pre-AIA).

- The Clarion AutoPC 310C Owner’s Manual (“AutoPC

Manual”, Ex. 1009) bears a copyright date of 1998. The AutoPC Manual is prior art to the ’786 patent under at least 35 U.S.C. § 102(b) (pre-AIA).

- The Universal Serial Bus Specification - Rev. 2.0 (“USB 2.0”, Ex. 1010) was published on April 27, 2000. USB 2.0 is prior art to the ’786 patent under at least 35 U.S.C. § 102(b) (pre-AIA).

- The Universal Serial Bus Device Class Definition for Audio Data Formats - Release 1.0 (“USB ADF”, Ex. 1011) was published on March 18, 1998. USB ADF is prior art to the ’786 patent under at least 35 U.S.C. § 102(b) (pre-AIA).

- The Sony XR-C5120R FM/MW/LW Cassette Car Stereo Operating Instructions Manual (“Sony XR-C5120R Manual”, Ex. 1012) bears a copyright date of 1999. The Sony XR-C5120R Manual is prior art to the ’786 patent under at least 35 U.S.C. § 102(b) (pre-AIA).

- Minagawa et al., *Open Architectural Car Multimedia Platform*, Clarion Co., Ltd., Convergence 98 Int’l Congress on Transportation Elec’s. (“Minagawa,” Ex. 1013) is dated October 19-21, 1998, and bears a copyright date of 1998. Minagawa is prior art to the ’786 patent under at least 35 U.S.C. § 102(b) (pre-AIA).

B. The Beckert References Should Be Considered One Anticipatory Reference

Beckert ’710 incorporates *specific* disclosure from Beckert ’164 and

Beckert '363. Specifically, Beckert '710 incorporates details of its computer, support and faceplate modules 84, 82, 80 from Beckert '164:

A more detailed explanation of the three modules in the vehicle computer system is provided in co-pending US. patent application Ser. No. 08/564,586 entitled "Vehicle Computer System," which was filed on Nov. 29, 1995 in the names of Richard D. Beckert, Mark M. Moeller, and William Wong. This application is assigned to Microsoft Corporation and is incorporated herein by reference.

Ex. 1006 at 7:19-25. Furthermore, Beckert '710 incorporates details of its logic unit 110 from Beckert '363:

A detailed description of one implementation of the logic unit 110 is provided in co-pending US. patent application Ser. No. 08/668,781, entitled "Vehicle Computer System With High Speed Data Buffer and Serial Interconnect", which was filed on Jun. 24, 1996 in the names of Richard D. Beckert, Mark M. Moeller, Ron Randall, and William Wong. This application is assigned to the Microsoft® Corporation and is incorporated herein by reference. The logic circuitry described in this disclosure represents

another implementation of the logic unit 110 that is more specifically tailored to implement the audio entertainment system.

Ex. 1006 at 7:37-47. A host document incorporates material by reference if it “identif[ies] with detailed particularity what specific material it incorporates and clearly indicate[s] where that material is found in the various documents.” *Vicor Corp. v. SynQor, Inc.*, 603 Fed.Appx. 969, 874 (Fed. Cir. 2015) (citing *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000)). Whether the host document describes the material with sufficient particularity is determined from the point of view of a person of reasonable skill in the art. *Id.*

Beckert ’164 provides detail about the computer, support and faceplate modules 84, 82, 80 and data interface of the vehicle computer system, and Beckert ’363 provides low-level detail on the operation of the logic unit 110 of the support module. Beckert ’710 explicitly incorporates and references specific disclosure from Beckert ’164 and Beckert ’363. Because the three disclosures describe the same underlying invention and device, a person of ordinary skill in the art reading Beckert ’710 would have known to look to Beckert ’164 for additional details on the three modules of the vehicle computer system described in the Beckert patents, and would

also have known to look to Beckert '363 for additional detail on the support unit's logic unit, especially as it relates to an audio entertainment system.

Ex. 1003 at 28-29, ¶ 56.

Nevertheless, Petitioners have treated Beckert '710, Beckert '164 and Beckert '363 as separate references in the following Grounds. Motivation to combine Beckert '710 with Beckert '164 and/or Beckert '363 is clearly set out in Beckert '710's incorporation by reference of Beckert '164 and Beckert '363. Ex. 1003 at 29-30, ¶¶ 57-59.

C. Identification of Challenges and Relief Requested

In accordance with 35 U.S.C. § 311, Petitioners request cancelation of claims 1, 5-8, 10, 14, 23, 24, 57, 60-62, and 64-65 of the '786 patent in view of the following grounds:

Ground 1: Claims 1, 10, 14, 23, and 24 are Obvious Under 35 U.S.C. § 103(a) (pre-AIA) in Light of Beckert '710 and Beckert '164;

Ground 2: Claim 5 is Obvious Under 35 U.S.C. § 103(a) (pre-AIA) in Light of Beckert '710, Beckert '164, the AutoPC Manual and USB 2.0;

Ground 3: Claim 6 is Obvious Under 35 U.S.C. § 103(a) (pre-AIA) in Light of Beckert '710, Beckert '164 and Beckert '363;

Ground 4: Claim 7 is Obvious Under 35 U.S.C. § 103(a) (pre-AIA) in Light of Beckert '710, Beckert '164 and the AutoPC Manual;

Ground 5: Claim 8 is Obvious Under 35 U.S.C. § 103(a) (pre-AIA) in Light of Beckert '710, Beckert '164 and the Sony XR-C5120R Manual;

Ground 6: Claims 57, 60, 64 and 65 are Obvious Under 35 U.S.C. § 103(a) (pre-AIA) in Light of Beckert '710, Beckert '164 and USB ADF;

Ground 7: Claim 61 is Obvious Under 35 U.S.C. § 103(a) (pre-AIA) in Light of Beckert '710, Beckert '164, USB ADF and the AutoPC Manual; and

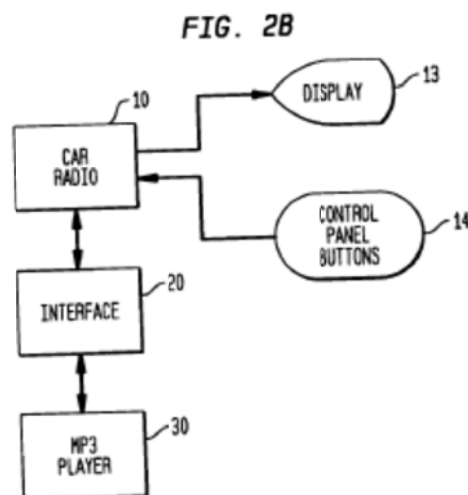
Ground 8: Claim 62 is Obvious Under 35 U.S.C. § 103(a) (pre-AIA) in Light of Beckert '710, Beckert '164, USB ADF and the Sony XR-C5120 Manual.

IV. FULL STATEMENT OF REASONS FOR REQUESTED RELIEF

A. Summary of the '786 Patent

The '786 patent relates to an “audio device integration system” that integrates a car stereo (also referred to as “car radio”) and one or more external or “after-market” devices, such as a CD changer or an MP3 player, that may otherwise be incompatible with the car stereo. *See* Ex. 1001 at abstract; 1:20-35 and FIG. 1. In the context of the '786 Patent, this integration is provided by an “interface,” which is separate from the car stereo and the external device. *Id.*

The interface converts control signals from the car stereo into a format compatible with an after-market external device, thus allowing commands input at the car stereo to control the external device. Figure 2B of the '786 patent reveals the control panel buttons 14 of the car radio 10 may be used to control the operation of an external device (MP3 player 30) as a result of interface 20 converting the control signals from the car radio 10 into a format compatible with the MP player. Ex. 1001 at 6:1-19. Similarly, the interface receives data from the external device and converts the data into a format compatible with car radio 10 to allow information, such as artist, song title, and track and time information, to be displayed on display 13 of car radio 10. Ex. 1001 at 6:19-24. The interface includes a microcontroller programmed to perform the format conversion for signals sent by the car stereo to the external device to the car stereo. Ex. 1001 at 8:31-9:7.



The interface of the '786 patent also provides auxiliary inputs (inputs 35 in Figure 2E) to allow additional audio devices to be connected. Ex. 1001 at 7:23-29. Devices connected to an auxiliary input may be selectively activated by the microcontroller to channel audio from the selected to the car stereo. Ex. 1001 at 7:30-37.

The interface also generates a “device presence signal” that it transmits to the car stereo to maintain the car stereo in an operational state, such as “prevent[ing] 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 at 12:29-35; 13:15-19; FIGs. 4A and 4B.

B. The '786 Patent's Prosecution History

The application for the '786 patent, U.S. App. No. 10/316,961, was filed on December 11, 2002. *See* Ex. 1002.0001. Portions of the file history pertinent to the issues in this Petition are summarized below.

In a first Non-Final Office Action dated June 5, 2006, all pending claims were rejected on prior art grounds. Ex. 1002 at 204-230. The Examiner relied primarily on U.S. Patent No. 6,993,615 (Falcon). *Id.* In response, the Applicant distinguished Falcon on the basis that it failed to show an interface “connected between a car stereo and an external audio source.” Ex. 1002 at 267 (Sept. 11, 2006 Amendment). The applicant also

distinguished Falcon as “unconcerned with integrating an external audio device, which is ordinarily alien to and incompatible with a car stereo system, for use with the car stereo system.” *Id.* In response, the Examiner issued another Non-Final Office Action on November 14, 2006 rejecting all of the claims on new grounds, relying primarily on U.S. Patent No. 6,163,079 (Miyazaki). Ex. 1002 at 282-326. A final rejection was issued on April 19, 2007, again relying primarily on Miyazaki. Ex. 1002 at 378-442.

In response to these Office Actions, the Applicant amended the independent claims to specify that the interface performed a “format” conversion of control commands from the car stereo to the external device. Ex. 1002 at 334-369 (Feb. 14, 2007 Amendment). The Applicant then distinguished Miyazaki because its interface was directed to devices that were “already compatible with each other.” Ex. 1002 at 604 (Sept. 6, 2007 Amendment). The Applicant also amended some claims to add “connectors” to the interface (*e.g.*, claim 1 amended to add a “first connector” that connects the interface to the “car stereo” and a “second connector” that connects the interface to the after-market (external) device; application claims 55 and 81 were amended similarly, which issued as claims 57 and 86.) Ex. 1002 at 575-576; 588-.589; 595-596.

On February 20, 2008, the Examiner issued a Final Office Action rejecting all of the pending claims on new grounds, relying primarily on U.S. Patent Application Publication No. 2002/0084910 (Owens) and U.S. Patent No. 6,175,789 (Beckert). Ex. 1002 at 616-665. Thereafter, the Applicant filed an Amendment on April 21, 2008. (Ex. 1002 at 678-709.) The Amendment included additional claim language requiring that the microcontroller be “*pre-programmed*” to perform the recited format conversion operations (e.g., “for remotely controlling the after-market audio device...” and “for receiving data from the after-market audio device...” E.g., Ex. 1002 at 679 (amendment to claim 1); 1002 at 707-709 (arguing “pre-programmed” aspect as basis for overcoming prior art).

A Notice of Allowance followed on July 31, 2008. Ex. 1002 at 1035-1041. The Examiner stated that although interfacing auxiliary after-market devices with a car stereo was known, “the Examiner has not found prior art that teaches or suggests an interface unit containing a *pre-programmed* microcontroller that allows for the communication of incompatible audio devices as presented in the independent claims 1, 24, 30, 42, 55, 63 and 72” or “to execute a code portion for generating and transmitting a *device presence signal* to a car stereo to maintain the stereo in an operational state responsive to signals from an after-market device as presented in the

independent claims 47, 81, 83, 104.” Ex. 1002 at 1039-1040 (emphasis added).

C. Person of Ordinary Skill in the Art

A person of ordinary skill in the art (“POSITA”) at the time of the alleged invention of the ’786 patent would have had at least at least a Bachelor’s Degree in Electrical Engineering or equivalent science/engineering degree and at least two years’ experience in signal processing and/or electronic system design, or at least four years’ experience in signal processing and/or electronic system design. Ex. 1003 at 13, ¶ 25.

D. Claim Construction

In accordance with 37 C.F.R. § 42.104(b)(3), Petitioners provide the following statement regarding construction of the ’786 patent claims. A claim subject to *inter partes* review receives the “broadest reasonable interpretation” (“BRI”) in light of the specification. 37 C.F.R. § 42.100(b). The Patent Owner in the pending litigations has argued that many of the claim terms at issue should be given their plain meaning. *See generally*, Ex. 1004. The Patent Owner, however, has construed some of the limitations of the ’786 patent. The limitations that have been construed by the Patent Owner and that are pertinent to the challenged claims are discussed below.

In presenting this Petition, unless otherwise stated, the grounds set forth herein are based on (1) the claim constructions adopted by the Panel in the recent institution of IPR2016-00421, Paper No. 13 (Ex. 1014); (2) the proposed claim constructions offered by the Patent Owner in *Blitzsafe Texas, LLC v. Honda Motor Co., Ltd. et al.*, 2:15-cv-01274 (E.D. Tex.)(lead case); or (3) for terms where Patent Owner has not explicitly offered a claim construction, on Petitioner's understanding of Patent Owner's claim construction based upon Patent Owner's infringement contentions submitted in *Blitzsafe Texas, LLC v. Honda Motor Co., Ltd. et al.*, 2:15-cv-01274 (E.D. Tex.)(lead case). *See generally*, Ex. 1005 at Appendices A, B.

Petitioners do not concede that any claim interpretation impliedly or expressly proposed by Patent Owner is appropriate for the district court litigation, where a different legal standard applies to the construction of the asserted claim terms. Petitioners present these interpretations to the Board for consideration in determining the BRI because Patent Owner has advanced them as proper, and therefore necessarily within the scope of the BRI. Petitioners further submit these interpretations under 35 U.S.C. § 301(a)(2), which encourages submission of claim construction materials to prevent patentees from arguing broad interpretations under *Phillips* while simultaneously arguing narrow constructions as the BRI.

1. “car stereo”

The term “car stereo” appears in challenged claims 1, 6, 8, and 57. In the underlying litigation, Patent Owner said this term means “components that process audio signals and produce audible output in a car.” Ex. 1004 at 10. But this construction does not account for the specification, which expressly and broadly states that “car stereo” can encompass “software-driven receivers”:

[A]s used herein, the terms “car stereo” and “car radio” are used interchangeably and are intended to include all presently existing car stereos and radios, such as physical devices that are present at any location within a vehicle, in addition to software and/or graphically-or display-driven receivers. An example of such a receiver is a software-driven receiver that operates on a universal LCD panel within a vehicle and is operable by a user via a graphical user interface displayed on the universal LCD panel. Further, any future receiver, whether a hardwired or software/graphical receiver operable on one or more displays, is considered within the definition of the terms “car stereo” and “car radio,” as used herein, and is within the spirit and scope of the present invention.

Ex. 1001 at 5:1-13. Accordingly, Petitioner submits this is the proper construction for this term.

2. “integration” / “integrating”

The term “integration” appears in challenged claims 1 and 57 while the term “integrating” appears in challenged claim 5. In the underlying litigations, the parties agreed that these terms mean “connecting one or more external devices or inputs to an existing car radio or stereo via an interface, processing and handling signals and audio channels, allowing a user to control the devices via the car stereo, and displaying data from the devices on the radio.” Ex. 1004 at 9.

3. “interface”

The term “interface” appears in challenged claims 1, 5, 6, 10, 14, 57 and 64 and has been construed by the Patent Owner to mean “a device configured to integrate an external device with a car stereo.” Ex. 1004 at 15. But in a recent institution decision in Case IPR2015-00421, a Panel of Administrative Patent Judges (“the Panel”) interpreted this term as “*a physical unit that connects one device to another and that has a functional and structural identity separate from that of both connected devices.*” Ex. 1014 at 15. Accordingly, that is the construction Petitioners apply here.

4. “device presence signal”

The term “device presence signal” appears in challenged claims 6 and 57. Patent Owner has construed this term to mean “a signal indicating an audio device is present.” Ex. 1004 at 23. But in the institution of Case

IPR2015-00421, the Panel construed this term 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.*” Ex. 2015 at 18. Petitioners apply this construction to the grounds below.

5. “portable”

The term “portable” appears in challenged claims 57 and 62. Patent Owner did not construe this term in the underlying litigations, but in the institution of Case IPR2015-00421, the Panel construed it as “*capable of being carried by a user.*” Ex. 2015 at 12. Petitioners apply this construction to the grounds below.

6. “maintain ... in an operational state”

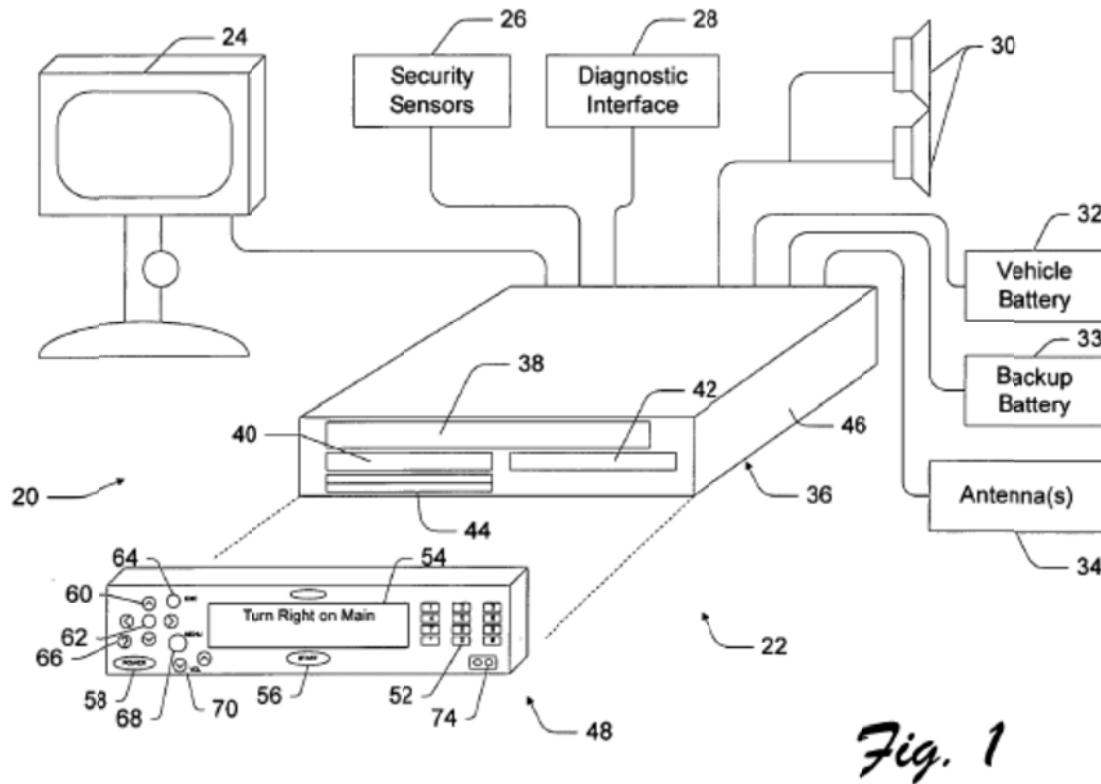
The term “maintain ... in an operational state” appears in challenged claim 57. In the underlying litigations, the parties have agreed that this term means “maintain in a state responsive to processed data and audio signals from the external device.” Ex. 1004 at 34.

E. Ground 1: Claims 1, 10, 14, 23, and 24 are Obvious Under 35 U.S.C. § 103(a) (pre-AIA) in Light of Beckert ’710 And Beckert ’164

1. Overview of Beckert ’710

Beckert ’710 relates to a vehicle-borne, computer-based audio entertainment system. As shown by the exemplary embodiment of Figure 1, the vehicle audio system has a centralized computer (22) coupled to various

external peripheral devices, including a monitor (24) and a faceplate module (48) with a keypad and graphical display. Ex. 1006 at 3:54-4:61.



Ex. 1006, FIG. 1.

As Figure 2 shows, the computer 22 of the audio entertainment system is divided into a computer module (84) and a support module (82), which is further connected to the faceplate module (80), depicted in Figure 1 as element 48. The support module is also connected to several external peripheral devices, including a CD-ROM changer and TV Tuner, via the well-known USB interface. Ex. 1006 at 5:34-54.

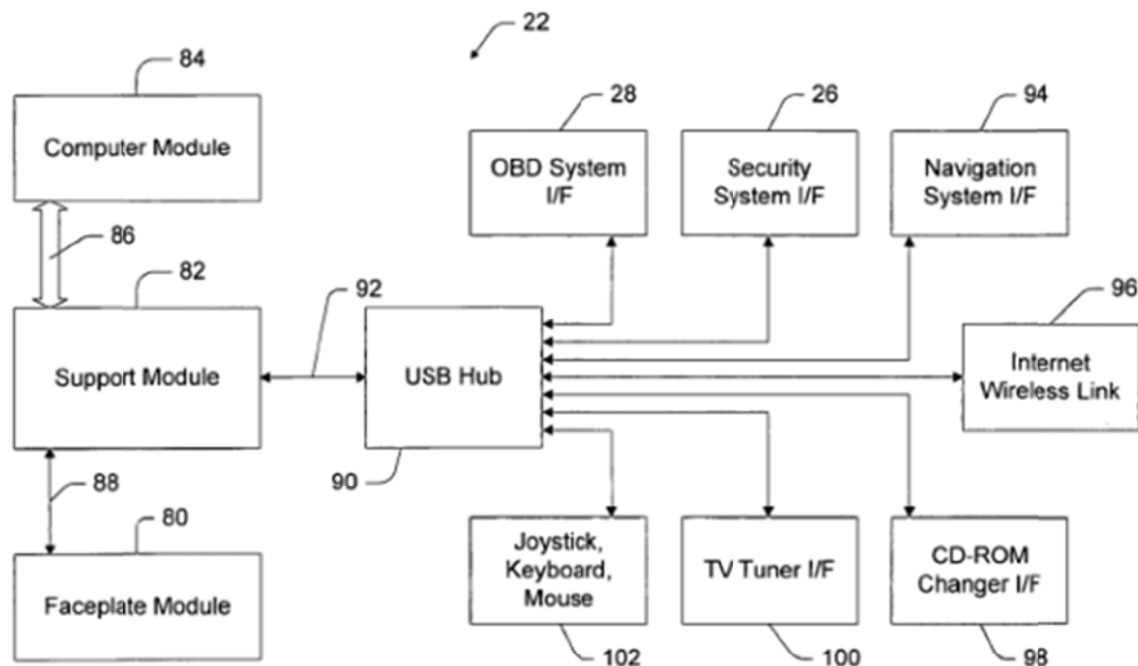


Fig. 2

Ex. 1006, FIG. 2. Beckert '710 expressly incorporates by reference certain specific disclosures of Beckert '164 and Beckert '363, described more fully below. *See* Ex. 1006 at 7:19-25 and 7:37-47.

2. Overview of Beckert '164

Beckert '164, like Beckert '710, relates to a vehicle computer system supporting entertainment, navigation, communications, security, diagnostics, and other applications. Ex. 1007, Abstract. More specifically, Beckert '164 addresses the problem of integrating traditionally diverse and separate automotive systems by building them on top of a general purpose computing

platform. Ex. 1007 at 1:65 -2:9. In particular, Beckert '164 details the computer, faceplate and support modules of the computing system¹:

In one implementation, the vehicle computer system has two independent processors. One processor . . . is provided on a computer module which mounts to a stationary base unit of the housing that resides in the vehicle dashboard or other location. The operating system runs on this processor to support the vehicle-related applications and to additionally provide all of the functionality typically afforded by a personal computer. Another processor . . . is provided on a faceplate module that detachably connects to the base unit. . . . A third module, known as the support module, resides in the stationary base unit. The support module contains a storage drive (which also functions as an entertainment player), power supply, multimedia audio driver for the entertainment system, and a communications bus.

Ex. 1007 at 2:22-39.

3. Obvious to Combine Beckert '164 with Beckert '710

Beckert '710 expressly incorporates the details of the computing module, support module, and faceplate modules set forth in Beckert '164 by reference. Ex. 1006 at 7:19-25 (“A more detailed explanation of the three modules in the vehicle computer system is provided in [Beckert '164]”). As

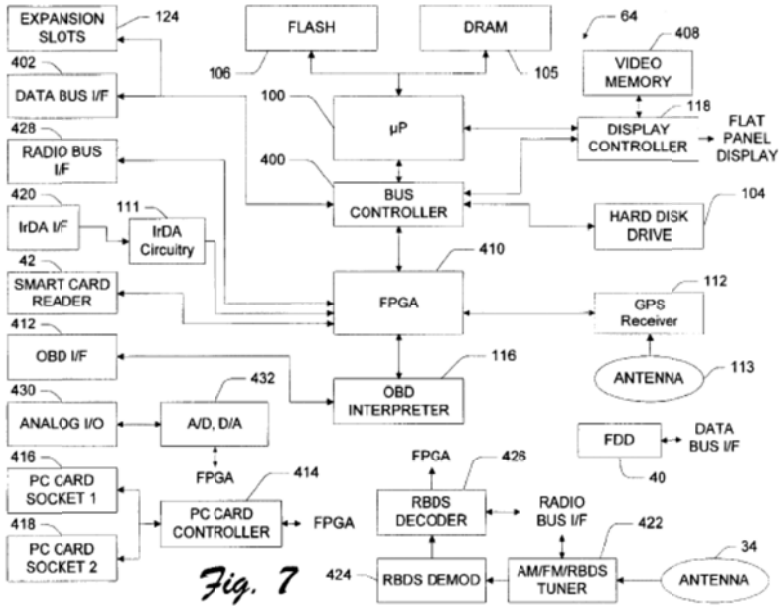
¹ See Beckert '710, Ex. 1006 at 7:19-25.

such, there is express motivation to combine Beckert '164 with Beckert '710. Ex. 1003 ¶ 57. In addition to the express teaching and motivation to combine Beckert '164 with Beckert '710, a person of ordinary skill in the art at the time after reading Beckert '710 would have known to look to Beckert '164 for additional details on the three modules of the vehicle computer system (described in the Beckert patents) as a use of known technique to improve a similar device in the same way. Ex. 1003 ¶ 58. Moreover, the use of the known technique from Beckert '164 to improve Beckert '710 would have yielded a predictable result. Ex. 1003 ¶ 59 .

4. Detailed Analysis

a. Claim 1

Claim 1	Beckert '710 and Beckert '164
[a] An audio device integration system comprising:	<p>Beckert '710 in view of Beckert '164 discloses an audio device integration system. Ex. 1003 at 30.</p> <p>This invention relates to audio entertainment systems for vehicles. More particularly, this invention relates to a vehicle computer system that implements an audio entertainment system.</p> <p>Ex. 1006 at 1:6-9.</p>
[b] a first connector electrically connectable to a car stereo;	<p>Beckert '710 in view of Beckert '164 discloses a first connector electrically connectable to a car stereo. Ex. 1003 at 30-33.</p> <p>Beckert '710 discloses a computer module, which corresponds to the broad construction of “car stereo” in the '786 patent: The computer module 84 supports any variety of applications that the vehicle user might desire.</p>

Claim 1	Beckert '710 and Beckert '164
	<p>Ex. 1006 at 7:4-5.</p> <p>Additional details of the audio entertainment system of Beckert '710 are found in the disclosure of Beckert '164, which Beckert '710 expressly incorporates by reference. Beckert '164 provides “a more detailed explanation of the [computer module, support module, and faceplate module] in the vehicle computer system.” Ex. 1006 at 7:19-25.</p> <p>Beckert '164 discloses:</p> <p style="padding-left: 40px;">[T]he computer module supports the navigation, security, diagnostics, communications, and <i>entertainment systems</i>. . . .</p> <p>Ex. 1007 at 3:15-17.</p> <p>The computer module is illustrated in Figure 7 of Beckert '164:</p>  <p style="text-align: center;"><i>Fig. 7</i></p> <p>Ex. 1007 at 3:57-58 (“FIG. 7 is a functional block diagram of the computer module”).</p> <p style="padding-left: 40px;">The computer module 64 also includes at least one flat panel display controller 118 to control the flat panel monitor 24.</p> <p><i>Id.</i> at 9:36-38.</p>

Claim 1**Beckert '710 and Beckert '164**

The computer module 64 is equipped with a second radio receiver unit consisting of an AM/FM tuner 422 connected to receive an RF signal from antenna 34, a demodulator 424, and a decoder 426. The second radio receiver unit can be used to receive radio signals for timed recording of radio programming for later playback. Additionally, the second radio receiver can be used to receive both the FM subcarrier and audio programming of the primary FM channel. Such FM subcarrier might carry weather, news, sports, financial, traffic, paging, or other information.

Id. at 10:37-46.

Beckert '710 shows a first electrical connector (86) electrically connectable to the computer module in annotated Figure 3:

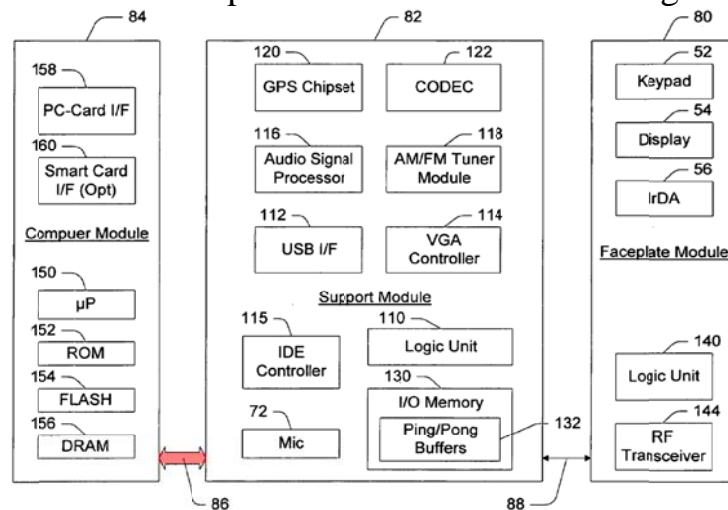
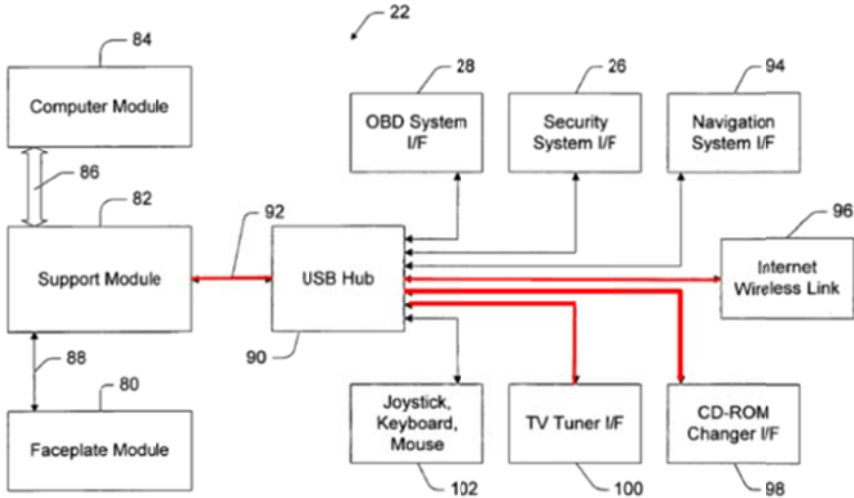


Fig. 3

Ex. 1006 at FIG. 3; *see also id.* at 3:34-36 (“FIG. 3 is a block diagram of the vehicle computer system according to one implementation having a faceplate module, a support module, and a computer module.”).

Beckert '710 also discloses:

Claim 1	Beckert '710 and Beckert '164
	<p>The computer module 84 is operatively connected to the support module 72 via a multi-bit bus 86.</p> <p>Ex. 1006 at 5:37-39.</p> <p>When plugged in, the computer module 84 is connected to the PCI bus 86 to communicate with the support module 82.</p> <p>Ex. 1006 at 6:65-67.</p> <p>Accordingly, one of ordinary skill in the art at the time of the '786 invention would have determined that Beckert '710 in view of Beckert '164 discloses a first connector electrically connectable to a car stereo.</p>
<p>[c] a second connector electrically connectable to an after-market audio device external to the car stereo;</p>	<p>Beckert '710 in view of Beckert '164 discloses a second connector electrically connectable to an aftermarket audio device external to the car stereo. As annotated below, the “second connector” is the USB bus, which extends from the support module 82 and connects to external audio devices, for example through a USB Hub 90. Ex. 1003 at 33-34.</p>  <p style="text-align: center;"><i>Fig. 2</i></p> <p>Ex. 1006 at FIG. 2; <i>see also id.</i> at 3:31-33 “FIG. 2 is a diagrammatic illustration of the vehicle computer system interfaced with multiple external peripheral devices.”).</p>

Claim 1	Beckert '710 and Beckert '164
	<p>Beckert '710 further discloses:</p> <p>The support module 82 is also connected to a universal serial bus (USB) hub 90 via a USB serial I/F connector 92. The USB hub 99 provides connections to many peripheral devices (e.g., up to 128 devices). Example peripheral devices include the OBD (On Board Diagnostic) system 28, the security system 26, navigation system 94, a wireless link 96 to the Internet, a CD-ROM changer 98, a TV tuner 100, and user I/O devices such as a joystick, keyboard or a mouse 102. This USB hub 90 could be separate as shown in FIG. 2 or it could be integrated into one or more of the USB peripherals.</p> <p>Ex. 1006 at 5:44-54.</p>
<p>[d] a third connector electrically connectable to one or more auxiliary input sources external to the car stereo and the after-market audio device;</p>	<p>Beckert '710 in view of Beckert '164 discloses a third connector electrically connectable to one or more auxiliary input sources external to the car stereo and the after-market audio device. Ex. 1003 at 34-36.</p> <p>Beckert '710 discloses a logic unit with traces for auxiliary inputs AUX#1, AUX#2, and Mono In, each of which are a third connector electrically connectable to one or more auxiliary input sources external to the car stereo.</p>

Claim 1

Beckert '710 and Beckert '164

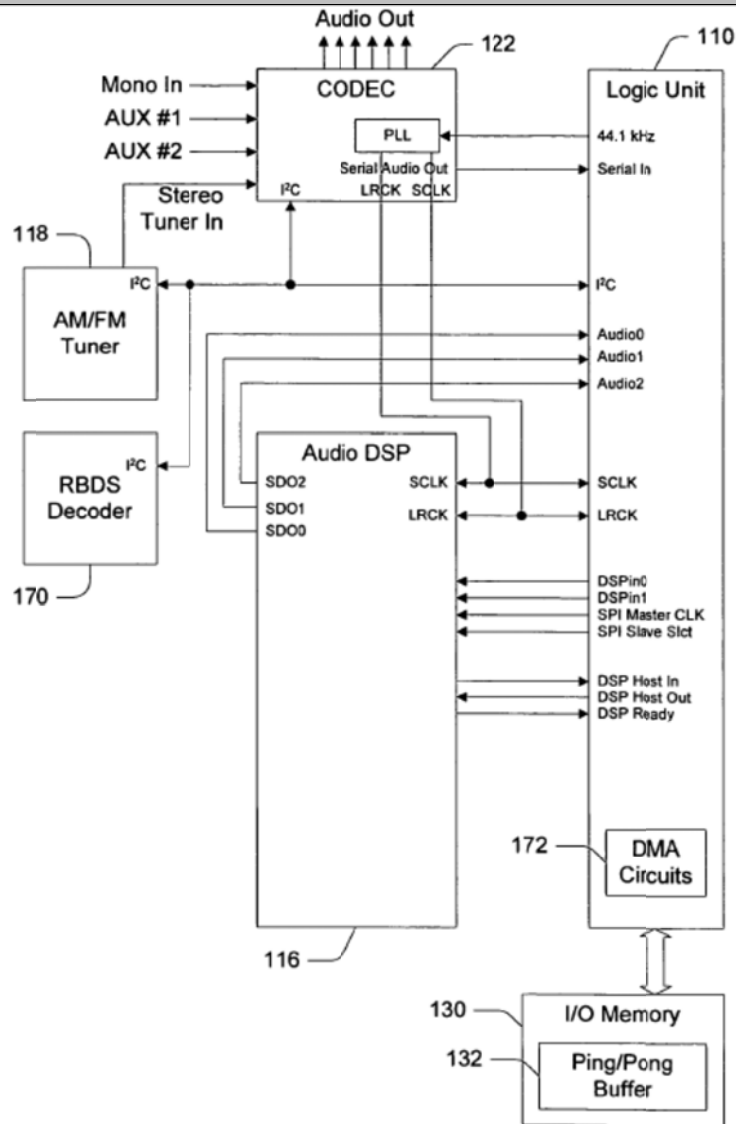


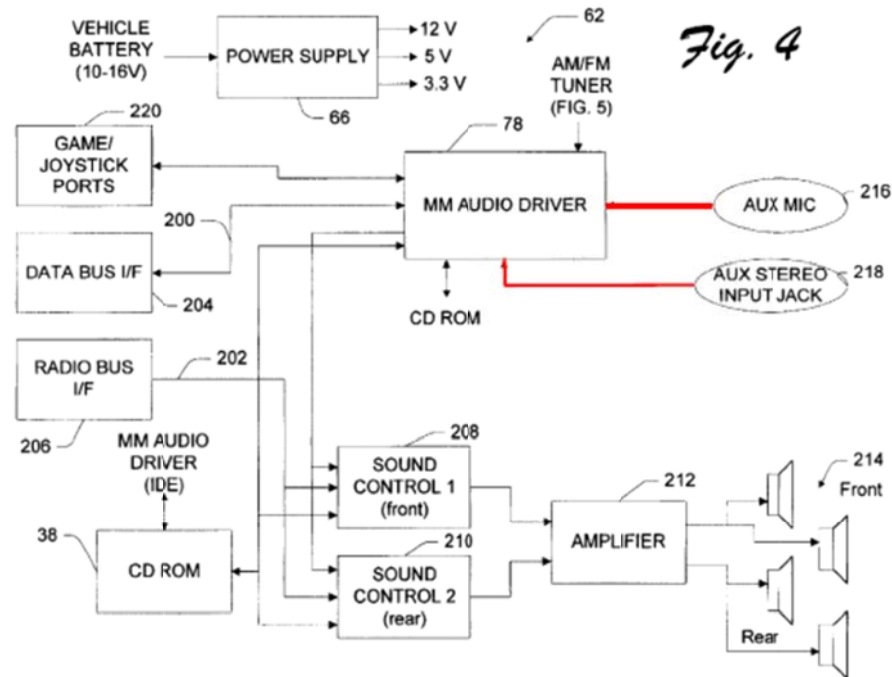
Fig. 4

Ex. 1006 at FIG 4; *see also id.* at 3:37-38. (“FIG. 4 is a block diagram of a logic unit and audio DSP implemented in the support module of the computer system.”)

In addition, according to Beckert '164's more detailed disclosure of the support module 82, however, the “third connector” is shown below by the annotated lines between the MM AUDIO DRIVER and AUX MIC and AUX STEREO INPUT JACK. *Compare* Ex. 1005 (Patent Owner's Infringement Chart) Appendix A at 52.

Claim 1

Beckert '710 and Beckert '164

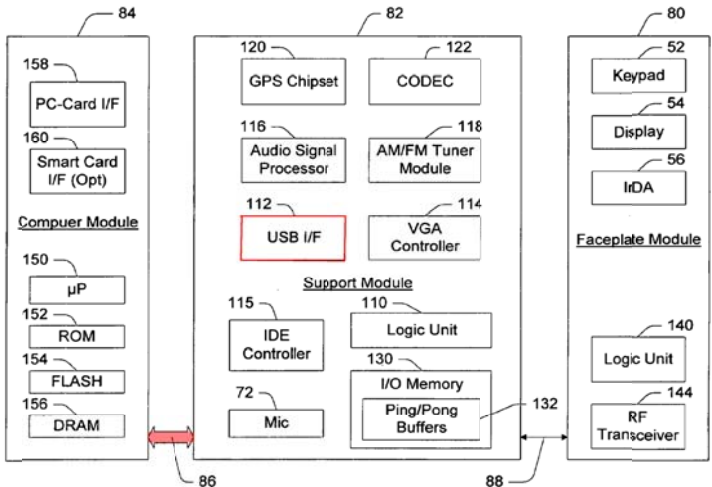


Ex. 1007 at FIG. 4; *see also id.* at 3:50-51 (“FIG. 4 is a functional block diagram of the support module.”).

The audio sources are generally categorized into two kinds: foreground audio sources and background audio sources. Foreground audio sources include a computer wave file output and text-to-speech output. Foreground audio sources are mixed with active background audio sources. The foreground audio sources are controlled by the wave-out API. In contrast, the background audio sources include AM/FM tuner, CD player, *auxiliary inputs*, and other sources from the USB. Background sources are controlled by the audio source control API.

Ex. 1006 at 13:22-31 (emphasis added).

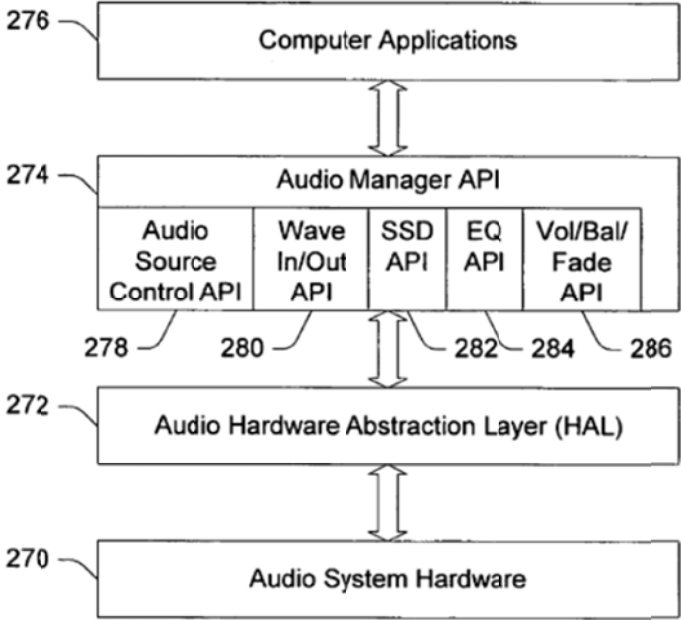
Accordingly, one of ordinary skill in the art at the time of the '786 invention would have determined that Beckert '710 in view of Beckert '164 discloses a third connector electrically connectable to one or more auxiliary input sources external to the car stereo and the after-market audio device.

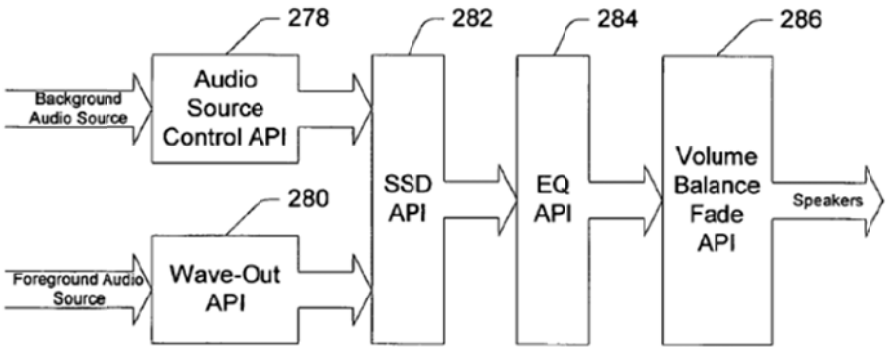
Claim 1	Beckert '710 and Beckert '164
<p>[e] an interface connected between said first and second electrical connectors for channeling audio signals to the car stereo from the after-market audio device,</p>	<p>Beckert '710 in view of Beckert '164 discloses an interface connected between said first and second electrical connectors for channeling audio signals to the car stereo from the after-market audio device. Ex. 1003 at 37-38.</p> <p>Beckert '710 discloses a support module connected to the car stereo (i.e., the computer module) through a first interface (PCI bus 86), and connected to external after-market audio devices through a USB bus (as shown in Beckert '710 Figure 2, below). The support module is thus “connected between said first and second electrical connectors” for channeling audio signals to the car stereo from the after-market audio device.”</p>  <p style="text-align: center;">Fig. 3</p> <p>Ex. 1006 at FIG. 3; <i>see also id.</i> at 3:34-36 (“FIG. 3 is a block diagram of the vehicle computer system according to one implementation having a faceplate module, a support module, and a computer module.”). Moreover, according to Beckert '710:</p> <p style="padding-left: 40px;">The support module 82 has several hardware interfaces. A USB interface 112 is driven from the PCI bus 86 and provides the interconnection to the various USB peripherals shown in FIG. 2.</p> <p>Ex. 1006 at 6:5-8.</p> <p>In addition, Beckert '710 discloses:</p>

Claim 1	Beckert '710 and Beckert '164
	<p>The support module 82 has several hardware interfaces. A USB interface 112 is <i>driven from the PCI bus 86 and provides the interconnection to the various USB peripherals</i> shown in FIG. 2. A separate USB hub may be required as shown . . . if some of the attached peripherals do not incorporate one or more USB peripherals than supported directly by the support module are attached.</p> <p>Ex. 1006 at 6:5-11 (emphasis added).</p>
<p>[f] said interface including a microcontroller in electrical communication with said first and second electrical connectors, said microcontroller pre-programmed to execute:</p>	<p>Beckert '710 in view of Beckert '164 discloses said interface including a microcontroller in electrical communication with said first and second electrical connectors, and pre-programmed to execute certain functions described below. Ex. 1003 at 38-39.</p> <p>Beckert '710 discloses logic unit 110 of the support module, which can also provide USB interface functionality and can be implemented as a customized processor. Ex. 1006 at 6:17-18 (“It is noted that the USB interface 112 and VGA controller 114 could be incorporated into the logic unit 110”); <i>see also id.</i> at FIG. 3.</p> <p>Beckert '710 discloses that the logic unit of the support module includes a microcontroller:</p> <p style="padding-left: 40px;">The support module is formed as part of a stationary base unit of the housing that resides in the vehicle dashboard or other location. It has its own logic unit that can be implemented in a field programmable gate array (FPGA), application specific integrated circuit (ASIC), <i>customized processor</i>, or the like.</p> <p>Ex. 1006 at 1:65-2:3 (emphasis added).</p> <p>Beckert '710 further discloses that logic unit 110 is in electrical communication with the first electrical connector (PCI bus 86):</p> <p style="padding-left: 40px;">The logic unit 110 and microprocessor 150 are interfaced using a bus, such as PCI bus 86.</p> <p>Ex. 1006 at 7:28-30.</p>

Claim 1	Beckert '710 and Beckert '164
	<p>Beckert '710 also discloses that logic unit 110 is in electrical communication with the second electrical connector (USB line 92):</p> <p style="padding-left: 40px;">The support module 82 is also connected to a universal serial bus (USB) hub 90 via a USB serial I/F connector 92.</p> <p>Ex. 1006 at 5:44-45; 6:17-18 (“It is noted that the USB interface 112 and VGA controller 114 could be incorporated into the logic unit 110”).</p>
<p>[g] 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,</p>	<p>Beckert '710 discloses 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. Ex. 1003 at 39-40.</p> <p>Beckert '710's audio entertainment system addressed the problem of integrating incompatible after-market devices with car stereos:</p> <p style="padding-left: 40px;">Modern vehicles are typically equipped with several independent electronic systems. For instance, most modern vehicles have a sound system and a security system</p> <p style="padding-left: 40px;">While these various electronics systems have proven useful to vehicle users, <i>there is a drawback in that the systems are unrelated and incompatible</i>. Each system employs separate proprietary dedicated processors or ASICs . . . which execute incompatible proprietary software.</p> <p>Ex. 1006 at 1:13-34 (emphasis added); <i>see also</i> Ex. 1007 at 1:25-60.</p> <p>Beckert '710 expressly discloses pre-programmed applications that are enabled by the API to control the functionality of the audio system:</p> <p style="padding-left: 40px;">The audio entertainment system of Beckert '710 is based on a general purpose computer, and is capable of running many types of programs by sending a</p>

Claim 1	Beckert '710 and Beckert '164
	<p>control command from the computer module (e.g., from computer applications) to the support module, and eventually to after-market audio devices through the USB interface: According to another aspect, the computer system provides an <i>audio manager API</i> (application program interface) to enable applications running on the computer to control the various audio sources <i>without knowing the hardware and implementation details of the underlying sound system</i>. Different audio devices and their drivers control different functionality of the audio system, such as equalization, volume controls and surround sound decoding. The audio manager API transfers <i>calls made by the applications</i> to the appropriate device driver(s).</p> <p>Ex. 1006 at 2:64-3:6 (emphasis added); <i>see also</i> Ex. 1003 at 40.</p> <p>The audio sources are generally categorized into two kinds: foreground audio sources and background audio sources. . . . [T]he background audio sources include AM/FM tuner, CD player, auxiliary inputs, and other sources from the USB. Background sources are controlled by the audio source control API.</p> <p>Ex. 1006 at 13:22-31.</p>
<p>[h] processing the received control command into a formatted command compatible with the after-market audio device, and transmitting</p>	<p>Beckert '710 in view of Beckert '164 discloses processing the retrieved 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. 1003 at 40-43.</p> <p>The computer system 20 supports an audio entertainment system. As noted above, the logic unit 110 in support module 82 performs many of the functions for the audio entertainment system. This invention is directed to the audio architecture for an</p>

Claim 1	Beckert '710 and Beckert '164
<p>the formatted command to the after-market audio device through said second connector for execution by the after-market audio device;</p>	<p>audio entertainment system, such as that implemented in the computer system 20.</p> <p>Ex. 1006 at 7:49-54.</p> <p>Beckert '710 further describes using a hardware abstraction layer (HAL) to process received commands from the car stereo into formatted commands for transfer to the audio system hardware connected through the second connector (e.g., the USB bus):</p>  <p style="text-align: center;"><i>Fig. 8</i></p> <p>Ex. 1006 at FIG. 8; <i>see also id.</i> at 3:44-45 (“FIG. 8 shows an audio/software hardware interface architecture.”).</p> <p>Moreover, Beckert '710 discloses: According to another aspect, <i>the computer system provides an audio manager API (application</i></p>

Claim 1	Beckert '710 and Beckert '164
	<p><i>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.</i> Different audio devices and their drivers control different functionality of the audio system, such as equalization, volume controls and surround sound decoding. The audio manager API transfers calls made by the applications to the appropriate device driver(s).</p> <p>Beckert '710 at 2:64 – 3:6 (emphasis added). FIG. 8 shows the application-to-hardware architecture. The audio hardware 270 forms the lowest level in the architecture. An audio hardware abstraction layer (HAL) 272 defines a basic interface layer between the audio related drivers for the hardware 270 and the audio manager API layer 274. Atop the audio manager API 274 are the applications 276. <i>The audio manager API 274 defines the APIs to access and control the underlying audio system.</i></p> <p>Ex. 1006 at 13:7-15 (emphasis added).</p>  <pre> graph LR B[Background Audio Source] --> 278[Audio Source Control API] F[Foreground Audio Source] --> 280[Wave-Out API] 278 --> 282[SSD API] 280 --> 282 282 --> 284[EQ API] 284 --> 286[Volume Balance Fade API] 286 --> S[Speakers] </pre> <p style="text-align: center;"><i>Fig. 9</i></p>

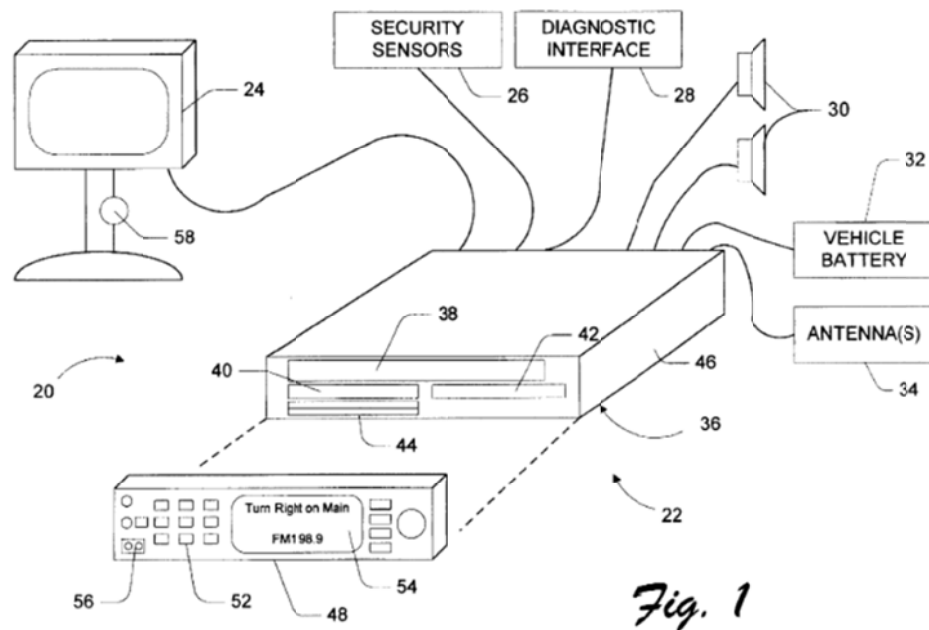
Claim 1	Beckert '710 and Beckert '164
	<p>FIG. 9 shows how the audio manager API modules control the audio flow path.</p> <p>The audio source control API 278 is used to select the background audio source. It serves as the coordinator between the different audio applications that control different pieces of the audio system.</p> <p>Ex. 1006 at 13:37-42.</p> <p>The audio sources are generally categorized into two kinds: foreground audio sources and background audio sources. . . . [T]he background audio sources include AM/FM tuner, CD player, auxiliary inputs, and other sources from the USB. Background sources are controlled by the audio source control API.</p> <p>Ex. 1006 at 13:22-31.</p> <p>In the USB context, commands issued by the car stereo (e.g., from the Computer Applications 276 in Figure 8 of Beckert '710, above) are converted through the Audio Manager API and the hardware abstraction layer to be able to communicate with a connected USB audio hardware device. Ex. 1003 at 44.</p>
<p>[i] 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,</p>	<p>Beckert '710 in view of Beckert '164 discloses 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 command 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. Ex. 1003 at 43-46.</p> <p>As discussed above with respect to elements [g] and [h], Beckert '710 in view of Beckert '164 is directed to integrating incompatible audio devices into a car audio system through the use of general purpose computer with a hardware abstraction layer for controlling a plurality of audio devices.</p> <p>Beckert '710's Figure 8 shows that the data flows between the car stereo/computer and the underlying audio hardware flows</p>

Claim 1	Beckert '710 and Beckert '164
<p>processing the received data into formatted data compatible with the car stereo, and</p> <p>transmitting the formatted data to the car stereo through said first connector for display by the car stereo; and</p>	<p>bidirectionally; data is transmitted <i>to</i> the car stereo/computer as data and commands are sent from the car stereo/computer:</p> <div data-bbox="597 348 1273 966" data-label="Diagram"> </div> <p style="text-align: center;"><i>Fig. 8</i></p> <p>Ex. 1006 at FIG. 8; <i>see also id.</i> at 3:44-45 (“FIG. 8 shows an audio/software hardware interface architecture.”).</p> <p>Beckert '164 further discloses that the car stereo can output visual data on a large general-purpose display:</p> <p style="padding-left: 40px;">The computer 22 can output visual data to the LCD 54 at the faceplate, or to the monitor 24. The display 54 is preferably a back lit LCD. The monitor 24 is preferably a small flat panel display (e.g., 6.4” screen) that is movably mounted on a stand or yoke and remotely located from the computer. . . . The type of data displayed on the monitor can range widely from word instructions concerning the</p>

Claim 1**Beckert '710 and Beckert '164**

vehicle's performance, to diagrammatic directions used by the navigation system, to video movies for in-car entertainment.

Ex. 1007 at 5:17-27.



Ex. 1007 at FIG. 1.

Beckert '710 also discloses an Audio Source Control API for retrieving information on a specific audio source.

TABLE 1

Audio Source Control API 278

Name	Function
GetNumSources	Returns the total number of registered audio sources.
GetSourceCaps	Provides information on a specific audio source.
RegisterCallback	Registers a callback thread.
SelectSource	Selects the specific audio source to play.

Ex. 1006 at 13:48-55.

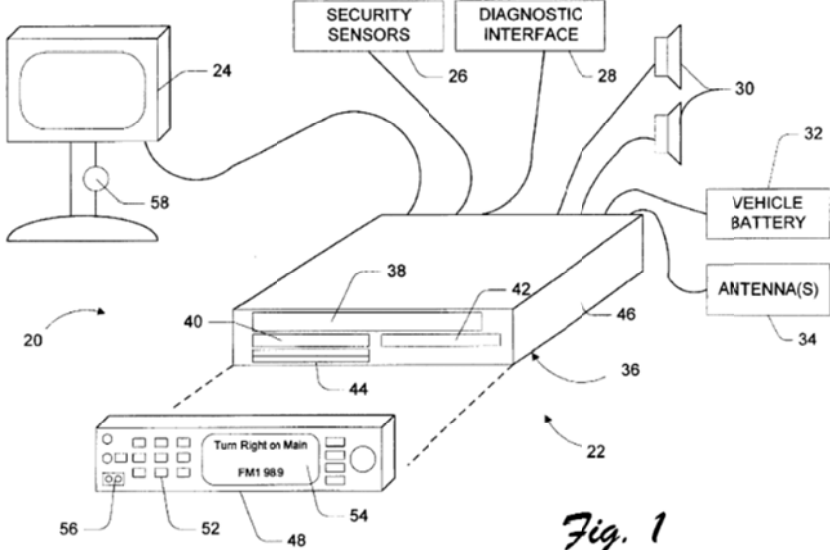
Accordingly, one of ordinary skill in the art at the time of the '786 invention would have determined that Beckert '710 in view

Claim 1	Beckert '710 and Beckert '164										
	<p>of Beckert '164 discloses 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 command 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.</p>										
<p>[j] a third pre-programmed code portion for switching to one or more auxiliary input sources connected to said third electrical connector.</p>	<p>Beckert '710 in view of Beckert '164 discloses a third pre-programmed code portion for switching to one or more auxiliary input sources connected to said third electrical connection. Ex. 1003 at 46-47.</p> <p>Beckert '710 discloses a CD player as an auxiliary input source and switching to that auxiliary input source. For example, according to Beckert '710:</p> <p style="padding-left: 40px;">The audio source control API 278 is used to select the background audio source. It serves as the coordinator between the different audio applications that control different pieces of the audio system. <i>For example, while the AM/FM tuner is playing and the operator elects to play a CD, the audio source control API 278 serves to coordinate stopping the tuner and starting the CD player.</i> Table 1 lists the functions of the audio source control API 278.</p> <div style="text-align: center; margin: 10px 0;"> <p>TABLE 1</p> <hr/> <p><u>Audio Source Control API 278</u></p> </div> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; padding: 5px;">Name</th><th style="text-align: left; padding: 5px;">Function</th></tr> </thead> <tbody> <tr> <td style="padding: 5px;">GetNumSources</td><td style="padding: 5px;">Returns the total number of registered audio sources.</td></tr> <tr> <td style="padding: 5px;">GetSourceCaps</td><td style="padding: 5px;">Provides information on a specific audio source.</td></tr> <tr> <td style="padding: 5px;">RegisterCallback</td><td style="padding: 5px;">Registers a callback thread.</td></tr> <tr> <td style="padding: 5px;">SelectSource</td><td style="padding: 5px;">Selects the specific audio source to play.</td></tr> </tbody> </table> <p>Ex. 1006 at 13:40-55 (emphasis added).</p> <p>If an application wants to play an audio source, it calls SelectSource with the audio source ID as its parameter. The audio manager API deselects any</p>	Name	Function	GetNumSources	Returns the total number of registered audio sources.	GetSourceCaps	Provides information on a specific audio source.	RegisterCallback	Registers a callback thread.	SelectSource	Selects the specific audio source to play.
Name	Function										
GetNumSources	Returns the total number of registered audio sources.										
GetSourceCaps	Provides information on a specific audio source.										
RegisterCallback	Registers a callback thread.										
SelectSource	Selects the specific audio source to play.										

Claim 1	Beckert '710 and Beckert '164
	<p>current audio source and selects the source requested by the application. To deselect the current audio source, the audio manager API traverses through the link list structure and informs each source or dependent device of its termination. To select the new source, it informs the source and dependent devices of their initiation.</p> <p>Ex. 1006 at 14:61 – 15:3.</p>

b. Claim 10

Claim 10	Beckert '710 and Beckert '164
<p>The apparatus of claim limitation 1, wherein said interface processes video information generated by the after-market audio device.</p>	<p>Beckert '710 in view of Beckert '164 discloses that said interface processes video information generated by the after-market audio device. Ex. 1003 at 47-48.</p> <p>Beckert '710 does not expressly disclose that said interface processes video information generated by the after-market audio device.</p> <p>Beckert '164, however, discloses that the car stereo can output movies on a general-purpose display:</p> <p style="padding-left: 40px;">The computer 22 can output visual data to the LCD 54 at the faceplate, or to the monitor 24. The display 54 is preferably a back lit LCD. The monitor 24 is preferably a small flat panel display (e.g., 6.4" screen) that is movably mounted on a stand or yoke and remotely located from the computer. . . . The type of data displayed on the monitor can range widely from word instructions concerning the vehicle's performance, to diagrammatic directions used by the navigation system, to <i>video movies</i> for in-car entertainment.</p> <p>Ex. 1007 at 5:17-27 (emphasis added).</p>

Claim 10	Beckert '710 and Beckert '164
	 <p>Fig. 1</p> <p>Ex. 1007 at FIG. 1.</p> <p>Accordingly, one of ordinary skill in the art at the time of the '786 invention would have determined that Beckert '710 in view of Beckert '164 discloses that said interface processes video information generated by the after-market audio device.</p>

c. Claim 14

Claim 14	Beckert '710 and Beckert '164
<p>The apparatus of claim limitation 1, wherein audio signals from the one or more auxiliary input sources are selectively channeled to the car stereo by said interface.</p>	<p>Beckert '710 in view of Beckert '164 discloses audio signals being selectively channeled to the car stereo by the claimed interface. Ex. 1003 at 48-51.</p> <p>Beckert '710 discloses a logic unit with traces for auxiliary inputs AUX#1, AUX#2, and Mono In, each of which comprise a third connector electrically connectable to one or more auxiliary input sources external to the car stereo:</p>

Claim 14

Beckert '710 and Beckert '164

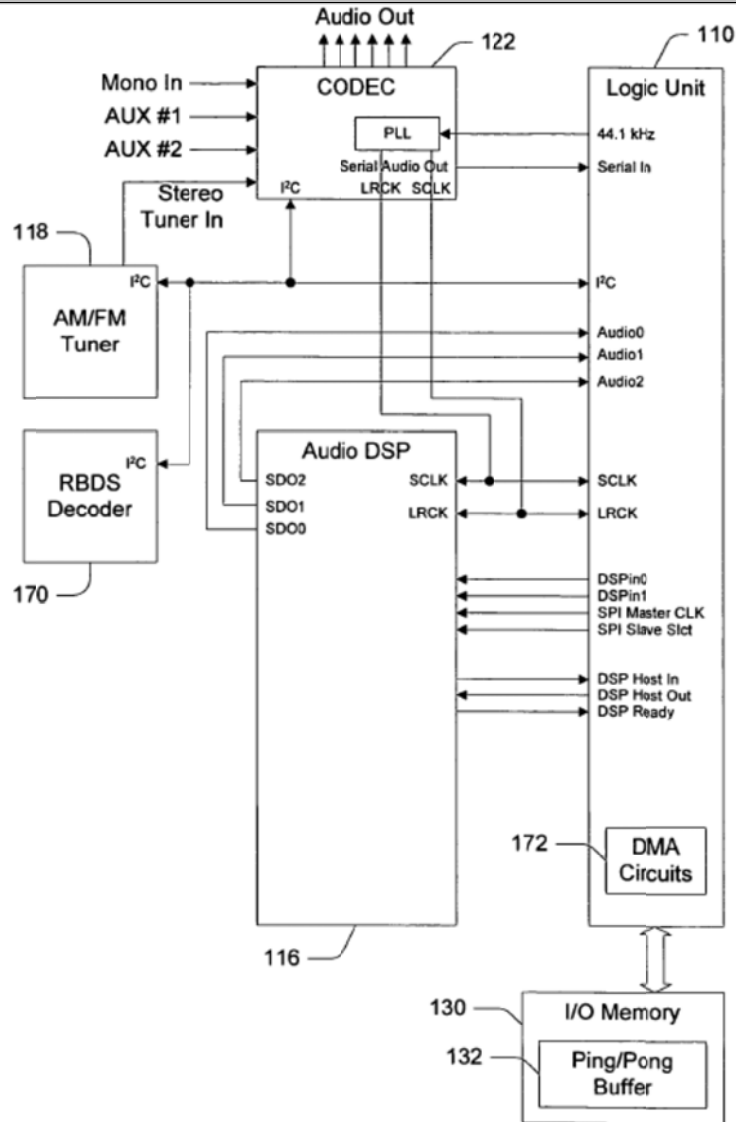


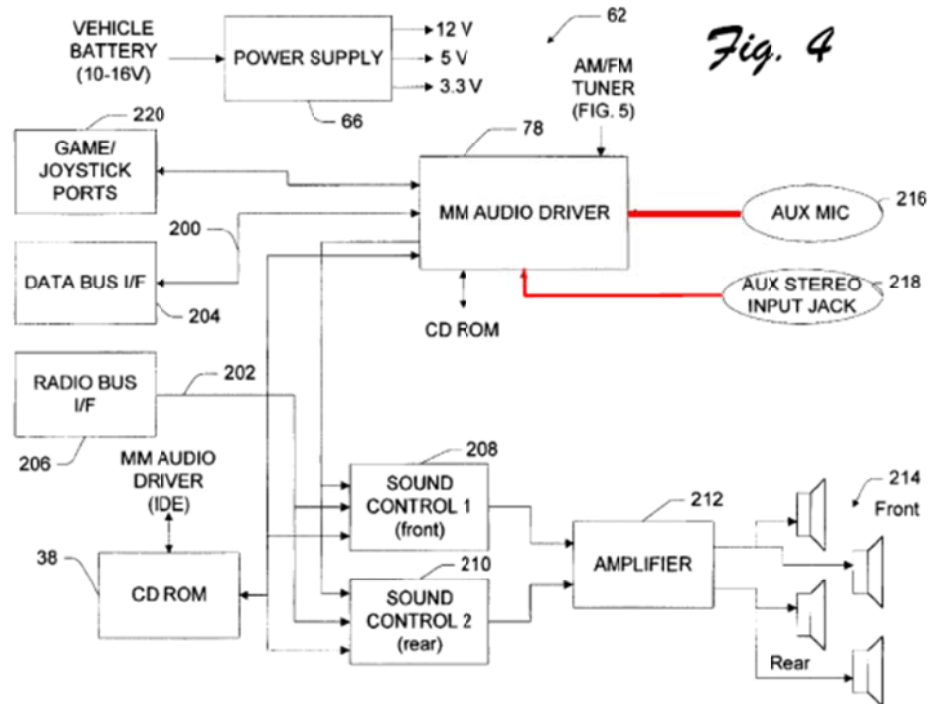
Fig. 4

Ex. 1006 at FIG 4; *see also id.* at 3:37-38. (“FIG. 4 is a block diagram of a logic unit and audio DSP implemented in the support module of the computer system.”)

Beckert '164 provides additional disclosure of the support module 82's auxiliary input lines:

Claim 14

Beckert '710 and Beckert '164



Ex. 1007 at FIG. 4; *see also id.* at 3:50-51 (“FIG. 4 is a functional block diagram of the support module.”).

In addition, Beckert '710 discloses:

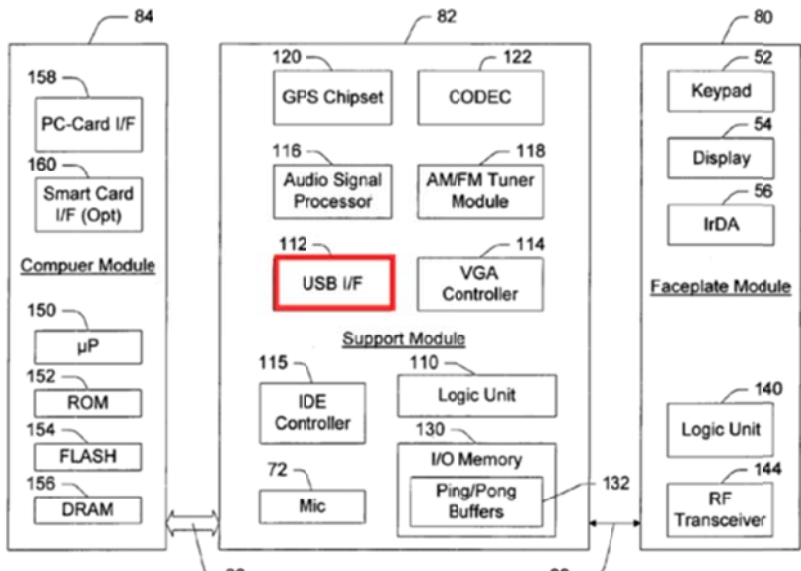
The audio entertainment system is primarily supported by the logic unit and audio DSP of support module. The support module can accommodate multiple audio sources such as CD player, CD changer, AM/FM tuner, auxiliary 1, auxiliary two, computer wave outputs and a microphone. The support module receives the data from the sources, processes it in the audio DSP, and outputs the data to the speaker system or other destination, such as a USB peripheral or memory in the computer module.

Ex. 1006 at 2:17-25.

The audio sources are generally categorized into two kinds: foreground audio sources and background audio sources. Foreground audio sources include a computer wave file output and text-to-speech output.

Claim 14	Beckert '710 and Beckert '164
	<p>Foreground audio sources are mixed with active background audio sources. The foreground audio sources are controlled by the wave-out API. In contrast, the background audio sources include AM/FM tuner, CD player, auxiliary inputs, and other sources from the USB. Background sources are controlled by the audio source control API.</p> <p>Ex. 1006 at 13:22-31.</p> <p>Accordingly, one of ordinary skill in the art at the time of the '786 invention would have determined that Beckert '710 in view of Beckert '164 discloses audio signals being selectively channeled to the car stereo by the claimed interface.</p>

d. Claim 23

Claim 23	Beckert '710 and Beckert '164
<p>The apparatus of claim limitation 1, further comprising a bus connection established between the after-market audio device and said interface.</p>	<p>Beckert '710 in view of Beckert '164 discloses a bus connection established between the after-market audio device and said interface. Ex. 1003 at 51-53.</p>  <p style="text-align: center;"><i>Fig. 3</i></p> <p>Ex. 1006 at FIG. 3; <i>see also id.</i> at 3:34-36 (“FIG. 3. Is a block diagram of the vehicle computer system according to</p>

Claim 23	Beckert '710 and Beckert '164
	<p>one implementation having a faceplate module, a support module, and a computer module.”).</p> <p>Moreover, Beckert '710 discloses:</p> <p style="padding-left: 40px;">The support module 82 has several hardware interfaces. A USB interface 112 is driven from the PCI bus 86 and provides the interconnection to the various USB peripherals shown in FIG. 2.</p> <p>Ex. 1006 at 6:5-8.</p> <div data-bbox="446 714 1299 1218" data-label="Diagram"> <pre> graph TD 84[Computer Module] <--> 86 82[Support Module] 82 <--> 88 80[Faceplate Module] 82 -- 92 --> 90[USB Hub] 90 --> 28[OBD System I/F] 90 --> 26[Security System I/F] 90 --> 94[Navigation System I/F] 90 --> 96[Internet Wireless Link] 90 --> 102[Joystick, Keyboard, Mouse] 90 --> 100[TV Tuner I/F] 90 --> 98[CD-ROM Changer I/F] </pre> </div> <p style="text-align: center;"><i>Fig. 2</i></p> <p>Ex. 1006 at FIG. 2; <i>see also id.</i> at 3:31-33 (“FIG. 2 is a diagrammatic illustration of the vehicle computer system interfaced with multiple external peripheral devices.”).</p> <p>In addition, according to Beckert '710:</p> <p style="padding-left: 40px;">The support module 82 is also connected to a universal serial bus (USB) hub 90 via a USB serial I/F connector 92. The USB hub 99 provides connections to many peripheral devices (e.g., up to 128 devices). Example peripheral devices include the OBD (On Board Diagnostic) system 28, the security system 26, navigation system 94, a wireless link 96 to the Internet, a CD-ROM changer 98, a TV</p>

Claim 23	Beckert '710 and Beckert '164
	<p>tuner 100, and user I/O devices such as a joystick, keyboard or a mouse 102. This USB hub 90 could be separate as shown in FIG. 2 or it could be integrated into one or more of the USB peripherals.</p> <p>Ex. 1006 at 5:44-54 (emphasis added).</p>

e. Claim 24

Claim 24	Beckert '710 and Beckert '164
<p>The apparatus of claim limitation 23, wherein the bus connection comprises a Universal Serial Bus (USB) connection.</p>	<p>Beckert '710 in view of Beckert '164 discloses the bus connection comprises a USB connection. Ex. 1003 at 51-54.</p> <p><i>See discussion of claim 23 above.</i></p>

F. Ground 2: Claim 5 Is Obvious Under 35 U.S.C. § 103(a) (pre-AIA) In Light Of Beckert '710, Beckert '164, The AutoPC Manual And USB 2.0

1. Overview of the AutoPC Manual

The AutoPC Manual describes Clarion's AutoPC 310C product, and specifically describes using USB for plug-and-play installation of hardware:

Hardware is also installed or removed automatically. For most external devices, Auto PC uses the Universal Serial Bus (USB) Controller to sense when these devices are attached or detached.

Ex. 1009 at 143.

Contemporaneous publications further demonstrate that the AutoPC was a commercial embodiment of the inventions disclosed in Beckert '710, Beckert '164 and Beckert '363. *See, e.g.*, Ex. 1013. Clarion and Microsoft co-developed an automotive PC entertainment system that supports voice control and uses the same three-module hardware architecture as Beckert '710, Beckert '164 and Beckert '363 describe. Ex. 1013 at 4.

2. Overview of USB 2.0

USB 2.0 specifies the hardware and software features of the second revision of the well-known Universal Serial Bus standard.

This document defines an industry-standard USB. The specification describes the bus attributes, the protocol definition, types of transactions, bus management, and the programming interface required to design and build systems and peripherals that are compliant with this standard.

The goal is to enable such devices from different vendors to interoperate in an open architecture. . . . It is intended that the specification allow system OEMs and peripheral developers adequate room for product versatility and

market differentiation without the undue burden of carrying obsolete interfaces or losing compatibility.

Ex. 1011 at 1.

3. Obvious to Combine the AutoPC Manual and USB 2.0 with Beckert '710 and Beckert '164

A person of ordinary skill in the art at the time of the '786 patent, with knowledge of the AutoPC Manual, USB 2.0, Beckert '710 and Beckert '164, would have considered it obvious to combine the respective teachings of the AutoPC Manual and USB 2.0 with the combined teachings of Beckert '710 and Beckert '164. Specifically, a person of ordinary skill in the art at the time of the '786 patent upon reading the AutoPC Manual, which describes using USB to automatically detect and add external hardware, would find it obvious to combine its teachings with the USB 2.0 specification, which sets forth the requirements for complying with the USB standard. The rationale for doing so includes combining prior art elements according to a known methods to yield predictable results and the use of known technique to improve a similar device in the same way. Ex. 1003 ¶ 63. Moreover, it would have been obvious to try the resulting combination as it amounts to merely choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success. Ex. 1003 ¶ 64. Additionally, a person of ordinary skill in the art at the time of the '786 patent upon reading

the AutoPC Manual and the Beckert references would notice the strong similarities in their respective descriptions of an automotive entertainment system based on a general-purpose computer running a Windows operating system (Ex. 1009 at 1) featuring USB support (*id.* at 31, 143) and a detachable faceplate (*id.* at 2, 6-9, 159). *See* Sections IV.E.1 and IV.E.2, above. Ex. 1003 ¶ 65.

4. Detailed Analysis

Claim 5	Beckert '710 In View Of Beckert '164, The AutoPC Manual and USB 2.0
The apparatus of claim limitation 1, wherein said interface further comprises a plug-and-play mode for automatically detecting a device type of the after-market audio device connected to said second electrical connector and integrating the after-market audio device based upon the device type.	<p>Beckert '710 in view of Beckert '164, the AutoPC Manual and USB 2.0 discloses a plug-and-play mode (i.e., USB) for automatically detecting a device type of the after-market audio device connected to said second electrical connector and integrating the after-market audio device based upon the device type. Ex. 1003 at 57-59.</p> <p>As discussed with respect to claim 1, the “second electrical connector” of Beckert '710 is the USB bus. Beckert '710 in view of Beckert '164 does not specifically disclose a plug and play mode for automatically detecting a device type of the after-market audio device.</p> <p>As shown below, the Auto PC Manual states that USB is used to install or remove hardware automatically and to detect when other devices are attached or detached.</p>

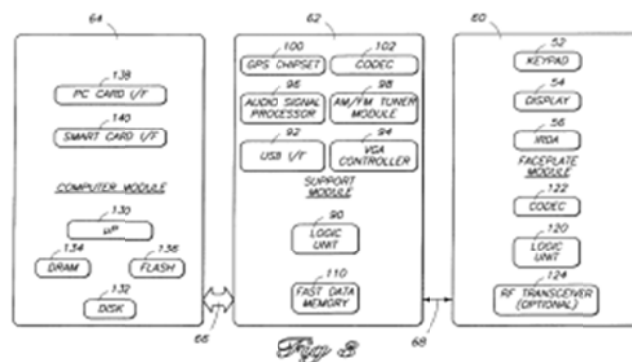
Claim 5	Beckert '710 In View Of Beckert '164, The AutoPC Manual and USB 2.0
	<p style="text-align: center;">Chapter 13 – Adding/Removing Software and Hardware</p> <p><i>Software automatically installed or removed</i> Auto PC allows you to install new programs and hardware to utilize additional information and entertainment services while on the road. Auto PC provides automatic installation or removal of programs using either a CD or a CF Card.</p> <p><i>USB assists automatic installation or removal</i> Hardware is also installed or removed automatically. For most external devices, Auto PC uses the Universal Serial Bus (USB) Controller to sense when these devices are attached or detached.</p> <p>To add a program Caution: Do not drive or turn off the ignition while doing installation of programs using CD or CF Card. Insert the program's installation CD or CF Card into the Auto PC. Follow the instructions that the installation program displays. Installed programs automatically appear at the end of the Start menu program list.</p> <p>Installing hardware options Auto PC allows you to add new hardware, such as a cellular phone, CD changer, or GPS unit. Contact your dealer to have upgrades or maintenance done on your system.</p> <p>Ex. 1009 at 143.</p> <p>Ex. 1009 at 144.</p> <p>At the time of the '786 patent, it was well known that USB is a plug-and-play compatible, automatically-configuring bus. Indeed, plug-and-play was one of the major motivations for creating and adopting USB as a standard:</p> <ul style="list-style-type: none"> • Ease-of-use <p>The lack of flexibility in reconfiguring the PC has been acknowledged as the Achilles' heel to its further deployment. The combination of user-friendly graphical interfaces and the hardware and software mechanisms associated with new-generation bus architectures have made computers less confrontational and easier to reconfigure. However, from the end user's point of view, the PC's I/O interfaces, such as serial/parallel ports, keyboard/mouse/joystick interfaces, etc., do not have the attributes of plug-and-play.</p>

Claim 5	Beckert '710 In View Of Beckert '164, The AutoPC Manual and USB 2.0
	<p>Ex. 1010 at 1.</p> <p>USB automatically detects a device type via device descriptors:</p> <p style="text-align: center;">9.5 Descriptors</p> <p>USB devices report their attributes using descriptors. A descriptor is a data structure with a defined format. . . .</p> <p>Using descriptors allows concise storage of the attributes of individual configurations because each configuration may reuse descriptors or portions of descriptors from other configurations that have the same characteristics. In this manner, the descriptors resemble individual data records in a relational database.</p> <p>Ex. 1010 at 260.</p> <p style="text-align: center;">9.6.1 Device</p> <p>A device descriptor describes general information about a USB device. It includes information that applies globally to the device and all of the device's configurations</p> <p>Ex. 1010 at 261.</p> <p>Accordingly, one of ordinary skill in the art at the time of the '786 invention would have determined that Beckert '710 in view of Beckert '164, the AutoPC Manual and USB 2.0 discloses a plug-and-play mode (i.e., USB) for automatically detecting a device type of the after-market audio device connected to said second electrical connector and integrating the after-market audio device based upon the device type.</p>

G. Ground 3: Claim 6 Is Obvious Under 35 U.S.C. § 103(a) (pre-AIA) in Light of Beckert '710, Beckert '164 and Beckert '363

1. Overview of Beckert '363

Like Beckert '710 and Beckert '164, Beckert '363 relates to a vehicle computer entertainment system. Ex. 1008, Abstract. More specifically, Beckert '363 focuses on the implementation details of the vehicle computer system's support module, with a particular emphasis on the logic unit 90 as depicted in Figure 3. *See also* Ex. 1006, Beckert '710 at 7:37-47.



2. Obvious to Combine Beckert '363 with Beckert '710 and Beckert '164

As discussed above, a person of ordinary skill in the art would have known to look to Beckert '164 for additional detail on the support module of Beckert '710, and would also have known to look to Beckert '363 for additional detail on the support unit's logic unit, especially as it relates to the detailed operation of the buses and various electrical signals used in the audio entertainment system. Ex. 1003 ¶ 67. Beckert '363 is expressly

incorporated by reference into Beckert '710. Ex. 1006 at 7:37-47. As such, there is express motivation to combine Beckert '363 with Beckert '710 (and Beckert '164). Ex. 1003 at ¶ 68. In addition to the express teaching and motivation to combine Beckert '363 with Beckert '710 and Beckert '164, a person of ordinary skill in the art at the time of the '786 patent after reading Beckert '710 would have known to look to Beckert '363 for additional details on the logic unit of the vehicle computer system (described in the Beckert patents) as a use of known technique to improve a similar device in the same way. Ex. 1003 ¶ 69. Moreover, the use of the known known technique from Beckert '363 to improve Beckert '710 (and Beckert '164) would have yielded a predictable result. Ex. 1003 ¶ 70.

3. Detailed Analysis

Claim 6	Beckert '710 in View of Beckert '164 and Beckert '363
The apparatus of claim limitation 1, wherein said interface generates a device presence signal for maintaining the car stereo in a state responsive to processed data and audio signals.	<p>Beckert '710 in view of Beckert '164 and Beckert '363 discloses that the interface generates a device presence signal for maintaining the car stereo in a state responsive to processed data and audio signals. Ex. 1003 at 61-63.</p> <p>As discussed above, Beckert '710's support module corresponds to the "interface" of the '786 patent. Beckert '710 in view of Beckert '164, however, does not specifically disclose that its support module generates a device presence signal for maintaining the car stereo in a state responsive to processed data and audio signals</p> <p>Beckert '363, which is incorporated by reference into Beckert '710, specifically provides a detailed disclosure of the operation of a logic unit specially adapted to be used in an audio</p>

Claim 6	Beckert '710 in View of Beckert '164 and Beckert '363
	<p>entertainment system (<i>see</i> Ex. 1006 at 7:37-47) as follows:</p> <p>The USB interface of Beckert '710 is driven from a PCI bus:</p> <p style="padding-left: 40px;">The support module 62 has several hardware interfaces. A USB interface 92 is driven from the PCI bus 66 and provides the interconnection to the various USB peripherals shown in FIG. 2.</p> <p>Ex. 1008 at 6:24-26.</p> <p>The PCI bus 66 connecting the support module 62 to the computer module 64 is connected to the internal bus structure 140 via latches 150, 152, and 154, and a PCI bus interface 156. The PCI connection has primary control over the internal bus structure 140. The USB interface 92 and the VGA controller 94 are devices on the PCI bus interconnect, or they may be incorporated into the logic unit 90.Ex. 1008 at 8:8-14.</p> <p style="padding-left: 40px;">The bus arbiter 148 controls the bus ownership and has selection logic to transition between a PCI bus request and a DMA request. . . .</p> <p style="padding-left: 40px;">As noted above, signals received from the PCI bus 66 have priority on the address/data bus 140. The PCI bus signals are input into the logic unit 90 as 32-bit multiplexed signals consisting of address/data bits plus the PCI control/timing signals. . . . The bus arbiter 148 grants the PCI bus 66 access to the internal address/data bus 140 at the next opportunity.</p> <p style="padding-left: 40px;"><i>While this is happening the PCI bus is held in a wait state until the logic unit 90 asserts a target ready signal. The bus arbiter 148 grants the PCI bus interface circuit 156 access to the internal bus when the PCI BUS GRANT signal is active.</i> This initiates a bus cycle state machine in the logic unit, which generates an internal read or write bus cycle. . . . The logic unit 90 then asserts the target ready signal to allow the PCI master of the PCI bus 66 to</p>

Claim 6	Beckert '710 in View of Beckert '164 and Beckert '363
	<p>complete the bus cycle.</p> <p>Ex. 1008 at 9:12-45 (emphasis added)</p> <p>Accordingly, one of ordinary skill in the art at the time of the '786 invention would have determined that Beckert '710 in view of Beckert '164 and Beckert '363 discloses that the interface generates a device presence signal for maintaining the car stereo in a state responsive to processed data and audio signals.</p>

H. Ground 4: Claim 7 is Obvious Under 35 U.S.C. § 103(a) (pre-AIA) in Light of Beckert '710, Beckert '164 and the AutoPC Manual

1. Obvious to Combine the AutoPC Manual with Beckert '710 and Beckert '164

Petitioners submit that it would have been obvious to combine the AutoPC Manual with Beckert '710 and Beckert '164 for at least the reasons set forth above. As previously described, Beckert '710 and Beckert '164 disclose an audio entertainment system that can obtain information from an after-market audio device. With respect to claim 7, a person of ordinary skill in the art at the time of the '786 patent would have known to look to the AutoPC Manual's description of the display of well-known information like track and time information, for example on the faceplate of Beckert '710 and Beckert '164. Ex. 1003 ¶ 71. The rationale for doing so includes combining prior art elements according to known methods to yield predictable results and the use of known technique to improve a similar device in the same way.

Ex. 1003 ¶ 72. Moreover, it would have been obvious to try the resulting combination as it amounts to merely choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Id.

2. Detailed Analysis

Claim 7	Beckert '710 in View of Beckert '164, and the AutoPC Manual
<p>The apparatus of claim limitation 1, wherein said second pre-programmed code portion processes data generated by the after-market audio device including track and time information.</p>	<p>Beckert '710 in view of Beckert '164 and the AutoPC Manual discloses a pre-programmed code portion that processes data generated by the after-market audio device including track and time information. Ex. 1003 at 65.</p> <p>While Beckert '710 in view of Beckert '164 discloses a faceplate module and interfacing with an aftermarket audio device, the combination does not specifically disclose processing data that includes track and time information.</p> <p>The faceplate of the Clarion Auto PC displayed track and time information from the CD changer:</p> <div data-bbox="591 1260 1284 1314" data-label="Section-Header"> <h3>Chapter 5 – Using the CD Player</h3> </div> <div data-bbox="493 1348 548 1400" data-label="Image"> </div> <div data-bbox="591 1348 1302 1402" data-label="Text"> <p>The Auto PC CD Player program gives you access to advanced play functions using speech commands. Using speech commands, you can:</p> </div> <div data-bbox="591 1409 1278 1583" data-label="List-Group"> <ul style="list-style-type: none"> • Play and pause the CD • Delete the current track from the tracks played for the current CD • Play tracks randomly • Go to the next or previous track • Go to the next CD (if you have the optional CD changer) </div> <div data-bbox="594 1604 980 1703" data-label="Image"> </div> <div data-bbox="591 1711 1328 1820" data-label="Text"> <p>Using the control panel keys, you can also fast forward, rewind, or enter a track number. You can also go to the CD Player options menu where you can control which tracks to play and change the display options for the CD Player.</p> </div> <p>Ex. 1009 at 43. Accordingly, one of ordinary skill in the art at</p>

Claim 7	Beckert '710 in View of Beckert '164, and the AutoPC Manual
	the time of the '786 invention would have determined that Beckert '710 in view of Beckert '164 and the AutoPC Manual discloses a pre-programmed code portion that processes data generated by the after-market audio device including track and time information.

I. Ground 5: Claim 8 is Obvious Under 35 U.S.C. § 103(a) (pre-AIA) in Light of Beckert '710, Beckert '164 and the Sony XR-C5120R Manual

1. Overview of the Sony XR-C5120R Manual

The Sony XR-C5120R Manual describes the operation of a typical automotive head unit and cassette player of the late 1990s, to which a user could connect external CD and Mini-Disc (MD) players. Ex. 1012 at 2.

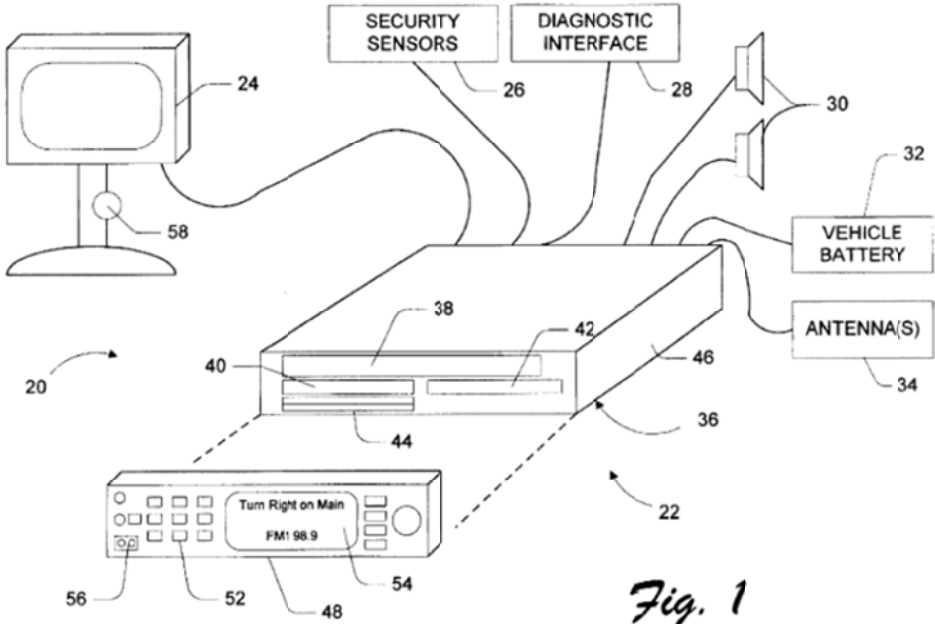
2. Obvious to Combine the AutoPC Manual and the Sony XR-C5120R Manual with Beckert '710 and Beckert '164

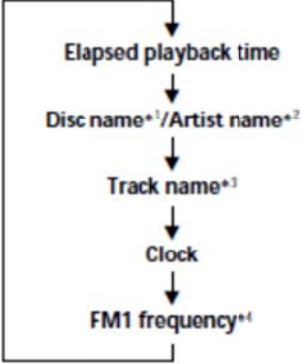
As previously described, Beckert '710 and Beckert '164 disclose an audio entertainment system that can obtain information from an after-market audio device. With respect to claim 8, a person of ordinary skill in the art would have known to look to descriptions of well-known existing head units like the Sony XR-C5120R for details on displaying well-known information like song title and artist information, for example on the faceplate of Beckert '710 and Beckert '164. Ex. 1003 ¶ 74. The rationale for doing so includes combining prior art elements according to known methods to yield

predictable results and the use of known technique to improve a similar device in the same way. Ex. 1003 ¶ 75. Moreover, it would have been obvious to try the resulting combination as it amounts to merely choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success. Ex. 1003 ¶ 76.

3. Detailed Analysis

Claim 8	Beckert '710 in View of Beckert '164 and the Sony XR-C5120R Manual
<p>The apparatus of claim limitation 1, wherein said second pre-programmed code portion processes data generated by the after-market audio device including song title and artist information.</p>	<p>Beckert '710 in view of Beckert '164 and the Sony XR-C1520R Manual discloses a pre-programmed code portion that processes data generated by the after-market audio device including song title and artist information. Ex. 1003 at 67-69.</p> <p>Although Beckert '710 in view of Beckert '164 does not expressly disclose the display of song title and artist information from an after-market device, one of ordinary skill in the art at the time of the '786 patent would have found it obvious to modify the combination to include this functionality.</p> <p>For example, Beckert '164 discloses that the car stereo can output visual data on a large general-purpose display:</p> <p style="padding-left: 40px;">The computer 22 can <i>output visual data to the LCD 54 at the faceplate, or to the monitor 24</i>. The display 54 is preferably a back lit LCD. The monitor 24 is preferably a small flat panel display (e.g., 6.4" screen) that is movably mounted on a stand or yoke and remotely located from the computer. . . . <i>The type of data displayed on the monitor can range widely</i> from word instructions concerning the vehicle's performance, to diagrammatic directions used by the navigation system, to video movies for in-car entertainment.</p> <p>Ex. 1007 at 5:17-27 (emphasis added).</p>

Claim 8	Beckert '710 in View of Beckert '164 and the Sony XR-C5120R Manual
	 <p><i>Fig. 1</i></p> <p>Ex. 1007 at FIG. 1.</p> <p>Moreover, by the time of the claimed priority date of the '786 patent, car radio head units had the capability for displaying information such as track name ("song title"), and artist names. For instance, another prior art head unit, the Sony XR-C5120R, expressly discloses displaying this information.</p>

Claim 8	Beckert '710 in View of Beckert '164 and the Sony XR-C5120R Manual
	<p>Changing the display item Each time you press (DSPL) during CD, CD TEXT, or MD playback, the item changes as follows:</p>  <pre> graph TD A[Elapsed playback time] --> B[Disc name*1/Artist name*2] B --> C[Track name*3] C --> D[Clock] D --> E[FM1 frequency*4] E --> A </pre> <p>Ex. 1012 at 18. A person of ordinary skill in the art would have recognized the advantages of displaying such metadata information related to the various types of data sources supported by Beckert '710 and Beckert '164, and given the Auto PC's flexible and extensible architecture (as disclosed by Beckert '710 and Beckert '164), would have found it obvious to modify the system of Beckert '710 and Beckert '164 to support the display of song title and artist name information.</p> <p>Accordingly, one of ordinary skill in the art at the time of the '786 invention would have determined that Beckert '710 in view of Beckert '164 and the Sony XR-C5120R Manual discloses a pre-programmed code portion that processes data generated by the after-market audio device including song title and artist information.</p>

J. Ground 6: Claims 57, 60, 64 and 65 are Obvious Under 35 U.S.C. § 103(a) (pre-AIA) in Light of Beckert '710, Beckert '164 and USB ADF

1. Overview of USB ADF

USB ADF describes the Audio Data Formats supported by the Audio Device Class, as set forth in the core USB Audio Specification. Ex. 1011 at 6. Most relevant here, USB ADF specifies how MPEG-formatted data is handled USB Audio Device Class compliant devices. *E.g., id.* at 16-17.

2. Obvious to Combine USB ADF with Beckert '710 and Beckert '164

As previously discussed, Beckert '710 in combination with Beckert '164 describe a vehicle entertainment system based on generic computer hardware that accepts peripheral audio devices over a USB connection. A person of ordinary skill in the art would naturally look to the relevant USB specifications, including USB ADF, for additional information about how to communicate with USB audio devices connected to a USB-capable computer. Ex. 1003 ¶ 78. The rationale for doing so includes combining prior art elements according to known methods to yield predictable results and the use of known technique to improve a similar device in the same way. Ex. 1003 ¶ 79. Moreover, it would have been obvious to try the resulting combination as it amounts to merely choosing from a finite number of

identified, predictable solutions, with a reasonable expectation of success.

Ex. 1003 ¶ 80.

3. Detailed Analysis

a. Claim 57

Claim 57	Beckert '710 in View of Beckert '164 and USB ADF										
[a] An audio device integration system comprising:	<p>Beckert '710 in view of Beckert '164 and USB ADF discloses an audio device integration system. Ex. 1003 at 71.</p> <p>See discussion of claim limitation 1[a] in Ground 1.</p>										
[b] a first electrical connector connectable to a car stereo;	<p>Beckert '710 in view of Beckert '164 and USB ADF discloses a first electrical connector connectable to a car stereo. Ex. 1003 at 71.</p> <p>See discussion of claim limitation 1[b] in Ground 1.</p>										
[c] a second electrical connector connectable to a portable MP3 player external to the car stereo	<p>Beckert '710 in view of Beckert '164 and USB ADF discloses a second electrical connector connectable to a portable MP3 player external to the car stereo. Ex. 1003 at 71-72.</p> <p>Beckert '710 and Beckert '164 do not specifically disclose connecting to a portable MP3 player.</p> <p>Portable MP3 players were well known in the art at the time of the '786 invention. For example, the USB specifications expressly define a USB Device Class Definition for MP3 players:</p> <table><tr><th>Offset</th><th>Field</th><th>Size</th><th>Value</th><th>Description</th></tr><tr><td>5</td><td>bmMPEGCapabilities</td><td>2</td><td>Bitmap</td><td>Bitmap identifying the MPEG capabilities of the decoder. A bit set indicates that the capability is supported: D2..0: Layer support: D0 = Layer I D1 = Layer II D2 = Layer III D3: MPEG 1 only</td></tr></table> <p>Ex. 1011 at 17.</p>	Offset	Field	Size	Value	Description	5	bmMPEGCapabilities	2	Bitmap	Bitmap identifying the MPEG capabilities of the decoder. A bit set indicates that the capability is supported: D2..0: Layer support: D0 = Layer I D1 = Layer II D2 = Layer III D3: MPEG 1 only
Offset	Field	Size	Value	Description							
5	bmMPEGCapabilities	2	Bitmap	Bitmap identifying the MPEG capabilities of the decoder. A bit set indicates that the capability is supported: D2..0: Layer support: D0 = Layer I D1 = Layer II D2 = Layer III D3: MPEG 1 only							

Claim 57	Beckert '710 in View of Beckert '164 and USB ADF
	Accordingly, one of ordinary skill in the art at the time of the '786 invention would have determined that Beckert '710 in view of Beckert '164 and USB ADF discloses a second electrical connector connectable to a portable MP3 player external to the car stereo.
[d] an interface connected between said first and second electrical connectors for transmitting audio from a portable MP3 player to a car stereo,	<p>Beckert '710 in view of Beckert '164 and USB ADF discloses an interface connected between said first and second electrical connectors for transmitting audio from a portable MP3 player to a car stereo. Ex. 1003 at 72.</p> <p><i>See discussion of claim limitation 1[e] in Ground 1.</i></p>
<p>[e] said interface including a microcontroller in electrical communication with said first and second electrical connectors, said microcontroller pre-programmed to execute:</p> <p>a first pre-programmed code portion for generating a device</p>	<p>Beckert '710 in view of Beckert '164 and USB ADF discloses that said interface includes 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 generating a device presence signal and transmitting the signal to the car stereo to maintain the car stereo in an operational state. Ex. 1003 at 72-73.</p> <p><i>See discussion of claim limitation 1[f] in Ground 1.</i></p>

Claim 57	Beckert '710 in View of Beckert '164 and USB ADF
<p>presence signal and transmitting the signal to the car stereo to maintain the car stereo in an operational state; and</p>	
<p>[f] a second pre-programmed code portion for remotely controlling the MP3 player using the car stereo by receiving a control command from the car stereo through said first electrical connector in a format incompatible with the MP3 player,</p> <p>processing the control command into a formatted control command compatible with the MP3 player, and</p>	<p>Beckert '710 in view of Beckert '164 and USB ADF discloses a second pre-programmed code portion for remotely controlling the MP3 player using the car stereo by receiving a control command from the car stereo through said first electrical connector in a format incompatible with the MP3 player, processing the control command into a formatted control command compatible with the MP3 player, and transmitting the formatted control command to the MP3 player through said second electrical connector for execution by the MP3 player. Ex. 1003 at 73-74.</p> <p><i>See discussion of claim limitation 1[g] in Ground 1.</i></p>

Claim 57	Beckert '710 in View of Beckert '164 and USB ADF
transmitting the formatted control command to the MP3 player through said second electrical connector for execution by the MP3 player.	

b. Claim 60

Claim 60	Beckert '710 in View of Beckert '164 and USB ADF
<p>The system of claim limitation 57, wherein said microcontroller is pre-programmed to execute a third code portion for receiving data from the MP3 player in a format incompatible with the car stereo,</p> <p>processing received data into formatted data compatible</p>	<p>Beckert '710 in view of Beckert '164 and USB ADF discloses that said microcontroller is pre-programmed to execute a third code portion for receiving data from the MP3 player in a format incompatible with the car stereo, processing received data into formatted data compatible with the car stereo, and transmitting formatted data to the car stereo for display thereby. Ex. 1003 at 74-75.</p> <p><i>See discussion of claim limitation 1[i] in Ground 1.</i></p>

Claim 60	Beckert '710 in View of Beckert '164 and USB ADF
with the car stereo, and transmitting formatted data to the car stereo for display thereby.	

c. Claim 64

Claim 64	Beckert '710 in View of Beckert '164 and USB ADF									
The apparatus of claim limitation 57, further comprising a bus connection established between the MP3 player and said interface.	Beckert '710 in view of Beckert '164 and USB ADF discloses a bus connection established between the MP3 player and said interface. Ex. 1003 at 75-76.									
	See discussion of claim 23 in Ground 1.									
	To the extent Beckert '710 and Beckert '164 do not specifically disclose connecting to a portable MP3 player, a POSITA would have considered it obvious to use a portable MP3 player as a source of music files as set forth in the '786 patent.									
	Portable MP3 players were well known in the art at the time of the '786 invention. For example, the USB specifications expressly define a USB Device Class Definition for MP3 players:									
	<table><tr><th>Offset</th><th>Field</th><th>Size</th><th>Value</th><th>Description</th></tr><tr><td>5</td><td>bmMPEGCapabilities</td><td>2</td><td>Bitmap</td><td>Bitmap identifying the MPEG capabilities of the decoder. A bit set indicates that the capability is supported: D2..0: Layer support: D0 = Layer I D1 = Layer II D2 = Layer III D3: MPEG 1 only</td></tr></table>	Offset	Field	Size	Value	Description	5	bmMPEGCapabilities	2	Bitmap
Offset	Field	Size	Value	Description						
5	bmMPEGCapabilities	2	Bitmap	Bitmap identifying the MPEG capabilities of the decoder. A bit set indicates that the capability is supported: D2..0: Layer support: D0 = Layer I D1 = Layer II D2 = Layer III D3: MPEG 1 only						
	Ex. 1011 at 17.									
	Accordingly, one of ordinary skill in the art at the time of the									

Claim 64	Beckert '710 in View of Beckert '164 and USB ADF
	<p>'786 invention would have determined that Beckert '710 in view of Beckert '164 and USB ADF discloses a second electrical connector connectable to a portable MP3 player external to the car stereo.</p> <p>In this combination, the bus connection would comprise of the connection on the USB bus of Beckert '710 and Beckert '363.</p>

d. Claim 64

Claim 65	Beckert '710 in View of Beckert '164 and USB ADF
The apparatus of claim limitation 64, wherein the bus connection comprises a Universal Serial Bus (USB) connection.	<p>Beckert '710 in view of Beckert '164 and USB ADF discloses that the bus connection comprises a Universal Serial Bus (USB) connection. Ex. 1003 at 76.</p> <p><i>See discussion of claim 24 in Ground 1.</i></p>

K. Ground 7: Claim 61 is Obvious Under 35 U.S.C. § 103(a) (pre-AIA) in Light of Beckert '710, Beckert '164, USB ADF and the AutoPC Manual

1. Obvious to Combine the AutoPC Manual with Beckert '710, Beckert '164 and USB ADF

Claim 61 is identical to claim 7 except for the express recitation of an MP3 player. As discussed above in Section IV.G.2, it would have been obvious to combine the AutoPC Manual with Beckert '710 and Beckert '164. A person of ordinary skill in the art would have known to look to the

AutoPC Manual’s descriptions of USB peripherals and the display of well-known information like track and time information from USB-based MP3 players, whose data format is provided by USB ADF. Ex. 1003 ¶ 81. The rationale for doing so includes combining prior art elements according to known methods to yield predictable results and the use of known technique to improve a similar device in the same way. Ex. 1003 ¶ 82. Moreover, it would have been obvious to try the resulting combination as it amounts to merely choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success. Ex. 1003 ¶ 83.

2. Detailed Analysis

Claim 61	Beckert ’710 in View of Beckert ’164, USB ADF and the AutoPC Manual
The apparatus of claim limitation 60, wherein said third code portion processes data generated by the MP3 player including track and time information.	<p>Beckert ’710 in view of Beckert ’164, USB ADF and the AutoPC Manual discloses that said third code portion processes data generated by the MP3 player including track and time information. Ex. 1003 at 78.</p> <p><i>See</i> discussion of claim 7 in Ground 4.</p> <p>To the extent Beckert ’710 and Beckert ’164 do not specifically disclose processing track and time information generated by an MP3 player, USB ADF showed that portable MP3 players were well known in the art at the time of the ’786 invention. For example, the USB specifications expressly define a USB Device Class Definition for MP3 players:</p>

Claim 61	Beckert '710 in View of Beckert '164, USB ADF and the AutoPC Manual				
	Offset	Field	Size	Value	Description
	5	bmMPEGCapabilities	2	Bitmap	Bitmap identifying the MPEG capabilities of the decoder. A bit set indicates that the capability is supported: D2..0: Layer support: D0 = Layer I D1 = Layer II D2 = Layer III D3: MPEG 1 only
Ex. 1011 at 17.					

L. Ground 8: Claim 62 is Obvious Under 35 U.S.C. § 103(a) (pre-AIA) in Light of Beckert '710, Beckert '164, USB ADF, the AutoPC Manual and the Sony XR-C5120 Manual

1. Obvious to Combine the AutoPC Manual and the Sony XR-C5120 Manual with Beckert '710, Beckert '164 and USB ADF

Claim 62 is identical to claim 8 except for the express recitation of an MP3 player. As discussed above in Section IV.I.2, it would have been obvious to combine the Sony XR-C5120 Manual with Beckert '710 and Beckert '164. A person of ordinary skill in the art would have known to look to Beckert '710 and Beckert '164's descriptions of USB peripherals and the display of well-known information like title and artist information from USB-based MP3 players, whose data format is provided by USB ADF. Ex. 1003 ¶ 84. The rationale for doing so includes combining prior art elements according to known methods to yield predictable results and the use of known technique to improve a similar device in the same way. Ex. 1003 ¶

85. Moreover, it would have been obvious to try the resulting combination as it amounts to merely choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success. Ex. 1003

¶ 86.

2. Detailed Analysis

Claim 62	Beckert '710 in View of Beckert '164, USB ADF, the AutoPC Manual and the Sony XR-C5120 Manual										
The apparatus of claim limitation 60, wherein said third code portion processes data generated by the MP3 player including song title and artist information.	<p>Beckert '710 in view of Beckert '164, USB ADF, the AutoPC Manual and the Sony XR-C5120 Manual discloses that said third code portion processes data generated by the MP3 player including song title and artist information. Ex. 1003 at 80.</p> <p><i>See discussion of claim 8 in Ground 5.</i></p> <p>Moreover, to the extent Beckert '710 and Beckert '164 do not specifically disclose processing title and artist information generated by an MP3 player, USB ADF showed that portable MP3 players were well known in the art at the time of the '786 invention. For example, the USB specifications expressly define a USB Device Class Definition for MP3 players:</p> <table><tr><th>Offset</th><th>Field</th><th>Size</th><th>Value</th><th>Description</th></tr><tr><td>5</td><td>bmMEPGCapabilities</td><td>2</td><td>Bitmap</td><td>Bitmap identifying the MPEG capabilities of the decoder. A bit set indicates that the capability is supported: D2..0: Layer support: D0 = Layer I D1 = Layer II D2 = Layer III D3: MPEG 1 only</td></tr></table> <p>Ex. 1011 at 17.</p>	Offset	Field	Size	Value	Description	5	bmMEPGCapabilities	2	Bitmap	Bitmap identifying the MPEG capabilities of the decoder. A bit set indicates that the capability is supported: D2..0: Layer support: D0 = Layer I D1 = Layer II D2 = Layer III D3: MPEG 1 only
Offset	Field	Size	Value	Description							
5	bmMEPGCapabilities	2	Bitmap	Bitmap identifying the MPEG capabilities of the decoder. A bit set indicates that the capability is supported: D2..0: Layer support: D0 = Layer I D1 = Layer II D2 = Layer III D3: MPEG 1 only							

V. CONCLUSION

For the foregoing reasons, Petitioners request that the Board institute

trial and find unpatentable claims 1, 5-8, 10, 14, 23, 24, 57, 60-62, and 64-65 of the '786 patent.

Dated: July 21, 2016

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CERTIFICATION UNDER 37 CFR § 42.24(d)

Under the provisions of 37 CFR §42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for *Inter Partes* Review totals 13,187 as calculated by Microsoft Word, which is less than the 14,000 allowed under 37 CFR §42.24(a)(i).

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing Petition for Inter Partes Review and all Exhibits and other documents filed together with the petition were served via United Parcel Service upon the following:

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