

**UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY**

MARLOWE PATENT HOLDINGS LLC,

Plaintiff,

v.

FORD MOTOR COMPANY,

Defendant.

Case No. 3:11-cv-07044-PGS-DEA

OPINION

INTRODUCTION

There are two cases wherein Marlowe alleges that several entities infringed upon the '786 patent. One is this case, and the other is *Marlowe Patent Holdings, LLC v. Dice Electronics, LLC*, No. 10-01199 (D.N.J.) ("*Dice Electronics*"). As a result, a *Markman*¹ decision is rendered in each case. On July 31, 2014, the Court conducted a *Markman* hearing for disputed claim terms in U.S. Patent No. 7,489,786, titled "Audio Device Integration System" filed December 11, 2002 ("the '786 Patent"), between Marlowe Patent Holdings LLC (hereinafter "Marlowe") and Ford Motor Company (hereinafter "Ford"). *Marlowe Patent Holdings, LLC v. Ford Motor Co.*, No. 11-07044 (D.N.J.) ("*Ford Motor*"), ECF No. 98. Thereafter, a draft opinion of the *Markman* Ruling was issued to the parties, and a telephone conference was conducted. Based upon all of the proceedings, the Court finalizes its *Markman* Ruling as follows.

In *Ford Motor*, Marlowe and Ford have filed the appropriate *Markman* claim construction briefs, presenting the disputed claim language and the meaning that one of ordinary skill in the art should employ in light of the specification, custom and usage. (*Ford Motor*, ECF No. 90 and 93.) In *Dice Electronics*, LTI Enterprises, Inc. (hereinafter "LTI"), has filed

¹ *Markman v. Westview Instruments*, 517 U.S. 370 (1996).

supplemental *Markman* brief that disputes additional claim language in the '786 Patent. (*Dice Electronics*, ECF No. 221.)

The '786 Patent, issued to inventor Ira Marlowe, pertains to an audio device integration system that enables after-market audio products such as a CD player, a CD changer, an MP3 player, and other auxiliary sources to be connected to, operate with, and be controlled from, an existing stereo system in an automobile. (*Ford Motor*, ECF No. 93, Exhibit A).

This Court has considered the claim construction briefs filed by the parties, and made claim construction determinations for the claim terms that remain in dispute in light of the evidence and arguments presented.

I. STANDARDS FOR CLAIM CONSTRUCTION

There is a two-step analysis for determining patent infringement: “first, the court determines the meaning of the disputed claim terms, then the accused device is compared to the claims as construed to determine infringement.” *Acumed LLC v. Stryker Corp.*, 483 F.3d 800, 804 (Fed. Cir. 2007) (citation omitted). When the court engages in claim construction to determine the meaning of disputed claim terms, it is decided as a matter of law. *Markman*, 517 U.S. at 372. It is well established that “the construction of a patent, including terms of art within its claim, is exclusively within the province of the court.” *Id.* When construing claims, the court must focus on the claim language. As explained by the Federal Circuit:

It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude. Attending this principle, a claim construction analysis must begin and remain centered on the claim language itself, for that is the language the patentee has chosen to particularly point out and distinctly claim the subject matter which the patentee regards as his invention.

Innova/Pure Water, Inc. v. Safari Water Filtration Sys., 381 F.3d 1111, 1115-16 (Fed. Cir. 2004) (citations omitted). When looking at the words of a claim, the words “are generally given their ordinary and customary meaning,” which has been defined as “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005), cert. denied, 546 U.S. 1170 (2006). The Federal Circuit has counseled:

It is the person of ordinary skill in the field of the invention through whose eyes the claims are construed. Such person is deemed to read the words used in the patent documents with an understanding of their meaning in the field, and to have knowledge of any special meaning usage in the field. The inventor’s words that are used to describe the invention—the inventor’s lexicography—must be understood and interpreted by the court as they would be understood and interpreted by a person in that field of technology. Thus the court starts the decision making process by reviewing the same resources as would that person, viz., the patent specification and prosecution history.

Id. at 1313 (quoting *Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998)). Those resources, called intrinsic evidence, include the claim language, the specification, and the prosecution history. *See id.* at 1314.

However, when intrinsic evidence alone does not resolve the ambiguities in a disputed claim term, extrinsic evidence—evidence that is outside the patent and prosecution history—may also be used to construe a claim. *See id.* at 1317; *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582-83 (Fed. Cir. 1996). “[E]xtrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art” may be consulted; for example, expert testimony, dictionaries, and treatises. *Phillips*, 415 F.3d at 1314. However, when a court relies on extrinsic evidence to construe a claim, it is guided by the principle that extrinsic evidence may never conflict with intrinsic evidence. *Id.* at 1319. Courts “have viewed extrinsic evidence in

general as less reliable than the patent and its prosecution history in determining how to read claim terms.” *Id.* Thus, a court should take care to “attach the appropriate weight to be assigned to those sources.” *Id.* at 1322-24.

II. THE DISPUTED CLAIM TERMS – ’786 PATENT

A. “Interface”

The ’786 Patent relates to an audio device integration system, wherein one or more after-market audio devices such as CD player, CD changer, MP3 player, satellite receiver, digital audio broadcast (DAB) receiver, or the like, (hereinafter “after-market audio device”), can be integrated with factory-installed or after-market car stereo systems. (’786 Patent, col. 1, ll. 5-12; col. 4, ll. 26-32.) The ’786 Patent explains that the whole objective of the invention is to “achieve[] integration of various audio devices that are alien to a given OEM² or after-market stereo system.” (’786 Patent, col. 1, ll. 60-64; *Ford Motor*, Def. Br. at 11.) The disputed claim term is described in all independent device claims, which provides “an *interface*” connected between said first and second electrical connectors.

an *interface* connected between said first and second electrical connectors for channeling audio signals to the car stereo from the after-market audio device, said interface including a microcontroller in electrical communication with said first and second electrical connectors, said microcontroller pre-programmed to execute

(’786 Patent, claim 1, l. 8; claim 25, l. 5; claim 44, l. 10; claim 57, l. 5; claim 66, l. 5; claim 76, l. 5; claim 86, l. 6; claim 92, l. 4; claim 99, l. 7 (emphasis added).) The disputed term is also found in the method claims, which recites the step of “providing an *interface* having a first electrical connector connectable to a car stereo...” (’786 Patent, claim 33, l. 3; claim 49, l. 4.)

² Original Equipment Manufacturers (“OEM”), ’786 Patent, col. 1, ll. 22-23.

Marlowe’s proposed construction for the disputed term is—“a device including a microcontroller.” (*Ford Motor*, Pl. Br. at 5.) Ford’s proposed construction for the disputed term is—“a device *separate* from the vehicle and car stereo.” (*Ford Motor*, Def. Br. at 7 (emphasis added).) The main dispute between the parties as to this term is whether the interface can be part of the OEM or after-market stereo system, or whether it is separate. (*Ford Motor*, Def. Br. at 8.)

Marlowe argues that if an interface is integrated to a car stereo, the interface *becomes a part of the “car stereo,”* based on the definition of the “car stereo” of the ’786 Patent. (*Ford Motor*, Pl. Br. at 6 (emphasis added).) The “car stereo” of the ’786 Patent is defined such that its configuration determines whether an interface is *part of the car stereo*. The ’786 Patent defines “car stereo” as follows:

Also, as 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 a 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.

(’786 Patent, col. 5, ll. 1-14 (emphasis added); *see also* Supp. Joint Claim Construction at 2.)

From this disclosure, it is evident that “car stereo” is a physical device present within a vehicle that is a software-driven receiver operating on a universal LCD panel and is operable by a user via a graphical user interface displayed on the universal LCD panel.

In further support of its position that the after-market device *becomes a part of the car-stereo*, Marlowe points to the definition of “integration” or “integrated” discussed in the specification:

As used herein, the term “integration” or “integrated” is intended to 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*. Thus, for example, integration of a CD player with a car stereo system allows for the CD player to be remotely controlled via the control panel of the stereo system, and data from the CD player to be sent to the display of the stereo.

(’786 Patent, col. 4, ll. 47-56 (emphasis added).) From this disclosure, it is evident that upon connecting one or more after-market devices to a car stereo, the after-market device becomes part of the car stereo, or integrated with the car stereo, as it *allows a user to control the devices via the car stereo*. In essence, connecting the after-market device to the car-stereo results in an *extension* of car radio, as a user can operate the after-market device using the car stereo.

Ford argues that the disputed term “interface” is not part of the “car stereo” because independent claim 1 recites said terms as *different* terms, as they are *physically separated* by “first” and “second” “connectors.” (*Ford Motor*, Def. Br. at 8 (emphasis added).) In support of its argument, Ford cites to *Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp.*, 93 F.3d 1572, 1579 (Fed. Cir. 1996), which held that it was improper to construe two different terms in the same claim as synonyms.

Ford further asserts the point that “interface” is separate from “car stereo” by relying on Figure 2A of the ’786 Patent. Ford argues that because Figure 2A of the specification illustrates the “interface” and the “car stereo” in different blocks, the “interface” represented by block (20)

and the “car stereo” as block (10), the two components represent different structural elements that are separate from each other. (*Ford Motor*, Def. Br. at 9.) As a result of such structural separation, Ford argues that the “interface” is not integrated into the “car stereo.” (*Id.*)

Ford draws such inference by relying in particular upon the continuation-in-part application filed by Marlowe, Application No. 11/071,667, filed Mar. 3, 2005, (hereinafter “‘667 CIP”), where Figure 10 of said ‘667 CIP application has interface, represented by block 630, integrated or built into the car stereo system, represented by block 610. (*Ford Motor*, Def. Br. at 9; *see also* PG Pub ¶ [0127] of ‘667 CIP; *Ford Motor*, LeRoy Dec., ECF No. 90, Exhibit B.) Ford alleges that “[t]he fact that Marlow added an example in which the interface is part of the car stereo in a later patent application confirms that such a configuration was not part of the earlier ‘786 Patent.” (*Ford Motor*, Def. Br. at 9-10.)

Ford has also brought to this Court’s attention the PCT application prosecuted in Singapore, which has the same disclosure as the ‘786 Patent, where during examination in order to overcome a rejection, Marlowe argued that the PCT application did not disclose positioning the interface within the car stereo system. (*Ford Motor*, Def. Br. at 10-11.)

Claim Construction

The Court adopts the claim construction for the disputed term “interface” to be construed as “a microcontroller that is a *functionally and structurally* separate component from the car stereo, which integrates an after-market device with a car stereo.” The primary purpose and objective of the ‘786 Patent is to achieve integration of various after-market devices with the car stereo system such that information can be exchanged between the after-market device and the car stereo. (‘786 Patent, col. 1, ll. 5-12; col. 1, ll. 60-64; col. 4, ll. 26-32; *see also Ford Motor*, Def. Br. at 11.)

In construing the claims of a patent, the Court must look to three sources known as the “intrinsic evidence”: the claim language, the patent specification and the prosecution history of the patent. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977 (Fed. Cir. 1995), *aff’d*, 517 U.S. 370 (1996); *Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1331 (Fed. Cir. 2001).

The claim terms are to be given their ordinary meaning as would be apparent to a person of ordinary skill in the art unless it is clear from the patent itself that the inventor intended to use certain terms differently. *See Phillips*, 415 F.3d at 1313 (citing *Vitronics Corp.*, 90 F.3d at 1582). The inventor’s words that are used to describe the invention—the inventor’s lexicography — must be understood and interpreted by the court as they would be understood and interpreted by a person in that field of technology. *Phillips*, 415 F.3d at 1313 (citing *Multiform Desiccants, Inc.*, 133 F.3d at 1477). The specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor’s lexicography governs. *Phillips*, 415 F.3d at 1313 (citing *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002)).

Here, the intrinsic evidence of claim language, clearly illustrates the “interface” to be defined as: a microcontroller, **functionally** separate from the car stereo, that integrates an after-market device with the car stereo.³ From the specification, it is evident that “interface” is synonymous with “integration,”⁴ as the interface, represented by block 20 in Fig. 1A, **integrates**

³ ’786 Patent, col. 1, ll. 60-64 (“It would be desirable to provide an integration system that not only achieves integration of various audio devices that are alien to a given OEM or after-market stereo system, but also allows for information to be exchanged between the after-market device and the car stereo.”); col. 2, ll. 28-32 (“The integration system connects to and interacts with the car stereo at any available port of the car stereo, such as a CD input port, a satellite input, or other known type of connection.”); col. 5, ll. 38-41 (“Fig. 2 a is a block diagram of an alternate embodiment of the audio device interface system of the present invention, wherein a CD player/changer 15 is integrated with an OEM or after-market car radio 10.”); *see also* Claims 1, 25, 57, & 66, for instance, where the preamble recites “integration system.”

⁴ ’786 Patent, col. 5, ll. 15-17 (“FIG. 1 is a block diagram showing the audio device integration (or interface) system of the present invention, generally indicated at 20.”(emphasis added)).

the after-market devices with the car stereo form a “device integration system.” (’786 Patent, col. 5, ll. 17-19.) As noted above, the inventor, being his own lexicographer, has defined and given special meaning to the term *integration*: “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.” (’786 Patent, col. 4, ll. 47-56.)

As noted from Figures 1, 2A, and 2B, for instance, the “interface” (20), acts as an *extension* to the car radio or car stereo’s (10) circuitry such that an after-market device can be connected and integrated to the car stereo (10) via the interface. After all, the ’786 Patent clearly states “it would be desirable to provide an integration system that . . . achieves integration of various audio devices that are alien to a given OEM or after-market stereo system.” (’786 Patent, col. 1, ll. 60-63.) As a result, the after-market device in connection with the car stereo via the interface, results in a “device integration system.” (’786 Patent, Claim 1 preamble.)

Therefore, based on the intrinsic evidence provided in the ’786 Patent, Marlowe’s argument that the interface *becomes a part of the “car stereo”* is found to be persuasive, as the connecting of the after-market device with the car stereo, via the interface, forms an *extension* to the car stereo as said after-market devices are *inter-operable* with the car stereo, and capable of exchanging commands and data via the interface. (’786 Patent, col. 3, ll. 1-5.)

A further question to consider regarding “interface” is whether it is: (i) physically separate; and/or (ii) functionally separate from the car stereo. Here, based on the intrinsic evidence, “interface” is considered *functionally* separate, rather than *physically* separate from the car stereo.

The “interface” is used as a communicator or signal converter between the car stereo and the after-market device. (’786 Patent, col. 5, ll. 41-45.) The “interface” allows a user to control

the after-market device from control panel buttons (14) on the car stereo (10), and accordingly process and format information from the after-market device and send it to the car stereo (10). ('786 Patent, Figure 2A col. 5, ll. 45-55; *see also Ford Motor*, Def. Br. at 4-5 (“[T]he ’786 patent discloses and claims an interface which outputs to the car stereo a CD player ‘presence signal’ that the car stereo understands. Upon receiving this ‘presence signal,’ the car stereo enters the CD player mode, enabling control of the after-market CD player using the car stereo”).)

Representing the “car stereo” and “interface” in separate blocks in Figure 2A illustrates two components that represent different structural elements that perform different function; and not necessarily physical separation *per se*. (*Ford Motor*, Def. Br. at 9-10.) Figure 2A of ’786 Patent is directed to “audio device interface system,” wherein the different structural components comprise: “car stereo,” “interface,” “CD player,” “display,” and “control panel buttons.” ('786 Patent, col. 5, ll. 38-41.) All the different structural components are integrated together to form an “audio device interface system.” (*Id.*)

Taking Ford’s position that “interface” and “car stereo” are two components that are *physically* separated, or separated *by distance*, from each other would be contrary to the understanding and interpretation by a person in this field of technology. If this Court takes Ford’s interpretation of structural separation with regards to “interface” and “car stereo,” then interpretation of display (13) and control panel buttons (14), would run afoul, as persuasively argued by Marlowe. (*Ford Motor*, Pl. Br. at 6-7.)

Therefore, the block diagram represented in Figure 2A, illustrating car stereo as (10) and interface as (20), represents different structural components that perform different *function*, which therein work together in unison to form an “audio device integration system.” The block diagram of Figure 2A should not be construed to interpret *physical* separation from each other.

Rather, it should be inferred as the representation of the “audio device interface system” as collectively formed by the different components. (’786 Patent, col. 5, ll. 38-40.)

Ford’s argument as to structural separation between “interface” and “car stereo” based upon the ‘667 CIP application is persuasive in light of the claim construction of “interface” adopted by this Court. Figure 10 of ‘667 CIP application has “interface,” represented by block 630, integrated or built into the car stereo system, as represented by block 610. The specification of the ‘667 application recites:

FIG. 10 is a block diagram showing an alternate embodiment of the multimedia device integration system of the present invention, indicated generally at 600, wherein the interface 630 is incorporated within a car stereo or car video system 610. The interface 630 is in electrical communication with the control panel buttons 620, display 615, and associated control circuitry 625 of the car stereo or video system 610. The interface 630 could be manufactured on a separate printed circuit board positioned within the stereo or video system 610, or on one or more existing circuit boards of the stereo or video system 610. An after-market device 635 can be put into electrical communication with the interface 630 via a port or connection on the car stereo or video system 610, and integrated for use with the car stereo or video system 610.

(PG Pub ¶ [0127] of ‘667 CIP application; *Ford Motor*, LeRoy Dec., ECF No. 90, Exhibit B.)

Based on the disclosure of the ‘667 CIP application it would be evident to one of ordinary skill in this field of technology that during manufacturing process the interface (630) could be placed on a separate or an existing circuit board of the car stereo or video system (610).

This Court acknowledges the distinction between Figure 10 of the ‘667 CIP application, and Figure 2A of ’786 Patent. Figure 10 of the ‘667 CIP application explicitly illustrates the interface being built-in or manufactured into the car stereo system, making the system a single physical entity, wherein *physical separation* between “interface” and “car stereo” has been

eliminated or reduced to none. In contrast, Figure 2A of '786 Patent illustrates the unified *functioning* of the different *structural* components—"interface" (20), "car stereo" (10), "CD player" (15), "display" (13), and "control panel buttons" (14)—to form an "audio device integration *system*." Figure 2A does not illustrate the physical separation or placement of the "interface" with respect to the "car stereo." Interpreting Figure 2A as illustrating distance or separation between the different components would be contrary to the understanding and interpretation of the specification by a person in this field of technology. Figure 2A, instead, illustrates the *integration* of an after-market device with a car stereo, via an interface, which therein collectively forms an "audio device *integration system*." ('786 Patent, col. 5, ll. 38-55.)

As to the issue of physical and/or structural separation between the interface and the car stereo, based upon the claim language presented in independent claim 1 along with the response to Patent Office action, it is evident to one of ordinary skill in the art that the interface is a *structurally separate* device from the car stereo. (*Ford Motor*, ECF No. 102, Exhibit 2, Amendment to Claims & Remarks, 29-30.) In order to overcome prior art reference, Miyazaki *et al.* (U.S. Patent No. 6,613,079 (filed Dec. 19, 2000)), Mr. Marlowe amended the claim language to add, *inter alia*, a first connector, a second connector, and a third connector, wherein said connectors electrically connected the after-market device to the car stereo via the interface. (*Ford Motor*, ECF No. 102, at 2, 9, and 31.) Moreover, in its remarks, Mr. Marlowe differentiated the patented invention over the prior art reference by stating:

wherein a code portion is executed by the microcontroller for receiving an incompatible control command issued a car stereo through a first electrical connector connected to the interface, processing the incompatible control command into a formatted control command compatible with an after-market audio device, and transmitting the formatted control command to an after-market audio device through a second electrical connector connected to the interface, as required by Claim 1.

(*Id.* at 32.) Having such first, second, and third electrical connectors between the interface, car stereo, and an after-market device indicates to one of ordinary skill in this field of technology the ***physical and structural separation*** between the interface and the car stereo.

Marlowe's argument as to Ford's attempt to confusing the issue in bringing Miyazaki reference, used by examiner during prosecution, is not found to be persuasive. (*Ford Motor*, ECF No. 106, at 1-2.) In construing the claims of a patent, the Court must look to three sources known as the "intrinsic evidence": the claim language, the patent specification and the prosecution history of the patent. *Markman*, 52 F.3d at 977. Here, the reference to the Miyazaki patent was applied by the examiner during prosecution, is part of the file wrapper and prosecution history, and is therefore considered intrinsic evidence. Thus, it is imperative for the Court to consider the Miyazaki reference, and the remarks and claim amendments made by Mr. Marlowe in his applications in order to define its claimed invention over the prior art reference.

As noted above, and persuasively pointed out by Ford, Mr. Marlowe amended the claim language to add separate structural features, *inter alia*, a first connector, a second connector, and a third connector, wherein said connectors electrically connected the after-market device to the car stereo via the interface.

Therefore, based on the intrinsic evidence presented, "interface" is interpreted as a device containing a microcontroller that is a ***functionally and structurally separate component*** from a "car stereo." Upon connecting an after-market device with the "car stereo," via the "interface," the "interface" ***becomes part of the "car stereo,"*** as the "interface" is used as a communicator or signal converter between the "car stereo" and the after-market device. ('786 Patent, col. 5, ll. 41-45.)

B. “Device Presence Signal”

The disputed term, “device presence signal” is recited in claims of the ’786 Patent, for maintaining the car stereo in a state responsive to processed data and audio signals.

The apparatus of claim 1, wherein said interface generates a *device presence signal* for maintaining the car stereo in a state responsive to processed data and audio signals.

(’786 Patent, claim 6 (emphasis added); *see also* claims 49, 57, 66, 76, 86, 92, and 99.)

This Court construes the disputed term “Device Presence Signal” as “transmission of a continuous signal indicating an audio device is present.” The specification of the ’786 Patent states, when a patented interface is connected to the car stereo’s CD input port, the car stereo sends out a signal to the patented interface through the CD input port and the patented interface sends a CD changer device presence signal back to the car stereo to maintain the car stereo in an operational state and responsive to external data and signals.⁵ (*Ford Motor*, Pl. Br. at 9 n.9.) When an after-market device is connected to the interface, the interface generates an audio device presence signal and continuously transmits such presence signal to the car stereo⁶.

In order for the device presence signal to be continuously transmitted, as illustrated in box 110 in Figure 4A, box 140 in Figure 4B, and box 170 in Figure 4C, a preliminary determination is first made by the interface. Such determination pertains to whether the car radio is powered on and in “CD player mode”, as illustrated by boxes 106, 136, and 166 in Figures 4A-C. (’786 Patent, col 12, ll. 26-30.) Once a positive determination is made that the car radio

⁵ “The integration system connects to and *interacts* with the car stereo at any available port of the car stereo, such as a CD input port, a satellite input, or other known type of connection. If the car stereo system is an after-market car stereo system, the *present invention generates a signal* that is sent to the car stereo to keep same in an operational state and responsive to external data and signals.” (’786 Patent, col. 2, ll. 29-35 (emphasis added).)

⁶ “Beginning in step 110, a signal is generated by the present invention indicating that a CD play/changer is present, and the signal is continuously transmitted to the car stereo.” (’786 Patent, col. 12, ll. 29-32; *see also* col 13, ll. 15-18; col 13, ll. 62-66; col 14, ll. 49-51; col 15, ll. 35-38; col 16, ll. 12-15; col 16, ll. 57-60.)

is powered on, a “CD player presence signal” is generated and continuously transmitted in order to prevent the car stereo from shutting off, entering sleep mode, or otherwise being unresponsive to signals and/or data from an external source. (’786 Patent, col 12, ll. 32-35.) However, said “CD player presence signal” need not be generated if the car radio is an OEM car radio. (*Id.* at ll. 35-36; *see also* col 13, ll. 18-19.) Thus, the term “CD player presence signal” is not specifically added into the claim construction of device presence signal, as such a signal would not be generated if the car radio is an OEM car radio.

Ford argues that the specification of ’786 Patent does not teach or mention generating a presence signal that indicates the presence of any device other than a CD player. (*Ford Motor*, Def. Br. at 12-13.) As to the claim term “device presence signal,” Ford has argued that the disputed term was missing from the original application and was added to the claims more than two years after the original application was filed. (*Ford Motor*, Def. Br. at 12.) Ford’s argument with regards to lack of support of the disputed term in the disclosure is not found to be persuasive.

Original filing of claims and specification of the ’786 Patent recites the term “presence signal.” (’786 Patent, Specification at 26, ll. 15-20 and Claim 6,⁷ filed Dec. 11, 2002; *see also Ford Motor*, Pl. Br. at 12-13.) Here, “device presence signal” and “presence signal” are considered the same, as stating one or the other would not add a different meaning, or be construed differently, such that a person of ordinary skill in this field of technology would be confused or designate different meaning to these terms.

Ford has further argued that the disputed term should look to the description of CD changer presence signal in the specification and construe device presence signal to require a

⁷ “The apparatus of claim 1, wherein the interface generates a CD player *presence signal* for maintaining the car stereo in a state responsive to processed data and audio signals.” ’786 Patent, Claim 6.

signal indicating that a CD changer is present. (*Ford Motor*, Def. Br. at 13.) In other words, Ford is asking this Court to limit the device to the CD changer embodiment that generates the signal. In support of this position, Ford has directed Court's attention to col. 13, ll. 15-18 of '786 Patent. This Court disagrees with Ford's argument that the disputed term should be limited to the CD player embodiment.

Figure 6 of the specification illustrates a flowchart processing logic for determining and handling various device types connected to the auxiliary input ports. ('786 Patent, col. 20, ll. 5-7.) The present invention *can sense device types connected* to the auxiliary input ports, and can *integrate* same with the car stereo. (*Id.* at ll. 8-10.) It is determined whether the device connected is CD player/charger, MP3 player, satellite receiver or a DAB receiver. (*Id.* at ll. 20-35.) Based on which device is connected to the auxiliary input, respective logic is invoked; for instance logic of block 108 of Fig. 4A is invoked for CD handling process, logic of block 138 of Fig. 4B is invoked for MP3 handling processes, etc. (*Id.* at 20-30.)

Moreover, limiting claims to one embodiment would be contrary to the Federal Circuit's formulation of the claim differentiation rule, which states: "when a patent claim does not contain a certain limitation and another claim does, that limitation cannot be read into the former claim in determining either validity or infringement." *SRI Int'l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1122 (Fed. Cir. 1985).

Dependent claim 4, which depends off of independent claim 1, further defines the different types of after-market audio devices that can be connected, comprising a "CD player, CD changer, MP3 player, Digital Audio Broadcast ("DAB") receiver, or satellite receiver." ('786 Patent, claim 4.) Independent claim 1, which recites an "after-market audio device," is generic to the different types of "after-market audio devices" that can be connected with the interface, as

it does not have a specific limitation to the type of after-market audio device that can be connected. ('786 Patent, claim 1.)

Thus, based on the claim differentiation doctrine formulated by the Federal Circuit, limitation of a CD changer expressly present in dependent claim 4 should not be read into independent claim 1, particularly where the narrower dependent claim 4 is dependent upon the broader independent claim 1.

Limiting the claim scope to one embodiment, CD changer, would be improper in light of the guidelines set forth by the Federal Circuit, the intrinsic evidence, and when independent claims are generic to all embodiments. The Federal Circuit has repeatedly held that even when the specification describes only a single embodiment, the claims will not be limited to that embodiment unless there is a clear and unambiguous disavowal of claim scope. *Liebel Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004); *ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1091 (Fed. Cir. 2003); *Apex Inc. v. Rarotam Computer, Inc.*, 325 F.3d 1364, 1377 (Fed. Cir. 2003).

For the foregoing reasons, this Court construes the disputed term “Device Presence Signal” as “transmission of a continuous signal indicating an audio device is present.”

C. “Auxiliary Input Source”

The disputed term, “auxiliary input source” is recited in claims of the '786 Patent, for electrically connecting one or more auxiliary input sources external to the car stereo and the after-market audio device:

a third connector electrically connectable to one or more *auxiliary input sources* external to the car stereo and the after-market audio device.

('786 Patent, claim 1, ll. 6 (emphasis added)).

This Court construes the disputed term “auxiliary input source” as “a device that outputs audio by headphone jack or other connector.” Both parties, Ford and Marlowe, have agreed on the definition of this claim term in the Joint Claim Construction Statement filed by the parties, pursuant to Local Patent Rule 4.3. (*Ford Motor*, ECF No. 89 at 2.)

In *Dice Electronics*, LTI has submitted a supplemental *Markman* brief to address the “auxiliary input source” term used in the claims of ’786 Patent. (*Dice Electronics*, ECF No. 221, at 2-3.) LTI acknowledges the agreement between Marlowe and Ford regarding the “input sources” term, as stated in the Joint Claim Construction Statement filed by the parties. (*Dice Electronics*, ECF No. 221 at 3 (citing *Ford Motor*, ECF No. 89).) However, LTI fails to acknowledge that Marlowe and Ford have also agreed to the claim term “auxiliary input sources,” which is being defined as a portable device that outputs audio by headphone jack or connector. (*Ford Motor*, ECF No. 89 at 2).

LTI has proposed a different claim construction for the disputed term, and has asked the Court to break up the claim term into two terms – “auxiliary” and “input sources,” wherein “auxiliary” is defined as supplementary. (*Dice Electronics*, ECF No. 221 at 3.) In support, LTI has provided the dictionary definition of auxiliary. (*Id.*)

In construing the claims of a patent, the inventor’s words that are used to describe the invention—the inventor’s lexicography—must be understood and interpreted by the court as they would be understood and interpreted by a person in that field of technology. *Phillips*, 415 F.3d at 1313 (citing *Multiform Desiccants, Inc.*, 133 F.3d at 1477). However, the specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor’s lexicography governs. *Phillips*, 415 F.3d at 1313 (citing *CCS Fitness, Inc.*, 288 F.3d at 1366).

Here, taking the dictionary definition of the term “auxiliary” would be improper in light of the specialized meaning in the context in the specification and through industry usage. Throughout the specification of the ’786 Patent, “auxiliary input source” is used synonymously with after-market devices such as digital MP3 players, CD changers, and/or audio broadcast (DAB) receivers. (’786 Patent, col. 2, ll. 22-29 and ll. 60-67.) Moreover, figures 2D, 2E, 2F, and 2G, which represent alternate embodiments of the invention, illustrate auxiliary input sources (35) being “*integrated*” with an after-market car stereo, just like a CD player. (’786 Patent col. 6, ll. 44-67 to col. 7, ll. 61.)

Merriam-Webster’s dictionary defines “supplementary” or “supplement” as: something that is added to something else in order to make it complete.⁸ The device, which is going to be *integrated* with the “interface,” like any after-market audio device, will be supplementary, in functional and structural sense, as it completes the connection and integrates with the car-stereo. (See “Interface” under section A.)

The Court’s construction of “auxiliary input source” as meaning “a device that outputs audio by headphone jack or other connector,” inevitably infers “supplementary” from this definition because the interface, as discussed above, is a physically separate device that is introduced into the environment of the car for connecting audio devices that are alien to the car environment. (’786 Patent, col. 1, ll. 60-64 and col. 4, ll. 64-67.)

LTI’s breaking apart of the disputed term into “auxiliary” and “input sources,” and defining it differently from what is commonly understood by one of ordinary skill in this field of technology, would run counter to the industry custom and usage of said term. The ordinary and customary meaning of a term may be evidenced by a variety of sources, including “the words of

⁸ Merriam-Webster’s dictionary, Supplement, *available at* <http://www.merriam-webster.com/dictionary/supplement>, last visited Sept. 18, 2014.

the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art.” *Phillips*, 415 F.3d at 1314. If extrinsic reference sources, such as dictionaries, evidence more than one definition for the term, the intrinsic record must be consulted to identify which of the different possible definitions is most consistent with applicant’s use of the terms. *Brookhill-Wilk 1, LLC v. Intuitive Surgical, Inc.*, 334 F.3d 1294, 1300 (Fed. Cir. 2003).

Here, extrinsic evidence presented by Marlowe, which represents usage of the disputed claim term in its ordinary and customary meaning, defines the term to be “a device that outputs audio by headphone jack or other connector.” (*Dice Electronics*, Cho Dec., Exhibits C-Q.)

D. “Operational State”

The disputed term, “operational state” is recited in claims of the ’786 Patent, for responsive to signals generated by the after-market device.

generating and transmitting a device presence signal to the car stereo using a first code portion pre-programmed into and executed by the microcontroller to maintain the car stereo in an operational state responsive to signals generated by the after-market device, the device presence signal based upon the car stereo

(’786 Patent, claims 49, 57, 66, 76, 86, 92, and 99 (emphasis added).)

This Court construes the disputed term “operational state” as “in a state responsive to data and/or command signals from the external device.” Both parties, Ford and Marlowe, have agreed on the definition of this claim term in the Joint Claim Construction Statement filed by the parties, pursuant to Local Patent Rule 4.3. (*Ford Motor*, ECF No. 89 at 2.)

However, in *Dice Electronics*, LTI has submitted a supplemental *Markman* brief to address the “operational state” term used in the claims of ’786 Patent. (*Dice Electronics*, ECF

No. 221 at 5-6.) LTI contends that said disputed term should be construed as ready condition, and not responsive to data and/or command signals from the external device. (*Id.*)

This Court adopts the definition agreed by Ford and Marlowe for “operational state” as including data and/or command signals from the external device because there is adequate support for such interpretation in the specification, and one of ordinary skill in the art would understand operational state in present disclosure to mean commands from an external device. The specification recites, if the car stereo system is an after-market car stereo system, the present invention generates a signal that is sent to the car stereo to keep same in an operational state and responsive to external data and signals. (’786 Patent, col. 2, ll. 32-35.) The primary purpose and objective of the ’786 Patent is to achieve integration of various after-market devices with the car stereo system such that information can be exchanged between the after-market device and the car stereo. (’786 Patent, col. 1, ll. 5-12; col. 1, ll. 60-64; col. 4, ll. 26-32; *see also Ford Motor*, Def. Br. at 11.)

As noted in the specification, and discussed below under means plus function section, the circuitry disclosed has plurality of discrete components such as resistors, diodes, capacitors, transistors, etc., that provide the hardware framework with the microcontroller to act as an interface in integrating an after-market device with a car stereo. (’786 Patent, col. 9, ll. 45-60; col. 10, ll. 19-24.)

Thus, in light of the teachings in the specification, one of ordinary skill in this field of technology would understand “operational state,” in the present invention, as “in a state responsive to data and/or command signals from the external device.”

E. “Pre-Programmed”

The disputed term, “pre-programmed,” is stated in various claims of the ’786 Patent, with reference to pre-programmed code to be executed:

said microcontroller *pre-programmed* to execute

a first *pre-programmed* code portion for remotely controlling the after-market audio device using the car stereo . . . ;

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 . . . ;

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

(’786 Patent, independent claims 1, 25, 33, 44, 49, 57, 66, 76, 86, 92 and 99 (emphasis added).)

This Court adopts the claim construction for the disputed term “Pre-Programmed” to be construed as “programmed prior to its use in the normal course.” Both parties, Ford and Marlowe, have agreed to a similar definition but have included “by the consumer” in the definition, as noted in the Joint Claim Construction Statement filed by the parties, pursuant to Local Patent Rule 4.3. (*Ford Motor*, ECF No. 89 at 2.)

In *Dice Electronics*, LTI has submitted a supplemental *Markman* brief to address the “pre-programmed” term used in the claims of ’786 Patent. (*Dice Electronics*, ECF No. 221 at 6-7.) LTI contends that said disputed term should be construed as pre-programmed during manufacture. (*Id.*)

The specification teaches that the microcontroller DD1 comprises the 16F872 microcontroller manufactured by MICROCHIP, Inc. The 16F872 chip is a CMOS, flash-based, 8-bit microcontroller having 64 bytes of EEPROM data memory, *self-programming capability*, an ICD, 5 channels of 10 bit Analog-to-Digital (A/D) converters, 2 timers, capture/compare/PWM functions, a USART, and a synchronous serial port configurable as either a 3-wire serial

peripheral interface or a 2-wire inter-integrated circuit bus. ('786 Patent, col. 10, ll. 1-12; col. 11, ll. 47-56.)

Based on the teachings, a person of ordinary skill in this field of technology would be capable of self-programming or pre-programming the device based on the car stereo or after-market device that is going to be integrated with the microcontroller. Likewise, a consumer who is not technologically savvy in computer programming or coding would be able to use the microcontroller device as is, with a program already installed therein during manufacturing and assembly process.

Thus, limiting the definition of pre-programmed to “by a consumer” or “during manufacture” would be inappropriate in light of the teachings in the specification, and custom and usage of such microcontrollers by a person of ordinary skill in this field of technology.

F. “External”

The disputed term, “external,” is stated in various claims of the '786 Patent, with reference to an after-market device:

a second connector electrically connectable to an after-market audio device external to the car stereo;

a third connector electrically connectable to one or more auxiliary input sources external to the car stereo and the after-market audio device;

('786 Patent, independent claims 1, 33, 57, 86, 92, and 99.)

The Court construes the disputed term “external” as meaning “an after-market device that is outside and alien to the environment of an OEM or after-market stereo system.” As previously stated, the inventive concept of '786 Patent relates to an audio device integration system, wherein one or more after-market audio devices such as CD player, CD changer, MP3 player, etc., can be integrated with factory-installed or after-market car stereo systems. ('786 Patent, col.

1, ll. 5-12; col. 4, ll. 26-32.) The specification clearly states “allowing a device that is alien to the environment of an existing OEM or after-market car stereo to be utilized thereby.” (’786 Patent, col. 4, ll. 66-67).

Precision Interface Electronics, Inc. (“Precision”), one of the defendants in the *Dice Electronics* matter, has persuasively argued in its brief that during prosecution history numerous U.S. Patents were made of record that taught and illustrated integrating an external audio device with a car stereo. (*Dice Electronics*, ECF No. 151, Precision Def. Br. at 15.) Disclosure of prior art references such as the Falcon Patent (U.S. Patent No. 6,993,615 (filed Oct. 11, 2005)), the Miyazaki, *et al.*, Patent (U.S. Patent No. 6,163,079 (filed Mar. 14, 2002)); and the Owens, *et al.*, Patent Application (Application No. 09/752,269 (filed Dec. 29, 2000)), clearly indicates that one of ordinary skill in this field of technology, at the time of the invention, would have understood said claim term to refer to devices that are external or alien to environment of an existing OEM, and that were being introduced into the environment and made compatible with OEM or after-market car stereo.

For the foregoing reasons, the Court construes the disputed term “external” as “an after-market device that is outside of and alien to the environment of an OEM or after-market stereo system.”

G. “Portable”

The disputed term, “portable,” is stated in various claims of the ’786 Patent, with reference to an after-market device:

a storage area remote from a car stereo for storing the portable device;

a second electrical connector connectable to a portable MP3 player external to the car stereo

(’786 Patent, independent claims 44, 57, and 92.) The Court construes the disputed term “portable” as meaning “capable of being moved about,” which is consistent with inventive concept of ’786 Patent, intrinsic evidence, and Federal Circuit case law, *i.e.* *Computer Docking Station Corp. v. Dell, Inc.*, 519 F.3d 1366, 1375 (Fed. Cir. 2008) (“The Court agrees that the plain meaning of “portable” and its use in the specification and prosecution history require the computer to be “capable of being moved about”).

The only reference in the specification of ’786 Patent to “portable” is noted in col. 20, ll. 64-67 to col. 21, ll. 1-20, with respect to Figures 7A-7B. Other references to “portable” are found in the claims, *inter alia*: portable CD player, portable MP3 player, portable satellite receiver, portable Digital Audio Broadcast (DAB) receiver. (See ’786 Patent, claims 93, 94, 95 and 96.) Thus, keeping in mind that the inventive concept of present invention is to integrate an after-market audio device with factory-installed or after-market car stereo systems, and in light of the specification, it would be understood that the portable after-market device is capable of being moved about.

For the foregoing reasons, the Court construes the disputed term “portable” as “an after-market device that is capable of being moved about.”

H. MEANS PLUS FUNCTION TERMS

The construction of “means plus function” limitations in a claim language are governed by 35 U.S.C. § 112(f):

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

35 U.S.C. § 112(f).

Construing claims pursuant to 35 U.S.C. §112(f) is a two-step process. First, the Court must identify the function being performed and then the Court must determine the structure recited in the specification for performing that function. *Medtronic, Inc. v. Adv. Cardiovascular Sys., Inc.*, 248 F.3d 1303, 1310 (Fed. Cir. 2001) (even though structure is capable of performing function, if it is not clearly linked, it is not a corresponding structure). If the specification does not contain a corresponding structure, the claim is invalid as indefinite. *Ergo Licensing, LLC v. Carfusion 303, Inc.*, 673 F.3d 1361, 1363 (Fed. Cir. 2012).

When the claim function is implemented by computer, the specification must disclose an “algorithm” for performing the claimed function. *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1348-49 (Fed. Cir. 1999). “[T]he corresponding structure for a § 112 ¶ 6 claim for a computer-implemented function is the algorithm disclosed in the specification.” *Id.* at 1339. The algorithm may be disclosed “in any understandable terms including as a mathematical formula, in prose, or as a flow chart, or in any other manner that provides sufficient structure.” *Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1340 (Fed. Cir. 2008).

A claim is considered indefinite if it does not reasonably apprise those skilled in the art of its scope. *IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377, 1383-84 (Fed. Cir. 2005). If one skilled in the art would be able to identify the structure, material or acts from the description in the specification for performing the recited function, then the requirements of 35 U.S.C. § 112(b) are satisfied. *In re Dossel*, 115 F.3d 942, 946-47 (Fed. Cir. 1997). Compliance with the written description requirement is a question of fact which must be resolved on a case-by-case basis. *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1560 (Fed. Cir. 1991).

A structure disclosed in the specification qualifies as a “corresponding structure” if the specification or the prosecution history “clearly links or associates that structure to the function recited in the claim.” *Noah Systems, Inc. v. Intuit Inc.*, 675 F.3d 1302, 1311 (Fed. Cir. 2012)

(citing *B. Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1424 (Fed. Cir. 1997)). Even if the specification discloses a “corresponding structure,” the disclosure must be adequate; the patent’s specification must provide “an adequate disclosure showing what is meant by that [claim] language. *Noah Systems*, 675 F.3d at 1311.

The court in *Noah Systems* further explained:

If an applicant fails to set forth an adequate disclosure, the applicant has in effect failed to particularly point out and distinctly claim the invention as required by the second paragraph of section 112. Under 35 U.S.C. § 112 ¶ 2 and ¶ 6, therefore, “a means-plus-function clause is indefinite if a person of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim.

Id. at 1311-12 (internal citations and quotations omitted).

The functional limitations recited in the claims, which remain in dispute, have been addressed below.

1. “means for converting video information into a format compatible with the car stereo”

The above claim language is recited in dependent claim 87. The above claim element is recited in a mean-plus-function limitation and is thus subject to 35 U.S.C. §112(f) analysis. The function being performed is *conversion of video information into a format compatible with the car stereo*.

Marlowe has pointed out various figures and sections in the specification that are supposed to recite structure for said means plus function language. (*Ford Motor*, Pl. Br. at 15.) Upon reviewing the designated sections in the specification, this Court finds that there is no corresponding structure that performs the function of converting video information into a format compatible with the car stereo.

Cited sections of the specification state *conversion* of commands into a format recognizable by the CD player/charger, issued by car stereos of various car manufacturers such as GM, Honda, Ford, etc. ('786 Patent, col. 12, ll. 55-65; col. 13, ll. 35-45; col. 14, ll. 20-25.) Figures 4A, 4B, 4C, and 4G represent flowcharts showing processing logic according to the present invention. ('786 Patent col. 12, ll. 4.) In other words, flowcharts represented in such figures only illustrate the workflow or process, showing the steps as boxes of various kinds, and their order by connecting them with arrows. The boxes represented in the flowcharts do not represent any *structure* that would perform that function.

As persuasively pointed out by Ford in its *Markman* brief:

Courts have previously held that such high-level flowcharts do not constitute algorithms. For example, in *Noah Systems* . . . 675 F.3d [at] 1305 . . . , the patent contained a flow chart with a single box (“box 44”) that stated “enter change order(s), recording instruction adjustments, manual transactions including line item category code.” The Federal Circuit stated that the claimed function taking place within box 44 of the flowchart “merely recite[d] functional, not structural, language.” *Id.* at 1316-1317.” It has also been held that there is no structure where a flowchart and corresponding text only described the results to be obtained without describing how to achieve those results. *In re Amoya*, 656 F.3d 1293, 1298 (Fed. Cir. 2011).

(*Ford Motor*, Def. Br. at 19).

Here, flowcharts illustrated in Figures 4A-G, 5, and 6 merely *describe* the results to be obtained without describing *how to achieve the results* of claimed function taking place; there is no recitation of the structure that will perform the function of *conversion of video information into a format compatible with the car stereo*.

Even if the circuits and electric wiring illustrated in figures 3A-D are considered as appropriate “structure” that performs the function of converting the video into a format

compatible with the car stereo, the disclosure is still silent on teaching an *algorithm* that can perform the function of converting video information compatible with the car stereo.

The Federal Circuit has held that when the claim function is implemented by a computer, the specification must disclose an “algorithm” for performing the claimed function. *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1348-49 (Fed. Cir. 1999). An algorithm can take the form of a mathematical formula, prose, flow chart, or expression in any other manner that provides sufficient structure.” *Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1340 (Fed. Cir. 2008); *see also* Transcript of *Markman* Hearing (“1T”), 1T103:20-104:3 (“Mr. LeRoy: [a]lgorithm is an open-ended type thing. It could be a flow chart, it could be a pseudo code, prose, you can describe it . . . it has to have some format . . . the public has to have been able to pick up his patent and find it.”).

Here, there is no disclosure directed to the structure or algorithm that would perform the claimed function of *converting video information into a format compatible with the car stereo*.

Since the flowcharts illustrated in figures 4A-G, 5 and 6, and their description in the specification do not provide adequate structure to perform the function of converting video information into a format compatible with the car stereo, said means plus function claim language is found indefinite as failing to particularly point out and distinctly claiming the invention as required by second paragraph of 35 U.S.C. § 112.

2. “first pre-programmed means for generating a device presence signal”

The above claim language is recited in independent claim 92. The above claim element is recited in a mean-plus-function limitation and is thus subject to 35 U.S.C. §112(f) analysis. The function being performed is *generating a device presence signal to the car stereo*.

Marlowe has pointed out various figures and sections in the specification that are supposed to recite structure for said means plus function language. (*Ford Motor*, Pl. Br. at 15.) Upon reviewing the designated sections in the specification, this Court finds that there is adequate structure that performs the function of generating a device presence signal to the car stereo.

As discussed under Section B, this Court construes the disputed term “Device Presence Signal” as meaning “transmission of a continuous signal indicating an audio device is present.” Figure 6 of the specification illustrates a flowchart processing logic for determining and handling various device types connected to the auxiliary input ports. (’786 Patent, col. 20, ll. 5-7.) The present invention *can sense device types connected* to the auxiliary input ports, and can *integrate* same with the car stereo. (*Id.* at ll. 8-10.) The present invention determines whether the device connected is CD player/charger, MP3 player, satellite receiver or a DAB receiver. (*Id.* at ll. 20-35.)

As to the structure performing said function, Ford has argued the *WMS Gaming* case in support of its position that said means plus functional language, along with other functional languages in dispute, lack the teaching of an *algorithm* in the disclosure. (*Ford Motor*, Def. Br. at 15-17.) In *WMS Gaming*, the Federal Circuit held that in a means-plus-function claim in which the disclosed structure is a computer, or microprocessor, programmed to carry out an algorithm, the disclosed structure is *the special purpose computer programmed to perform the disclosed algorithm*, and not the general purpose computer. *WMS Gaming*, 184 F.3d at 1349. The Federal Circuit found that the structure of a microprocessor programmed to carry out an algorithm *is limited by the disclosed algorithm*. *Id.* A general purpose computer, or microprocessor, programmed to carry out an algorithm creates “a new machine, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform

particular functions pursuant to instructions from program software.” *Id.* (citing *In re Alappat*, 33 F.3d 1526, 1545 (Fed.Cir.1994) (en banc)); *see also In re Bernhart*, 417 F.2d 1395, 1399–1400 (C.C.P.A. 1969) (“[I]f a machine is programmed in a certain new and unobvious way, it is physically different from the machine without that program; its memory elements are differently arranged.”)).

The Court acknowledges that the *WMS Gaming* case requires disclosure of a programmed “algorithm” in the specification when the special purpose computer or microprocessor is programmed to carry out an algorithm. However, the Court does not agree with Ford’s argument that structure is limited to an *algorithm* when the function being performed is generating, receiving, or transmitting signals.

For instance, the computer or microprocessor (U1), illustrated in Figure 3A, is used for ***processing or formatting*** a signal between a car stereo and an after-market device. (’786 Patent, col. 17, ll. 29-30 and 63-67; Table 1; col. 18, ll. 10-15; and Table 2.) The algorithm, which is the required structure under standard set forth by *WMS Gaming*, is disclosed in the respective tables. In contrast, when it comes to generating, receiving, and transmitting signals, the microcontroller is working in conjunction with numerous discrete connectors such as ports, power sources, resistors, diodes, capacitors, transistors, transformers amplifiers, and oscillators, among other structural components that aid in generating, receiving and transmitting signals. (’786 Patent, col. 9, ll. 45-60; col. 10, ll. 19-24.) Said discrete components provide the structural hardware framework for the microcontroller to act as an interface in integrating an after-market device with a car stereo. (’786 Patent , col. 1, ll. 5-12; col. 1, ll. 60-64; col. 4, ll. 26-32.)

In *Linear Technology Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1320-21 (Fed. Cir. 2004), the Federal Circuit determined that the term “circuit” itself connotes structure, and the contextual language that describes the objective and operation of the claimed “circuit” conveys

the structural arrangement of the circuit's components and provides additional limiting structure. The Federal Circuit further stated that "*The Dictionary of Computing* 75 (4th ed.1996) defines 'circuit' as 'the combination of a number of electrical devices and conductors that, when interconnected to form a conducting path, fulfill some desired function.'" *Id.* at 1320 (citations omitted).

Thus, when the structure-connoting term "circuit" is coupled with a description of the circuit's operation, sufficient structural meaning generally will be conveyed to persons of ordinary skill in the art, and § 112 ¶ 6 presumptively will not apply. *Id.* at 1320.

This Court finds structure associated with **generating** a device presence signal, '786 Patent, col. 8, ll. 31-45 discloses that ports J2A1, X2, RCH, and LCH, connected to a power source (*i.e.* battery) that are provided for allowing connection between the interface system of the present invention and an after-market device, or an auxiliary input source. Figure 3A of the '786 Patent illustrates ports J2A1, X2, RCH, and LCH as connected to an after-market device or to an auxiliary input source. ('786 Patent, col. 8, ll. 42-45.)

Specification of '786 Patent further teaches that plurality of ports J2A1, X2, RCH, and LCH are connected to and interface with a microcontroller (U1) with hardware components such as resistors, diodes, capacitors, and oscillators. ('786 Patent, col. 9, ll. 9-13.) The microcontroller (U1), which is a 16F628 microcontroller manufactured by MICROCHIP, Inc., comprises 8-bit microcontroller having an internal 4MHz internal oscillator, 128 bytes of EEPROM data memory, a capture/compare/PWM, a USART, 2 comparators, and a programmable voltage reference. ('786 Patent, col. 9, ll. 1-5.)

It would be appreciated by a person of ordinary skill in this field that upon connection of an after-market device with one of the plurality of ports, which interface with the microcontroller via hardware illustrated in Figure 3A, for instance, forms a complete functioning circuit that

results in generation of a device presence signal. ('786 Patent, col. 2, ll. 29-35; col. 8, ll. 65-67 to col. 9, ll. 1-8.)

Since the circuit diagrams illustrated in Figure 3A, for instance, accompanied with description in the specification, and guidance by the Federal Circuit on circuitry, constitutes sufficient structure to perform the desired function, said means plus functional claim language is found definite as it particularly points out and distinctly claims the invention as required by second paragraph of 35 U.S.C. § 112.

3. “first pre-programmed means for...transmitting the signal to the car stereo to maintain the car stereo in an operational state”

The above claim language is recited in independent claim 92. The above claim element is recited in a mean-plus-function limitation and is thus subject to 35 U.S.C. §112(f) analysis. The function being performed is *transmitting the signal to the car stereo to maintain the car stereo in an operational state*.

Marlowe has pointed out various figures and sections in the specification that are supposed to recite structure for said means plus function language. (*Ford Motor*, Pl. Br. at 15.) Upon reviewing the designated sections in the specification, this Court finds that there is corresponding adequate structure and an algorithm that performs the function of transmitting the signal to the car stereo to maintain the car stereo in an operational state.

The specification of '786 Patent explicitly provides an algorithm, disclosed in Table 2, which is in the form of computer code that illustrates how data is converted from the after-market device into a format understandable by the car stereo, in this case car stereo of a BMW. As stated in the specification, the after-market device and the car stereo are in communication with each other via the interface:

The code portion shown in Table 2 receives a STOP confirmation message from the CD player, in a format

proprietary to the CD player. Preferably, the received command is stored in a first buffer, such as BMW_Send_buff. The procedure “Load_CD_stop_msg” retrieves status information, magazine information, current disc, and current track information from the CD changer, and constructs a response containing this information. Then, a checksum is calculated and stored in another buffer. ***The response and checksum are in a format compatible with the BMW stereo, and are ready for dispatching to the car stereo.***

(’786 Patent, col. 18, ll. 51-62 (emphasis added).) Thus, there is an algorithm disclosed in the specification that performs the function of ***transmitting the signal to the car stereo to maintain the car stereo in an operational state.***

Moreover, the specification discloses that the circuit disclosed in Figure 3B, for instance, has a plurality of resistors, diodes, capacitors, transistors, transformers, amplifiers, oscillator, among other structural components that provide the hardware framework, for the microcontroller to act as an interface in integrating an after-market device with a car stereo. (’786 Patent, col. 9, ll. 45-60; col. 10, ll. 19-24.) The interconnected framework of structural components, *i.e.* power source, amplifiers, transistors, capacitors, etc., between the after-market device and the car stereo, via the microcontroller, completes the circuitry, which teaches one of ordinary skill in the art that said structural components allow the channels of communication for receiving and transmitting signals.

In view of the computer code algorithm provided in Table 2, structural features disclosed in various circuitry embodiments in the specification, and guidance by the Federal Circuit in *Linear Technology Corp*, 379 F.3d at 1320-21, as discussed above, the Declaration of Thomas Matheson regarding specification lacking algorithm for the microcontroller for ***transmitting*** the signal after it is generated by the microcontroller, is not found to be persuasive. (*Ford Motor*, Matheson Dec., at ¶ 8.)

Since the computer code illustrated in Table 2, and structural features disclosed in various circuitry embodiments in the specification, constitutes sufficient structure, said means plus function claim language is found to be definite as it particularly points out and distinctly claims the invention as required by second paragraph of 35 U.S.C. § 112.

4. “means for remotely controlling the portable audio device using the car stereo by receiving a control command from the car stereo in a format incompatible with the portable audio device”

The above claim language is recited in independent claim 92. The above claim element is recited in a mean-plus-function limitation and is thus subject to 35 U.S.C. §112(f) analysis. The function being performed is *remotely controlling the portable audio device by receiving a control command from the car stereo in a format incompatible with portable audio device*. The key function being performed by said claim limitations is the *receiving* of the commands by the interface system.

Marlowe has pointed out various figures and sections in the specification that are supposed to recite structure for said means plus function language. (*Ford Motor*, Pl. Br. at 16.) Upon reviewing the designated sections in the specification, this Court finds that there is adequate structure that performs the function of *receiving* the signal from the car stereo in a format incompatible with portable audio device.

Ford has argued that '786 Patent does not disclose an algorithm for *receiving* the signal from the car stereo, which is the structure required to perform the functional claim language of *receiving* signal from the car stereo. (*Ford Motor*, Def. Br. at 17.) In response, Marlowe has argued that '786 Patent discloses algorithm by using text, description, prose, flow chart, table, diagram, figure, code portion and other manners in combination to provide sufficient structure for the claim elements having means plus function terms. (*Ford Motor*, Pl. Br. at 18 n.14.) Marlowe further purports that since Ford has agreed to the claim language having structure in the

specification – “means for . . . **processing** the control command into a formatted control command” – the disputed claim term pertaining to means for **receiving** a control command, should be attributed the same structure because they both pertain to the same function. (*Id.* at 5 (emphasis added).)

As an initial matter, this Court does not attribute **receiving** and **processing** of a control command from a car stereo in order to control a portable audio device as the same function. The specification of '786 Patent recites that the interface monitors the control buttons of the car stereo for CD operational commands. ('786 Patent col. 12, ll. 50-51.) When a command, such as forward, reverse, play, stop, etc., is **received** by the interface, it is then **converted** into a format recognized by a CD player/changer. (*Id.* at ll. 52-59.) There are two different functional steps taking place – receiving of the command and converting or processing of the command that can be interpreted by the after-market device such as a CD player/changer.

As for the structure that performs the disputed functional language - **remotely controlling the portable audio device by receiving a control command from the car stereo in a format incompatible with portable audio device**, Marlowe has directed this Court's attention to Figure 3D, col. 11, lines 19-46. Figure 3D represents a circuit diagram for integrating a satellite or DAB receiver with a car radio. The specification teaches how ports J1 and J2, which are connected to an after-market device and a car radio; a microcontroller, which is comprised of a 16F873 microcontroller manufactured by MICROCHIP, Inc.; and a plurality of resistors (R1-R7), capacitors (C1-C2), and amplifier (A1), among other components, **receive, process, format, and dispatch formatted commands** to and from car stereo and the after-market device. ('786 Patent col. 11, ll. 30-67.)

The specification also teaches that microcontroller receives control commands such as button or key sequences, initiated by a user at control panel of the car radio and received at the

connectors J4A and J4B or J3. ('786 Patent col. 9, ll. 49-55.) Discrete connectors, such as resistors, diodes, capacitors, transistors, transformers, amplifiers, oscillator, among other components, are provided for interfacing the microcontroller with the hardware connected to ports J4A, J4B, J3, J5L1, etc. ('786 Patent col. 10, ll. 19-25.)

The interconnected framework of structural components, *i.e.* amplifiers, transistors, capacitors, etc., between the after-market device and the car stereo, via the microcontroller, teaches that a person of ordinary skill in the art that said structural components allow the channels of communication for receiving and transmitting signals. ('786 Patent, col. 9, ll. 45-60; col. 10, ll. 19-24; *see also Linear Technology Corp.*, 379 F.3d at 1320-21, (“term “circuit” itself connotes structure and the contextual language that describes the objective and operation of the claimed “circuit” conveys the structural arrangement of the circuit's components and provides additional limiting structure”).)

The argument presented by Ford as to the disclosure lacking an algorithm, which is the required structure for a computer or microcontroller, under guidelines of *WMS Gaming*, 184 F.3d at 1349, is not persuasive when the claimed function is only *receiving* a control command and not processing or formatting the signal. The circuit diagrams, illustrating various discrete connectors, such as resistors, capacitors, transistors, transformers, amplifiers, are the structural components that interface the microcontroller with the hardware connected to ports J4A, J4B, J3, J5L1, etc., to receive a control command. ('786 Patent col. 10, ll. 19-25.)

Since the structural features disclosed in various circuitry embodiments in the specification constitutes sufficient structure, the means-plus-function claim language is found to be definite as it particularly points out and distinctly claims the invention as required by second paragraph of 35 U.S.C. § 112.

5. “means for remotely controlling the portable audio device using the car stereo by . . . processing the control command into a formatted control command compatible with the portable audio device”

The above claim language is recited in independent claim 92. The above claim element is recited in a mean-plus-function limitation and is thus subject to 35 U.S.C. §112(f) analysis. The function being performed is *remotely controlling the portable audio device by processing a control command from the car stereo in a format compatible with portable audio device*. The key function being performed by said claim limitations is the *processing* of the commands by the interface system.

As agreed by both parties, said functional claim language has adequate structure recited in the specification of '786 Patent. (*Ford Motor*, Def. Br. at 16-17; Pl. Br. at 18-19.)

This Court adopts both parties position that the algorithm performing the function of *processing a control command from the car stereo in a format compatible with portable audio device*, is recited in Table 1 of the specification. ('786 Patent, col. 17, ll. 29-30 and 63-67 (“[A] sample code portion is shown in Table 1, below, for converting control signals from a BMW car stereo into a format understandable by a CD changer.”).)

Here, the microprocessor performing the function of *processing* the control command into a “formatted” command results in a new machine and a *special purpose computer* because it takes in a control signal and converts it into a format understandable by the after-market device, and vice versa. ('786 Patent, col. 17, ll. 29-30 and 63-67; *see also WMS Gaming*, 184 F.3d at 1348 (“A general purpose computer, or microprocessor, programmed to carry out an algorithm creates a new machine, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software.”) (internal quotation marks omitted).)

Only when the microprocessor is performing the function of *processing* or *formatting* a command signal, it results in transformation of the device from a general purpose computer into a special purpose computer. As a result, under the guidelines of *WMS Gaming*, the structure of special purpose computer or microcontroller is dictated by the code or algorithm illustrated in Tables 1 and 2 of '786 Patent. Since the computer code illustrated in Table 1 constitutes an algorithm that will perform the function of *processing a control command from the car stereo in a format compatible with portable audio device*, said means plus function claim language is found to be definite as it particularly points out and distinctly claims the invention as required by second paragraph of 35 U.S.C. § 112.

6. “means for remotely controlling the portable audio device using the car stereo by . . . transmitting the formatted control command to the portable audio device for execution thereby”

The above claim language is recited in independent claim 92. The above claim element is recited in a mean-plus-function limitation and is thus subject to 35 U.S.C. §112(f) analysis. The function being performed is *transmitting the formatted control command to the portable audio device for execution thereby*. The key function being performed by said claim limitations is the *transmitting* of the commands by the interface system to the portable audio device or after-market device.

As discussed above, the specification discloses a circuit in Figure 3B, for instance, having a plurality of resistors, diodes, capacitors, transistors, transformers, amplifiers, oscillator, among other structural components that provide the hardware framework, for the microcontroller to act as an interface in integrating an after-market device with a car stereo. ('786 Patent, col. 9, ll. 45-60; col. 10, ll. 19-24.) The '786 Patent recites, “microcontroller DD1 receives control

commands, such as button or key sequences, initiated by a user at control panel of the car radio and received at the connectors J4A and J4B or J3, processes and formats same, and *dispatches* the formatted commands to the CD player and auxiliary input source via connectors J1 or J2.” (’786 Patent, col. 9, ll. 49-55.) Plurality of discrete connectors as noted above, *i.e.* resistors, transformers, amplifiers, etc., allow the interfacing of microcontroller with the after-market device in order to *transmit* signals. (’786 Patent, col. 10, ll. 20-30.)

Thus, the interconnected framework of structural components, *i.e.* amplifiers, transistors, capacitors, etc., between the after-market device and the car-stereo, via the microcontroller, teaches one of ordinary skill in the art that said structural components allow the channels of communication for receiving and transmitting signals.

Since the discrete components interconnected to form a framework to interface the microcontroller with the after-market device, to perform the function of *transmitting the formatted control command to the portable audio device*, said means plus function claim language is found to be definite as it particularly points out and distinctly claims the invention as required by second paragraph of 35 U.S.C. § 112.

7. “means for transmitting audio from the portable audio device to the car stereo”

The above claim language is recited in independent claim 92. The above claim element is recited in a mean-plus-function limitation and is thus subject to 35 U.S.C. §112(f) analysis. The function being performed is *transmitting audio from the portable audio device to the car radio*. The key function being performed by said claim limitations is the *transmitting* of the commands by the interface system to the portable audio device or after-market device.

Analysis for said means plus functional language mirrors that of the above functional language discussed under sections 3, 4 and 6. As discussed above, under section 6, the

specification discloses circuit in Figure 3B, for instance, having plurality of resistors, diodes, capacitors, transistors, transformers, amplifiers, oscillator, among other structural components that provide the hardware framework, for the microcontroller to act as an interface in integrating an after-market device with a car stereo. ('786 Patent, col. 9, ll. 45-60; col. 10, ll. 19-24.)

The '786 Patent states, “microcontroller DD1 receives control commands, such as button or key sequences, initiated by a user at control panel of the car radio and received at the connectors J4A and J4B or J3, processes and formats same, and *dispatches* the formatted commands to the CD player and auxiliary input source via connectors J1 or J2.” ('786 Patent, col. 9, ll. 49-55.) A plurality of discrete connectors as noted above, *i.e.* resistors, transformers, amplifiers, etc., allow the interfacing of microcontroller with the after-market device in order to transmit signals. ('786 Patent, col. 10, ll. 20-30.)

Thus, the interconnected framework of structural components, *i.e.* amplifiers, transistors, capacitors, etc., between the after-market device and the car-stereo, via the microcontroller, teaches a person of ordinary skill in the art that said structural components allow a channel of communication for receiving and transmitting signals.

Since the discrete components interconnected to form a framework to interface the microcontroller with the after-market device, to perform the function of *transmitting audio from the portable audio device to the car radio*, said means plus function claim language is found to be definite as it particularly points out and distinctly claims the invention as required by the second paragraph of 35 U.S.C. § 112.

January 16, 2015

s/Peter G. Sheridan
PETER G. SHERIDAN, U.S.D.J.