IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

SMART SPEAKER LLC, Plaintiff, v. AMAZON.COM SERVICES LLC, Defendant.	Case No. 2:25-cv-00707-JRG

DEFENDANT'S INVALIDITY AND
SUBJECT MATTER ELIGIBILITY CONTENTIONS

I. INTRODUCTION

Pursuant to Local Patent Rules 3-3 and 3-4, Defendant Amazon.com Services LLC ("Defendant") hereby provides its invalidity contentions concerning the following claims of U.S. Patent No. 12,316,706 (the "'706 Patent"), U.S. Patent No. 12,010,174 (the "'174 Patent"), U.S. Patent No. 11,128,710 (the "'710 Patent"), U.S. Patent No. 11,190,590 (the "'590 Patent"), U.S. Patent No. 12,401,720 (the "'720 Patent"), and U.S. Patent No. 12,401,721 (the "'721 Patent") (collectively, the "Asserted Patents"):

- Claims 1-14, 16, 20, 21, 23-25, and 27-29 of the '706 Patent;
- Claims 1-14, 16, 20, 21, 23-25, and 27-29 of the '174 Patent;[1]
- Claims 1-14, 16, 20, 21, 23-25, and 27-29 of the '710 Patent;
- Claims 1, 7, 20-24, 26-28, 32, 34-36, 38, 48-50, 52-53, 55, and 60-63 of the '590 Patent;

[1] Smart Speaker's infringement contentions charted claim 12 of the '174 Patent and claim 12 of the '710 Patent. Smart Speaker 9/16/2025 infringement contentions, Appendix B at 62-65 and Appendix C at 78-80. Nonetheless, Smart Speaker left out both claims from its list of asserted claims. Smart Speaker 9/16/2025 infringement contentions at 2. Amazon hereby addresses invalidity of both claims in these contentions.

- Claims 1, 4-10, 12-13, 15, 20-21, 23, and 28-29 of the ’720 Patent; and
- Claims 1-14, 17-19, 21-22, 24-29, 31 and 33 of the ’721 Patent (collectively, the “Asserted Patent Claims”).

This citation of references and the accompanying charts and/or exhibits may, in part, be based on Plaintiff Smart Speaker LLC’s apparent view as to the scope of the Asserted Patent Claims as reflected in the Infringement Contentions served by Plaintiff on Defendant on September 16, 2025, and October 28, 2025.

Defendant in no way accepts Plaintiff’s apparent reading of the Asserted Patent Claims as reflecting the proper scope of the claims. Moreover, these Invalidity Contentions are not intended to reflect Defendant’s claim construction positions.

These Invalidity Contentions reflect Defendant’s present knowledge and contentions, and Defendant reserves all rights to modify and supplement these contentions without prejudice in the event that additional invalidity grounds are identified during discovery in this case or otherwise. These Invalidity Contentions are not, and should in no way be construed as, admissions or adoptions of any particular claim scope or construction, or as an admission that a particular claim limitation is met by the accused products in any particular way.

These Invalidity Contentions attempt to use the improper assertions of infringement and improper applications of the Asserted Patent Claims by Plaintiff (evidenced at least by the Infringement Contentions) to understand Plaintiff’s view of the scope of the Asserted Patent Claims.

Defendant does not agree with Plaintiff’s application of the Asserted Patent Claims and denies infringement. Accordingly, these Invalidity Contentions should not be construed as an admission regarding the proper construction of any asserted claim and should not be deemed to

relate to Defendant's non-infringement positions. Further, to the extent an accused product or feature comprises or arises from prior art, Defendant contends, without admitting purported infringement, that the Asserted Patent Claims are anticipated and/or made obvious in light of such prior art and Plaintiff's Infringement Contentions.

In those instances where Defendant contends that the Asserted Patent Claims are invalid for failing to comply with 35 U.S.C. § 112 (*e.g.*, lack of written description, not enabled, and/or indefinite), Defendant has applied the prior art, in part, in accordance with Defendant's assumption that Plaintiff contends that those claims are not indefinite, have adequate written description support, and are enabled by the respective specifications of the Asserted Patents. These Invalidity Contentions, however, do not constitute Defendant's agreement or view as to the meaning of, definiteness of, written description support for, or enablement of any claim contained therein, or that the Asserted Patents each properly disclose structures corresponding to functions in claims governed by 35 U.S.C. § 112(6). To the contrary, Defendant notes numerous grounds for invalidity on such bases below. Further, none of the Invalidity Contentions contained herein shall be construed as an admission that any asserted claim satisfies the requirements of 35 U.S.C. §§ 101 and/or 112.

Much of the art identified in the attached exhibits reflects common knowledge and the state of the art before the respective earliest effective filing dates of the applications for the Asserted Patents. In many instances, where a particular contention calls for combining references, any one of a number of references can be combined. Each of the Asserted Patent Claims is anticipated by and/or rendered obvious in view of one or more of the items of prior art identified herein alone or in combination with other prior art references. The accompanying invalidity claim charts list specific examples where prior art references disclose, either expressly or inherently, each

limitation of the Asserted Patent Claims and/or examples of disclosures in view of which a person of ordinary skill in the art ("POSITA") at the time of the alleged inventions would have considered each limitation, and therefore the claim as a whole, obvious.

Certain pieces of identified prior art inherently disclose features of the Asserted Patent Claims. Defendant reserves the right to rely on inherency to demonstrate invalidity of the Asserted Patent Claims. Moreover, certain prior art references and solutions may inherently disclose certain features of the Asserted Patent Claims as they are being construed by Plaintiff in this case.

Defendant may rely on cited or uncited portions of the prior art, other documents, and expert testimony to establish the inherency of certain features of the prior art to invalidate one or more of the Asserted Patent Claims. Defendant also reserves the right to rely on any reference identified in these Invalidity Contentions or any other reference to prove that the solution or references herein are enabled or to explain the meaning of a term used in the solutions or in any reference.

The citations included in each of the accompanying invalidity claim charts are illustrative, and not exhaustive. In an effort to focus the issues, Defendant is identifying only exemplary portions of cited prior art references. The references, however, may contain additional support on which Defendant may rely. Defendant reserves the right to rely on uncited portions of the identified prior art to establish the invalidity of the asserted claims. For any given quotation or excerpt, for example, Defendant reserves the right to introduce other text and images (including but not limited to surrounding, related, or explanatory text, images, or uncited portions of the prior art references) from the same or other documents that may help to provide context to the quotation or excerpt.

Furthermore, where Defendant cites to a particular figure in a prior art reference, the citation should be understood to encompass the caption and description of the figure and any corresponding text relating to the figure. Similarly, where Defendant cites to particular text referring to a figure, the citation should be understood to include the corresponding figure as well. Defendant may also rely on other documents and information, including cited references and prosecution histories for the Asserted Patents, and witness testimony (*e.g.*, expert testimony), to explain, amplify, illustrate, demonstrate, provide context for, or aid in the understanding of the cited portions of the references. When Defendant identifies a citation for an element, each and every disclosure of the same element in the reference is not necessarily identified. The lack of a citation for an element should not be deemed an admission that the element is not disclosed or is not inherent in the reference.

The specific combinations of references provided below to establish obviousness under 35 U.S.C. § 103 are merely examples and are not intended to be exhaustive. In particular, Defendant is currently unaware of the extent, if any, to which Plaintiff will contend that limitations of the Asserted Patent Claims are not disclosed in the art identified herein by Defendant. To the extent that an issue arises with any such limitation, Defendant reserves the right to identify other references that would have made obvious the addition of the allegedly missing limitation from the perspective of one of ordinary skill in the relevant art.

To the extent these Invalidity Contentions identify any prior art patents and/or printed publications under 35 U.S.C. §§ 102(a), (b), or (e), Defendant may also rely on those patents and/or printed publications as evidence that the described invention was known or used by others under 35 U.S.C. § 102(a), (f) or (g)(2), or was in public use, was known publicly, or on sale under 35 U.S.C. § 102(b).

As discussed above, these Invalidity Contentions reflect Defendant's current knowledge, thinking and contentions as of this stage of the present litigation. Defendant reserves the right to revise, amend, and/or supplement these Invalidity Contentions, without prejudice, at such time as Plaintiff produces relevant information, or for any other appropriate reasons, including but not limited to: (1) any further amendment by Plaintiff of its Infringement Contentions, (2) discovery concerning the alleged priority, conception, public use, public knowledge, on-sale, and reduction to practice dates for any of the Asserted Patent Claims, (3) issues raised by Plaintiff in this action or in any related action or proceeding, (4) any order from the Court relating to the construction of the Asserted Patent Claims, or (5) any other basis in law or in fact.

Defendant further reserves the right to amend these Invalidity Contentions to counter any secondary considerations of non-obviousness asserted by Plaintiff. Defendant expressly reserves the right to rely on witness testimony about the prior art references to supplement these contentions, where appropriate. Moreover, Defendant reserves the right to revise its ultimate contentions concerning the invalidity of the Asserted Patent Claims, which may change depending upon the Court's construction of the Asserted Patent Claims, any findings as to the priority date of the Asserted Patent Claims, and/or positions that Plaintiff or fact or expert witnesses may take concerning claim construction, infringement, and/or invalidity issues.

Defendant reserves the right to contend that, to the extent any prior art system is evidenced by multiple prior art references, those references constitute a single reference for purposes of anticipation. Defendant also reserves the right to contend that, if the prior art references evidencing any system are considered individually, it would have been obvious to combine those references to render the Asserted Patent Claims invalid, because those references, or the information contained therein, all discuss the same subject.

To the extent that a physical system or product embodies an invalidating patent or other printed publication, these Invalidity Contentions should be understood to refer to both the physical system/product as well as the printed publication. Similarly, Invalidity Contentions referring to systems/products should be understood to also refer to patents or other publications describing the system/product.

To the extent any reference that evidences any system discloses a particular feature, it would have been obvious to combine that feature in other or all references that evidence that system to render the Asserted Patent Claims invalid. The reasons or motivation to modify the references describing the system in that manner include, for example, the fact that it would be common sense to apply concepts to one reference about the system that were already being described in another reference about the same system.

To the extent Plaintiff asserts that any system, or any reference supporting that system, does not anticipate the Asserted Patent Claims, it would also have been obvious to combine or modify that system, or any reference supporting that system, with concepts from other prior art such as, for example, other prior art identified in these Invalidity Contentions, to render the Asserted Patent Claims invalid, because all of that prior art relates to the claimed invention of the Asserted Patent Claims.

One of ordinary skill in the art would not have limited himself when making modifications to any of the systems disclosed herein to concepts solely implemented in or discussed with reference to such system. Rather, one of ordinary skill also would have considered the concepts in technologies of the time that are related to the claimed invention of the Asserted Patent Claims. This would have been a result of ordinary innovation, ordinary skill, and common sense and would

have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

Finally, Defendant is only providing Invalidity Contentions for the Asserted Patent Claims. Should Plaintiff later attempt to assert other claims and should the Court grant Plaintiff leave to do so, Defendant reserves the right to contend that any newly-asserted claims are invalid.

II. LOCAL PATENT RULE 3-3(A)-(C): IDENTIFICATION OF BASES FOR INVALIDITY UNDER 35 U.S.C. §§ 102, 103 AND CLAIM CHARTS[2]

Each of the patents and publications (and where appropriate and as further identified in the attached claim charts, the knowledge, public use, sale, offer for sale, or prior invention disclosed or referenced therein) set forth in Table 1 below anticipates and/or renders obvious one or more of the Asserted Patent Claims.

A. '706 Patent

Amazon identifies the following prior art now known to Amazon to anticipate or render obvious the asserted claims of the '706 Patent under at least 35 U.S.C. §§ 102(a), (b), (d), (e) and/or (g) and 103, either expressly or inherently as understood by a POSITA.

Table 1

Ex.	Patent or Publication	Country	First Inventor or Author	Date of Issue (Patents) or Publication
A-1	2012/0198339 A1	US	Hunter Williams	08/02/2012
A-2	7,062,339 B2	US	John K. Howard	06/13/2006
A-3	2011/0313775 A1	US	Pierre-Yves Laligand	12/22/2011
A-4	2013/0132094 A1	US	Jonathan Lim	05/23/2013

[2] Defendant further incorporates its petitions for *inter partes* review filed against the '174, '710, '706, and '590 Patents and all exhibits thereto. *See* IPR2026-00145, IPR2026-00146, IPR2026-00147, IPR2026-0148.

Ex.	Patent or Publication	Country	First Inventor or Author	Date of Issue (Patents) or Publication
A-5	Homes appliances controlled using speech recognition in wireless network environment		B. Mardiana	12/29/2009
A-6	2009/0183070 A1	US	David Robbins	07/16/2009
A-7	8,195,467 B2	US	Todd F. Mozer	06/05/2012
A-8	2012/0265528 A1	US	Thomas Robert Gruber	10/18/2012
A-8	Springer Handbook of Speech Processing	US	Jacob Benesty	11/22/2007
A-8	8,340,975 B1	US	Theodore Alfred Rosenberger	12/25/2012
A-8	7,529,677 B1	US	John W. Wittenberg	05/05/2009
A-8	2013/0052946 A1	US	Manjirnath Chatterjee	2/28/2013
A-8	Springer Handbook of Acoustics	US	Thomas D. Rossing	07/23/2007
A-8	Wireless Communications	US	Andrea Goldsmith	01/20/2006
A-8	8,768,707 B2	US	Todd. F. Mozer	07/01/2014
A-8	Wireless Home Networking Simplified	N/A	Jim Doherty	01/16/2007
A-8	IP Address Management	U.S.	P A Roberts	07/2000

In addition, Defendant identifies system prior art including the Siri Proxy System, developed by Peter Lamonica, which was in public use in the United States by around November 2011. Ex. A-9.

To the extent Plaintiff contends that any of the above items of prior art do not anticipate any asserted claim, Defendant reserves the right to contend that each of the items of prior art renders the Asserted Patent Claims obvious either alone or in combination with one or more other items of prior art. A corresponding claim chart for each item of prior art identified above is attached hereto in Exhibits A-1 to A-9. To the extent a patent prior art reference has a corresponding

application publication (or vice versa), Defendant reserves the right to rely on and cite to that application publication (or patent) and its corresponding disclosures.

In addition, to the extent that Plaintiff fails to satisfy its burden to establish the '706 Patent's entitlement to its claimed priority date due to insufficient written description (discussed below), Defendant reserves the right to identify additional art that renders that Asserted Patent Claims anticipated or obvious. For example, Defendant asserts that earlier published patent applications from the '706 Patent's family, including U.S. Patent Publication No. 2013/0201316 A1, would qualify as prior art and render the Asserted Patent Claims obvious, either alone or in combination with one or more additional references, including those identified above. Defendant further asserts that accused products, like the Amazon Echo (1st Generation) and Amazon Echo Dot (1st Generation), would qualify as prior art and render the Asserted Patents Claims anticipated under Plaintiff's own mapping of the claims. *See Upsher-Smith Lab'ys, Inc. v. Pamlab, L.L.C.*, 412 F.3d 1319, 1322 (Fed. Cir. 2005) ("A century-old axiom of patent law holds that a product 'which would literally infringe if later in time anticipates if earlier.'"). Or they would render the Asserted Patent Claims obvious, alone or in combination with one or more additional references, including those identified above.

Each patent or printed publication describing or relating to a prior art instrumentality should be understood to discuss the instrumentality's capabilities generally and also to discuss specific implementation examples of specific installations and configurations of the particular instrumentality. To the extent the prior art references describe various implementations of the same underlying instrumentality, that underlying instrumentality is a single reference under 35 U.S.C. §§ 102(a) and/or 102(b). The prior art references are evidence of the capabilities of the prior art instrumentality, and each chart provided for a prior art instrumentality should be understood to

incorporate by reference all patents or publications describing or relating to that prior art instrumentality and all charts provided for those patents or printed publications. In addition, each of the prior art references also qualifies as prior art on separate grounds as a patent or publication under 35 U.S.C. § 102. Even if the prior art references are not treated as a single prior art reference, at the very least it would have been obvious to combine the features described in those references as the individual references discuss the same instrumentality.

While Defendant's investigation continues, information available to date indicates that each instrumentality disclosed or referenced in the prior art listed above, and as further identified in the claim charts of Exhibits A-1 to A-9, was: (1) known, published, or used in this country before the alleged invention of the claimed subject matter of the Asserted Patent Claims, (2) published, in public use, and/or on sale in this country more than one year before the filing date of the '706 Patent, and/or (3) invented by another who did not abandon, suppress, or conceal, before the alleged invention of the claimed subject matter of the Asserted Patent Claims. Information concerning the entities who knew of and/or used these instrumentalities, or who were involved in any sales or offers to sell these instrumentalities, can be found in the documents identified describing these instrumentalities.

Defendant reserves the right to rely on the testimony of witness(es) knowledgeable about these or other instrumentalities, as well as documents that are currently in the possession of Plaintiff or third parties describing these or other instrumentalities. Defendant reserves the right to assert that the Asserted Patent Claims are invalid under 35 U.S.C. § 102(f) in the event that Defendant obtains evidence that the named inventor(s) of the '706 Patent did not invent (either alone or in conjunction with others) the subject matter claimed in the '706 Patent. Defendant further intends to rely on admissions of the named inventors, including admissions made on his

or their behalf by attorneys or other agents or representatives, concerning the prior art, including, but not limited to, statements found in the ’706 Patent, its prosecution history, related patents and/or patent applications, any deposition testimony, and the papers filed, and any evidence submitted by Plaintiff in conjunction with this litigation. Defendant may also rely on testimony from the author(s) or named inventor(s) listed on the above references, as well as from individuals involved in the development of the prior art instrumentalities.

Each of the prior art references identified above anticipates the Asserted Patent Claims in accordance with 35 U.S.C. § 102 and/or renders them obvious under 35 U.S.C. § 103, as more specifically noted in the charts of Exhibits A-1 to A-9.

The cited portions of the identified prior art for the ’706 Patent are provided as examples and are representative of the content of the prior art references, and should be understood in the context of the reference as a whole, as understood by one of ordinary skill in the art. To the extent any cited item of prior art for the ’706 Patent is deemed not to anticipate one of the Asserted Patent Claims for failing to teach or suggest one or more limitations of that claim, such limitations would nonetheless have been inherent and/or obvious to one of ordinary skill in the art at the time of the alleged invention(s), either alone or in combination with any of the other identified items of prior art for the ’706 Patent.

All Asserted Patent Claims are rendered obvious in light of any item of prior art cited in Exhibits A-1 to A-9 alone or combined with one or more items of the other prior art cited in Exhibits A-1 to A-9. Moreover, to the extent that any prior art identified as anticipatory is found to be missing an explicit teaching of one or more limitations of the Asserted Patent Claims, any such missing limitation is inherent within the system or publication or was known by those of ordinary skill in the art. Accordingly, such prior art on its own either anticipates or would have

rendered obvious the Asserted Patent Claims. If, and to the extent Plaintiff challenges the correspondence of any of these references with respect to particular elements of the asserted claims of the '706 Patent, Defendant reserves the right to supplement these Invalidity Contentions to identify motivation to combine particular references with one another with additional particularity.

In *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), the U.S. Supreme Court rejected the Federal Circuit's rigid "teaching, suggestion, or motivation" requirement in favor of a flexible, functional approach in which an explicit finding of a "motivation" to combine prior art references is not required to establish obviousness. *Id.* at 407. The Supreme Court held that it is sufficient that a combination of elements was "obvious to try" stating that, "[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp." *Id*. at 415, 421; *see also Dystar Textilfarben GmbH v. C.H. Patrick Co.*, 464 F.3d 1356, 1368 (Fed. Cir. 2006) (explaining that when the "combination of references results in a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient," there exists a motivation to combine prior art references even when there is no explicit suggestion in the references themselves "[b]ecause the desire to enhance commercial opportunities by improving a product or process is universal—and even common-sensical"); *LeapFrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (applying *KSR* and holding that "one of ordinary skill in the art of children's learning toys would have found it obvious to combine the Bevan device with the SSR to update it using modern electronic components in order to gain the commonly understood benefits of such adaption, such as decreased size, increased reliability, simplified operation, and reduced cost").

To the extent that applicable law requires evidence of motivation to combine, motivation exists to combine one or more of the references disclosed herein with each other.[3] Generally, motivation to combine any of these references with others exists within the references themselves, as well as within the knowledge of those of ordinary skill in the art. These references identify and address similar technical issues as the '706 Patent and also suggest solutions to those issues. Various combinations of the above references would have naturally been considered as part of the exercise of ordinary skill by one skilled in the art. The claims of the '706 Patent relate to providing wireless device connectivity and/or control at home and processing and responding to human speech commands. Each of the purported features of the '706 Patent was available in prior art, individually and in combination, prior to the date of the purported invention and was well known to those of ordinary skill in the art. To the extent any of these features solved a problem in the art, that problem was known to those of ordinary skill and had already been solved using obvious solutions.

Further, the items of prior art identified in Exhibits A-1 to A-9 are directed to analogous art. In particular, but without limitation, the items of prior art identified in Exhibits A-1 to A-9 relate to systems and methods for remotely processing audio information such as speech for controlling devices or providing services through devices. For instance:

- Laligand, is a patent publication published Dec. 22, 2011, and assigned to Google. It discloses a client device, e.g., a smartphone, that interacts with a remote server and local wireless network and relies on voice commands to control an appliance, e.g., a television. Laligand at Abstract, 0002, 0005-0008. Laligand is analogous art to the Asserted Patent

[3] Defendant further incorporates the motions to combine from its petitions for *inter partes* review filed against the'706 Patent, as applicable.

Claims and to the systems of Williams and Lim. A POSITA would have looked to combine the voice recognition and search functionality of Laligand with either or both of these systems, in the case of Lim that discloses a system in which where a server sends messages for controlling devices to a client device then to a controlled devices and Williams, which transmits commands from the server to controlled devices. Williams at Abstract, 0007, 0010-0012, 0035-0037; Lim at 0007. A POSITA would have appreciated based on their familiarity with at least these references that the system of Laligand could be modified to control additional types of devices.

- Williams is a 2012 patent publication describing in-home audio interface devices (microphone, optional speaker, network interface) that stream audio via a home router and public network to a cloud application engine, which performs speech/audio recognition and drives media and home-automation services through an exposed API. It discloses a cloud-based, always-connected audio client/server model with remote processing and downstream actions on local devices. Williams at Abstract, 0007, 0010-0012, 0035-0037. A POSITA would have been motivated to modify Williams with, for instance, the system of Lim, which also relates to processing and responding to human speech commands. Williams at 0027, 0036; Lim at 0007. The resulting combination with Lim would disclose a system in which where a server sends messages for controlling devices to a client device rather than directly to the controlled devices, which then transmits commands to the controlled devices.
- Howard is a patent that issued on June 13, 2006, describing a portable pen/phone-like device with microphone, speaker, display, and optical sensor that wirelessly communicates with a home gateway/server to recognize spoken commands and control appliances, such

as televisions, VCRs, lights, HVAC appliances, and others over a home network. Howard at 1:53-64; 3:19-4:24; 9:13-38. A POSITA would have been familiar with and look to the teachings of references, such as Doherty, Doherty teaches that home devices can be connected via the wireless router, stating that "[i]n the next wave, we see all types of devices connecting to the network, including some obvious devices such as TVs, stereos, and digital recording devices (DVRs), but also appliances, home security systems, and electronics that can control home lighting, sprinkler systems, air conditioning, and answering machines." Doherty at 321.

- Robbins is a patent application published on July 16, 2009. It discloses a hub type client device interacting with a server and controllable devices in the home in response to a user's voice commands. Robbins at Abstract, 0007, Robbins at Abstract, 0039-0044. In this way, a POSITA would have looked to Robbins to combine the systems disclosed in, for example, Laligand, to control other types of appliances beyond televisions, such as telephones, lighting, alarm systems, and HVAC appliances with a hub type client device.
- Lim is a patent publication resulting from an application filed Nov. 17, 2011, which describes a universal remote control that can capture voice input about the brand and model of an appliance. Lim at 0001. The remote can then send the data wirelessly to a controlling device for further processing and operation of that appliance. Lim at 0007, 0027. Lim discloses remote control of numerous home appliances—including televisions, displays, DVD players, digital video recorders, and thermostats. Lim at 0017, 0027-31. Lim is analogous art to the Asserted Patent Claims and references, such as Wittenberg, Williams (addressed above), Chatterjee, Rosenberger, and/or Gruber. All relate to remotely processing audio information such as voice data to control devices or providing services

through devices. A POSITA would have looked to combine Lim with Wittenberg's disclosure of specific voice recognition and with Gruber's contextual speech processing, Rosenberger's device that "includes . . . a multi-colored LED status light", and/or Chatterjee's disclosed control of automated devices to expand the capabilities of the system of Lim.

- Siri Proxy System was a system based on Peter Lamonica's work published to YouTube and GitHub in and around November 2011. It discloses a system for controlling home appliances connected over a network using voice commands using an iPhone 4s, a home server, and an appliance, such as a thermostat. *See* Pete Lamonica, Siri Proxy demo (Nov. 21, 2011), https://www.youtube.com/watch?v=AN6wy0keQqo; Pete Lamonica, SiriProxy Installation (Long Version) (Dec. 3, 2011), https://www.youtube.com/watch?v=GQXyJR6mOk0. A POSITA would have looked to the Siri Proxy System, which could be created using conventional, off-the-shelf components for controlling household appliances with a smartphone to combine with the voice recognition methods of, for instance, Gruber, and the systems of Lim, Williams, Laligand, and/or Chatterjee, which are analogous art, and disclose controlling multiple types of home appliances to expand the capabilities of Siri Proxy System with reasonable success. Lim at 0017, 0027-31; Williams at Abstract, 0007, 0010-0012, 0035-0037; Chatterjee at 0012; Laligand at Abstract, 0002, 0005-0008.
- Gruber is a patent publication resulting from an application filed Sept. 30, 2011. It describes a virtual assistant that can interface with remote servers and computing devices to interpret voice input and prompt the speaker to provide additional information where needed. Gruber at Abstract, 0007, 0218-225, & Fig. 31. The device of Gruber also

provides "signatures of connected networks, including Ethernet, Wi-Fi and Bluetooth. Signatures include MAC addresses of network access points, IP addresses assigned, device identifiers such as Bluetooth names, frequency channels and other properties of wireless networks." Gruber at 0218-0225. A POSITA would have looked to Gruber's disclosure of contextual information from device sensors for improved speech processing, a light sensor and thermometer, and networking protocols to combine with, for example, the systems of Williams and Lim.

- Mardiana is non-patent literature published from a 2009 conference describing a Wi-Fi–based client/server system in which a PC captures spoken commands, sends them over a wireless LAN to a remote speech-recognition PC, and uses the results to switch home appliances (lamps, fans, TV, radio, air-conditioner) on and off. Mardiana at 285-86: Abstract & Fig. 1:

Figure 1. Overview of system architecture

A POSITA would have been motivated to modify Mardiana with, for instance, the system of Lim, which also relates to processing and responding to human speech commands. Lim at 0007. Such a combined system would disclose a server sending messages for controlling devices.

- Mozer ’467 is a U.S. patent issued June 5, 2012. It describes a system comprised of wireless devices, such as Bluetooth headsets that include a microphone, local speech recognizer, and memory. Mozer ’467 at Abstract; 5:1-23. Mozer ’467 further discloses that upon recognizing command words, the device causes a connection to remote systems such as voice search engines, where more sophisticated speech recognition and dialog can occur. Mozer ’467 at Abstract; 2:9-29; 3:14-35; 5:1-23; 8:19-9:21. A POSITA would have looked to combine the systems of, for instance, Lim, Williams, or Laligand, with Mozer ’467 because it is analogous art and its disclosure of multiple microphones.
- Mozer ’707 is a U.S. patent issued on July 1, 2014. It describes a system for performing speech recognition and specifically for identifying a specific voice. Mozer ’707 at 9:18-30. Mozer ’707 and Mozer ’467 share the same inventor.
- Rosenberger is a U.S. patent filed on October 4, 2011. It is directed to “improvements in speech-recognizing control devices that respond to oral commands from a system user to produce a desired effect or result.” Rosenberger at 1:7-13. Rosenberger’s device “[p]referably . . . includes . . . a multi-colored LED status light 34 for visually indicating various device states and modes.” Rosenberger at 8:8-16. A POSITA would have looked to Rosenberger for its disclosure of speech recognition to trigger a device status light and to play a prerecorded or synthesized audio message (e.g. “How may I help you?”) through a speaker. Rosenberger at 8:20-32.

- Wittenberg is a U.S. patent filed on January 21, 2005. It relates to "a technique for remotely processing a local audio command to control a local device." Wittenberg at Abstract. It discloses "performing speech recognition processing on the audio signal at the remote site to determine whether the audio signal includes a command; performing voice recognition processing on the audio signal at the remote site to determine whether the audio signal has been supplied by an authorized user; generating a command signal in response to the audio signal including a command and being supplied by an authorized user; and transmitting the command signal to a device at the local site to effect a change in a state of the local device." Wittenberg at Abstract. A POSITA would have looked to the voice recognition of Wittenberg to combine with, for instance, the system of Lim, Williams, or Laligand, to achieve greater security and with a reasonable expectation of success.
- Chatterjee is a patent publication resulting from an application filed on August 23, 2011. It is directed to "a system and method for providing home automation using a mobile device." Chatterjee at Abstract. The disclosed "home automation systems provide centralized control for lighting, HVAC (heating, ventilation and air conditioning), appliances (such as refrigerators and dishwashers), and similar systems." Chatterjee at 0001. A POSITA would have looked to the system of Chatterjee for its disclosure of automated control of various types of appliances, including "such as controlling the temperature of a HVAC or toggling the light system on and off," to combine with, for example the system of Lim. Chatterjee 0012.

A POSITA would have looked to the references identified above to provide insight into field of remotely processing audio information such as speech for controlling devices or providing services through devices. Based on these related disclosures, a POSITA at the time of the alleged

invention would have been motivated to apply the teachings from one reference to another in the same way.

In addition, much of the art identified above reflects common knowledge and the state of the art prior to the priority date of the ’706 Patent and/or at the time each alleged invention was made with which a POSITA would have been familiar. By way of example, Benesty is a textbook entitled “Springer Handbook of Speech Processing”. It is an overview describing the state of the art for speech processing techniques, including speech recognition, speaker recognition, speech enhancement via noise reduction, and microphone arrays, that would have been well-known to a POSITA. Similarly, Goldsmith is a textbook titled “Wireless Communications,” published by Cambridge University Press, describes the state of the art, and would have been well-known to a POSITA for wireless communication systems, protocols, and techniques for applying them. Roberts is a 2000 article describing how devices are addressed on networks like the Internet. Further, Rossing is a textbook titled “Audio and Electroacoustics,” disclosing how conventional microphones and speakers operate, published by Springer and would have been well-known to a POSITA. A POSITA would have been familiar with this common knowledge and the state of the art and would have been motivated to combine it with the prior art identified in Exhibits A-1 to A-9.

A POSITA would have been motivated to combine the devices in Williams, Howard, Laligand, Lim, Mardiana, Robbins, Mozer ’467, and/or Siri Proxy System, with disclosures like those from Roberts, Goldsmith, Doherty, and/or Gruber to allow those devices to use different wireless standards, improving interoperability for users with diverse wireless networks; to utilize wireless standards with improved bandwidth, speed, and/or signal strength or that may be more appropriate for a given use case (like satellite helping serve remote users); and to provide means

for addressing the device in a network to permit efficient network communications, including with Internet-connected devices.

A POSITA would have been motivated to combine the devices in Williams, Howard, Laligand, Lim, Mardiana, Robbins, Mozer ’467, and/or Siri Proxy System, with disclosures like those from Benesty, Gruber, Mozer ’707, and Wittenberg to allow those devices to use different speech processing methods and techniques, including use of multiple microphones and capabilities for determining a speaker’s identify, improving capability for utilizing voice recognition for controlling devices or provisioning services.

A POSITA would have been motivated to combine the devices in Williams, Howard, Laligand, Lim, Mardiana, Robbins, Mozer ’467, and/or Siri Proxy System, with disclosures like those from Chatterjee, Gruber, and Rosenbeger to enhance the capabilities of these devices to connect to expanding types of devices, home appliances, and actuators, thereby increasing their utility and efficiency.

With this knowledge, the person of ordinary skill in the art would have been motivated to consider the techniques and systems disclosed in the prior art identified in Exhibits A-1 to A-9 and to combine the teachings of the various other items of prior art disclosed in Exhibits A-1 to A-9 to arrive at the purported inventions embodied in the Asserted Patent Claims. Thus, the motivation to combine the references arises: from the field of processing and responding to human speech commands to control devices connected by a network, from the awareness of the deficiencies in the prior art, and from the interest in developing systems for increasing the prominence of useful information. Moreover, in light of the nature of the problem to be solved, the similarity of the field in which the prior art is found, and the ordinary creativity of one with ordinary skill in the art, it would have been obvious to try to combine the features of the prior art

identified in Exhibits A-1 to A-9 to arrive at the purported inventions embodied in the Asserted Patent Claims. The features of the prior art identified in Exhibits A-1 to A-9 would have been understood as compatible and desirable for use in conjunction with, or as enhancements to each other, resulting in a more desirable system. Implementation of such features, including in software, would have been understood to have been feasible and straightforward to one of ordinary skill in the art at the priority date of the ’706 Patent.

Each of the features purportedly found in the ’706 Patent are combined for the very purpose for which they were designed by prior art inventors and the combination yields predictable results. *KSR*, 550 U.S. at 416. A person of ordinary skill in the art had reason to combine these known features to achieve predictable results to satisfy market demand as evidenced by the fact that the features were already present in the prior art, either in combination or individually. The ’706 Patent is therefore a combination that only unites old elements with no change to their respective functions in an attempt to withdraw what was already known from the public domain. To the extent the ’706 Patent provides any variations to the known combinations, those variations were predictable to one of ordinary skill in the art.

In addition to the foregoing, the teaching, suggestion, or motivation to combine these references, although not required, is explicitly or implicitly found in one or more of the following: the explicit and/or implicit teachings of the references in Exhibits A-1 to A-9 and the prior art as a whole, including interrelated teachings of multiple prior art references; the subject matter acknowledged as prior art in the ’706 Patent; the general knowledge of those skilled in the art (including knowledge of trends in the field and knowledge that the art is of special interest or importance in the field); the fact that all of the prior art references concern the field of processing and responding to human speech commands to control devices connected by a network and

related fields; the nature of the problem to be solved and the existence of similar improvements in similar applications; design incentives and other market forces, including the advantages of creating a superior and more desirable product and the effects of demands known to the design community or present in the marketplace; the ability to implement the alleged invention as a predictable variation of the prior art; improvements in similar devices; the interrelated teachings of multiple prior art references; any needs or problems known in the field addressed by the '706 Patent; and the number of identified, predictable solutions to the problem addressed by these patents. In addition, the simultaneous (and/or prior) inventions described above (and elsewhere in these contentions) is evidence that motivation to combine the concepts described in the various prior art references did, in fact, exist, and they were, in fact, combined. One of ordinary skill in the art would be motivated by considerations such as wanting to improve a method or system for using voice controls to control devices connected by a network, to combine the various teachings to arrive at the purported inventions embodied in the Asserted Patent Claims. Stated differently, the prior art identified in Exhibits A-1 to A-9 demonstrates that there was, at the time of the alleged invention, a finite number of identified, predictable solutions for improving the effectiveness and timeliness of delivering audio content to a user that persons of ordinary skill in the art would have known how to successfully combine the prior art identified in Exhibits A-1 to A-9 to yield one or more embodiments of the Asserted Patent Claims, making the claimed invention obvious.

Known methods and elements of the Asserted Patent Claims would yield predictable results:

- Howard discloses: "Increasingly, homes appliances are being connected together and controlled via a home network, which typically take different forms ranging from a simple

network hub device to a more complex hub and switching system with broadband connection to the Internet." Howard at 1:18-22.

- Lim describes: "It is known to offer an app for download and installation into memory **312** which app may serve to allow use of the smart phone to transmit commands suitable for operation of entertainment and other appliances. Such an app may draw on a library of codesets suitable for commanding the functional operations of various types of appliances of multiple manufactures and/or models, i.e., a library of codesets for a so-called "universal" controller, as well known in the art. As appropriate for a particular embodiment this library may be resident on the smart device itself, either downloaded as part of or in conjunction with the app or preinstalled in memory **312** or in a separate self-contained command transmitter; may be located externally at a local PC or remote server device accessible to smart device **110** for the download of only those code sets necessary for operation of the configured appliances; or may be located in a command relay device such as described in the previously referenced U.S. patent application Ser. No. 13/043,915." Lim at 0024.
- Williams describes: "Homes and other user premises are increasingly equipped with always-on Internet or 'cloud' connectivity. In many cases, even mobile users have constant or nearly constant data connectivity. The common availability of network communications has created a number of new possibilities for services and other functionality, using the variety of connected devices accessible to users." Williams at 0001.
- Robbins discloses: "These new digital sources—coupled with internet content such as available on YouTube and iTunes Web sites—is enticing consumers with vast media

libraries of hundreds of thousands of titles. At the same time the user wants a simple control device that fits in the hand as the user relaxes in their home. This is driving a conflict into the command and control space: greater interactivity and control demanded from a handheld device. There are two ways to address this challenge—through menus and screens, or through voice control." Robbins at 0002.

The Siri Proxy System further indicates that the claims result from the combination of known methods and components to yield predicable results. In or around November 2011, individuals, including Peter Lamonica, created a system for controlling home appliances connected over a network using voice commands. *See* Pete Lamonica, Siri Proxy demo (Nov. 21, 2011), https://www.youtube.com/watch?v=AN6wy0keQqo; Pete Lamonica, SiriProxy Installation (Long Version) (Dec. 3, 2011), https://www.youtube.com/watch?v=GQXyJR6mOk0; Kelly Hodgkins, Developer builds Siri proxy server, Engadget (Nov. 21, 2011); Mike Nathan, Siri Proxy Adds Tons of Functionality, Doesn't Require a Jailbreak, Hackaday (Nov. 21, 2011); Voice Activated Home Automation with SiriProxy & ioBridge, MarkHodder.com (2011). The Siri Proxy System relied on a conventional, iPhone 4s, an open-source Siri Proxy server running on a personal computer over a home network that interacted with Apple's servers, and an internet-controlled appliance, such as a thermostat. Pete Lamonica, Siri Proxy demo (Nov. 21, 2011), https://www.youtube.com/watch?v=AN6wy0keQqo. The Siri Proxy System exhibits the claimed functionality of generating, transmitting, and processing data, and controlling a device based on the processed data using off-the-shelf components.

Design incentives and other market forces motivating persons of ordinary skill:

- Robbins discloses: "The command and control market is at a crossroads. Consumers are integrating more devices into their entertainment systems (e.g., DVD burners, networked

media, Hi-Def DVD, etc.) each of which has its own remote control. These new digital sources—coupled with internet content such as available on YouTube and iTunes Web sites—is enticing consumers with vast media libraries of hundreds of thousands of titles. At the same time the user wants a simple control device that fits in the hand as the user relaxes in their home. This is driving a conflict into the command and control space: greater interactivity and control demanded from a handheld device. There are two ways to address this challenge—through menus and screens, or through voice control." Robbins at 0002.

- Laligand discloses: "People interact more and more with computers, and they also interact more and more with different kinds of computers. While desktop and laptop computers may have been the most prevalent computers in people's lives in the past, most people are more likely now to interact with smart phones, DVRs, televisions, and other consumer devices that include computers in them." Laligand at 0003.
- Williams discloses: "The architecture [] can be utilized to provide a wide variety of services and functionality, of which the following are simple examples.

  A cloud-based application may be configured to received vocal commands from users and to perform operations based on those commands. For example, a user may speak a grocery order, and the spoken order may be interpreted using the voice recognition functionality described above. Once interpreted, the order may be submitted to a grocery store for subsequent delivery or simply recorded as a shopping list that the user can view on their smartphone when shopping at the grocery store. An application such as this may apply personalized settings for each order, such as preferred delivery schedules and historical portion sizes.

Similarly, a cloud-based application may allow users to order tickets without needing a computer. A user may tell the application what movie they want to see. The application may use pre-configured information about the user (such as location) to determine which theater is near the user. The application may respond to a spoken command to order movie tickets by using the speech synthesis functionality of the system to query the user regarding movie selections and times.

. . . .

A similar type of application may identify the song the user is currently listening to, and in response may provide information about related articles, offer samples, suggest related music and playlists, or present information allowing the user to purchase individual music tracks." Williams at 0043-0047.

- Howard discloses: "An illustration of how the portable device of the present invention can be utilized to purchase items over the Internet is illustrated in FIG. 10." Howard at 0073.
- Gruber discloses: "Accordingly, existing systems are often difficult to use and to navigate, and often present users with inconsistent and overwhelming interfaces that often prevent the users from making effective use of the technology.

  An intelligent automated assistant, also referred to herein as a virtual assistant, can provide an improved interface between human and computer." Gruber at 0010-0011.
- Wittenberg discloses: "For example, speech processing software (i.e., software that processes audio signals to identify spoken words within the audio signal) can require significant memory capacity and can be processing intensive. Such processing and memory demands may undesirably increase the cost and size of an electronic device due to the need for increased memory and processing capability. Further, in a network of such devices,

updating command processing software would require downloading new software to each device, which may be cumbersome and time consuming.

Another option would be to control a local device by processing command signals remotely. Remote processing of commands is known in a number of contexts." Wittenberg at 1:24-35.

In many instances where a particular contention calls for, or requires, combining references, any one of a number of references can be combined. Defendant reserves its right to identify supplemental combinations as the case progresses. As such, the combinations evidencing teachings, suggestions, and/or motivations to combine the prior art references in a way that renders the asserted claims obvious listed herein are merely examples. A person of ordinary skill would have access to the materials found in in these contentions and would have at least the ordinary creativity and skill to combine the attached references in ways not explicitly recited above.

As explained herein and in the accompanying claim charts, it would have been obvious to a person of ordinary skill in the art at the time of the alleged invention to combine the various references identified below in a way to practice the claimed invention. The Asserted Patent Claims are therefore obvious under 35 U.S.C. § 103.

Defendant may rely on a subset of the identified references, or all of the references identified herein for purposes of obviousness, depending on the Court's claim construction, positions taken by Plaintiff, and further discovery in this case. Defendant identifies the following combinations of prior art references that render obvious the asserted claims under 35 U.S.C. § 103:

1. Williams alone or in combination with at least one of Howard, Laligand, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer '707, Mozer '467, Siri Proxy System, Roberts,

Doherty and/or the admitted prior art.

2. Howard alone or in combination with at least one of Williams, Laligand, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Siri Proxy System, Roberts, Doherty and/or the admitted prior art;

3. Laligand alone or in combination with at least one of Howard, Williams, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Siri Proxy System, Roberts, Doherty, and/or the admitted prior art.

4. Lim alone or in combination with at least one of Howard, Williams, Laligand, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Siri Proxy System, Roberts, Doherty, and/or the admitted prior art.

5. Mardiana alone or in combination with at least one of Howard, Williams, Laligand, Lim, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Siri Proxy System, Roberts, Doherty, and/or the admitted prior art.

6. Robbins alone or in combination with at least one of Howard, Williams, Laligand, Lim, Mardiana, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Siri Proxy System, Roberts, Doherty, and/or the admitted prior art.

7. Mozer ’467 alone or in combination with at least one of Howard, Williams, Laligand, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg,

Chatterjee, Rossing, Goldsmith, Mozer ’707, Siri Proxy System, Roberts, Doherty, and/or the admitted prior art.

8. Siri Proxy System alone or in combination with at least one of Williams, Howard, Laligand, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467 Roberts, Doherty, and/or the admitted prior art.

A person of ordinary skill in the art would have arrived at the claimed alleged invention in the ’706 Patent based on the combinations of the prior art listed above. Motivation to combine the above references is present in the references themselves, the common knowledge of a person of ordinary skill in the art, the prior art as a whole, and the nature of the problems allegedly addressed by the ’706 Patent. Combining these references would have been obvious to one of ordinary skill in the art because the references identify and address the same technical issues and suggest similar solutions to those issues. Defendant reserves the right to establish additional motivations to combine any of the above references based on the teachings contained in any of the references identified in these Invalidity Contentions.

Additionally, one of ordinary skill in the art would be motivated to combine the identified references because of the nature of the problem being solved, the express, implied, and inherent teachings of the prior art, and the knowledge of the person of ordinary skill in the art that such combinations would yield predictable results. These combinations that render the ’706 Patent obvious would also have been a simple design choice that represented a predictable variation within the knowledge and skill of a person of ordinary skill in the art at the time of the purported invention in the ’706 Patent.

One of ordinary skill in the art would also have been motivated to combine the above identified references based on his or her education, knowledge, and experience, by the state of the prior art at the time of invention, by the nature of the problem to be solved, and by common sense. A person of ordinary skill in the art is presumed to have knowledge of all relevant prior art and therefore would have been familiar with each of the references identified above. A person of ordinary skill in the art would also be familiar with the background knowledge in the art and the full range of teachings they contain.

B. '174 Patent

Amazon identifies the following prior art now known to Amazon to anticipate or render obvious the asserted claims of the '174 Patent under at least 35 U.S.C. §§ 102(a), (b), (d), (e) and/or (g) and 103, either expressly or inherently as understood by a POSITA.

Table 2

Ex.	Patent or Publication	Country	First Inventor or Author	Date of Issue (Patents) or Publication
B-1	2012/0198339 A1	US	Hunter Williams	08/02/2012
B-2	7,062,339 B2	US	John K. Howard	06/13/2006
B-3	2011/0313775 A1	US	Pierre-Yves Laligand	12/22/2011
B-4	2013/0132094 A1	US	Jonathan Lim	05/23/2013
B-5	Homes appliances controlled using speech recognition in wireless network environment	US	B. Mardiana	12/28/2009
B-6	2009/0183070 A1	US	David Robbins	07/16/2009
B-7	8,195,467 B2	US	Todd F. Mozer	06/05/2012
B-8	2012/0265528 A1	US	Thomas Robert Gruber	10/18/2012
B-8	Springer Handbook of Speech Processing	US	Jacob Benesty	11/22/2007
B-8	8,340,975 B1	US	Theodore Alfred Rosenberger	12/25/2012

Ex.	Patent or Publication	Country	First Inventor or Author	Date of Issue (Patents) or Publication
B-8	7,529,677 B1	US	John W. Wittenberg	05/05/2009
B-8	2013/0052946 A1	US	Manjirnath Chatterjee	02/28/2013
B-8	Springer Handbook of Acoustics	US	Thomas D. Rossing	07/23/2007
B-8	Wireless Communications	US	Andrea Goldsmith	01/20/2006
B-8	8,768,707 B2	US	Todd. F. Mozer	07/01/2014
B-8	Wireless Home Networking Simplified	N/A	Jim Doherty	01/16/2007
B-8	IP Address Management	U.S.	P A Roberts	07/2000

In addition, Defendant identifies system prior art including the Siri Proxy System, which was in public use in the United States by around November 2011. Ex. B-9.

To the extent Plaintiff contends that any of the above items of prior art do not anticipate any asserted claim, Defendant reserves the right to contend that each of the items of prior art renders the Asserted Patent Claims obvious either alone or in combination with one or more other items of prior art. A corresponding claim chart for each item of prior art identified above is attached hereto in Exhibits B-1 to B-9. To the extent a patent prior art reference has a corresponding application publication (or vice versa), Defendant reserves the right to rely on and cite to that application publication (or patent) and its corresponding disclosures.

In addition, to the extent that Plaintiff fails to satisfy its burden to establish the ’174 Patent’s entitlement to its claimed priority date due to insufficient written description (discussed below), Defendant reserves the right to identify additional art that renders that Asserted Patent Claims anticipated or obvious. For example, Defendant asserts that earlier published patent applications from the ’174 Patent’s family, including U.S. Patent Publication No. 2013/0201316 A1, would qualify as prior art and render the Asserted Patent Claims obvious, either alone or in combination with one or more additional references, including those identified above. Defendant further asserts

that accused products, like the Amazon Echo (1st Generation) and Amazon Echo Dot (1st Generation), would qualify as prior art and render the Asserted Patents Claims anticipated under Plaintiff's own mapping of the claims. *See Upsher-Smith Lab'ys*, 412 F.3d at 1322 ("A century-old axiom of patent law holds that a product 'which would literally infringe if later in time anticipates if earlier.'"). Or they would render the Asserted Patent Claims obvious, alone or in combination with one or more additional references, including those identified above.

Each patent or printed publication describing or relating to a prior art instrumentality should be understood to discuss the instrumentality's capabilities generally and also to discuss specific implementation examples of specific installations and configurations of the particular instrumentality. To the extent the prior art references describe various implementations of the same underlying instrumentality, that underlying instrumentality is a single reference under 35 U.S.C. §§ 102(a) and/or 102(b). The prior art references are evidence of the capabilities of the prior art instrumentality, and each chart provided for a prior art instrumentality should be understood to incorporate by reference all patents or publications describing or relating to that prior art instrumentality and all charts provided for those patents or printed publications. In addition, each of the prior art references also qualifies as prior art on separate grounds as a patent or publication under 35 U.S.C. § 102. Even if the prior art references are not treated as a single prior art reference, at the very least it would have been obvious to combine the features described in those references as the individual references discuss the same instrumentality.

While Defendant's investigation continues, information available to date indicates that each instrumentality disclosed or referenced in the prior art listed above, and as further identified in the claim charts of Exhibits B-1 to B-9, was: (1) known, published, or used in this country before the alleged invention of the claimed subject matter of the Asserted Patent Claims, (2)

published, in public use, and/or on sale in this country more than one year before the filing date of the ’174 Patent, and/or (3) invented by another who did not abandon, suppress, or conceal, before the alleged invention of the claimed subject matter of the Asserted Patent Claims. Information concerning the entities who knew of and/or used these instrumentalities, or who were involved in any sales or offers to sell these instrumentalities, can be found in the documents identified describing these instrumentalities.

Defendant reserves the right to rely on the testimony of witness(es) knowledgeable about these or other instrumentalities, as well as documents that are currently in the possession of Plaintiff or third parties describing these or other instrumentalities. Defendant reserves the right to assert that the Asserted Patent Claims are invalid under 35 U.S.C. § 102(f) in the event that Defendant obtains evidence that the named inventor(s) of the ’174 Patent did not invent (either alone or in conjunction with others) the subject matter claimed in the ’174 Patent. Defendant further intends to rely on admissions of the named inventors, including admissions made on his or their behalf by attorneys or other agents or representatives, concerning the prior art, including, but not limited to, statements found in the ’174 Patent, its prosecution history, related patents and/or patent applications, any deposition testimony, and the papers filed, and any evidence submitted by Plaintiff in conjunction with this litigation. Defendant may also rely on testimony from the author(s) or named inventor(s) listed on the above references, as well as from individuals involved in the development of the prior art instrumentalities.

Each of the prior art references identified above anticipates the Asserted Patent Claims in accordance with 35 U.S.C. § 102 and/or renders them obvious under 35 U.S.C. § 103, as more specifically noted in the charts of Exhibits B-1 to B-9.

The cited portions of the identified prior art for the ’174 Patent are provided as examples and are representative of the content of the prior art references, and should be understood in the context of the reference as a whole, as understood by one of ordinary skill in the art. To the extent any cited item of prior art for the ’174 Patent is deemed not to anticipate one of the Asserted Patent Claims for failing to teach or suggest one or more limitations of that claim, such limitations would nonetheless have been inherent and/or obvious to one of ordinary skill in the art at the time of the alleged invention(s), either alone or in combination with any of the other identified items of prior art for the ’174 Patent.

All Asserted Patent Claims are rendered obvious in light of any item of prior art cited in Exhibits B-1 to B-9 alone or combined with one or more items of the other prior art cited in Exhibits B-1 to B-9. Moreover, to the extent that any prior art identified as anticipatory is found to be missing an explicit teaching of one or more limitations of the Asserted Patent Claims, any such missing limitation is inherent within the system or publication or was known by those of ordinary skill in the art. Accordingly, such prior art on its own either anticipates or would have rendered obvious the Asserted Patent Claims. If, and to the extent Plaintiff challenges the correspondence of any of these references with respect to particular elements of the asserted claims of the ’174 Patent, Defendant reserves the right to supplement these Invalidity Contentions to identify motivation to combine particular references with one another with additional particularity.

In *KSR* , the U.S. Supreme Court rejected the Federal Circuit’s rigid “teaching, suggestion, or motivation” requirement in favor of a flexible, functional approach in which an explicit finding of a “motivation” to combine prior art references is not required to establish obviousness. 550 U.S. at 407. The Supreme Court held that it is sufficient that a combination of elements was “obvious

to try" stating that, "[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp." *Id*. at 415, 421; *see also Dystar* , 464 F.3d at 1368 (explaining that when the "combination of references results in a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient," there exists a motivation to combine prior art references even when there is no explicit suggestion in the references themselves "[b]ecause the desire to enhance commercial opportunities by improving a product or process is universal—and even common-sensical"); *LeapFrog* , 485 F.3d at 1162 (applying *KSR* and holding that "one of ordinary skill in the art of children's learning toys would have found it obvious to combine the Bevan device with the SSR to update it using modern electronic components in order to gain the commonly understood benefits of such adaption, such as decreased size, increased reliability, simplified operation, and reduced cost").

To the extent that applicable law requires evidence of motivation to combine, motivation exists to combine one or more of the references disclosed herein with each other.[4] Generally, motivation to combine any of these references with others exists within the references themselves, as well as within the knowledge of those of ordinary skill in the art. These references identify and address similar technical issues as the '174 Patent and also suggest solutions to those issues. Various combinations of the above references would have naturally been considered as part of the exercise of ordinary skill by one skilled in the art. The claims of the '174 Patent relate to providing wireless device connectivity and/or control at home and processing and responding

[4] Defendant further incorporates the motions to combine from its petitions for *inter partes* review filed against the'174 Patent, as applicable.

to human speech commands. Each of the purported features of the ’174 Patent was available in prior art, individually and in combination, prior to the date of the purported invention and was well known to those of ordinary skill in the art. To the extent any of these features solved a problem in the art, that problem was known to those of ordinary skill and had already been solved using obvious solutions.

Further, the items of prior art identified in Exhibits B-1 to B-9 are directed to analogous art. In particular, but without limitation, the items of prior art identified in Exhibits B-1 to B-9 all relate to systems and methods for remotely processing audio information such as speech for controlling devices or providing services through devices. For instance:

- Laligand, is a patent publication published Dec. 22, 2011, and assigned to Google. It discloses a client device, e.g., a smartphone, that interacts with a remote server and local wireless network and relies on voice commands to control an appliance, e.g., a television. Laligand at Abstract, 0002, 0005-0008. Laligand is analogous art to the Asserted Patent Claims and to the systems of Williams and Lim. A POSITA would have looked to combine the voice recognition and search functionality of Laligand with either or both of these systems, in the case of Lim that discloses a system in which where a server sends messages for controlling devices to a client device then to a controlled devices and Williams, which transmits commands from the server to controlled devices. Williams at Abstract, 0007, 0010-0012, 0035-0037; Lim at 0007. A POSITA would have appreciated based on their familiarity with at least these references that the system of Laligand could be modified to control additional types of devices.
- Williams is a 2012 patent publication describing in-home audio interface devices (microphone, optional speaker, network interface) that stream audio via a home router

and public network to a cloud application engine, which performs speech/audio recognition and drives media and home-automation services through an exposed API. It discloses a cloud-based, always-connected audio client/server model with remote processing and downstream actions on local devices. Williams at Abstract, 0007, 0010-0012, 0035-0037. A POSITA would have been motivated to modify Williams with, for instance, the system of Lim, which also relates to processing and responding to human speech commands. Williams at 0027, 0036; Lim at 0007. The resulting combination with Lim would disclose a system in which where a server sends messages for controlling devices to a client device rather than directly to the controlled devices, which then transmits commands to the controlled devices.

- Howard is a patent that issued on June 13, 2006, describing a portable pen/phone-like device with microphone, speaker, display, and optical sensor that wirelessly communicates with a home gateway/server to recognize spoken commands and control appliances, such as televisions, VCRs, lights, HVAC appliances, and others over a home network. Howard at 1:53-64; 3:19-4:24; 9:13-38. A POSITA would have been familiar with and look to the teachings of references, such as Doherty, Doherty teaches that home devices can be connected via the wireless router, stating that "[i]n the next wave, we see all types of devices connecting to the network, including some obvious devices such as TVs, stereos, and digital recording devices (DVRs), but also appliances, home security systems, and electronics that can control home lighting, sprinkler systems, air conditioning, and answering machines." Doherty at 321.
- Robbins is a patent application published on July 16, 2009. It discloses a hub type client device interacting with a server and controllable devices in the home in response to a

user's voice commands. Robbins at Abstract, 0007, Robbins at Abstract, 0039-0044. In this way, a POSITA would have looked to Robbins to combine the systems disclosed in, for example, Laligand, to control other types of appliances beyond televisions, such as telephones, lighting, alarm systems, and HVAC appliances with a hub type client device.

- Lim is a patent publication resulting from an application filed Nov. 17, 2011, which describes a universal remote control that can capture voice input about the brand and model of an appliance. Lim at 0001. The remote can then send the data wirelessly to a controlling device for further processing and operation of that appliance. Lim at 0007, 0027. Lim discloses remote control of numerous home appliances—including televisions, displays, DVD players, digital video recorders, and thermostats. Lim at 0017, 0027-31. Lim is analogous art to the Asserted Patent Claims and references, such as Wittenberg, Williams (addressed above), Chatterjee, Rosenberger, and/or Gruber. All relate to remotely processing audio information such as voice data to control devices or providing services through devices. A POSITA would have looked to combine Lim with Wittenberg's disclosure of specific voice recognition and with Gruber's contextual speech processing, Rosenberger's device that "includes . . . a multi-colored LED status light", and/or Chatterjee's disclosed control of automated devices to expand the capabilities of the system of Lim.
- Siri Proxy System was a system based on Peter Lamonica's work published to YouTube and GitHub in and around November 2011. It discloses a system for controlling home appliances connected over a network using voice commands using an iPhone 4s, a home server, and an appliance, such as a thermostat. *See* Pete Lamonica, Siri Proxy demo (Nov. 21, 2011), https://www.youtube.com/watch?v=AN6wy0keQqo; Pete Lamonica,

SiriProxy Installation (Long Version) (Dec. 3, 2011), https://www.youtube.com/watch?v=GQXyJR6mOk0. A POSITA would have looked to the Siri Proxy System, which could be created using conventional, off-the-shelf components for controlling household appliances with a smartphone to combine with the voice recognition methods of, for instance, Gruber, and the systems of Lim, Williams, Laligand, and/or Chatterjee, which are analogous art, and disclose controlling multiple types of home appliances to expand the capabilities of Siri Proxy System with reasonable success. Lim at 0017, 0027-31; Williams at Abstract, 0007, 0010-0012, 0035-0037; Chatterjee at 0012; Laligand at Abstract, 0002, 0005-0008.

- Gruber is a patent publication resulting from an application filed Sept. 30, 2011. It describes a virtual assistant that can interface with remote servers and computing devices to interpret voice input and prompt the speaker to provide additional information where needed. Gruber at Abstract, 0007, 0218-225, & Fig. 31. The device of Gruber also provides "signatures of connected networks, including Ethernet, Wi-Fi and Bluetooth. Signatures include MAC addresses of network access points, IP addresses assigned, device identifiers such as Bluetooth names, frequency channels and other properties of wireless networks." Gruber at 0218-0225. A POSITA would have looked to Gruber's disclosure of contextual information from device sensors for improved speech processing, a light sensor and thermometer, and networking protocols to combine with, for example, the systems of Williams and Lim.
- Mardiana is non-patent literature published from a 2009 conference describing a Wi-Fi–based client/server system in which a PC captures spoken commands, sends them over a wireless LAN to a remote speech-recognition PC, and uses the results to switch home

appliances (lamps, fans, TV, radio, air-conditioner) on and off. Mardiana at 285-86: Abstract & Fig. 1:

Figure 1. Overview of system architecture

A POSITA would have been motivated to modify Mardiana with, for instance, the system of Lim, which also relates to processing and responding to human speech commands. Lim at 0007. Such a combined system would disclose a server sending messages for controlling devices.

- Mozer ’467 is a U.S. patent issued June 5, 2012. It describes a system comprised of wireless devices, such as Bluetooth headsets that include a microphone, local speech recognizer, and memory. Mozer ’467 at Abstract; 5:1-23. Mozer ’467 further discloses that upon recognizing command words, the device causes a connection to remote systems such as voice search engines, where more sophisticated speech recognition and dialog can occur. Mozer ’467 at Abstract; 2:9-29; 3:14-35; 5:1-23; 8:19-9:21. A POSITA

would have looked to combine the systems of, for instance, Lim and Williams, with Mozer ’467 because it is analogous art and its disclosure of multiple microphones.

- Mozer ’707 describes a system for performing speech recognition and specifically for identifying a specific voice. Mozer ’707 at 9:18-30. Mozer ’707 and Mozer ’467 share the same inventor.
- Rosenberger is directed to “improvements in speech-recognizing control devices that respond to oral commands from a system user to produce a desired effect or result.” Rosenberger at 1:7-13. Rosenberger’s device “[p]referably . . . includes . . . a multi-colored LED status light 34 for visually indicating various device states and modes.” Rosenberger at 8:8-16. A POSITA would have looked to Rosenberger for its disclosure of speech recognition to trigger a device status light and to play a prerecorded or synthesized audio message (e.g. “How may I help you?”) through a speaker. Rosenberger at 8:20-32.
- Wittenberg is a patent relating to “a technique for remotely processing a local audio command to control a local device.” Wittenberg at Abstract. It discloses “performing speech recognition processing on the audio signal at the remote site to determine whether the audio signal includes a command; performing voice recognition processing on the audio signal at the remote site to determine whether the audio signal has been supplied by an authorized user; generating a command signal in response to the audio signal including a command and being supplied by an authorized user; and transmitting the command signal to a device at the local site to effect a change in a state of the local device.” Wittenberg at Abstract. A POSITA would have looked to the voice recognition

of Wittenberg to combine with, for instance, the system of Lim, to achieve greater security and with a reasonable expectation of success.

- Chatterjee is directed to "a system and method for providing home automation using a mobile device." Chatterjee at Abstract. The disclosed "home automation systems provide centralized control for lighting, HVAC (heating, ventilation and air conditioning), appliances (such as refrigerators and dishwashers), and similar systems." Chatterjee at 0001. A POSITA would have looked to the system of Chatterjee for its disclosure of automated control of various types of appliances, including "such as controlling the temperature of a HVAC or toggling the light system on and off," to combine with, for example the system of Lim. Chatterjee 0012.

A POSITA would have looked to the references identified above to provide insight into field of remotely processing audio information such as speech for controlling devices or providing services through devices. Based on these related disclosures, a POSITA at the time of the alleged invention would have been motivated to apply the teachings from one reference to another in the same way.

A POSITA would have been motivated to combine the devices in Williams, Howard, Laligand, Lim, Mardiana, Robbins, Mozer '467, and/or Siri Proxy System, with disclosures like those from Roberts, Goldsmith, Doherty, and/or Gruber to allow those devices to use different wireless standards, improving interoperability for users with diverse wireless networks; to utilize wireless standards with improved bandwidth, speed, and/or signal strength or that may be more appropriate for a given use case (like satellite helping serve remote users); and to provide means for addressing the device in a network to permit efficient network communications, including with Internet-connected devices.

A POSITA would have been motivated to combine the devices in Williams, Howard, Laligand, Lim, Mardiana, Robbins, Mozer ’467, and/or Siri Proxy System, with disclosures like those from Benesty, Gruber, Mozer ’707, and Wittenberg to allow those devices to use different speech processing methods and techniques, including use of multiple microphones and capabilities for determining a speaker’s identify, improving capability for utilizing voice recognition for controlling devices or provisioning services.

A POSITA would have been motivated to combine the devices in Williams, Howard, Laligand, Lim, Mardiana, Robbins, Mozer ’467, and/or Siri Proxy System, with disclosures like those from Chatterjee, Gruber, and Rosenbeger to enhance the capabilities of these devices to connect to expanding types of devices, home appliances, and actuators, thereby increasing their utility and efficiency.

In addition, much of the art identified above reflects common knowledge and the state of the art prior to the priority date of the ’706 Patent and/or at the time each alleged invention was made with which a POSITA would have been familiar. By way of example, Benesty is a textbook entitled “Springer Handbook of Speech Processing”. It is an overview describing the state of the art for speech processing techniques, including speech recognition, speaker recognition, speech enhancement via noise reduction, and microphone arrays, that would have been well-known to a POSITA. Similarly, Goldsmith is a textbook titled “Wireless Communications,” published by Cambridge University Press, describes the state of the art, and would have been well-known to a POSITA for wireless communication systems, protocols, and techniques for applying them. Further, Rossing is a textbook titled “Audio and Electroacoustics,” disclosing how conventional microphones and speakers operate, published by Springer and would have been well-known to a POSITA. Roberts is a 2000 article describing how devices are addressed on networks like the

Internet. And Doherty is a is a textbook called "Wireless Home Networking Simplified" that was published by Cisco and teaches how to set up wireless networks at home using conventional components. A POSITA would have been familiar with this common knowledge and the state of the art and would have been motivated to combine it with the prior art identified in Exhibits B-1 to B-9.

With this knowledge, the person of ordinary skill in the art would have been motivated to consider the techniques and systems disclosed in the prior art identified in Exhibits B-1 to B-9 and to combine the teachings of the various other items of prior art disclosed in Exhibits B-1 to B-9 to arrive at the purported inventions embodied in the Asserted Patent Claims. Thus, the motivation to combine the references arises: from the field of processing and responding to human speech commands to control devices connected by a network, from the awareness of the deficiencies in the prior art, and from the interest in developing systems for increasing the prominence of useful information. Moreover, in light of the nature of the problem to be solved, the similarity of the field in which the prior art is found, and the ordinary creativity of one with ordinary skill in the art, it would have been obvious to try to combine the features of the prior art identified in Exhibits B-1 to B-9 to arrive at the purported inventions embodied in the Asserted Patent Claims. The features of the prior art identified in Exhibits B-1 to B-9 would have been understood as compatible and desirable for use in conjunction with, or as enhancements to each other, resulting in a more desirable system. Implementation of such features, including in software, would have been understood to have been feasible and straightforward to one of ordinary skill in the art at the priority date of the '174 Patent.

Each of the features purportedly found in the '174 Patent are combined for the very purpose for which they were designed by prior art inventors and the combination yields

predictable results. *KSR*, 550 U.S. at 416. A person of ordinary skill in the art had reason to combine these known features to achieve predictable results to satisfy market demand as evidenced by the fact that the features were already present in the prior art, either in combination or individually. The ’174 Patent is therefore a combination that only unites old elements with no change to their respective functions in an attempt to withdraw what was already known from the public domain. To the extent the ’174 Patent provides any variations to the known combinations, those variations were predictable to one of ordinary skill in the art.

In addition to the foregoing, the teaching, suggestion, or motivation to combine these references, although not required, is explicitly or implicitly found in one or more of the following: the explicit and/or implicit teachings of the references in Exhibits B-1 to B-9 and the prior art as a whole, including interrelated teachings of multiple prior art references; the subject matter acknowledged as prior art in the ’174 Patent; the general knowledge of those skilled in the art (including knowledge of trends in the field and knowledge that the art is of special interest or importance in the field); the fact that all of the prior art references concern the field of processing and responding to human speech commands to control devices connected by a network and related fields; the nature of the problem to be solved and the existence of similar improvements in similar applications; design incentives and other market forces, including the advantages of creating a superior and more desirable product and the effects of demands known to the design community or present in the marketplace; the ability to implement the alleged invention as a predictable variation of the prior art; improvements in similar devices; the interrelated teachings of multiple prior art references; any needs or problems known in the field addressed by the ’174 Patent; and the number of identified, predictable solutions to the problem addressed by these patents. In addition, the simultaneous (and/or prior) inventions described above (and elsewhere

in these contentions) is evidence that motivation to combine the concepts described in the various prior art references did, in fact, exist, and they were, in fact, combined. One of ordinary skill in the art would be motivated by considerations such as wanting to improve a method or system for using voice controls to control devices connected by a network, to combine the various teachings to arrive at the purported inventions embodied in the Asserted Patent Claims. Stated differently, the prior art identified in Exhibits B-1 to B-9 demonstrates that there was, at the time of the alleged invention, a finite number of identified, predictable solutions for improving the effectiveness and timeliness of delivering audio content to a user that persons of ordinary skill in the art would have known how to successfully combine the prior art identified in Exhibits B-1 to B-9 to yield one or more embodiments of the Asserted Patent Claims, making the claimed invention obvious.

Known methods and elements of the Asserted Patent Claims would yield predictable results:

- Howard discloses: "Increasingly, homes appliances are being connected together and controlled via a home network, which typically take different forms ranging from a simple network hub device to a more complex hub and switching system with broadband connection to the Internet." Howard at 1:18-30.
- Lim describes: "It is known to offer an app for download and installation into memory **312** which app may serve to allow use of the smart phone to transmit commands suitable for operation of entertainment and other appliances. Such an app may draw on a library of codesets suitable for commanding the functional operations of various types of appliances of multiple manufactures and/or models, i.e., a library of codesets for a so-called "universal" controller, as well known in the art. As appropriate for a particular

embodiment this library may be resident on the smart device itself, either downloaded as part of or in conjunction with the app or preinstalled in memory **312** or in a separate self-contained command transmitter; may be located externally at a local PC or remote server device accessible to smart device **110** for the download of only those code sets necessary for operation of the configured appliances; or may be located in a command relay device such as described in the previously referenced U.S. patent application Ser. No. 13/043,915." Lim at 0024.

- Williams describes: "Homes and other user premises are increasingly equipped with always-on Internet or 'cloud' connectivity. In many cases, even mobile users have constant or nearly constant data connectivity. The common availability of network communications has created a number of new possibilities for services and other functionality, using the variety of connected devices accessible to users." Williams at 0001.
- Robbins discloses: "These new digital sources—coupled with internet content such as available on YouTube and iTunes Web sites—is enticing consumers with vast media libraries of hundreds of thousands of titles. At the same time the user wants a simple control device that fits in the hand as the user relaxes in their home. This is driving a conflict into the command and control space: greater interactivity and control demanded from a handheld device. There are two ways to address this challenge—through menus and screens, or through voice control." Robbins at 0002.

The Siri Proxy System further indicates that the claims result from the combination of known methods and components to yield predicable results. In or around November 2011, individuals, including Peter Lamonica, created a system for controlling home appliances connected

over a network using voice commands. *See* Pete Lamonica, Siri Proxy demo (Nov. 21, 2011), https://www.youtube.com/watch?v=AN6wy0keQqo; Pete Lamonica, SiriProxy Installation (Long Version) (Dec. 3, 2011), https://www.youtube.com/watch?v=GQXyJR6mOk0; Kelly Hodgkins, Developer builds Siri proxy server, Engadget (Nov. 21, 2011); Mike Nathan, Siri Proxy Adds Tons of Functionality, Doesn't Require a Jailbreak, Hackaday (Nov. 21, 2011); Voice Activated Home Automation with SiriProxy & ioBridge, MarkHodder.com (2011). The Siri Proxy System relied on a conventional, iPhone 4s, an open-source Siri Proxy server running on a personal computer over a home network that interacted with Apple's servers, and an internet-controlled appliance, such as a thermostat. Pete Lamonica, Siri Proxy demo (Nov. 21, 2011), https://www.youtube.com/watch?v=AN6wy0keQqo. The Siri Proxy System exhibits the claimed functionality of generating, transmitting, and processing data, and controlling a device based on the processed data using off-the-shelf components.

Design incentives and other market forces motivating persons of ordinary skill:

- Robbins discloses: "The command and control market is at a crossroads. Consumers are integrating more devices into their entertainment systems (e.g., DVD burners, networked media, Hi-Def DVD, etc.) each of which has its own remote control. These new digital sources—coupled with internet content such as available on YouTube and iTunes Web sites—is enticing consumers with vast media libraries of hundreds of thousands of titles. At the same time the user wants a simple control device that fits in the hand as the user relaxes in their home. This is driving a conflict into the command and control space: greater interactivity and control demanded from a handheld device. There are two ways to address this challenge—through menus and screens, or through voice control." Robbins at 0002.

- Laligand discloses: “People interact more and more with computers, and they also interact more and more with different kinds of computers. While desktop and laptop computers may have been the most prevalent computers in people's lives in the past, most people are more likely now to interact with smart phones, DVRs, televisions, and other consumer devices that include computers in them.” Laligand at 0003.
- Williams discloses: “The architecture above can be utilized to provide a wide variety of services and functionality, of which the following are simple examples.

  A cloud-based application may be configured to received vocal commands from users and to perform operations based on those commands. For example, a user may speak a grocery order, and the spoken order may be interpreted using the voice recognition functionality described above. Once interpreted, the order may be submitted to a grocery store for subsequent delivery or simply recorded as a shopping list that the user can view on their smartphone when shopping at the grocery store. An application such as this may apply personalized settings for each order, such as preferred delivery schedules and historical portion sizes.

  Similarly, a cloud-based application may allow users to order tickets without needing a computer. A user may tell the application what movie they want to see. The application may use pre-configured information about the user (such as location) to determine which theater is near the user. The application may respond to a spoken command to order movie tickets by using the speech synthesis functionality of the system to query the user regarding movie selections and times.

  . . . .

A similar type of application may identify the song the user is currently listening to, and in response may provide information about related articles, offer samples, suggest related music and playlists, or present information allowing the user to purchase individual music tracks." Williams at 0043-0047.

- Howard discloses: "An illustration of how the portable device of the present invention can be utilized to purchase items over the Internet is illustrated in FIG. 10." Howard at 12:15-17.
- Gruber discloses: "Accordingly, existing systems are often difficult to use and to navigate, and often present users with inconsistent and overwhelming interfaces that often prevent the users from making effective use of the technology.

  An intelligent automated assistant, also referred to herein as a virtual assistant, can provide an improved interface between human and computer." Gruber at 0010-0011.
- Wittenberg discloses: "For example, speech processing software (i.e., software that processes audio signals to identify spoken words within the audio signal) can require significant memory capacity and can be processing intensive. Such processing and memory demands may undesirably increase the cost and size of an electronic device due to the need for increased memory and processing capability. Further, in a network of such devices, updating command processing software would require downloading new software to each device, which may be cumbersome and time consuming.

  Another option would be to control a local device by processing command signals remotely. Remote processing of commands is known in a number of contexts." Wittenberg at 1:24-35.

In many instances where a particular contention calls for, or requires, combining references, any one of a number of references can be combined. Defendant reserves its right to identify supplemental combinations as the case progresses. As such, the combinations evidencing teachings, suggestions, and/or motivations to combine the prior art references in a way that renders the asserted claims obvious listed herein are merely examples. A person of ordinary skill would have access to the materials found in in these contentions and would have at least the ordinary creativity and skill to combine the attached references in ways not explicitly recited above.

As explained herein and in the accompanying claim charts, it would have been obvious to a person of ordinary skill in the art at the time of the alleged invention to combine the various references identified below in a way to practice the claimed invention. The Asserted Patent Claims are therefore obvious under 35 U.S.C. § 103.

Defendant may rely on a subset of the identified references, or all of the references identified herein for purposes of obviousness, depending on the Court's claim construction, positions taken by Plaintiff, and further discovery in this case. Defendant identifies the following combinations of prior art references that render obvious the asserted claims under 35 U.S.C. § 103:

1. Williams alone or in combination with at least one of Howard, Laligand, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer '707, Mozer '467, Doherty, Roberts, Siri Proxy System, and/or the admitted prior art.
2. Howard alone or in combination with at least one of Williams, Laligand, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer '707, Mozer '467, Doherty, Roberts, Siri Proxy

System, and/or the admitted prior art.

3. Laligand alone or in combination with at least one of Howard, Williams, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Doherty, Roberts, Siri Proxy System, and/or the admitted prior art.

4. Lim alone or in combination with at least one of Howard, Williams, Laligand, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Doherty, Roberts, Siri Proxy System, and/or the admitted prior art.

5. Mardiana alone or in combination with at least one of Howard, Williams, Laligand, Lim, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Doherty, Roberts, Siri Proxy System, and/or the admitted prior art.

6. Robbins alone or in combination with at least one of Howard, Williams, Laligand, Lim, Mardiana, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Doherty, Roberts, Siri Proxy System, and/or the admitted prior art.

7. Mozer ’467 alone or in combination with at least one of Howard, Williams, Laligand, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Doherty, Roberts, Siri Proxy System, and/or the admitted prior art.

8. Siri Proxy System alone or in combination with at least one of Williams, Howard, Laligand, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg,

Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Doherty, Roberts, and/or the admitted prior art.

A person of ordinary skill in the art would have arrived at the claimed alleged invention in the ’174 Patent based on the combinations of the prior art listed above. Motivation to combine the above references is present in the references themselves, the common knowledge of a person of ordinary skill in the art, the prior art as a whole, and the nature of the problems allegedly addressed by the ’174 Patent. Combining these references would have been obvious to one of ordinary skill in the art because the references identify and address the same technical issues and suggest similar solutions to those issues. Defendant reserves the right to establish additional motivations to combine any of the above references based on the teachings contained in any of the references identified in these Invalidity Contentions.

Additionally, one of ordinary skill in the art would be motivated to combine the identified references because of the nature of the problem being solved, the express, implied, and inherent teachings of the prior art, and the knowledge of the person of ordinary skill in the art that such combinations would yield predictable results. These combinations that render the ’174 Patent obvious would also have been a simple design choice that represented a predictable variation within the knowledge and skill of a person of ordinary skill in the art at the time of the purported invention in the ’174 Patent.

One of ordinary skill in the art would also have been motivated to combine the above identified references based on his or her education, knowledge, and experience, by the state of the prior art at the time of invention, by the nature of the problem to be solved, and by common sense. A person of ordinary skill in the art is presumed to have knowledge of all relevant prior art and therefore would have been familiar with each of the references identified above. A person of

ordinary skill in the art would also be familiar with the background knowledge in the art and the full range of teachings they contain.

C. '710 Patent

Amazon identifies the following prior art now known to Amazon to anticipate or render obvious the asserted claims of the '710 Patent under at least 35 U.S.C. §§ 102(a), (b), (d), (e) and/or (g) and 103, either expressly or inherently as understood by a POSITA.

Table 3

Ex.	Patent or Publication	Country	First Inventor or Author	Date of Issue (Patents) or Publication
C-1	2012/0198339 A1	US	Hunter Williams	08/02/2012
C-2	7,062,339 B2	US	John K. Howard	06/13/2006
C-3	2011/0313775 A1	US	Pierre-Yves Laligand	12/22/2011
C-4	2013/0132094	US	Jonathan Lim	05/23/2013
C-5	Homes appliances controlled using speech recognition in wireless network environment	US	B. Mardiana	12/29/2009
C-6	8,195,467 B2	US	Todd F. Mozer	06/05/2012
C-7	2009/0183070 A1	US	David Robbins	07/16/2009
C-8	2012/0265528 A1	US	Thomas Robert Gruber	10/18/2012
C-8	Springer Handbook of Speech Processing	US	Jacob Benesty	11/22/2007
C-8	8,340,975 B1	US	Theodore Alfred Rosenberger	12/25/2012
C-8	7,529,677 B1	US	John W. Wittenberg	05/05/2009
C-8	2013/0052946	US	Manjirnath Chatterjee	02/28/2013
C-8	Springer Handbook of Acoustics	US	Thomas D. Rossing	07/23/2007
C-8	8,768,707 B2	US	Todd. F. Mozer	07/01/2014
C-8	Wireless Home Networking Simplified	N/A	Jim Doherty	01/16/2007
C-8	IP Address Management	U.S.	P A Roberts	07/2000

In addition, Defendant identifies system prior art including the Siri Proxy System, which was in public use in the United States by around November 2011. Ex. C-9.

To the extent Plaintiff contends that any of the above items of prior art do not anticipate any asserted claim, Defendant reserves the right to contend that each of the items of prior art renders the Asserted Patent Claims obvious either alone or in combination with one or more other items of prior art. A corresponding claim chart for each item of prior art identified above is attached hereto in Exhibits C-1 to C-9. To the extent a patent prior art reference has a corresponding application publication (or vice versa), Defendant reserves the right to rely on and cite to that application publication (or patent) and its corresponding disclosures.

In addition, to the extent that Plaintiff fails to satisfy its burden to establish the '710 Patent's entitlement to its claimed priority date due to insufficient written description (discussed below), Defendant reserves the right to identify additional art that renders that Asserted Patent Claims anticipated or obvious. For example, Defendant asserts that earlier published patent applications from the '710 Patent's family, including U.S. Patent Publication No. 2013/0201316 A1, would qualify as prior art and render the Asserted Patent Claims obvious, either alone or in combination with one or more additional references, including those identified above. Defendant further asserts that accused products, like the Amazon Echo (1st Generation) and Amazon Echo Dot (1st Generation), would qualify as prior art and render the Asserted Patents Claims anticipated under Plaintiff's own mapping of the claims. *See Upsher-Smith Lab'ys*, 412 F.3d at 1322 ("A century-old axiom of patent law holds that a product 'which would literally infringe if later in time anticipates if earlier.'"). Or they would render the Asserted Patent Claims obvious, alone or in combination with one or more additional references, including those identified above.

Each patent or printed publication describing or relating to a prior art instrumentality should be understood to discuss the instrumentality's capabilities generally and also to discuss specific implementation examples of specific installations and configurations of the particular instrumentality. To the extent the prior art references describe various implementations of the same underlying instrumentality, that underlying instrumentality is a single reference under 35 U.S.C. §§ 102(a) and/or 102(b). The prior art references are evidence of the capabilities of the prior art instrumentality, and each chart provided for a prior art instrumentality should be understood to incorporate by reference all patents or publications describing or relating to that prior art instrumentality and all charts provided for those patents or printed publications. In addition, each of the prior art references also qualifies as prior art on separate grounds as a patent or publication under 35 U.S.C. § 102. Even if the prior art references are not treated as a single prior art reference, at the very least it would have been obvious to combine the features described in those references as the individual references discuss the same instrumentality.

While Defendant's investigation continues, information available to date indicates that each instrumentality disclosed or referenced in the prior art listed above, and as further identified in the claim charts of Exhibits C-1 to C-8, was: (1) known, published, or used in this country before the alleged invention of the claimed subject matter of the Asserted Patent Claims, (2) published, in public use, and/or on sale in this country more than one year before the filing date of the '710 Patent, and/or (3) invented by another who did not abandon, suppress, or conceal, before the alleged invention of the claimed subject matter of the Asserted Patent Claims. Information concerning the entities who knew of and/or used these instrumentalities, or who were involved in any sales or offers to sell these instrumentalities, can be found in the documents identified describing these instrumentalities.

Defendant reserves the right to rely on the testimony of witness(es) knowledgeable about these or other instrumentalities, as well as documents that are currently in the possession of Plaintiff or third parties describing these or other instrumentalities. Defendant reserves the right to assert that the Asserted Patent Claims are invalid under 35 U.S.C. § 102(f) in the event that Defendant obtains evidence that the named inventor(s) of the ’710 Patent did not invent (either alone or in conjunction with others) the subject matter claimed in the ’710 Patent. Defendant further intends to rely on admissions of the named inventors, including admissions made on his or their behalf by attorneys or other agents or representatives, concerning the prior art, including, but not limited to, statements found in the ’710 Patent, its prosecution history, related patents and/or patent applications, any deposition testimony, and the papers filed, and any evidence submitted by Plaintiff in conjunction with this litigation. Defendant may also rely on testimony from the author(s) or named inventor(s) listed on the above references, as well as from individuals involved in the development of the prior art instrumentalities.

Each of the prior art references identified above anticipates the Asserted Patent Claims in accordance with 35 U.S.C. § 102 and/or renders them obvious under 35 U.S.C. § 103, as more specifically noted in the charts of Exhibits C-1 to C-9.

The cited portions of the identified prior art for the ’710 Patent are provided as examples and are representative of the content of the prior art references, and should be understood in the context of the reference as a whole, as understood by one of ordinary skill in the art. To the extent any cited item of prior art for the ’710 Patent is deemed not to anticipate one of the Asserted Patent Claims for failing to teach or suggest one or more limitations of that claim, such limitations would nonetheless have been inherent and/or obvious to one of ordinary skill in the art at the time

of the alleged invention(s), either alone or in combination with any of the other identified items of prior art for the ’710 Patent.

All Asserted Patent Claims are rendered obvious in light of any item of prior art cited in Exhibits C-1 to C-9 alone or combined with one or more items of the other prior art cited in Exhibits C-1 to C-9. Moreover, to the extent that any prior art identified as anticipatory is found to be missing an explicit teaching of one or more limitations of the Asserted Patent Claims, any such missing limitation is inherent within the system or publication or was known by those of ordinary skill in the art. Accordingly, such prior art on its own either anticipates or would have rendered obvious the Asserted Patent Claims. If, and to the extent Plaintiff challenges the correspondence of any of these references with respect to particular elements of the asserted claims of the ’710 Patent, Defendant reserves the right to supplement these Invalidity Contentions to identify motivation to combine particular references with one another with additional particularity.

In *KSR* , the U.S. Supreme Court rejected the Federal Circuit’s rigid “teaching, suggestion, or motivation” requirement in favor of a flexible, functional approach in which an explicit finding of a “motivation” to combine prior art references is not required to establish obviousness. 550 U.S. at 407. The Supreme Court held that it is sufficient that a combination of elements was “obvious to try” stating that, “[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.” *Id*. at 415, 421; *see also Dystar Textilfarben*, 464 F.3d at 1368 (explaining that when the “combination of references results in a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient,” there exists a motivation to combine prior

art references even when there is no explicit suggestion in the references themselves "[b]ecause the desire to enhance commercial opportunities by improving a product or process is universal—and even common-sensical"); *LeapFrog*, 485 F.3d at 1162 (applying *KSR* and holding that "one of ordinary skill in the art of children's learning toys would have found it obvious to combine the Bevan device with the SSR to update it using modern electronic components in order to gain the commonly understood benefits of such adaption, such as decreased size, increased reliability, simplified operation, and reduced cost").

To the extent that applicable law requires evidence of motivation to combine, motivation exists to combine one or more of the references disclosed herein with each other.[5] Generally, motivation to combine any of these references with others exists within the references themselves, as well as within the knowledge of those of ordinary skill in the art. These references identify and address similar technical issues as the '710 Patent and also suggest solutions to those issues. Various combinations of the above references would have naturally been considered as part of the exercise of ordinary skill by one skilled in the art. The claims of the '710 Patent relate to providing wireless device connectivity and/or control at home and processing and responding to human speech commands. Each of the purported features of the '710 Patent was available in prior art, individually and in combination, prior to the date of the purported invention and was well known to those of ordinary skill in the art. To the extent any of these features solved a problem in the art, that problem was known to those of ordinary skill and had already been solved using obvious solutions.

[5] Defendant further incorporates the motions to combine from its petitions for *inter partes* review filed against the'710 Patent, as applicable.

Further, the items of prior art identified in Exhibits C-1 to C-8 are directed to analogous art. In particular, but without limitation, the items of prior art identified in Exhibits C-1 to C-8 all relate to systems and methods for remotely processing audio information such as speech for controlling devices or providing services through devices. For instance:

- Laligand, is a patent publication published Dec. 22, 2011, and assigned to Google. It discloses a client device, e.g., a smartphone, that interacts with a remote server and local wireless network and relies on voice commands to control an appliance, e.g., a television. Laligand at Abstract, 0002, 0005-0008. Laligand is analogous art to the Asserted Patent Claims and to the systems of Williams and Lim. A POSITA would have looked to combine the voice recognition and search functionality of Laligand with either or both of these systems. Williams at Abstract, 0007, 0010-0012, 0035-0037; Lim at 0007. A POSITA would have appreciated based on their familiarity with at least these references that the system of Laligand could be modified to control additional types of devices.
- Williams is a 2012 patent publication describing in-home audio interface devices (microphone, optional speaker, network interface) that stream audio via a home router and public network to a cloud application engine, which performs speech/audio recognition and drives media and home-automation services through an exposed API. It discloses a cloud-based, always-connected audio client/server model with remote processing and downstream actions on local devices. Williams at Abstract, 0007, 0010-0012, 0035-0037. A POSITA would have been motivated to combine Williams with, for instance, the systems of Lim, Howard, and/or Chatterjee, which also relate to processing and responding to human speech commands. Williams at 0027, 0036; Lim at 0007; Howard at 1:53-64; 3:19-4:24; 9:13-38; Chatterjee at 0012. A POSITA would have further looked to Rosenberger

to combine with Williams for its disclosure of speech recognition to trigger a device status light and to play a prerecorded or synthesized audio message (e.g. "How may I help you?") through a speaker. Rosenberger at 8:20-32.

- Howard is a patent that issued on June 13, 2006, describing a portable pen/phone-like device with microphone, speaker, display, and optical sensor that wirelessly communicates with a home gateway/server to recognize spoken commands and control appliances, such as televisions, VCRs, lights, HVAC appliances, and others over a home network. Howard at 1:53-64; 3:19-4:24; 9:13-38. A POSITA would have been familiar with and look to the teachings of references, such as Doherty, Doherty teaches that home devices can be connected via the wireless router, stating that "[i]n the next wave, we see all types of devices connecting to the network, including some obvious devices such as TVs, stereos, and digital recording devices (DVRs), but also appliances, home security systems, and electronics that can control home lighting, sprinkler systems, air conditioning, and answering machines." Doherty at 321.
- Robbins is a patent application published on July 16, 2009. It discloses a hub type client device interacting with a server and controllable devices in the home in response to a user's voice commands. Robbins at Abstract, 0007, Robbins at Abstract, 0039-0044. In this way, a POSITA would have looked to Robbins to combine the systems disclosed in, for example, Laligand, to control other types of appliances beyond televisions, such as telephones, lighting, alarm systems, and HVAC appliances with a hub type client device.
- Lim is a patent publication resulting from an application filed Nov. 17, 2011, which describes a universal remote control that can capture voice input about the brand and model of an appliance. Lim at 0001. The remote can then send the data wirelessly to a controlling

device for further processing and operation of that appliance. Lim at 0007, 0027. Lim discloses remote control of numerous home appliances—including televisions, displays, DVD players, digital video recorders, and thermostats. Lim at 0017, 0027-31. Lim is analogous art to the Asserted Patent Claims and references, such as Wittenberg, Williams (addressed above), Chatterjee, Rosenberger, and/or Gruber. All relate to remotely processing audio information such as voice data to control devices or providing services through devices. A POSITA would have looked to combine Lim with Wittenberg's disclosure of specific voice recognition and with Gruber's contextual speech processing, Rosenberger's device that "includes . . . a multi-colored LED status light", and/or Chatterjee's disclosed control of automated devices to expand the capabilities of the system of Lim.

- Siri Proxy System was a system based on Peter Lamonica's work published to YouTube and GitHub in and around November 2011. It discloses a system for controlling home appliances connected over a network using voice commands using an iPhone 4s, a home server, and an appliance, such as a thermostat. *See* Pete Lamonica, Siri Proxy demo (Nov. 21, 2011), https://www.youtube.com/watch?v=AN6wy0keQqo; Pete Lamonica, SiriProxy Installation (Long Version) (Dec. 3, 2011), https://www.youtube.com/watch?v=GQXyJR6mOk0. A POSITA would have looked to the Siri Proxy System, which could be created using conventional, off-the-shelf components for controlling household appliances with a smartphone to combine with the voice recognition methods of, for instance, Gruber, and the systems of Lim, Williams, Laligand, and/or Chatterjee, which are analogous art, and disclose controlling multiple types of home appliances to expand the capabilities of Siri Proxy System with reasonable

success. Lim at 0017, 0027-31; Williams at Abstract, 0007, 0010-0012, 0035-0037; Chatterjee at 0012; Laligand at Abstract, 0002, 0005-0008.

- Gruber is a patent publication resulting from an application filed Sept. 30, 2011. It describes a virtual assistant that can interface with remote servers and computing devices to interpret voice input and prompt the speaker to provide additional information where needed. Gruber at Abstract, 0007, 0218-225, & Fig. 31. The device of Gruber also provides "signatures of connected networks, including Ethernet, Wi-Fi and Bluetooth. Signatures include MAC addresses of network access points, IP addresses assigned, device identifiers such as Bluetooth names, frequency channels and other properties of wireless networks." Gruber at 0218-0225. A POSITA would have looked to Gruber's disclosure of contextual information from device sensors for improved speech processing, a light sensor and thermometer, and networking protocols to combine with, for example, the systems of Williams and Lim.
- Mardiana is non-patent literature published from a 2009 conference describing a Wi-Fi–based client/server system in which a PC captures spoken commands, sends them over a wireless LAN to a remote speech-recognition PC, and uses the results to switch home appliances (lamps, fans, TV, radio, air-conditioner) on and off. Mardiana at 285-86: Abstract & Fig. 1:

Figure 1. Overview of system architecture

A POSITA would have been motivated to modify Mardiana with, for instance, the system of Lim, which also relates to processing and responding to human speech commands. Lim at 0007. Such a combined system would disclose a server sending messages for controlling devices.

- Mozer '467 is a U.S. patent issued June 5, 2012. It describes a system comprised of wireless devices, such as Bluetooth headsets that include a microphone, local speech recognizer, and memory. Mozer '467 at Abstract; 5:1-23. Mozer '467 further discloses that upon recognizing command words, the device causes a connection to remote systems such as voice search engines, where more sophisticated speech recognition and dialog can occur. Mozer '467 at Abstract; 2:9-29; 3:14-35; 5:1-23; 8:19-9:21. A POSITA would have looked to combine the systems of, for instance, Lim and Williams, with Mozer '467 because it is analogous art and its disclosure of multiple microphones.

- Mozer ’707 describes a system for performing speech recognition and specifically for identifying a specific voice. Mozer ’707 at 9:18-30. Mozer ’707 and Mozer ’467 share the same inventor.
- Rosenberger is directed to “improvements in speech-recognizing control devices that respond to oral commands from a system user to produce a desired effect or result.” Rosenberger at 1:7-13. Rosenberger’s device “[p]referably . . . includes . . . a multi-colored LED status light 34 for visually indicating various device states and modes.” Rosenberger at 8:8-16. A POSITA would have looked to Rosenberger for its disclosure of speech recognition to trigger a device status light and to play a prerecorded or synthesized audio message (e.g. “How may I help you?”) through a speaker. Rosenberger at 8:20-32.
- Wittenberg is a patent relating to “a technique for remotely processing a local audio command to control a local device.” Wittenberg at Abstract. It discloses “performing speech recognition processing on the audio signal at the remote site to determine whether the audio signal includes a command; performing voice recognition processing on the audio signal at the remote site to determine whether the audio signal has been supplied by an authorized user; generating a command signal in response to the audio signal including a command and being supplied by an authorized user; and transmitting the command signal to a device at the local site to effect a change in a state of the local device.” Wittenberg at Abstract. A POSITA would have looked to the voice recognition of Wittenberg to combine with, for instance, the systems of Williams or Lim, to achieve greater security and with a reasonable expectation of success.
- Chatterjee is directed to “a system and method for providing home automation using a mobile device.” Chatterjee at Abstract. The disclosed “home automation systems provide

centralized control for lighting, HVAC (heating, ventilation and air conditioning), appliances (such as refrigerators and dishwashers), and similar systems." Chatterjee at 0001. A POSITA would have looked to the system of Chatterjee for its disclosure of automated control of various types of appliances, including "such as controlling the temperature of a HVAC or toggling the light system on and off," to combine with, for example the systems of Lim or Williams. Chatterjee 0012.

A POSITA would have looked to the references identified above to provide insight into field of remotely processing audio information such as speech for controlling devices or providing services through devices. Based on these related disclosures, a POSITA at the time of the alleged invention would have been motivated to apply the teachings from one reference to another in the same way.

A POSITA would have been motivated to combine the devices in Williams, Howard, Laligand, Lim, Mardiana, Robbins, Mozer '467, and/or Siri Proxy System, with disclosures like those from Roberts, Goldsmith, Doherty, and/or Gruber to allow those devices to use different wireless standards, improving interoperability for users with diverse wireless networks; to utilize wireless standards with improved bandwidth, speed, and/or signal strength or that may be more appropriate for a given use case (like satellite helping serve remote users); and to provide means for addressing the device in a network to permit efficient network communications, including with Internet-connected devices.

A POSITA would have been motivated to combine the devices in Williams, Howard, Laligand, Lim, Mardiana, Robbins, Mozer '467, and/or Siri Proxy System, with disclosures like those from Benesty, Gruber, Mozer '707, and Wittenberg to allow those devices to use different speech processing methods and techniques, including use of multiple microphones and

capabilities for determining a speaker's identify, improving capability for utilizing voice recognition for controlling devices or provisioning services.

A POSITA would have been motivated to combine the devices in Williams, Howard, Laligand, Lim, Mardiana, Robbins, Mozer '467, and/or Siri Proxy System, with disclosures like those from Chatterjee, Gruber, and Rosenbeger to enhance the capabilities of these devices to connect to expanding types of devices, home appliances, and actuators, thereby increasing their utility and efficiency.

In addition, much of the art identified above reflects common knowledge and the state of the art prior to the priority date of the '706 Patent and/or at the time each alleged invention was made with which a POSITA would have been familiar. By way of example, Benesty is a textbook entitled "Springer Handbook of Speech Processing". It is an overview describing the state of the art for speech processing techniques, including speech recognition, speaker recognition, speech enhancement via noise reduction, and microphone arrays, that would have been well-known to a POSITA. Similarly, Goldsmith is a textbook titled "Wireless Communications," published by Cambridge University Press, describes the state of the art, and would have been well-known to a POSITA for wireless communication systems, protocols, and techniques for applying them. Roberts is a 2000 article describing how devices are addressed on networks like the Internet. Further, Rossing is a textbook titled "Audio and Electroacoustics," disclosing how conventional microphones and speakers operate, published by Springer and would have been well-known to a POSITA. And Doherty is a is a textbook called "Wireless Home Networking Simplified" that was published by Cisco and teaches how to set up wireless networks at home using conventional components. A POSITA would have been familiar with this common knowledge and the state of

the art and would have been motivated to combine it with the prior art identified in Exhibits C-1 to C-9.

With this knowledge, the person of ordinary skill in the art would have been motivated to consider the techniques and systems disclosed in the prior art identified in Exhibits C-1 to C-9 and to combine the teachings of the various other items of prior art disclosed in Exhibits C-1 to C-9 to arrive at the purported inventions embodied in the Asserted Patent Claims. Thus, the motivation to combine the references arises: from the field of processing and responding to human speech commands to control devices connected by a network, from the awareness of the deficiencies in the prior art, and from the interest in developing systems for increasing the prominence of useful information. Moreover, in light of the nature of the problem to be solved, the similarity of the field in which the prior art is found, and the ordinary creativity of one with ordinary skill in the art, it would have been obvious to try to combine the features of the prior art identified in Exhibits C-1 to C-9 to arrive at the purported inventions embodied in the Asserted Patent Claims. The features of the prior art identified in Exhibits C-1 to C-9 would have been understood as compatible and desirable for use in conjunction with, or as enhancements to each other, resulting in a more desirable system. Implementation of such features, including in software, would have been understood to have been feasible and straightforward to one of ordinary skill in the art at the priority date of the ’710 Patent.

Each of the features purportedly found in the ’710 Patent are combined for the very purpose for which they were designed by prior art inventors and the combination yields predictable results. *KSR*, 550 U.S. at 416. A person of ordinary skill in the art had reason to combine these known features to achieve predictable results to satisfy market demand as evidenced by the fact that the features were already present in the prior art, either in combination

or individually. The ’710 Patent is therefore a combination that only unites old elements with no change to their respective functions in an attempt to withdraw what was already known from the public domain. To the extent the ’710 Patent provides any variations to the known combinations, those variations were predictable to one of ordinary skill in the art.

In addition to the foregoing, the teaching, suggestion, or motivation to combine these references, although not required, is explicitly or implicitly found in one or more of the following: the explicit and/or implicit teachings of the references in Exhibits C-1 to C-9 and the prior art as a whole, including interrelated teachings of multiple prior art references; the subject matter acknowledged as prior art in the ’710 Patent; the general knowledge of those skilled in the art (including knowledge of trends in the field and knowledge that the art is of special interest or importance in the field); the fact that all of the prior art references concern the field of processing and responding to human speech commands to control devices connected by a network and related fields; the nature of the problem to be solved and the existence of similar improvements in similar applications; design incentives and other market forces, including the advantages of creating a superior and more desirable product and the effects of demands known to the design community or present in the marketplace; the ability to implement the alleged invention as a predictable variation of the prior art; improvements in similar devices; the interrelated teachings of multiple prior art references; any needs or problems known in the field addressed by the ’710 Patent; and the number of identified, predictable solutions to the problem addressed by these patents. In addition, the simultaneous (and/or prior) inventions described above (and elsewhere in these contentions) is evidence that motivation to combine the concepts described in the various prior art references did, in fact, exist, and they were, in fact, combined. One of ordinary skill in the art would be motivated by considerations such as wanting to improve a method or system for

using voice controls to control devices connected by a network, to combine the various teachings to arrive at the purported inventions embodied in the Asserted Patent Claims. Stated differently, the prior art identified in Exhibits C-1 to C-9 demonstrates that there was, at the time of the alleged invention, a finite number of identified, predictable solutions for improving the effectiveness and timeliness of delivering audio content to a user that persons of ordinary skill in the art would have known how to successfully combine the prior art identified in Exhibits C-1 to C-9 to yield one or more embodiments of the Asserted Patent Claims, making the claimed invention obvious.

Known methods and elements of the Asserted Patent Claims would yield predictable results:

- Howard discloses: "Increasingly, homes appliances are being connected together and controlled via a home network, which typically take different forms ranging from a simple network hub device to a more complex hub and switching system with broadband connection to the Internet." Howard at 1:18-30.
- Lim describes: "It is known to offer an app for download and installation into memory **312** which app may serve to allow use of the smart phone to transmit commands suitable for operation of entertainment and other appliances. Such an app may draw on a library of codesets suitable for commanding the functional operations of various types of appliances of multiple manufactures and/or models, i.e., a library of codesets for a so-called "universal" controller, as well known in the art. As appropriate for a particular embodiment this library may be resident on the smart device itself, either downloaded as part of or in conjunction with the app or preinstalled in memory **312** or in a separate self-contained command transmitter; may be located externally at a local PC or remote server

device accessible to smart device **110** for the download of only those code sets necessary for operation of the configured appliances; or may be located in a command relay device such as described in the previously referenced U.S. patent application Ser. No. 13/043,915." Lim at 0024.

- Williams describes: "Homes and other user premises are increasingly equipped with always-on Internet or 'cloud' connectivity. In many cases, even mobile users have constant or nearly constant data connectivity. The common availability of network communications has created a number of new possibilities for services and other functionality, using the variety of connected devices accessible to users." Williams at 0001.
- Robbins discloses: "These new digital sources—coupled with internet content such as available on YouTube and iTunes Web sites—is enticing consumers with vast media libraries of hundreds of thousands of titles. At the same time the user wants a simple control device that fits in the hand as the user relaxes in their home. This is driving a conflict into the command and control space: greater interactivity and control demanded from a handheld device. There are two ways to address this challenge—through menus and screens, or through voice control." Robbins at 0002.

The Siri Proxy System further indicates that the claims result from the combination of known methods and components to yield predicable results. In or around November 2011, individuals, including Peter Lamonica, created a system for controlling home appliances connected over a network using voice commands. *See* Pete Lamonica, Siri Proxy demo (Nov. 21, 2011), https://www.youtube.com/watch?v=AN6wy0keQqo; Pete Lamonica, SiriProxy Installation (Long Version) (Dec. 3, 2011), https://www.youtube.com/watch?v=GQXyJR6mOk0; Kelly Hodgkins,

Developer builds Siri proxy server, Engadget (Nov. 21, 2011); Mike Nathan, Siri Proxy Adds Tons of Functionality, Doesn't Require a Jailbreak, Hackaday (Nov. 21, 2011); Voice Activated Home Automation with SiriProxy & ioBridge, MarkHodder.com (2011). The Siri Proxy System relied on a conventional, iPhone 4s, an open-source Siri Proxy server running on a personal computer over a home network that interacted with Apple's servers, and an internet-controlled appliance, such as a thermostat. Pete Lamonica, Siri Proxy demo (Nov. 21, 2011), https://www.youtube.com/watch?v=AN6wy0keQqo. The Siri Proxy System exhibits the claimed functionality of generating, transmitting, and processing data, and controlling a device based on the processed data using off-the-shelf components.

Design incentives and other market forces motivating persons of ordinary skill:

- Robbins discloses: "The command and control market is at a crossroads. Consumers are integrating more devices into their entertainment systems (e.g., DVD burners, networked media, Hi-Def DVD, etc.) each of which has its own remote control. These new digital sources—coupled with internet content such as available on YouTube and iTunes Web sites—is enticing consumers with vast media libraries of hundreds of thousands of titles. At the same time the user wants a simple control device that fits in the hand as the user relaxes in their home. This is driving a conflict into the command and control space: greater interactivity and control demanded from a handheld device. There are two ways to address this challenge—through menus and screens, or through voice control." Robbins at 0002.
- Laligand discloses: "People interact more and more with computers, and they also interact more and more with different kinds of computers. While desktop and laptop computers may have been the most prevalent computers in people's lives in the past, most people are

more likely now to interact with smart phones, DVRs, televisions, and other consumer devices that include computers in them." Laligand at 0003.

- Williams discloses: "The architecture above can be utilized to provide a wide variety of services and functionality, of which the following are simple examples.

  A cloud-based application may be configured to received vocal commands from users and to perform operations based on those commands. For example, a user may speak a grocery order, and the spoken order may be interpreted using the voice recognition functionality described above. Once interpreted, the order may be submitted to a grocery store for subsequent delivery or simply recorded as a shopping list that the user can view on their smartphone when shopping at the grocery store. An application such as this may apply personalized settings for each order, such as preferred delivery schedules and historical portion sizes.

  Similarly, a cloud-based application may allow users to order tickets without needing a computer. A user may tell the application what movie they want to see. The application may use pre-configured information about the user (such as location) to determine which theater is near the user. The application may respond to a spoken command to order movie tickets by using the speech synthesis functionality of the system to query the user regarding movie selections and times.

  . . . .

  A similar type of application may identify the song the user is currently listening to, and in response may provide information about related articles, offer samples, suggest related music and playlists, or present information allowing the user to purchase individual music tracks." Williams at 0043-0047.

- Howard discloses: "An illustration of how the portable device of the present invention can be utilized to purchase items over the Internet is illustrated in FIG. 10." Howard at 12:15-17.
- Gruber discloses: "Accordingly, existing systems are often difficult to use and to navigate, and often present users with inconsistent and overwhelming interfaces that often prevent the users from making effective use of the technology.

  An intelligent automated assistant, also referred to herein as a virtual assistant, can provide an improved interface between human and computer." Gruber at 0010-0011.
- Wittenberg discloses: "For example, speech processing software (i.e., software that processes audio signals to identify spoken words within the audio signal) can require significant memory capacity and can be processing intensive. Such processing and memory demands may undesirably increase the cost and size of an electronic device due to the need for increased memory and processing capability. Further, in a network of such devices, updating command processing software would require downloading new software to each device, which may be cumbersome and time consuming.

  Another option would be to control a local device by processing command signals remotely. Remote processing of commands is known in a number of contexts." Wittenberg at 1:24-35.

In many instances where a particular contention calls for, or requires, combining references, any one of a number of references can be combined. Defendant reserves its right to identify supplemental combinations as the case progresses. As such, the combinations evidencing teachings, suggestions, and/or motivations to combine the prior art references in a way that renders the asserted claims obvious listed herein are merely examples. A person of ordinary skill

would have access to the materials found in in these contentions and would have at least the ordinary creativity and skill to combine the attached references in ways not explicitly recited above.

As explained herein and in the accompanying claim charts, it would have been obvious to a person of ordinary skill in the art at the time of the alleged invention to combine the various references identified below in a way to practice the claimed invention. The Asserted Patent Claims are therefore obvious under 35 U.S.C. § 103.

Defendant may rely on a subset of the identified references, or all of the references identified herein for purposes of obviousness, depending on the Court's claim construction, positions taken by Plaintiff, and further discovery in this case. Defendant identifies the following combinations of prior art references that render obvious the asserted claims under 35 U.S.C. § 103:

1. Williams alone or in combination with at least one of Howard, Laligand, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer '707, Mozer '467, Doherty, Roberts, the Siri Proxy System, and/or the admitted prior art.
2. Howard alone or in combination with at least one of Williams, Laligand, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer '707, Mozer '467, Doherty, Roberts, the Siri Proxy System, and/or the admitted prior art.
3. Laligand alone or in combination with at least one of Howard, Williams, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer '707, Mozer '467, Doherty, Roberts, the Siri Proxy System, and/or the admitted prior art.

4. Lim alone or in combination with at least one of Howard, Williams, Laligand, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Doherty, Roberts, the Siri Proxy System, and/or the admitted prior art.

5. Siri Proxy System alone or in combination with at least one of Williams, Howard, Laligand, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Doherty, Roberts, and/or the admitted prior art.

6. Mozer ’467 alone or in combination with at least one of Williams, Howard, Laligand, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Doherty, Roberts, the Siri Proxy System, and/or the admitted prior art.

A person of ordinary skill in the art would have arrived at the claimed alleged invention in the ’710 Patent based on the combinations of the prior art listed above. Motivation to combine the above references is present in the references themselves, the common knowledge of a person of ordinary skill in the art, the prior art as a whole, and the nature of the problems allegedly addressed by the ’710 Patent. Combining these references would have been obvious to one of ordinary skill in the art because the references identify and address the same technical issues and suggest similar solutions to those issues. Defendant reserves the right to establish additional motivations to combine any of the above references based on the teachings contained in any of the references identified in these Invalidity Contentions.

Additionally, one of ordinary skill in the art would be motivated to combine the identified references because of the nature of the problem being solved, the express, implied, and inherent

teachings of the prior art, and the knowledge of the person of ordinary skill in the art that such combinations would yield predictable results. These combinations that render the ’710 Patent obvious would also have been a simple design choice that represented a predictable variation within the knowledge and skill of a person of ordinary skill in the art at the time of the purported invention in the ’710 Patent.

One of ordinary skill in the art would also have been motivated to combine the above identified references based on his or her education, knowledge, and experience, by the state of the prior art at the time of invention, by the nature of the problem to be solved, and by common sense. A person of ordinary skill in the art is presumed to have knowledge of all relevant prior art and therefore would have been familiar with each of the references identified above. A person of ordinary skill in the art would also be familiar with the background knowledge in the art and the full range of teachings they contain.

D. ’590 Patent

Amazon identifies the following prior art now known to Amazon to anticipate or render obvious the asserted claims of the ’590 Patent under at least 35 U.S.C. §§ 102(a), (b), (d), (e) and/or (g) and 103, either expressly or inherently as understood by a POSITA.

Table 4

Ex.	Patent or Publication	Country	First Inventor or Author	Date of Issue (Patents) or Publication
D-1	2003/0234725 A1	US	Jerome Lemelson	03/29/2005
D-2	2008/0024605 A1	US	Robert Osann	01/31/2008
D-3	2009/0195349 A1	US	Seth Frader-Thompson	08/06/2009
D-4	100918923B1	KR	Doc Jin Chang	09/28/2009
D-5	2010/0130142 A1	US	Clifford Schubert	05/27/2010
D-6	2010/0083686	KR	Mun Seok Seo	07/22/2010

Ex.	Patent or Publication	Country	First Inventor or Author	Date of Issue (Patents) or Publication
D-7	2010/0238003 A1	US	Tat Keung Chan	09/23/2010
D-8	2011/0298301 A1	US	Simon Wong	12/08/2011
D-9	IP Address Management	US	P.A. Roberts	07/2000
D-9	6,906,617 B1	US	Pieter Suerd van der Meulen	06/14/2005
D-9	Wireless Communications	US	Andrea Goldsmith	01/20/2006
D-9	Wireless Home Networking Simplified	US	Jim Doherty	01/16/2007
D-9	Springer Handbook of Acoustics	US	Thomas D. Rossing	07/23/2007
D-9	Springer Handbook of Speech Processing	US	Jacob Benesty	11/22/2007
D-9	8,461,861 B2	US	Ronald Botts	06/11/2013
D-9	7,529,677 B1	US	John W. Wittenberg	05/05/2009
D-9	8,195,467 B2	US	Todd F. Mozer	08/13/2009
D-9	Handbook of Modern Sensors	US	Jacob Fraden	09/29/2010
D-9	2012/0265528 A1	US	Thomas Robert Gruber	10/18/2012
D-9	8,340,975 B1	US	Theodore Alfred Rosenberger	12/25/2012
D-9	2013/0052946 A1	US	Manjirnath Chatterjee	2/28/2013

In addition, Defendant identifies system prior art including the Siri Proxy System, developed by Peter Lamonica, which was in public use in the United States by around November 2011. *See* Exhibit D-9.

To the extent Plaintiff contends that any of the above items of prior art do not anticipate any asserted claim, Defendant reserves the right to contend that each of the items of prior art renders the Asserted Patent Claims obvious either alone or in combination with one or more other items of prior art. A corresponding claim chart for each item of prior art identified above is attached hereto in Exhibits D-1 to D-9. Exemplary disclosures of combinations of references rendering the

claims obvious are set forth in Exhibits D-1 to D-9. To the extent a patent prior art reference has a corresponding application publication (or vice versa), Defendant reserves the right to rely on and cite to that application publication (or patent) and its corresponding disclosures.

In addition, to the extent that Plaintiff fails to satisfy its burden to establish the '590 Patent's entitlement to its claimed priority date due to insufficient written description (discussed below), Defendant reserves the right to identify additional art that renders that Asserted Patent Claims anticipated or obvious. For example, Defendant asserts that earlier published patent applications from the '590 Patent's family, including U.S. Patent Publication No. 2013/0201316 A1, would qualify as prior art and render the Asserted Patent Claims obvious, either alone or in combination with one or more additional references, including those identified above. Defendant further asserts that accused products, like the Amazon Echo (1st Generation) and Amazon Echo Dot (1st Generation), would qualify as prior art and render the Asserted Patents Claims anticipated under Plaintiff's own mapping of the claims. *See Upsher-Smith Lab'ys*, 412 F.3d at 1322 ("A century-old axiom of patent law holds that a product 'which would literally infringe if later in time anticipates if earlier.'"). Or they would render the Asserted Patent Claims obvious, alone or in combination with one or more additional references, including those identified above.

Each patent or printed publication describing or relating to a prior art instrumentality should be understood to discuss the instrumentality's capabilities generally and also to discuss specific implementation examples of specific installations and configurations of the particular instrumentality. To the extent the prior art references describe various implementations of the same underlying instrumentality, that underlying instrumentality is a single reference under 35 U.S.C. §§ 102(a) and/or 102(b). The prior art references are evidence of the capabilities of the prior art instrumentality, and each chart provided for a prior art instrumentality should be understood to

incorporate by reference all patents or publications describing or relating to that prior art instrumentality and all charts provided for those patents or printed publications. In addition, each of the prior art references also qualifies as prior art on separate grounds as a patent or publication under 35 U.S.C. § 102. Even if the prior art references are not treated as a single prior art reference, at the very least it would have been obvious to combine the features described in those references as the individual references discuss the same instrumentality.

While Defendant's investigation continues, information available to date indicates that each instrumentality disclosed or referenced in the prior art listed above, and as further identified in the claim charts of Exhibits D-1 to D-9, was: (1) known, published, or used in this country before the alleged invention of the claimed subject matter of the Asserted Patent Claims, (2) published, in public use, and/or on sale in this country more than one year before the filing date of the '590 Patent, and/or (3) invented by another who did not abandon, suppress, or conceal, before the alleged invention of the claimed subject matter of the Asserted Patent Claims. Information concerning the entities who knew of and/or used these instrumentalities, or who were involved in any sales or offers to sell these instrumentalities, can be found in the documents identified describing these instrumentalities.

Defendant reserves the right to rely on the testimony of witness(es) knowledgeable about these or other instrumentalities, as well as documents that are currently in the possession of Plaintiff or third parties describing these or other instrumentalities. Defendant reserves the right to assert that the Asserted Patent Claims are invalid under 35 U.S.C. § 102(f) in the event that Defendant obtains evidence that the named inventor(s) of the '590 Patent did not invent (either alone or in conjunction with others) the subject matter claimed in the '590 Patent. Defendant further intends to rely on admissions of the named inventors, including admissions made on his

or their behalf by attorneys or other agents or representatives, concerning the prior art, including, but not limited to, statements found in the ’590 Patent, its prosecution history, related patents and/or patent applications, any deposition testimony, and the papers filed, and any evidence submitted by Plaintiff in conjunction with this litigation. Defendant may also rely on testimony from the author(s) or named inventor(s) listed on the above references, as well as from individuals involved in the development of the prior art instrumentalities.

Each of the prior art references identified above anticipates the Asserted Patent Claims in accordance with 35 U.S.C. § 102 and/or renders them obvious under 35 U.S.C. § 103, as more specifically noted in the charts of Exhibits D-1 to D-9.

The cited portions of the identified prior art for the ’590 Patent are provided as examples and are representative of the content of the prior art references, and should be understood in the context of the reference as a whole, as understood by one of ordinary skill in the art. To the extent any cited item of prior art for the ’590 Patent is deemed not to anticipate one of the Asserted Patent Claims for failing to teach or suggest one or more limitations of that claim, such limitations would nonetheless have been inherent and/or obvious to one of ordinary skill in the art at the time of the alleged invention(s), either alone or in combination with any of the other identified items of prior art for the ’590 Patent.

All Asserted Patent Claims are rendered obvious in light of any item of prior art cited in Exhibits D-1 to D-9 alone or combined with one or more items of the other prior art cited in Exhibits D-1 to D-9. Moreover, to the extent that any prior art is found to be missing an explicit teaching of one or more limitations of the Asserted Patent Claims, any such missing limitation is inherent within the system or publication or was known by those of ordinary skill in the art. Accordingly, such prior art on its own either anticipates or would have rendered obvious the

Asserted Patent Claims. If, and to the extent Plaintiff challenges the correspondence of any of these references with respect to particular elements of the asserted claims of the '590 Patent, Defendant reserves the right to supplement these Invalidity Contentions to identify motivation to combine particular references with one another with additional particularity.

In *KSR* , the U.S. Supreme Court rejected the Federal Circuit's rigid "teaching, suggestion, or motivation" requirement in favor of a flexible, functional approach in which an explicit finding of a "motivation" to combine prior art references is not required to establish obviousness. 550 U.S. at 407. The Supreme Court held that it is sufficient that a combination of elements was "obvious to try" stating that, "[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp." *Id*. at 415, 421; *see also Dystar Textilfarben*, 464 F.3d at 1368 (explaining that when the "combination of references results in a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient," there exists a motivation to combine prior art references even when there is no explicit suggestion in the references themselves "[b]ecause the desire to enhance commercial opportunities by improving a product or process is universal—and even common-sensical"); *LeapFrog*, 485 F.3d at 1162 (applying *KSR* and holding that "one of ordinary skill in the art of children's learning toys would have found it obvious to combine the Bevan device with the SSR to update it using modern electronic components in order to gain the commonly understood benefits of such adaption, such as decreased size, increased reliability, simplified operation, and reduced cost").

To the extent that applicable law requires evidence of motivation to combine, motivation exists to combine one or more of the references disclosed herein with each other.[6] Generally, motivation to combine any of these references with others exists within the references themselves, as well as within the knowledge of those of ordinary skill in the art. These references identify and address similar technical issues as the '590 Patent and also suggest solutions to those issues. Various combinations of the above references would have naturally been considered as part of the exercise of ordinary skill by one skilled in the art. The claims of the '590 Patent are directed to providing for wireless activation and monitoring of an appliance. Each of the purported features of the '590 Patent was available in prior art, individually and in combination, prior to the date of the purported invention and was well known to those of ordinary skill in the art. To the extent any of these features solved a problem in the art, that problem was known to those of ordinary skill and had already been solved using obvious solutions.

Further, the items of prior art identified in Exhibits D-1 to D-9 are directed to analogous art. In particular, but without limitation, the items of prior art identified in Exhibits D-1 to D-9 all relate to devices that sense conditions and/or wirelessly transmit and receive data. For instance, several references disclose devices within wireless networks that sense conditions, wirelessly transmit sensed data, and wirelessly receive control commands to activate or actuate an element of the device:

- Lemelson is a 2003 patent application publication describing a sensor unit that senses several different conditions, wirelessly transmits data to other devices, and wirelessly receives control commands from other devices. *E.g.*, Lemelson at 0062, 0067, 0086.

[6] Defendant further incorporates the motions to combine from its petitions for *inter partes* review filed against the'590 Patent, as applicable.

- Osann is a 2008 patent describing a network for the monitoring and control of appliances. Osann at 0002. It discloses "energy monitoring and control points," integrated with appliances, that sense conditions, like current supplied thereto and environmental conditions; that wirelessly transmit that data to other devices; and that wirelessly receive control commands from other devices. *E.g.*, *id.* at 0085, 0086, 0095, 0145-0146.
- Frader-Thompson is a 2009 patent application publication describing a network for the monitoring and control of appliances, including refrigerators and ovens. Frader-Thompson at Abstract, 0032, 0037, 0081. It discloses wireless "nodes," integrated with appliances, that sense conditions, like current supplied thereto and environmental conditions; that wirelessly transmit that data to other devices; and that wirelessly receive control commands from other devices. *E.g.*, *id.* at 0037.
- Chang is a 2009 patent describing a network for the monitoring and control of appliances, including home appliances. It discloses wireless "reference nodes," integrated with appliances, that sense conditions, like current supplied thereto and environmental conditions; that wirelessly transmit that data to other devices; and that wirelessly receive control commands from other devices.
- Schubert is a 2010 patent application publication describing a network for the monitoring and control of appliances. Schubert at Abstract, 0021, 0024. It discloses electrical assemblies, integrated with appliances, that sense conditions, like current supplied thereto and environmental conditions, that wirelessly transmit that data to other devices; and that wirelessly receive control commands from other devices. *E.g.*, *id.* at 0027-0029.
- Seo is a 2010 patent application publication describing a kitchen appliance, namely a refrigerator, that senses conditions, like current supplied thereto and environment

condition; that wirelessly transmits data to other devices; and that wirelessly receives control commands from other devices. *E.g.*, Seo at 0022, 0027, 0049, 0051, 0076, 0078, 0083.

- Chan is a 2010 patent application publication describing a network for the control and management of energy supplied to appliances, including refrigerators and microwave ovens. Chan at Abstract, 0009, 0047. Chan discloses wireless "appliance modules," integrated with appliances, that sense conditions, like current supplied thereto and environmental conditions; that wirelessly transmit that data to other devices; and that wirelessly receive control commands from other devices. *E.g.*, *id.* at 0047, 0057.
- Wong is a 2011 patent application publication describing a network for the monitoring and control of appliances. Wong at Abstract, 0078. It discloses wireless "sensor modules," integrated with appliances, that sense conditions, like current supplied thereto and environmental conditions; that wirelessly transmit that data to other devices; and that wirelessly receive control commands from other devices. *E.g.*, *id.* at 0078, 0096, 0107.

These references are analogous to one another, and to several other references that describe wireless networking technology. For instance:

- Roberts is a 2000 article describing how devices are addressed on networks like the Internet.
- Goldsmith is a 2006 book describing wireless communication technology, different types of wireless networks, and common wireless standards.
- Doherty is a 2006 textbook describing wireless home networking technology and its implementation.

- Gruber is a 2012 patent application publication describing a virtual assistant that can interface with remote servers and computing devices to interpret voice input and prompt the speaker to provide additional information where needed. Gruber at Abstract, 0007, 0218-225, & Fig. 31. The device of Gruber also provides "signatures of connected networks, including Ethernet, Wi-Fi and Bluetooth. Signatures include MAC addresses of network access points, IP addresses assigned, device identifiers such as Bluetooth names, frequency channels and other properties of wireless networks." Gruber at 0218-0225.

A POSITA would have been motivated to combine the devices in Lemelson, Osann, Frader-Thompson, Chang, Schubert, Seo, Chan, and/or Wong with disclosures like those from Roberts, Goldsmith, Doherty, and/or Gruber to allow those devices to use different wireless standards, improving interoperability for users with diverse wireless networks; to utilize wireless standards with improved bandwidth, speed, and/or signal strength or that may be more appropriate for a given use case (like satellite helping serve remote users); and to provide means for addressing the device in a network to permit efficient network communications, including with Internet-connected devices. As the '590 Patent itself recognizes, claimed networking technologies predate the '590 patent, were standardized and widely adopted, and their benefits were widely known and acknowledge. *See, e.g.*, '590 Patent at 2:1-3:17, 4:3-6:12, 7:43-8:63. In addition, a POSITA would have merely been applying a known technique to a known device ready for improvement to yield predictable results.

Several references are analogous to Lemelson, Osann, Frader-Thompson, Chang, Schubert, Seo, Chan, and/or Wong in describing technology for sensing certain condition.

- Fraden is a 2010 textbook disclosing various types of sensors.

- Rosenberger is a 2011 patent describing a device that, using wireless protocols, provides functionality for interactive speech recognition and two-way communication. *E.g.*, Rosenberger at 7:32-60.
- Gruber is a 2012 patent application publication describing a virtual assistant that can interface with remote servers and computing devices to interpret voice input and prompt the speaker to provide additional information where needed. Gruber at Abstract, 0007, 0218-225, & Fig. 31. The device of Gruber also provides "signatures of connected networks, including Ethernet, Wi-Fi and Bluetooth. Signatures include MAC addresses of network access points, IP addresses assigned, device identifiers such as Bluetooth names, frequency channels and other properties of wireless networks." Gruber at 0218-0225.
- Rossing is a 2007 textbook titled "Audio and Electroacoustics," disclosing how conventional microphones and speakers operate.
- Wittenberg is a 2009 patent relating to "a technique for remotely processing a local audio command to control a local device." Wittenberg at Abstract. It discloses "performing speech recognition processing on the audio signal at the remote site to determine whether the audio signal includes a command; performing voice recognition processing on the audio signal at the remote site to determine whether the audio signal has been supplied by an authorized user; generating a command signal in response to the audio signal including a command and being supplied by an authorized user; and transmitting the command signal to a device at the local site to effect a change in a state of the local device." *Id.*

A POSITA would have been motivated to combine the devices in Lemelson, Osann, Frader-Thompson, Chang, Schubert, Seo, Chan, and/or Wong with disclosures like those from Fraden, Rosenberger, Gruber, Rossing and/or Wittenberg to allow those devices to act as a two-

way communicator, to accept and interpret voice commands, or to detect a more robust set of conditions—giving users more robust data and an additional options for triggering the activation of other device elements—using well-known and widely available sensors that long predate the '590 Patent. In addition, a POSITA would have merely been applying a known technique to a known device ready for improvement to yield predictable results.

Several references are analogous to Lemelson, Osann, Frader-Thompson, Chang, Schubert, Seo, Chan, and Wong in describing technology for wirelessly controlling certain actuators on a device.

- Botts is directed to "a household appliance, and particularly, to a household appliance that monitors energy usage, and more particularly, to a system and method of monitoring energy usage for a household appliance." Botts at 1:6-9. It discloses a light indicator reflecting device status. *Id.* at 10:56-11:2.
- Rossing is a 2007 textbook titled "Audio and Electroacoustics," disclosing how conventional microphones and speakers operate.
- Benesty is a textbook describing the state of the art for speech processing techniques, including speech recognition, speaker recognition, speech enhancement via noise reduction, and microphone arrays.
- Gruber is a 2012 patent application publication describing a virtual assistant that can interface with remote servers and computing devices to interpret voice input and prompt the speaker to provide additional information where needed. Gruber at Abstract, 0007, 0218-225, & Fig. 31.
- Rosenberger is a 2012 patent directed to "improvements in speech-recognizing control devices that respond to oral commands from a system user to produce a desired effect or

result." Rosenberger at 1:7-13. Rosenberger's device "[p]referably . . . includes . . . a multi-colored LED status light 34 for visually indicating various device states and modes." Rosenberger at 8:8-16.

A POSITA would have been motivated to combine the devices in Lemelson, Osann, Frader-Thompson, Chang, Schubert, Seo, Chan, and/or Wong with disclosures like those from Botts, Rossing, Benesty, Gruber, and/or Rosenberger to provide a more robust feature set, including accepting and providing a response (either visually or aurally) to voice commands, to facilitate two-way communications (including audio-visually), or to provide other information from elsewhere in the network (like network connection status) that can be reflected to a user via light indicator.

A POSITA would have looked to the references identified above to provide insight into field of devices within wireless networks that sense conditions, wirelessly transmit sensed data, and/or wirelessly receive control commands to activate or actuate an element of the device. Based on these related disclosures, a POSITA at the time of the alleged invention would have been motivated to apply the teachings from one reference to another in the same way.

Much of the art identified above and in the exhibits hereto reflects common knowledge and the state of the art prior to the priority date of the '590 Patent and/or at the time each alleged invention was made. By way of example, Benesty is a textbook entitled "Springer Handbook of Speech Processing". It is an overview describing the state of the art for speech processing techniques, including speech recognition, speaker recognition, speech enhancement via noise reduction, and microphone arrays, that would have been well-known to a POSITA. Similarly, Goldsmith is a textbook titled "Wireless Communications," published by Cambridge University Press, describes the state of the art, and would have been well-known to a POSITA for wireless

communication systems, protocols, and techniques for applying them. Further, Rossing is a textbook titled "Audio and Electroacoustics," disclosing how conventional microphones and speakers operate, published by Springer and would have been well-known to a POSITA. And Doherty is a is a textbook called "Wireless Home Networking Simplified" that was published by Cisco and teaches how to set up wireless networks at home using conventional components. A POSITA would have been familiar with this common knowledge and the state of the art and would have been motivated to combine it with the prior art identified in Exhibits D-1 to D-9.

With this knowledge, the person of ordinary skill in the art would have been motivated to consider the techniques and systems disclosed in the prior art identified in Exhibits D-1 to D-9 and to combine the teachings of the various other items of prior art disclosed in Exhibits D-1 to D-9 to arrive at the purported inventions embodied in the Asserted Patent Claims. Thus, the motivation to combine the references arises: from the field of providing for wireless activation and current monitoring of an appliance, from the awareness of the deficiencies in the prior art, and from the interest in developing systems for increasing the prominence of useful information. Moreover, in light of the nature of the problem to be solved, the similarity of the field in which the prior art is found, and the ordinary creativity of one with ordinary skill in the art, it would have been obvious to try to combine the features of the prior art identified in Exhibits D-1 to D-9 to arrive at the purported inventions embodied in the Asserted Patent Claims. The features of the prior art identified in Exhibits D-1 to D-9 would have been understood as compatible and desirable for use in conjunction with, or as enhancements to each other, resulting in a more desirable solution. Implementation of such features, including in software, would have been understood to have been feasible and straightforward to one of ordinary skill in the art at the priority date of the '590 Patent.

Each of the features purportedly found in the ’590 Patent are combined for the very purpose for which they were designed by prior art inventors and the combination yields predictable results. *KSR*, 550 U.S. at 416. A person of ordinary skill in the art had reason to combine these known features to achieve predictable results to satisfy market demand as evidenced by the fact that the features were already present in the prior art, either in combination or individually. The ’590 Patent is therefore a combination that only unites old elements with no change to their respective functions in an attempt to withdraw what was already known from the public domain. To the extent the ’590 Patent provides any variations to the known combinations, those variations were predictable to one of ordinary skill in the art.

In addition to the foregoing, the teaching, suggestion, or motivation to combine these references, although not required, is explicitly or implicitly found in one or more of the following: the explicit and/or implicit teachings of the references in Exhibits D-1 to D-9 and the prior art as a whole, including interrelated teachings of multiple prior art references; the subject matter acknowledged as prior art in the ’590 Patent; the general knowledge of those skilled in the art (including knowledge of trends in the field and knowledge that the art is of special interest or importance in the field); the fact that all of the prior art references concern the field of providing for wireless activation and current monitoring of an appliance and related fields; the nature of the problem to be solved and the existence of similar improvements in similar applications; design incentives and other market forces, including the advantages of creating a superior and more desirable product and the effects of demands known to the design community or present in the marketplace; the ability to implement the alleged invention as a predictable variation of the prior art; improvements in similar devices; the interrelated teachings of multiple prior art references; any needs or problems known in the field addressed by the ’590 Patent; and the number of

identified, predictable solutions to the problem addressed by these patents. In addition, the simultaneous (and/or prior) inventions described above (and elsewhere in these contentions) is evidence that motivation to combine the concepts described in the various prior art references did, in fact, exist, and they were, in fact, combined. One of ordinary skill in the art would be motivated by considerations such as wanting to improve a method or system for providing wireless activation and current monitoring of an appliance, to combine the various teachings to arrive at the purported inventions embodied in the Asserted Patent Claims. Stated differently, the prior art identified in Exhibits D-1 to D-9 demonstrates that there was, at the time of the alleged invention, a finite number of identified, predictable solutions for improving a method or system for providing wireless activation and current monitoring of an appliance that persons of ordinary skill in the art would have known how to successfully combine the prior art identified in Exhibits D-1 to D-9 to yield one or more embodiments of the Asserted Patent Claims, making the claimed invention obvious.

Design incentives and other market forces motivating persons of ordinary skill:

- Chang discloses, "In addition, since the energy consumption of the building is directly connected to the financial expenditure from the viewpoint of the building owner, the tenant, and the user, the energy consumption of the inefficient building has a significant financial burden. To solve these problems, it is necessary to efficiently and systematically manage the use of energy consumed in buildings."
- Wittenberg discloses: "For example, speech processing software (i.e., software that processes audio signals to identify spoken words within the audio signal) can require significant memory capacity and can be processing intensive. Such processing and memory demands may undesirably increase the cost and size of an electronic device due to the need

for increased memory and processing capability. Further, in a network of such devices, updating command processing software would require downloading new software to each device, which may be cumbersome and time consuming.

Another option would be to control a local device by processing command signals remotely. Remote processing of commands is known in a number of contexts." Wittenberg at 1:24-35.

- Seo discloses: "Recently, the demand for refrigerators having a high utilization of storage space has been increasing among consumers of refrigerators, as well as the demand for traditional cooling efficiency, so that various storage items can be stored according to the improvement of living standards. Increasingly, there is an increasing demand for the addition of various functions to improve user convenience."
- Frader-Thompson discloses: "It should be readily apparent to those skilled in the art that the above situations and others of their kind do not satisfactorily address the needs and desires of consumers wishing to take part in conservation and other environmental activities. Further, these situations are leaving consumers in the dark about their energy consumption and expenditures, potentially preventing them from making wiser energy-conscious decisions in their homes and businesses.

  More broadly, no system currently exists in which a consumer can effectively and efficiently monitor, understand, and control their personal energy usage in a home or business." Frader-Thompson at 0005-0006.

In many instances where a particular contention calls for, or requires, combining references, any one of a number of references can be combined. Defendant reserves its right to identify supplemental combinations as the case progresses. As such, the combinations evidencing

teachings, suggestions, and/or motivations to combine the prior art references in a way that renders the asserted claims obvious listed herein are merely examples. A person of ordinary skill would have access to the materials found in in these contentions and would have at least the ordinary creativity and skill to combine the attached references in ways not explicitly recited above.

As explained herein and in the accompanying claim charts, it would have been obvious to a person of ordinary skill in the art at the time of the alleged invention to combine the various references identified below in a way to practice the claimed invention. The Asserted Patent Claims are therefore obvious under 35 U.S.C. § 103.

Defendant may rely on a subset of the identified references, or all of the references identified herein for purposes of obviousness, depending on the Court's claim construction, positions taken by Plaintiff, and further discovery in this case. Defendant identifies the following combinations of prior art references that render obvious the asserted claims under 35 U.S.C. § 103:

1. Chan alone or in combination with at least one of JIM Appliance Module, Seo, Frader-Thompson, Schubert, Chang, Wong, Osann, Lemelson, Van der Meulen, Botts, Goldsmith, Rossing, Benesty, Fraden, Doherty, Chatterjee, Mozer '467, Rosenberger, Wittenberg, Roberts, Siri Proxy System, and/or the admitted prior art.
2. Seo alone or in combination with at least one of Chan, the EnergyHub energy management system, Frader-Thompson, Schubert, Chang, Wong, Osann, Lemelson, Van der Meulen, Botts, Goldsmith, Rossing, Benesty, Fraden, Doherty, Chatterjee, Mozer '467, Rosenberger, Wittenberg, Roberts, Siri Proxy System, and/or the admitted prior art.

3. Frader-Thompson alone or in combination with at least one of Chan, Seo, Schubert, Chang, Wong, Osann, Lemelson, Van der Meulen, Botts, Goldsmith, Rossing, Benesty, Fraden, Doherty, Chatterjee, Mozer ’467, Rosenberger, Wittenberg, Roberts, Siri Proxy System, and/or the admitted prior art.

4. Schubert alone or in combination with at least one of Chan, Seo, Frader-Thompson, Chang, Wong, Osann, Lemelson, Van der Meulen, Botts, Goldsmith, Rossing, Benesty, Fraden, Doherty, Chatterjee, Mozer ’467, Rosenberger, Wittenberg, Roberts, Siri Proxy System, and/or the admitted prior art.

5. Chang alone or in combination with at least one of Chan, Seo, Frader-Thompson, Schubert, Wong, Osann, Lemelson, Van der Meulen, Botts, Goldsmith, Rossing, Benesty, Fraden, Doherty, Chatterjee, Mozer ’467, Rosenberger, Wittenberg, Roberts, Siri Proxy System, and/or the admitted prior art.

6. Wong alone or in combination with at least one of Chan, Seo, Frader-Thompson, Schubert, Chang, Osann, Lemelson, Van der Meulen, Botts, Goldsmith, Rossing, Benesty, Fraden, Doherty, Chatterjee, Mozer ’467, Rosenberger, Wittenberg, Roberts, Siri Proxy System, and/or the admitted prior art.

7. Osann alone or in combination with at least one of Chan, Seo, Frader-Thompson, Schubert, Chang, Wong, Lemelson, Van der Meulen, Botts, Goldsmith, Rossing, Benesty, Fraden, Doherty, Chatterjee, Mozer ’467, Rosenberger, Wittenberg, Roberts, Siri Proxy System, and/or the admitted prior art.

8. Lemelson alone or in combination with at least one of Chan, Seo, Frader-Thompson, Schubert, Chang, Wong, Osann, Van der Meulen, Botts, Goldsmith, Rossing, Benesty, Fraden, Doherty, Chatterjee, Mozer ’467, Rosenberger,

Wittenberg, Roberts, Siri Proxy System, and/or the admitted prior art.

A person of ordinary skill in the art would have arrived at the claimed alleged invention in the ’590 Patent based on the combinations of the prior art listed above. Motivation to combine the above references is present in the references themselves, the common knowledge of a person of ordinary skill in the art, the prior art as a whole, and the nature of the problems allegedly addressed by the ’590 Patent. Combining these references would have been obvious to one of ordinary skill in the art because the references identify and address the same technical issues and suggest similar solutions to those issues. Defendant reserves the right to establish additional motivations to combine any of the above references based on the teachings contained in any of the references identified in these Invalidity Contentions.

Additionally, one of ordinary skill in the art would be motivated to combine the identified references because of the nature of the problem being solved, the express, implied, and inherent teachings of the prior art, and the knowledge of the person of ordinary skill in the art that such combinations would yield predictable results. These combinations that render the ’590 Patent obvious would also have been a simple design choice that represented a predictable variation within the knowledge and skill of a person of ordinary skill in the art at the time of the purported invention in the ’590 Patent.

One of ordinary skill in the art would also have been motivated to combine the above identified references based on his or her education, knowledge, and experience, by the state of the prior art at the time of invention, by the nature of the problem to be solved, and by common sense. A person of ordinary skill in the art is presumed to have knowledge of all relevant prior art and therefore would have been familiar with each of the references identified above. A person of

ordinary skill in the art would also be familiar with the background knowledge in the art and the full range of teachings they contain.

E. '720 Patent

Amazon identifies the following prior art now known to Amazon to anticipate or render obvious the asserted claims of the '720 Patent under at least 35 U.S.C. §§ 102(a), (b), (d), (e) and/or (g) and 103, either expressly or inherently as understood by a POSITA.

Table 5

Ex.	Patent or Publication	Country	First Inventor or Author	Date of Issue (Patents) or Publication
E-1	2012/0198339 A1	US	Hunter Williams	08/02/2012
E-2	7,062,339	US	John K. Howard	11/13/2003
E-3	2013/0132094 A1	US	Jonathan Lim	05/23/2013
E-4	2012/0265528 A1	US	Thomas Robert Gruber	10/18/2012
E-5	2011/0313775 A1	US	Pierre-Yves Laligand	12/22/2011
E-6	2010/0088100 A1	US	Aram M. Lindahl	04/08/2010
E-7	8,195,467	US	Todd F. Mozer	08/13/2009
E-8	Springer Handbook of Speech Processing	US	Jacob Benesty	11/22/2007
E-8	Springer Handbook of Acoustics	US	Thomas D. Rossing	07/23/2007
E-8	Wireless Communications	US	Andrea Goldsmith	01/20/2006
E-8	Wireless Home Networking Simplified	US	Jim Doherty	01/16/2007
E-8	IP Address Management	U.S.	P A Roberts	07/2000

In addition, Defendant identifies system prior art including the Siri Proxy System, which was in public use in the United States by around November 2011. Ex. E-9.

To the extent Plaintiff contends that any of the above items of prior art do not anticipate any asserted claim, Defendant reserves the right to contend that each of the items of prior art renders the Asserted Patent Claims obvious either alone or in combination with one or more other

items of prior art. A corresponding claim chart for each item of prior art identified above is attached hereto in Exhibits E-1 to E-9. To the extent a patent prior art reference has a corresponding application publication (or vice versa), Defendant reserves the right to rely on and cite to that application publication (or patent) and its corresponding disclosures.

In addition, to the extent that Plaintiff fails to satisfy its burden to establish the '720 Patent's entitlement to its claimed priority date due to insufficient written description (discussed below), Defendant reserves the right to identify additional art that renders that Asserted Patent Claims anticipated or obvious. For example, Defendant asserts that earlier published patent applications from the '720 Patent's family, including U.S. Patent Publication No. 2013/0201316 A1, would qualify as prior art and render the Asserted Patent Claims obvious, either alone or in combination with one or more additional references, including those identified above. Defendant further asserts that accused products, like the Amazon Echo (1st Generation) and Amazon Echo Dot (1st Generation), would qualify as prior art and render the Asserted Patents Claims anticipated under Plaintiff's own mapping of the claims. *See Upsher-Smith Lab'ys*, 412 F.3d at 1322 ("A century-old axiom of patent law holds that a product 'which would literally infringe if later in time anticipates if earlier.'"). Or they would render the Asserted Patent Claims obvious, alone or in combination with one or more additional references, including those identified above.

Each patent or printed publication describing or relating to a prior art instrumentality should be understood to discuss the instrumentality's capabilities generally and also to discuss specific implementation examples of specific installations and configurations of the particular instrumentality. To the extent the prior art references describe various implementations of the same underlying instrumentality, that underlying instrumentality is a single reference under 35 U.S.C. §§ 102(a) and/or 102(b). The prior art references are evidence of the capabilities of the prior art

instrumentality, and each chart provided for a prior art instrumentality should be understood to incorporate by reference all patents or publications describing or relating to that prior art instrumentality and all charts provided for those patents or printed publications. In addition, each of the prior art references also qualifies as prior art on separate grounds as a patent or publication under 35 U.S.C. § 102. Even if the prior art references are not treated as a single prior art reference, at the very least it would have been obvious to combine the features described in those references as the individual references discuss the same instrumentality.

While Defendant's investigation continues, information available to date indicates that each instrumentality disclosed or referenced in the prior art listed above, and as further identified in the claim charts of Exhibits E-1 to E-9, was: (1) known, published, or used in this country before the alleged invention of the claimed subject matter of the Asserted Patent Claims, (2) published, in public use, and/or on sale in this country more than one year before the filing date of the '720 Patent, and/or (3) invented by another who did not abandon, suppress, or conceal, before the alleged invention of the claimed subject matter of the Asserted Patent Claims. Information concerning the entities who knew of and/or used these instrumentalities, or who were involved in any sales or offers to sell these instrumentalities, can be found in the documents identified describing these instrumentalities.

Defendant reserves the right to rely on the testimony of witness(es) knowledgeable about these or other instrumentalities, as well as documents that are currently in the possession of Plaintiff or third parties describing these or other instrumentalities. Defendant reserves the right to assert that the Asserted Patent Claims are invalid under 35 U.S.C. § 102(f) in the event that Defendant obtains evidence that the named inventor(s) of the '720 Patent did not invent (either alone or in conjunction with others) the subject matter claimed in the '720 Patent. Defendant

further intends to rely on admissions of the named inventors, including admissions made on his or their behalf by attorneys or other agents or representatives, concerning the prior art, including, but not limited to, statements found in the ’720 Patent, its prosecution history, related patents and/or patent applications, any deposition testimony, and the papers filed, and any evidence submitted by Plaintiff in conjunction with this litigation. Defendant may also rely on testimony from the author(s) or named inventor(s) listed on the above references, as well as from individuals involved in the development of the prior art instrumentalities.

Each of the prior art references identified above anticipates the Asserted Patent Claims in accordance with 35 U.S.C. § 102 and/or renders them obvious under 35 U.S.C. § 103, as more specifically noted in the charts of Exhibits E-1 to E-9.

The cited portions of the identified prior art for the ’720 Patent are provided as examples and are representative of the content of the prior art references, and should be understood in the context of the reference as a whole, as understood by one of ordinary skill in the art. To the extent any cited item of prior art for the ’720 Patent is deemed not to anticipate one of the Asserted Patent Claims for failing to teach or suggest one or more limitations of that claim, such limitations would nonetheless have been inherent and/or obvious to one of ordinary skill in the art at the time of the alleged invention(s), either alone or in combination with any of the other identified items of prior art for the ’720 Patent.

All Asserted Patent Claims are rendered obvious in light of any item of prior art cited in Exhibits E-1 to E-9 alone or combined with one or more items of the other prior art cited in Exhibits E-1 to E-9. Moreover, to the extent that any prior art identified as anticipatory is found to be missing an explicit teaching of one or more limitations of the Asserted Patent Claims, any such missing limitation is inherent within the system or publication or was known by those of

ordinary skill in the art. Accordingly, such prior art on its own either anticipates or would have rendered obvious the Asserted Patent Claims. If, and to the extent Plaintiff challenges the correspondence of any of these references with respect to particular elements of the asserted claims of the '720 Patent, Defendant reserves the right to supplement these Invalidity Contentions to identify motivation to combine particular references with one another with additional particularity.

In *KSR* , the U.S. Supreme Court rejected the Federal Circuit's rigid "teaching, suggestion, or motivation" requirement in favor of a flexible, functional approach in which an explicit finding of a "motivation" to combine prior art references is not required to establish obviousness. 550 U.S. at 407. The Supreme Court held that it is sufficient that a combination of elements was "obvious to try" stating that, "[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp." *Id*. at 415, 421; *see also Dystar Textilfarben*, 464 F.3d at 1368 (explaining that when the "combination of references results in a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient," there exists a motivation to combine prior art references even when there is no explicit suggestion in the references themselves "[b]ecause the desire to enhance commercial opportunities by improving a product or process is universal—and even common-sensical"); *LeapFrog*, 485 F.3d at 1162 (applying *KSR* and holding that "one of ordinary skill in the art of children's learning toys would have found it obvious to combine the Bevan device with the SSR to update it using modern electronic components in order to gain the commonly understood benefits of such adaption, such as decreased size, increased reliability, simplified operation, and reduced cost").

To the extent that applicable law requires evidence of motivation to combine, motivation exists to combine one or more of the references disclosed herein with each other. Generally, motivation to combine any of these references with others exists within the references themselves, as well as within the knowledge of those of ordinary skill in the art. These references identify and address similar technical issues as the '720 Patent and also suggest solutions to those issues. Various combinations of the above references would have naturally been considered as part of the exercise of ordinary skill by one skilled in the art. The claims of the '720 Patent relate to wireless control of devices and/or processing and responding to human speech commands. Each of the purported features of the '720 Patent was available in prior art, individually and in combination, prior to the date of the purported invention and was well known to those of ordinary skill in the art. To the extent any of these features solved a problem in the art, that problem was known to those of ordinary skill and had already been solved using obvious solutions.

Further, the items of prior art identified in Exhibits E-1 to E-9 are directed to analogous art. In particular, but without limitation, the items of prior art identified in Exhibits E-1 to E-9 all relate to systems and methods for remotely processing audio information such as speech for controlling devices or providing services through devices. For instance:

- Laligand, is a patent publication published Dec. 22, 2011, and assigned to Google. It discloses a client device, e.g., a smartphone, that interacts with a remote server and local wireless network and relies on voice commands to control an appliance, e.g., a television. Laligand at Abstract, 0002, 0005-0008. Laligand is analogous art to the Asserted Patent Claims and to the systems of Williams and Lim. A POSITA would have looked to combine the voice recognition and search functionality of Laligand with either or both of these systems, in the case of Lim that discloses a system in which where a server sends messages

for controlling devices to a client device then to a controlled devices and Williams, which transmits commands from the server to controlled devices. Williams at Abstract, 0007, 0010-0012, 0035-0037; Lim at 0007. A POSITA would have appreciated based on their familiarity with at least these references that the system of Laligand could be modified to control additional types of devices.

- Williams is a 2012 patent publication describing in-home audio interface devices (microphone, optional speaker, network interface) that stream audio via a home router and public network to a cloud application engine, which performs speech/audio recognition and drives media and home-automation services through an exposed API. It discloses a cloud-based, always-connected audio client/server model with remote processing and downstream actions on local devices. Williams at Abstract, 0007, 0010-0012, 0035-0037. A POSITA would have been motivated to combine Williams with, for instance, the system of Lim, which also relates to processing and responding to human speech commands. Williams at 0027, 0036; Lim at 0007.
- Howard is a patent that issued on June 13, 2006, describing a portable pen/phone-like device with microphone, speaker, display, and optical sensor that wirelessly communicates with a home gateway/server to recognize spoken commands and control appliances, such as televisions, VCRs, lights, HVAC appliances, and others over a home network. Howard at 1:53-64; 3:19-4:24; 9:13-38. A POSITA would have been familiar with and look to the teachings of references, such as Doherty, Doherty teaches that home devices can be connected via the wireless router, stating that "[i]n the next wave, we see all types of devices connecting to the network, including some obvious devices such as TVs, stereos, and digital recording devices (DVRs), but also appliances, home security systems, and

electronics that can control home lighting, sprinkler systems, air conditioning, and answering machines." Doherty at 321.

- Lim is a patent publication resulting from an application filed Nov. 17, 2011, which describes a universal remote control that can capture voice input about the brand and model of an appliance. Lim at 0001. The remote can then send the data wirelessly to a controlling device for further processing and operation of that appliance. Lim at 0007, 0027. Lim discloses remote control of numerous home appliances—including televisions, displays, DVD players, digital video recorders, and thermostats. Lim at 0017, 0027-31. Lim is analogous art to the Asserted Patent Claims and references, such as Williams (addressed above) and/or Gruber. All relate to remotely processing audio information such as voice data to control devices or providing services through devices.
- Siri Proxy System was a system based on Peter Lamonica's work published to YouTube and GitHub in and around November 2011. It discloses a system for controlling home appliances connected over a network using voice commands using an iPhone 4s, a home server, and an appliance, such as a thermostat. *See* Pete Lamonica, Siri Proxy demo (Nov. 21, 2011), https://www.youtube.com/watch?v=AN6wy0keQqo; Pete Lamonica, SiriProxy Installation (Long Version) (Dec. 3, 2011), https://www.youtube.com/watch?v=GQXyJR6mOk0. A POSITA would have looked to the Siri Proxy System, which could be created using conventional, off-the-shelf components for controlling household appliances with a smartphone to combine with the voice recognition methods of, for instance, Gruber, and the systems of Lim, Williams, and/or Laligand, which are analogous art, and disclose controlling multiple types of home appliances to expand the capabilities of Siri Proxy System with reasonable success. Lim

at 0017, 0027-31; Williams at Abstract, 0007, 0010-0012, 0035-0037; Laligand at Abstract, 0002, 0005-0008.

- Gruber is a patent publication resulting from an application filed Sept. 30, 2011. It describes a virtual assistant that can interface with remote servers and computing devices to interpret voice input and prompt the speaker to provide additional information where needed. Gruber at Abstract, 0007, 0218-225, & Fig. 31. The device of Gruber also provides "signatures of connected networks, including Ethernet, Wi-Fi and Bluetooth. Signatures include MAC addresses of network access points, IP addresses assigned, device identifiers such as Bluetooth names, frequency channels and other properties of wireless networks." Gruber at 0218-0225. A POSITA would have looked to Gruber's disclosure of contextual information from device sensors for improved speech processing, a light sensor and thermometer, and networking protocols to combine with, for example, the systems of Williams and Lim.
- Lindahl is a patent application published on Apr. 8, 2011. It describes a capture device that receives voice commands and sends them to a remote server and controlling device for additional processing. Lindahl at Abstract. The controlling device can respond to the voice command by prompting the user for additional details or by transmitting information relevant to the command back to the capture device. Lindahl at 0031. The capture device can also interface with external output devices (e.g. televisions, speakers, displays, etc.) in response to the commands. Lindahl at 0031, 0040. A POSITA would have looked to other references, such as the systems of Laligand, Williams, and/or Lim disclose control of certain types of actuators.

A POSITA would have looked to the references identified above to provide insight into field of remotely processing audio information such as speech for controlling devices or providing services through devices. Based on these related disclosures, a POSITA at the time of the alleged invention would have been motivated to apply the teachings from one reference to another in the same way.

A POSITA would have been motivated to combine the devices in Williams, Howard, Gruber, Laligand, Lim, Mozer '467, and/or Siri Proxy System, with disclosures like those from Roberts, Goldsmith, and/or Doherty to allow those devices to use different wireless standards, improving interoperability for users with diverse wireless networks; to utilize wireless standards with improved bandwidth, speed, and/or signal strength or that may be more appropriate for a given use case (like satellite helping serve remote users); and to provide means for addressing the device in a network to permit efficient network communications, including with Internet-connected devices.

A POSITA would have been motivated to combine the devices in Williams, Howard, Gruber, Laligand, Lim, Mozer '467, and/or Siri Proxy System, with disclosures like those from Benesty to allow those devices to use different speech processing methods and techniques, including use of multiple microphones and capabilities for determining a speaker's identify, improving capability for utilizing voice recognition for controlling devices or provisioning services.

In addition, much of the art identified above reflects common knowledge and the state of the art prior to the priority date of the '706 Patent and/or at the time each alleged invention was made with which a POSITA would have been familiar. By way of example, Benesty is a textbook entitled "Springer Handbook of Speech Processing". It is an overview describing the state of the

art for speech processing techniques, including speech recognition, speaker recognition, speech enhancement via noise reduction, and microphone arrays, that would have been well-known to a POSITA. Similarly, Goldsmith is a textbook titled "Wireless Communications," published by Cambridge University Press, describes the state of the art, and would have been well-known to a POSITA for wireless communication systems, protocols, and techniques for applying them. Further, Rossing is a textbook titled "Audio and Electroacoustics," disclosing how conventional microphones and speakers operate, published by Springer and would have been well-known to a POSITA. Roberts is a 2000 article describing how devices are addressed on networks like the Internet. And Doherty is a is a textbook called "Wireless Home Networking Simplified" that was published by Cisco and teaches how to set up wireless networks at home using conventional components. A POSITA would have been familiar with this common knowledge and the state of the art and would have been motivated to combine it with the prior art identified in Exhibits E-1 to E-9.

With this knowledge, the person of ordinary skill in the art would have been motivated to consider the techniques and systems disclosed in the prior art identified in Exhibits E-1 to E-9 and to combine the teachings of the various other items of prior art disclosed in Exhibits E-1 to E-9 to arrive at the purported inventions embodied in the Asserted Patent Claims. Thus, the motivation to combine the references arises: from the field of wireless control of devices and/or processing and responding to human speech commands, from the awareness of the deficiencies in the prior art, and from the interest in developing systems for increasing the prominence of useful information. Moreover, in light of the nature of the problem to be solved, the similarity of the field in which the prior art is found, and the ordinary creativity of one with ordinary skill in the art, it would have been obvious to try to combine the features of the prior art identified in

Exhibits E-1 to E-9 to arrive at the purported inventions embodied in the Asserted Patent Claims. The features of the prior art identified in Exhibits E-1 to E-9 would have been understood as compatible and desirable for use in conjunction with, or as enhancements to each other, resulting in a more desirable system. Implementation of such features, including in software, would have been understood to have been feasible and straightforward to one of ordinary skill in the art at the priority date of the ’720 Patent.

Each of the features purportedly found in the ’720 Patent are combined for the very purpose for which they were designed by prior art inventors and the combination yields predictable results. *KSR*, 550 U.S. at 416. A person of ordinary skill in the art had reason to combine these known features to achieve predictable results to satisfy market demand as evidenced by the fact that the features were already present in the prior art, either in combination or individually. The ’720 Patent is therefore a combination that only unites old elements with no change to their respective functions in an attempt to withdraw what was already known from the public domain. To the extent the ’720 Patent provides any variations to the known combinations, those variations were predictable to one of ordinary skill in the art.

In addition to the foregoing, the teaching, suggestion, or motivation to combine these references, although not required, is explicitly or implicitly found in one or more of the following: the explicit and/or implicit teachings of the references in Exhibits E-1 to E-9 and the prior art as a whole, including interrelated teachings of multiple prior art references; the subject matter acknowledged as prior art in the ’720 Patent; the general knowledge of those skilled in the art (including knowledge of trends in the field and knowledge that the art is of special interest or importance in the field); the fact that all of the prior art references concern the field of processing and responding to human speech commands to control devices connected by a network and

related fields; the nature of the problem to be solved and the existence of similar improvements in similar applications; design incentives and other market forces, including the advantages of creating a superior and more desirable product and the effects of demands known to the design community or present in the marketplace; the ability to implement the alleged invention as a predictable variation of the prior art; improvements in similar devices; the interrelated teachings of multiple prior art references; any needs or problems known in the field addressed by the '720 Patent; and the number of identified, predictable solutions to the problem addressed by these patents. In addition, the simultaneous (and/or prior) inventions described above (and elsewhere in these contentions) is evidence that motivation to combine the concepts described in the various prior art references did, in fact, exist, and they were, in fact, combined. One of ordinary skill in the art would be motivated by considerations such as wanting to improve a method or system for using voice controls to control devices connected by a network, to combine the various teachings to arrive at the purported inventions embodied in the Asserted Patent Claims. Stated differently, the prior art identified in Exhibits E-1 to E-9 demonstrates that there was, at the time of the alleged invention, a finite number of identified, predictable solutions for improving the effectiveness and timeliness of delivering audio content to a user that persons of ordinary skill in the art would have known how to successfully combine the prior art identified in Exhibits E-1 to E-9 to yield one or more embodiments of the Asserted Patent Claims, making the claimed invention obvious.

Known methods and elements of the Asserted Patent Claims would yield predictable results:

- Howard discloses: "Increasingly, homes appliances are being connected together and controlled via a home network, which typically take different forms ranging from a simple

network hub device to a more complex hub and switching system with broadband connection to the Internet." Howard at 1:18-30.

- Lim describes: "It is known to offer an app for download and installation into memory **312** which app may serve to allow use of the smart phone to transmit commands suitable for operation of entertainment and other appliances. Such an app may draw on a library of codesets suitable for commanding the functional operations of various types of appliances of multiple manufactures and/or models, i.e., a library of codesets for a so-called "universal" controller, as well known in the art. As appropriate for a particular embodiment this library may be resident on the smart device itself, either downloaded as part of or in conjunction with the app or preinstalled in memory **312** or in a separate self-contained command transmitter; may be located externally at a local PC or remote server device accessible to smart device **110** for the download of only those code sets necessary for operation of the configured appliances; or may be located in a command relay device such as described in the previously referenced U.S. patent application Ser. No. 13/043,915." Lim at 0024.
- Williams describes: "Homes and other user premises are increasingly equipped with always-on Internet or 'cloud' connectivity. In many cases, even mobile users have constant or nearly constant data connectivity. The common availability of network communications has created a number of new possibilities for services and other functionality, using the variety of connected devices accessible to users." Williams at 0001.

The Siri Proxy System further indicates that the claims result from the combination of known methods and components to yield predicable results. In or around November 2011,

individuals, including Peter Lamonica, created a system for controlling home appliances connected over a network using voice commands. *See* Pete Lamonica, Siri Proxy demo (Nov. 21, 2011), https://www.youtube.com/watch?v=AN6wy0keQqo; Pete Lamonica, SiriProxy Installation (Long Version) (Dec. 3, 2011), https://www.youtube.com/watch?v=GQXyJR6mOk0; Kelly Hodgkins, Developer builds Siri proxy server, Engadget (Nov. 21, 2011); Mike Nathan, Siri Proxy Adds Tons of Functionality, Doesn't Require a Jailbreak, Hackaday (Nov. 21, 2011); Voice Activated Home Automation with SiriProxy & ioBridge, MarkHodder.com (2011). The Siri Proxy System relied on a conventional, iPhone 4s, an open-source Siri Proxy server running on a personal computer over a home network that interacted with Apple's servers, and an internet-controlled appliance, such as a thermostat. Pete Lamonica, Siri Proxy demo (Nov. 21, 2011), https://www.youtube.com/watch?v=AN6wy0keQqo. The Siri Proxy System exhibits the claimed functionality of generating, transmitting, and processing data, and controlling a device based on the processed data using off-the-shelf components.

Design incentives and other market forces motivating persons of ordinary skill:

- Laligand discloses: "People interact more and more with computers, and they also interact more and more with different kinds of computers. While desktop and laptop computers may have been the most prevalent computers in people's lives in the past, most people are more likely now to interact with smart phones, DVRs, televisions, and other consumer devices that include computers in them." Laligand at 0003.
- Williams discloses: "The architecture above can be utilized to provide a wide variety of services and functionality, of which the following are simple examples.

  A cloud-based application may be configured to received vocal commands from users and to perform operations based on those commands. For example, a user may speak a grocery

order, and the spoken order may be interpreted using the voice recognition functionality described above. Once interpreted, the order may be submitted to a grocery store for subsequent delivery or simply recorded as a shopping list that the user can view on their smartphone when shopping at the grocery store. An application such as this may apply personalized settings for each order, such as preferred delivery schedules and historical portion sizes.

Similarly, a cloud-based application may allow users to order tickets without needing a computer. A user may tell the application what movie they want to see. The application may use pre-configured information about the user (such as location) to determine which theater is near the user. The application may respond to a spoken command to order movie tickets by using the speech synthesis functionality of the system to query the user regarding movie selections and times.

. . . .

A similar type of application may identify the song the user is currently listening to, and in response may provide information about related articles, offer samples, suggest related music and playlists, or present information allowing the user to purchase individual music tracks." Williams at 0043-0047.

- Howard discloses: "An illustration of how the portable device of the present invention can be utilized to purchase items over the Internet is illustrated in FIG. 10." Howard at 12:15-17.
- Gruber discloses: "Accordingly, existing systems are often difficult to use and to navigate, and often present users with inconsistent and overwhelming interfaces that often prevent the users from making effective use of the technology.

An intelligent automated assistant, also referred to herein as a virtual assistant, can provide an improved interface between human and computer." Gruber at 0010-0011.

In many instances where a particular contention calls for, or requires, combining references, any one of a number of references can be combined. Defendant reserves its right to identify supplemental combinations as the case progresses. As such, the combinations evidencing teachings, suggestions, and/or motivations to combine the prior art references in a way that renders the asserted claims obvious listed herein are merely examples. A person of ordinary skill would have access to the materials found in in these contentions and would have at least the ordinary creativity and skill to combine the attached references in ways not explicitly recited above.

As explained herein and in the accompanying claim charts, it would have been obvious to a person of ordinary skill in the art at the time of the alleged invention to combine the various references identified below in a way to practice the claimed invention. The Asserted Patent Claims are therefore obvious under 35 U.S.C. § 103.

Defendant may rely on a subset of the identified references, or all of the references identified herein for purposes of obviousness, depending on the Court's claim construction, positions taken by Plaintiff, and further discovery in this case. Defendant identifies the following combinations of prior art references that render obvious the asserted claims under 35 U.S.C. § 103:

1. Williams alone or in combination with at least one of Howard, Laligand, Lim, Lindahl, Gruber, Benesty, Rossing, Goldsmith, Mozer '467, Doherty, Roberts, the Siri Proxy System, and/or the admitted prior art.
2. Howard alone or in combination with at least one of Williams, Laligand, Lim, Lindahl, Gruber, Benesty, Rossing, Goldsmith, Mozer '467, Doherty, Roberts, the Siri Proxy System, and/or the admitted prior art.

3. Laligand alone or in combination with at least one of Williams, Howard, Lim, Lindahl, Gruber, Benesty, Rossing, Goldsmith, Mozer ’467, Doherty, Roberts, the Siri Proxy System, and/or the admitted prior art.
4. Lim alone or in combination with at least one of Williams, Howard, Laligand, Lindahl, Gruber, Benesty, Rossing, Goldsmith, Mozer ’467, Doherty, Roberts, the Siri Proxy System, and/or the admitted prior art.
5. Lindahl alone or in combination with at least one of Williams, Howard, Laligand, Lim, Gruber, Benesty, Rossing, Goldsmith, Mozer ’467, Doherty, Roberts, the Siri Proxy System, and/or the admitted prior art.
6. Gruber alone or in combination with at least one of Williams, Howard, Laligand, Lim, Lindahl, Benesty, Rossing, Goldsmith, Mozer ’467, Doherty, Roberts, the Siri Proxy System, and/or the admitted prior art.
7. Mozer ’467 alone or in combination with at least one of Williams, Howard, Laligand, Lim, Lindahl, Gruber, Benesty, Rossing, Goldsmith, Doherty, Roberts, the Siri Proxy System, and/or the admitted prior art.
8. Siri Proxy System alone or in combination with at least one of Williams, Howard, Laligand, Lim, Lindahl, Gruber, Benesty, Rossing, Goldsmith, Mozer ’467, Doherty, and/or the admitted prior art.

A person of ordinary skill in the art would have arrived at the claimed alleged invention in the ’720 Patent based on the combinations of the prior art listed above. Motivation to combine the above references is present in the references themselves, the common knowledge of a person of ordinary skill in the art, the prior art as a whole, and the nature of the problems allegedly addressed by the ’720 Patent. Combining these references would have been obvious to one of ordinary skill

in the art because the references identify and address the same technical issues and suggest similar solutions to those issues. Defendant reserves the right to establish additional motivations to combine any of the above references based on the teachings contained in any of the references identified in these Invalidity Contentions.

Additionally, one of ordinary skill in the art would be motivated to combine the identified references because of the nature of the problem being solved, the express, implied, and inherent teachings of the prior art, and the knowledge of the person of ordinary skill in the art that such combinations would yield predictable results. These combinations that render the '720 Patent obvious would also have been a simple design choice that represented a predictable variation within the knowledge and skill of a person of ordinary skill in the art at the time of the purported invention in the '720 Patent.

One of ordinary skill in the art would also have been motivated to combine the above identified references based on his or her education, knowledge, and experience, by the state of the prior art at the time of invention, by the nature of the problem to be solved, and by common sense. A person of ordinary skill in the art is presumed to have knowledge of all relevant prior art and therefore would have been familiar with each of the references identified above. A person of ordinary skill in the art would also be familiar with the background knowledge in the art and the full range of teachings they contain.

F. '721 Patent

Amazon identifies the following prior art now known to Amazon to anticipate or render obvious the asserted claims of the '721 Patent under at least 35 U.S.C. §§ 102(a), (b), (d), (e) and/or (g) and 103, either expressly or inherently as understood by a POSITA.

Table 6

Ex.	Patent or Publication	Country	First Inventor or Author	Date of Issue (Patents) or Publication
F-1	2012/0198339 A1	US	Hunter Williams	08/02/2012
F-2	7,062,339 B2	US	John K. Howard	06/13/2006
F-3	2011/0313775 A1	US	Pierre-Yves Laligand	12/22/2011
F-4	2013/0132094	US	Jonathan Lim	05/23/2013
F-5	Homes appliances controlled using speech recognition in wireless network environment	US	B. Mardiana	12/29/2009
F-6	2009/0183070 A1	US	David Robbins	07/16/2009
F-7	8,195,467 B2	US	Todd F. Mozer	6/5/2012
F-8	2012/0265528 A1	US	Thomas Robert Gruber	10/18/2012
F-8	Springer Handbook of Speech Processing	US	Jacob Benesty	11/22/2007
F-8	8,340,975 B1	US	Theodore Alfred Rosenberger	12/25/2012
F-8	7,529,677 B1	US	John W. Wittenberg	05/05/2009
F-8	2013/0052946	US	Manjirnath Chatterjee	02/28/2013
F-8	Springer Handbook of Acoustics	US	Thomas D. Rossing	07/23/2007
F-8	Wireless Communications	US	Andrea Goldsmith	01/20/2006
F-8	8,768,707 B2	US	Todd. F. Mozer	7/1/2014
F-8	Wireless Home Networking Simplified	N/A	Jim Doherty	01/16/2007
F-8	IP Address Management	US	P A Roberts	07/2000

In addition, Defendant identifies system prior art including the Siri Proxy System, which was in public use in the United States by around November 2011. Ex. F-9.

To the extent Plaintiff contends that any of the above items of prior art do not anticipate any asserted claim, Defendant reserves the right to contend that each of the items of prior art renders the Asserted Patent Claims obvious either alone or in combination with one or more other

items of prior art. A corresponding claim chart for each item of prior art identified above is attached hereto in Exhibits F-1 to F-9. To the extent a patent prior art reference has a corresponding application publication (or vice versa), Defendant reserves the right to rely on and cite to that application publication (or patent) and its corresponding disclosures.

In addition, to the extent that Plaintiff fails to satisfy its burden to establish the '721 Patent's entitlement to its claimed priority date due to insufficient written description (discussed below), Defendant reserves the right to identify additional art that renders that Asserted Patent Claims anticipated or obvious. For example, Defendant asserts that earlier published patent applications from the '721 Patent's family, including U.S. Patent Publication No. 2013/0201316 A1, would qualify as prior art and render the Asserted Patent Claims obvious, either alone or in combination with one or more additional references, including those identified above. Defendant further asserts that accused products, like the Amazon Echo (1st Generation) and Amazon Echo Dot (1st Generation), would qualify as prior art and render the Asserted Patents Claims anticipated under Plaintiff's own mapping of the claims. *See Upsher-Smith Lab'ys*, 412 F.3d at 1322 ("A century-old axiom of patent law holds that a product 'which would literally infringe if later in time anticipates if earlier.'"). Or they would render the Asserted Patent Claims obvious, alone or in combination with one or more additional references, including those identified above.

Each patent or printed publication describing or relating to a prior art instrumentality should be understood to discuss the instrumentality's capabilities generally and also to discuss specific implementation examples of specific installations and configurations of the particular instrumentality. To the extent the prior art references describe various implementations of the same underlying instrumentality, that underlying instrumentality is a single reference under 35 U.S.C. §§ 102(a) and/or 102(b). The prior art references are evidence of the capabilities of the prior art

instrumentality, and each chart provided for a prior art instrumentality should be understood to incorporate by reference all patents or publications describing or relating to that prior art instrumentality and all charts provided for those patents or printed publications. In addition, each of the prior art references also qualifies as prior art on separate grounds as a patent or publication under 35 U.S.C. § 102. Even if the prior art references are not treated as a single prior art reference, at the very least it would have been obvious to combine the features described in those references as the individual references discuss the same instrumentality.

While Defendant's investigation continues, information available to date indicates that each instrumentality disclosed or referenced in the prior art listed above, and as further identified in the claim charts of Exhibits F-1 to F-9, was: (1) known, published, or used in this country before the alleged invention of the claimed subject matter of the Asserted Patent Claims, (2) published, in public use, and/or on sale in this country more than one year before the filing date of the '721 Patent, and/or (3) invented by another who did not abandon, suppress, or conceal, before the alleged invention of the claimed subject matter of the Asserted Patent Claims. Information concerning the entities who knew of and/or used these instrumentalities, or who were involved in any sales or offers to sell these instrumentalities, can be found in the documents identified describing these instrumentalities.

Defendant reserves the right to rely on the testimony of witness(es) knowledgeable about these or other instrumentalities, as well as documents that are currently in the possession of Plaintiff or third parties describing these or other instrumentalities. Defendant reserves the right to assert that the Asserted Patent Claims are invalid under 35 U.S.C. § 102(f) in the event that Defendant obtains evidence that the named inventor(s) of the '721 Patent did not invent (either alone or in conjunction with others) the subject matter claimed in the '721 Patent. Defendant

further intends to rely on admissions of the named inventors, including admissions made on his or their behalf by attorneys or other agents or representatives, concerning the prior art, including, but not limited to, statements found in the ’721 Patent, its prosecution history, related patents and/or patent applications, any deposition testimony, and the papers filed, and any evidence submitted by Plaintiff in conjunction with this litigation. Defendant may also rely on testimony from the author(s) or named inventor(s) listed on the above references, as well as from individuals involved in the development of the prior art instrumentalities.

On information and belief, the ’721 Patent is also invalid because the claimed invention was in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States.

Each of the prior art references identified above anticipates the Asserted Patent Claims in accordance with 35 U.S.C. § 102 and/or renders them obvious under 35 U.S.C. § 103, as more specifically noted in the charts of Exhibits F-1 to F-9.

The cited portions of the identified prior art for the ’721 Patent are provided as examples and are representative of the content of the prior art references, and should be understood in the context of the reference as a whole, as understood by one of ordinary skill in the art. To the extent any cited item of prior art for the ’721 Patent is deemed not to anticipate one of the Asserted Patent Claims for failing to teach or suggest one or more limitations of that claim, such limitations would nonetheless have been inherent and/or obvious to one of ordinary skill in the art at the time of the alleged invention(s), either alone or in combination with any of the other identified items of prior art for the ’721 Patent.

All Asserted Patent Claims are rendered obvious in light of any item of prior art cited in Exhibits F-1 to F-9 alone or combined with one or more items of the other prior art cited in

Exhibits F-1 to F-9. Moreover, to the extent that any prior art identified as anticipatory is found to be missing an explicit teaching of one or more limitations of the Asserted Patent Claims, any such missing limitation is inherent within the system or publication or was known by those of ordinary skill in the art. Accordingly, such prior art on its own either anticipates or would have rendered obvious the Asserted Patent Claims. If, and to the extent Plaintiff challenges the correspondence of any of these references with respect to particular elements of the asserted claims of the '721 Patent, Defendant reserves the right to supplement these Invalidity Contentions to identify motivation to combine particular references with one another with additional particularity.

In *KSR* , the U.S. Supreme Court rejected the Federal Circuit's rigid "teaching, suggestion, or motivation" requirement in favor of a flexible, functional approach in which an explicit finding of a "motivation" to combine prior art references is not required to establish obviousness. 550 U.S. at 407. The Supreme Court held that it is sufficient that a combination of elements was "obvious to try" stating that, "[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp." *Id*. at 415, 421; *see also Dystar Textilfarben*, 464 F.3d at 1368 (explaining that when the "combination of references results in a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient," there exists a motivation to combine prior art references even when there is no explicit suggestion in the references themselves "[b]ecause the desire to enhance commercial opportunities by improving a product or process is universal—and even common-sensical"); *LeapFrog*, 485 F.3d at 1162 (applying *KSR* and holding that "one of ordinary skill in the art of children's learning toys would have found it obvious to combine the

Bevan device with the SSR to update it using modern electronic components in order to gain the commonly understood benefits of such adaption, such as decreased size, increased reliability, simplified operation, and reduced cost").

To the extent that applicable law requires evidence of motivation to combine, motivation exists to combine one or more of the references disclosed herein with each other. Generally, motivation to combine any of these references with others exists within the references themselves, as well as within the knowledge of those of ordinary skill in the art. These references identify and address similar technical issues as the '721 Patent and also suggest solutions to those issues. Various combinations of the above references would have naturally been considered as part of the exercise of ordinary skill by one skilled in the art. The claims of the '721 Patent relate to providing wireless device connectivity and/or control at home and processing and responding to human speech commands. Each of the purported features of the '721 Patent was available in prior art, individually and in combination, prior to the date of the purported invention and was well known to those of ordinary skill in the art. To the extent any of these features solved a problem in the art, that problem was known to those of ordinary skill and had already been solved using obvious solutions.

Further, the items of prior art identified in Exhibits F-1 to F-9 are directed to analogous art. In particular, but without limitation, the items of prior art identified in Exhibits F-1 to F-9 all relate to systems and methods for remotely processing audio information such as speech for controlling devices or providing services through devices. For instance:

- Laligand, is a patent publication published Dec. 22, 2011, and assigned to Google. It discloses a client device, e.g., a smartphone, that interacts with a remote server and local wireless network and relies on voice commands to control an appliance, e.g., a television.

Laligand at Abstract, 0002, 0005-0008. Laligand is analogous art to the Asserted Patent Claims and to the systems of Williams and Lim. A POSITA would have looked to combine the voice recognition and search functionality of Laligand with either or both of these systems, in the case of Lim that discloses a system in which where a server sends messages for controlling devices to a client device then to a controlled devices and Williams, which transmits commands from the server to controlled devices. Williams at Abstract, 0007, 0010-0012, 0035-0037; Lim at 0007. A POSITA would have appreciated based on their familiarity with at least these references that the system of Laligand could be modified to control additional types of devices.

- Williams is a 2012 patent publication describing in-home audio interface devices (microphone, optional speaker, network interface) that stream audio via a home router and public network to a cloud application engine, which performs speech/audio recognition and drives media and home-automation services through an exposed API. It discloses a cloud-based, always-connected audio client/server model with remote processing and downstream actions on local devices. Williams at Abstract, 0007, 0010-0012, 0035-0037. A POSITA would have been motivated to modify Williams with, for instance, the system of Lim, which also relates to processing and responding to human speech commands. Williams at 0027, 0036; Lim at 0007. The resulting combination with Lim would disclose a system in which where a server sends messages for controlling devices to a client device rather than directly to the controlled devices, which then transmits commands to the controlled devices.
- Howard is a patent that issued on June 13, 2006, describing a portable pen/phone-like device with microphone, speaker, display, and optical sensor that wirelessly

communicates with a home gateway/server to recognize spoken commands and control appliances, such as televisions, VCRs, lights, HVAC appliances, and others over a home network. Howard at 1:53-64; 3:19-4:24; 9:13-38. A POSITA would have been familiar with and look to the teachings of references, such as Doherty, Doherty teaches that home devices can be connected via the wireless router, stating that "[i]n the next wave, we see all types of devices connecting to the network, including some obvious devices such as TVs, stereos, and digital recording devices (DVRs), but also appliances, home security systems, and electronics that can control home lighting, sprinkler systems, air conditioning, and answering machines." Doherty at 321.

- Robbins is a patent application published on July 16, 2009. It discloses a hub type client device interacting with a server and controllable devices in the home in response to a user's voice commands. Robbins at Abstract, 0007, Robbins at Abstract, 0039-0044. In this way, a POSITA would have looked to Robbins to combine the systems disclosed in, for example, Laligand, to control other types of appliances beyond televisions, such as telephones, lighting, alarm systems, and HVAC appliances with a hub type client device.
- Lim is a patent publication resulting from an application filed Nov. 17, 2011, which describes a universal remote control that can capture voice input about the brand and model of an appliance. Lim at 0001. The remote can then send the data wirelessly to a controlling device for further processing and operation of that appliance. Lim at 0007, 0027. Lim discloses remote control of numerous home appliances—including televisions, displays, DVD players, digital video recorders, and thermostats. Lim at 0017, 0027-31. Lim is analogous art to the Asserted Patent Claims and references, such as Wittenberg, Williams (addressed above), Chatterjee, Rosenberger, Laligand and/or

Gruber. All relate to remotely processing audio information such as voice data to control devices or providing services through devices. A POSITA would have looked to combine Lim with Wittenberg's disclosure of specific voice recognition and with Gruber's contextual speech processing, Rosenberger's device that "includes . . . a multi-colored LED status light", and/or Chatterjee's disclosed control of automated devices to expand the capabilities of the system of Lim.

- Siri Proxy System was a system based on Peter Lamonica's work published to YouTube and GitHub in and around November 2011. It discloses a system for controlling home appliances connected over a network using voice commands using an iPhone 4s, a home server, and an appliance, such as a thermostat. *See* Pete Lamonica, Siri Proxy demo (Nov. 21, 2011), https://www.youtube.com/watch?v=AN6wy0keQqo; Pete Lamonica, SiriProxy Installation (Long Version) (Dec. 3, 2011), https://www.youtube.com/watch?v=GQXyJR6mOk0. A POSITA would have looked to the Siri Proxy System, which could be created using conventional, off-the-shelf components for controlling household appliances with a smartphone to combine with the voice recognition methods of, for instance, Gruber, and the systems of Lim, Williams, Laligand, and/or Chatterjee, which are analogous art, and disclose controlling multiple types of home appliances to expand the capabilities of Siri Proxy System with reasonable success. Lim at 0017, 0027-31; Williams at Abstract, 0007, 0010-0012, 0035-0037; Chatterjee at 0012; Laligand at Abstract, 0002, 0005-0008.
- Gruber is a patent publication resulting from an application filed Sept. 30, 2011. It describes a virtual assistant that can interface with remote servers and computing devices to interpret voice input and prompt the speaker to provide additional information where

needed. Gruber at Abstract, 0007, 0218-225, & Fig. 31. The device of Gruber also provides "signatures of connected networks, including Ethernet, Wi-Fi and Bluetooth. Signatures include MAC addresses of network access points, IP addresses assigned, device identifiers such as Bluetooth names, frequency channels and other properties of wireless networks." Gruber at 0218-0225. A POSITA would have looked to Gruber's disclosure of contextual information from device sensors for improved speech processing, a light sensor and thermometer, and networking protocols to combine with, for example, the systems of Williams and Lim.

- Mardiana is non-patent literature published from a 2009 conference describing a Wi-Fi–based client/server system in which a PC captures spoken commands, sends them over a wireless LAN to a remote speech-recognition PC, and uses the results to switch home appliances (lamps, fans, TV, radio, air-conditioner) on and off. Mardiana at 285-86: Abstract & Fig. 1:

Figure 1. Overview of system architecture

A POSITA would have been motivated to modify Mardiana with, for instance, the system of Lim, which also relates to processing and responding to human speech commands. Lim at 0007. Such a combined system would disclose a server sending messages for controlling devices.

- Mozer ’467 is a U.S. patent issued June 5, 2012. It describes a system comprised of wireless devices, such as Bluetooth headsets that include a microphone, local speech recognizer, and memory. Mozer ’467 at Abstract; 5:1-23. Mozer ’467 further discloses that upon recognizing command words, the device causes a connection to remote systems such as voice search engines, where more sophisticated speech recognition and dialog can occur. Mozer ’467 at Abstract; 2:9-29; 3:14-35; 5:1-23; 8:19-9:21. A POSITA would have looked to combine the systems of, for instance, Lim and Williams, with Mozer ’467 because it is analogous art and its disclosure of multiple microphones.
- Mozer ’707 describes a system for performing speech recognition and specifically for identifying a specific voice. Mozer ’707 at 9:18-30. Mozer ’707 and Mozer ’467 share the same inventor.
- Rosenberger is directed to “improvements in speech-recognizing control devices that respond to oral commands from a system user to produce a desired effect or result.” Rosenberger at 1:7-13. Rosenberger’s device “[p]referably . . . includes . . . a multi-colored LED status light 34 for visually indicating various device states and modes.” Rosenberger at 8:8-16. A POSITA would have looked to Rosenberger for its disclosure of speech recognition to trigger a device status light and to play a prerecorded or synthesized audio message (e.g. “How may I help you?”) through a speaker. Rosenberger at 8:20-32.

- Wittenberg is a patent relating to "a technique for remotely processing a local audio command to control a local device." Wittenberg at Abstract. It discloses "performing speech recognition processing on the audio signal at the remote site to determine whether the audio signal includes a command; performing voice recognition processing on the audio signal at the remote site to determine whether the audio signal has been supplied by an authorized user; generating a command signal in response to the audio signal including a command and being supplied by an authorized user; and transmitting the command signal to a device at the local site to effect a change in a state of the local device." Wittenberg at Abstract. A POSITA would have looked to the voice recognition of Wittenberg to combine with, for instance, the system of Lim, to achieve greater security and with a reasonable expectation of success.
- Chatterjee is directed to "a system and method for providing home automation using a mobile device." Chatterjee at Abstract. The disclosed "home automation systems provide centralized control for lighting, HVAC (heating, ventilation and air conditioning), appliances (such as refrigerators and dishwashers), and similar systems." Chatterjee at 0001. A POSITA would have looked to the system of Chatterjee for its disclosure of automated control of various types of appliances, including "such as controlling the temperature of a HVAC or toggling the light system on and off," to combine with, for example the system of Lim. Chatterjee 0012.

A POSITA would have looked to the references identified above to provide insight into field of remotely processing audio information such as speech for controlling devices or providing services through devices. Based on these related disclosures, a POSITA at the time of the alleged

invention would have been motivated to apply the teachings from one reference to another in the same way.

A POSITA would have been motivated to combine the devices in Williams, Howard, Laligand, Lim, Mardiana, Robbins, Mozer ’467, and/or Siri Proxy System, with disclosures like those from Roberts, Goldsmith, Doherty, and/or Gruber to allow those devices to use different wireless standards, improving interoperability for users with diverse wireless networks; to utilize wireless standards with improved bandwidth, speed, and/or signal strength or that may be more appropriate for a given use case (like satellite helping serve remote users); and to provide means for addressing the device in a network to permit efficient network communications, including with Internet-connected devices.

A POSITA would have been motivated to combine the devices in Williams, Howard, Laligand, Lim, Mardiana, Robbins, Mozer ’467, and/or Siri Proxy System, with disclosures like those from Benesty, Gruber, Mozer ’707, and Wittenberg to allow those devices to use different speech processing methods and techniques, including use of multiple microphones and capabilities for determining a speaker’s identify, improving capability for utilizing voice recognition for controlling devices or provisioning services.

A POSITA would have been motivated to combine the devices in Williams, Howard, Laligand, Lim, Mardiana, Robbins, Mozer ’467, and/or Siri Proxy System, with disclosures like those from Chatterjee, Gruber, and Rosenbeger to enhance the capabilities of these devices to connect to expanding types of devices, home appliances, and actuators, thereby increasing their utility and efficiency.

In addition, much of the art identified above reflects common knowledge and the state of the art prior to the priority date of the ’706 Patent and/or at the time each alleged invention was

made with which a POSITA would have been familiar. By way of example, Benesty is a textbook entitled "Springer Handbook of Speech Processing". It is an overview describing the state of the art for speech processing techniques, including speech recognition, speaker recognition, speech enhancement via noise reduction, and microphone arrays, that would have been well-known to a POSITA. Similarly, Goldsmith is a textbook titled "Wireless Communications," published by Cambridge University Press, describes the state of the art, and would have been well-known to a POSITA for wireless communication systems, protocols, and techniques for applying them. Roberts is a 2000 article describing how devices are addressed on networks like the Internet. Further, Rossing is a textbook titled "Audio and Electroacoustics," disclosing how conventional microphones and speakers operate, published by Springer and would have been well-known to a POSITA. A POSITA would have been familiar with this common knowledge and the state of the art and would have been motivated to combine it with the prior art identified in Exhibits F-1 to F-9.

With this knowledge, the person of ordinary skill in the art would have been motivated to consider the techniques and systems disclosed in the prior art identified in Exhibits F-1 to F-9 and to combine the teachings of the various other items of prior art disclosed in Exhibits F-1 to F-9 to arrive at the purported inventions embodied in the Asserted Patent Claims. Thus, the motivation to combine the references arises: from the field of processing and responding to human speech commands to control devices connected by a network, from the awareness of the deficiencies in the prior art, and from the interest in developing systems for increasing the prominence of useful information. Moreover, in light of the nature of the problem to be solved, the similarity of the field in which the prior art is found, and the ordinary creativity of one with ordinary skill in the art, it would have been obvious to try to combine the features of the prior art

identified in Exhibits F-1 to F-9 to arrive at the purported inventions embodied in the Asserted Patent Claims. The features of the prior art identified in Exhibits F-1 to F-9 would have been understood as compatible and desirable for use in conjunction with, or as enhancements to each other, resulting in a more desirable system. Implementation of such features, including in software, would have been understood to have been feasible and straightforward to one of ordinary skill in the art at the priority date of the ’721 Patent.

Each of the features purportedly found in the ’721 Patent are combined for the very purpose for which they were designed by prior art inventors and the combination yields predictable results. *KSR*, 550 U.S. at 416. A person of ordinary skill in the art had reason to combine these known features to achieve predictable results to satisfy market demand as evidenced by the fact that the features were already present in the prior art, either in combination or individually. The ’721 Patent is therefore a combination that only unites old elements with no change to their respective functions in an attempt to withdraw what was already known from the public domain. To the extent the ’721 Patent provides any variations to the known combinations, those variations were predictable to one of ordinary skill in the art.

In addition to the foregoing, the teaching, suggestion, or motivation to combine these references, although not required, is explicitly or implicitly found in one or more of the following: the explicit and/or implicit teachings of the references in Exhibits F-1 to F-9 and the prior art as a whole, including interrelated teachings of multiple prior art references; the subject matter acknowledged as prior art in the ’721 Patent; the general knowledge of those skilled in the art (including knowledge of trends in the field and knowledge that the art is of special interest or importance in the field); the fact that all of the prior art references concern the field of processing and responding to human speech commands to control devices connected by a network and

related fields; the nature of the problem to be solved and the existence of similar improvements in similar applications; design incentives and other market forces, including the advantages of creating a superior and more desirable product and the effects of demands known to the design community or present in the marketplace; the ability to implement the alleged invention as a predictable variation of the prior art; improvements in similar devices; the interrelated teachings of multiple prior art references; any needs or problems known in the field addressed by the '721 Patent; and the number of identified, predictable solutions to the problem addressed by these patents. In addition, the simultaneous (and/or prior) inventions described above (and elsewhere in these contentions) is evidence that motivation to combine the concepts described in the various prior art references did, in fact, exist, and they were, in fact, combined. One of ordinary skill in the art would be motivated by considerations such as wanting to improve a method or system for using voice controls to control devices connected by a network, to combine the various teachings to arrive at the purported inventions embodied in the Asserted Patent Claims. Stated differently, the prior art identified in Exhibits F-1 to F-9 demonstrates that there was, at the time of the alleged invention, a finite number of identified, predictable solutions for improving the effectiveness and timeliness of delivering audio content to a user that persons of ordinary skill in the art would have known how to successfully combine the prior art identified in Exhibits F-1 to F-9 to yield one or more embodiments of the Asserted Patent Claims, making the claimed invention obvious.

Known methods and elements of the Asserted Patent Claims would yield predictable results:

- Howard discloses: "Increasingly, homes appliances are being connected together and controlled via a home network, which typically take different forms ranging from a simple

network hub device to a more complex hub and switching system with broadband connection to the Internet." Howard at 1:18-30.

- Lim describes: "It is known to offer an app for download and installation into memory **312** which app may serve to allow use of the smart phone to transmit commands suitable for operation of entertainment and other appliances. Such an app may draw on a library of codesets suitable for commanding the functional operations of various types of appliances of multiple manufactures and/or models, i.e., a library of codesets for a so-called "universal" controller, as well known in the art. As appropriate for a particular embodiment this library may be resident on the smart device itself, either downloaded as part of or in conjunction with the app or preinstalled in memory **312** or in a separate self-contained command transmitter; may be located externally at a local PC or remote server device accessible to smart device **110** for the download of only those code sets necessary for operation of the configured appliances; or may be located in a command relay device such as described in the previously referenced U.S. patent application Ser. No. 13/043,915." Lim at 0024.
- Williams describes: "Homes and other user premises are increasingly equipped with always-on Internet or 'cloud' connectivity. In many cases, even mobile users have constant or nearly constant data connectivity. The common availability of network communications has created a number of new possibilities for services and other functionality, using the variety of connected devices accessible to users." Williams at 0001.
- Robbins discloses: "These new digital sources—coupled with internet content such as available on YouTube and iTunes Web sites—is enticing consumers with vast media

libraries of hundreds of thousands of titles. At the same time the user wants a simple control device that fits in the hand as the user relaxes in their home. This is driving a conflict into the command and control space: greater interactivity and control demanded from a handheld device. There are two ways to address this challenge—through menus and screens, or through voice control." Robbins at 0002.

The Siri Proxy System further indicates that the claims result from the combination of known methods and components to yield predicable results. In or around November 2011, individuals, including Peter Lamonica, created a system for controlling home appliances connected over a network using voice commands. *See* Pete Lamonica, Siri Proxy demo (Nov. 21, 2011), https://www.youtube.com/watch?v=AN6wy0keQqo; Pete Lamonica, SiriProxy Installation (Long Version) (Dec. 3, 2011), https://www.youtube.com/watch?v=GQXyJR6mOk0; Kelly Hodgkins, Developer builds Siri proxy server, Engadget (Nov. 21, 2011); Mike Nathan, Siri Proxy Adds Tons of Functionality, Doesn't Require a Jailbreak, Hackaday (Nov. 21, 2011); Voice Activated Home Automation with SiriProxy & ioBridge, MarkHodder.com (2011). The Siri Proxy System relied on a conventional, iPhone 4s, an open-source Siri Proxy server running on a personal computer over a home network that interacted with Apple's servers, and an internet-controlled appliance, such as a thermostat. Pete Lamonica, Siri Proxy demo (Nov. 21, 2011), https://www.youtube.com/watch?v=AN6wy0keQqo. The Siri Proxy System exhibits the claimed functionality of generating, transmitting, and processing data, and controlling a device based on the processed data using off-the-shelf components.

Design incentives and other market forces motivating persons of ordinary skill:

- Robbins discloses: "The command and control market is at a crossroads. Consumers are integrating more devices into their entertainment systems (e.g., DVD burners, networked

media, Hi-Def DVD, etc.) each of which has its own remote control. These new digital sources—coupled with internet content such as available on YouTube and iTunes Web sites—is enticing consumers with vast media libraries of hundreds of thousands of titles. At the same time the user wants a simple control device that fits in the hand as the user relaxes in their home. This is driving a conflict into the command and control space: greater interactivity and control demanded from a handheld device. There are two ways to address this challenge—through menus and screens, or through voice control." Robbins at 0002.

- Laligand discloses: "People interact more and more with computers, and they also interact more and more with different kinds of computers. While desktop and laptop computers may have been the most prevalent computers in people's lives in the past, most people are more likely now to interact with smart phones, DVRs, televisions, and other consumer devices that include computers in them." Laligand at 0003.
- Williams discloses: "The architecture above can be utilized to provide a wide variety of services and functionality, of which the following are simple examples.

  A cloud-based application may be configured to received vocal commands from users and to perform operations based on those commands. For example, a user may speak a grocery order, and the spoken order may be interpreted using the voice recognition functionality described above. Once interpreted, the order may be submitted to a grocery store for subsequent delivery or simply recorded as a shopping list that the user can view on their smartphone when shopping at the grocery store. An application such as this may apply personalized settings for each order, such as preferred delivery schedules and historical portion sizes.

Similarly, a cloud-based application may allow users to order tickets without needing a computer. A user may tell the application what movie they want to see. The application may use pre-configured information about the user (such as location) to determine which theater is near the user. The application may respond to a spoken command to order movie tickets by using the speech synthesis functionality of the system to query the user regarding movie selections and times.

. . . .

A similar type of application may identify the song the user is currently listening to, and in response may provide information about related articles, offer samples, suggest related music and playlists, or present information allowing the user to purchase individual music tracks." Williams at 0043-0047.

- Howard discloses: "An illustration of how the portable device of the present invention can be utilized to purchase items over the Internet is illustrated in FIG. 10." Howard at 12:15-17.
- Gruber discloses: "Accordingly, existing systems are often difficult to use and to navigate, and often present users with inconsistent and overwhelming interfaces that often prevent the users from making effective use of the technology.

  An intelligent automated assistant, also referred to herein as a virtual assistant, can provide an improved interface between human and computer." Gruber at 0010-0011.
- Wittenberg discloses: "For example, speech processing software (i.e., software that processes audio signals to identify spoken words within the audio signal) can require significant memory capacity and can be processing intensive. Such processing and memory demands may undesirably increase the cost and size of an electronic device due to the need

for increased memory and processing capability. Further, in a network of such devices, updating command processing software would require downloading new software to each device, which may be cumbersome and time consuming.

Another option would be to control a local device by processing command signals remotely. Remote processing of commands is known in a number of contexts." Wittenberg at 1:24-35.

In many instances where a particular contention calls for, or requires, combining references, any one of a number of references can be combined. Defendant reserves its right to identify supplemental combinations as the case progresses. As such, the combinations evidencing teachings, suggestions, and/or motivations to combine the prior art references in a way that renders the asserted claims obvious listed herein are merely examples. A person of ordinary skill would have access to the materials found in in these contentions and would have at least the ordinary creativity and skill to combine the attached references in ways not explicitly recited above.

As explained herein and in the accompanying claim charts, it would have been obvious to a person of ordinary skill in the art at the time of the alleged invention to combine the various references identified below in a way to practice the claimed invention. The Asserted Patent Claims are therefore obvious under 35 U.S.C. § 103.

Defendant may rely on a subset of the identified references, or all of the references identified herein for purposes of obviousness, depending on the Court's claim construction, positions taken by Plaintiff, and further discovery in this case. Defendant identifies the following combinations of prior art references that render obvious the asserted claims under 35 U.S.C. § 103:

1. Williams alone or in combination with at least one of Howard, Laligand, Lim,

Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Siri Proxy System, Roberts, Doherty, and/or the admitted prior art.

2. Howard alone or in combination with at least one of Williams, Laligand, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Siri Proxy System, Roberts, Doherty, and/or the admitted prior art;

3. Laligand alone or in combination with at least one of Howard, Williams, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Siri Proxy System, Roberts, Doherty, and/or the admitted prior art.

4. Lim alone or in combination with at least one of Howard, Williams, Laligand, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Siri Proxy System, Roberts, Doherty, and/or the admitted prior art.

5. Mardiana alone or in combination with at least one of Howard, Williams, Laligand, Lim, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Siri Proxy System, Roberts, Doherty, and/or the admitted prior art.

6. Robbins alone or in combination with at least one of Howard, Williams, Laligand, Lim, Mardiana, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Siri Proxy System, Roberts, Doherty, and/or the admitted prior art.

7. Mozer ’467 alone or in combination with at least one of Howard, Williams, Laligand, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Siri Proxy System, Roberts, Doherty, and/or the admitted prior art.

8. Siri Proxy System alone or in combination with at least one of Williams, Howard, Laligand, Lim, Mardiana, Robbins, Gruber, Benesty, Rosenberger, Wittenberg, Chatterjee, Rossing, Goldsmith, Mozer ’707, Mozer ’467, Roberts, Doherty, and/or the admitted prior art.

A person of ordinary skill in the art would have arrived at the claimed alleged invention in the ’721 Patent based on the combinations of the prior art listed above. Motivation to combine the above references is present in the references themselves, the common knowledge of a person of ordinary skill in the art, the prior art as a whole, and the nature of the problems allegedly addressed by the ’721 Patent. Combining these references would have been obvious to one of ordinary skill in the art because the references identify and address the same technical issues and suggest similar solutions to those issues. Defendant reserves the right to establish additional motivations to combine any of the above references based on the teachings contained in any of the references identified in these Invalidity Contentions.

Additionally, one of ordinary skill in the art would be motivated to combine the identified references because of the nature of the problem being solved, the express, implied, and inherent teachings of the prior art, and the knowledge of the person of ordinary skill in the art that such combinations would yield predictable results. These combinations that render the ’721 Patent obvious would also have been a simple design choice that represented a predictable variation

within the knowledge and skill of a person of ordinary skill in the art at the time of the purported invention in the '721 Patent.

One of ordinary skill in the art would also have been motivated to combine the above identified references based on his or her education, knowledge, and experience, by the state of the prior art at the time of invention, by the nature of the problem to be solved, and by common sense. A person of ordinary skill in the art is presumed to have knowledge of all relevant prior art and therefore would have been familiar with each of the references identified above. A person of ordinary skill in the art would also be familiar with the background knowledge in the art and the full range of teachings they contain.

III. LOCAL PATENT RULE 3-3(D): INVALIDITY UNDER 35 U.S.C. § 112 ¶¶ 1-2

Defendant provides the following contentions relating to the invalidity of the Asserted Patent Claims under 35 U.S.C. § 112 ¶ 1. These contentions are being proffered without expert disclosure or discovery and, therefore, Defendant reserves the right to supplement and amend these contentions as this action progresses.

A. '706 Patent

The Asserted Patent Claims are invalid because they are not enabled and/or sufficiently described by the specification of the '706 Patent. The subject matter of these claims is not sufficiently shown in the specification of the '706 Patent. Nor is it described in such a way that one of ordinary skill in the art could implement it to achieve the results sought by the individuals named on the face of the '706 Patent as inventors. Nor was it described in such a way that a person having ordinary skill in the art at the time of the alleged invention would have understood that the individuals named as inventors on the face of the '706 Patent were in possession of the claimed subject matter as of the filing date of the application for patent.

The Asserted Patent Claims are invalid for failing to meet the written description requirement under 35 U.S.C. § 112 ¶ 1. To meet this written description requirement, the description of the invention in the specification portion of the patent as filed must be detailed enough to demonstrate that the applicant actually possessed the invention as claimed in the claims of the issued patent. At least each of the following claim limitations (and accordingly, any claims which incorporate or depend from those limitations) fail to meet the written description requirement:

- first/second human voice data;
- first/second message; and
- a microphone for capturing first and second human voice data;
- sending, over the Internet via the WLAN, the captured first and second human voice data to an Internet-connected server device external to the building;
- receiving, from the server device over the Internet via the WLAN, first and second messages, in response to the sending of the captured first and second human voice data;
- operating the first actuator in response to the received first message;
- sending, to the controlled device over the WLAN, a control message in response to the received second message, and
- the multiple microphones are arranged as a directional microphones array operative to estimate a number, magnitude, frequency, Direction-Of-Arrival (DOA), distance, or speed of a phenomenon impinging the microphones array.

In addition, to satisfy the written description requirement, the specification must present each claim as an "integrated whole rather than as a collection of independent limitations." *Novozymes A/S*

v. Dupont Nutrition Biosciences APS, 723 F.3d 1336, 1349 (Fed. Cir. 2013); *see also Flash-Control, LLC v. Intel Corp.*, No. 2020-2141, 2021 WL 2944592, at *4 (Fed. Cir. July 14, 2021). The written description requirement is not satisfied by the patent owner pointing to an "amalgam of disclosures" from which an ordinary artisan could have created the claimed invention. *Novozymes*, 723 F.3d at 1349. Claim 1 of the '706 Patent, along with those claims that incorporate or depend from it, fails to meet the written description requirement because the specification does not present claim 1 as an integrated whole. The specification of the '706 Patent does not disclose adequate support for the particular claimed combination of functionality. Claim 1, for example, claims a client device including a WLAN transceiver for communicating over the WLAN, a microphone for capturing first and second human voice data, and a first actuator, and the client device is configured to (1) send, over the Internet via the WLAN, the captured first and second human voice data to an Internet-connected server device external to the building; (2) receive, from the server device over the Internet via the WLAN, first and second messages, in response to the sending of the captured first and second human voice data; (3) operate the first actuator in response to the received first message; and (4) send, to the controlled device over the WLAN, a control message in response to the received second message. The '706 Patent's specification does not describe the combination of claim 1's elements as a whole. Accordingly, the '706 Patent's written description fails to sufficiently demonstrate that the inventors possessed the full scope of the claimed device. *See, e.g.*, *Natera, Inc. v. Caredx, Inc.*, No. 20-38-CFC-CJB, 2025 WL 592760, at *4-6 (D. Del. Feb. 24, 2025). Each dependent claim is likewise invalid as lacking written description because (1) they depend on the invalid claim 1; *and* (2) because the specification fails to disclose the dependent limitations as an integrated whole with the claim(s) from which they depend.

The Asserted Patent Claims are invalid for failing to meet the enablement requirement under 35 U.S.C. § 112 ¶ 1. To meet this enablement requirement, the description in the patent has to be sufficiently full and clear to have allowed persons of ordinary skill in the field of technology of the patent to make and use the invention without undue experimentation, at the time the patent application was originally filed. At least each of the following claim limitations (and accordingly, any claims which incorporate those limitations) fails to meet the enablement requirement:

- a microphone for capturing first and second human voice data; and
- sending, over the Internet via the WLAN, the captured first and second human voice data to an Internet-connected server device external to the building;
- receiving, from the server device over the Internet via the WLAN, first and second messages, in response to the sending of the captured first and second human voice data;
- operating the first actuator in response to the received first message; and
- sending, to the controlled device over the WLAN, a control message in response to the received second message, and
- the multiple microphones are arranged as a directional microphones array operative to estimate a number, magnitude, frequency, Direction-Of-Arrival (DOA), distance, or speed of a phenomenon impinging the microphones array.

The Asserted Patent Claims are also invalid as indefinite for failing to meet the requirements of 35 U.S.C. § 112 ¶ 2. For example, claim 1 is indefinite at least because it lacks reasonable certainty due to its recitation of "first human voice data," "second human voice data," "first message" and "second message." Claim 16 is indefinite because it lacks reasonable certainty due to its recitation of "household appliance." Claims 16, 20, 21, and 23 are indefinite at least

because they lack reasonable certainty due to their recitation of "primary function." Further, claim 2 is indefinite at least because it recites functional language—"processing the first and second human voice data using a voice recognition algorithm for identifying a voice of a specific person"—subject to 35 U.S.C. § 112 ¶ 6, without disclosing the corresponding "algorithm" in the specification.

Defendant reserves the right to amend, modify, or supplement any of its invalidity contentions, including if Plaintiff, its expert(s), the Court, or the USPTO in post-granting proceedings adopts a construction that: modifies the scope of the Asserted Patent Claims such that the modified scope is not described and/or enabled; would render any of the Asserted Patent Claims to be indefinite; would render any of the Asserted Patent Claims invalid for failing to claim patentable subject matter; would render any of the Asserted Patent Claims invalid as lacking utility; or would render any of the Asserted Patent Claims invalid for statutory-type double patenting. Defendant expressly reserves the right to assert any other ground for invalidity not required to be disclosed under Local Patent Rule 3-3, including, but not limited to, obviousness-type double patenting, and invalidity based on the introduction of new matter in the '706 Patent.

B. '174 Patent

The Asserted Patent Claims are invalid because they are not enabled and/or sufficiently described by the specification of the '174 Patent. The subject matter of these claims is not sufficiently shown in the specification of the '174 Patent. Nor is it described in such a way that one of ordinary skill in the art could implement it to achieve the results sought by the individuals named on the face of the '174 Patent as inventors. Nor was it described in such a way that a person having ordinary skill in the art at the time of the alleged invention would have understood that the individuals named as inventors on the face of the '174 Patent were in possession of the claimed subject matter as of the filing date of the application for patent.

The Asserted Patent Claims are invalid for failing to meet the written description requirement under 35 U.S.C. § 112 ¶ 1. To meet this written description requirement, the description of the invention in the specification portion of the patent as filed must be detailed enough to demonstrate that the applicant actually possessed the invention as claimed in the claims of the issued patent. At least each of the following claim limitations (and accordingly, any claims which incorporate or depend from those limitations) fail to meet the written description requirement:

- an Internet-connected server device external to the building configured for processing first and second human voice data, and to provide first and second messages respectively in response to the processing;
- a microphone in the client device for capturing first and second human voice data;
- a first actuator in the client device;
- sending to the server by the client device via the wireless network, the captured first and second human voice data;
- receiving, from the server the first and second messages in response to the sending, to operate the first actuator in the client device in response to the received first message, and to operate the second actuator in the controlled device in response to the received second message; and
- the multiple microphones are arranged as a directional microphones array operative to estimate a number, magnitude, frequency, Direction-Of-Arrival (DOA), distance, or speed of a phenomenon impinging the microphones array.

In addition, to satisfy the written description requirement, the specification must present each claim as an "integrated whole rather than as a collection of independent limitations." *Novozymes*, 723

F.3d at 1349; *see also Flash-Control*, 2021 WL 2944592, at *4. The written description requirement is not satisfied by the patent owner pointing to an "amalgam of disclosures" from which an ordinary artisan could have created the claimed invention. *Novozymes*, 723 F.3d at 1349. The specification of the '174 Patent does not disclose adequate support for the particular claimed combination of components and functionality. Claim 1, for example, claims a system including (1) an Internet-connected server device external to the building configured for processing first and second human voice data, and to produce first and second messages respectively in response to the processing; (2) a client device in the building configured to communicate with the controlled device and with the server device over the wireless network; (3) a microphone in the client device for capturing the first and second human voice data; and (4) a first actuator in the client device. In addition, the system is operative for (1) sending to the server by the client device via the wireless network, the captured first and second human voice data, and (2) receiving from the server the first and second messages in response to the sending, to operate the first actuator in the client device in response to the received first message, and to operate the second actuator in the controlled device in response to the received second message. The '174 Patent's specification does not describe the combination of claim 1's elements as a whole. Accordingly, the '174 Patent's written description fails to sufficiently demonstrate that the inventors possessed the full scope of the claimed system. *See, e.g.*, *Natera*, 2025 WL 592760, at *4-6. Each dependent claim is likewise invalid as lacking written description because (1) they depend on the invalid claim 1; *and* (2) because the specification fails to disclose the dependent limitations as an integrated whole with the claim(s) from which they depend.

The Asserted Patent Claims are invalid for failing to meet the enablement requirement under 35 U.S.C. § 112 ¶ 1. To meet this enablement requirement, the description in the patent has to be sufficiently full and clear to have allowed persons of ordinary skill in the field of technology

of the patent to make and use the invention without undue experimentation, at the time the patent application was originally filed. At least each of the following claim limitations (and accordingly, any claims which incorporate those limitations) fails to meet the enablement requirement:

- an Internet-connected server device external to the building configured for processing first and second human voice data, and to provide first and second messages respectively in response to the processing;
- a microphone in the client device for capturing first and second human voice data;
- a first actuator in the client device;
- sending to the server by the client device via the wireless network, the captured first and second human voice data;
- receiving, from the server the first and second messages in response to the sending, to operate the first actuator in the client device in response to the received first message, and to operate the second actuator in the controlled device in response to the received second message; and
- the multiple microphones are arranged as a directional microphones array operative to estimate a number, magnitude, frequency, Direction-Of-Arrival (DOA), distance, or speed of a phenomenon impinging the microphones array.

The Asserted Patent Claims are also invalid as indefinite for failing to meet the requirements of 35 U.S.C. § 112 ¶ 2. For example:

- Claim 1 is indefinite at least because it lacks reasonable certainty due to its recitation of "first and second voice data" and "first and second messages."
- Claim 2 is indefinite at least because it recites functional language—"the processing comprises performing a voice recognition algorithm for identifying the

voice of a specific person"—subject to 35 U.S.C. § 112 ¶ 6, without disclosing the corresponding "algorithm" in the specification.

- Claim 9 is indefinite at least because the limitation "the sensing an incident sound based motion of a diaphragm or a ribbon, or wherein the microphone comprises a condenser, an electret, a dynamic, a ribbon, a carbon, or a piezoelectric microphone" lacks antecedent basis.
- Claim 14 is indefinite at least because the limitation "wherein the wireless network uses a licensed or unlicensed radio frequency band" does not designate a licensing entity.
- Claim 16 is indefinite because it lacks reasonable certainty due to its recitation of "household appliance." Claims 16, 20, and 21 are indefinite at least because they lack reasonable certainty due to their recitation of "primary function."

Defendant reserves the right to amend, modify, or supplement any of its invalidity contentions, including if Plaintiff, its expert(s), the Court, or the USPTO in post-grant proceedings adopts a construction that: modifies the scope of the Asserted Patent Claims such that the modified scope is not described and/or enabled; would render any of the Asserted Patent Claims to be indefinite; would render any of the Asserted Patent Claims invalid for failing to claim patentable subject matter; would render any of the Asserted Patent Claims invalid as lacking utility; or would render any of the Asserted Patent Claims invalid for statutory-type double patenting. Defendant expressly reserves the right to assert any other ground for invalidity not required to be disclosed under Local Patent Rule 3-3, including, but not limited to, obviousness-type double patenting and invalidity based on the introduction of new matter in the '174 Patent.

C. ’710 Patent

The Asserted Patent Claims are invalid because they are not enabled and/or sufficiently described by the specification of the ’710 Patent. The subject matter of these claims is not sufficiently shown in the specification of the ’710 Patent. Nor is it described in such a way that one of ordinary skill in the art could implement it to achieve the results sought by the individuals named on the face of the ’710 Patent as inventors. Nor was it described in such a way that a person having ordinary skill in the art at the time of the alleged invention would have understood that the individuals named as inventors on the face of the ’710 Patent were in possession of the claimed subject matter as of the filing date of the application for patent.

The Asserted Patent Claims are invalid for failing to meet the written description requirement under 35 U.S.C. § 112 ¶ 1. To meet this written description requirement, the description of the invention in the specification portion of the patent as filed must be detailed enough to demonstrate that the applicant actually possessed the invention as claimed in the claims of the issued patent. At least each of the following claim limitations (and accordingly, any claims which incorporate or depend from those limitations) fail to meet the written description requirement:

- capturing, by a microphone in the client device, a first human voice data;
- first/second human voice data;
- first/second message; and
- the multiple microphones are arranged as a directional microphones array operative to estimate a number, magnitude, frequency, Direction-Of-Arrival (DOA), distance, or speed of a phenomenon impinging the microphones array.

In addition, to satisfy the written description requirement, the specification must present each claim as an "integrated whole rather than as a collection of independent limitations." *Novozymes*, 723 F.3d at 1349; *see also Flash-Control*, 2021 WL 2944592, at *4. The written description requirement is not satisfied by the patent owner pointing to an "amalgam of disclosures" from which an ordinary artisan could have created the claimed invention. *Novozymes*, 723 F.3d at 1349. The specification of the '710 Patent does not disclose adequate support for the particular claimed combination of functionality. Claim 1, for example, claims a method including (1) capturing, by a microphone in the client device, a first human voice data; (2) sending to the server, by the client device via the wireless network, the captured first human voice data; (3) receiving, by the server over the Internet, the captured first human voice data; (4) processing, by the server, the captured first human voice data; (5) responsive to the processing, sending a first message, by the server to the client device over the Internet; (6) receiving, by the client device via the wireless network, the first message; (7) operating a first actuator in the client device in response to the received first message; (8) capturing, by the microphone in the client device, a second human voice data; (9) sending to the server, by the client device via the wireless network, the captured second human voice data; (10) receiving, by the server over the Internet, the captured second human voice data; (11) processing, by the server, the captured second human voice data; (12) responsive to the processing, sending a second message, by the server to the controlled device over the Internet; (13) receiving, by the controlled device via the wireless network, the second message and (14) operating a second actuator in the controlled device in response to the received second message. The '710 Patent's specification does not describe the combination of claim 1's elements as a whole. Accordingly, the '710 Patent's written description fails to sufficiently demonstrate that the inventors possessed the full scope of the claimed methods. *See, e.g.*, *Natera,* 2025 WL 592760, at *4-6. Each dependent

claim is likewise invalid as lacking written description because (1) they depend on the invalid claim 1; *and* (2) because the specification fails to disclose the dependent limitations as an integrated whole with the claim(s) from which they depend.

The Asserted Patent Claims are invalid for failing to meet the enablement requirement under 35 U.S.C. § 112 ¶ 1. To meet this enablement requirement, the description in the patent has to be sufficiently full and clear to have allowed persons of ordinary skill in the field of technology of the patent to make and use the invention without undue experimentation, at the time the patent application was originally filed. At least each of the following claim limitations (and accordingly, any claims which incorporate those limitations) fails to meet the enablement requirement:

- capturing, by a microphone in the client device, a first human voice data; and
- first/second human voice data;
- first/second message;
- the multiple microphones are arranged as a directional microphones array operative to estimate a number, magnitude, frequency, Direction-Of-Arrival (DOA), distance, or speed of a phenomenon impinging the microphones array.

The Asserted Patent Claims are also invalid as indefinite for failing to meet the requirements of 35 U.S.C. § 112 ¶ 2. For example, claim 1 is indefinite at least because it lacks reasonable certainty due to its recitation of "first human voice data," "second human voice data," "first message" and "second message." Further, claim 2 is indefinite at least because it recites functional language—"the processing comprises performing a voice recognition algorithm for identifying the voice of a specific person"—subject to 35 U.S.C. § 112 ¶ 6, without disclosing the corresponding "algorithm" in the specification.

Defendant reserves the right to amend, modify, or supplement any of its invalidity contentions, including if Plaintiff, its expert(s), the Court, or the USPTO in post-grant proceedings adopts a construction that: modifies the scope of the Asserted Patent Claims such that the modified scope is not described and/or enabled; would render any of the Asserted Patent Claims to be indefinite; i would render any of the Asserted Patent Claims invalid for failing to claim patentable subject matter; would render any of the Asserted Patent Claims invalid as lacking utility; or would render any of the Asserted Patent Claims invalid for statutory-type double patenting. Defendant expressly reserves the right to assert any other ground for invalidity not required to be disclosed under Local Patent Rule 3-3, including, but not limited to, obviousness-type double patenting and invalidity based on the introduction of new matter in the '710 Patent.

D. '590 Patent

The Asserted Patent Claims are invalid because they are not enabled and/or sufficiently described by the specification of the '590 Patent. The subject matter of these claims is not sufficiently shown in the specification of the '590 Patent. Nor is it described in such a way that one of ordinary skill in the art could implement it to achieve the results sought by the individuals named on the face of the '590 Patent as inventors. Nor was it described in such a way that a person having ordinary skill in the art at the time of the alleged invention would have understood that the individuals named as inventors on the face of the '590 Patent were in possession of the claimed subject matter as of the filing date of the application for patent.

The Asserted Patent Claims are invalid for failing to meet the written description requirement under 35 U.S.C. § 112 ¶ 1. To meet this written description requirement, the description of the invention in the specification portion of the patent as filed must be detailed enough to demonstrate that the applicant actually possessed the invention as claimed in the claims of the issued patent. At least each of the following claim limitations (and accordingly, any claims

which incorporate or depend from those limitations) fail to meet the written description requirement:

- An Alternating-Current (AC) powered appliance associated with food storage, handling, or preparation;
- a first sensor having an output that responds to a physical phenomenon;
- multiple sensors arranged as a directional sensor array operative to estimate the number, magnitude, frequency, Direction-Of-Arrival (DOA), distance, or speed of the physical phenomenon impinging the sensor array;
- wherein the actuator consists of, or comprises, a sounder for converting an electrical energy to omnidirectional, unidirectional, or bidirectional pattern emitted, audible or inaudible, sound waves; and
- wherein the wireless network is a satellite network, the antenna is a satellite antenna, and the wireless transceiver is a satellite modem.

In addition, to satisfy the written description requirement, the specification must present each claim as an "integrated whole rather than as a collection of independent limitations." *Novozymes*, 723 F.3d at 1349; *see also Flash-Control*, 2021 WL 2944592, at *4. The written description requirement is not satisfied by the patent owner pointing to an "amalgam of disclosures" from which an ordinary artisan could have created the claimed invention. *Novozymes*, 723 F.3d at 1349. Claim 1 of the '590 Patent, along with those claims that incorporate or depend from it, fails to meet the written description requirement because the specification does not present claim 1 as an integrated whole. The specification does not disclose a single embodiment disclosing each limitation of claim 1 *or* statements linking different embodiments together to arrive at the invention recited in claim 1. For example, the specification does not provide written description for a claim directed to an "[AC] powered appliance

associated with food storage, handling, or preparation" "wherein the appliance is controlled or activated in response to digital data received from the wireless network," in combination with claim 1's remaining limitations. Accordingly, the '710 Patent's written description fails to sufficiently demonstrate that the inventors possessed the full scope of the claimed methods. *See, e.g.*, *Natera,* 2025 WL 592760, at *4-6. Each dependent claim is likewise invalid as lacking written description because (1) they depend on the invalid claim 1; *and* (2) because the specification fails to disclose the dependent limitations as an integrated whole with the claim(s) from which they depend.

The Asserted Patent Claims are invalid for failing to meet the enablement requirement under 35 U.S.C. § 112 ¶ 1. To meet this enablement requirement, the description in the patent has to be sufficiently full and clear to have allowed persons of ordinary skill in the field of technology of the patent to make and use the invention without undue experimentation, at the time the patent application was originally filed. At least each of the following claim limitations (and accordingly, any claims which incorporate those limitations) fails to meet the enablement requirement:

- An Alternating-Current (AC) powered appliance associated with food storage, handling, or preparation;
- a first sensor having an output that responds to a physical phenomenon;
- multiple sensors arranged as a directional sensor array operative to estimate the number, magnitude, frequency, Direction-Of-Arrival (DOA), distance, or speed of the physical phenomenon impinging the sensor array;
- wherein the actuator consists of, or comprises, a sounder for converting an electrical energy to omnidirectional, unidirectional, or bidirectional pattern emitted, audible or inaudible, sound waves; and
- wherein the wireless network is a satellite network, the antenna is a satellite

antenna, and the wireless transceiver is a satellite modem.

The Asserted Patent Claims are also invalid as indefinite for failing to meet the requirements of 35 U.S.C. § 112 ¶ 2. For example:

- Claim 1 is indefinite at least because the use of the phrase "associated with" in the preamble is, to the extent limiting, vague and ambiguous. The remaining asserted claims are likewise indefinite as dependent on an indefinite base claim.
- Claim 1 is indefinite at least because the limitation, "wherein the first sensor is coupled to the wireless transceiver for transmitting digital data in response to the physical phenomenon to the wireless network," is unclear as to what component must "transmit[] digital data." The remaining asserted claims are likewise indefinite as dependent on an indefinite base claim.
- Claims 21 and 22 are also indefinite at least because the limitation "wherein the WPAN is according to, based on, or compatible with . . . standards," is unclear as to the characteristics of the WPAN that would make it "according to, based on, or compatible with" the claimed standards.
- Claim 23 is indefinite at least because the term "WLAN modem" is vague and ambiguous.
- Claim 24 is indefinite at least because the limitation "wherein the WLAN is according to, based on, or compatible with" certain standards is unclear as to the characteristics of the WLAN that would make it "according to, based on, or compatible with" the claimed standards.
- Claim 26 is indefinite at least because the limitation "wherein the wireless network uses a licensed or unlicensed radio frequency band" does not designate a licensing entity. Claim 27 is likewise indefinite as dependent on claim 26.

- Claim 34 is indefinite at least because the limitation "the physical phenomenon impinging the sensor array" lacks antecedent basis.

Defendant reserves the right to amend, modify, or supplement any of its invalidity contentions, including if Plaintiff, its expert(s), the Court, or the USPTO in post-grant proceedings adopts a construction that: modifies the scope of the Asserted Patent Claims such that the modified scope is not described and/or enabled; would render any of the Asserted Patent Claims to be indefinite; would render any of the Asserted Patent Claims invalid for failing to claim patentable subject matter; would render any of the Asserted Patent Claims invalid as lacking utility; or would render any of the Asserted Patent Claims invalid for statutory-type double patenting. Defendant expressly reserves the right to assert any other ground for invalidity not required to be disclosed under Local Patent Rule 3-3, including, but not limited to, obviousness-type double patenting and invalidity based on the introduction of new matter in the '590 Patent.

E. '720 Patent

The Asserted Patent Claims are invalid because they are not enabled and/or sufficiently described by the specification of the '720 Patent. The subject matter of these claims is not sufficiently shown in the specification of the '720 Patent. Nor is it described in such a way that one of ordinary skill in the art could implement it to achieve the results sought by the individuals named on the face of the '720 Patent as inventors. Nor was it described in such a way that a person having ordinary skill in the art at the time of the alleged invention would have understood that the individuals named as inventors on the face of the '720 Patent were in possession of the claimed subject matter as of the filing date of the application for patent.

The Asserted Patent Claims are invalid for failing to meet the written description requirement under 35 U.S.C. § 112 ¶ 1. To meet this written description requirement, the description of the invention in the specification portion of the patent as filed must be detailed

enough to demonstrate that the applicant actually possessed the invention as claimed in the claims of the issued patent. At least each of the following claim limitations (and accordingly, any claims which incorporate or depend from those limitations) fail to meet the written description requirement:

- multiple microphones for capturing first human voice data;
- The device according to claim 1, further comprising in the enclosure an actuator that is directly or indirectly affecting, changing, producing, or creating a physical phenomenon, the actuator that is coupled to the WLAN transceiver for being activated or controlled in response to data received from the WLAN.
- the multiple microphones are arranged as a directional microphones array operative to estimate a number, magnitude, frequency, Direction-Of-Arrival (DOA), distance, or speed of a phenomenon impinging the microphones array.

In addition, to satisfy the written description requirement, the specification must present each claim as an "integrated whole rather than as a collection of independent limitations." *Novozymes*, 723 F.3d at 1349; *see also Flash-Control*, 2021 WL 2944592, at *4. The written description requirement is not satisfied by the patent owner pointing to an "amalgam of disclosures" from which an ordinary artisan could have created the claimed invention. *Novozymes*, 723 F.3d at 1349. The specification of the '720 Patent does not disclose adequate support for the particular claimed combination of components and functionality. Claim 1, for example, claims a device including (1) multiple microphones for capturing first human voice data; (2) a Wireless Local Area Network (WLAN) transceiver for transmitting digital data to, and for receiving digital data from, a WLAN; (3) a speaker for sounding audio data; (4) an electric light source for emitting light for emitting light; (5) an enclosure that houses the multiple microphones, the WLAN transceiver, the speaker, and

the electric light source; and (6) one or more processors programmed with computer program instructions. In addition, the instructions cause the device to (1) send, to a server device over the Internet via the WLAN by the WLAN transceiver, at least part of the first human voice data captured by the multiple microphones; (2) play, by the speaker, an audio data received from the server device over the Internet via the WLAN by the WLAN transceiver; and (3) emit, by the electric light source, in response to data received from the server over the Internet via the WLAN by the WLAN transceiver. The '720 Patent's specification does not describe the combination of claim 1's elements as a whole. Accordingly, the '720 Patent's written description fails to sufficiently demonstrate that the inventors possessed the full scope of the claimed device. *See, e.g.*, *Natera*, 2025 WL 592760, at *4-6. Each dependent claim is likewise invalid as lacking written description because (1) they depend on the invalid claim 1; *and* (2) because the specification fails to disclose the dependent limitations as an integrated whole with the claim(s) from which they depend.

The Asserted Patent Claims are invalid for failing to meet the enablement requirement under 35 U.S.C. § 112 ¶ 1. To meet this enablement requirement, the description in the patent has to be sufficiently full and clear to have allowed persons of ordinary skill in the field of technology of the patent to make and use the invention without undue experimentation, at the time the patent application was originally filed. At least each of the following claim limitations (and accordingly, any claims which incorporate those limitations) fails to meet the enablement requirement:

- multiple microphones for capturing first human voice data; and
- The device according to claim 1, further comprising in the enclosure an actuator that is directly or indirectly affecting, changing, producing, or creating a physical phenomenon, the actuator that is coupled to the WLAN transceiver for being activated or controlled in response to data received from the WLAN.

- the multiple microphones are arranged as a directional microphones array operative to estimate a number, magnitude, frequency, Direction-Of-Arrival (DOA), distance, or speed of a phenomenon impinging the microphones array.

The Asserted Patent Claims are also invalid as indefinite for failing to meet the requirements of 35 U.S.C. § 112 ¶ 2. For example, claim 1 is indefinite at least because it lacks reasonable certainty due to its recitation of "first human voice data captured by the multiple microphones."

Defendant reserves the right to amend, modify, or supplement any of its invalidity contentions, including if Plaintiff, its expert(s), the Court, or the USPTO in post-grant proceedings adopts a construction that: modifies the scope of the Asserted Patent Claims such that the modified scope is not described and/or enabled; would render any of the Asserted Patent Claims to be indefinite; would render any of the Asserted Patent Claims invalid for failing to claim patentable subject matter; would render any of the Asserted Patent Claims invalid as lacking utility; or would render any of the Asserted Patent Claims invalid for statutory-type double patenting. Defendant expressly reserves the right to assert any other ground for invalidity not required to be disclosed under Local Patent Rule 3-3, including, but not limited to, obviousness-type double patenting and invalidity based on the introduction of new matter in the '720 Patent.

F. '721 Patent

The Asserted Patent Claims are invalid because they are not enabled and/or sufficiently described by the specification of the '721 Patent. The subject matter of these claims is not sufficiently shown in the specification of the '721 Patent. Nor is it described in such a way that one of ordinary skill in the art could implement it to achieve the results sought by the individuals named on the face of the '721 Patent as inventors. Nor was it described in such a way that a person having ordinary skill in the art at the time of the alleged invention would have understood that the

individuals named as inventors on the face of the ’721 Patent were in possession of the claimed subject matter as of the filing date of the application for patent.

The Asserted Patent Claims are invalid for failing to meet the written description requirement under 35 U.S.C. § 112 ¶ 1. To meet this written description requirement, the description of the invention in the specification portion of the patent as filed must be detailed enough to demonstrate that the applicant actually possessed the invention as claimed in the claims of the issued patent. At least each of the following claim limitations (and accordingly, any claims which incorporate or depend from those limitations) fail to meet the written description requirement:

- first/second human voice data;
- first/second message; and
- capture, using the microphone, first and second human voice data;
- send, over the Internet via the WLAN, to a server device, the captured first and second human voice data;
- receive, from the server device via the WLAN over the Internet, first and second messages, in response to the sending of the respectively captured first and second human voice data;
- sound, using the sounder, digital audio content in response to the received first message; and
- send, to a second device over the WLAN, a control message that comprises a control data for controlling a first actuator in the second device to directly or indirectly affect, change, or produce, a first physical phenomenon, in response to the received second message,

- the multiple microphones are arranged as a directional microphones array operative to estimate a number, magnitude, frequency, Direction-Of-Arrival (DOA), distance, or speed of a phenomenon impinging the microphones array.

In addition, to satisfy the written description requirement, the specification must present each claim as an "integrated whole rather than as a collection of independent limitations." *Novozymes*, 723 F.3d at 1349; *see also Flash-Control*, 2021 WL 2944592, at *4. The written description requirement is not satisfied by the patent owner pointing to an "amalgam of disclosures" from which an ordinary artisan could have created the claimed invention. *Novozymes*, 723 F.3d at 1349. The specification of the '721 Patent does not disclose adequate support for the particular claimed combination of components and functionality recited in the Asserted Patent Claims. Take claim 1 as an example, it claims a device including (1) a WLAN transceiver for communicating over the WLAN; (2) a microphone for capturing human voice data; (3) a sounder for converting an electrical energy to audible sound waves; and (4) one or more processors programmed with computer program instructions. In addition, the instructions cause the device to (1) capture, using the microphone, first and second human voice data; (2) send, over the Internet via the WLAN, to a server device, the captured first and second human voice data; (3) receive, from the server device via the WLAN over the Internet, first and second messages, in response to the sending of the respectively captured first and second human voice data; (4) sound, using the sounder, digital audio content in response to the received first message; and (5) send, to a second device over the WLAN, a control message that comprises a control data for controlling a first actuator in the second device to directly or indirectly affect, change, or produce, a first physical phenomenon, in response to the received second message. The '721 Patent's specification does not describe the combination of claim 1's elements as a whole. Accordingly, the '721 Patent's written description fails to sufficiently

demonstrate that the inventors possessed the full scope of the claimed device. *See, e.g.*, *Natera*, 2025 WL 592760, at *4-6. Each dependent claim is likewise invalid as lacking written description because (1) they depend on the invalid claim 1; *and* (2) because the specification fails to disclose the dependent limitations as an integrated whole with the claim(s) from which they depend.

The Asserted Patent Claims are invalid for failing to meet the enablement requirement under 35 U.S.C. § 112 ¶ 1. To meet this enablement requirement, the description in the patent has to be sufficiently full and clear to have allowed persons of ordinary skill in the field of technology of the patent to make and use the invention without undue experimentation, at the time the patent application was originally filed. At least each of the following claim limitations (and accordingly, any claims which incorporate those limitations) fails to meet the enablement requirement:

- capture, using the microphone, first and second human voice data;
- send, over the Internet via the WLAN, to a server device, the captured first and second human voice data;
- receive, from the server device via the WLAN over the Internet, first and second messages, in response to the sending of the respectively captured first and second human voice data;
- sound, using the sounder, digital audio content in response to the received first message; and
- send, to a second device over the WLAN, a control message that comprises a control data for controlling a first actuator in the second device to directly or indirectly affect, change, or produce, a first physical phenomenon, in response to the received second message;
- the multiple microphones are arranged as a directional microphones array

operative to estimate a number, magnitude, frequency, Direction-Of-Arrival (DOA), distance, or speed of a phenomenon impinging the microphones array.

The Asserted Patent Claims are also invalid as indefinite for failing to meet the requirements of 35 U.S.C. § 112 ¶ 2. For example, claim 1 is indefinite at least because it lacks reasonable certainty due to its recitation of "first human voice data," "second human voice data," "first message" and "second message." Claim 17 is indefinite because it lacks reasonable certainty due to its recitation of "household appliance." Claims 17-19 and 21-22 are indefinite at least because they lack reasonable certainty due to their recitation of "primary function." Further, claim 2 is indefinite at least because it recites functional language—"processing the first and second human voice data using a voice recognition algorithm for identifying a voice of a specific person"—subject to 35 U.S.C. § 112 ¶ 6, without disclosing the corresponding "algorithm" in the specification.

Defendant reserves the right to amend, modify, or supplement any of its invalidity contentions, including if Plaintiff, its expert(s), the Court, or the USPTO in post-grant proceedings adopts a construction that: modifies the scope of the Asserted Patent Claims such that the modified scope is not described and/or enabled; would render any of the Asserted Patent Claims to be indefinite; would render any of the Asserted Patent Claims invalid for failing to claim patentable subject matter; would render any of the Asserted Patent Claims invalid as lacking utility; or would render any of the Asserted Patent Claims invalid for statutory-type double patenting. Defendant expressly reserves the right to assert any other ground for invalidity not required to be disclosed under Local Patent Rule 3-3, including, but not limited to, obviousness-type double patenting and invalidity based on the introduction of new matter in the '721 Patent.

IV. ADDITIONAL INVALIDITY POSITIONS UNDER 35 U.S.C. § 112

The Asserted Patent Claims are invalid under 35 U.S.C. § 112 and the principles articulated in *Halliburton Oil Well Cementing Co. v. Walker*, 329 U.S. 1 (1946) for functional claiming at the point of novelty. Precise identification of all of the bases upon which the Asserted Patent Claims are invalid under 35 U.S.C. § 112 are likely to be revealed only after further developments in the case, including remaining fact and expert discovery. Defendant reserves the right to amend or supplement these Invalidity Contentions to address any invalidity arguments under 35 U.S.C. § 112 that become apparent in view of any relevant facts and information revealed during discovery.

V. INVALIDITY UNDER 35 U.S.C. § 101

Defendant discloses the following bases for invalidity based on 35 U.S.C. § 101 and hereby incorporates the ineligibility chart attached hereto as Appendices 1-6.

Appendix 1	Ineligibility chart for U.S. Patent No. 12,316,706
Appendix 2	Ineligibility chart for U.S. Patent No. 12,010,174
Appendix 3	Ineligibility chart for U.S. Patent No. 11,128,710
Appendix 4	Ineligibility chart for U.S. Patent No. 11,190,590
Appendix 5	Ineligibility chart for U.S. Patent No. 12,401,720
Appendix 6	Ineligibility chart for U.S. Patent No. 12,401,721

The Supreme Court has established a two-step framework to determine whether claims cover patent-ineligible subject matter. *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014). First, the Court must determine whether the claims are directed to an abstract idea. *Id.* at 217. If so, the Court must then determine whether the claims contain an "inventive concept—*i.e.*, an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [abstract idea] itself." *Id*. at 217–18 (internal citations and quotes omitted). The "inventive concept" must be more than "'well-understood, routine, conventional activit[ies].'" *Id.* at 225 (quoting *Mayo Collaborative Servs. v. Prometheus Labs.,*

Inc., 566 U.S. 66, 73 (2012)). "The §101 inquiry must focus on the language of the asserted claims themselves," and "the specification cannot be used to import details from the specification if those details are not claimed." *ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 769 (Fed. Cir. 2019) (quoting *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1149 (Fed. Cir. 2016)).

The Asserted Patent Claims are invalid for reciting subject matter that is patent-ineligible under 35 U.S.C. § 101. Under *Alice* step 1, one exemplary identification of the concept embodied in each Asserted Patent Claim is it is directed to the abstract idea of generating, transmitting, processing data, and controlling a device based on the processed data. Under *Alice* step 2, the Asserted Patent Claims recite routine and conventional elements and none of them contain an inventive concept beyond the abstract idea.

VI. LOCAL PATENT RULE 3-4: DOCUMENT PRODUCTION ACCOMPANYING AMENDED INVALIDITY CONTENTIONS

A. Local Patent Rule 3-4(a)

Defendant has produced documents and source code in accordance with Local Patent Rule 3-4(a) to the extent such documents are in its possession, custody, or control.

B. Local Patent Rule 3-4(b)

Defendant has produced documents in accordance with Local Patent Rule 3-4(b) to the extent such documents are in its possession, custody, or control.

Dated: December 9, 2025

By: */s/ Brian C. Nash*

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of the above and foregoing document has been served on all counsel of record on December 9, 2025.

/s/ Brian C. Nash
Brian C. Nash