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

GENERAL VIDEO, LLC,	§	
	§	
Plaintiff,	§	
	§	
v.	§	Civil Action No. 5:24-CV-01526
	§	(consolidated with lead case 5:24-cv-
ASUSTEK COMPUTER, INC.,	§	00122)
	§	
	§	JURY TRIAL DEMANDED
Defendant.	§	
	§	

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Pursuant to the Court's Docket Control Order (Dkt. 56) and P.R. 3-3, Defendant ASUSTek Computer, Inc., ("Defendant") provides General Video, LLC ("Plaintiff") with notice of Defendant's Preliminary Invalidity Contentions. These contentions are with respect to the claims identified in Plaintiff's Preliminary Infringement Contentions, dated April 28, 2025, and any supplements thereto (collectively, "Infringement Contentions").

Plaintiff asserts that Defendant infringes claims 7 and 9 of U.S. Patent No. 6,584,443 (the "'443 Patent"), claims 3 and 5 of U.S. Patent No. 7,069,224 (the "'224 Patent"), claim 1 of U.S. Patent No. 7,225,282 (the "'282 Patent"), claim 41 of U.S. Patent No. 7,359,437 (the "'437 Patent"), claims 1 and 12 of U.S. Patent No. 9,036,010 (the "'010 Patent"), and claims 1 and 13 of U.S. Patent No. 9,843,786 (the "'786 Patent"). Defendant contends that all such claims are invalid for the reasons described below. As used in these Preliminary Invalidity Contentions, "Asserted Claims" include any and all claims asserted against the Defendant.

With respect to each Asserted Claim and based on its investigation to date, Defendant hereby: (a) identifies each currently known item of prior art that either anticipates or renders obvious each Asserted Claim; (b) specifies whether each such item of prior art (or a combination of several of the same) anticipates each Asserted Claim or renders it obvious; (c) submits a chart identifying where each limitation in each Asserted Claim is disclosed, described, or taught in the prior art; (d) identifies the grounds for invalidating the Asserted Claims based on 35 U.S.C. §101; and (e) identifies the grounds for invalidating the Asserted Claims based on 35 U.S.C. § 112.

I. RESERVATIONS

A. General Reservations

Defendant relies on and incorporates by reference, as if originally set forth herein, all invalidity positions, and all associated prior art and claim charts, asserted against Plaintiff in the original prosecution of the Asserted Patents, or by potential or actual licensees to the Asserted

Patents. Moreover, Defendant reserves the right to supplement these Invalidity Contentions based on prior art currently known to Plaintiff and prior art identified or provided to Plaintiff by any third parties.

Defendant reserves the right to further amend or supplement these disclosures and the subsequent document production should Plaintiff: 1) provide any information that it failed to provide pursuant to the Scheduling Order and the Court's patent rules; 2) amend its contentions or disclosures in any way; or 3) attempt to rely upon any information at trial, in a hearing or during a deposition which it failed to provide in its contentions or disclosures.

Defendant further reserves the right to amend or supplement these Invalidity Contentions for any other reason permitted by the Court and/or the applicable statutes and rules.

Defendant provides the information below, as well as the accompanying production of documents, for the purpose of complying with the Scheduling Order and the Court's patent rules. The information provided shall not be deemed an admission regarding the scope of any claims or the proper construction of those claims or any terms contained therein. Nothing contained in these Invalidity Contentions should be understood or deemed to be an express or implied admission or contention with respect to the proper construction of any terms in the asserted claim, or with respect to the alleged infringement of that claim.

B. Ongoing Discovery

For example, Defendant may issue subpoenas to third parties believed to have knowledge, documentation, and/or corroborating evidence concerning some of the prior art listed herein and/or additional prior art. These third parties include without limitation the authors, inventors, or assignees of the references listed in these disclosures. For example, for any given company's commercial products, Defendant anticipates that additional documentation relating to these

products will be discovered, and Defendant reserves the right to rely on such documentation to further support these Invalidity Contentions.

Similarly, Defendant has not had the opportunity to take any depositions of the patent applicants named on the face the Asserted Patents or other persons having relevant information. Defendant reserves the right to revise, amend or supplement these Invalidity Contentions pursuant to Federal Rule of Civil Procedure 26(e) and the Local Rules to the extent appropriate in light of further investigation and discovery regarding the defenses, the review and analysis of expert witnesses, or supplemental contentions by Plaintiff.

Defendant accordingly reserves the right to modify these Invalidity Contentions by adding or withdrawing prior art and/or modifying any of the referenced claim charts in light of the Court's claim construction ruling, any amended or supplemental infringement contentions by Plaintiff, any party admissions or admissions by any named inventor concerning the scope of the claims or teachings of the prior art, or any positions taken by Plaintiff in this or related litigation, reexamination, *inter partes* review, or other proceeding, or to avoid unfair prejudice from Plaintiff's failure to timely comply with its disclosure obligations. Furthermore, additional obviousness combinations of the references identified in these disclosures are possible, and Defendant reserves the right to use any such combination(s) in these actions. In particular, Defendant is currently unaware of the extent, if any, to which Plaintiff will contend that limitations of the claims at issue are not disclosed in the art identified by Defendant as anticipatory, and the extent to which Plaintiff will contend that elements not disclosed in the specifications of the Asserted Patents and related applications would have been known to persons of ordinary skill in the art at the relevant time. To the extent that an issue arises with any such limitations, Defendant

reserves the right to identify other references that would have made such limitations obvious in view of the relevant disclosures.

C. Claim Construction

Defendant reserves the right to revise its ultimate contentions concerning the invalidity of the Asserted Claims, which may change depending upon any findings as to the priority date of those claims and/or positions that Plaintiff or expert witness(es) may take concerning infringement and/or invalidity issues. Defendant does not waive the right to contest any claim constructions or to take positions during claim construction proceedings that have yet to occur that may be inconsistent with the invalidity contentions herein. Consequently, Defendant also reserves the right to amend or supplement these Invalidity Contentions in the event that the claims are construed differently at some point in the future.

Defendant does not adopt Plaintiff's positions on the scope or construction of the claims. In certain instances, however, Defendant has applied the Asserted Claims to the prior art in view of Plaintiff's allegations, admissions, and infringement positions for purposes of these Invalidity Contentions only. As such, Defendant's Invalidity Contentions are not adoptions or admissions by Defendant as to the accuracy of Plaintiff's allegations, admissions, or positions. Accordingly, these Invalidity Contentions are made in the alternative, are not necessarily intended to be consistent with each other or with other contentions and should not be otherwise construed.

Moreover, because Plaintiff's infringement assertions and interpretations of the claims are incorrect, Defendant expressly reserves the right to take positions with respect to future claim construction or infringement issues that are inconsistent with, or even contradictory to, any claim construction positions expressed or implied in the Invalidity Contentions set forth herein.

D. Plaintiff's Infringement Contentions

Plaintiff's Infringement Contentions are deficient in numerous respects. Plaintiff has failed to specifically identify where each limitation of each claim is found within each Accused Instrumentality and has taken either unintelligible or contradictory positions regarding how the Accused Instrumentalities allegedly practice the Asserted Claims. Plaintiff's failure to provide adequate contentions has prejudiced Defendant's ability to prepare these Invalidity Contentions by forcing them to speculate as to Plaintiff's actual position on Defendant's alleged infringement. Therefore, these Invalidity Contentions are based in whole or in part on the present understanding of the Asserted Claims and Plaintiff's apparent positions as to the scope of the Asserted Claims as applied in its Infringement Contentions. Defendant further reserves the right to modify or add additional contentions in light of Plaintiff's failure to provide adequate infringement contentions. Defendant specifically reserves the right to modify, amend, or supplement their contentions as Plaintiff modifies, amends, or supplements its disclosures and/or produces documents in discovery.

Additionally, Plaintiff has presented insufficient contentions for indirect infringement, *i.e.*, active inducement or contributory infringement. Plaintiff has not, for example, provided contentions that sufficiently identify how Defendant allegedly induces direct infringement of the Asserted Patents by a third party, or how Defendant allegedly contribute to the infringement of the Asserted Patents by a third party. Plaintiff has also not provided contentions that sufficiently allege Defendant's pre-suit knowledge of the Asserted Patents. Nor has Plaintiff provided sufficient contentions regarding any alleged infringement by multiple parties pursuant to 35 U.S.C. § 271(a) (*i.e.*, joint infringement). Nor has Plaintiff provided sufficient contentions of any alleged infringement under the doctrine of equivalents. Plaintiff has therefore waived any such claims.

E. The Intrinsic Record

Defendant further reserves the right to rely upon applicable industry standards and prior art cited in the specification and file history of the Asserted Patents and any related U.S. and foreign patent applications as invalidating references or to show the state of the art. References to the file history of the Asserted Patents herein should be understood to include the reexamination record or *inter partes* review proceedings for the Asserted Patents. Defendant further reserves the right to rely on the patent applicants' admissions concerning the scope of the prior art relevant to the Asserted Patents found in, *inter alia*: the specification; the patent prosecution history for the Asserted Patents and any related patents and/or patent applications or reexaminations; any deposition testimony of the named patent applicants on the Asserted Patents; and the papers filed and any evidence submitted by Plaintiff in connection with this litigation.

F. Rebuttal Evidence

Prior art not included in these Invalidity Contentions, whether known or not known to Defendant, may become relevant. In particular, Defendant is currently unaware of the extent, if any, to which Plaintiff will contend that limitations of the Asserted Claims of the Asserted Patents are not disclosed in the prior art identified herein. To the extent that such an issue arises, Defendant reserves the right to identify other references that would render obvious the allegedly missing limitation(s) or the disclosed device or method.

G. Contextual Evidence

Defendant's claim charts cite particular teachings and disclosures of the prior art as applied to the limitations of each of the Asserted Claims. However, persons having ordinary skill in the art generally may view an item of prior art in the context of his or her experience and training, other publications, literature, products, and understanding. As such, the cited portions are only exemplary, and Defendant reserves the right to rely on uncited portions of the prior art references

and on other publications and expert testimony as aids in understanding and interpreting the cited portions, as providing context thereto, and as additional evidence that the prior art discloses a claim limitation or the claimed subject matter as a whole. Defendant further reserves the right to rely on uncited portions of the prior art references, other publications, and testimony, including expert testimony, to establish bases for combinations of certain cited references that render the asserted claims obvious.

Where Defendant identifies a particular figure in a prior art reference, the identification should be understood to encompass the caption and description of the figure as well as any text relating to the figure in addition to the figure itself. Similarly, where an identified portion of text refers to a figure or other material, the identification should be understood to include the referenced figure or other material as well.

The references discussed in the claim charts may disclose the limitations of the Asserted Claims explicitly and/or inherently, and/or they may be relied upon to show the state of the art in the relevant time frame. The suggested obviousness combinations are provided in the alternative to anticipation contentions and are not to be construed to suggest that any reference included in the combinations is not by itself anticipatory.

H. Invalidity Under Section 102(f) Prior Art

Defendant reserves the right to assert that the Asserted Claims are invalid under 35 U.S.C. § 102(f) in the event Defendant obtains evidence that the named inventors did not exclusively "invent" the subject matter claimed in the Asserted Patents.

I. Priority and Effective Filing Date

The Invalidity Contentions are based on the priority dates set forth in the Infringement Contentions. However, as explained further in Section II below, one or more of the Asserted Patents are not entitled to the priority dates set forth in the Infringement Contentions. Defendant

reservesd the right to amend these Invalidity Contentions upon Plaintiff's assertion of any other priority date(s) or the Court's (or other competent jurisdiction's) determination of the correct priority date(s) of the Asserted Claims, because a change in the priority date from the priority date indicated on the face of the patents, in the presence of Plaintiff's failure to indicate any other specific priority date, provides good cause for amendments to invalidity contentions. Defendant further reserves the right to use related patents in the alleged chain of priority of the Asserted Patents as prior art upon the Court's determination of the priority date(s) of the Asserted Claims.

According to Plaintiff's infringement interpretation, Plaintiff has identified certain Accused Instrumentalities as infringing one or more claims of the Asserted Patents. Defendant asserts that some or all of the functionalities contained, referenced, or otherwise included in the Accused Instrumentalities (or any predecessor) may serve as prior art to the extent that they predate the alleged priority date of the Asserted Patents. Likewise, should it be the case that the Asserted Patents are not entitled to the priority claims made, then Defendant asserts that some or all of the functionalities contained, referenced, or otherwise included in the accused products (or any predecessor) may serve as prior art to the extent that they predate the filing date of the Asserted Patents.

J. No Patentable Weight

Defendant contends that portions of the Asserted Claims, relating to an intended use or result, printed matter, non-functional descriptive material, and certain preamble language, are entitled to no patentable weight, at least for purposes of §§101–103. Mapping of a portion of an asserted claim to a prior art reference does not represent that such portion of the claim is entitled to patentable weight when comparing the claimed subject matter to the prior art.

II. GENERAL VIDEO'S ALLEGED PRIORITY DATES

A. '437 Patent

In its Infringement Contentions, General Video contends that the Asserted Claim of the '437 Patent is entitled to a priority date of September 12, 2001, the filing date of U.S. Application No. 09/954,663. *See* Infringement Contentions, 2.

The '437 Patent was filed on December 24, 2001 and is a continuation-in-part of Appl. No. 09/954,663, filed on September 12, 2001. Accordingly, there is no presumption that the Asserted Claim of the '437 Patent is entitled to its earliest claimed priority date, and General Video bears the burden of proving a priority date earlier than the December 24, 2001 filing date of the '437 Patent. *See, e.g.*, *PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1305 (Fed. Cir. 2008).

General Video has not met its burden to demonstrate that the Asserted Claim of the '437 Patent should be entitled to an earlier priority date—or even attempted to do so—at least because General Video has provided no claim analysis and has not identified any supporting disclosures for the Asserted Claim of the '437 Patent in the claimed September 12, 2001 priority application.

Asserted Claim of the '437 Patent is not entitled to a priority date earlier than December 24, 2001 because Appl. No. 09/954,663 does not set forth an adequate written description or enable the claim scope for at least the following claim limitations:

- "generating bursts of encoded control words by encoding control bits" (claim 41);
- "transmitting over the link a first burst of the encoded control words between a first burst of the video code words and the burst of the selected code words, and a second burst of the encoded control words between the burst of the selected code words and a second burst of the video code words." (claim 41).

B. ’443 Patent

In its Infringement Contentions, General Video contends that the Asserted Claims of the ’443 Patent are entitled to a priority date of April 23, 1999, the filing date of JP11-115885. *See* Infringement Contentions, 2.

General Video bears the burden of proving—for each and every Asserted Claim of the ’443 Patent—a priority date earlier than the April 20, 2000 filing date of the ’443 Patent. *See, e.g.*, *PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1305 (Fed. Cir. 2008).

General Video has not met its burden to demonstrate that the Asserted Claims of the ’443 Patent should be entitled to an earlier priority date—or even attempted to do so—at least because General Video has provided no analysis on a claim-by-claim basis and has not identified any supporting disclosures for any Asserted Claim of the ’443 Patent in the claimed April 23, 1999 priority application.

None of the Asserted Claims of the ’443 Patent is entitled to a priority date earlier than April 20, 2000 because JP11-115885 does not set forth an adequate written description or enable the claim scope for at least the following claim limitations:

- “wherein the audio-related information includes monitor information indicating whether or not the audio data is capable of being monitored in the reception step”

C. ’224 Patent

In its Infringement Contentions, General Video contends that the Asserted Claims of the ’224 Patent are entitled to a priority date of April 23, 1999, the filing date of JP11-115885. *See* Infringement Contentions, 2.

General Video bears the burden of proving—for each and every Asserted Claim of the ’224 Patent—a priority date earlier than the April 28, 2003 filing date of the ’224 Patent. *See, e.g.*, *PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1305 (Fed. Cir. 2008).

General Video has not met its burden to demonstrate that the Asserted Claims of the ’224 Patent should be entitled to an earlier priority date—or even attempted to do so—at least because General Video has provided no analysis on a claim-by-claim basis and has not identified any supporting disclosures for any Asserted Claim of the ’224 Patent in the claimed April 23, 1999 priority application.

None of the Asserted Claims of the ’224 Patent is entitled to a priority date earlier than April 20, 2000 because JP11-115885 does not set forth an adequate written description or enable the claim scope for at least the following claim limitations:

- “an analysis section operable to determine whether or not the audio data is capable of being monitored by the receiver”;
- “wherein the audio-related information includes monitor information indicating whether or not the audio data is capable of being monitored by the receiver”; and
- “the analysis section determines whether or not the audio data is capable of being monitored by the receiver based on the monitor information”

III. INVENTORSHIP

Consistent with the reservation of rights previously stated, Defendant reserves their right to assert that any of the Asserted Claims are invalid for failing to properly name the true inventors of either patent, pursuant to at least 35 U.S.C. §§ 101, 115(a), and/or 35 U.S.C. § 102(f). For example, Defendant believes the ’437 Patent may be invalid on this basis because there is a discrepancy in the listed inventors between the ’437 patent (Seung Ho Hwang, Jano Banks, Paul Daniel Wolf, Eric Lee, Baegin Sung, Albert M. Scalise as inventors) and several related patents. *See* U.S. Patent No. 7,558,326 (which lists James D. Lyle, Gyudong Kim, Min-Kyu Kim, Ken-Sue Tan, Paul Daniel Wolf, William C. Altmann, Russel A. Martin as inventors); U.S. Patent No.

7,257,163 (which lists Seung Ho Hwang, Jano Banks, Paul Daniel Wolf, Eric Lee, William Sheet, Albert M. Scalise as inventors); and U.S. Patent No. 6,914,637 (which lists Paul Daniel Wolf, John D. Banks, Stephen J. Keating, Duane Siemens, Eric Lee, Albert M. Scalise, Gijung Ahn, Seung Ho Hwang, Keewook Jung, James D. Lyle, Michael Anthony Schumacher, Vladimir Grekhov as inventors).

IV. INVALIDITY UNDER 35 U.S.C. §§ 102-103

The following contentions are subject to revision and amendment pursuant to Federal Rule of Civil Procedure 26(e) and the Orders of record in this matter to the extent appropriate, *e.g.*, in light of further investigation and discovery regarding the defenses, the Court's construction of the claims at issue, and/or review and analysis of expert witnesses. Defendant offers these Invalidity Contentions in response to Plaintiff's Infringement Contentions and without prejudice to any position it may ultimately take as to any claim construction issues.

A. Summary of Prior Art

The concepts disclosed and claimed in the Asserted Patents are not new. Rather, the concepts have been disclosed and actively practiced by others prior to the claimed priority date. The prior art includes various documents, systems, products, patents and inventions that separately and together render the Asserted Claims invalid. Defendant asserts that at least the prior art listed below, individually or in combination, invalidates the asserted claims. In particular, Sections D-I below list prior art that anticipates and/or renders obvious the Asserted Claims of the Asserted Patents. The identification of prior art below is not exclusive, and Defendant's production contains additional references that render the asserted claims invalid. Defendant reserves the right to rely upon both the listed and unlisted references, as well as other art that may become known and/or relevant during the course of this or related litigation.

The attached exhibits provide detailed claim charts for the Asserted Patents. The claim charts show where each claim limitation may be found in the particular reference being charted. For those references for which detailed claim charts are not provided in the aforementioned exhibits, those additional prior art references are otherwise pertinent to the invalidity of the Asserted Patents, either alone or in combination with other references. At this time, Defendant may not provide claim charts for each of these additional references, for any of a variety of reasons, such as: because the references are cited in conjunction with primary references for which charts have already been provided and are cited therein, because the references have similar disclosure to the prior art references for which invalidity charts have been provided, because the references may be used to show the state of the art, and/or because Defendant's investigation of the references is ongoing. Defendant reserves the right to rely on the uncharted references, for example, to address claim construction, findings regarding the priority date of the claims, and/or positions that Plaintiff or expert witness(es) may take in the future concerning infringement and/or invalidity issues.

Defendant also incorporates as if fully set forth herein the complete file history for the Asserted Patents, as well as any prior art or supporting documents cited therein.

Defendant not only relies upon the prior art disclosed herein, but also rely on any commercial embodiments and accompanying literature of the various assignees that correspond to the respective disclosures found within the prior art disclosed herein. The assignees' various and respective commercial embodiments and/or corresponding literature anticipate and/or render obvious the claims of the Asserted Patents for at least the reasons disclosed in these Invalidity Contentions and claim charts, as well as for other independent reasons found within the commercial embodiments and corresponding literature. Defendant also reserves the right to rely

on related patents, published applications, foreign patents or publications, and other patent documents as necessary to establish prior art status or clarify the disclosures cited.

Defendant reserves the right to revise its claim charts to rely on any of these references to prove the invalidity of the claims of the Asserted Patents in a manner consistent with the Federal Rules of Civil Procedure and this Court's Orders.

B. Summary of Motivation for Combining Identified Prior Art

Should any prior art charted in the accompanying exhibits be deemed not to disclose, explicitly or inherently, any limitation of a claim, Defendant asserts that any such difference between that prior art and the corresponding claim would have been obvious to one of ordinary skill in the art. For example, each of the Asserted Claims are obvious over the items of prior art identified below in combination with the knowledge of a person of ordinary skill in the art. The knowledge of a person of ordinary skill in the art is demonstrated by, but not limited to, the full list of references in these contentions and the prior art produced along with Defendant's contentions.

Additionally, consistent with the following summary, a person of skill in the art would have many motivations to combine any of the identified prior art references. As the United States Supreme Court held in *KSR Int'l Co. v. Teleflex Inc.*, "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." 550 U.S. 398, 416 (2007). The Supreme Court further held that, "[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, §103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual

application is beyond his or her skill . . . ." *Id*. at 417. Moreover, "[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. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense." *Id.* at 421.

Here, one of ordinary skill in the art would have been motivated to combine known prior art solutions demonstrated in the prior art identified below. These motivations apply throughout each of the combinations specifically identified below and in the additional identified combinations in the claim charts.

First, one of skill in the art would also have been motivated to combine related references. For example, one of skill in the art would have been motivated to combine different references that were authored by employees of the same company or assigned to the same assignee and related to the same subject matter, particularly when that assignee was well-known to have experience and knowledge in the design and development of computer architectures and the patents are directed to improvements in the company's products. So, for example, for such companies one of skill in the art would have been motivated to look at the various patents assigned to the companies, as well as articles written about their products, and to combine the approaches taken in those patents and articles for such products. Additionally, one of ordinary skill in the art would have been motivated to combine references from the same company that relate to various generations of the systems that were developed, made and sold by that same company. Further, one of skill in the art would have been motivated to combine different references from systems that were known to be related or subject to collaboration by different companies or individuals. Finally, one of skill in the art would have been motivated to combine different references that were authored,

developed, or invented by the same individual(s) related to the same subject matter. The common inventor/author/architect references themselves demonstrate that they relate to continued work in a common field of effort and continued related developments in that field. One of skill in the art would, therefore, combine the references related to each individual.

Second, one of skill in the art would have been motivated to combine any references that expressly refer to each other or incorporate each other by reference. For example, one of skill in the art would have been motivated to combine different references from articles or papers that were known to be related and/or referenced within another related article or paper. So, for example, it would have been obvious to combine a paper referenced in an article with the paper that references the article. Similarly, the person of ordinary skill in the art would also have been motivated to combine patents with other references that patent incorporates by reference.

Third, one of skill would have been motivated to combine each of the prior art references identified below because such combinations reflect known methods that can be combined to yield predictable results; known techniques that work in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to try combining the prior art references identified below because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based upon predictable design incentives and/or market forces either in the same field or a different one.

Fourth, as described in Sections D–I below, one of ordinary skill in the art would have been specifically motivated to combine each of the prior art references identified below for each of the Asserted Patents.

Any reference or combination of references that anticipates or makes obvious an independent claim also makes obvious any claim dependent on that independent claim because every limitation of each dependent claim was known by a person of ordinary skill at the time of the alleged invention—as reflected, *e.g.*, by the prior art references identified below—and it would have been obvious to combine those known elements with the independent claim at least as a matter of common sense and routine innovation.

To the extent Plaintiff contends that any reference contains multiple distinct embodiments, it would be obvious to combine elements of the distinct embodiments. A person would be motivated to make such a combination at least because the elements are found in the same reference and the reference as a whole is directed to the same topic or topics.

In addition to the specific combinations of prior art and the specific combinations of groups of prior art disclosed, Defendant reserves the right to rely on any other combination of any prior art references disclosed below, including any other combination of any prior art references charted in the attached exhibits. Defendant further reserves the right to rely upon combinations disclosed within the prosecution history of the references cited herein.

C. Secondary Considerations

Notwithstanding the factors and motivations identified above, including the exemplary combinations identified above and in the claim charts of the Exhibits, and notwithstanding the nascent stage of discovery, and subject to the reservation of rights stated above, Defendant contends that an analysis of secondary considerations further supports the view that each of the asserted claims is obvious. Secondary considerations that courts evaluate as objective indicia of obviousness or nonobviousness of an alleged invention include the: (1) commercial success of the claimed subject matter; (2) long felt but unresolved needs; (3) failure of others; (4) teaching away from the claimed subject matter by the prior art; (5) copying or acclamation by others; and (6)

skepticism of experts. *See, e.g.*, *Ruiz v. A.B. Chance Co.*, 357 F.3d 1270, 1274 (Fed. Cir. 2004); *Ecolochem, Inc. v. Southern Cal. Edison Co.*, 227 F.3d 1361, 1379 (Fed. Cir. 2000).

Evidence of simultaneous invention may be considered as a secondary consideration providing indicia of obviousness. *Geo M Martin Co. v. Alliance Machine Sys. Int'l LLC*, 618 F.3d 1294, 1304-05 (Fed. Cir. 2010). Simultaneous invention may be shown by evidence that others independently developed the claimed invention at or near the same time as the inventors. Simultaneous invention is also relevant to the level of ordinary skill in the art. Independently made, simultaneous inventions, made within a comparatively short space of time, are persuasive evidence that the claimed apparatus was the product only of ordinary mechanical or engineering skill." *Id.* at 1304 (internal quotations omitted). Defendant's Invalidity Contentions indicate companies and individuals had developed or were simultaneously developing the features claimed in the Asserted Patents. Defendant reserves the right to rely on any of the prior art references identified below as evidence of simultaneous invention and that the claimed invention is the product of ordinary mechanical or engineering skill.

Plaintiff has not identified any evidence supporting any secondary considerations of non-obviousness. For example, Plaintiff has not identified any evidence that it, or any predecessor in interest of the Asserted Patents, has developed a commercially successful product embodying the claimed subject matter of these patents. Plaintiff has also provided no evidence that the Asserted Patents were directed to long felt, unresolved needs. On the contrary, the Asserted Patents addressed problems that had been handled successfully in the prior art. Additionally, and as outlined herein and in the attached exhibits, numerous prior art references anticipate the Asserted Claims of the Asserted Patents, so failure by others cannot be cited as a secondary consideration in favor of nonobviousness.

Plaintiff also has not presented any evidence to suggest that others in the industry copied or praised the alleged inventions of the Asserted Patents. To the extent that others may have subsequently adopted a similar technique, Defendant asserts that they were in fact using well-known systems that predate the Asserted Patents. At the time of the alleged invention of the Asserted Patents, experts would not have been skeptical of the general approach or idea disclosed therein. The general ideas—e.g., audio-video data transmission and reception—had already been in widespread use for a long time, and none was patentable by the time the applicants filed their patent applications. Experts would have regarded the disclosures and matter claimed in the Asserted Patents as obvious.

Defendant reserves all rights to respond to any secondary considerations of non-obviousness raised by Plaintiff, including by updating, modifying, and/or adding to these Invalidity Contentions. Defendant also reserves the right to affirmatively rely on secondary considerations of obviousness to the extent necessary and appropriate.

D. The ’443 Patent

Plaintiff alleges that Defendant infringe claims 7 and 9 of the ’443 Patent. Defendant contends that these claims (collectively, “the Asserted Claims of the ’443 Patent”) are invalid.

1. Identification of Prior Art

Defendant asserts that at least the prior art listed below, individually or in combination, invalidates the Asserted Claims of the ’443 Patent. Exhibits 443-A through 443-H provide detailed claim charts showing where each claim limitation may be found in certain references listed below, either expressly or inherently as the reference would be understood by a person having ordinary skill in the art. For those references for which detailed claim charts are not provided in Exhibits 443-A through 443-H, those additional prior art references are otherwise pertinent to the invalidity of the ’443 Patent, either alone or in combination with other references.

(i) Prior Art Patents, Patent Applications, and Patent Publications

The following patents, patent applications, and patent application publications are prior art under 35 U.S.C. §§ 102(a), (b), and/or (e).[1]

Patent or Pub. No.	Earliest Priority Date	Filing Date	Publication Date	Statutory Category
US 6,222,983 ("Heo")	1997-20-9	2000-03-15	2001-04-24	102(e)
US 6,141,354 ("Nakatsugawa")	1996-12-8	1997-12-8	2000-10-31	102(e)
US 5,946,298 ("Okuyama")	1995-04-06	1996-04-05	1999-08-31	102(a), 102(e)
US 5,400,305 ("Sadanaka")	1992-7-10	1993-7-8	1995-03-21	102(a), 102(b), 102(e)
US 6,738,561 ("Tanaka")	1997-11-21	1998-11-18	2004-05-18	102(e)
US 6,047,036 ("Schnizlein")	1997-05-02	1997-05-02	2000-04-04	102(a), 102(e)
JPH 08331067 ("Tetsuya")	1995-05-31	1995-05-31	1996-12-13	102(a), 102(b)

(ii) Prior Art Publications

The following publications are prior art under 35 U.S.C. §§ 102(a) and/or (b).

Title	Author/Publisher	Date of Publication	Statutory Category
Digital Audio Compression Standard (AC-3) ("the AC-3 Standard")	Advanced Television Systems Committee	Dec 20, 1995	102(a), 102(b)
("the EBU-AES Digital Audio Interface Engineering Guidelines")	European Broadcasting Union	September 29, 1995	102(a), 102(b)
Digital Audio Coding: Dolby AC-3, The Digital Signal Processing Handbook ("the	Davidson, Grant A./ CRC Press LLC	1999	102(a), 102(b)

[1] Under the America Invents Act ("AIA"), invalidating prior art is defined in 35 U.S.C. § 102(a). However, AIA Section 102(a) was not effective until March 17, 2013. The '443 Patent purports to predate March 17, 2013, and therefore pre-AIA Section 102 (including sub-sections 102(a), (b), (e) and (g)) apply to the prior art identified in these Invalidity Contentions and the attached exhibits.

Title	Author/Publisher	Date of Publication	Statutory Category
Digital Signal Processing Handbook”)			

(iii) Prior Art Systems

The Asserted Claims of the ’443 Patent are invalid under 35 U.S.C. § 102(a) and (b), because it was known by others, publicly used, and on sale in the United States before it was purportedly invented and more than one year before priority date of the Asserted Claim. Additionally, the Asserted Claim is invalid under 35 U.S.C. § 102(g) because any purported invention was made in this country by another who had not abandoned, suppressed, or concealed the purported invention. For example, the foregoing patents and publications are evidence of such prior art systems and inventions.

2. Bases for Anticipation and/or Obviousness

Each prior art reference identified in Exhibits 443-A through 443-H expressly, implicitly, or inherently anticipates and/or renders obvious the Asserted Claims of the ’443 Patent, either alone or in combination with other prior art references (e.g., the references identified in Exhibits 443-A through 443-H or other references identified above) or the knowledge of the person of ordinary skill in the art at the time of the alleged invention. Each of the prior art references included in Exhibits 443-A through 443-H can be combined with any other prior art reference identified in Exhibits 443-A through 443-H, or identified above, to render obvious the Asserted Claims of the ’443 Patent, and the examples of combinations below are intended for emphasis only.[2]

[2] For example, each of the AC-3 Standard, Heo, Nakatsugawa, Okuyama, Sadanaka, Tanaka, Tung, Schnizlein, and Tetsuya may be combined with each other to render obvious the Asserted Claims of the ’443 Patent,

In the table below, Defendant identifies a non-exhaustive list of prior art references that, alone or in combination, anticipate and/or render obvious the Asserted Claims of the ’443 Patent.

Reference(s)	Grounds	Exhibit
Heo	35 U.S.C. §§ 102, 103	443-A
Heo in view of Nakatsugawa	35 U.S.C. §103	443-A
Heo in view of Okuyama	35 U.S.C. §103	443-A
Heo in view of Sadanaka	35 U.S.C. §103	443-A
Heo in view of Tanaka	35 U.S.C. §103	443-A
Heo in view of Tetsuya	35 U.S.C. §103	443-A
Heo in view of Schnizlein	35 U.S.C. §103	443-A
Heo in view of the AC-3 Standard	35 U.S.C. §103	443-A
Heo in view of the EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. §103	443-A
Heo in view of Nakatsugawa, Okuyama, Sadanaka, Tanaka, Tetsuya, Schnizlein, the AC-3 Standard, and/ or the EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. §103	443-A
Nakatsugawa	35 U.S.C. §§ 102, 103	443-B
Nakatsugawa in view of Heo	35 U.S.C. §103	443-B
Nakatsugawa in view of Okuyama	35 U.S.C. §103	443-B
Nakatsugawa in view of Sadanaka	35 U.S.C. §103	443-B
Nakatsugawa in view of Tanaka	35 U.S.C. §103	443-B
Nakatsugawa in view of Tetsuya	35 U.S.C. §103	443-B
Nakatsugawa in view of Schnizlein	35 U.S.C. §103	443-B
Nakatsugawa in view of the AC-3 Standard	35 U.S.C. §103	443-B
Nakatsugawa in view of the EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. §103	443-B
Nakatsugawa in view of Heo, Okuyama, Sadanaka, Tanaka, Tetsuya, Schnizlein, the AC-3 Standard, and/ or the EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. §103	443-B
Okuyama	35 U.S.C. §§ 102, 103	443-C
Okuyama in view of Heo	35 U.S.C. §103	443-C
Okuyama in view of Nakatsugawa	35 U.S.C. §103	443-C
Okuyama in view of Sadanaka	35 U.S.C. §103	443-C
Okuyama in view of Tanaka	35 U.S.C. §103	443-C
Okuyama in view of Tetsuya	35 U.S.C. §103	443-C
Okuyama in view of Schnizlein	35 U.S.C. §103	443-C
Okuyama in view of the AC-3 Standard	35 U.S.C. §103	443-C
Okuyama in view of the EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. §103	443-C
Okuyama in view of Heo, Nakatsugawa, Sadanaka, Tanaka, Tetsuya, Schnizlein, the AC-3 Standard, and/ or	35 U.S.C. §103	443-C

Reference(s)	Grounds	Exhibit
the EBU-AES Digital Audio Interface Engineering Guidelines		
Sadanaka	35 U.S.C. §§ 102, 103	443-D
Sadanaka in view of Heo	35 U.S.C. §103	443-D
Sadanaka in view of Nakatsugawa	35 U.S.C. §103	443-D
Sadanaka in view of Okuyama	35 U.S.C. §103	443-D
Sadanaka in view of Tanaka	35 U.S.C. §103	443-D
Sadanaka in view of Tetsuya	35 U.S.C. §103	443-D
Sadanaka in view of the AC-3 Standard	35 U.S.C. §103	443-D
Sadanaka in view of the EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. §103	443-D
Sadanaka in view of Heo, Nakatsugawa, Okuyama, Tanaka, Tetsuya, the AC-3 Standard, and/ or the EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. §103	443-D
Tanaka	35 U.S.C. §§ 102, 103	443-E
Tanaka in view of Heo	35 U.S.C. §103	443-E
Tanaka in view of Nakatsugawa	35 U.S.C. §103	443-E
Tanaka in view of Okuyama	35 U.S.C. §103	443-E
Tanaka in view of Schnizlein	35 U.S.C. §103	443-E
Tanaka in view of Sadanaka	35 U.S.C. §103	443-E
Tanaka in view of Tetsuya	35 U.S.C. §103	443-E
Tanaka in view of the AC-3 Standard	35 U.S.C. §103	443-E
Tanaka in view of the EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. §103	443-E
Tanaka in view of Heo, Nakatsugawa, Okuyama, Sadanaka, Tetsuya, Schnizlein, the AC-3 Standard, and/ or the EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. §103	443-E
Tetsuya	35 U.S.C. §§ 102, 103	443-F
Tetsuya in view of Heo	35 U.S.C. §103	443-F
Tetsuya in view of Nakatsugawa	35 U.S.C. §103	443-F
Tetsuya in view of Okuyama	35 U.S.C. §103	443-F
Tetsuya in view of Sadanaka	35 U.S.C. §103	443-F
Tetsuya in view of Tanaka	35 U.S.C. §103	443-F
Tetsuya in view of the AC-3 Standard	35 U.S.C. §103	443-F
Tetsuya in view of the EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. §103	443-F
Tetsuya in view of Heo, Nakatsugawa, Okuyama, Sadanaka, Tanaka, the AC-3 Standard, and/ or the EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. §103	443-F
The AC-3 Standard	35 U.S.C. §§ 102, 103	443-G
The AC-3 Standard in view Heo	35 U.S.C. §103	443-G
The AC-3 Standard in view of Nakatsugawa	35 U.S.C. §103	443-G
The AC-3 Standard in view of Okuyama	35 U.S.C. §103	443-G

Reference(s)	Grounds	Exhibit
The AC-3 Standard in view of Sadanaka	35 U.S.C. §103	443-G
The AC-3 Standard in view of Tanaka	35 U.S.C. §103	443-G
The AC-3 Standard in view of Tetsuya	35 U.S.C. §103	443-G
The AC-3 Standard in view of the EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. §103	443-G
The AC-3 Standard in view of Heo, Nakatsugawa, Okuyama, Sadanaka, Tanaka, Tetsuya, and/ or the EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. §103	443-G
The EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. §§ 102, 103	443-H
The EBU-AES Digital Audio Interface Engineering Guidelines in view Heo	35 U.S.C. §103	443-H
The EBU-AES Digital Audio Interface Engineering Guidelines in view of Nakatsugawa	35 U.S.C. §103	443-H
The EBU-AES Digital Audio Interface Engineering Guidelines in view of Okuyama	35 U.S.C. §103	443-H
The EBU-AES Digital Audio Interface Engineering Guidelines in view of Sadanaka	35 U.S.C. §103	443-H
The EBU-AES Digital Audio Interface Engineering Guidelines in view of Tanaka	35 U.S.C. §103	443-H
The EBU-AES Digital Audio Interface Engineering Guidelines in view of the Tetsuya	35 U.S.C. §103	443-H
The EBU-AES Digital Audio Interface Engineering Guidelines in view of the AC-3 Standard	35 U.S.C. §103	443-H
The EBU-AES Digital Audio Interface Engineering Guidelines in view of Heo, Nakatsugawa, Okuyama, Sadanaka, Tanaka, Tetsuya, and/ or the AC-3 Standard	35 U.S.C. §103	443-H

The accompanying claim charts (Exhibits 443-A through 443-H) set forth example bases for anticipation and obviousness, identifying where each reference discloses, alone or in combination with other references, each limitation of the Asserted Claims of the ’443 Patent on a limitation-by-limitation basis. Defendant’s claim charts are exemplary and not intended to be exhaustive.

(i) Obviousness Combinations

Subject to Defendant's reservation of rights, Defendant contends that all of the prior art references, as identified above and described in the charts attached as Exhibits 443-A through 443-H, by themselves anticipate the Asserted Claims of the '443 Patent in accordance with 35 U.S.C. § 102 and/or render the Asserted Claims of the '443 Patent obvious under 35 U.S.C. § 103, as more specifically noted in the attached charts.

The cited portions of the prior art references are examples and 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 a cited prior art reference is deemed not to anticipate or render obvious a claim as noted in the attached charts for failing to teach or suggest one or more limitations of that claim, that claim would nonetheless have been obvious to one of ordinary skill in the art at the time of the invention by the combination of the cited prior art reference with one or more other prior art references and/or common knowledge disclosing the missing claim limitations. For example, any of the references listed above, to the extent it does not explicitly or inherently disclose any limitation, could be combined with any one or more of the other references listed above which discloses that limitation.

Defendant reserves the right to supplement the obviousness arguments using any references listed above, or any references that may become known to Defendant during the course of discovery. Further, the suggested obviousness combinations are in addition to Defendant's anticipation contentions and are not to be construed to suggest that any reference included in the combinations is not anticipatory on its own.

(ii) Motivation to Combine and Reasonable Expectation Of Success

With respect to the '443 Patent, the prior art identified above non-exhaustively illustrates the scope and content of the prior art. As detailed in claim charts 443-A through 443-H, the prior

art included each limitation recited in the Asserted Claims of the ’443 Patent. To the extent a cited prior art reference is deemed not to anticipate a claim, the only difference between the claimed invention and the prior art is the lack of actual combination of the elements in a single prior art reference. However, for at least the reasons discussed above and the additional reasons discussed below, a Person of Ordinary Skill in the Art (“POSITA”) would have been motivated to combine each of the above prior art references. A POSITA in the art pertaining to the ’443 Patent at the relevant time would have been someone with either (i) a Master of Science in Electrical Engineering, or an equivalent field, or (ii) a Bachelor of Science in Electrical Engineering or an equivalent field as well as at least two years of experience working in the field of audio transmissions. A more advanced degree would require less work experience.

A POSITA would have numerous motivations to combine each of the above-referenced prior art. For example, as the United States Supreme Court held in *KSR*, “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” 550 U.S. at 416. The Supreme Court further held that, “[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. . . .” *Id.* at 417. Accordingly, a person of skill in the art would have been motivated to combine or adapt known or familiar methods in the art.

The combinations of the prior art references identified above would have been obvious in view of: (1) the knowledge of persons of ordinary skill in the art; (2) the express, implied and inherent teachings of the prior art, or the interrelated teachings of multiple prior art references; (3) the nature of the problem being solved; (4) the fact that they are combinations of known methods to yield predictable results; (5) the fact that they involve a simple substitution of one known, equivalent element for another to obtain predictable results; (6) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces; (7) the existence of a known need or problem in the field of endeavor at the time of the invention(s); and/or (8) a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to try combining the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. Furthermore, the combination of the prior art references identified above would have been obvious because the combination represents the known potential options with a reasonable expectation of success.

Indeed, to the extent the prior art references identified herein do not anticipate the Asserted Claim, the limitations of the Asserted Claim are merely obvious variations of the systems and methods disclosed in the various prior art references. As discussed below and in the prior art references identified in Exhibits 443-A through 443-H, the Asserted Claim includes only well-known, conventional technologies prior to the ’443 Patent. The prior art identified herein and in Exhibits 443-A through 443-H reflects the common knowledge and state of the art prior to the Asserted Patents. The ’443 Patent does not purport to have invented any of these technologies; rather, the ’443 Patent simply tacked on these conventional prior art approaches to conventional

and generic known prior techniques. As such, the Asserted Claims of the ’443 Patent merely incorporate the knowledge of a POSITA. The mere amalgamation of such conventional technologies here is not inventive—it is simply combining or substituting well-known, conventional prior art elements according to known methods to yield predictable results.

For example, a person having ordinary skill in the art would have been motivated to combine the prior art identified in Exhibits 443-A through 443-H, and would have held a reasonable expectation of success in doing so, based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons having ordinary skill in the art. Each reference in Exhibits 443-A through 443-H discloses methods and systems for transmission of data, including but not limited to video data, over a serial link. The references identified in Exhibits 443-A through 443-H are analogous prior art to the subject matter of the Asserted Claims and are proper to combine. Because these prior art references exist within a single field of art—such as, for example, audio data transmission—particularly one in which individuals in the field often shared and/or collaborated on their work—for example, given the standardization of various transmission mechanisms in the industry—it would have been obvious for a POSITA to look from one piece of prior art to another to find any missing functionality they desired to implement, or to replace functionality in one prior art reference for that described in another reference. Therefore, these references provide interrelated teachings and one of ordinary skill would look to the concepts in any of these references when seeking to solve the problems purportedly addressed by the ’443 patent.

Combining the prior art references identified herein and in Exhibits 443-A through 443-H, which address similar problems as explained above, would have been obvious and straightforward to a POSITA. *First*, the combinations represent no more than the use of known techniques

according to known methods in the same ways to yield predictable results. For example, the references generally address the same field of audio data transmission, and a POSITA would be motivated by such obvious considerations as enhancing the control and operation of audio data transmission at the claimed time of invention. *Second*, the references themselves identify the known problems and provide known solutions to address those problems in the field. Indeed, the references identified herein and in Exhibits 443-A through 443-G demonstrate that there was, at the time of the alleged invention, a finite number of identified, predictable solutions for enhancing the reliability and operation of serial data transmissions that persons of ordinary skill in the art would have known how to successfully combine, making the claimed invention obvious. *Third*, a POSITA would appreciate that the combinations improve the systems in the prior art to transmit audio data. *Fourth*, because the problems and solutions were known in the field, the particular arrangements and combinations of references would yield predictable results. *Fifth*, a number of the references themselves provide express motivations that would have led a person of ordinary skill to their combination.

Below, Defendant has provided several additional examples of the motivations that a POSITA would have had to combine certain of the prior art references in Exhibits 433-A through 443-H. The inclusion of certain example combinations herein does not exclude other combinations based on the claim charts attached hereto, as there are many possible combinations of the references listed herein, and it is not practical, particularly at this early stage prior to further factual investigation and claim construction proceedings, to identify and list all potentially relevant combinations. Instead, in many instances where a particular contention calls for, or requires, combining references, any one of a number of references can be combined.

As one example, methods and apparatus for digitally transferring audio data and audio-related information were well-known and within the skill of POSITAs at the time of the alleged invention. *See, e.g.*, Heo, Nakatsugawa, Okuyama, Sadanaka, Tetsuya, Tanaka, the AC-3 Standard, and the EBU-AES Digital Audio Interface Engineering Guidelines. For example, the AC-3 Standard discloses the transmission of "digital audio signals" and "digital information needed to accurately reproduce the original pulse code modulation (PCM) samples." The AC-3 Standard, 2. The '443 patent also concedes that "[c]onventional methods for digitally transferring audio data and audio related information" based on international standards were already being used "in a wide range of digital data transfer applications." '443 Patent, 1:21-26. These methods and systems included techniques for transferring audio data and audio-related information were disclosed by at least Heo, Nakatsugawa, Okuyama, Sadanaka, Tetsuya, Tanaka, the AC-3 Standard, and the EBU-AES Digital Audio Interface Engineering Guidelines. *See, e.g.*, Exs. 443-A through 443-H, at claim elements 7.1, 7.2, 7.3. A POSITA would have been motivated to combine these references with each other and other references disclosing digitally transferring audio data and audio-related information, including references disclosing decoding or analyzing monitor information included with audio data to determine whether the audio data is capable of being properly reproduced, in order to prevent reproduction of incomplete, erroneous, or otherwise low-quality audio signals. A POSITA would have a reasonable expectation of success with combining these references because the references already describe application of similar or the same techniques for transferring audio data and audio-related information and would use known techniques to include monitor information in the audio-related information to prevent reproduction of incomplete audio signals, such as muting the incomplete audio, in predictable ways.

As a further example, methods of transmitting audio data and audio related information were well-known and within the skill of POSITAs at the time of the alleged invention. *See, e.g.,* Heo, Nakatsugawa, Okuyama, Sadanaka, Tetsuya, Tanaka, the AC-3 Standard, and the EBU-AES Digital Audio Interface Engineering Guidelines. The ’443 Patent itself concedes that “[c]onventional methods for digitally transferring audio and audio-related data” existed at the time of the alleged invention. ’224 patent, 1:19-20. These transfer methods are disclosed by at least Heo, Nakatsugawa, Okuyama, Sadanaka, Tetsuya, Tanaka, the AC-3 Standard, and the EBU-AES Digital Audio Interface Engineering Guidelines. *See, e.g.,* Exs. 443-A through 443-H, claim element 7.1. A POSITA would have been motivated to combine these transfer methods with references disclosing transmission of audio data because using a transmitter to transfer audio data is a well-known and frequently used concept that is widely implemented in the prior art.

As a further example, methods of receiving audio data and audio related information were well-known and within the skill of POSITAs at the time of the alleged invention. *See, e.g.,* Heo, Nakatsugawa, Okuyama, Sadanaka, Tetsuya, Tanaka, the AC-3 Standard, and the EBU-AES Digital Audio Interface Engineering Guidelines. The ’443 Patent itself concedes that “[c]onventional methods for digitally transferring audio and audio-related data” existed at the time of the alleged invention. ’224 patent, 1:19-20. These transfer methods are disclosed by at least Heo, Nakatsugawa, Okuyama, Sadanaka, Tetsuya, Tanaka, the AC-3 Standard, and the EBU-AES Digital Audio Interface Engineering Guidelines. *See, e.g.,* Exs. 443-A through 443-H, claim element 7.2. A POSITA would have been motivated to combine these transfer methods with references disclosing reception of audio data because using a receiver to receive audio data is a well-known and frequently used concept that is widely implemented in the prior art.

As a further example, audio-related information including monitor information indicating requirements for uninterrupted audio reproduction was well known at the time of the alleged invention. *See, e.g.,* Heo, Nakatsugawa, Okuyama, Sadanaka, Tetsuya, Tanaka, the AC-3 Standard, and the EBU-AES Digital Audio Interface Engineering Guidelines. The ’443 patent itself recognizes that it was known that under “sampling conversion conditions, the sampling frequency of the transferred audio data differs from that of the original audio data,” and thus that it would have been obvious to include audio-related information such as sampling frequency or similar information with transmission of audio data to prevent interruptions in the reproduction of the audio. This could include the audio-related information indicating other requirements for uninterrupted audio reproduction, as disclosed by at least Heo, Nakatsugawa, Okuyama, Sadanaka, Tetsuya, Tanaka, the AC-3 Standard, and the EBU-AES Digital Audio Interface Engineering Guidelines. *See, e.g.,* Exs. 443-A through 443-H at claim element 7.3. A POSITA would have been motivated to combine these references with each other because they teach similar techniques of monitoring audio-related information to prevent incomplete or interrupted reproduction of audio. A POSITA would have a reasonable expectation of success with combining these references because the references teach using the same or similar audio-related information, the same or methods and techniques for using audio-related information, and including such audio-related information in audio data transmission improved reception, coordination among devices, and audio quality.

As a further example, muting audio data that is not capable of being monitored was well known at the time of the alleged invention. *See, e.g.,* Heo, Sadanaka, Schnizlein, Tanaka, Tetsuya, the AC-3 Standard, and the EBU-AES Digital Audio Interface Engineering Guidelines; Exs. 443-A through 443-H. A POSITA would have been motivated to combine these references teaching

this technique of muting audio not capable of being monitored with each other and other references disclosing receiving audio-related information including monitor information indicating that audio is not capable of being monitored because it would prevent audible reproduction of interrupted or otherwise low-quality audio data. A POSITA would have a reasonable expectation for success with combining these references because muting audio was a well-known and conventional way of preventing audible reproduction of audio data.

As a further example, a POSITA would be motivated to combine Okuyama with Schnizlein. A POSITA would be motivated to combine these references because Schnizlein discloses muting audio data experiencing severe conditions, high bit errors, or temporary loss of signal similar to the transfer rate information disclosed in Schnizlein and Okuyama. Schnizlein, 1:32-54; Okuyama, 11:32-49. A POSITA would recognize that the muting step in Schnizlein would be useful in preventing the audible reproduction of interrupted audio data, and accordingly would be motivated to combine Schnizlein with Okuyama to improve audio quality. A POSITA would have a reasonable expectation of success with combining these references because muting audio was a well-known and conventional way to prevent unwanted reproduction of audio signals. A POSITA would have a reasonable expectation for success with combining these references because muting audio was a well-known and conventional way of preventing audible reproduction of audio data.

As a further example, a POSITA would be motivated to combine the AC-3 Standard and Nakatsugawa with the EBU-AES Digital Audio Interface Engineering Guidelines. A POSITA would have been motivated to combine these references because the AC-3 Standard, the EBU-AES Digital Audio Interface Engineering Guidelines, and Nakatsugawa each discloses a “validity” bit or flag included in the audio-related information. AC-3 Standard, 119; Nakatsugawa, Fig. 5;

The EBU-AES Digital Audio Interface Engineering Guidelines, 27-28. The EBU-AES Digital Audio Interface Engineering Guidelines discloses a "Validity, V, bit in the interface [that] gives a warning that an audio sample is not 'suitable for conversion to an analogue audio signal" and that muting the audio occurs when the validity bit is set to "1". The EBU-AES Digital Audio Interface Engineering Guidelines, 27-28. A POSITA would have a reasonable expectation of success with combining these references because muting audio was a well-known and conventional way of preventing audible reproduction of audio data.

Much of the art identified above and in the attached Exhibits reflects common knowledge and the state of the art prior to the filing date of the '443 Patent and/or at the time the alleged invention was made. In many instances where a particular contention calls for, or requires, combining references, any one of a number of references can be combined. The inclusion of certain example combinations herein does not exclude other combinations based on the claim charts attached hereto, as there are many possible combinations of the references listed herein, and it is not practical, particularly at this early stage prior to further factual investigation and claim construction proceedings, to identify and list all potentially relevant combinations.

E. The '224 Patent

Plaintiff alleges that Defendant infringe claims 3 and 5 of the '224 Patent. Defendant contends that these claims (collectively, "the Asserted Claims of the '224 Patent") are invalid.

1. Identification of Prior Art

Defendant asserts that at least the prior art listed below, individually or in combination, invalidates the Asserted Claims of the '224 Patent. Exhibits 224-A through 224-F provide detailed claim charts showing where each claim limitation may be found in certain references listed below, either expressly or inherently in the larger context of the passage, or inherently as the reference as a whole would be understood by a person having ordinary skill in the art. For those references for

which detailed claim charts are not provided in Exhibits 224-A through 224-F, those additional prior art references are otherwise pertinent to the invalidity of the ’224 Patent, either alone or in combination with other references.

(i) Prior Art Patents, Patent Applications, and Patent Publications

The following patents, patent applications, and patent application publications are prior art under 35 U.S.C. §§ 102(a), (b), and/or (e).[3]

Patent or Pub. No.	Earliest Priority Date	Filing Date	Publication Date	Statutory Category
US 6,141,354 (“Nakatsugawa”)	1996-12-8	1997-12-8	2000-10-31	102(e)
US 5,946,298 (“Okuyama”)	1995-04-06	1996-04-05	1999-08-31	102(a), 102(e)
US 5,400,305 (“Sadanaka”)	1992-7-10	1993-7-8	1995-03-21	102(a), 102(b), 102(e)
US 6,047,036 (“Schnizlein”)	1997-05-02	1997-05-02	2000-04-04	102(a), 102(e)
JPH 08331067 (“Tetsuya”)	1995-05-31	1995-05-31	1996-12-13	102(a), 102(b)

(ii) Prior Art Publications

The following publications are prior art under 35 U.S.C. §§ 102(a) and/or (b).

Title	Author/Publisher	Date of Publication	Statutory Category
Digital Audio Compression Standard (AC-3) (“the AC-3 Standard”)	Advanced Television Systems Committee	Dec 20, 1995	102(a), 102(b)
(“the EBU-AES Digital Audio Interface Engineering Guidelines”)	European Broadcasting Union	September 29, 1995	102(a), 102(b)
Digital Audio Coding: Dolby AC-3, The Digital Signal	Davidson, Grant A./ CRC Press LLC	1999	102(a), 102(b)

[3] Under the America Invents Act (“AIA”), invalidating prior art is defined in 35 U.S.C. § 102(a). However, AIA Section 102(a) was not effective until March 17, 2013. The ’224 Patent purports to predate March 17, 2013, and therefore pre-AIA Section 102 (including sub-sections 102(a), (b), (e) and (g)) apply to the prior art identified in these Invalidity Contentions and the attached exhibits.

Title	Author/Publisher	Date of Publication	Statutory Category
Processing Handbook ("the Digital Signal Processing Handbook")			

(iii) Prior Art Systems

The Asserted Claims of the '224 Patent are invalid for public use or knowledge or sales or offers for sale of products and services that anticipate or render obvious the asserted claim under 35 U.S.C. § 102(a) or (b), or the purported invention of the claims was made in this country by another inventor who had not abandoned, suppressed, or concealed it under 35 U.S.C. § 102(g). On information and belief, the foregoing patents and publications are evidence of such prior art systems and inventions.

2. Bases for Anticipation and/or Obviousness

Each prior art reference identified in Exhibits 224-A through 224-F expressly, implicitly, or inherently anticipates and/or renders obvious the Asserted Claims of the '224 Patent, either alone or in combination with other prior art references (specifically, the references disclosed in Exhibits 224-A through 224-F or other references identified above) or the knowledge of those of ordinary skill in the art at the time of the alleged invention. Each of the prior art references included in Exhibits 224-A through 224-F can be combined with any other prior art reference in Exhibits 224-A through 224-F, or identified above, to render obvious the Asserted Claims of the '224 Patent, and the examples of combinations below are intended for emphasis only.

In the table below, Defendant identifies a non-exhaustive list of prior art references that, alone or in combination, anticipate and/or render obvious the Asserted Claims.

Reference(s)	Grounds	Exhibit
Nakatsugawa	35 U.S.C. §§ 102, 103	224-A
Nakatsugawa in view of Okuyama	35 U.S.C. § 103	224-A
Nakatsugawa in view of Sadanaka	35 U.S.C. § 103	224-A

Reference(s)	Grounds	Exhibit
Nakatsugawa in view of Schnizlein	35 U.S.C. § 103	224-A
Nakatsugawa in view of Tetsuya	35 U.S.C. § 103	224-A
Nakatsugawa in view of the AC-3 Standard	35 U.S.C. § 103	224-A
Nakatsugawa in view of the EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. § 103	224-A
Nakatsugawa in view of Okuyama, Sadanaka, Schnizlein, Tetsuya, the AC-3 Standard, and/ or the EBU-AES Digital Audio Interface Guidelines	35 U.S.C. § 103	224-A
Okuyama	35 U.S.C. §§ 102, 103	224-B
Okuyama in view of Nakatsugawa	35 U.S.C. § 103	224-B
Okuyama in view of Sadanaka	35 U.S.C. § 103	224-B
Okuyama in view of Schnizlein	35 U.S.C. § 103	224-B
Okuyama in view of Tetsuya	35 U.S.C. § 103	224-B
Okuyama in view of the AC-3 Standard	35 U.S.C. § 103	224-B
Okuyama in view of the EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. § 103	224-B
Okuyama in view of Nakatsugawa, Sadanaka, Schnizlein, Tetsuya, the AC-3 Standard, and/ or the EBU-AES Digital Audio Interface Guidelines	35 U.S.C. § 103	224-B
Sadanaka	35 U.S.C. §§ 102, 103	224-C
Sadanaka in view of Nakatsugawa	35 U.S.C. § 103	224-C
Sadanaka in view of Okuyama	35 U.S.C. § 103	224-C
Sadanaka in view of Tetsuya	35 U.S.C. § 103	224-C
Sadanaka in view of the AC-3 Standard	35 U.S.C. § 103	224-C
Sadanaka in view of the EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. § 103	224-C
Sadanaka in view of Nakatsugawa, Okuyama, Tetsuya, the AC-3 Standard, and/ or the EBU-AES Digital Audio Interface Guidelines	35 U.S.C. § 103	224-C
Tetsuya	35 U.S.C. §§ 102, 103	224-D
Tetsuya in view of Nakatsugawa	35 U.S.C. § 103	224-D
Tetsuya in view of Okuyama	35 U.S.C. § 103	224-D
Tetsuya in view of Sadanaka	35 U.S.C. § 103	224-D
Tetsuya in view of the AC-3 Standard	35 U.S.C. § 103	224-D
Tetsuya in view of the EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. § 103	224-D
Tetsuya in view of Nakatsugawa, Okuyama, Sadanaka, the AC-3 Standard, and/ or the EBU-AES Digital Audio Interface Guidelines	35 U.S.C. § 103	224-D
The AC-3 Standard	35 U.S.C. §§ 102, 103	224-E
The AC-3 Standard in view of Nakatsugawa	35 U.S.C. § 103	224-E
The AC-3 Standard in view of Okuyama	35 U.S.C. § 103	224-E
The AC-3 Standard in view of Sadanaka	35 U.S.C. § 103	224-E
The AC-3 Standard in view of the Tetsuya	35 U.S.C. § 103	224-E

Reference(s)	Grounds	Exhibit
The AC-3 Standard in view of the EBU-AES Digital Audio Interface Engineering Guidelines	35 U.S.C. § 103	224-E
The AC-3 Standard in view of Nakatsugawa, Okuyama, Sadanaka, Tetsuya, and/ or the EBU-AES Digital Audio Interface Guidelines	35 U.S.C. § 103	224-E
The EBU-AES Digital Audio Interface Guidelines	35 U.S.C. §§ 102, 103	224-F
The EBU-AES Digital Audio Interface Guidelines in view of Nakatsugawa	35 U.S.C. § 103	224-F
The EBU-AES Digital Audio Interface Guidelines in view of Okuyama	35 U.S.C. § 103	224-F
The EBU-AES Digital Audio Interface Guidelines in view of Sadanaka	35 U.S.C. § 103	224-F
The EBU-AES Digital Audio Interface Guidelines in view of the Tetsuya	35 U.S.C. § 103	224-F
The EBU-AES Digital Audio Interface Guidelines in view of the AC-3 Standard	35 U.S.C. § 103	224-F
The EBU-AES Digital Audio Interface Guidelines in view of Nakatsugawa, Okuyama, Sadanaka, Tetsuya, and the AC-3 Standard	35 U.S.C. § 103	224-F

The accompanying claim charts (Exhibits 224-A through 224-F) set forth example bases for anticipation and obviousness, identifying where each reference discloses, alone or in combination with other references, each limitation of the Asserted Claims of the ’224 Patent on a limitation-by-limitation basis. Defendant’s claim charts are exemplary and not intended to be exhaustive.

(i) Obviousness Combinations

Subject to Defendant’s reservation of rights, Defendant contends that all of the prior art references, as identified above and described in the charts attached as Exhibits 224-A through 224-F, by themselves anticipate the asserted claim in accordance with 35 U.S.C. § 102 and/or render the Asserted Claims of the ’224 Patent obvious under 35 U.S.C. § 103, as more specifically noted in the attached charts.

The cited portions of the prior art references are examples and 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 a cited prior art reference is deemed not to anticipate or render obvious a claim as noted in the attached charts for failing to teach or suggest one or more limitations of that claim, that claim would nonetheless have been obvious to one of ordinary skill in the art at the time of the invention by the combination of the cited prior art reference with one or more other prior art references and/or common knowledge disclosing the missing claim limitations. For example, any of the references listed above, to the extent it does not explicitly or inherently disclose any limitation, could be combined with any one or more of the other references listed above which discloses that limitation.

Defendant reserves the right to supplement the obviousness arguments using any references listed above, or any references that may become known to Defendant during the course of discovery. Further, the suggested obviousness combinations are in addition to Defendant's anticipation contentions and are not to be construed to suggest that any reference included in the combinations is not anticipatory on its own.

(ii) Motivation to Combine and Reasonable Expectation of Success

With respect to the '224 Patent, the prior art identified above non-exhaustively illustrates the scope and content of the prior art. As detailed in claim charts 224-A through 224-F, the prior art included each limitation recited in the Asserted Claims of the '224 Patent. To the extent a cited prior art reference is deemed not to anticipate a claim, the only difference between the claimed invention and the prior art is the lack of actual combination of the elements in a single prior art reference. However, for at least the reasons discussed above and the additional reasons discussed below, a Person of Ordinary Skill in the Art ("POSITA") would have been motivated to combine each of the above prior art references. A POSITA in the art pertaining to the '224 Patent at the relevant time would have been someone with either (i) a Master of Science in Electrical Engineering, or an equivalent field, or (ii) a Bachelor of Science in Electrical Engineering or an

equivalent field as well as at least two years of experience working in the field of audio transmissions. A more advanced degree would require less work experience.

A POSITA would have numerous motivations to combine each of the above-referenced prior art. For example, as the United States Supreme Court held in *KSR*, "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." 550 U.S. at 416. The Supreme Court further held that, "[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. . . ." *Id.* at 417. Accordingly, a person of skill in the art would have been motivated to combine or adapt known or familiar methods in the art.

The combinations of the prior art references identified above would have been obvious in view of: (1) the knowledge of persons of ordinary skill in the art; (2) the express, implied and inherent teachings of the prior art, or the interrelated teachings of multiple prior art references; (3) the nature of the problem being solved; (4) the fact that they are combinations of known methods to yield predictable results; (5) the fact that they involve a simple substitution of one known, equivalent element for another to obtain predictable results; (6) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces; (7) the existence of a known need or problem in the field of endeavor at the time of the invention(s); and/or (8) a teaching, suggestion, or motivation in the

prior art generally. In addition, it would have been obvious to try combining the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. Furthermore, the combination of the prior art references identified above would have been obvious because the combination represents the known potential options with a reasonable expectation of success.

Indeed, to the extent the prior art references identified herein do not anticipate the Asserted Claim, the limitations of the Asserted Claim are merely obvious variations of the systems and methods disclosed in the various prior art references. As discussed below and in the prior art references identified in Exhibits 224-A through 224-F, the Asserted Claim includes only well-known, conventional technologies prior to the ’224 Patent. The prior art identified herein and in Exhibits 224-A through 224-F reflects the common knowledge and state of the art prior to the Asserted Patents. The ’224 Patent does not purport to have invented any of these technologies; rather, the ’224 Patent simply tacked on these conventional prior art approaches to conventional and generic known prior techniques. As such, the Asserted Claims of the ’224 Patent merely incorporate the knowledge of a POSITA. The mere amalgamation of such conventional technologies here is not inventive—it is simply combining or substituting well-known, conventional prior art elements according to known methods to yield predictable results.

For example, a person having ordinary skill in the art would have been motivated to combine the prior art identified in Exhibits 224-A through 224-F, and would have held a reasonable expectation of success in doing so, based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons having ordinary skill in the art. Each reference in Exhibits 224-A through 224-F discloses methods and systems for transmission of data, including

but not limited to video data, over a serial link. The references identified in Exhibits 224-A through 224-F are analogous prior art to the subject matter of the Asserted Claims and are proper to combine. Because these prior art references exist within a single field of art—such as, for example, audio data transmission—particularly one in which individuals in the field often shared and/or collaborated on their work—for example, given the standardization of various transmission mechanisms in the industry—it would have been obvious for a POSITA to look from one piece of prior art to another to find any missing functionality they desired to implement, or to replace functionality in one prior art reference for that described in another reference. Therefore, these references provide interrelated teachings and one of ordinary skill would look to the concepts in any of these references when seeking to solve the problems purportedly addressed by the '224 patent.

Combining the prior art references identified herein and in Exhibits 224-A through 224-F, which address similar problems as explained above, would have been obvious and straightforward to a POSITA. *First*, the combinations represent no more than the use of known techniques according to known methods in the same ways to yield predictable results. For example, the references generally address the same field of audio data transmission, and a POSITA would be motivated by such obvious considerations as enhancing the control and operation of audio data transmission at the claimed time of invention. *Second*, the references themselves identify the known problems and provide known solutions to address those problems in the field. Indeed, the references identified herein and in Exhibits 224-A through 224-F demonstrate that there was, at the time of the alleged invention, a finite number of identified, predictable solutions for enhancing the reliability and operation of serial data transmissions that persons of ordinary skill in the art would have known how to successfully combine, making the claimed invention obvious. *Third*, a

POSITA would appreciate that the combinations improve the systems in the prior art to transmit audio data. *Fourth*, because the problems and solutions were known in the field, the particular arrangements and combinations of references would yield predictable results. *Fifth*, a number of the references themselves provide express motivations that would have led a person of ordinary skill to their combination. For example, the references acknowledge that, reducing interruption and errors when reproducing received audio signals is important.

Below, Defendant has provided several additional examples of the motivations that a POSITA would have had to combine certain of the prior art references in Exhibits 224-A through 224-F. The inclusion of certain example combinations herein does not exclude other combinations based on the claim charts attached hereto, as there are many possible combinations of the references listed herein, and it is not practical, particularly at this early stage prior to further factual investigation and claim construction proceedings, to identify and list all potentially relevant combinations. Instead, in many instances where a particular contention calls for, or requires, combining references, any one of a number of references can be combined.

As one example, methods and apparatus for digitally transferring audio data and audio-related information were well-known and within the skill of POSITAs at the time of the alleged invention. *See, e.g.*, Nakatsugawa, Okuyama, Sadanaka, Tetsuya, the AC-3 Standard, and the EBU-AES Digital Audio Interface Engineering Guidelines. For example, the AC-3 Standard discloses the transmission of "digital audio signals" and "digital information needed to accurately reproduce the original pulse code modulation (PCM) samples." The AC-3 Standard, 2. The '224 patent also concedes that "methods for digitally transferring audio data and audio related information" based on international standards were already being used "in a wide range of digital data transfer applications." '224 Patent, 1:29-35. These methods and systems included techniques

for transferring audio data and audio-related information were disclosed by at least Nakatsugawa, Okuyama, Sadanaka, Tetsuya, the AC-3 Standard, and the EBU-AES Digital Audio Interface Engineering Guidelines. *See, e.g.,* Exs. 224-A through 224-F, at claim elements 3.2, 3.3. A POSITA would have been motivated to combine these references with each other and other references disclosing decoding or analyzing monitor information included in audio data to determine whether the audio data is capable of being properly reproduced in order to prevent reproduction of incomplete, erroneous, or otherwise low-quality audio signals. A POSITA would have a reasonable expectation of success with combining these references because the references already describe application of similar or the same techniques for transferring audio data and audio-related information and would use known techniques to include monitor information in the audio-related information to prevent reproduction of incomplete audio signals, such as muting the incomplete audio, in predictable ways.

As a further example, receivers comprising an analysis section operable to determine whether audio data is capable of being monitored were well-known at the time of the alleged invention. *See, e.g.,* Nakatsugawa, Okuyama, Sadanaka, Tetsuya, the AC-3 Standard, and the EBU-AES Digital Audio Interface Engineering Guidelines. The ’224 patent itself describes “conventional method for transferring audio data and audio-related information” that utilized “external decoder[s].” ’224 patent, 1:29-41. These analysis sections are disclosed by at least Nakatsugawa, Okuyama, Sadanaka, Tetsuya, the AC-3 Standard, and the EBU-AES Digital Audio Interface Engineering Guidelines. *See, e.g.,* Exs. 224-A through 224-F, at claim element 3.1. A POSITA would have been motivated to combine these references disclosing an analysis section with each other because they implement similar systems to ensure that received audio data is reproduced without error or interruption. A POSITA would have a reasonable expectation of

success with combining these references because the analysis section is a well-known, frequently used concept that is widely implemented in the prior art.

As a further example, monitor information indicating requirements for uninterrupted audio reproduction was well known at the time of the alleged invention. *See, e.g.,* Nakatsugawa, Okuyama, Sadanaka, Tetsuya, the AC-3 Standard, and the EBU-AES Digital Audio Interface Engineering Guidelines. The ’224 patent itself recognizes that it was known that under “sampling conversion conditions, the sampling frequency of the transferred audio data differs from that of the original audio data,” and thus that it would have been obvious to include audio-related information such as sampling frequency with transmission of audio data to prevent interruptions in the reproduction of the audio. This could include the audio-related information indicating other requirements for uninterrupted audio reproduction, as disclosed by at least Nakatsugawa, Okuyama, Sadanaka, Tetsuya, the AC-3 Standard, and the EBU-AES Digital Audio Interface Engineering Guidelines. *See, e.g.,* Exs. 224-A through 224-F at claim element 3.2. A POSITA would have been motivated to combine these references with each other because they teach similar techniques of monitoring audio-information to prevent incomplete or interrupted reproduction of audio. A POSITA would have a reasonable expectation of success with combining these references because including such monitor information in audio data transmission would inform the receiver of whether the audio data is capable of being reproduced.

As a further example, muting audio data that is not capable of being monitored was well known at the time of the alleged invention. *See, e.g.,* Sadanaka, Schnizlein, Tetsuya, the AC-3 Standard, and the EBU-AES Digital Audio Interface Engineering Guidelines; Exs. 224-A through 224-F. A POSITA would have been motivated to combine these references teaching this technique of muting audio not capable of being monitored with each other and other references disclosing

receivers that receive monitor information indicating audio is not capable of being monitored because it would prevent audible reproduction of interrupted or otherwise low-quality audio data. A POSITA would have a reasonable expectation for success with combining these references because muting audio was a well-known and conventional way of preventing audible reproduction of audio data.

As a further example, a POSITA would be motivated to combine Okuyama with Schnizlein. A POSITA would be motivated to combine these references because Schnizlein discloses muting audio data experiencing severe conditions or high bit errors, similar to the transfer rate information disclosed in Schnizlein and Okuyama. Schnizlein, 1:32-54; Okuyama, 11:32-49. A POSITA would recognize that the muting step in Schnizlein would be useful in preventing the audible reproduction of interrupted audio data, and accordingly would be motivated to combine Schnizlein with and Okuyama to improve audio quality. A POSITA would have a reasonable expectation of success with combining these references because muting audio was a well-known and conventional way to prevent unwanted reproduction of audio signals. A POSITA would have a reasonable expectation for success with combining these references because muting audio was a well-known and conventional way of preventing audible reproduction of audio data.

As a further example, a POSITA would be motivated to combine the AC-3 Standard and Nakatsugawa with the EBU-AES Digital Audio Interface Engineering Guidelines. A POSITA would have been motivated to combine these references because the AC-3 Standard, the EBU-AES Digital Audio Interface Engineering Guidelines, and Nakatsugawa each discloses a “validity” bit or flag included in the audio-related information. AC-3 Standard, 119; Nakatsugawa, Fig. 5; The EBU-AES Digital Audio Interface Engineering Guidelines, 27-28. The EBU-AES Digital Audio Interface Engineering Guidelines discloses a “Validity, V, bit in the interface [that] gives a

warning that an audio sample is not 'suitable for conversion to an analogue audio signal" and that muting the audio occurs when the validity bit is set to "1". The EBU-AES Digital Audio Interface Engineering Guidelines, 27-28. A POSITA would have a reasonable expectation of success with combining these references because muting audio was a well-known and conventional way of preventing audible reproduction of audio data.

Much of the art identified above and in the attached Exhibits reflects common knowledge and the state of the art prior to the filing date of the '224 Patent and/or at the time the alleged invention was made. In many instances where a particular contention calls for, or requires, combining references, any one of a number of references can be combined. The inclusion of certain example combinations herein does not exclude other combinations based on the claim charts attached hereto, as there are many possible combinations of the references listed herein, and it is not practical, particularly at this early stage prior to further factual investigation and claim construction proceedings, to identify and list all potentially relevant combinations.

F. The '282 Patent

Plaintiff alleges that Defendant infringe claim 1 of the '282 Patent. Defendant contends that this claim ("the Asserted Claim of the '282 Patent") is invalid.

1. Identification of Prior Art

Defendant asserts that at least the prior art listed below, individually or in combination, invalidates the Asserted Claim of the '282 Patent. Exhibits 282-A through 282-H provide detailed claim charts showing where each claim limitation may be found in certain references listed below, either expressly or inherently in the larger context of the passage, or inherently as the reference as a whole would be understood by a person having ordinary skill in the art. For those references for which detailed claim charts are not provided in Exhibits 282-A through 282-H, those additional

prior art references are otherwise pertinent to the invalidity of the ’282 Patent, either alone or in combination with other references.

(i) Prior Art Patents, Patent Applications, and Patent Publications

The following patents, patent applications, and patent application publications are prior art under 35 U.S.C. §§ 102(a), (b), and/or (e).[4]

Patent or Pub. No.	Earliest Priority Date	Filing Date	Publication Date	Statutory Category
US 2003/0079075 (“Asseline”)	10-19-2001	10-19-2001	4-24-2003	102(e)
WO 02/088975 (“McLeod”)	4-27-2001	4-24-2002	11-7-2002	102(e)
WO 2002/044836 (“Zhao”)	11-28-2000	11-16-2001	6-6-2002	102(a), 102(b), 102(e)
US 6,839,413 (“Brock”)	2-22-2000	2-22-2000	1-4-2005	102(e)
US 4,711,976 (“Narjes”)	12-3-1985	12-3-1985	12-8-1987	102(a), 102(b), 102(e)
KR 0164835 B1 (“Ko”)	1-29-1996	1-29-1996	2-1-1999	102(a), 102(b)
US 6,738,823 (“Pierce”)	1-31-2000	1-31-2000	5-18-2004	102(e)
US 6,874,052 (“Delmonico”)	9-29-2000	9-29-2000	3-29-2005	102(e)
US 2002/0178291 (“Senthil”)	3-22-2001	3-22-2001	11-28-2002	102(e)
US 2001/0040631 (“Ewedemi”)	1-3-2001	1-3-2001	11-15-2001	102(a), 102(b), 102(e)
US 5,778,189 (“Kimura”)	1-21-1997	1-21-1997	7-7-1998	102(a), 102(b), 102(e)
US 6,731,201 (“Bailey”)	2-23-2000	2-23-2000	5-4-2004	102(e)
US 6,867,749 (“Il”)	4-23-1999	4-23-1999	3-15-2005	102(e)

[4] Under the America Invents Act (“AIA”), invalidating prior art is defined in 35 U.S.C. § 102(a). However, AIA Section 102(a) was not effective until March 17, 2013. The ’282 Patent purports to predate March 17, 2013, and therefore pre-AIA Section 102 (including sub-sections 102(a), (b), (e) and (g)) apply to the prior art identified in these Invalidity Contentions and the attached exhibits.

(ii) Prior Art Systems

The Asserted Claim of the ’282 Patent is invalid for public use or knowledge or sales or offers for sale of products and services that anticipate or render obvious the asserted claim under 35 U.S.C. § 102(a) or (b), or the purported invention of the claims was made in this country by another inventor who had not abandoned, suppressed, or concealed it under 35 U.S.C. § 102(g). On information and belief, the foregoing patents and publications are evidence of such prior art systems and inventions.

2. Bases for Anticipation and/or Obviousness

Each prior art reference identified in Exhibits 282-A through 282-H expressly, implicitly, or inherently anticipates and/or renders obvious the Asserted Claim of the ’282 Patent, either alone or in combination with other prior art references (specifically, the references disclosed in Exhibits 282-A through 282-H or other references identified above) or the knowledge of those of ordinary skill in the art at the time of the alleged invention. Each of the prior art references included in Exhibits 282-A through 282-H can be combined with any other prior art reference in Exhibits 282-A through 282-H, or identified above, to render obvious the Asserted Claim of the ’282 Patent, and the examples of combinations below are intended for emphasis only.

In the table below, Defendant identifies a non-exhaustive list of prior art references that, alone or in combination, anticipate and/or render obvious the Asserted Claim of the ’282 Patent.

Reference(s)	Grounds	Exhibit
Asseline	35 U.S.C. §§ 102, 103	282-A
Asseline in view of Senthil	35 U.S.C. § 103	282-A
Asseline in view of McLeod	35 U.S.C. § 103	282-A
Asseline in view of Brock	35 U.S.C. § 103	282-A
Asseline in view of Pierce	35 U.S.C. § 103	282-A
Asseline in view of Ewedemi	35 U.S.C. § 103	282-A
Asseline in view of Kimura	35 U.S.C. § 103	282-A
Asseline in view of Bailey	35 U.S.C. § 103	282-A
Asseline in view of Il	35 U.S.C. § 103	282-A

Reference(s)	Grounds	Exhibit
Asseline in view of Narjes	35 U.S.C. § 103	282-A
Asseline in view of Ko	35 U.S.C. § 103	282-A
Asseline in view of Delmonico	35 U.S.C. § 103	282-A
Asseline in view of Zhao	35 U.S.C. § 103	282-A
Asseline in view of Senthil, Ewedemi, Kimura, Bailey, Il, Mcleod, Brock, Narjes, Ko, Delmonico, Zhao, and/or Pierce	35 U.S.C. § 103	282-A
McLeod	35 U.S.C. §§ 102, 103	282-B
McLeod in view of Senthil	35 U.S.C. § 103	282-B
McLeod in view of Asseline	35 U.S.C. § 103	282-B
McLeod in view of Brock	35 U.S.C. § 103	282-B
McLeod in view of Pierce	35 U.S.C. § 103	282-B
McLeod in view of Ewedemi	35 U.S.C. § 103	282-B
McLeod in view of Kimura	35 U.S.C. § 103	282-B
McLeod in view of Bailey	35 U.S.C. § 103	282-B
McLeod in view of Il	35 U.S.C. § 103	282-B
McLeod in view of Narjes	35 U.S.C. § 103	282-B
McLeod in view of Ko	35 U.S.C. § 103	282-B
McLeod in view of Delmonico	35 U.S.C. § 103	282-B
McLeod in view of Zhao	35 U.S.C. § 103	282-B
McLeod in view of Senthil, Ewedemi, Kimura, Bailey, Il, Asseline, Brock, Narjes, Ko, Delmonico, Zhao, and/or Pierce	35 U.S.C. § 103	282-B
Zhao	35 U.S.C. §§ 102, 103	282-C
Zhao in view of Senthil	35 U.S.C. § 103	282-C
Zhao in view of Asseline	35 U.S.C. § 103	282-C
Zhao in view of McLeod	35 U.S.C. § 103	282-C
Zhao in view of Brock	35 U.S.C. § 103	282-C
Zhao in view of Pierce	35 U.S.C. § 103	282-C
Zhao in view of Ewedemi	35 U.S.C. § 103	282-C
Zhao in view of Kimura	35 U.S.C. § 103	282-C
Zhao in view of Bailey	35 U.S.C. § 103	282-C
Zhao in view of Il	35 U.S.C. § 103	282-C
Zhao in view of Narjes	35 U.S.C. § 103	282-C
Zhao in view of Ko	35 U.S.C. § 103	282-C
Zhao in view of Delmonico	35 U.S.C. § 103	282-C
Zhao in view of Senthil, Ewedemi, Kimura, Bailey, Il, Mcleod, Brock, Narjes, Ko, Delmonico, Asseline, and/or Pierce	35 U.S.C. § 103	282-C
Brock	35 U.S.C. §§ 102, 103	282-D
Brock in view of Senthil	35 U.S.C. § 103	282-D
Brock in view of Asseline	35 U.S.C. § 103	282-D
Brock in view of McLeod	35 U.S.C. § 103	282-D

Reference(s)	Grounds	Exhibit
Brock in view of Pierce	35 U.S.C. § 103	282-D
Brock in view of Ewedemi	35 U.S.C. § 103	282-D
Brock in view of Kimura	35 U.S.C. § 103	282-D
Brock in view of Bailey	35 U.S.C. § 103	282-D
Brock in view of Il	35 U.S.C. § 103	282-D
Brock in view of Narjes	35 U.S.C. § 103	282-D
Brock in view of Ko	35 U.S.C. § 103	282-D
Brock in view of Delmonico	35 U.S.C. § 103	282-D
Brock in view of Zhao	35 U.S.C. § 103	282-D
Brock in view of Senthil, Ewedemi, Kimura, Bailey, Il, Mcleod, Asseline, Narjes, Ko, Delmonico, Zhao, and/or Pierce	35 U.S.C. § 103	282-D
Narjes	35 U.S.C. §§ 102, 103	282-E
Narjes in view of Senthil	35 U.S.C. § 103	282-E
Narjes in view of Asseline	35 U.S.C. § 103	282-E
Narjes in view of McLeod	35 U.S.C. § 103	282-E
Narjes in view of Brock	35 U.S.C. § 103	282-E
Narjes in view of Pierce	35 U.S.C. § 103	282-E
Narjes in view of Ewedemi	35 U.S.C. § 103	282-E
Narjes in view of Kimura	35 U.S.C. § 103	282-E
Narjes in view of Bailey	35 U.S.C. § 103	282-E
Narjes in view of Il	35 U.S.C. § 103	282-E
Narjes in view of Ko	35 U.S.C. § 103	282-E
Narjes in view of Delmonico	35 U.S.C. § 103	282-E
Narjes in view of Zhao	35 U.S.C. § 103	282-E
Narjes in view of Senthil, Ewedemi, Kimura, Bailey, Il, Mcleod, Brock, Asseline, Ko, Delmonico, Zhao, and/or Pierce	35 U.S.C. § 103	282-E
Ko	35 U.S.C. §§ 102, 103	282-F
Ko in view of Senthil	35 U.S.C. § 103	282-F
Ko in view of Asseline	35 U.S.C. § 103	282-F
Ko in view of McLeod	35 U.S.C. § 103	282-F
Ko in view of Brock	35 U.S.C. § 103	282-F
Ko in view of Pierce	35 U.S.C. § 103	282-F
Ko in view of Ewedemi	35 U.S.C. § 103	282-F
Ko in view of Kimura	35 U.S.C. § 103	282-F
Ko in view of Bailey	35 U.S.C. § 103	282-F
Ko in view of Il	35 U.S.C. § 103	282-F
Ko in view of Narjes	35 U.S.C. § 103	282-F
Ko in view of Delmonico	35 U.S.C. § 103	282-F
Ko in view of Zhao	35 U.S.C. § 103	282-F

Reference(s)	Grounds	Exhibit
Ko in view of Senthil, Ewedemi, Kimura, Bailey, Il, Mcleod, Brock, Narjes, Asseline, Delmonico, Zhao, and/or Pierce	35 U.S.C. § 103	282-F
Pierce	35 U.S.C. §§ 102, 103	282-G
Pierce in view of Senthil	35 U.S.C. § 103	282-G
Pierce in view of Asseline	35 U.S.C. § 103	282-G
Pierce in view of McLeod	35 U.S.C. § 103	282-G
Pierce in view of Brock	35 U.S.C. § 103	282-G
Pierce in view of Ewedemi	35 U.S.C. § 103	282-G
Pierce in view of Kimura	35 U.S.C. § 103	282-G
Pierce in view of Bailey	35 U.S.C. § 103	282-G
Pierce in view of Il	35 U.S.C. § 103	282-G
Pierce in view of Narjes	35 U.S.C. § 103	282-G
Pierce in view of Ko	35 U.S.C. § 103	282-G
Pierce in view of Delmonico	35 U.S.C. § 103	282-G
Pierce in view of Zhao	35 U.S.C. § 103	282-G
Pierce in view of Senthil, Ewedemi, Kimura, Bailey, Il, Mcleod, Brock, Narjes, Ko, Delmonico, Zhao, and/or Asseline	35 U.S.C. § 103	282-G
Delmonico	35 U.S.C. §§ 102, 103	282-H
Delmonico in view of Senthil	35 U.S.C. § 103	282-H
Delmonico in view of Asseline	35 U.S.C. § 103	282-H
Delmonico in view of McLeod	35 U.S.C. § 103	282-H
Delmonico in view of Brock	35 U.S.C. § 103	282-H
Delmonico in view of Pierce	35 U.S.C. § 103	282-H
Delmonico in view of Ewedemi	35 U.S.C. § 103	282-H
Delmonico in view of Kimura	35 U.S.C. § 103	282-H
Delmonico in view of Bailey	35 U.S.C. § 103	282-H
Delmonico in view of Il	35 U.S.C. § 103	282-H
Delmonico in view of Narjes	35 U.S.C. § 103	282-H
Delmonico in view of Ko	35 U.S.C. § 103	282-H
Delmonico in view of Zhao	35 U.S.C. § 103	282-H
Delmonico in view of Senthil, Ewedemi, Kimura, Bailey, Il, Mcleod, Brock, Narjes, Ko, Asseline, Zhao, and/or Pierce	35 U.S.C. § 103	282-H

The accompanying claim charts (Exhibits 282-A through 282-H) set forth example bases for anticipation and obviousness, identifying where each reference discloses, alone or in combination with other references, each limitation of the Asserted Claim of the ’282 Patent on a

limitation-by-limitation basis. Defendant's claim charts are exemplary and not intended to be exhaustive.

(i) Obviousness Combinations

Subject to Defendant's reservation of rights, Defendant contends that all of the prior art references, as identified above and described in the charts attached as Exhibits 282-A through 282-H, by themselves anticipate the Asserted Claim of the '282 Patent in accordance with 35 U.S.C. § 102 and/or render the Asserted Claim of the '282 Patent obvious under 35 U.S.C. § 103, as more specifically noted in the attached charts.

The cited portions of the prior art references are examples and 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 a cited prior art reference is deemed not to anticipate or render obvious a claim as noted in the attached charts for failing to teach or suggest one or more limitations of that claim, that claim would nonetheless have been obvious to one of ordinary skill in the art at the time of the invention by the combination of the cited prior art reference with one or more other prior art references and/or common knowledge disclosing the missing claim limitations. For example, any of the references listed above, to the extent it does not explicitly or inherently disclose any limitation, could be combined with any one or more of the other references listed above which discloses that limitation.

Defendant reserves the right to supplement the obviousness arguments using any references listed above, or any references that may become known to Defendant during the course of discovery. Further, the suggested obviousness combinations are in addition to Defendant's anticipation contentions and are not to be construed to suggest that any reference included in the combinations is not anticipatory on its own.

(ii) Motivation to Combine

With respect to the Asserted Patents, the prior art identified above demonstrates the scope and content of the prior art. As detailed in claim charts 282-A through 282-H, the prior art included each limitation recited in the Asserted Claim of the '282 Patent. To the extent a cited prior art reference is deemed not to anticipate a claim, the only difference between the claimed invention and the prior art is the lack of actual combination of the elements in a single prior art reference. However, for at least the reasons discussed above and the additional reasons discussed below, a Person of Ordinary Skill in the Art ("POSITA") would have been motivated to combine each of the above prior art references. A POSITA in the art pertaining to the '282 Patent at the relevant time would have been someone with either (i) a Master of Science in Electrical Engineering, or an equivalent field, or (ii) a Bachelor of Science in Electrical Engineering or an equivalent field as well as at least two years of experience in the design of audio-video connectors. A more advanced degree would require less work experience.

A POSITA would have numerous motivations to combine each of the above-referenced prior art. For example, as the United States Supreme Court held in *KSR*, "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." 550 U.S. at 416. The Supreme Court further held that, "[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. . . ." *Id.* at 417. Accordingly, a person of

skill in the art would have been motivated to combine or adapt known or familiar methods in the art.

One or more combinations of the prior art references identified above would have been apparent because these references would have been combined using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to try combining the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. Furthermore, the combination of the prior art references identified above would have been obvious because the combination represents the known potential options with a reasonable expectation of success.

Additional evidence that there would have been a motivation to combine the prior art references identified above includes the interrelated teachings of multiple prior art references; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution encompassed by the asserted claim; the existence of a known need or problem in the field of endeavor at the time of the invention(s); and the background knowledge that would have been possessed by a person having ordinary skill in the art.

Thus, the motivation to combine the teachings of the prior art references disclosed herein is found in the references themselves and: (1) the nature of the problem being solved; (2) the express, implied and inherent teachings of the prior art; (3) the knowledge of persons of ordinary

skill in the art; (4) the predictable results obtained in combining the different elements of the prior art; (5) the predictable results obtained in simple substitution of one known element for another; (6) the use of a known technique to improve similar devices, methods, or products in the same way; (7) the predictable results obtained in applying a known technique to a known device, method, or product ready for improvement; (8) the finite number of identified predictable solutions that had a reasonable expectation of success; and (9) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces.

Accordingly, the teaching, suggestion, or motivation to modify or combine the references in the manner claimed can be found in the explicit and/or implicit teachings of the references and the prior art as a whole, 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. One of ordinary skill in the art would be motivated by such obvious considerations as enhancing the control and operation of bi-directional transmissions over two-wire interfaces at the claimed time of invention. One of ordinary skill in the art would be motivated by additional obvious considerations such as enhancing the compatibility of a sink and a source with current standards. *See e.g.*, McLeod at 1:7-9; see also id. at 4:34-36 ("Also, the current revision of the USB Specification requires compatibility between hosts and devices which were manufactured in accordance with the different USB Specification Revisions.") One of ordinary skill in the art would additionally be motivated by additional obvious considerations including increasing wire length between a source and a sink. *See e.g.*, McLeod at 2:12-13 ("There is therefore a need for methods and apparatus to allow USB devices to be positioned at greater distances from the host PC.") Another obvious consideration that would motivate a POSITA is improving performance of a bi-

directional transmission interface. *See e.g.*, Asseline at [0023] ("There is, therefore, a need for a method to improve the communication performance between PCI protocol units and IB protocol units when bridge units are available and to improve performance when bridge units are not available.") An additional obvious consideration that would motivate a POSITA is maintaining data Integrity. *See e.g.*, Delmonico at 1:34-36 ("Accordingly, there is a need for an I2C-type bus that practically supports a greater number of addresses while also providing an amount of integrity for data traveling thereon.") Stated differently, the references above demonstrate that there was, at the time of the alleged invention, a finite number of identified, predictable solutions for enhancing the control and operation of audio-video data transmission and reception that persons of ordinary skill in the art would have known how to successfully combine, making the claimed invention obvious.

Much of the art identified above and in the attached Exhibits reflects common knowledge and the state of the art prior to the filing date of the '282 Patent and/or at the time the alleged invention was made. In many instances where a particular contention calls for, or requires, combining references, any one of a number of references can be combined. The inclusion of certain example combinations herein does not exclude other combinations based on the claim charts attached hereto, as there are many possible combinations of the references listed herein, and it is not practical, particularly at this early stage prior to further factual investigation and claim construction proceedings, to identify and list all potentially relevant combinations.

Below, Defendant has provided several additional examples of the motivations that a POSITA would have had to combine certain of the prior art references in Exhibits 282-A through 282-H. The inclusion of certain example combinations herein does not exclude other combinations based on the claim charts attached hereto, as there are many possible combinations of the

references listed herein, and it is not practical, particularly at this early stage prior to further factual investigation and claim construction proceedings, to identify and list all potentially relevant combinations. Instead, in many instances where a particular contention calls for, or requires, combining references, any one of a number of references can be combined.

As an example, a POSITA would be motivated to combine Asseline, Mcleod, Brock, Narjes, Ko, Delmonico, Zhao, and/or Pierce with each other. A POSITA would be motivated to combine these references because they all disclose features of and/or are applicable to bi-directional transmission of data of data over a two-wire interface. *See* Exs. 282-A through 282-H at claim element [1.pre]. A POSITA would recognize that Asseline, Mcleod, Brock, Narjes, Ko, Delmonico, Zhao, and Pierce include features applicable to the same or similar type of transmitters and/ or receivers, and accordingly would be motivated to combine those references to improve the usability and reliability of the ensuing bi-directional data transmissions. A POSITA would have a reasonable expectation of success with combining these references because they describe features of the same underlying bi-directional data transmissions.

As a further example, a POSITA would be motivated to combine Asseline, Mcleod, Brock, Narjes, Ko, Delmonico, Zhao, and/or Pierce with Senthil, Ewedemi, Kimura, Bailey, and Il. A POSITA would be motivated to combine these references because Senthil, Ewedemi, Kimura, Bailey, and Il describe features of and/or are applicable to the disclosure of re-mapping a data signal and a clock signal from a first local bus on the source into a different protocol signal by Asseline, Mcleod, Brock, Narjes, Ko, Delmonico, Zhao, and Pierce. *See* Exs. 282-A through 282-H at claim element [1.1]. A POSITA would recognize that re-mapping a data signal and a clock signal from a first local bus on the source into a different protocol signal would be useful for bi-directional transmission of data, and accordingly would be motivated to combine these references

to order to improve the transmission of the encoded data. A POSITA would have a reasonable expectation of success with combining these references because re-mapping signals into other protocols was a well-known technique which a person of ordinary skill knew could provide for compatibility with current standards, increased wire lengths, improved transmission performance, and/ or maintaining integrity of transmitted data.

As a further example, a POSITA would be motivated to combine Asseline, Mcleod, Brock, Narjes, Ko, Delmonico, Zhao, and/or Pierce with Senthil, Ewedemi, Kimura, Bailey, and Il. A POSITA would be motivated to combine these references because Senthil, Ewedemi, Kimura, Bailey, and Il describe features of and/or are applicable to the disclosure of transmitting a different protocol signal from a source to a sink by Asseline, Mcleod, Brock, Narjes, Ko, Delmonico, Zhao, and/or Pierce. *See* Exs. 282-A through 282-H at claim element [1.2]. A POSITA would recognize that transmitting a different protocol signal from the source to the sink would be useful for bi-directional transmission of data, and accordingly would be motivated to combine these references to order to improve the transmission of the encoded data. A POSITA would have a reasonable expectation of success with combining these references because transmitting a re-mapped signal was a well-known technique which a person of ordinary skill knew could provide for compatibility with current standards, increased wire lengths, improved transmission performance, and/ or maintaining integrity of transmitted data.

As a further example, a POSITA would be motivated to combine Asseline, Mcleod, Brock, Narjes, Ko, Delmonico, Zhao, and/or Pierce with Il. A POSITA would be motivated to combine these references because Il describes features of and/or is applicable to the disclosure of re-mapping the different protocol signal back into the data signal and the clock signal for use on a second local bus on the sink by Asseline, Mcleod, Brock, Narjes, Ko, Delmonico, Zhao, and

Pierce. *See* Exs. 282-A through 282-H at claim element [1.3]. A POSITA would recognize that re-mapping a transmitted signal back into the data signal and clock signal would be useful for bi-directional transmission of data, and accordingly would be motivated to combine these references to order to improve the transmission of the encoded data. A POSITA would have a reasonable expectation of success with combining these references because re-mapping a transmitted signal back to their original protocol was a well-known technique which a person of ordinary skill knew could provide for compatibility with current standards, increased wire lengths, improved transmission performance, and/ or maintaining integrity of transmitted data.

As a further example, a POSITA would be motivated to combine Asseline, Mcleod, Brock, Narjes, Ko, Delmonico, Zhao, and/or Pierce with each other. A POSITA would be motivated to combine these references because they describe features of and/or are applicable to the disclosure of re-mapping the data signal and the clock signal from the second local bus into the different protocol signal. *See* Exs. 282-A through 282-H at claim element [1.4]. A POSITA would recognize that re-mapping the data signal and the clock signal from the second local bus into the different protocol signal would be useful for bi-directional transmission of data, and accordingly would be motivated to combine these references to order to improve the transmission of the encoded data. A POSITA would have a reasonable expectation of success with combining these references because re-mapping the data signal and the clock signal from sink into the different protocol signal was a well-known technique which a person of ordinary skill knew could provide for compatibility with current standards, increased wire lengths, improved transmission performance, and/ or maintaining integrity of transmitted data.

As a further example, a POSITA would be motivated to combine Asseline, Mcleod, Brock, Narjes, Ko, Delmonico, Zhao, and/or Pierce with Ewedemi and Bailey. A POSITA would be

motivated to combine these references because Ewedemi and Bailey describe features of and/or are applicable to the disclosure of transmitting the different protocol signal from the sink to the source over the two-wire interface by Asseline, Mcleod, Brock, Narjes, Ko, Delmonico, Zhao, and/or Pierce. *See* Exs. 282-A through 282-H at claim element [1.5]. A POSITA would recognize that transmitting the different protocol signal from the sink to the source over the two-wire interface would be useful for bi-directional transmission of data, and accordingly would be motivated to combine these references to order to improve the transmission of the encoded data. A POSITA would have a reasonable expectation of success with combining these references because the bi-directional transmission of a common protocol was a well-known technique which a person of ordinary skill knew could provide for compatibility with current standards, increased wire lengths, improved transmission performance, and/ or maintaining integrity of transmitted data.

G. The ’437 Patent

Plaintiff alleges that Defendant infringes claim 41 of the ’437 Patent, but this claim (“the Asserted Claim of the ’437 Patent”) is invalid.

1. Identification of Prior Art

At least the prior art listed below, individually or in combination, invalidates the Asserted Claim of the ’437 Patent. Exhibits 437-A through 437-I provide detailed claim charts showing where each claim limitation may be found in certain references listed below, either expressly or inherently as the reference would be understood by a person having ordinary skill in the art. For those references for which detailed claim charts are not provided in Exhibits 437-A through 437-I, those additional prior art references are otherwise pertinent to the invalidity of the ’437 Patent, either alone or in combination with other references.

(i) Prior Art Patents, Patent Applications, and Patent Publications

The following patents, patent applications, and patent application publications are prior art under 35 U.S.C. §§ 102(a), (b), and/or (e).[5]

Patent or Pub. No.	Earliest Priority Date	Filing Date	Publication Date	Statutory Category
US 5,835,498 ("Kim")	1995-10-6	1996-06-14	1998-11-10	102(a), 102(b), 102(e)
US 2001/0019560 ("Yamashita '560")	2000-01-05	2001-01-04	2001-09-06	102(a), 102(e)
US 7,356,051 ("Pasqualino '051")	2001-01-24	2001-09-12	2008-04-08	102(e)
US 2002/0097869 ("Pasqualino '869")	2001-01-24	2001-09-12	2002-07-25	102(e)
US 5,625,644 ("Myers")	1991-12-20	1991-12-20	1997-04-29	102(a), 102(b), 102(e)
US 5,974,464 ("Shin")	1995-10-06	1996-09-30	1999-10-26	102(a), 102(b), 102(e)
US 6,353,912 ("Uchida")	1997-11-21	1998-11-17	2002-03-05	102(e)
US 5,025,256 ("Stevens")	1989-05-31	1990-04-17	1991-06-18	102(a), 102(b), 102(e)
US 5,241,382 ("Paik")	1992-04-25	1992-04-25	1993-08-31	102(a), 102(b), 102(e)
US 6,005,861 ("Humpleman")	1995-11-22	1999-03-03	1999-12-21	102(a), 102(b), 102(e)
US 4,486,739 ("Franaszek")	1982-06-30	1982-06-30	1984-12-04	102(a), 102(b), 102(e)
DE 19647453 ("Loew")	1996-11-16	1996-11-16	1998-05-20	102(a), 102(b)
US 2003/0118196 ("Woolfork")	2001-12-21	2001-12-21	2003-06-26	102(e)
US 7,146,506 ("Hannah")	1999-05-25	1999-05-25	2006-12-05	102(e)

[5] Under the America Invents Act ("AIA"), invalidating prior art is defined in 35 U.S.C. § 102(a). However, AIA Section 102(a) was not effective until March 17, 2013. The '437 Patent purports to predate March 17, 2013, and therefore pre-AIA Section 102 (including sub-sections 102(a), (b), (e) and (g)) apply to the prior art identified in these Invalidity Contentions and the attached exhibits.

EP0981220A2 (“Pehkonen”)	1998-06-22	1999-06-18	2000-02-23	102(a), 102(b)
US 7,161,998 (“Bodenschatz”)	2001-02-14	2001-07-26	2002-09-05	102(e)
US 6,903,780 (“Mair”)	2001-06-08	2001-09-28	2002-12-12	102(e)

(ii) Prior Art Publications

The following publications are prior art under 35 U.S.C. §§ 102(a) and/or (b).

Title	Author/Publisher	Date of Publication	Statutory Category
European Standard EN 50083-9, entitled “Cable networks for television signals, sound signals and interactive services Part 9: Interfaces for CATV/SMATV headends and similar professional equipment for DVB/MPEG-2 transport streams” (“DVB 50083-9”)	European Committee for Electrotechnical Standardization	1998-06	102(a), 102(b)
DVB FEC Codec, ALTERA (Feb. 29, 2000) (“DVB FEC”)	Altera	2000-02-29	102(a), 102(b)
EN ISO/IEC 13818-1, entitled “Information technology – Generic coding of moving pictures and associated audio information” (“EN ISO/IEC 13818-1”)	International Telecommunication Union	1995-07-10	102(a), 102(b)
ETS 300 429, entitled “Digital Broadcasting for television, sound, and data services – Framing Structure, channel coding and modulation for cable systems” (“ETS 300 429”)	European Telecommunication Standards Institute	1994-12	102(a), 102(b)
Altera Ships Mercury™ Device Family - The World's First Programmable ASSP, ALTERA (Feb. 19, 2001) (“Mercury Shipment”)	Altera	2001-02-19	102(a)

Title	Author/Publisher	Date of Publication	Statutory Category
Altera Ships 10,000-Gate FLEX 10K Device, ALTERA (Mar. 25, 1996) ("FLEX 10K Shipment")	Altera	1996-03-25	102(a), 102(b)
Altera Ships APEX EP20K100 for High Performance System-on-a-Programmable-Chip Designs, ALTERA (June 14, 1999) ("APEX 20K Shipment")	Altera	1999-06-14	102(a), 102(b)
Application Note 130 – CDR In Mercury Devices, ALTERA (Feb., 2001) ("AN130")	Altera	2001-02	102(a)
Mercury Advanced CDR Support, ALTERA (Apr. 7, 2001) ("Mercury CDR")	Altera	2001-04-07	102(a)
M1GXCVR MegaCore Function, ALTERA (Jun. 8, 2001) ("M1GXCVR")	Altera	2001-06-08	102(a)
Mercury Gigabit Transceiver MegaCore Function (M1GXCVR) Data Sheet, ALTERA (Apr., 2001) ("M1GXCVR Data Sheet")	Altera	2001-04	102(a)
Reed-Solomon Compiler MegaCore Function User Guide November 1999, ALTERA (Nov., 1999) ("Reed-Solomon User Guide")	Altera	1999-11	102(a), 102(b)
Mercury Programmable Logic Device Family Data Sheet,	Altera	2001-10	102(a)

Title	Author/Publisher	Date of Publication	Statutory Category
ALTERA (Oct. 2001) ("Mercury Data Sheet")			
Customer Success Stories, ALTERA (Apr. 5, 2001) ("Customer Success Stories")	Altera	2001-04-05	102(a)
Mercury The Programmable ASSP, ALTERA (May, 2001) ("Mercury ASSP")	Altera	2001-05	102(a)
HammerCores by Altera, 8b/10b Encoders White Paper, ALTERA (Jan. 2000) ("8b/10b Encoders White Paper")	Altera	2000-01	102(a), 102(b)
8b10b Encoder/Decoder MegaCore Function (ED8B10B) Data Sheet, ALTERA (Nov., 2001) ("ED8B10B")	Altera	2001-11	102(a)
IEEE Standard 802.3, entitled "Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications" ("IEEE Standard 802.3")	IEEE Computer Society	1998-06	102(a), 102(b)
QuickTime 4 Moves Upstream, MACWORLD (Jun. 30, 1999) ("Quicktime")	Macworld	1999-06-30	102(a), 102(b)
Digital Visual Interface DVI Specification ("DVI")	Digital Display Working Group	1999-04-2	102(a), 102(b)

Title	Author/Publisher	Date of Publication	Statutory Category
Intel 810E Chipset: 82810E Graphics and Memory Controller Hub (GMCH) Datasheet ("810E Datasheet")	Intel	2000-09	102(a), 102(b)
Intel 810 Chipset Product Brief ("810 Product Brief")	Intel	2000	102(a), 102(b)
Intel 810 Chipset Design Guide ("810 Design Guide")	Intel	1999-06	102(a), 102(b)
SMPTE Standard for Television ---- 1125/60 High-Definition Production System — Digital Representation and Bit-Parallel Interface, SMPTE 260M-1999 ("SMPTE 260M")	Society of Motion Picture and Television Engineers	1999-01-04	102(a), 102(b)
SMPTE Standard for Television ---- Bit-Serial Digital Interface for High-Definition Television Systems, SMPTE 292M-1998, by SMPTE ("SMPTE 292M")	Society of Motion Picture and Television Engineers	1998-10-01	102(a), 102(b)
SMPTE Standard for Television ---- Ancillary Data Packet and Space Formatting, SMPTE 291M-1998 ("SMPTE 291M")	Society of Motion Picture and Television Engineers	1998-10-01	102(a), 102(b)
Sony HD Color Video Camera HDC-700 Operation Manual, 1st Edition (Revised 1) ("HDC-700 Op Manual")	Sony	1997-09-13	102(a), 102(b)

Title	Author/Publisher	Date of Publication	Statutory Category
American National Standard Institute ANSI INCITS 230-1994 (R1999), entitled Fiber Channel – Physical Signaling Interface (FC-PH) ("ANSI 230-1994")	American National Standards Institute	1994-11-14	102(a), 102(b)
A DC-Balanced, Partitioned-Block, 8B/10B Transmission Code, 27 IBM J. OF RES. AND DEVELOP. 5, 440 ("Widmer")	IBM	1983-09	102(a), 102(b)
Cypress CY7B923/CY7B933 HOTLink Transmitter/Receiver ("Cypress HOTLink")	Cypress Semiconductor Corporation	August 14, 1997	102(a), 102(b)
American National Standard Institute ANSI T1X1.5/2000-024R3, entitled *Generic Framing Procedure*	American National Standards Institute	May, 2001	102(a)

(iii) Prior Art Systems

The Asserted Claim of the '437 Patent is invalid under 35 U.S.C. § 102(a) and (b) because it was known by others, publicly used, and on sale in the United States before it was purportedly invented and more than one year before the priority date of the Asserted Claim. Additionally, the Asserted Claim is invalid under 35 U.S.C. § 102(g) because any purported invention was made in this country by another who had not abandoned, suppressed, or concealed the purported invention. For example, the foregoing patents and publications are evidence of such prior art systems and inventions. Additionally, Defendant relies on the systems identified in the Exhibits hereto, and also the systems identified below.

System	Date of Prior Invention, Sale, Use, Or Knowledge	Statutory Category
DVB	No later than February 29, 2000	102(a), 102(b), 102(g)

System	Date of Prior Invention, Sale, Use, Or Knowledge	Statutory Category
Altera PLDs (Mercury, Flex 10K, and Apex 20K Programmable Logic Device Product Families)	No later than February 19, 2001	102(a), 102(b), 102(g)
SDI Products (Sony HDC-900, Sony HDC-930, Sony HDC-950, Sony HDCU-900, and other products compliant with SDI)	No later than 2000	102(a), 102(b), 102(g)
The Gigabit Ethernet Standard	No later than June 1998	102(a), 102(b), 102(g)
DVI Products (Intel 810 Chipset, Intel 810E Chipset, and other products compliant with DVI)	No later than June 1999	102(a), 102(b), 102(g)

2. Bases for Anticipation and/or Obviousness

Each prior art reference identified in Exhibits 437-A through 437-I expressly, implicitly, or inherently anticipates and/or renders obvious the Asserted Claim of the ’437 Patent, either alone or in combination with other prior art references (*e.g.*, the references identified in Exhibits 437-A through 437-I or other references identified above) or the knowledge of the person of ordinary skill in the art at the time of the alleged invention. Each of the prior art references included in Exhibits 437-A through 437-I can be combined with any other prior art reference identified in Exhibits 437-A through 437-I, or identified above, to render obvious the Asserted Claim of the ’437 Patent, and the examples of combinations below are intended for emphasis only.[6]

[6] For example, each of Kim (optionally in view of Shin), Yamashita ’560, DVB-50083-9, or DVB, Pasqualino ’051, Pasqualino ’869, SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products,

In the table below, Defendant identifies a non-exhaustive list of prior art references that, alone or in combination, anticipate and/or render obvious the Asserted Claim of the ’437 Patent.

Reference(s)	Grounds	Exhibit
Kim (optionally in view of Shin)	35 U.S.C. §§ 102, 103	437-A
Kim (optionally in view of Shin) and in view of Myers	35 U.S.C. § 103	437-A
Kim (optionally in view of Shin) and in view of Uchida	35 U.S.C. § 103	437-A
Kim (optionally in view of Shin) and in view of Stevens	35 U.S.C. § 103	437-A
Kim (optionally in view of Shin) and in view of ANSI 230-1994	35 U.S.C. § 103	437-A
Kim (optionally in view of Shin) and in view of Franaszek	35 U.S.C. § 103	437-A
Kim (optionally in view of Shin) and in view of Widmer	35 U.S.C. § 103	437-A
Kim (optionally in view of Shin) and in view of Paik	35 U.S.C. § 103	437-A
Kim (optionally in view of Shin) and in view of Loew	35 U.S.C. § 103	437-A
Kim (optionally in view of Shin) and in view of Woolfork	35 U.S.C. § 103	437-A
Kim (optionally in view of Shin) and in view of ANSI T1X1.5/2000-024R3	35 U.S.C. § 103	437-A
Kim (optionally in view of Shin) and in view of Hannah	35 U.S.C. § 103	437-A
Kim (optionally in view of Shin) and in view of Pehkonen	35 U.S.C. § 103	437-A
Kim (optionally in view of Shin) and in view of Bodenschatz	35 U.S.C. § 103	437-A
Kim (optionally in view of Shin) and in view of Mair	35 U.S.C. § 103	437-A
Kim (optionally in view of Shin) and in view of Myers, Uchida, Stevens, ANSI 230-1994, Franaszek, Widmer, Paik, Loew, Woolfork, ANSI T1X1.5/2000-024R3, Hannah, Pehkonen, Bodenschatz, and/or Mair	35 U.S.C. § 103	437-A
Kim (optionally in view of Shin) and in view of Yamashita ’560	35 U.S.C. § 103	437-A, 437-B
Yamashita ’560	35 U.S.C. §§ 102, 103	437-B
Yamashita ’560 in view of Myers	35 U.S.C. § 103	437-B
Yamashita ’560 in view of Uchida	35 U.S.C. § 103	437-B
Yamashita ’560 in view of Stevens	35 U.S.C. § 103	437-B
Yamashita ’560 in view of ANSI 230-1994	35 U.S.C. § 103	437-B
Yamashita ’560 in view of Franaszek	35 U.S.C. § 103	437-B
Yamashita ’560 in view of Widmer	35 U.S.C. § 103	437-B
Yamashita ’560 in view of Paik	35 U.S.C. § 103	437-B
Yamashita ’560 in view of Shin	35 U.S.C. § 103	437-B

Altera PLDs, IEEE Standard 802.3, or the Gigabit Ethernet Standard, and DVI or DVI Products may be combined with each other to render obvious the Asserted Claim of the ’437 Patent.

Reference(s)	Grounds	Exhibit
Yamashita ’560 in view of Loew	35 U.S.C. § 103	437-B
Yamashita ’560 in view of Woolfork	35 U.S.C. § 103	437-B
Yamashita ’560 in view of ANSI T1X1.5/2000-024R3	35 U.S.C. § 103	437-B
Yamashita ’560 in view of Hannah	35 U.S.C. § 103	437-B
Yamashita ’560 in view of Pehkonen	35 U.S.C. § 103	437-B
Yamashita ’560 in view of Bodenschatz	35 U.S.C. § 103	437-B
Yamashita ’560 in view of Mair	35 U.S.C. § 103	437-B
Yamashita ’560 in view of Myers, Uchida, Stevens, ANSI 230-1994, Franaszek, Widmer, Paik, Shin, Loew, Woolfork, ANSI T1X1.5/2000-024R3, Hannah, Pehkonen, Bodenschatz, and/or Mair	35 U.S.C. § 103	437-B
DVB-50083-9, or DVB	35 U.S.C. §§ 102, 103	437-C
DVB-50083-9, or DVB, in view of Myers	35 U.S.C. § 103	437-C
DVB-50083-9, or DVB, in view of Uchida	35 U.S.C. § 103	437-C
DVB-50083-9, or DVB, in view of Stevens	35 U.S.C. § 103	437-C
DVB-50083-9, or DVB, in view of ANSI 230-1994	35 U.S.C. § 103	437-C
DVB-50083-9, or DVB, in view of Franaszek	35 U.S.C. § 103	437-C
DVB-50083-9, or DVB, in view of Widmer	35 U.S.C. § 103	437-C
DVB-50083-9, or DVB, in view of Paik	35 U.S.C. § 103	437-C
DVB-50083-9, or DVB, in view of Shin	35 U.S.C. § 103	437-C
DVB-50083-9, or DVB, in view of Loew	35 U.S.C. § 103	437-C
DVB-50083-9, or DVB, in view of Woolfork	35 U.S.C. § 103	437-C
DVB-50083-9, or DVB, in view of ANSI T1X1.5/2000-024R3	35 U.S.C. § 103	437-C
DVB-50083-9, or DVB, in view of Hannah	35 U.S.C. § 103	437-C
DVB-50083-9, or DVB, in view of Pehkonen	35 U.S.C. § 103	437-C
DVB-50083-9, or DVB, in view of Bodenschatz	35 U.S.C. § 103	437-C
DVB-50083-9, or DVB, in view of Mair	35 U.S.C. § 103	437-C
DVB-50083-9, or DVB, in view of Yamashita ’560	35 U.S.C. § 103	437-C, 437-B
DVB-50083-9, or DVB in view of Myers, Uchida, Stevens, ANSI 230-1994, Franaszek, Widmer, Paik, Shin, Loew, Woolfork, ANSI T1X1.5/2000-024R3, Hannah, Pehkonen, Bodenschatz, and/or Mair	35 U.S.C. § 103	437-C
Pasqualino ’051	35 U.S.C. §§ 102, 103	437-D
Pasqualino ’051 in view of Myers	35 U.S.C. § 103	437-D
Pasqualino ’051 in view of Uchida	35 U.S.C. § 103	437-D
Pasqualino ’051 in view of Stevens	35 U.S.C. § 103	437-D
Pasqualino ’051 in view of ANSI 230-1994	35 U.S.C. § 103	437-D
Pasqualino ’051 in view of Franaszek	35 U.S.C. § 103	437-D
Pasqualino ’051 in view of Widmer	35 U.S.C. § 103	437-D
Pasqualino ’051 in view of Paik	35 U.S.C. § 103	437-D
Pasqualino ’051 in view of Shin	35 U.S.C. § 103	437-D
Pasqualino ’051 in view of Loew	35 U.S.C. § 103	437-D

Reference(s)	Grounds	Exhibit
Pasqualino ’051 in view of Woolfork	35 U.S.C. § 103	437-D
Pasqualino ’051 in view of ANSI T1X1.5/2000-024R3	35 U.S.C. § 103	437-D
Pasqualino ’051 in view of Hannah	35 U.S.C. § 103	437-D
Pasqualino ’051 in view of Pehkonen	35 U.S.C. § 103	437-D
Pasqualino ’051 in view of Bodenschatz	35 U.S.C. § 103	437-D
Pasqualino ’051 in view of Mair	35 U.S.C. § 103	437-D
Pasqualino ’051 in view of DVI or DVI Products	35 U.S.C. § 103	437-D, 437-I
Pasqualino ’051 in view of Yamashita ’560	35 U.S.C. § 103	437-D, 437-B
Pasqualino ’051 in view of Pasqualino ’869	35 U.S.C. § 103	437-D, 437-E
Pasqualino ’051 in view of Myers, Uchida, Stevens, ANSI 230-1994, Franaszek, Widmer, Paik, Shin, Loew, Woolfork, ANSI T1X1.5/2000-024R3, Hannah, Pehkonen, Bodenschatz, and/or Mair	35 U.S.C. § 103	437-D
Pasqualino ’869	35 U.S.C. §§ 102, 103	437-E
Pasqualino ’869 in view of Myers	35 U.S.C. § 103	437-E
Pasqualino ’869 in view of Uchida	35 U.S.C. § 103	437-E
Pasqualino ’869 in view of Stevens	35 U.S.C. § 103	437-E
Pasqualino ’869 in view of ANSI 230-1994	35 U.S.C. § 103	437-E
Pasqualino ’869 in view of Franaszek	35 U.S.C. § 103	437-E
Pasqualino ’869 in view of Widmer	35 U.S.C. § 103	437-E
Pasqualino ’869 in view of Paik	35 U.S.C. § 103	437-E
Pasqualino ’869 in view of Shin	35 U.S.C. § 103	437-E
Pasqualino ’869 in view of Loew	35 U.S.C. § 103	437-E
Pasqualino ’869 in view of Woolfork	35 U.S.C. § 103	437-E
Pasqualino ’869 in view of ANSI T1X1.5/2000-024R3	35 U.S.C. § 103	437-E
Pasqualino ’869 in view of Hannah	35 U.S.C. § 103	437-E
Pasqualino ’869 in view of Pehkonen	35 U.S.C. § 103	437-E
Pasqualino ’869 in view of Bodenschatz	35 U.S.C. § 103	437-E
Pasqualino ’869 in view of Mair	35 U.S.C. § 103	437-E
Pasqualino ’869 in view of Yamashita ’560	35 U.S.C. § 103	437-E, 437-B
Pasqualino ’869 in view of Pasqualino ’051	35 U.S.C. § 103	437-E, 437-D
Pasqualino ’869 in view of DVI or DVI Products	35 U.S.C. § 103	437-E, 437-I
Pasqualino ’869 in view of Myers, Uchida, Stevens, ANSI 230-1994, Franaszek, Widmer, Paik, Shin, Loew, Woolfork, ANSI T1X1.5/2000-024R3, Hannah, Pehkonen, Bodenschatz, and/or Mair	35 U.S.C. § 103	437-E
SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products	35 U.S.C. §§ 102, 103	437-F

Reference(s)	Grounds	Exhibit
SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products in view of Myers	35 U.S.C. § 103	437-F
SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products in view of Uchida	35 U.S.C. § 103	437-F
SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products in view of Stevens	35 U.S.C. § 103	437-F
SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products in view of ANSI 230-1994	35 U.S.C. § 103	437-F
SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products in view of Franaszek	35 U.S.C. § 103	437-F
SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products in view of Widmer	35 U.S.C. § 103	437-F
SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products in view of Paik	35 U.S.C. § 103	437-F
SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products in view of Shin	35 U.S.C. § 103	437-F
SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products in view of Loew	35 U.S.C. § 103	437-F
SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products in view of Woolfork	35 U.S.C. § 103	437-F
SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products in view of ANSI T1X1.5/2000-024R3	35 U.S.C. § 103	437-F
SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products in view of Hannah	35 U.S.C. § 103	437-F
SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products in view of Pehkonen	35 U.S.C. § 103	437-F
SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products in view of Bodenschatz	35 U.S.C. § 103	437-F
SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products in view of Mair	35 U.S.C. § 103	437-F
SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products in view of Yamashita ’560	35 U.S.C. § 103	437-F, 437-B
SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products in view of Myers, Uchida, Stevens, ANSI 230-1994, Franaszek, Widmer, Paik, Shin, Loew, Woolfork, ANSI T1X1.5/2000-024R3, Hannah, Pehkonen, Bodenschatz, and/or Mair	35 U.S.C. § 103	437-F
Altera PLDs	35 U.S.C. §§ 102, 103	437-G
Altera PLDs in view of Myers	35 U.S.C. § 103	437-G
Altera PLDs in view of Uchida	35 U.S.C. § 103	437-G
Altera PLDs in view of Stevens	35 U.S.C. § 103	437-G
Altera PLDs in view of ANSI 230-1994	35 U.S.C. § 103	437-G
Altera PLDs in view of Franaszek	35 U.S.C. § 103	437-G
Altera PLDs in view of Widmer	35 U.S.C. § 103	437-G

Reference(s)	Grounds	Exhibit
Altera PLDs in view of Paik	35 U.S.C. § 103	437-G
Altera PLDs in view of Shin	35 U.S.C. § 103	437-G
Altera PLDs in view of Loew	35 U.S.C. § 103	437-G
Altera PLDs in view of Woolfork	35 U.S.C. § 103	437-G
Altera PLDs in view of ANSI T1X1.5/2000-024R3	35 U.S.C. § 103	437-G
Altera PLDs in view of Hannah	35 U.S.C. § 103	437-G
Altera PLDs in view of Pehkonen	35 U.S.C. § 103	437-G
Altera PLDs in view of Bodenschatz	35 U.S.C. § 103	437-G
Altera PLDs in view of Mair	35 U.S.C. § 103	437-G
Altera PLDs in view of Yamashita ’560	35 U.S.C. § 103	437-G, 437-B
Altera PLDs in view of SMPTE 291M, SMPTE 292M, SMPTE 260M, or SDI Products	35 U.S.C. § 103	437-G, 437-F
Altera PLDs in view of DVB-50083-9, or DVB	35 U.S.C. § 103	437-G, 437-C
Altera PLDs in view of IEEE Standard 802.3, or the Gigabit Ethernet Standard	35 U.S.C. § 103	437-G, 437-H
Altera PLDs in view of Myers, Uchida, Stevens, ANSI 230-1994, Franaszek, Widmer, Paik, Shin, Loew, Woolfork, ANSI T1X1.5/2000-024R3, Hannah, Pehkonen, Bodenschatz, and/or Mair	35 U.S.C. § 103	437-G
IEEE Standard 802.3, or the Gigabit Ethernet Standard	35 U.S.C. §§ 102, 103	437-H
IEEE Standard 802.3, or the Gigabit Ethernet Standard in view of Myers	35 U.S.C. § 103	437-H
IEEE Standard 802.3, or the Gigabit Ethernet Standard in view of Uchida	35 U.S.C. § 103	437-H
IEEE Standard 802.3, or the Gigabit Ethernet Standard in view of Stevens	35 U.S.C. § 103	437-H
IEEE Standard 802.3, or the Gigabit Ethernet Standard in view of ANSI 230-1994	35 U.S.C. § 103	437-H
IEEE Standard 802.3, or the Gigabit Ethernet Standard in view of Franaszek	35 U.S.C. § 103	437-H
IEEE Standard 802.3, or the Gigabit Ethernet Standard in view of Widmer	35 U.S.C. § 103	437-H
IEEE Standard 802.3, or the Gigabit Ethernet Standard in view of Paik	35 U.S.C. § 103	437-H
IEEE Standard 802.3, or the Gigabit Ethernet Standard in view of Humpleman	35 U.S.C. § 103	437-H
IEEE Standard 802.3, or the Gigabit Ethernet Standard in view of Shin	35 U.S.C. § 103	437-H
IEEE Standard 802.3, or the Gigabit Ethernet Standard in view of Loew	35 U.S.C. § 103	437-H
IEEE Standard 802.3, or the Gigabit Ethernet Standard in view of Woolfork	35 U.S.C. § 103	437-H

Reference(s)	Grounds	Exhibit
IEEE Standard 802.3, or the Gigabit Ethernet Standard in view of ANSI T1X1.5/2000-024R3	35 U.S.C. § 103	437-H
IEEE Standard 802.3, or the Gigabit Ethernet Standard in view of Hannah	35 U.S.C. § 103	437-H
IEEE Standard 802.3, or the Gigabit Ethernet Standard in view of Pehkonen	35 U.S.C. § 103	437-H
IEEE Standard 802.3, or the Gigabit Ethernet Standard in view of Bodenschatz	35 U.S.C. § 103	437-H
IEEE Standard 802.3, or the Gigabit Ethernet Standard in view of Mair	35 U.S.C. § 103	437-H
IEEE Standard 802.3, or the Gigabit Ethernet Standard in view of Yamashita ’560	35 U.S.C. § 103	437-H, 437-B
IEEE Standard 802.3, or the Gigabit Ethernet Standard in view of Myers, Uchida, Stevens, ANSI 230-1994, Franaszek, Widmer, Paik, Humpleman, Shin, Loew, Woolfork, ANSI T1X1.5/2000-024R3, Hannah, Pehkonen, Bodenschatz, and/or Mair	35 U.S.C. § 103	437-H
DVI or DVI Products	35 U.S.C. §§ 102, 103	437-I
DVI or DVI Products in view of Myers	35 U.S.C. § 103	437-I
DVI or DVI Products in view of Uchida	35 U.S.C. § 103	437-I
DVI or DVI Products in view of Stevens	35 U.S.C. § 103	437-I
DVI or DVI Products in view of ANSI 230-1994	35 U.S.C. § 103	437-I
DVI or DVI Products in view of Franaszek	35 U.S.C. § 103	437-I
DVI or DVI Products in view of Widmer	35 U.S.C. § 103	437-I
DVI or DVI Products in view of Paik	35 U.S.C. § 103	437-I
DVI or DVI Products in view of Shin	35 U.S.C. § 103	437-I
DVI or DVI Products in view of Loew	35 U.S.C. § 103	437-I
DVI or DVI Products in view of Woolfork	35 U.S.C. § 103	437-I
DVI or DVI Products in view of ANSI T1X1.5/2000-024R3	35 U.S.C. § 103	437-I
DVI or DVI Products in view of Hannah	35 U.S.C. § 103	437-I
DVI or DVI Products in view of Pehkonen	35 U.S.C. § 103	437-I
DVI or DVI Products in view of Bodenschatz	35 U.S.C. § 103	437-I
DVI or DVI Products in view of Mair	35 U.S.C. § 103	437-I
DVI or DVI Products in view of Yamashita ’560	35 U.S.C. § 103	437-I, 437-B
DVI or DVI Products in view of Pasqualino ’051	35 U.S.C. § 103	437-I, 437-D
DVI or DVI Products in view of Pasqualino ’869	35 U.S.C. § 103	437-I, 437-E
DVI or DVI Products in view of Myers, Uchida, Stevens, ANSI 230-1994, Franaszek, Widmer, Paik, Shin, Loew, Woolfork, ANSI T1X1.5/2000-024R3, Hannah, Pehkonen, Bodenschatz, and/or Mair	35 U.S.C. § 103	437-I

The accompanying claim charts (Exhibits 437-A through 437-I) set forth example bases for anticipation and obviousness, identifying where each reference discloses, alone or in combination with other references, each limitation of the Asserted Claim of the ’437 Patent on a limitation-by-limitation basis. Defendant’s claim charts are exemplary and not intended to be exhaustive.

(i) Obviousness Combinations

Subject to Defendant’s reservation of rights, Defendant contends that all of the prior art references, as identified above and described in the charts attached as Exhibits 437-A through 437-I, by themselves anticipate the Asserted Claim of the ’437 Patent in accordance with 35 U.S.C. § 102 and/or render the Asserted Claim of the ’437 Patent obvious under 35 U.S.C. § 103, as more specifically noted in the attached charts.

The cited portions of the prior art references are examples and 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 a cited prior art reference is deemed not to anticipate or render obvious a claim as noted in the attached charts for failing to teach or suggest one or more limitations of that claim, that claim would nonetheless have been obvious to one of ordinary skill in the art at the time of the invention by the combination of the cited prior art reference with one or more other prior art references and/or common knowledge disclosing the missing claim limitations. For example, any of the references listed above, to the extent it does not explicitly or inherently disclose any limitation, could be combined with any one or more of the other references listed above which discloses that limitation.

Defendant reserves the right to supplement the obviousness arguments using any references listed above, or any references that may become known to Defendant during the course of

discovery. Further, the suggested obviousness combinations are in addition to Defendant's anticipation contentions and are not to be construed to suggest that any reference included in the combinations is not anticipatory on its own.

(ii) Motivation to Combine And Reasonable Expectation Of Success

With respect to the '437 Patent, the prior art identified above non-exhaustively illustrates the scope and content of the prior art. As detailed in claim charts 437-A through 437-I, the prior art included each limitation recited in the Asserted Claim of the '437 Patent. To the extent a cited prior art reference is deemed not to anticipate a claim, the only difference between the claimed invention and the prior art is the lack of actual combination of the elements in a single prior art reference. However, for at least the reasons discussed above and the additional reasons discussed below, a Person of Ordinary Skill in the Art ("POSITA") would have been motivated to combine each of the above prior art references. A POSITA in the art pertaining to the Asserted Patents at the relevant time would have been someone with a bachelor's degree in computer science, computer engineering, electrical engineering, or equivalent training, as well as at least two years of experience working in the field of digital transmissions. A more advanced degree would require less work experience.

A POSITA would have numerous motivations to combine each of the above-referenced prior art. For example, as the United States Supreme Court held in *KSR*, "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." 550 U.S. at 416. The Supreme Court further held that, "[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would

recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. . . ." *Id.* at 417. Accordingly, a person of skill in the art would have been motivated to combine or adapt known or familiar methods in the art.

The combinations of the prior art references identified above would have been obvious in view of: (1) the knowledge of persons of ordinary skill in the art; (2) the express, implied and inherent teachings of the prior art, or the interrelated teachings of multiple prior art references; (3) the nature of the problem being solved; (4) the fact that they are combinations of known methods to yield predictable results; (5) the fact that they involve a simple substitution of one known, equivalent element for another to obtain predictable results; (6) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces; (7) the existence of a known need or problem in the field of endeavor at the time of the invention(s); and/or (8) a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to try combining the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. Furthermore, the combination of the prior art references identified above would have been obvious because the combination represents the known potential options with a reasonable expectation of success.

Indeed, to the extent the prior art references identified herein do not anticipate the Asserted Claim, the limitations of the Asserted Claim are merely obvious variations of the systems and methods disclosed in the various prior art references. As discussed below and in the prior art references identified in Exhibits 437-A through 437-I, the Asserted Claim includes only well-

known, conventional technologies prior to the ’437 Patent. The prior art identified herein and in Exhibits 437-A through 437-I reflects the common knowledge and state of the art prior to the Asserted Patents. The ’437 Patent does not purport to have invented any of these technologies; rather, the ’437 Patent simply tacked on these conventional prior art approaches to conventional and generic known prior techniques. As such, the Asserted Claim of the ’437 Patent merely incorporates the knowledge of a POSITA. The mere amalgamation of such conventional technologies here is not inventive—it is simply combining or substituting well-known, conventional prior art elements according to known methods to yield predictable results.

For example, a person having ordinary skill in the art would have been motivated to combine the prior art identified in Exhibits 437-A through 437-I, and would have held a reasonable expectation of success in doing so, based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons having ordinary skill in the art. Each reference in Exhibits 437-A through 437-I discloses methods and systems for transmission of data, including but not limited to video data, over a serial link. The references identified in Exhibits 437-A through 437-I are analogous prior art to the subject matter of the Asserted Claims and are proper to combine. Because these prior art references exist within a single field of art—such as, for example, serial data transmission—particularly one in which individuals in the field often shared and/or collaborated on their work—for example, given the standardization of various transmission mechanisms in the industry—it would have been obvious for a POSITA to look from one piece of prior art to another to find any missing functionality they desired to implement, or to replace functionality in one prior art reference for that described in another reference. Therefore, these references provide interrelated teachings and one of ordinary skill would look to the concepts in

any of these references when seeking to solve the problems purportedly addressed by the ’437 patent.

Combining the prior art references identified herein and in Exhibits 437-A through 437-I, which address similar problems as explained above, would have been obvious and straightforward to a POSITA. *First*, the combinations represent no more than the use of known techniques according to known methods in the same ways to yield predictable results. For example, the references generally address the same field of serial data transmission, and a POSITA would be motivated by such obvious considerations as enhancing the reliability and operation of serial data transmissions at the claimed time of invention. *Second*, the references themselves identify the known problems and provide known solutions to address those problems in the field. Indeed, the references identified herein and in Exhibits 437-A through 437-I demonstrate that there was, at the time of the alleged invention, a finite number of identified, predictable solutions for enhancing the reliability and operation of serial data transmissions that persons of ordinary skill in the art would have known how to successfully combine, making the claimed invention obvious. *Third*, a POSITA would appreciate that the combinations improve the systems in the prior art to transmit serial data, including by using conventional encoding techniques, providing more robust encoding techniques, providing subset selection rules, defining control words and their encoding, and/or describing transmission sequences for the serial link. *Fourth*, because the problems and solutions were known in the field, the particular arrangements and combinations of references would yield predictable results. *Fifth*, a number of the references themselves provide express motivations that would have led a person of ordinary skill to their combination. For example, the references acknowledge that preserving data, reducing interference and errors, and transmission sequencing can be important.

Below, Defendant has provided several additional examples of the motivations that a POSITA would have had to combine certain of the prior art references in Exhibits 437-A through 437-I. The inclusion of certain example combinations herein does not exclude other combinations based on the claim charts attached hereto, as there are many possible combinations of the references listed herein, and it is not practical, particularly at this early stage prior to further factual investigation and claim construction proceedings, to identify and list all potentially relevant combinations. Instead, in many instances where a particular contention calls for, or requires, combining references, any one of a number of references can be combined.

As one example, methods of encoding data for transmission were well-known and within the skill of POSITAs at the time of the alleged invention. *See, e.g.*, Stevens, Widmer, Myers, Loew, Woolfork, ANSI T1X1.5/2000-024R3, and Pehkonen. The '437 patent itself concedes that transition minimized differential signaling ("TMDS") and other "TMDS-like" techniques, including 8b/10b encoding, were "conventional" and well known. *See* '437 patent, 1:29-33, 4:50-63. These encoding methods, including at least 8b/10b, are disclosed by at least Stevens, Widmer, Paik, Uchida, ANSI-230-1994, Franzaszek, Shin, Myers, Loew, Woolfork, ANSI T1X1.5/2000-024R3, and Pehkonen. *See, e.g.*, Exs. 437-A through 437-I, at claim elements [41a]. A POSITA would have been motivated to combine these encoding techniques with references disclosing transmission sequences because encoding the data can help improve data integrity and reduce errors in the corresponding transmission. A POSITA would have a reasonable expectation of success with combining these references because the encoding of data for transmission is a well-known frequently-used concept that is widely implemented in the prior art.

As a further example, methods of more robustly encoding data to reduce errors and interference were well-known and within the skills of POSITAs at the time of the alleged

invention. *See, e.g.*, Stevens, Widmer, Myers, and Loew. The '437 patent itself recognizes that it was known that "error rate can be unacceptably high for auxiliary data (especially when the auxiliary data are audio data)," and thus that it would be obvious to apply certain encoding methods to these data types which would reduce those errors to an acceptable level. '437 patent, 12:65-67; *id.*, 12:32-38. These methods could include robust encoding techniques, as disclosed by at least Stevens, Widmer, Myers, Loew, ANSI T1X1.5/2000-024R3, Hannah, and Pehkonen. *See, e.g.*, Exs. 437-A through 437-I, at claim elements [41b]. A POSITA would have been motivated to combine these robust encoding techniques with references disclosing other conventional encoding techniques because certain data types could further benefit from more robust encoding that results in less errors in the transmission. A POSITA would have a reasonable expectation of success with combining these references because the robust encoding techniques are techniques to further encode the conventionally encoded data and thus were designed to be successfully combined with those conventional techniques.

As a further example, methods of encoding control words by encoding control bits were well known and within the skills of POSITAs at the time of the alleged invention. The '437 patent itself concedes that in "a conventional system," an "encoder [] generates out-of-band words indicative of the values of [control bits]." '437 patent, 2:54-63, 9:61-62. These well-known methods of encoding control bits were disclosed by at least Stevens, Widmer, Paik, ANSI 230-1994, Franaszek, Shin, Myers, and Loew. *See, e.g.*, Exs. 437-A through 437-I, at claim elements [41c]. A POSITA would have been motivated to combine these control word encoding techniques with references disclosing serial data transmission techniques because encoding control words could allow them to be transmitted serially with other data, and simplify the decoding process. A POSITA would have a reasonable expectation of success with combining these references because

the references already describe application of similar or the same encoding techniques to other types of data.

As a further example, a POSITA would be motivated to combine Kim, Yamashita, Pasqualino ’051, Pasqualino ’869, the DVB System, Altera PLDs, SDI Products, Gigabit Ethernet Standard, and the DVI Products with each other. A POSITA would be motivated to combine these references because they all disclose features of and/or are applicable to transmission of data over a serial link. *See* Exs. 437-A through 437-I at claim element [41pre]. A POSITA would recognize that Kim, Yamashita, Pasqualino ’051, Pasqualino ’869, the DVB System, Altera PLDs, SDI Products, Gigabit Ethernet Standard, and the DVI Products include features applicable to the same or similar type of transmitters for transmitting the same or similar data types, and accordingly would be motivated to combine those references to improve the usability and reliability of the ensuing data transmissions. A POSITA would have a reasonable expectation of success with combining these references because they describe features of the same underlying data transmissions—serial transmissions of data, including video, control, audio, and/or other related data types.

As a further example, a POSITA would be motivated to combine Kim, Yamashita, Pasqualino ’051, Pasqualino ’869, the DVB System, Altera PLDs, SDI Products, Gigabit Ethernet Standard, or the DVI Products with Stevens, Widmer, Myers, Loew, Woolfork, ANSI T1X1.5/2000-024R3, and/or Pehkonen. A POSITA would be motivated to combine these references because Stevens, Widmer, Myers, Loew, Woolfork, ANSI T1X1.5/2000-024R3, and/or Pehkonen disclose techniques for a more robust encoding than the conventional techniques described in Kim, Yamashita, Pasqualino ’051, Pasqualino ’869, the DVB System, Altera PLDs, SDI Products, Gigabit Ethernet Standard, or the DVI Products. A POSITA would recognize that

the disclosure of more robust encoding in Stevens, Widmer, Myers, and Loew would be useful in reducing interference, errors, and providing for more robust transmission (especially for certain data types where reducing interference or errors is more important, such as audio data), and accordingly would be motivated to combine Stevens, Widmer, Myers, Loew, Woolfork, ANSI T1X1.5/2000-024R3, or Pehkonen with prior art systems using conventional encoding to improve transmission integrity. A POSITA would have a reasonable expectation of success with combining these references because these robust techniques were well-known encoding techniques which a person of ordinary skill knew could provide for more robust transmission of certain data types, including for example, audio data.

As a further example, a POSITA would be motivated to combine Kim, Yamashita, Pasqualino ’051, Pasqualino ’869, the DVB System, Altera PLDs, SDI Products, Gigabit Ethernet Standard, or the DVI Products with Stevens, Widmer, Paik, ANSI 230-1994, Franaszek, Shin, Myers, Loew, ANSI T1X1.5/2000-024R3, Hannah, and/or Pehkonen. A POSITA would be motivated to combine these references because Stevens, Widmer, Paik, ANSI 230-1994, Franaszek, Shin, Myers, Loew, ANSI T1X1.5/2000-024R3, Hannah, and Pehkonen disclose techniques for encoding the control bits disclosed in Kim, Yamashita, Pasqualino ’051, Pasqualino ’869, the DVB System, Altera PLDs, SDI Products, Gigabit Ethernet Standard, or the DVI Products. A POSITA would recognize that the disclosure in Stevens, Widmer, Paik, ANSI 230-1994, Franaszek, Shin, Myers, Loew, ANSI T1X1.5/2000-024R3, Hannah, and Pehkonen of encoding control bits would be useful in encoding the control bits for transmission on the serial stream and could improve the decoding process, and accordingly would be motivated to combine one or more of them with Kim, Yamashita, Pasqualino ’051, Pasqualino ’869, the DVB System, Altera PLDs, SDI Products, Gigabit Ethernet Standard, or the DVI Products to facilitate

transmission of control information with the serial stream and decoding. A POSITA would have a reasonable expectation of success with combining these references because a person of ordinary skill would recognize that the control information should be encoded so it could be transmitted on the serial link with other data.

As a further example, a POSITA would be motivated to combine Kim, Yamashita, Pasqualino ’051, Pasqualino ’869, the DVB System, Altera PLDs, SDI Products, Gigabit Ethernet Standard, or the DVI Products with Stevens, Paik, Shin, Myers, and/or Bodenschatz. A POSITA would be motivated to combine these references because Stevens, Paik, Shin, Myers, and/or Bodenschatz disclose the sequences for transmitting the data which was encoded via the techniques of Kim, Yamashita, Pasqualino ’051, Pasqualino ’869, the DVB System, Altera PLDs, SDI Products, Gigabit Ethernet Standard, or the DVI Products. A POSITA would recognize that the disclosure in Stevens, Paik, Shin, Myers, and Bodenschatz of transmission sequences would be useful in transmitting the encoded data via a serial link, and accordingly would be motivated to combine one or more of them with Kim, Yamashita, Pasqualino ’051, Pasqualino ’869, the DVB System, Altera PLDs, SDI Products, Gigabit Ethernet Standard, or the DVI Products to order the transmission of the encoded data. A POSITA would have a reasonable expectation of success with combining these references because these transmission sequences were well-known orderings for transmitting data which a person of ordinary skill knew could be used to sequence the encoded data for transmission, and because there were a finite number of orderings in which transmission could occur.

As a further example, a POSITA would be motivated to combine references related to the same standard with each other. A POSITA would be motivated to combine these references because these references disclose techniques applicable to or implementing the same standard,

including DVI, DVB, SDI, and/or Gigabit Ethernet, and provide techniques which improve upon other implementations of the same or similar standard, such as by improving error detection, robustness, expanding applicability into other types of data transmissions, or further providing implementation details of those standards. A POSITA would have a reasonable expectation of success with combining these references because these techniques relate to the same standard and/or are applicable to standards directed to similar use cases.

As a further example, a POSITA would be motivated to combine the Altera PLDs with one or more of SDI, DVB, and Gigabit Ethernet. A POSITA would be motivated to combine these references because SDI, DVB, Gigabit Ethernet systems implement standards which the Altera PLDs implemented and/or were compatible with. A POSITA would recognize that the Altera PLDs implemented or were compatible with SDI, DVB, and Gigabit Ethernet, and accordingly would be motivated to implement the SDI, DVB, Gigabit Ethernet standards in Altera PLDs to ensure compatibility with those standards. A POSITA would have a reasonable expectation of success with combining these references because the Altera PLDs support using those standards in its system.

As a further example, a POSITA would be motivated to combine both Pasqualino references with DVI. A POSITA would be motivated to combine these references because the Pasqualino references explicitly incorporate by reference the DVI standard and teach implementations which utilize that standard. A POSITA would have a reasonable expectation of success with combining these references because both Pasqualino references explicitly teach a POSITA to make that combination.

As a further example, a POSITA would be motivated to combine Kim, DVB, Altera PLDs, Gigabit Ethernet, and Yamashita ’560, with ANSI 230-1994, Franaszek, and/or Widmer. A

POSITA would be motivated to combine these references because Kim, DVB, Altera PLDs, Gigabit Ethernet, and Yamashita ’560 disclose implementations which utilize 8b/10b encoding, while references ANSI 230-1994, Franaszek, and Widmer disclose how to implement 8b/10b encoding. A POSITA would recognize that implementation of 8b/10b encoding in Kim, DVB, Altera PLDs, Gigabit Ethernet, and Yamashita ’560 could be accomplished through the techniques described in ANSI 230-1994, Franaszek, and Widmer, and accordingly would be motivated to combine them to implement 8b/10b encoding. A POSITA would have a reasonable expectation of success with combining these references because ANSI 230-1994, Franaszek, and Widmer teach the details of how to accomplish the 8b/10b encoding already described in Kim, DVB, Altera PLDs, Gigabit Ethernet, and Yamashita ’560.

As a further example, a POSITA would be motivated to combine Pasqualino ’051 with Pasqualino ’869. A POSITA would be motivated to combine these references because they are related works of the same inventor, relating to the same subject matter. A POSITA would have a reasonable expectation of success with combining these references because they describe extremely similar systems, invented around the same timeframe, from the same inventor and are thus compatible with one another.

As a further example, a POSITA would be motivated to combine Kim, Yamashita, Pasqualino ’051, Pasqualino ’869, the DVB System, Altera PLDs, SDI Products, Gigabit Ethernet Standard, or the DVI Products with Myers, Loew, Woolfork, ANSI T1X1.5/2000-024R3, and/or Pehkonen. A POSITA would recognize Myers , Loew, Woolfork, ANSI T1X1.5/2000-024R3, and/or Pehkonen’s disclosure of more robust encoding would be useful in reducing interference, errors, and providing for more robust transmission (especially for certain data types where reducing interference or errors is more important, such as audio data), and accordingly would be

motivated to combine Myers, Loew, Woolfork, ANSI T1X1.5/2000-024R3, and/or Pehkonen with Kim, Yamashita, Pasqualino ’051, Pasqualino ’869, the DVB System, Altera PLDs, SDI Products, Gigabit Ethernet Standard, or the DVI Products to improve transmission integrity. A POSITA would have a reasonable expectation of success with combining these references because these robust techniques were well-known encoding techniques which a person of ordinary skill knew could provide for more robust transmission of certain data types, including for example, audio data.

As a further example, a POSITA would be motivated to combine SDI Products, with ANSI 230-1994, Franaszek, Widmer. A POSITA would be motivated to combine these references because SDI Products recognize the benefit of DC balancing, and ANSI 230-1994, Franaszek, Widmer disclose 8b/10b encoding techniques which improve DC balancing. A POSITA would recognize that the well-known 8b/10b techniques described in ANSI 230-1994, Franaszek, Widmer could solve the DC balance issues of ANSI 230-1994, Franaszek, Widmer, and accordingly would be motivated to combine SDI Products with ANSI 230-1994, Franaszek, Widmer to implement 8b/10b encoding. A POSITA would have a reasonable expectation of success with combining these references because the 8b/10b encoding techniques of ANSI 230-1994, Franaszek, Widmer were designed to be compatible in the use cases described in SDI Products.

As a further example, a POSITA would be motivated to combine Kim, DVB, Altera PLDs, Gigabit Ethernet, and Yamashita ’560 with ANSI T1X1.5/2000-024R3. A POSITA would recognize ANSI T1X1.5/2000-024R3’s disclosure of further encoding the 8b/10b would be useful in reducing interference, errors, and providing for more robust transmission (especially for certain data types where reducing interference or errors is more important, such as audio data), and

accordingly would be motivated to combine ANSI T1X1.5/2000-024R3 with Kim, DVB, Altera PLDs, Gigabit Ethernet, and Yamashita '560 to improve transmission integrity. A POSITA would have a reasonable expectation of success with combining these references because these robust techniques were well-known encoding techniques which a person of ordinary skill knew could provide for more robust transmission of certain data types, including for example, audio data.

As a further example, a POSITA would be motivated to combine IEEE Standard 802.3, or the Gigabit Ethernet Standard with Humpleman. A POSITA would be motivated to combine these references because IEEE Standard 802.3, or the Gigabit Ethernet Standard describe transmitting data using the gigabit ethernet standard, and Humpleman describes using ethernet to transmit media such as audio and video, thus enabling the faster transmission of media such as audio and video. A POSITA would have a reasonable expectation of success with combining these references because the gigabit ethernet standard described in IEEE Standard 802.3, or the Gigabit Ethernet Standard is compatible with the disclosures of Humpleman, and the combination would amount to nothing more than combining known methods with predictable results.

H. The '010 Patent

Plaintiff alleges that Defendant infringes claims 1 and 12 of the '010 Patent. Defendant contends that these claims (collectively, "the Asserted Claims of the '010 Patent") are invalid.

1. Identification of Prior Art

Defendant asserts that at least the prior art listed below, individually or in combination, invalidates the Asserted Claims of the '010 Patent. Exhibits 010-A through 010-J provide detailed claim charts showing where each claim limitation may be found in certain references listed below, either expressly or inherently in the larger context of the passage, or inherently as the reference as a whole would be understood by a person having ordinary skill in the art. For those references for which detailed claim charts are not provided in Exhibits 010-A through 010-J, those additional

prior art references are otherwise pertinent to the invalidity of the ’010 Patent, either alone or in combination with other references.

(i) Prior Art Patents, Patent Applications, and Patent Publications

The following patents, patent applications, and patent application publications are prior art under 35 U.S.C. §§ 102(a), (b), and/or (e).[7]

Patent or Pub. No.	Earliest Priority Date	Filing Date	Publication Date	Statutory Category
US 2007/0296859 (“Suzuki”)	2007-05-08	2007-05-08	2007-12-27	102(e)
JP 2004/274642 (“Takada ’642”)	2003-03-12	2003-03-12	2004-09-30	102(a), 102(b), 102(e)
JP 4,451,804 (“Takada ’804”)	2005-04-06	2005-04-06	2006-10-26	102(a), 102(b), 102(e)
US 9,338,428 (“Newton”)	2007-12-14	2015-07-30	2015-11-19	102(e)
JP 2005/210700 (“Hibino”)	2004-12-24	2004-12-24	2005-08-04	102(a), 102(b), 102(e)
JP 2007/166277 (“Takada ’277”)	2005-12-14	2005-12-14	2007-06-28	102(a), 102(e)
US 2006/0238613 (“Takayama”)	2004-12-21	2006-06-22	2006-10-26	102(a), 102(b), 102(e)
US 2008/0134237 (“Tu”)	2007-08-16	2007-08-16	2008-06-05	102(e)
US 2004/0027452 (“Yun”)	2002-08-07	2002-11-12	2004-02-12	102(a), 102(b), 102(e)
US 8,159,529 (“Yoshida”)	2005-07-19	2008-01-17	2012-04-17	102(e)
JP 2007/325101 (“Matsuura”)	2006-06-02	2006-06-02	2007-12-13	102(a), 102(e)
US 2008/0036854 (“Elliott”)	2006-08-08	2006-12-29	2008-02-14	102(e)
US 8,866,971 (“Glen”)	2007-12-17	2007-12-17	2009-06-18	102(e)
WO 2005/114998	2004-05-21	2004-11-30	2005-12-01	102(a), 102(b), 102(e)

[7] Under the America Invents Act (“AIA”), invalidating prior art is defined in 35 U.S.C. § 102(a). However, AIA Section 102(a) was not effective until March 17, 2013. The ’010 Patent purports to predate March 17, 2013, and therefore pre-AIA Section 102 (including sub-sections 102(a), (b), (e) and (g)) apply to the prior art identified in these Invalidity Contentions and the attached exhibits.

("Cho")				
US 2007/0139769 ("DeCusatis")	2005-12-21	2005-12-21	2007-06-21	102(a), 102(e)
US 5,717,415 ("Iue")	1995-01-31	1996-07-10	1998-02-10	102(a), 102(b), 102(e)
JP 2005/006114 ("Ishihara")	2003-06-12	2003-06-12	2005-01-06	102(a), 102(b), 102(e)

(ii) Prior Art Publications

The following publications are prior art under 35 U.S.C. §§ 102(a) and/or (b).

Title	Author/Publisher	Date of Publication	Statutory Category
ISO/IEC23002-3, "Representation of Auxiliary Video and Supplemental Information"	MPEG	2007-10-15	102(a), 102(b)
MPEG-C Part 3: Enabling The Introduction Of Video Plus Depth Contents	Bourge et al.	2006-06	102(a), 102(b)
Comparison of Stereo Video Coding Support in MPEG-4 MAC, H.264/AVC and H.264/SVC	Hewage et al.	2007-07	102(a)
A Standards-Based, Flexible, End-to-End Multi-View Video Streaming Architecture	Kurutepe et al.	2007-11-12	102(a), 102(b)
Coding Algorithms for 3DTV—A Survey	Smolic et al.	2007-10-29	102(a), 102(b)
Integration of 3D Video Into the Blu-ray Format	D.D.R.J. Bolio	2007-10	102(a), 102(b)
3DTV over IP	Tekalp et al.	2007-11-27	102(a), 102(b)
42-inch 3D-Intelligent Display User Manual	Philips	2006-03-22	102(a), 102(b)
Philips Multiview 3D Display Solutions	Philips	2004-06-17	102(a), 102(b)
3-D TV That Actually Works	Wired	2006-08-22	102(a), 102(b)
Locally Switchable 3D Displays	The Society for Information Display	2006-06	102(a), 102(b)
Computer Shopper Magazine	*Computer Shopper* Magazine	2006-08	102(a), 102(b)
Philips 3D Solutions	Philips	2006-05	102(a), 102(b)
Philips 42 inch 3D Display wins Gold Award at SID2006	New Atlas	2006-06	102(a), 102(b)
Philips to reveal 3D display innovations at SID2006	Designer Today Magazine	2008-06-07	102(a), 102(b)

Title	Author/Publisher	Date of Publication	Statutory Category
Philips 3D solutions: from content creation to visualization	IEEE Computer Society	2006-06	102(a), 102(b)
3D graphics rendering for multiview displays	Eindhoven University of Technology	2005-03	102(a), 102(b)
GPU-based rendering to a multiview display	Eindhoven University of Technology	2006-06	102(a), 102(b)
Chapter 30. The GeForce 6 Series GPU Architecture	NVIDIA	2005-04	102(a), 102(b)
Stereoscopic Player and Stereoscopic Multiplexer: a computer-based system for stereoscopic video playback and recording	Wimmer	2005-03-22	102(a), 102(b)
NVIDIA's Stereoscopic 3D Development Guide	NVIDIA	2004-12-09	102(a), 102(b)
NVIDIA 3D Stereo User's Guide	NVIDIA	2005-07-18	102(a), 102(b)
NVIDIA GPU Programming Guide Version 2.5.0	NVIDIA	2006-03-01	102(a), 102(b)
NVIDIA 3D Stereo User's Guide (for Detonator XP)	NVIDIA	2001-11-08	102(a), 102(b)
ForceWare Graphics Drivers, NVIDIA 3D Stereo User's Guide (for Release 55)	NVIDIA	2004-03-09	102(a), 102(b)
ForceWare Graphics Driver User's Guide	NVIDIA	2004-10	102(a), 102(b)
NVIDIA Quadro Professional Drivers – Workstation User's Guide	NVIDIA	2006-07	102(a), 102(b)
ForceWare Graphics Driver User's Guide (November 2005)	NVIDIA	2005-11	102(a), 102(b)
ForceWare Graphics Driver User's Guide (March 2005)	NVIDIA	2005-03	102(a), 102(b)
ForceWare Graphics Drivers Release 80 Notes Version 81.95	NVIDIA	2005-11	102(a), 102(b)
Dell Inspiron 9300 Owner's Manual ("Dell Inspiron 9300")	Dell	2005-01	102(a), 102(b)
Sharp LL-151-3D Operation Manual ("Sharp LL-151-3D")	Sharp	Early 2000s	102(a), 102(b)
2D/3D Switchable Displays	Sharp	2003-01-14	102(a), 102(b)
Challenges And Opportunities In Video Coding For 3D TV	IEEE	2006-07-09	102(a), 102(b)

Title	Author/Publisher	Date of Publication	Statutory Category
Design and Evaluation of a 3D Video System Based on H.264 View Coding	NOSSDAV	2006-05-26	102(a), 102(b)
Sharp Announces Second Generation 3D Notebook	Phys.org	2006-03-08	102(a), 102(b)
Sharp develops 3D flat screen	CNET	2002-09-27	102(a), 102(b)
Sharp introduces 3-D computer display	NBC News	2004-08-09	102(a), 102(b)
Sharp Introduces 3D LCD Color Monitor that provides a stereoscopic display	Phys.org	2004-06-18	102(a), 102(b)
Sharp's 3D LCD Technology Now Available for Desktop Computers; No-Glasses 3D Technology Now Available in 15-Inch Desktop	Phys.org	2004-08-09	102(a), 102(b)
Sharp 3D 'Glasses Free' Display Technology	Sharp	2006-10-21	102(a), 102(b)
3D Display Monitor Without the Need For Special Glasses	Sharp	2005-11-26	102(a), 102(b)
A Shift in Time: An Interactive Painting on a Multi-View Display	New York University	2005-05-05	102(a), 102(b)
3D TV Using MPEG-2 and H.264 View Coding and Autostereoscopic Displays	Association for Computing Machinery	2006-10-23	102(a), 102(b)
DIA Awards Archive	The Society For Information Display	2023-03-21	102(a), 102(b)
Enabling Introduction of Stereoscopic (3D) Video: Formats and Compression Standards	Bruls et al.	2007-09-16	102(a)

(iii) Prior Art Systems

The Asserted Claims of the '010 Patent are invalid under 35 U.S.C. § 102(a) and (b) because they were known by others, publicly used, and on sale in the United States before they were purportedly invented and more than one year before the priority date of the Asserted Claims. Additionally, the Asserted Claims are invalid under 35 U.S.C. § 102(g) because any purported invention was made in this country by another who had not abandoned, suppressed, or concealed

the purported invention. For example, the foregoing patents and publications are evidence of such prior art systems and inventions. Additionally, Defendant relies on the systems identified in the Exhibits hereto, and also the systems identified below.

System	Date of Prior Invention, Sale, Use, Or Knowledge	Statutory Category
Sharp 3D System[8]	No later than March 2005	102(a), 102(b), 102(g)
Philips 3D System[9]	No later than March 2006	102(a), 102(b), 102(g)
MPEG-C Part 3 Specification and Products[10]	No later than November 2007	102(a), 102(g)

2. Bases for Anticipation and/or Obviousness

Each prior art reference identified in Exhibits 010-A through 010-J expressly, implicitly, or inherently anticipates and/or renders obvious the Asserted Claims of the ’010 Patent, either alone or in combination with other prior art references (e.g., the references identified in Exhibits 010-A through 010-J or other references identified above) or the knowledge of the person of ordinary skill in the art at the time of the alleged invention. Each of the prior art references included in Exhibits 010-A through 010-J can be combined with any other prior art reference in

[8] The Sharp 3D System consisted of products using Sharp stereoscopic 3D technology such as, for example, the Sharp LL-151-3D LCD Monitor, Dell Inspiron 9300 Laptop, and NVIDIA GeForce Go 6800 GPU, as described in Exhibit 010-I.

[9] The Philips 3D System consisted of products using Philips stereoscopic 3D technology such as, for example, the Philips 42-inch 3D-Intelligent Display, Dell Inspiron 9300 Laptop, and NVIDIA GeForce Go 6800 GPU, as described in Exhibit 010-H.

[10] The MPEG-C Part 3 Specification and Products consisted of the MPEG-C Part 3 specification and products implementing the MPEG-C Part 3 specification such as, for example, the Philips 42-inch 3D-Intelligent Display and the Sigma Designs Blu-ray reference board, as described in Exhibit 010-J.

Exhibits 010-A through 010-J, or identified above, to render obvious the Asserted Claims of the ’010 Patent and the examples of combinations below are intended for emphasis only.[11]

In the table below, Defendant identifies a non-exhaustive list of prior art references that, alone or in combination, anticipate and/or render obvious the Asserted Claims.

Reference(s)	Grounds	Exhibit
Suzuki	35 U.S.C. §§ 102, 103	010-A
Suzuki in view of Tu	35 U.S.C. § 103	010-A
Suzuki in view of Yun	35 U.S.C. § 103	010-A
Suzuki in view of Yoshida	35 U.S.C. § 103	010-A
Suzuki in view of Matsuura	35 U.S.C. § 103	010-A
Suzuki in view of Elliott	35 U.S.C. § 103	010-A
Suzuki in view of Glen	35 U.S.C. § 103	010-A
Suzuki in view of Cho	35 U.S.C. § 103	010-A
Suzuki in view of DeCusatis	35 U.S.C. § 103	010-A
Suzuki in view of Iue	35 U.S.C. § 103	010-A
Suzuki in view of Ishihara	35 U.S.C. § 103	010-A
Suzuki in view of Yoshida, Tu, Yun, Glen, Cho, DeCusatis, Matsuura, Elliott, Iue, and/or Ishihara.	35 U.S.C. § 103	010-A
Takada ’642	35 U.S.C. §§ 102, 103	010-B
Takada ’642 in view of Suzuki	35 U.S.C. § 103	010-B, 010-A
Takada ’642 in view of Tu	35 U.S.C. § 103	010-B
Takada ’642 in view of Yun	35 U.S.C. § 103	010-B
Takada ’642 in view of Yoshida	35 U.S.C. § 103	010-B
Takada ’642 in view of Matsuura	35 U.S.C. § 103	010-B
Takada ’642 in view of Elliott	35 U.S.C. § 103	010-B
Takada ’642 in view of Glen	35 U.S.C. § 103	010-B
Takada ’642 in view of Cho	35 U.S.C. § 103	010-B
Takada ’642 in view of DeCusatis	35 U.S.C. § 103	010-B
Takada ’642 in view of Iue	35 U.S.C. § 103	010-B
Takada ’642 in view of Ishihara	35 U.S.C. § 103	010-B
Takada ’642 in view of Yoshida, Tu, Yun, Glen, Cho, DeCusatis, Matsuura, and/or Elliott.	35 U.S.C. § 103	010-B
Takada ’804	35 U.S.C. §§ 102, 103	010-C
Takada ’804 in view of Suzuki	35 U.S.C. § 103	010-C, 010-A

[11] For example, each of Suzuki, Takada ’642, Takada ’804, Newton, Hibino, Takada ’277, Takayama, the Philips System, and the Sharp System may be combined with each other to render obvious the Asserted Claims of the ’010 Patent.

Reference(s)	Grounds	Exhibit
Takada ’804 in view of Tu	35 U.S.C. § 103	010-C
Takada ’804 in view of Yun	35 U.S.C. § 103	010-C
Takada ’804 in view of Yoshida	35 U.S.C. § 103	010-C
Takada ’804 in view of Matsuura	35 U.S.C. § 103	010-C
Takada ’804 in view of Elliott	35 U.S.C. § 103	010-C
Takada ’804 in view of Glen	35 U.S.C. § 103	010-C
Takada ’804 in view of Cho	35 U.S.C. § 103	010-C
Takada ’804 in view of DeCusatis	35 U.S.C. § 103	010-C
Takada ’804 in view of Iue	35 U.S.C. § 103	010-C
Takada ’804 in view of Ishihara	35 U.S.C. § 103	010-C
Takada ’804 in view of Yoshida, Tu, Yun, Glen, Cho, DeCusatis, Matsuura, Elliott, Iue, and/or Ishihara.	35 U.S.C. § 103	010-C
Newton	35 U.S.C. §§ 102, 103	010-D
Newton in view of Suzuki	35 U.S.C. § 103	010-D, 010-A
Newton in view of Tu	35 U.S.C. § 103	010-D
Newton in view of Yun	35 U.S.C. § 103	010-D
Newton in view of Yoshida	35 U.S.C. § 103	010-D
Newton in view of Matsuura	35 U.S.C. § 103	010-D
Newton in view of Elliott	35 U.S.C. § 103	010-D
Newton in view of Glen	35 U.S.C. § 103	010-D
Newton in view of Cho	35 U.S.C. § 103	010-D
Newton in view of DeCusatis	35 U.S.C. § 103	010-D
Newton in view of Iue	35 U.S.C. § 103	010-D
Newton in view of Ishihara	35 U.S.C. § 103	010-D
Newton in view of Yoshida, Tu, Yun, Glen, Cho, DeCusatis, Matsuura, Elliott, Iue, and/or Ishihara.	35 U.S.C. § 103	010-D
Hibino	35 U.S.C. §§ 102, 103	010-E
Hibino in view of Suzuki	35 U.S.C. § 103	010-E, 010-A
Hibino in view of Tu	35 U.S.C. § 103	010-E
Hibino in view of Yun	35 U.S.C. § 103	010-E
Hibino in view of Yoshida	35 U.S.C. § 103	010-E
Hibino in view of Matsuura	35 U.S.C. § 103	010-E
Hibino in view of Elliott	35 U.S.C. § 103	010-E
Hibino in view of Glen	35 U.S.C. § 103	010-E
Hibino in view of Cho	35 U.S.C. § 103	010-E
Hibino in view of DeCusatis	35 U.S.C. § 103	010-E
Hibino in view of Iue	35 U.S.C. § 103	010-E
Hibino in view of Ishihara	35 U.S.C. § 103	010-E
Hibino in view of Yoshida, Tu, Matsuura, Glen, Cho, DeCusatis, Elliott, Yun, Iue, and/or Ishihara.	35 U.S.C. § 103	010-E
Takada ’277	35 U.S.C. §§ 102, 103	010-F

Reference(s)	Grounds	Exhibit
Takada ’277 in view of Suzuki	35 U.S.C. § 103	010-F, 010-A
Takada ’277 in view of Tu	35 U.S.C. § 103	010-F
Takada ’277 in view of Yun	35 U.S.C. § 103	010-F
Takada ’277 in view of Yoshida	35 U.S.C. § 103	010-F
Takada ’277 in view of Matsuura	35 U.S.C. § 103	010-F
Takada ’277 in view of Elliott	35 U.S.C. § 103	010-F
Takada ’277 in view of Glen	35 U.S.C. § 103	010-F
Takada ’277 in view of Cho	35 U.S.C. § 103	010-F
Takada ’277 in view of DeCusatis	35 U.S.C. § 103	010-F
Takada ’277 in view of Iue	35 U.S.C. § 103	010-F
Takada ’277 in view of Ishihara	35 U.S.C. § 103	010-F
Takada ’277 in view of Yoshida, Tu, Yun, Glen, Cho, DeCusatis, Matsuura, Elliott, Iue, and/or Ishihara.	35 U.S.C. § 103	010-F
Takayama	35 U.S.C. §§ 102, 103	010-G
Takayama in view of Suzuki	35 U.S.C. § 103	010-G, 010-A
Takayama in view of Tu	35 U.S.C. § 103	010-G
Takayama in view of Yun	35 U.S.C. § 103	010-G
Takayama in view of Yoshida	35 U.S.C. § 103	010-G
Takayama in view of Matsuura	35 U.S.C. § 103	010-G
Takayama in view of Elliott	35 U.S.C. § 103	010-G
Takayama in view of Glen	35 U.S.C. § 103	010-G
Takayama in view of Cho	35 U.S.C. § 103	010-G
Takayama in view of DeCusatis	35 U.S.C. § 103	010-G
Takayama in view of Iue	35 U.S.C. § 103	010-G
Takayama in view of Ishihara	35 U.S.C. § 103	010-G
Takayama in view of Yoshida, Tu, Matsuura, Glen, Cho, DeCusatis, Yun, Elliott, Iue, and/or Ishihara.	35 U.S.C. § 103	010-G
The Philips System	35 U.S.C. §§ 102, 103	010-H
The Philips System in view of Suzuki	35 U.S.C. § 103	010-H, 010A
The Philips System in view of Tu	35 U.S.C. § 103	010-H
The Philips System in view of Yun	35 U.S.C. § 103	010-H
The Philips System in view of Yoshida	35 U.S.C. § 103	010-H
The Philips System in view of Matsuura	35 U.S.C. § 103	010-H
The Philips System in view of Elliott	35 U.S.C. § 103	010-H
The Philips System in view of Glen	35 U.S.C. § 103	010-H
The Philips System in view of Cho	35 U.S.C. § 103	010-H
The Philips System in view of DeCusatis	35 U.S.C. § 103	010-H
The Philips System in view of Iue	35 U.S.C. § 103	010-H
The Philips System in view of Ishihara	35 U.S.C. § 103	010-H

Reference(s)	Grounds	Exhibit
The Philips System in view of Yoshida, Tu, Matsuura, Glen, Cho, DeCusatis, Elliott, Yun, Iue, and/or Ishihara.	35 U.S.C. § 103	010-H
The Sharp System	35 U.S.C. §§ 102, 103	010-I
The Sharp System in view of Suzuki	35 U.S.C. § 103	010-I, 010-A
The Sharp System in view of Tu	35 U.S.C. § 103	010-I
The Sharp System in view of Yun	35 U.S.C. § 103	010-I
The Sharp System in view of Yoshida	35 U.S.C. § 103	010-I
The Sharp System in view of Matsuura	35 U.S.C. § 103	010-I
The Sharp System in view of Elliott	35 U.S.C. § 103	010-I
The Sharp System in view of Glen	35 U.S.C. § 103	010-I
The Sharp System in view of Cho	35 U.S.C. § 103	010-I
The Sharp System in view of Iue	35 U.S.C. § 103	010-I
The Sharp System in view of Ishihara	35 U.S.C. § 103	010-I
The Sharp System in view of Yoshida, Tu, Matsuura, Glen, Cho, DeCusatis, Elliott, Yun, Iue, and/or Ishihara.	35 U.S.C. § 103	010-I
MPEG-C Part 3 Specification And Products	35 U.S.C. §§ 102, 103	010-J
MPEG-C Part 3 Specification And Products in view of Suzuki	35 U.S.C. § 103	010-J, 010-A
MPEG-C Part 3 Specification And Products in view of Tu	35 U.S.C. § 103	010-J
MPEG-C Part 3 Specification And Products in view of Yun	35 U.S.C. § 103	010-J
MPEG-C Part 3 Specification And Products in view of Yoshida	35 U.S.C. § 103	010-J
MPEG-C Part 3 Specification And Products in view of Matsuura	35 U.S.C. § 103	010-J
MPEG-C Part 3 Specification And Products in view of Elliott	35 U.S.C. § 103	010-J
MPEG-C Part 3 Specification And Products in view of Glen	35 U.S.C. § 103	010-J
MPEG-C Part 3 Specification And Products in view of Cho	35 U.S.C. § 103	010-J
MPEG-C Part 3 Specification And Products in view of Iue	35 U.S.C. § 103	010-J
MPEG-C Part 3 Specification And Products in view of Ishihara	35 U.S.C. § 103	010-J
MPEG-C Part 3 Specification And Products in view of Yoshida, Tu, Matsuura, Glen, Cho, DeCusatis, Elliott, Yun, Iue, and/or Ishihara.	35 U.S.C. § 103	010-J

The accompanying claim charts (Exhibits 010-A through 010-J) set forth example bases for anticipation and obviousness, identifying where each reference discloses, alone or in

combination with other references, each limitation of the Asserted Claims of the ’010 Patent on a limitation-by-limitation basis. Defendant’s claim charts are exemplary and not intended to be exhaustive.

(i) Obviousness Combinations

Subject to Defendant’s reservation of rights, Defendant contends that all of the prior art references, as identified above and described in the charts attached as Exhibits 010-A through 010-J, by themselves anticipate the asserted claim in accordance with 35 U.S.C. § 102 and/or render the Asserted Claims of the ’010 Patent obvious under 35 U.S.C. § 103, as more specifically noted in the attached charts.

The cited portions of the prior art references are examples and 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 a cited prior art reference is deemed not to anticipate or render obvious a claim as noted in the attached charts for failing to teach or suggest one or more limitations of that claim, that claim would nonetheless have been obvious to one of ordinary skill in the art at the time of the invention by the combination of the cited prior art reference with one or more other prior art references and/or common knowledge disclosing the missing claim limitations. For example, any of the references listed above, to the extent it does not explicitly or inherently disclose any limitation, could be combined with any one or more of the other references listed above which discloses that limitation.

Defendant reserves the right to supplement the obviousness arguments using any references listed above, or any references that may become known to Defendant during the course of discovery. Further, the suggested obviousness combinations are in addition to Defendant’s anticipation contentions and are not to be construed to suggest that any reference included in the combinations is not anticipatory on its own.

(ii) Motivation to Combine And Reasonable Expectation Of Success

With respect to the ’010 Patent, the prior art identified above non-exhaustively illustrates the scope and content of the prior art. As detailed in claim charts 010-A through 010-J, the prior art included each limitation recited in the Asserted Claims of the ’010 Patent. To the extent a cited prior art reference is deemed not to anticipate a claim, the only difference between the claimed invention and the prior art is the lack of actual combination of the elements in a single prior art reference. However, for at least the reasons discussed above and the additional reasons discussed below, a POSITA would have been motivated to combine each of the above prior art references. A POSITA in the art pertaining to the ’010 Patent at the relevant time would have been someone with a bachelor’s degree in computer science, computer engineering, electrical engineering, or equivalent training, and approximately two years’ experience working in video processing and would be knowledgeable regarding audio-visual communications and stereoscopic display techniques. Lack of work experience can be substituted for additional education, and vice versa.

A POSITA would have numerous motivations to combine each of the above-referenced prior art. For example, as the United States Supreme Court held in *KSR*, “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” 550 U.S. at 416. The Supreme Court further held that, “[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. . . .” *Id.* at 417. Accordingly, a person of

skill in the art would have been motivated to combine or adapt known or familiar methods in the art.

The combinations of the prior art references identified above would have been obvious in view of: (1) the knowledge of persons of ordinary skill in the art; (2) the express, implied and inherent teachings of the prior art, or the interrelated teachings of multiple prior art references; (3) the nature of the problem being solved; (4) the fact that they are combinations of known methods to yield predictable results; (5) the fact that they involve a simple substitution of one known, equivalent element for another to obtain predictable results; (6) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces; (7) the existence of a known need or problem in the field of endeavor at the time of the invention(s); and/or (8) a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to try combining the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. Furthermore, the combination of the prior art references identified above would have been obvious because the combination represents the known potential options with a reasonable expectation of success.

Indeed, to the extent the prior art references identified herein do not anticipate the Asserted Claims of the ’010 Patent, the limitations of these claims are merely obvious variations of the systems and methods disclosed in the various prior art references. As discussed below and in the prior art references, all of these were well-known, conventional technologies prior to the Asserted Claims of the ’010 Patent. The ’010 Patent does not purport to have invented any of these technologies; rather, the ’010 Patent simply tacked on these conventional prior art approaches to

conventional and generic known prior techniques. As such, the Asserted Claims merely incorporate the knowledge of a POSITA. The mere amalgamation of such conventional technologies here is not inventive—it is simply combining or substituting well-known, conventional prior art elements according to known methods to yield predictable results.

For example, a person having ordinary skill in the art would have been motivated to combine the prior art identified in Exhibits 010-A through 010-J based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons having ordinary skill in the art. Each reference in Exhibits 010-A through 010-J discloses methods and systems transmitting and/or receiving image data, such as 2D and 3D stereoscopic image data, across an interface. The references identified in Exhibits 010-A through 010-J are analogous prior art to the subject matter of the Asserted Claims and are proper to combine. Because these prior art references exist within a single area (transmission and/or processing of image data across an interface), it would have been obvious for a POSITA to look from one piece of prior art to another to find any missing functionality they desired to implement, or to replace functionality in one prior art reference for that described in another reference. Therefore, these references provide interrelated teachings and one of ordinary skill would look to the concepts in any of these references when seeking to solve the problems purportedly addressed by the ’010 patent.

Combining the similar references identified herein and in Exhibits 010-A through 010-J, which address similar problems as noted above, would have been obvious and straightforward to a POSITA. *First*, the combinations represent no more than the use of known techniques according to known methods in the same ways to yield predictable results. For example, the references generally address the same field of transmitting and/or receiving image data, such as 2D and 3D stereoscopic image data, across an interface, and one of ordinary skill in the art would be motivated

by such obvious considerations as enhancing the amount of data that could be transmitted or received over the interface. *Second*, the references themselves identify the known problems and provide known solutions to address those problems in the field. Indeed, the references identified herein and in Exhibits 010-A through 010-J demonstrate that there was, at the time of the alleged invention, a finite number of identified, predictable solutions for enhancing the transmission and/or receipt of image data that persons of ordinary skill in the art would have known how to successfully combine, making the claimed invention obvious. *Third*, the combinations are motivated because a person of ordinary skill would appreciate that they improve the systems in the prior art by providing further techniques to transmit and/or receive 2D and stereoscopic 3D data over an interface, including by providing techniques for formatting and processing image data in 2D and stereoscopic 3D modes, multiplexing 3D stereoscopic image components so the components may be transmitted over the existing capacity of an interface, and/or signaling whether a 2D or stereoscopic 3D mode is being used and the format of the stereoscopic 3D data. *Fourth*, because the problems and solutions were known in the field, the particular arrangements and combinations of references would yield predictable results. *Fifth*, a number of the references themselves provide express motivations that would have led a person of ordinary skill to their combination. For example, the references acknowledge that formatting image data in a 2D or stereoscopic 3D mode and formatting stereoscopic 3D data so that it may be transmitted over the existing capacity of an interface that typically transmits 2D data can be important.

Below, Defendant has provided several additional examples of the motivations that a person of ordinary skill in the art would have had to combine certain of the prior art references in Exhibits 010-A through 010-J. The inclusion of certain example combinations herein does not exclude other combinations based on the claim charts attached hereto, as there are many possible

combinations of the references listed herein, and it is not practical, particularly at this early stage prior to further factual investigation and claim construction proceedings, to identify and list all potentially relevant combinations. Instead, in many instances where a particular contention calls for, or requires, combining references, any one of a number of references can be combined.

As one example, methods and systems that formatted image data for transmission across an interface from a source device to a sink device in either a 2D or stereoscopic 3D mode were well-known and within the skill of persons of ordinary skill in the art at the time of the alleged invention. *See, e.g.*, Suzuki, Takada ’804, Newton, Takada ’277, Takayama, the Philips System, and the Sharp System. For example, Suzuki describes both transmission of “typical video data (specifically, video data not for three dimensional display)” and “video data transmission for three-dimensional display.” Suzuki, [0053], [0068]. The ’010 patent also concedes that “[s]chemes for conveying stereoscopic image data within the confines of existing display interfaces” were well-known, such as the Philips WOWvx system which transmitted both “[s]ub-frames [that] carrie[d] 2D image data and a second of the sub-frames [that] carrie[d] depth information.” ’010 patent, 1:42-51. These methods and systems included techniques for setting the formatter to operate in a 2D or stereoscopic 3D mode, including setting the mode according to a signal received from the sink device, as disclosed by at least Suzuki, Takada ’804, Newton, Takada ’277, Takayama, the Philips System, and the Sharp System. *See, e.g.*, Exs. 010-A, 010-C, 010-D, 010-F, 010-G, 010-H, 010-I, at claim element 1(b). A person of ordinary skill would have been motivated to combine techniques for operating a formatter in a 2D or 3D stereoscopic mode with references disclosing transmitting image data because doing so would allow the user to view both 2D and 3D stereoscopic content. A POSITA would have a reasonable expectation of success with combining these references because formatters operable to transmit 2D and stereoscopic 3D image data across

an interface are readily adaptable to systems that transmit image data across an interface, and would amount to using known techniques for implementing multi-mode formatters in existing transmission interfaces in predictable ways.

As a further example, methods and systems that processed image data received across an interface at a sink device in either a 2D or stereoscopic 3D mode were well-known and within the skill of persons of ordinary skill in the art at the time of the alleged invention. *See, e.g.*, Suzuki, Takada '804, Newton, Takada '277, Takayama, the Philips System, and the Sharp System. For example, Suzuki explains that "[t]ypical display processing for 2D display is performed" but "in the case where it is determined that the three-dimensional mode has been set, the video data for the left eye and the video data for the right eye are separated (or combined) and corresponding display processing for three-dimensional image is performed." Suzuki, [0065], [0066]. The '010 patent also concedes that "[s]chemes for conveying stereoscopic image data within the confines of existing display interfaces" were well-known, such as the Philips WOWvx system which, in the case of a 3D mode, "extracts depth data from the second sub-frame and creates a 3D image having a resolution of the first sub-frame." '010 patent, 1:42-56. These systems and methods included techniques for configuring the sink device to process the received image data in either a 2D or stereoscopic 3D mode, including setting the mode according to the capabilities of the source device, as disclosed by at least Suzuki, Takada '804, Newton, Takada '277, Takayama, the Philips System, and the Sharp System. *See, e.g.*, Exs. 010-A, 010-C, 010-D, 010-F, 010-G, 010-H, 010-I, at claim element 12(b). A person of ordinary skill would have been motivated to combine techniques for processing image data in a 2D or stereoscopic 3D mode with references disclosing receiving image data over an interface because doing so would allow sink devices to process both 2D and stereoscopic 3D data for users. Making these combinations would be straightforward

because processors operable to process 2D and stereoscopic 3D image data received from a source device are readily adaptable to systems that receive image data across an interface, and would amount to using known techniques for implementing multi-mode processors in existing transmission interfaces in predictable ways.

As a further example, methods and systems that multiplexed and demultiplexed components of 3D stereoscopic image data so that the 3D stereoscopic image data may be transmitted over the existing capacity of an interface that typically transmits 2D data were well-known and within the skill of persons of ordinary skill in the art at the time of the alleged invention. *See, e.g.*, Suzuki, Takada ’642, Takada ’804, Hibino, Takada ’277, Takayama, the Philips System, and the Sharp System. The ’010 patent itself concedes that “[s]chemes for conveying stereoscopic image data within the confines of existing display interfaces” were well-known, such as the Philips WOWvx system which “divides the overall display frame into a number of separate regions where different data can be carried. The overall frame is divided into two sub-frames, arranged side-by-side: a first of the sub-frames carries 2D image data and a second of the sub-frames carries depth information.” ’010 patent, 1:42-51. These systems and methods included techniques for multiplexing and demultiplexing left and right eye image data or 2D data and depth information as disclosed by at least Suzuki, Takada ’642, Takada ’804, Hibino, Takada ’277, Takayama, the Philips System, and the Sharp System. *See, e.g.*, Exs. 010-A, 010-B, 010-C, 010-E, 010-F, 010-G, 010-H, 010-I, at claim elements 1(d), 1(e), 12(d), 12(e). A person of ordinary skill would have been motivated to combine techniques for multiplexing and demultiplexing components of 3D stereoscopic image data with references disclosing transmitting or receiving data over an interface so that stereoscopic 3D data may be transmitted and received using the capacity of an existing interface that typically transmits 2D data, without needing to change the configuration of the

interface. Making these combinations would be straightforward because systems and techniques for multiplexing and de-multiplexing stereoscopic image data are readily adaptable to systems that transmit and receive image data across an interface, and amount to using known techniques for generating and processing multiplexed data in predictable ways using the existing capacity of the interface.

As a further example, methods and systems that transmitted signaling information informing a sink device of whether received image data is formatted in a 2D or stereoscopic 3D mode and the characteristics of the transmitted stereoscopic 3D data were well-known and within the skill of persons of ordinary skill in the art at the time of the alleged invention. *See, e.g.*, Suzuki, Takada '642, Takada '804, Newton, Hibino, Takayama, the Philips System, and the Sharp System. The '010 patent itself concedes that there were well-known methods for signaling a 3D mode and the characteristics of the 3D data, such as the use of conventional HDMI Data Island Packets. For example, "a WOWvx encoded image as described in the background section, comprises a 2D image, depth information and/or occlusion information already embedded into separate regions of a conventional image." '010 patent, 10:1-4. "In order to identify such a 3D image, an HDMI Data Island Packet (typically a General Control Packet, Auxiliary Video InfoFrame (AVI) packet or specifically designated InfoFrame Packet) indicates this method. The information in this Packet identifies: the current stereoscopic method (e.g. 2D+Depth) being used; any information pertaining to this method which is required by the display." *Id.*, 10:12-20. These systems and methods included techniques for transmitting the format of stereoscopic 3D data, such as left eye data and right eye data or 2D data and depth information, as disclosed by at least Suzuki, Takada '642, Takada '804, Newton, Hibino, Takayama, the Philips System, and the Sharp System. *See, e.g.*, Exs. 010-A, 010-B, 010-C, 010-D, 010-E, 010-G, 010-H, and 010-I, at claim elements 1(f), 12(f).

A person of ordinary skill would have been motivated to combine these techniques for signaling whether the image data is formatted in a 2D or stereoscopic 3D mode, and the characteristics of the transmitted data, with references disclosing transmitting or receiving data over an interface so that the sink device can determine the format and configuration of the received image data so it can display the data properly. Making these combinations would be straightforward because systems and techniques for transmitting signaling information informing a sink device of whether received image data is formatted in a 2D or stereoscopic 3D mode and the characteristics of the transmitted stereoscopic 3D data are readily adaptable to systems that already transmit data, such as image data, between source and sink devices, and amount to using known techniques for sending signaling information between source and sink devices in predictable ways.

As a further example, a POSITA would be motivated to combine Suzuki, Takada '642, Takada '804, Newton, Hibino, Takada '277, Takayama, the Philips System, and the Sharp System with each other. A POSITA would be motivated to combine these references because they all disclose features of and/or applicable to interfaces that transmit image information from a source device to a sink device. *See* Exs. 010-A through 010-J, at claim elements 1(p)(i), 1(p)(ii), 12(p)(i), 12(p)(ii). A POSITA would recognize that Suzuki, Takada '642, Takada '804, Newton, Hibino, Takada '277, Takayama, the Philips System, and the Sharp System include the same or similar types of interface parts that support transmitting pixel information between a source device and a sink device, and accordingly would be motivated to combine those references to improve the usability of the interfaces for transmitting both 2D and stereoscopic 3D data. A POSITA would have a reasonable expectation of success with combining these references because they all describe similar systems—*e.g.*, involving transmission of 2D and stereoscopic 3D data across an interface,

formatting and processing the image data according to a 2D or stereoscopic 3D mode, and/or indicating the type of mode and characteristics of the stereoscopic 3D data.

As a further example, a POSITA would be motivated to combine Suzuki, Takada ’642, Takada ’804, Newton, Hibino, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products with one or more of Yoshida, Tu, Yun, Matsuura, Glen, Cho, and DeCusatis. A POSITA would be motivated to combine these references because Yoshida, Tu, Yun, Matsuura, Glen, Cho, and DeCusatis disclose interface parts in source and/or sink devices for transmitting and/or processing image data, such as uncompressed pixel information, that can be used in the image data transmission systems disclosed in Suzuki, Takada ’642, Takada ’804, Newton, Hibino, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products. A POSITA would recognize that Yoshida’s, Tu’s, Yun’s, Matsuura’s, Glen’s, Cho’s, and DeCusatis’s disclosure of interface parts for transmitting and/or processing image data would be useful in image data transmission systems, and accordingly would be motivated to combine Suzuki, Takada ’642, Takada ’804, Newton, Hibino, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products to facilitate the transmission and processing of image data, including uncompressed pixel information, between source and sink devices. Making these combinations would be straightforward because dedicated interface parts are readily adaptable to systems that transmit and receive data over interfaces such as HDMI and would amount to using known interface part configurations in predictable ways.

As a further example, a POSITA would be motivated to combine Suzuki, Takada ’642, Takada ’804, Takada ’277, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products with one or more of Yoshida, Matsuura, Elliott, Tu, Yun, Glen, Cho,

and DeCusatis. A POSITA would be motivated to combine these references because Yoshida, Matsuura, Elliott, Tu, Yun, Glen, Cho, and DeCusatis disclose inputs for receiving image data, including from a transmission interface, which may be used to receive the image data disclosed in Suzuki, Takada ’642, Takada ’804, Takada ’277, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products. A POSITA would recognize that Yoshida’s, Matsuura’s, Elliott’s, Tu’s, Yun’s, Glen’s, Cho’s, and DeCusatis’s disclosure of inputs for receiving image data would be useful in systems that format, transmit, and receive image data across an interface, and accordingly would be motivated to combine Yoshida, Matsuura, Elliott, Tu, Yun, Glen, Cho, and DeCusatis with the one or more additional references Suzuki, Takada ’642, Takada ’804, Takada ’277, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products to facilitate the inputting, formatting, transmitting, and receiving of image data across an interface. Making these combinations would be straightforward because inputs for receiving image data are readily adaptable to systems that already have interconnections for transporting image data and would amount to using known techniques and systems for data inputs in predictable ways.

As a further example, a POSITA would be motivated to combine Suzuki, Takada ’642, Takada ’804, Hibino, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products with one or more of Yoshida, Matsuura, Elliott, Tu, Yun, Glen, Cho, and DeCusatis. A POSITA would be motivated to combine these references because Yoshida, Matsuura, Elliott, Tu, Yun, Glen, Cho, and DeCusatis disclose formatters that format image data for transmission over an interface that are operable in both 2D and stereoscopic 3D modes, which may be used in the systems that transmit image data from source devices to sink devices disclosed in Suzuki, Takada ’642, Takada ’804, Hibino, the Philips System, the Sharp System, and the MPEG-C Part

3 Specification And Products. A POSITA would recognize that Yoshida's, Matsuura's, Elliott's, Tu's, Yun's, Glen's, Cho's, and DeCusatis's disclosure of formatters operable in 2D and stereoscopic 3D modes would be useful in systems that transmit image data, such as 2D and stereoscopic 3D data, and accordingly would be motivated to combine Suzuki, Takada '642, Takada '804, Hibino, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products to facilitate formatting image data for transmission across an interface. Making these combinations would be straightforward because formatters operable to transmit 2D and stereoscopic 3D image data across an interface are readily adaptable to systems that transmit image data across an interface, and would amount to using known techniques for implementing multi-mode formatters in existing transmission interfaces in predictable ways.

As a further example, a POSITA would be motivated to combine Suzuki, Takada '642, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products with one or more of Yoshida, Matsuura, Elliott, Tu, Yun, Glen, Cho, and DeCusatis. A POSITA would be motivated to combine these references because Yoshida, Matsuura, Elliott, Tu, Yun, Glen, Cho, and DeCusatis disclose components that process received image data and are operable in both 2D and stereoscopic 3D modes according to signals from the source device and may be used in systems that receive image data from a source device, as disclosed in Suzuki, Takada '642, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products. A POSITA would recognize that Yoshida's, Matsuura's, Elliott's, Tu's, Yun's, Glen's, Cho's, and DeCusatis's disclosure of processors operable in 2D and stereoscopic 3D modes according to signal information from the source device would be useful in systems that receive 2D data or stereoscopic 3D data from a source device, and accordingly would be motivated to combine Yoshida, Matsuura, Elliott, Tu, Yun, Glen, Cho, and DeCusatis with the one or more of Suzuki, Takada '642, the

Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products to facilitate processing image data that has been received across an interface. Making these combinations would be straightforward because processors operable to process 2D and stereoscopic 3D image data received from a source device are readily adaptable to systems that receive image data across an interface, and would amount to using known techniques for implementing multi-mode processors in existing transmission interfaces in predictable ways.

As a further example, a POSITA would be motivated to combine Takada ’642, Newton, Hibino, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products with one or more of Yoshida, Matsuura, Yun, Glen, and DeCusatis. A POSITA would be motivated to combine these references because Yoshida, Matsuura, and Yun disclose systems and techniques for generating and extracting 2D image data transmitted over the existing capacity of an interface, which may be used in the systems transmitting and receiving image data disclosed in Takada ’642, Newton, Hibino, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products. A POSITA would recognize that Yoshida’s, Matsuura’s, Yun’s, Glen’s, and DeCusatis’s disclosure of systems that generate and extract 2D image data would be useful in systems that transmit and receive image data for display, so that 2D image data may be provided in addition to other types of image data without reconfiguring the interface. Accordingly, a POSITA would be motivated to combine Yoshida, Matsuura, Yun, Glen, and DeCusatis with the one or more of Takada ’642, Newton, Hibino, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products to facilitate transmission of 2D image data over an existing interface so that users can view 2D content. Making these combinations would be straightforward because systems and techniques for generating and extracting 2D image data transmitted over the existing

capacity of an interface are readily adaptable to systems with interfaces for transmitting image data, and amount to using known techniques for utilizing the data capacity of an interface in predictable ways.

As a further example, a POSITA would be motivated to combine Suzuki, Takada ’804, Newton, Hibino, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products with one or more of Yoshida, Matsuura, Elliott, Yun, Cho, DeCusatis, Iue, and Ishihara. A POSITA would be motivated to combine these references because Yoshida, Matsuura, Elliott, Yun, Cho, DeCusatis, Iue, and Ishihara disclose systems and techniques for generating stereoscopic 3D data for transmission across an interface according to signal information received from a sink device, which may be used in systems that transmit image data disclosed in Suzuki, Takada ’804, Newton, Hibino, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products. A POSITA would recognize that Yoshida’s, Matsuura’s, Elliott’s, Yun’s, Cho’s, DeCusatis’s, Iue’s, and Ishihara’s disclosure of systems that generate stereoscopic 3D data for transmission across an interface according to signal information received from a sink device would be useful in systems that transmit image data for display, so that stereoscopic 3D image data may be provided in addition to other types of image data without reconfiguring the interface. Accordingly, a POSITA would be motivated to combine Yoshida, Matsuura, Elliott, Yun, Cho, DeCusatis, Iue, and Ishihara with the one or more additional references Suzuki, Takada ’804, Newton, Hibino, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products to facilitate transmission of stereoscopic 3D data over an existing interface so that users can watch stereoscopic 3D content. Making these combinations would be straightforward because systems and techniques for generating stereoscopic 3D data for transmission across an interface

according to signal information received from a sink device are readily adaptable to systems that already transmit data, such as image data, between source and sink devices, and amount to using known techniques for sending signaling information between source and sink devices in predictable ways.

As a further example, a POSITA would be motivated to combine Suzuki, Takada ’804, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products with one or more of Yoshida, Matsuura, Elliott, Yun, Glen, Cho, DeCusatis, Iue, and Ishihara. A POSITA would be motivated to combine these references because Yoshida, Matsuura, Elliott, and Yun disclose systems and techniques for demultiplexing stereoscopic image data according to the capabilities of the sink device that may be used in the systems that transmit image data disclosed in Suzuki, Takada ’804, the Philips System, and the Sharp System. A POSITA would recognize that Yoshida’s, Matsuura’s, Elliott’s, Yun’s, Glen’s, Cho’s, DeCusatis’s, Iue’s, and Ishihara’s disclosure of systems that demultiplex stereoscopic image data according to the capabilities of the source device would be useful in systems that receive image data for display, so that stereoscopic 3D data may be processed for display in addition to other types of data, and accordingly would be motivated to combine Yoshida, Matsuura, Elliott, Yun, Glen, Cho, DeCusatis, Iue, and Ishihara with the one or more of Suzuki, Takada ’804, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products to facilitate processing stereoscopic 3D data. Making these combinations would be straightforward because systems and techniques for de-multiplexing stereoscopic image data according to the capabilities of the source device are readily adaptable to systems that transmit and receive image data across an interface, and amount to using known techniques for processing multiplexed data in predictable ways.

As a further example, a POSITA would be motivated to combine Newton, Hibino, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products with Matsuura, Glen, DeCusatis, Iue, and Ishihara. A POSITA would be motivated to combine these references because Matsuura, Glen, DeCusatis, Iue, and Ishihara disclose systems and techniques for transmitting main image data along with other image components, such as stereoscopic image components, within the existing capacity of an interface such as HDMI, which may be used in systems that transmit 3D image data across the interfaces disclosed in Newton, Hibino, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products. A POSITA would recognize that Matsuura's, Glen's, DeCusatis's, Iue's, and Ishihara's disclosure of using the existing capacity of an interface to transmit both main image data and image components, such as stereoscopic image components, would be useful in systems that transmit 3D image data for display, and accordingly would be motivated to combine Matsuura, Glen, DeCusatis, Iue, and Ishihara with the one or more additional references Newton, Hibino, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products to facilitate transmitting 3D data over an existing interface so that users can watch 3D content without reconfiguring the interface. Making these combinations would be straightforward because systems and techniques for transmitting main image data along with other image components, such as stereoscopic image components, over the existing capacity of an interface are readily adaptable to systems with interfaces for transmitting image data, and amount to using known techniques for utilizing the data capacity of an interface in predictable ways.

As a further example, a POSITA would be motivated to combine Suzuki, Takada '642, Takada '277, Takayama, the Philips System, and the Sharp System with one or more of Yoshida, Matsuura, Tu, Glen, Cho, and DeCusatis. A POSITA would be motivated to combine these

references because Yoshida, Matsuura, Tu, Glen, Cho, and DeCusatis disclose systems and techniques for sending signaling information to the sink device identifying the mode of the formatter, such as a 2D or stereoscopic 3D mode, and the characteristics of the stereoscopic 3D data, such as left and right eye data or depth information, which may be used in the systems that transmit and receive image data disclosed in Suzuki, Takada ’642, Takada ’277, Takayama, the Philips System, and the Sharp System. A POSITA would recognize that Yoshida’s, Matsuura’s, Tu’s, Glen’s, Cho’s, and DeCusatis’s disclosure of signaling the formatter’s mode and characteristics of the stereoscopic 3D data would be useful in systems that transmit and receive image data so that the sink device can determine what type of data is being received and the format of the data, and accordingly would be motivated to combine Yoshida, Matsuura, Tu, Glen, Cho, and DeCusatis with the one or more additional references Suzuki, Takada ’642, Takada ’277, Takayama, the Philips System, and the Sharp System to facilitate transmitting, processing, and displaying different types of image content. Making these combinations would be straightforward because systems and techniques for sending signaling information to the sink device identifying the mode of the formatter and the characteristics of the stereoscopic 3D data are readily adaptable to systems that already transmit data, such as image data, between source and sink devices, and would amount to using known techniques for sending signaling information between source and sink devices in predictable ways.

As a further example, a POSITA would be motivated to combine Suzuki, Newton, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification And Products with each other. A POSITA would be motivated to combine these references because the references disclose techniques applicable to transmitting image data across the standardized interfaces, including HDMI, DVI, and/or USB, and provide techniques for improving the

transmission of image data across these interfaces, such as by sending stereoscopic 3D data in the form of 2D information and a depth map or signaling information identifying whether the image data is formatted in a 2D or 3D mode and the characteristics of the image data. A POSITA would have had a reasonable expectation of success with combining these references because these techniques relate to transmitting image data across the standardized interfaces.

As a further example, a POSITA would be motivated to combine Suzuki, Tu, and Yun with each other. A POSITA would be motivated to combine Suzuki and Tu because Suzuki provides implementation details regarding an HDMI interface and Tu uses an HDMI interface to transmit data between a source and sink device. A POSITA would have been further motivated to supplement Tu's disclosure of using back-channel communications to operate the source device by using Yun's back-channel information to control whether the source device operates in a 2D or 3D mode. A POSITA would have a reasonable expectation of success combining these references because each reference relates to transmitting data over an interface and thus the combination amounts to using known techniques for data transmission in predictable ways.

As a further example, a POSITA would be motivated to combine the Philips System, Suzuki, and Yun with each other. A POSITA would be motivated to combine the Philips System and Suzuki because the Philips System discloses transmitting stereoscopic image data over a standardized interface, and Suzuki discloses implementation details for multiplexing and transmitting both 2D image data and stereoscopic 3D data over a standardized interface that facilitates transmission in the Philips System. A POSITA would have been further motivated to supplement the combination of the Philips System and Suzuki with Yun, which also addresses transmitting video data and describes using back-channel information to determine whether the source device should operate in a 2D or stereoscopic 3D mode. A POSITA would have a

reasonable expectation of success combining these references because each reference relates to transmitting data over an interface and thus the combination amounts to using known techniques for data transmission in predictable ways.

As a further example, a POSITA would be motivated to combine the Philips System, Takada ’277, and Glen with each other. A POSITA would be motivated to combine the Philips System with Takada ’277 because the Philips System discloses transmitting stereoscopic image data over a standardized interface, and Takada ’277 discloses a technique for transmitting 2D and depth information, such as a depth signal, over a conventional transmission interface by filling unused portions of the interface’s capacity with depth information, which facilitates transmission in the Philips System. A POSITA would have been further motivated to supplement the combination of the Philips System and Takada ’277 with Glen, which describes a system in which a sink device can send commands that cause a source device to use certain video processing algorithms, such as algorithms for processing 2D or stereoscopic 3D data. In addition or alternatively to Glen, a POSITA would have also been motivated to supplement the combination of the Philips System and Takada ’277 with Matsuura, which discloses that a source device can determine whether a sink device can receive a sub-signal in addition to pixel data by reading the VSDB of the EDID from the sink device, so that the system can set a 2D or stereoscopic 3D mode according to the information received from the sink device. A POSITA would have a reasonable expectation of success combining these references because each reference relates to transmitting data over an interface and thus the combination amounts to using known techniques for data transmission in predictable ways.

As a further example, a POSITA would be motivated to combine the Sharp System, Suzuki, and Yun with each other. A POSITA would also be motivated to combine the Sharp System and

Suzuki because the Sharp System discloses transmitting stereoscopic image data over a standardized interface, and Suzuki discloses implementation details for multiplexing and transmitting both 2D image data and stereoscopic 3D data over a standardized interface that facilitates transmission in the Sharp System. A POSITA would have been further motivated to supplement the combination of the Sharp System and Suzuki with Yun, which also addresses transmitting video data and describes using back-channel information to determine whether the source device should operate in a 2D or stereoscopic 3D mode. A POSITA would have a reasonable expectation of success combining these references because each reference relates to transmitting data over an interface and thus the combination amounts to using known techniques for data transmission in predictable ways.

As a further example, a POSITA would be motivated to combine the Sharp System, Takada ’277, and Glen with each other. POSITA would be motivated to combine the Sharp System with Takada ’277 because the Sharp System discloses transmitting stereoscopic image data over a standardized interface, and Takada ’277 discloses a technique for transmitting stereoscopic image data over a conventional transmission interface by filling unused portions of the interface’s capacity with stereoscopic image data, such as depth information, which facilitates transmission in the Sharp System. A POSITA would have been further motivated to supplement the combination of the Sharp System and Takada ’277 with Glen, which describes a system in which a sink device can send commands that cause a source device to use certain video processing algorithms, such as algorithms for processing 2D or stereoscopic 3D data. In addition or alternatively to Glen, a POSITA would have also been motivated to supplement the combination of the Sharp System and Takada ’277 with Matsuura, which discloses that a source device can determine whether a sink device can receive a sub-signal in addition to pixel data by reading the

VSDB of the EDID from the sink device, so that the system can set a 2D or stereoscopic 3D mode according to the information received from the sink device. A POSITA would have a reasonable expectation of success combining these references because each reference relates to transmitting data over an interface and thus the combination amounts to using known techniques for data transmission in predictable ways.

I. The '786 Patent

Plaintiff alleges that Defendant infringes claims 1 and 13 of the '786 Patent. Defendant contends that these claims (collectively, "the Asserted Claims of the '786 Patent") are invalid.

1. Identification of Prior Art

Defendant asserts that at least the prior art listed below, individually or in combination, invalidates the Asserted Claims of the '786 Patent. Exhibits 786-A through 786-J provide detailed claim charts showing where each claim limitation may be found in certain references listed below, either expressly or inherently in the larger context of the passage, or inherently as the reference as a whole would be understood by a person having ordinary skill in the art. For those references for which detailed claim charts are not provided in Exhibits 786-A through 786-J, those additional prior art references are otherwise pertinent to the invalidity of the '786 Patent, either alone or in combination with other references.

(i) Prior Art Patents, Patent Applications, and Patent Publications

The following patents, patent applications, and patent application publications are prior art under 35 U.S.C. §§ 102(a), (b), and/or (e).[12]

[12] Under the America Invents Act ("AIA"), invalidating prior art is defined in 35 U.S.C. § 102(a). However, AIA Section 102(a) was not effective until March 17, 2013. The '786 Patent purports to predate March 17, 2013, and therefore pre-AIA Section 102 (including sub-sections 102(a), (b), (e) and (g)) apply to the prior art identified in these Invalidity Contentions and the attached exhibits.

Patent or Pub. No.	Earliest Priority Date	Filing Date	Publication Date	Statutory Category
US 2007/0296859 (“Suzuki”)	2007-05-08	2007-05-08	2007-12-27	102(e)
JP 2004/274642 (“Takada ’642”)	2003-03-12	2003-03-12	2004-09-30	102(a), 102(b), 102(e)
JP 4,451,804 (“Takada ’804”)	2005-04-06	2005-04-06	2006-10-26	102(a), 102(b), 102(e)
US 9,338,428 (“Newton”)	2007-12-14	2015-07-30	2015-11-19	102(e)
JP 2005/210700 (“Hibino”)	2004-12-24	2004-12-24	2005-08-04	102(a), 102(b), 102(e)
JP 2007/166277 (“Takada ’277”)	2005-12-14	2005-12-14	2007-06-28	102(a), 102(e)
US 2006/0238613 (“Takayama”)	2004-12-21	2006-06-22	2006-10-26	102(a), 102(b), 102(e)
US 2008/0134237 (“Tu”)	2007-08-16	2007-08-16	2008-06-05	102(e)
US 2008/0187028 (“Lida”)	2007-02-07	2007-02-07	2008-08-07	102(e)
US 8,159,529 (“Yoshida”)	2005-07-19	2008-01-17	2012-04-17	102(e)
JP 2007/325101 (“Matsuura”)	2006-06-02	2006-06-02	2007-12-13	102(a), 102(e)
US 2008/0036854 (“Elliott”)	2006-08-08	2006-12-29	2008-02-14	102(e)
US 8,866,971 (“Glen”)	2007-12-17	2007-12-17	2009-06-18	102(e)
WO 2005/114998 (“Cho”)	2004-05-21	2004-11-30	2005-12-01	102(a), 102(b), 102(e)
US 2007/0139769 (“DeCusatis”)	2005-12-21	2005-12-21	2007-06-21	102(a), 102(e)
US 5,717,415 (“Iue”)	1995-01-31	1996-07-10	1998-02-10	102(a), 102(b), 102(e)
JP 2005/006114 (“Ishihara”)	2003-06-12	2003-06-12	2005-01-06	102(a), 102(b), 102(e)

(ii) Prior Art Publications

The following publications are prior art under 35 U.S.C. §§ 102(a) and/or (b).

Title	Author/Publisher	Date of Publication	Statutory Category
ISO/IEC23002-3, “Representation of Auxiliary	MPEG	2007-10-15	102(a), 102(b)

Title	Author/Publisher	Date of Publication	Statutory Category
Video and Supplemental Information”			
MPEG-C Part 3: Enabling The Introduction Of Video Plus Depth Contents	Bourge et al.	2006-06	102(a), 102(b)
Comparison of Stereo Video Coding Support in MPEG-4 MAC, H.264/AVC and H.264/SVC	Hewage et al.	2007-07	102(a)
A Standards-Based, Flexible, End-to-End Multi-View Video Streaming Architecture	Kurutepe et al.	2007-11-12	102(a), 102(b)
Coding Algorithms for 3DTV—A Survey	Smolic et al.	2007-10-29	102(a), 102(b)
Integration of 3D Video Into the Blu-ray Format	D.D.R.J. Bolio	2007-10	102(a), 102(b)
3DTV over IP	Tekalp et al.	2007-11-27	102(a), 102(b)
42-inch 3D-Intelligent Display User Manual	Philips	2006-03-22	102(a), 102(b)
Philips Multiview 3D Display Solutions	Philips	2004-06-17	102(a), 102(b)
3-D TV That Actually Works	Wired	2006-08-22	102(a), 102(b)
Locally Switchable 3D Displays	The Society for Information Display	2006-06	102(a), 102(b)
Computer Shopper Magazine	*Computer Shopper* Magazine	2006-08	102(a), 102(b)
Philips 3D Solutions	Philips	2006-05	102(a), 102(b)
Philips 42 inch 3D Display wins Gold Award at SID2006	New Atlas	2006-06	102(a), 102(b)
Philips to reveal 3D display innovations at SID2006	Designer Today Magazine	2008-06-07	102(a), 102(b)
Philips 3D solutions: from content creation to visualization	IEEE Computer Society	2006-06	102(a), 102(b)
3D graphics rendering for multiview displays	Eindhoven University of Technology	2005-03	102(a), 102(b)
GPU-based rendering to a multiview display	Eindhoven University of Technology	2006-06	102(a), 102(b)
Chapter 30. The GeForce 6 Series GPU Architecture	NVIDIA	2005-04	102(a), 102(b)
Stereoscopic Player and Stereoscopic Multiplexer: a computer-based system for stereoscopic video playback and recording	Wimmer	2005-03-22	102(a), 102(b)

Title	Author/Publisher	Date of Publication	Statutory Category
NVIDIA's Stereoscopic 3D Development Guide	NVIDIA	2004-12-09	102(a), 102(b)
NVIDIA 3D Stereo User's Guide	NVIDIA	2005-07-18	102(a), 102(b)
NVIDIA GPU Programming Guide Version 2.5.0	NVIDIA	2006-03-01	102(a), 102(b)
NVIDIA 3D Stereo User's Guide (for Detonator XP)	NVIDIA	2001-11-08	102(a), 102(b)
ForceWare Graphics Drivers, NVIDIA 3D Stereo User's Guide (for Release 55)	NVIDIA	2004-03-09	102(a), 102(b)
ForceWare Graphics Driver User's Guide	NVIDIA	2004-10	102(a), 102(b)
NVIDIA Quadro Professional Drivers – Workstation User's Guide	NVIDIA	2006-07	102(a), 102(b)
ForceWare Graphics Driver User's Guide (November 2005)	NVIDIA	2005-11	102(a), 102(b)
ForceWare Graphics Driver User's Guide (March 2005)	NVIDIA	2005-03	102(a), 102(b)
ForceWare Graphics Drivers Release 80 Notes Version 81.95	NVIDIA	2005-11	102(a), 102(b)
Dell Inspiron 9300 Owner's Manual ("Dell Inspiron 9300")	Dell	2005-01	102(a), 102(b)
Sharp LL-151-3D Operation Manual ("Sharp LL-151-3D")	Sharp	Early 2000s	102(a), 102(b)
2D/3D Switchable Displays	Sharp	2003-01-14	102(a), 102(b)
Challenges And Opportunities In Video Coding For 3D TV	IEEE	2006-07-09	102(a), 102(b)
Design and Evaluation of a 3D Video System Based on H.264 View Coding	NOSSDAV	2006-05-26	102(a), 102(b)
Sharp Announces Second Generation 3D Notebook	Phys.org	2006-03-08	102(a), 102(b)
Sharp develops 3D flat screen	CNET	2002-09-27	102(a), 102(b)
Sharp introduces 3-D computer display	NBC News	2004-08-09	102(a), 102(b)
Sharp Introduces 3D LCD Color Monitor that provides a stereoscopic display	Phys.org	2004-06-18	102(a), 102(b)
Sharp's 3D LCD Technology Now Available for Desktop Computers; No-Glasses 3D	Phys.org	2004-08-09	102(a), 102(b)

Title	Author/Publisher	Date of Publication	Statutory Category
Technology Now Available in 15-Inch Desktop			
Sharp 3D 'Glasses Free' Display Technology	Sharp	2006-10-21	102(a), 102(b)
3D Display Monitor Without the Need For Special Glasses	Sharp	2005-11-26	102(a), 102(b)
A Shift in Time: An Interactive Painting on a Multi-View Display	New York University	2005-05-05	102(a), 102(b)
3D TV Using MPEG-2 and H.264 View Coding and Autostereoscopic Displays	Association for Computing Machinery	2006-10-23	102(a), 102(b)
DIA Awards Archive	The Society For Information Display	2023-03-21	102(a), 102(b)
Enabling Introduction of Stereoscopic (3D) Video: Formats and Compression Standards	Bruls et al.	2007-09-16	102(a)

(iii) Prior Art Systems

The Asserted Claims of the '786 Patent are invalid under 35 U.S.C. § 102(a) and (b) because they were known by others, publicly used, and on sale in the United States before they were purportedly invented and more than one year before the priority date of the Asserted Claims. Additionally, the Asserted Claims are invalid under 35 U.S.C. § 102(g) because any purported invention was made in this country by another who had not abandoned, suppressed, or concealed the purported invention. For example, the foregoing patents and publications are evidence of such prior art systems and inventions. Additionally, Defendant relies on the systems identified in the Exhibits hereto, and also the systems identified below.

System	Date of Prior Invention, Sale, Use, Or Knowledge	Statutory Category
Sharp 3D System[13]	No later than March 2005	102(a), 102(b), 102(g)

[13] The Sharp 3D System consisted of products using Sharp stereoscopic 3D technology such as, for example, the Sharp LL-151-3D LCD Monitor, Dell Inspiron 9300 Laptop, and NVIDIA GeForce Go 6800 GPU, as described in Exhibit 786-I.

System	Date of Prior Invention, Sale, Use, Or Knowledge	Statutory Category
Philips 3D System[14]	No later than March 2006	102(a), 102(b), 102(g)
MPEG-C Part 3 Specification and Products[15]	No later than November 2007	102(a), 102(g)

2. Bases for Anticipation and/or Obviousness

Each prior art reference identified in Exhibits 786-A through 786-J expressly, implicitly, or inherently anticipates and/or renders obvious the Asserted Claims of the ’786 Patent, either alone or in combination with other prior art references (e.g., the references identified in Exhibits 786-A through 786-J or other references identified above) or the knowledge of the person of ordinary skill in the art at the time of the alleged invention. Each of the prior art references included in Exhibits 786-A through 786-J can be combined with any other prior art reference in Exhibits 786-A through 786-J, or identified above, to render obvious the Asserted Claims of the ’786 Patent, and the examples of combinations below are intended for emphasis only.[16]

In the table below, Defendant identifies a non-exhaustive list of prior art references that, alone or in combination, anticipate and/or render obvious the Asserted Claims.

Reference(s)	Grounds	Exhibit
Suzuki	35 U.S.C. §§ 102, 103	786-A
Suzuki in view of Tu	35 U.S.C. § 103	786-A
Suzuki in view of Lida	35 U.S.C. § 103	786-A

[14] The Philips 3D System consisted of products using Philips stereoscopic 3D technology such as, for example, the Philips 42-inch 3D-Intelligent Display, Dell Inspiron 9300 Laptop, and NVIDIA GeForce Go 6800 GPU, as described in Exhibit 786-H.

[15] The MPEG-C Part 3 Specification and Products consisted of the MPEG-C Part 3 specification and products implementing the MPEG-C Part 3 specification such as, for example, the Philips 42-inch 3D-Intelligent Display and the Sigma Designs Blu-ray reference board, as described in Exhibit 786-J.

[16] For example, each of Suzuki, Takada ’642, Takada ’804, Newton, Hibino, Takada ’277, Takayama, the Philips System, and the Sharp System may be combined with each other to render obvious the Asserted Claims of the ’786 Patent.

Reference(s)	Grounds	Exhibit
Suzuki in view of Yoshida	35 U.S.C. § 103	786-A
Suzuki in view of Matsuura	35 U.S.C. § 103	786-A
Suzuki in view of Elliott	35 U.S.C. § 103	786-A
Suzuki in view of Glen	35 U.S.C. § 103	786-A
Suzuki in view of Cho	35 U.S.C. § 103	786-A
Suzuki in view of DeCusatis	35 U.S.C. § 103	786-A
Suzuki in view of Iue	35 U.S.C. § 103	786-A
Suzuki in view of Ishihara	35 U.S.C. § 103	786-A
Suzuki in view of Yoshida, Tu, Lida, Glen, Cho, DeCusatis, Matsuura, and/or Elliott.	35 U.S.C. § 103	786-A
Takada ’642	35 U.S.C. §§ 102, 103	786-B
Takada ’642 in view of Suzuki	35 U.S.C. § 103	786-B, 786-A
Takada ’642 in view of Tu	35 U.S.C. § 103	786-B
Takada ’642 in view of Lida	35 U.S.C. § 103	786-B
Takada ’642 in view of Yoshida	35 U.S.C. § 103	786-B
Takada ’642 in view of Matsuura	35 U.S.C. § 103	786-B
Takada ’642 in view of Elliott	35 U.S.C. § 103	786-B
Takada ’642 in view of Glen	35 U.S.C. § 103	786-B
Takada ’642 in view of Cho	35 U.S.C. § 103	786-B
Takada ’642 in view of DeCusatis	35 U.S.C. § 103	786-B
Takada ’642 in view of Iue	35 U.S.C. § 103	786-B
Takada ’642 in view of Ishihara	35 U.S.C. § 103	786-B
Takada ’642 in view of Yoshida, Tu, Lida, Glen, Cho, DeCusatis, Matsuura, and/or Elliott.	35 U.S.C. § 103	786-B
Takada ’804	35 U.S.C. §§ 102, 103	786-C
Takada ’804 in view of Suzuki	35 U.S.C. § 103	786-C, 786-A
Takada ’804 in view of Tu	35 U.S.C. § 103	786-C
Takada ’804 in view of Lida	35 U.S.C. § 103	786-C
Takada ’804 in view of Yoshida	35 U.S.C. § 103	786-C
Takada ’804 in view of Matsuura	35 U.S.C. § 103	786-C
Takada ’804 in view of Elliott	35 U.S.C. § 103	786-C
Takada ’804 in view of Glen	35 U.S.C. § 103	786-C
Takada ’804 in view of Cho	35 U.S.C. § 103	786-C
Takada ’804 in view of DeCusatis	35 U.S.C. § 103	786-C
Takada ’804 in view of Iue	35 U.S.C. § 103	786-C
Takada ’804 in view of Ishihara	35 U.S.C. § 103	786-C
Takada ’804 in view of Yoshida, Tu, Lida, Glen, Cho, DeCusatis, Matsuura, Elliott, Iue, and/or Ishihara.	35 U.S.C. § 103	786-C
Newton	35 U.S.C. §§ 102, 103	786-D
Newton in view of Suzuki	35 U.S.C. § 103	786-D, 786-A

Reference(s)	Grounds	Exhibit
Newton in view of Tu	35 U.S.C. § 103	786-D
Newton in view of Lida	35 U.S.C. § 103	786-D
Newton in view of Yoshida	35 U.S.C. § 103	786-D
Newton in view of Matsuura	35 U.S.C. § 103	786-D
Newton in view of Elliott	35 U.S.C. § 103	786-D
Newton in view of Glen	35 U.S.C. § 103	786-D
Newton in view of Cho	35 U.S.C. § 103	786-D
Newton in view of DeCusatis	35 U.S.C. § 103	786-D
Newton in view of Iue	35 U.S.C. § 103	786-D
Newton in view of Ishihara	35 U.S.C. § 103	786-D
Newton in view of Yoshida, Tu, Lida, Glen, Cho, DeCusatis, Matsuura, Elliott, Iue, and/or Ishihara.	35 U.S.C. § 103	786-D
Hibino	35 U.S.C. §§ 102, 103	786-E
Hibino in view of Suzuki	35 U.S.C. § 103	786-E, 786-A
Hibino in view of Tu	35 U.S.C. § 103	786-E
Hibino in view of Lida	35 U.S.C. § 103	786-E
Hibino in view of Yoshida	35 U.S.C. § 103	786-E
Hibino in view of Matsuura	35 U.S.C. § 103	786-E
Hibino in view of Elliott	35 U.S.C. § 103	786-E
Hibino in view of Glen	35 U.S.C. § 103	786-E
Hibino in view of Cho	35 U.S.C. § 103	786-E
Hibino in view of DeCusatis	35 U.S.C. § 103	786-E
Hibino in view of Iue	35 U.S.C. § 103	786-E
Hibino in view of Ishihara	35 U.S.C. § 103	786-E
Hibino in view of Yoshida, Tu, Lida, Matsuura, Glen, Cho, DeCusatis, and/or Elliott.	35 U.S.C. § 103	786-E
Takada ’277	35 U.S.C. §§ 102, 103	786-F
Takada ’277 in view of Suzuki	35 U.S.C. § 103	786-F, 786-A
Takada ’277 in view of Tu	35 U.S.C. § 103	786-F
Takada ’277 in view of Lida	35 U.S.C. § 103	786-F
Takada ’277 in view of Yoshida	35 U.S.C. § 103	786-F
Takada ’277 in view of Matsuura	35 U.S.C. § 103	786-F
Takada ’277 in view of Elliott	35 U.S.C. § 103	786-F
Takada ’277 in view of Glen	35 U.S.C. § 103	786-F
Takada ’277 in view of Cho	35 U.S.C. § 103	786-F
Takada ’277 in view of DeCusatis	35 U.S.C. § 103	786-F
Takada ’277 in view of Iue	35 U.S.C. § 103	786-F
Takada ’277 in view of Ishihara	35 U.S.C. § 103	786-F
Takada ’277 in view of Yoshida, Tu, Lida, Glen, Cho, DeCusatis, Matsuura, Elliott, Iue, and/or Ishihara.	35 U.S.C. § 103	786-F
Takayama	35 U.S.C. §§ 102, 103	786-G

Reference(s)	Grounds	Exhibit
Takayama in view of Suzuki	35 U.S.C. § 103	786-G, 786-A
Takayama in view of Tu	35 U.S.C. § 103	786-G
Takayama in view of Lida	35 U.S.C. § 103	786-G
Takayama in view of Yoshida	35 U.S.C. § 103	786-G
Takayama in view of Matsuura	35 U.S.C. § 103	786-G
Takayama in view of Elliott	35 U.S.C. § 103	786-G
Takayama in view of Glen	35 U.S.C. § 103	786-G
Takayama in view of Cho	35 U.S.C. § 103	786-G
Takayama in view of DeCusatis	35 U.S.C. § 103	786-G
Takayama in view of Iue	35 U.S.C. § 103	786-G
Takayama in view of Ishihara	35 U.S.C. § 103	786-G
Takayama in view of Yoshida, Tu, Lida, Matsuura, Glen, Cho, DeCusatis, Elliott, Iue, and/or Ishihara.	35 U.S.C. § 103	786-G
The Philips System	35 U.S.C. §§ 102, 103	786-H
The Philips System in view of Suzuki	35 U.S.C. § 103	786-H, 786-A
The Philips System in view of Tu	35 U.S.C. § 103	786-H
The Philips System in view of Lida	35 U.S.C. § 103	786-H
The Philips System in view of Yoshida	35 U.S.C. § 103	786-H
The Philips System in view of Matsuura	35 U.S.C. § 103	786-H
The Philips System in view of Elliott	35 U.S.C. § 103	786-H
The Philips System in view of Glen	35 U.S.C. § 103	786-H
The Philips System in view of Cho	35 U.S.C. § 103	786-H
The Philips System in view of DeCusatis	35 U.S.C. § 103	786-H
The Philips System in view of Iue	35 U.S.C. § 103	786-H
The Philips System in view of Ishihara	35 U.S.C. § 103	786-H
The Philips System in view of Yoshida, Tu, Lida, Matsuura, Glen, Cho, DeCusatis, Elliott, Iue, and/or Ishihara.	35 U.S.C. § 103	786-H
The Sharp System	35 U.S.C. §§ 102, 103	786-I
The Sharp System in view of Suzuki	35 U.S.C. § 103	786-I, 786-A
The Sharp System in view of Tu	35 U.S.C. § 103	786-I
The Sharp System in view of Lida	35 U.S.C. § 103	786-I
The Sharp System in view of Yoshida	35 U.S.C. § 103	786-I
The Sharp System in view of Matsuura	35 U.S.C. § 103	786-I
The Sharp System in view of Elliott	35 U.S.C. § 103	786-I
The Sharp System in view of Glen	35 U.S.C. § 103	786-I
The Sharp System in view of Cho	35 U.S.C. § 103	786-I
The Sharp System in view of Iue	35 U.S.C. § 103	786-I
The Sharp System in view of Ishihara	35 U.S.C. § 103	786-I

Reference(s)	Grounds	Exhibit
The Sharp System in view of Yoshida, Tu, Lida, Matsuura, Glen, Cho, DeCusatis, Elliott, Iue, and/or Ishihara.	35 U.S.C. § 103	786-I
MPEG-C Part 3 Specification And Products	35 U.S.C. §§ 102, 103	786-J
MPEG-C Part 3 Specification And Products in view of Suzuki	35 U.S.C. § 103	786-J, 786-A
MPEG-C Part 3 Specification And Products in view of Tu	35 U.S.C. § 103	786-J
MPEG-C Part 3 Specification And Products in view of Lida	35 U.S.C. § 103	786-J
MPEG-C Part 3 Specification And Products in view of Yoshida	35 U.S.C. § 103	786-J
MPEG-C Part 3 Specification And Products in view of Matsuura	35 U.S.C. § 103	786-J
MPEG-C Part 3 Specification And Products in view of Elliott	35 U.S.C. § 103	786-J
MPEG-C Part 3 Specification And Products in view of Glen	35 U.S.C. § 103	786-J
MPEG-C Part 3 Specification And Products in view of Cho	35 U.S.C. § 103	786-J
MPEG-C Part 3 Specification And Products in view of Iue	35 U.S.C. § 103	786-J
MPEG-C Part 3 Specification And Products in view of Ishihara	35 U.S.C. § 103	786-J
MPEG-C Part 3 Specification And Products in view of Yoshida, Tu, Lida, Matsuura, Glen, Cho, DeCusatis, Elliott, Iue, and/or Ishihara.	35 U.S.C. § 103	786-J

The accompanying claim charts (Exhibits 786-A through 786-J) set forth example bases for anticipation and obviousness, identifying where each reference discloses, alone or in combination with other references, each limitation of the Asserted Claims of the ’786 Patent on a limitation-by-limitation basis. Defendant’s claim charts are exemplary and not intended to be exhaustive.

(i) Obviousness Combinations

Subject to Defendant’s reservation of rights, Defendant contends that all of the prior art references, as identified above and described in the charts attached as Exhibits 786-A through 786-

J, by themselves anticipate the asserted claim in accordance with 35 U.S.C. § 102 and/or render the Asserted Claims of the ’786 Patent obvious under 35 U.S.C. § 103, as more specifically noted in the attached charts.

The cited portions of the prior art references are examples and 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 a cited prior art reference is deemed not to anticipate or render obvious a claim as noted in the attached charts for failing to teach or suggest one or more limitations of that claim, that claim would nonetheless have been obvious to one of ordinary skill in the art at the time of the invention by the combination of the cited prior art reference with one or more other prior art references and/or common knowledge disclosing the missing claim limitations. For example, any of the references listed above, to the extent it does not explicitly or inherently disclose any limitation, could be combined with any one or more of the other references listed above which discloses that limitation.

Defendant reserves the right to supplement the obviousness arguments using any references listed above, or any references that may become known to Defendant during the course of discovery. Further, the suggested obviousness combinations are in addition to Defendant’s anticipation contentions and are not to be construed to suggest that any reference included in the combinations is not anticipatory on its own.

(ii) Motivation to Combine And Reasonable Expectation Of Success

With respect to the ’786 Patent, the prior art identified above non-exhaustively illustrates the scope and content of the prior art. As detailed in claim charts 786-A through 786-J, the prior art included each limitation recited in the Asserted Claims of the ’786 Patent. To the extent a cited prior art reference is deemed not to anticipate a claim, the only difference between the claimed invention and the prior art is the lack of actual combination of the elements in a single prior art

reference. However, for at least the reasons discussed above and the additional reasons discussed below, a POSITA would have been motivated to combine each of the above prior art references. A POSITA in the art pertaining to the '786 Patent at the relevant time would have been someone with a bachelor's degree in computer science, computer engineering, electrical engineering, or equivalent training, and approximately two years' experience working in video processing and would be knowledgeable regarding audio-visual communications and stereoscopic display techniques. Lack of work experience can be substituted for additional education, and vice versa.

A POSITA would have numerous motivations to combine each of the above-referenced prior art. For example, as the United States Supreme Court held in *KSR*, "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." 550 U.S. at 416. The Supreme Court further held that, "[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. . . ." *Id.* at 417. Accordingly, a person of skill in the art would have been motivated to combine or adapt known or familiar methods in the art.

The combinations of the prior art references identified above would have been obvious in view of: (1) the knowledge of persons of ordinary skill in the art; (2) the express, implied and inherent teachings of the prior art, or the interrelated teachings of multiple prior art references; (3) the nature of the problem being solved; (4) the fact that they are combinations of known methods

to yield predictable results; (5) the fact that they involve a simple substitution of one known, equivalent element for another to obtain predictable results; (6) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces; (7) the existence of a known need or problem in the field of endeavor at the time of the invention(s); and/or (8) a teaching, suggestion, or motivation in the prior art generally. In addition, it would have been obvious to try combining the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. Furthermore, the combination of the prior art references identified above would have been obvious because the combination represents the known potential options with a reasonable expectation of success.

Indeed, to the extent the prior art references identified herein do not anticipate the Asserted Claims of the ’786 Patent, the limitations of these claims are merely obvious variations of the systems and methods disclosed in the various prior art references. As discussed below and in the prior art references, all of these were well-known, conventional technologies prior to the Asserted Claims of the ’786 Patent. The ’786 Patent does not purport to have invented any of these technologies; rather, the ’786 Patent simply tacked on these conventional prior art approaches to conventional and generic known prior techniques. As such, the Asserted Claims merely incorporate the knowledge of a POSITA. The mere amalgamation of such conventional technologies here is not inventive—it is simply combining or substituting well-known, conventional prior art elements according to known methods to yield predictable results.

For example, a person having ordinary skill in the art would have been motivated to combine the prior art identified in Exhibits 786-A through 786-J based on the nature of the problem

to be solved, the teachings of the prior art, and the knowledge of persons having ordinary skill in the art. Each reference in Exhibits 786-A through 786-J discloses methods and systems transmitting and/or receiving image data, such as 2D and 3D stereoscopic image data, across an interface. The references identified in Exhibits 786-A through 786-J are analogous prior art to the subject matter of the Asserted Claims and are proper to combine. Because these prior art references exist within a single area (transmission and/or processing of image data across an interface), it would have been obvious for a POSITA to look from one piece of prior art to another to find any missing functionality they desired to implement, or to replace functionality in one prior art reference for that described in another reference. Therefore, these references provide interrelated teachings and one of ordinary skill would look to the concepts in any of these references when seeking to solve the problems purportedly addressed by the '786 patent.

Combining the references identified herein and in Exhibits 786-A through 786-J, which address similar problems as explained above, would have been obvious and straightforward to a POSITA. *First*, the combinations represent no more than the use of known techniques according to known methods in the same ways to yield predictable results. For example, the references generally address the same field of transmitting and/or receiving image data, such as 2D and 3D stereoscopic image data, across an interface, and one of ordinary skill in the art would be motivated by such obvious considerations as enhancing the amount of data that could be transmitted or received over the interface. *Second*, the references themselves identify the known problems and provide known solutions to address those problems in the field. Indeed, the references identified herein and in Exhibits 786-A through 786-J demonstrate that there was, at the time of the alleged invention, a finite number of identified, predictable solutions for enhancing the transmission and/or receipt of image data that persons of ordinary skill in the art would have known how to successfully

combine, making the claimed invention obvious. *Third*, the combinations are motivated because a person of ordinary skill would appreciate that they improve the systems in the prior art by providing further techniques to transmit and/or receive 2D and stereoscopic 3D data over an interface, including by providing techniques for formatting and processing image data in 2D and stereoscopic 3D modes, multiplexing 3D stereoscopic image components so the components may be transmitted over the existing capacity of an interface, and/or signaling whether a 2D or stereoscopic 3D mode is being used and the format of the stereoscopic 3D data. *Fourth*, because the problems and solutions were known in the field, the particular arrangements and combinations of references would yield predictable results. *Fifth*, a number of the references themselves provide express motivations that would have led a person of ordinary skill to their combination. For example, the references acknowledge that formatting image data in a 2D or stereoscopic 3D mode and formatting stereoscopic 3D data so that it may be transmitted over the existing capacity of an interface that typically transmits 2D data can be important.

Below, Defendant has provided several additional examples of the motivations that a person of ordinary skill in the art would have had to combine certain of the prior art references in Exhibits 786-A through 786-J. The inclusion of certain example combinations herein does not exclude other combinations based on the claim charts attached hereto, as there are many possible combinations of the references listed herein, and it is not practical, particularly at this early stage prior to further factual investigation and claim construction proceedings, to identify and list all potentially relevant combinations. Instead, in many instances where a particular contention calls for, or requires, combining references, any one of a number of references can be combined.

As one example, methods and systems that formatted image data for transmission across an interface from a source device to a sink device in either a 2D or stereoscopic 3D mode were

well-known and within the skill of persons of ordinary skill in the art at the time of the alleged invention. *See, e.g.*, Suzuki, Takada '804, Newton, Takada '277, Takayama, the Philips System, and the Sharp System. For example, Suzuki describes both transmission of "typical video data (specifically, video data not for three dimensional display)" and "video data transmission for three-dimensional display." Suzuki, [0053], [0068]. The '786 patent also concedes that "[s]chemes for conveying stereoscopic image data within the confines of existing display interfaces" were well-known, such as the Philips WOWvx system which transmitted both "[s]ub-frames [that] carrie[d] 2D image data and a second of the sub-frames [that] carrie[d] depth information." '786 patent, 1:61-2:4. These methods and systems included techniques for setting the formatter to operate in a 2D or stereoscopic 3D mode as disclosed by at least Suzuki, Takada '804, Newton, Takada '277, Takayama, the Philips System, and the Sharp System. *See, e.g.*, Exs. 786-A, 786-C, 786-D, 786-F, 786-G, 786-H, 786-I, at claim element 1(b). A person of ordinary skill would have been motivated to combine techniques for operating a formatter in a 2D or 3D stereoscopic mode with references disclosing transmitting image data because doing so would allow the user to view both 2D and 3D stereoscopic content. A POSITA would have a reasonable expectation of success with combining these references because formatters operable to transmit 2D and stereoscopic 3D image data across an interface are readily adaptable to systems that transmit image data across an interface, and would amount to using known techniques for implementing multi-mode formatters in existing transmission interfaces in predictable ways.

As a further example, methods and systems that processed image data received across an interface at a sink device in either a 2D or stereoscopic 3D mode were well-known and within the skill of persons of ordinary skill in the art at the time of the alleged invention. *See, e.g.*, Suzuki, Takada '804, Newton, Takada '277, Takayama, the Philips System, and the Sharp System. For

example, Suzuki explains that "[t]ypical display processing for 2D display is performed" but "in the case where it is determined that the three-dimensional mode has been set, the video data for the left eye and the video data for the right eye are separated (or combined) and corresponding display processing for three-dimensional image is performed." Suzuki, [0065], [0066]. The '786 patent also concedes that "[s]chemes for conveying stereoscopic image data within the confines of existing display interfaces" were well-known, such as the Philips WOWvx system which, in the case of a 3D mode, "extracts depth data from the second sub-frame and creates a 3D image having a resolution of the first sub-frame." '786 patent, 1:61-2:8. These systems and methods included techniques for configuring the sink device to process the received image data in either a 2D or stereoscopic 3D mode as disclosed by at least Suzuki, Takada '804, Newton, Takada '277, Takayama, the Philips System, and the Sharp System. *See, e.g.*, Exs. 786-A, 786-C, 786-D, 786-F, 786-G, 786-H, 786-I, at claim element 13(b). A person of ordinary skill would have been motivated to combine techniques for processing image data in a 2D or stereoscopic 3D mode with references disclosing receiving image data over an interface because doing so would allow sink devices to process both 2D and stereoscopic 3D data for users. Making these combinations would be straightforward because processors operable to process 2D and stereoscopic 3D image data received from a source device are readily adaptable to systems that receive image data across an interface, and would amount to using known techniques for implementing multi-mode processors in existing transmission interfaces in predictable ways.

As a further example, methods and systems that multiplexed and demultiplexed components of 3D stereoscopic image data were well-known and within the skill of persons of ordinary skill in the art at the time of the alleged invention. *See, e.g.*, Suzuki, Takada '642, Takada '804, Hibino, Takada '277, Takayama, the Philips System, and the Sharp System. The '786 patent

itself concedes that "[s]chemes for conveying stereoscopic image data within the confines of existing display interfaces" were well-known, such as the Philips WOWvx system which "divides the overall display frame into a number of separate regions where different data can be carried. The overall frame is divided into two sub-frames, arranged side-by-side: a first of the sub-frames carries 2D image data and a second of the sub-frames carries depth information." '786 patent, 1:61-2:4. These systems and methods included techniques for multiplexing and demultiplexing left and right eye image data or 2D data and depth information as disclosed by at least Suzuki, Takada '642, Takada '804, Hibino, Takada '277, Takayama, the Philips System, and the Sharp System. *See, e.g.*, Exs. 786-A, 786-B, 786-C, 786-E, 786-F, 786-G, 786-H, 786-I, at claim elements 1(d), 13(d). For example, a person of ordinary skill would have been motivated to combine techniques for multiplexing and demultiplexing components of 3D stereoscopic image data with references disclosing transmitting or receiving data over an interface so that stereoscopic 3D data may be transmitted and received across an existing interface that typically transmits 2D data, without needing to change the configuration of the interface. Making these combinations would be straightforward because systems and techniques for multiplexing and de-multiplexing stereoscopic image data are readily adaptable to systems that transmit and receive image data across an interface, and amount to using known techniques for generating and processing multiplexed data in predictable ways using the existing configuration of the interface.

As a further example, methods and systems that transmitted signaling information informing a sink device indicating whether a 2D or stereoscopic 3D mode is being used and how the stereoscopic 3D data is multiplexed were well-known and within the skill of persons of ordinary skill in the art at the time of the alleged invention. *See, e.g.*, Suzuki, Takada '642, Takada '804, Newton, Hibino, Takayama, the Philips System, and the Sharp System. The '786 patent itself

concedes that there were well-known methods for signaling a 3D mode and how the stereoscopic 3D data is multiplexed, such as via 2D and depth information, including through the use of conventional HDMI Data Island Packets. For example, "a WOWvx encoded image as described in the background section, comprises a 2D image, depth information and/or occlusion information already embedded into separate regions of a conventional image." '786 patent, 10:28-31. "In order to identify such a 3D image, an HDMI Data Island Packet (typically a General Control Packet, Auxiliary Video InfoFrame (AVI) packet or specifically designated InfoFrame Packet) indicates this method. The information in this Packet identifies: the current stereoscopic method (e.g. 2D+Depth) being used; any information pertaining to this method which is required by the display." *Id.*, 10:39-47. These systems and methods included techniques for transmitting the format of stereoscopic 3D data, such as left eye data and right eye data or 2D data and depth information, as disclosed by at least Suzuki, Takada '642, Takada '804, Newton, Hibino, Takayama, the Philips System, and the Sharp System. *See, e.g.*, Exs. 786-A, 786-B, 786-C, 786-D, 786-E, 786-G, 786-H, and 786-I, at claim elements 1(e), 1(f), 13(e), 13(f). A person of ordinary skill would have been motivated to combine these techniques for signaling whether a 2D or stereoscopic 3D mode is being used and how the stereoscopic 3D data is multiplexed so that the sink device can determine the format and configuration of the received image data so it can decode the received stereoscopic 3D data for display to a user. Making these combinations would be straightforward because systems and techniques for signaling whether a 2D or stereoscopic 3D mode is being used and how the stereoscopic 3D data is multiplexed are readily adaptable to systems that already transmit data, such as image data, between source and sink devices, and amount to using known techniques for sending signaling information between source and sink devices in predictable ways.

As a further example, methods and systems that transmitted signaling information at intervals in streams of data elements as auxiliary data were well-known and within the skill of persons of ordinary skill in the art at the time of the alleged invention. *See, e.g.*, Suzuki, Takada '804, and Newton. The '786 patent itself concedes there were well-known methods for transmitting signaling information at intervals in streams of data elements as auxiliary data, including through the use of Auxiliary Video InfoFrame (AVI) packets. For example, "a WOWvx encoded image as described in the background section, comprises a 2D image, depth information and/or occlusion information already embedded into separate regions of a conventional image." '786 patent, 10:28-31. "In order to identify such a 3D image, an HDMI Data Island Packet (typically a General Control Packet, Auxiliary Video InfoFrame (AVI) packet or specifically designated InfoFrame Packet) indicates this method. The information in this Packet identifies: the current stereoscopic method (e.g. 2D+Depth) being used; any information pertaining to this method which is required by the display." *Id.*, 10:39-47. These systems and methods included techniques for transmitting signaling information during blanking intervals or as auxiliary data streams as disclosed by at least Suzuki, Takada '804, and Newton. *See, e.g.*, Exs. 786-A, 786-C, 786-D at claim elements 1(g), 1(h), 13(g), 13(h). A person of ordinary skill would have been motivated to combine these techniques for transmitting signaling information at intervals in streams of data elements as auxiliary data so that the signaling information may be transmitted and received using the existing configuration of the interface. Making these combinations would be straightforward because systems and techniques for transmitting signaling information at intervals in streams of data elements as auxiliary data are readily adaptable to systems that already transmit data, such as image data, between source and sink devices, and amount to using known techniques for sending signaling information between source and sink devices in predictable ways.

As a further example, a POSITA would be motivated to combine Suzuki, Takada ’642, Takada ’804, Newton, Hibino, Takada ’277, Takayama, the Philips System, and the Sharp System with each other. A POSITA would be motivated to combine these references because they all disclose features of and/or applicable to interfaces that transmit image information from a source device to a sink device. *See* Exs. 786-A through 786-J, at claim elements 1(p)(i), 1(p)(ii), 13(p)(i), 13(p)(ii). A POSITA would recognize that Suzuki, Takada ’642, Takada ’804, Newton, Hibino, Takada ’277, Takayama, the Philips System, and the Sharp System include the same or similar types of interface parts that support transmitting pixel information between a source device and a sink device, and accordingly would be motivated to combine those references to improve the usability of the interfaces for transmitting both 2D and stereoscopic 3D data. A POSITA would have a reasonable expectation of success with combining these references because they all describe similar systems—*e.g.*, involving transmission of 2D and stereoscopic 3D data across an interface, formatting and processing the image data according to a 2D or stereoscopic 3D mode, and/or transmitting signaling information at intervals in streams of data elements as auxiliary data.

As a further example, a POSITA would be motivated to combine Suzuki, Takada ’642, Takada ’804, Newton, Takada ’277, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification and Products with one or more of Yoshida, Tu, Lida, Glen, Cho, and DeCusatis. A POSITA would be motivated to combine these references because Yoshida, Tu, Lida, Glen, Cho, and DeCusatis disclose interface parts in source and/or sink devices for transmitting and/or processing image data, such as uncompressed pixel information, that can be used in the image data transmission systems disclosed in Suzuki, Takada ’642, Takada ’804, Newton, Takada ’277, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification and Products. A POSITA would recognize that Yoshida’s, Tu’s, Lida’s, Glen’s, Cho’s, and DeCusatis’s disclosure of

interface parts for transmitting and/or processing image data would be useful in image data transmission systems, and accordingly would be motivated to combine Yoshida, Tu, Lida, Glen, Cho, and DeCusatis with the one or more additional references Suzuki, Takada ’642, Takada ’804, Newton, Takada ’277, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification and Products to facilitate the transmission and processing of image data, including uncompressed pixel information, between source and sink devices. Making these combinations would be straightforward because dedicated interface parts are readily adaptable to systems that transmit and receive data over interfaces such as HDMI and would amount to using known interface part configurations in predictable ways.

As a further example, a POSITA would be motivated to combine Suzuki, Takada ’642, Takada ’804, and Takada ’277 with one or more of Yoshida, Matsuura, Elliott, Tu, Lida, Glen, Cho, or DeCusatis. A POSITA would be motivated to combine these references because Yoshida, Matsuura, Elliott, Tu, Lida, Glen, Cho, or DeCusatis disclose inputs for receiving image data, including from a transmission interface, which may be used to receive the image data disclosed in Suzuki, Takada ’642, Takada ’804, and Takada ’277. A POSITA would recognize that Yoshida’s, Matsuura’s, Elliott’s, Tu’s, Lida’s, Glen’s, Cho’s, or DeCusatis’s disclosure of inputs for receiving image data would be useful in systems that format, transmit, and receive image data across an interface, and accordingly would be motivated to combine Yoshida, Matsuura, Elliott, Tu, Lida, Glen, Cho, or DeCusatis with the one or more additional references Suzuki, Takada ’642, Takada ’804, and Takada ’277 to facilitate the inputting, formatting, transmitting, and receiving of image data across an interface. Making these combinations would be straightforward because inputs for receiving image data are readily adaptable to systems that already have interconnections for

transporting image data and would amount to using known techniques and systems for data inputs in predictable ways.

As a further example, a POSITA would be motivated to combine Takada ’642, Takada ’804, and Hibino with one or more of Yoshida, Matsuura, Elliott, Tu, Lida, Glen, Cho, and DeCusatis. A POSITA would be motivated to combine these references because Yoshida, Matsuura, Elliott, Tu, and Lida disclose formatters that format image data for transmission over an interface that are operable in both 2D and stereoscopic 3D modes that may be used in systems that transmit image data from source devices to sink devices, as disclosed in Takada ’642, Takada ’804, and Hibino. A POSITA would recognize that Yoshida’s, Matsuura’s, Elliott’s, Tu’s, Lida’s, Glen’s, Cho’s, and DeCusatis’s disclosure of formatters operable in 2D and stereoscopic 3D modes would be useful in systems that transmit image data, such as 2D and stereoscopic 3D data, and accordingly would be motivated to combine Yoshida, Matsuura, Elliott, Tu, Lida, Glen, Cho, and DeCusatis with the one or more additional references Takada ’642, Takada ’804, and Hibino to facilitate formatting image data for transmission across an interface. Making these combinations would be straightforward because formatters operable to transmit 2D and stereoscopic 3D image data across an interface are readily adaptable to systems that transmit image data across an interface, and would amount to using known techniques for implementing multi-mode formatters in existing transmission interfaces in predictable ways.

As a further example, a POSITA would be motivated to combine Takada ’642 and Takada ’277 with one or more of Yoshida, Matsuura, Elliott, Tu, Lida, Glen, Cho, and DeCusatis. A POSITA would be motivated to combine these references because Yoshida, Matsuura, Elliott, Tu, Lida, Glen, Cho, and DeCusatis disclose components that process received image data and are operable in both 2D and stereoscopic 3D modes and may be used in systems that receive image

data from a source device, as disclosed in Takada ’642 and Takada ’277. A POSITA would recognize that Yoshida’s, Matsuura’s, Elliott’s, Tu’s, Lida’s, Glen’s, Cho’s, and DeCusatis’s disclosure of processors operable in 2D and stereoscopic 3D modes would be useful in systems that receive 2D data or stereoscopic 3D data from a source device, and accordingly would be motivated to combine Yoshida, Matsuura, Elliott, Tu, Lida, Glen, Cho, and DeCusatis with Takada ’642 and Takada ’277 to facilitate processing image data that has been received across an interface. Making these combinations would be straightforward because processors operable to process 2D and stereoscopic 3D image data received from a source device are readily adaptable to systems that receive image data across an interface, and would amount to using known techniques for implementing multi-mode processors in existing transmission interfaces in predictable ways.

As a further example, a POSITA would be motivated to combine Takada ’642, Newton, Hibino, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification and Products with one or more of Yoshida, Matsuura, Tu, Lida, Glen, and DeCusatis. A POSITA would be motivated to combine these references because Yoshida, Matsuura, Tu, Lida, Glen, and DeCusatis disclose systems and techniques for generating and extracting 2D image data transmitted over an interface, which may be used in the systems transmitting and receiving image data disclosed in Takada ’642, Newton, Hibino, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification and Products. A POSITA would recognize that Yoshida’s, Matsuura’s, Tu’s, Lida’s, Glen’s, and DeCusatis’s disclosure of systems that generate and extract 2D image data would be useful in systems that transmit and receive image data for display, so that 2D image data may be provided in addition to other types of image data without reconfiguring the interface. Accordingly, a POSITA would be motivated to combine Yoshida, Matsuura, Tu, Lida, Glen, and DeCusatis with the one or more of Takada ’642, Newton,

Hibino, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification and Products to facilitate transmission of 2D image data over an existing interface so that users can view 2D content. Making these combinations would be straightforward because systems and techniques for generating and extracting 2D image data transmitted over an existing interface are readily adaptable to systems with interfaces for transmitting image data, and amount to using known techniques for utilizing the data capacity of an interface in predictable ways.

As a further example, a POSITA would be motivated to combine Takada ’804, Newton, Hibino, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification and Products with one or more of Yoshida, Matsuura, Elliott, Cho, DeCusatis, Iue, and Ishihara. A POSITA would be motivated to combine these references because Yoshida, Matsuura, Elliott, Cho, DeCusatis, Iue, and Ishihara disclose systems and techniques for generating and multiplexing stereoscopic 3D data for transmission across an interface that may be used in systems that transmit image data, as disclosed in Takada ’804, Newton, Hibino, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification and Products. A POSITA would recognize that Yoshida’s, Matsuura’s, Elliott’s, Cho’s, DeCusatis’s, Iue’s, and Ishihara’s disclosure of systems that generate and multiplex stereoscopic 3D data for transmission across an interface would be useful in systems that transmit image data for display so that stereoscopic 3D image data may be provided in addition to other types of image data without reconfiguring the interface. Accordingly, a POSITA would be motivated to combine Yoshida, Matsuura, Elliott, Cho, DeCusatis, Iue, and Ishihara with the one or more additional references Takada ’804, Newton, Hibino, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification and Products to facilitate transmission of stereoscopic 3D data over the interface so that users can view stereoscopic 3D content. Making

these combinations would be straightforward because systems and techniques for generating stereoscopic 3D data for transmission across an interface are readily adaptable to systems that already transmit image data between source and sink devices, and amount to using known techniques for generating and multiplexing stereoscopic 3D data for transmission across an interface in predictable ways.

As a further example, a POSITA would be motivated to combine Takada ’804, Newton, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification and Products with one or more of Yoshida, Matsuura, Elliott, Cho, DeCusatis, Iue, and Ishihara. A POSITA would be motivated to combine these references because Yoshida, Matsuura, Elliott, Cho, DeCusatis, Iue, and Ishihara disclose systems and techniques for demultiplexing stereoscopic 3D image data that may be used in systems that receive stereoscopic 3D image data, as disclosed in Takada ’804, Newton, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification and Products. A POSITA would recognize that Yoshida’s, Matsuura’s, Elliott’s, Cho’s, DeCusatis’s, Iue’s, and Ishihara’s disclosure of systems that demultiplex stereoscopic image data would be useful in systems that receive image data for display, so that stereoscopic 3D data may be processed for display in addition to other types of data, and accordingly would be motivated to combine Yoshida, Matsuura, Elliott, Cho, DeCusatis, Iue, and Ishihara with the one or more additional references Takada ’804, Newton, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification and Products to facilitate processing stereoscopic 3D data. Making these combinations would be straightforward because systems and techniques for de-multiplexing stereoscopic image data are readily adaptable to systems that transmit and receive image data across an interface, and amount to using known techniques for processing multiplexed data in predictable ways.

As a further example, a POSITA would be motivated to combine Takada ’642, Newton, Hibino, Takada ’277, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification and Products with one or more of Yoshida, Tu, Lida, Glen, Cho, and DeCusatis. A POSITA would be motivated to combine these references because Yoshida, Tu, Lida, Glen, Cho, and DeCusatis disclose systems and techniques for sending signaling information to the sink device indicating whether a 2D or stereoscopic 3D mode is being used and how the stereoscopic 3D data is multiplexed which may be used in systems that transmit and receive image data, as disclosed in Takada ’642, Newton, Hibino, Takada ’277, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification and Products. A POSITA would recognize that Yoshida’s, Tu’s, Lida’s, Glen’s, Cho’s, and DeCusatis’s disclosure of indicating whether a 2D or stereoscopic 3D mode is being used and how the stereoscopic 3D data is multiplexed would be useful in systems that transmit and receive image data so that the sink device can determine the format and configuration of the received image data so it can decode the received stereoscopic 3D data for display to a user, and accordingly would be motivated to combine Yoshida, Tu, Lida, Glen, Cho, and DeCusatis with the one or more additional references Takada ’642, Newton, Hibino, Takada ’277, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification and Products to facilitate transmitting, processing, and displaying different types of image content. Making these combinations would be straightforward because systems and techniques for sending signaling information to the sink device indicating whether a 2D or stereoscopic 3D mode is being used and how the stereoscopic 3D data is multiplexed are readily adaptable to systems that already transmit data, such as image data, between source and sink devices, and would amount to using known techniques for sending signaling information between source and sink devices in predictable ways.

As a further example, a POSITA would be motivated to combine Suzuki, Takada ’642, Hibino, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification and Products with one or more additional references Yoshida, Cho, Matsuura, Elliott, Lida, Glen, and DeCusatis. A POSITA would be motivated to combine these references because Yoshida, Cho, Matsuura, Elliott, Lida, Glen, and DeCusatis disclose systems and techniques for transmitting signaling information during blanking intervals or as auxiliary data streams which may be used in systems that transmit and receive different types of image data, as disclosed in Suzuki, Takada ’642, Hibino, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification and Products. A POSITA would recognize that Yoshida’s, Cho’s, Matsuura’s, Elliott’s, Lida’s, Glen’s, and DeCusatis’s disclosure of transmitting signaling information during blanking intervals or as auxiliary data streams would be useful in systems that transmit and receive different types of image data so that signaling information may be sent using the existing configuration of the interface, and accordingly would be motivated to combine Yoshida, Cho, Matsuura, Elliott, Lida, Glen, and DeCusatis with the one or more additional references Suzuki, Takada ’642, Hibino, Takada ’277, Takayama, the Philips System, the Sharp System, and the MPEG-C Part 3 Specification and Products to facilitate the transmission of signaling information in addition to main image data across the interface. Making these combinations would be straightforward because systems and techniques for transmitting signaling information during blanking intervals or as auxiliary data streams are readily adaptable to systems that already transmit data, such as image data, between source and sink devices, and would amount to using known techniques for sending information between source and sink devices in predictable ways.

As a further example, a POSITA would be motivated to combine Suzuki, Newton, Takayama, the Philips System, and the Sharp System with each other. A POSITA would be motivated to combine these references because the references disclose techniques applicable to transmitting image data across the standardized interfaces, including HDMI, DVI, and/or USB, and provide techniques for improving the transmission of image data across these interfaces, such as by sending stereoscopic 3D data in the form of 2D information and a depth map or signaling information identifying whether the image data is formatted in a 2D or 3D mode and the characteristics of the image data. A POSITA would have had a reasonable expectation of success with combining these references because these techniques relate to transmitting image data across the standardized interfaces.

As a further example, a POSITA would be motivated to combine Suzuki, Tu, and Lida with each other. A POSITA would be motivated to combine Suzuki and Tu because Suzuki provides implementation details regarding an HDMI interface and Tu uses an HDMI interface to transmit data between a source and sink device. A POSITA would further be motivated to use Lida's InfoFrames, which the HDMI specification designed for use in transmitting information regarding video data, in the combination of Suzuki and Tu, which features an HDMI interface for transmitting audio-visual data. A POSITA would have a reasonable expectation of success combining these references because each reference relates to transmitting data over an interface and thus the combination amounts to using known techniques for data transmission in predictable ways.

As a further example, a POSITA would be motivated to combine the Philips System, Suzuki, and Lida with each other. A POSITA would be motivated to combine the Philips System and Suzuki because the Philips System discloses transmitting stereoscopic image data over a

standardized interface, and Suzuki discloses implementation details for multiplexing and transmitting both 2D image data and stereoscopic 3D data over a standardized interface that facilitates transmission in the Philips System. A POSITA would have been further motivated to supplement the combination of the Philips System and Suzuki with Lida, which discloses transmitting packets comprising information that may describe the transmitted image data in the combination of the Philips System and Suzuki. In addition or alternatively to Lida, a POSITA would have also been motivated to supplement the combination of the Philips System and Suzuki with Takayama, which discloses that non-effective portions of an image signal such as blanking periods may be utilized to carry the depth component of a stereoscopic image, such as the stereoscopic components transmitted in the combination of the Philips System and Suzuki. A POSITA would have a reasonable expectation of success combining these references because each reference relates to transmitting data over an interface and thus the combination amounts to using known techniques for data transmission in predictable ways.

As a further example, a POSITA would be motivated to combine the Philips System, Takada ’277, and Takayama with each other. A POSITA would be motivated to combine the Philips System with Takada ’277 because the Philips System discloses transmitting stereoscopic image data over a standardized interface, and Takada ’277 discloses a technique for transmitting 2D and depth information, such as a depth signal, over a conventional transmission interface by filling unused portions of the interface’s capacity with depth information, which facilitates transmission in the Philips System. A POSITA would have been further motivated to supplement the combination of the Philips System and Takada ’277 with Takayama, which discloses that non-effective portions of an image signal such as blanking periods may be utilized to carry the depth component of a stereoscopic image, such as the stereoscopic components transmitted in the

combination of the Philips System and Takada ’277. A POSITA would have a reasonable expectation of success combining these references because each reference relates to transmitting data over an interface and thus the combination amounts to using known techniques for data transmission in predictable ways.

As a further example, a POSITA would be motivated to combine the Sharp System, Suzuki, and Lida with each other. A POSITA would be motivated to combine the Sharp System and Suzuki because the Sharp System discloses transmitting stereoscopic image data over a standardized interface, and Suzuki discloses implementation details for multiplexing and transmitting both 2D image data and stereoscopic 3D data over a standardized interface that facilitates transmission in the Sharp System. A POSITA would have been further motivated to supplement the combination of the Sharp System and Suzuki with Lida, which discloses transmitting packets comprising information that may describe the transmitted image data in the combination of the Sharp System and Suzuki. In addition or alternatively to Lida, a POSITA would have also been motivated to supplement the combination of the Sharp System and Suzuki with Takayama, which discloses that non-effective portions of an image signal such as blanking periods may be utilized to carry the depth component of a stereoscopic image, such as the stereoscopic components transmitted in the combination of the Sharp System and Suzuki. A POSITA would have a reasonable expectation of success combining these references because each reference relates to transmitting data over an interface and thus the combination amounts to using known techniques for data transmission in predictable ways.

As a further example, a POSITA would be motivated to combine the Sharp System, Takada ’277, and Takayama with each other. A POSITA would be motivated to combine the Sharp System with Takada ’277 because the Sharp System discloses transmitting stereoscopic image data over a

standardized interface, and Takada ’277 discloses a technique for transmitting stereoscopic image data over a conventional transmission interface by filling unused portions of the interface’s capacity with stereoscopic image information, such as depth information, which facilitates transmission in the Sharp System. A POSITA would have been further motivated to supplement the combination of the Sharp System and Takada ’277 with Takayama, which discloses that non-effective portions of an image signal such as blanking periods may be utilized to carry stereoscopic image signals. A POSITA would have a reasonable expectation of success combining these references because each reference relates to transmitting data over an interface and thus the combination amounts to using known techniques for data transmission in predictable ways.

V. LACK OF PATENTABLE SUBJECT MATTER[17]

A. The ’443 Patent

All the Asserted Claims of the ’443 Patent are directed to ineligible subject matter under 35 U.S.C. § 101. More specifically the claims are invalid because they are directed to an abstract idea. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014). As an initial matter, the identified claims are generally directed to the abstract idea of transmitting and receiving information and content. *See BuySAFE v. Google, Inc.*, 765 F.3d 1350, 1355 (Fed.Cir.2014) (“That a computer receives and sends the information over a network—with no further specification—is not even arguably inventive.”).

Moreover, aside from the abstract idea of transmitting and receiving information and content, the only other limitations of the Asserted Claims of the ’443 Patent recite unpatentable printed matter. Specifically, the remaining limitations of the Asserted Claims of the ’443 Patent

[17] Although Defendant understands that P.R. 3-4 does not require contentions regarding lack of patentable subject matter, Defendant offers this section in an effort to facilitate resolution of this matter and narrow issues in dispute.

recite "the audio-related information includes monitor information indicating whether or not the audio data is capable of being monitored in the reception step" (Claim 7) and "the monitor information indicates that the audio data is not capable of being monitored in the reception step" (Claim 9). The Asserted Claims are directed solely to abstract ideas and non-functional printed matter and contain no additional inventive concept. *See C R Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1383 (Fed. Cir. 2020).

Additionally, at least the following claim terms or phrases of the '443 Patent are routine and/or conventional are therefore directed to ineligible subject matter under 35 U.S.C. § 101 as indicated below:

Claim	Language
7	"transmitting the audio data and audio-related information associated with the audio data"
7	"receiving the audio data and the audio-related information"
7	"the audio-related information includes monitor information indicating whether or not the audio data is capable of being monitored in the reception step"
9	"muting the audio data if the monitor information indicates that the audio data is not capable of being monitored in the reception step."

B. The '224 Patent

All the Asserted Claims of the '224 Patent are directed to ineligible subject matter under 35 U.S.C. § 101. More specifically the claims are invalid because they are directed to an abstract idea. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014). As an initial matter, the identified claims are generally directed to the abstract idea of receiving and analyzing information and content. *See Content Extraction and Trans. v. Wells Fargo Bank*, 776 F. 3d 1343, 1347 (Fed.Cir.2014) ("The concept of data collection, recognition, and storage is undisputedly well-known.")*; see also Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1351 (Fed. Cir. 2016)

(Holding ineligible claims that "do not go beyond requiring the collection, analysis, and display of available information in a particular field."); *BuySAFE v. Google, Inc.*, 765 F.3d 1350, 1355 (Fed.Cir.2014).

Moreover, aside from the abstract idea of receiving and analyzing information and content, the only other limitations of the Asserted Claims of the '224 Patent recite unpatentable printed matter. Specifically, the remaining limitations of the Asserted Claims of the '224 Patent recite "the audio-related information includes monitor information indicating whether or not the audio data is capable of being monitored in the reception step" (Claim 3) and " the monitor information indicates that the audio data is not capable of being monitored by the receiver" (Claim 5). The Asserted Claims of the '224 Patent are directed solely to abstract ideas and non-functional printed matter and contain no additional inventive concept. *See C R Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1383 (Fed. Cir. 2020).

Additionally, at least the following claim terms or phrases of the '224 Patent are routine and/or conventional are therefore directed to ineligible subject matter under 35 U.S.C. § 101 as indicated below:

Claim	**Language**
3	"an analysis section operable to determine whether or not the audio data is capable of being monitored by the receiver"
3	"the audio-related information includes monitor information indicating whether or not the audio data is capable of being monitored by the receiver"
3	"the analysis section determines whether or not the audio data is capable of being monitored by the receiver based on the monitor information"
5	"the audio data is muted if the monitor information indicates that the audio data is not capable of being monitored by the receiver."

C. The ’282 Patent

The Asserted Claim of the ’282 Patent is directed to ineligible subject matter under 35 U.S.C. § 101. More specifically the claim is invalid because it is directed to an abstract idea. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014). As an initial matter, the identified claim is generally directed to the abstract idea of transmitting, receiving, and re-mapping information and content. *See BuySAFE*, 765 F.3d 1350 at 1355 (“That a computer receives and sends the information over a network—with no further specification—is not even arguably inventive.”); *see also Intell. Ventures I LLC v. Cap. One Fin. Corp.*, 850 F.3d 1332, 1341 (Fed. Cir. 2017) (“generic computer ‘components’ that merely restate their individual functions—i.e. … mapping, … merely describe the functions of the abstract idea itself”).

Moreover, aside from the abstract idea of transmitting and receiving information and content, the only other limitations of the Asserted Claims of the ’282 Patent recite unpatentable printed matter. Specifically, the remaining limitations of the Asserted Claims of the ’282 Patent recite “re-mapping a data signal and a clock signal from a first local bus on the source into a different protocol signal,” “re-mapping the different protocol signal back into the data signal and the clock signal for use on a second local bus on the sink,” and “re-mapping the data signal and the clock signal from the second local bus into the different protocol signal.” The Asserted Claims are directed solely to abstract ideas and non-functional printed matter and contain no additional inventive concept. *See C R Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1383 (Fed. Cir. 2020).

Additionally, at least the following claim terms or phrases of the ’282 Patent are routine and/or conventional are therefore directed to ineligible subject matter under 35 U.S.C. § 101 as indicated below:

Claim	Language
1	"re-mapping a data signal and a clock signal from a first local bus on the source into a different protocol signal"
1	"transmitting the different protocol signal from the source to the sink over the two-wire interface"
1	"re-mapping the different protocol signal back into the data signal and the clock signal for use on a second local bus on the sink"
1	"re-mapping the data signal and the clock signal from the second local bus into the different protocol signal"
1	"transmitting the different protocol signal from the sink to the source over the two-wire interface."

D. The '437 Patent

The Asserted Claim of the '437 Patent is directed to ineligible subject matter under 35 U.S.C. § 101. More specifically the claim is invalid because it is directed to an abstract idea. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014). As an initial matter, the identified claim is generally directed to the abstract idea of encoding and transmitting information and content. *See RecogniCorp, LLC v. Nintendo Co.*, Ltd., 855 F.3d 1322, 1326 (Fed. Cir. 2017) ("This method reflects standard encoding and decoding, an abstract concept long utilized to transmit information."); *see also BuySAFE*, 765 F.3d 1350, 1355 ("That a computer receives and sends the information over a network—with no further specification—is not even arguably inventive."); *Intell. Ventures I LLC v. Cap. One Fin. Corp.*, 850 F.3d 1332, 1341 (Fed. Cir. 2017) ("This method reflects standard encoding and decoding, an abstract concept long utilized to transmit information.").

Moreover, aside from the abstract idea of transmitting and receiving information and content, the only other limitations of the Asserted Claims of the '437 Patent recite unpatentable printed matter. Specifically, the remaining limitations of the Asserted Claims of the '437 Patent recite "providing words of input data capable of being encoded as a conventional sequence of code

words of a full code word set," "generating a sequence of selected code words by encoding the input data, wherein each of the selected code words is a member of a robust subset of the full code word set, and the sequence of selected code words is less susceptible to inter-symbol interference during transmission over the link than would be the conventional sequence of code words," and "generating bursts of encoded control words by encoding control bits." The Asserted Claims are directed solely to abstract ideas and non-functional printed matter and contain no additional inventive concept. *See C R Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1383 (Fed. Cir. 2020).

Additionally, at least the following claim terms or phrases of the '437 Patent are routine and/or conventional are therefore directed to ineligible subject matter under 35 U.S.C. § 101 as indicated below:

Claim	Language
41	"a method for encoding data for transmission over a serial link"
41	"providing words of input data capable of being encoded as a conventional sequence of code words of a full code word set"
41	"generating a sequence of selected code words by encoding the input data, wherein each of the selected code words is a member of a robust subset of the full code word set, and the sequence of selected code words is less susceptible to inter-symbol interference during transmission over the link than would be the conventional sequence of code words"
41	"generating bursts of encoded control words by encoding control bits"
41	"transmitting over the link a first burst of the encoded control words between a first burst of the video code words and the burst of the selected code words, and a second burst of the encoded control words between the burst of the selected code words and a second burst of the video code words"

E. The ’010 Patent

The Asserted Claims of the ’010 Patent are directed to ineligible subject matter under 35 U.S.C. § 101. More specifically, the claims are invalid because they are directed to an abstract idea. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014). The identified claims are generally directed to the abstract idea of transmitting and receiving content. *See BuySAFE*, 765 F.3d 1350, 1355 (“That a computer receives and sends the information over a network—with no further specification—is not even arguably inventive.”); s*ee also Hawk Tech. Sys., LLC v. Castle Retail, LLC*, 60 F.4th 1349, 1357 (Fed. Cir. 2023) (“The claims are directed to a method of receiving, displaying, converting, storing, and transmitting digital video ‘using result-based functional language.’”); *id.* (“The [] patent claims are directed to [] abstract ideas—displaying images, converting them into a format, transmitting them, and so on.”).

Moreover, aside from the abstract idea of transmitting and receiving information and content, the only other limitations of the Asserted Claims of the ’010 Patent recite unpatentable printed matter. Specifically, the remaining limitations of the Asserted Claims of the ’010 Patent recite “said first data element comprising pixel data of a 2D image”, “second data elements which carry a multiplexed combination of components of a stereoscopic image, wherein said components of said stereoscopic image elements being transmitted in a first portion of said interface and in a second portion of said interface,” and “the signaling information identifying which mode the formatter is using and characteristics of said steam of second data elements” (Claim 1); and “a 2D image from a stream of first data elements,” “a stream of second data elements which carry a multiplexed combination of components of a stereoscopic image, wherein said components of said stereoscopic image data elements being transmitted in a first portion of said interface and in a second portion of said interface,” and “the signaling information identifying which of said first mode and said second mode is used and characteristics of said steam of second data elements”

(Claim 12). The Asserted Claims are directed solely to abstract ideas and non-functional printed matter and contain no additional inventive concept. *See C R Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1383 (Fed. Cir. 2020).

Additionally, at least the following claim terms or phrases of the ’010 Patent are routine and/or conventional and are therefore directed to ineligible subject matter under 35 U.S.C. § 101 as indicated below:

Claim	Language
1	“A digital display interface part, for use in a first audio-visual device, for supporting a digital display interface between the first audio-visual device and a second audio-visual device, the digital display interface having a known data carrying capacity for transmitting uncompressed pixel information”
1	“an input for receiving image data”
1	“a formatter arranged to format the data for transport over the interface”
1	“the interface part is arranged to send signaling information across the interface, the signaling information identifying which mode the formatter is using and characteristics of said steam of second data elements”
12	“A digital display interface part for use in an audio-visual device, said interface part supporting a digital display interface having a known data carrying capacity between the audio-visual device and a second audio-visual device, and receiving uncompressed pixel information”
12	“an input for receiving formatted image data from the interface”
12	“a processor arranged to extract said image data”
12	“the interface part further arranged to receive signaling information across the interface, the signaling information identifying which of said first mode and said second mode is used and characteristics of said steam of second data elements”

F. The ’786 Patent

The Asserted Claims of the ’786 Patent are directed to ineligible subject matter under 35 U.S.C. § 101. More specifically, the claims are invalid because they are directed to an abstract

idea. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014). The identified claims are generally directed to the abstract idea of transmitting and receiving content. *See BuySAFE*, 765 F.3d at 1355 ("That a computer receives and sends the information over a network—with no further specification—is not even arguably inventive."); *see also Hawk Tech. Sys., LLC v. Castle Retail, LLC*, 60 F.4th 1349, 1357 (Fed. Cir. 2023) ("The claims are directed to a method of receiving, displaying, converting, storing, and transmitting digital video 'using result-based functional language.'"); *id.* ("The [] patent claims are directed to [] abstract ideas—displaying images, converting them into a format, transmitting them, and so on.").

Moreover, aside from the abstract idea of transmitting and receiving information and content, the other limitations of the Asserted Claims of the '786 Patent recite unpatentable printed matter. Specifically, the remaining limitations of the Asserted Claims of the '786 Patent recite " a stream of first data elements comprising pixel data of a 2D image," "a stream of second data elements comprising a multiplexed combination of components of a stereoscopic image," "the signaling information identifying which mode the formatter is using," and "the signaling information comprises information with respect to a multiplexing scheme used in a second mode," and "data elements comprising either the first or second data elements and auxiliary data carrying data elements at intervals in the stream," and "the signaling information being carried in the auxiliary data elements" (Claim 1); and "a 2D image from a stream of first data elements," "a stream of second data elements comprising a multiplexed combination of components of a stereoscopic image," "the signaling information identifying which mode the formatter is using," "the signaling information comprises information with respect to a multiplexing scheme used in a second mode," "the stream of data elements comprising either the first or second data elements and auxiliary data carrying data elements at intervals in the stream," and "the signaling information

being carried in the auxiliary data elements" (Claim 13). The Asserted Claims are directed solely to abstract ideas and non-functional printed matter and contain no additional inventive concept. *See C R Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1383 (Fed. Cir. 2020).

Additionally, at least the following claim terms or phrases of the '786 Patent are routine and/or conventional and are therefore directed to ineligible subject matter under 35 U.S.C. § 101 as indicated below:

Claim	Language
1	"An interface part for a digital display, for use in a first audio-visual device for supporting a digital display transmission interface between the first audio-visual device and a second audio-visual device, the interface for transmitting uncompressed pixel information"
1	"an input for receiving image data"
1	"a formatter configured to format the received image data for transport over a transmission interface"
1	"wherein the interface part is configured to send signaling information across the transmission interface, the signaling information identifying which mode the formatter is using"
1	"the signaling information being carried in the auxiliary data elements"
13	"An interface part for a digital display, for use in an audio-visual device for supporting a digital display transmission interface between a first audio-visual device and a second audio-visual device, the digital display interface for receiving uncompressed pixel information"
13	"an input for receiving formatted image data from the transmission interface"
13	"a processor arranged to extract image data"
13	"wherein the interface part is configured to receive signaling information across the transmission interface, the signaling information identifying which mode the formatter is using"
13	"the signaling information being carried in the auxiliary data elements"

VI. INVALIDITY UNDER 35 U.S.C. § 112

Defendant contends the Asserted Claims are invalid under 35 U.S.C. § 112 because the claims lack sufficient written description, are not enabled, and are indefinite. Defendant's contentions that the claims identified below are invalid under 35 U.S.C. § 112 are only exemplary and Defendant reserves the right to supplement the identification of claims and claim elements that do not comply with the requirements of 35 U.S.C. § 112. The following do not constitute, and should not be interpreted as, admissions regarding the construction or scope of the Asserted Claims of the Asserted Patents, or that any of the Asserted Claims of the Asserted Patents are not anticipated or rendered obvious by prior art. To the extent a limitation identified below, or its variation, appears in claims other than the ones specified below, it also renders those additional claims invalid under 35 U.S.C. § 112. Claims that depend on these additional claims and on the claims identified below are also invalid under 35 U.S.C. § 112.

The following contentions are subject to revision and amendment pursuant to Federal Rule of Civil Procedure 26(e) and the Orders of record in this matter to the extent appropriate, *e.g.*, in light of further investigation and discovery regarding the defenses, the Court's construction of the claims at issue, and/or review and analysis of expert witnesses. Defendant offers these Invalidity Contentions in response to Plaintiff's Infringement Contentions and without prejudice to any position it may ultimately take as to any claim construction issues.

A. Lack of Enablement and/or Written Description Under 35 U.S.C. § 112 ¶ (1)

Section 112 ¶ (1) includes a written description and enablement requirement. *See* 35 U.S.C. § 112, ¶ (1) ("The specification shall contain a written description of the invention, and of the manner and process of making and using [the invention] in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same.").

To satisfy the enablement requirement of 35 U.S.C § 112, ¶ (1), the disclosure "must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'" *Genentech, Inc. v. Novo Nordisk, A/S*, 108 F.3d 1361, 1365 (Fed. Cir. 1997) (citations omitted). Moreover, "[i]t is the specification, not the knowledge of one skilled in the art, that must supply the novel aspects of [the] invention in order to constitute adequate enablement." *Id.* at 1366. The Federal Circuit has enumerated several factors to consider in determining whether a disclosure would require "undue experimentation": (1) the quantity of experimentation necessary; (2) the amount of direction or guidance presented; (3) the presence or absence of working examples; (4) the nature of the invention; (5) the state of the prior art; (6) the relative skill of those in the art; (7) the predictability or unpredictability of the art; and (8) the breadth of the claims. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988).

To satisfy the written description requirement, the description must "clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed." *Ariad Pharmaceuticals, Inc. v. Eli Lilly and Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (internal citation omitted). In other words, the test for sufficiency is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date. *Id*. The test requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art. Based on that inquiry, the specification must describe an invention understandable to that skilled artisan and show that the inventor actually invented the invention claimed. "Whether the written description requirement is satisfied is a fact-based inquiry that will depend on the nature of the claimed invention, and the knowledge of one skilled in the art at the time an invention is made and a patent application is filed." *Carnegie Mellon Univ. v. Hoffmann La Roche Inc.*, 541 F.3d 1115, 1122

(Fed. Cir. 2008). Actual "possession" or reduction to practice outside of the specification is not enough. Rather, as stated above, it is the specification itself that must demonstrate possession. A description that merely renders the invention obvious does not satisfy the requirement. *Lockwood v. Am. Airlines*, 107 F.3d 1565, 1571-72 (Fed. Cir. 1997). Moreover, a claim fails the written description requirement if it contravenes the disclosure by, e.g., omitting components required by the disclosure or broadly encompassing undisclosed configurations. *See Rivera v. Int'l Trade Comm'n*, 857 F.3d 1315, 1319-23 (Fed. Cir. 2017); *Cisco Sys., Inc. v. Cirrex Sys., LLC*, 856 F.3d 997, 1009-10 (Fed. Cir. 2017); *ICU Med. Inc. v. Alaris Med. Sys., Inc.*, 558 F.3d 1371, 1376-79 (Fed. Cir. 2009); *LizardTech, Inc. v. Earth Res. Mapping, Inc.*, 424 F.3d 1336, 1343-46 (Fed. Cir. 2005); *Tronzo v. Biomet, Inc.*, 156 F.3d 1154, 1158-60 (Fed. Cir. 1998).

Thus, throughout these Invalidity Contentions, an assertion that a claim or claim element is "not adequately described or enabled" under 35 U.S.C. § 112 ¶ (1) means at least that the application did not provide as of the filing date sought:

a) the required written description for the claim element and the claimed subject matter;
b) the required written description for the full scope of the claim element and the claim;
c) the required enabling disclosure for the claim element and the claimed subject matter;
d) the required enabling disclosure for the full scope of the claim element and the claim;
e) a description of the claimed "invention" understandable to a skilled artisan and showing that the applicant actually possessed such "invention";
f) a description of the claimed "invention" that was express or necessarily present (inherent), complete, unambiguous, specific, and as broad as the claim; or
g) a disclosure teaching a skilled artisan how, by following the steps set forth in the application, to make or carry out (use) the claimed "invention" without undue experimentation.

1. '437 Patent

Especially in view of the expansive scope of these claim limitations that General Video appears to take in its Infringement Contentions, at least the following claim terms or phrases of

the ’437 Patent are thus invalid for failing to adequately describe or enable under 35 U.S.C. § 112 ¶ (1) as indicated below:

Claim	Language
41	“providing words of input data capable of being encoded as a conventional sequence of code words of a full code word set”
41	“generating a sequence of selected code words by encoding the input data, wherein each of the selected code words is a member of a robust subset of the full code word set, and the sequence of selected code words is less susceptible to inter-symbol interference during transmission over the link than would be the conventional sequence of code words”
41	“generating bursts of encoded control words by encoding control bits”
41	“transmitting over the link a first burst of the encoded control words between a first burst of the video code words and the burst of the selected code words, and a second burst of the encoded control words between the burst of the selected code words and a second burst of the video code words”

Claim 41 of the ’437 Patent is invalid under 35 U.S.C. § 112 ¶ (1) because the claim language, when read in light of the intrinsic record and General Video’s Infringement Contentions and apparent interpretation of the scope of the claim language, lacks adequate written description support for the terms “providing words of input data capable of being encoded as a conventional sequence of code words of a full code word set,” “generating a sequence of selected code words by encoding the input data, wherein each of the selected code words is a member of a robust subset of the full code word set, and the sequence of selected code words is less susceptible to inter-symbol interference during transmission over the link than would be the conventional sequence of code words,” “generating bursts of encoded control words by encoding control bits,” and “transmitting over the link a first burst of the encoded control words between a first burst of the video code words and the burst of the selected code words, and a second burst of the encoded control words between the burst of the selected code words and a second burst of the video code words,” nor is the provided description sufficient to enable one of ordinary skill in the art to

implement the claimed "providing words of input data capable of being encoded as a conventional sequence of code words of a full code word set," "generating a sequence of selected code words by encoding the input data, wherein each of the selected code words is a member of a robust subset of the full code word set, and the sequence of selected code words is less susceptible to inter-symbol interference during transmission over the link than would be the conventional sequence of code words," "generating bursts of encoded control words by encoding control bits," and "transmitting over the link a first burst of the encoded control words between a first burst of the video code words and the burst of the selected code words, and a second burst of the encoded control words between the burst of the selected code words and a second burst of the video code words," nor is the provided description sufficient to one of ordinary skill in the art such that such a person would reasonably conclude that the inventor had possession of the invention at the time of filing.

2. '010 Patent

Especially in view of the expansive scope of these claim limitations that General Video appears to take in its Infringement Contentions, at least the following claim terms or phrases of the '010 Patent are invalid for failing to adequately describe or enable under 35 U.S.C. § 112 ¶ (1) as indicated below:

Claim	Language
1	"a second mode to generate a stream of second data elements which carry a multiplexed combination of components of a stereoscopic image, wherein said components of said stereoscopic image elements being transmitted in a first portion of said interface and in a second portion of said interface, each of said first portion and said second portion having a lesser data carrying capacity than said known data carrying capacity and a combined data carrying capacity no greater than said known data carrying capacity"
12	"in a second mode, the processor demultiplexes components of a stereoscopic image from a stream of second data elements which carry

	a multiplexed combination of components of a stereoscopic image, wherein said components of said stereoscopic image data elements being transmitted in a first portion of said interface and in a second portion of said interface, each of said first portion and said second portion having a lesser data carrying capacity than said known data carrying capacity and a combined data carrying capacity no greater than said known data carrying capacity"

Claim 1 of the '010 Patent is invalid under 35 U.S.C. § 112 ¶ (1) because the claim language, when read in light of the intrinsic record and General Video's Infringement Contentions and apparent interpretation of the scope of the claim language, lacks adequate written description support for the term "a second mode to generate a stream of second data elements which carry a multiplexed combination of components of a stereoscopic image, wherein said components of said stereoscopic image elements being transmitted in a first portion of said interface and in a second portion of said interface, each of said first portion and said second portion having a lesser data carrying capacity than said known data carrying capacity and a combined data carrying capacity no greater than said known data carrying capacity," nor is the provided description sufficient to enable one of ordinary skill in the art to implement the claimed "a second mode to generate a stream of second data elements which carry a multiplexed combination of components of a stereoscopic image, wherein said components of said stereoscopic image elements being transmitted in a first portion of said interface and in a second portion of said interface, each of said first portion and said second portion having a lesser data carrying capacity than said known data carrying capacity and a combined data carrying capacity no greater than said known data carrying capacity," nor is the provided description sufficient to one of ordinary skill in the art such that such a person would reasonably conclude that the inventor had possession of the invention at the time of filing.

Claim 12 of the ’010 Patent is invalid under 35 U.S.C. § 112 ¶ (1) because the claim language, when read in light of the intrinsic record and General Video’s Infringement Contentions and apparent interpretation of the scope of the claim language, lacks adequate written description support for the term “in a second mode, the processor demultiplexes components of a stereoscopic image from a stream of second data elements which carry a multiplexed combination of components of a stereoscopic image, wherein said components of said stereoscopic image data elements being transmitted in a first portion of said interface and in a second portion of said interface, each of said first portion and said second portion having a lesser data carrying capacity than said known data carrying capacity and a combined data carrying capacity no greater than said known data carrying capacity,” nor is the provided description sufficient to enable one of ordinary skill in the art to implement the claimed “in a second mode, the processor demultiplexes components of a stereoscopic image from a stream of second data elements which carry a multiplexed combination of components of a stereoscopic image, wherein said components of said stereoscopic image data elements being transmitted in a first portion of said interface and in a second portion of said interface, each of said first portion and said second portion having a lesser data carrying capacity than said known data carrying capacity and a combined data carrying capacity no greater than said known data carrying capacity,” nor is the provided description sufficient to one of ordinary skill in the art such that such a person would reasonably conclude that the inventor had possession of the invention at the time of filing.

3. ’786 Patent

Especially in view of the expansive scope of these claim limitations that General Video appears to take in its Infringement Contentions, at least the following claim terms or phrases of the ’786 Patent are invalid for failing to adequately describe or enable under 35 U.S.C. § 112 ¶ (1) as indicated below:

Claim	Language
1	"a second mode, different from the first mode, operating at different times than the first mode, in which the formatter generates a stream of second data elements comprising a multiplexed combination of components of a stereoscopic image"
13	"a second mode, different from the first mode, operating at different times than the first mode, in which the processor de-multiplexes components of a stereoscopic image from a stream of second data elements comprising a multiplexed combination of components of a stereoscopic image"

Claim 1 of the '786 Patent is invalid under 35 U.S.C. § 112 ¶ (1) because the claim language, when read in light of the intrinsic record and General Video's Infringement Contentions and apparent interpretation of the scope of the claim language, lacks adequate written description support for the term "a second mode, different from the first mode, operating at different times than the first mode, in which the formatter generates a stream of second data elements comprising a multiplexed combination of components of a stereoscopic image," nor is the provided description sufficient to enable one of ordinary skill in the art to implement the claimed "a second mode, different from the first mode, operating at different times than the first mode, in which the formatter generates a stream of second data elements comprising a multiplexed combination of components of a stereoscopic image," nor is the provided description sufficient to one of ordinary skill in the art such that such a person would reasonably conclude that the inventor had possession of the invention at the time of filing.

Claim 13 of the '786 Patent is invalid under 35 U.S.C. § 112 ¶ (1) because the claim language, when read in light of the intrinsic record and General Video's Infringement Contentions and apparent interpretation of the scope of the claim language, lacks adequate written description support for the term "a second mode, different from the first mode, operating at different times than the first mode, in which the processor de-multiplexes components of a stereoscopic image

from a stream of second data elements comprising a multiplexed combination of components of a stereoscopic image," nor is the provided description sufficient to enable one of ordinary skill in the art to implement the claimed "a second mode, different from the first mode, operating at different times than the first mode, in which the processor de-multiplexes components of a stereoscopic image from a stream of second data elements comprising a multiplexed combination of components of a stereoscopic image," nor is the provided description sufficient to one of ordinary skill in the art such that such a person would reasonably conclude that the inventor had possession of the invention at the time of filing.

4. '282 Patent

Especially in view of the expansive scope of these claim limitations that General Video appears to take in its Infringement Contentions, at least the following claim terms or phrases of the '282 Patent are invalid for failing to adequately describe or enable under 35 U.S.C. § 112 ¶ (1) as indicated below:

Claim	Language
1	"re-mapping the data signal and the clock signal from the second local bus into the different protocol signal"
1	"re-mapping the different protocol signal back into the data signal and the clock signal for use on a second local bus on the sink"
1	"re-mapping the data signal and the clock signal from the second local bus into the different protocol signal"
1	"transmitting the different protocol signal from the sink to the source over the two-wire interface"

Claim 1 of the '282 Patent is invalid under 35 U.S.C. § 112 ¶ (1) because the claim language, when read in light of the intrinsic record and General Video's Infringement Contentions and apparent interpretation of the scope of the claim language, lacks adequate written description support for the term "re-mapping a data signal and a clock signal from a first local bus on the source into a different protocol signal," "re-mapping the different protocol signal back into the

data signal and the clock signal for use on a second local bus on the sink," and "re-mapping the data signal and the clock signal from the second local bus into the different protocol signal," and "transmitting the different protocol signal from the sink to the source over the two-wire interface," the provided description is not sufficient to enable one of ordinary skill in the art to implement the claimed "re-mapping a data signal and a clock signal from a first local bus on the source into a different protocol signal," "re-mapping the different protocol signal back into the data signal and the clock signal for use on a second local bus on the sink," and "re-mapping the data signal and the clock signal from the second local bus into the different protocol signal," and "transmitting the different protocol signal from the sink to the source over the two-wire interface," and the provided description is not sufficient to one of ordinary skill in the art such that such a person would reasonably conclude that the inventor had possession of the invention at the time of filing.

5. '443 Patent

Especially in view of the expansive scope of these claim limitations that General Video appears to take in its Infringement Contentions, at least the following claim terms or phrases of the '443 Patent are invalid for failing to adequately describe or enable under 35 U.S.C. § 112 ¶ (1) as indicated below:

Claim	Language
7	"wherein the audio-related information includes monitor information indicating whether or not the audio data is capable of being monitored in the reception step"
9	"wherein the audio data is muted if the monitor information indicates that the audio data is not capable of being monitored in the reception step"

Claim 7 of the '443 Patent is invalid under 35 U.S.C. § 112 ¶ (1) because the claim language, when read in light of the intrinsic record and General Video's Infringement Contentions and apparent interpretation of the scope of the claim language, lacks adequate written description

support for the term "wherein the audio-related information includes monitor information indicating whether or not the audio data is capable of being monitored in the reception step," nor is the provided description sufficient to enable one of ordinary skill in the art to implement the claimed "wherein the audio-related information includes monitor information indicating whether or not the audio data is capable of being monitored in the reception step," nor is the provided description sufficient to inform one of ordinary skill in the art such that such a person would reasonably conclude that the inventor had possession of the invention at the time of filing.

Claim 9 of the '443 Patent is invalid under 35 U.S.C. § 112 ¶ (1) because the claim language, when read in light of the intrinsic record and General Video's Infringement Contentions and apparent interpretation of the scope of the claim language, lacks adequate written description support for the term "wherein the audio data is muted if the monitor information indicates that the audio data is not capable of being monitored in the reception step," nor is the provided description sufficient to enable one of ordinary skill in the art to implement the claimed "wherein the audio data is muted if the monitor information indicates that the audio data is not capable of being monitored in the reception step," nor is the provided description sufficient to inform one of ordinary skill in the art such that such a person would reasonably conclude that the inventor had possession of the invention at the time of filing.

6. '224 Patent

Especially in view of the expansive scope of these claim limitations that General Video appears to take in its Infringement Contentions, at least the following claim terms or phrases of the '224 Patent are invalid for failing to adequately describe or enable under 35 U.S.C. § 112 ¶ (1) as indicated below:

Claim	Language

3	"an analysis section operable to determine whether or not the audio data is capable of being monitored by the receiver"; "wherein the audio-related information includes monitor information indicating whether or not the audio data is capable of being monitored by the receiver"; "the analysis section determines whether or not the audio data is capable of being monitored by the receiver based on the monitor information"
5	"wherein the audio data is muted if the monitor information indicates that the audio data is not capable of being monitored by the receiver"

Claim 3 of the '224 Patent is invalid under 35 U.S.C. § 112 ¶ (1) because the claim language, when read in light of the intrinsic record and General Video's Infringement Contentions and apparent interpretation of the scope of the claim language, lacks adequate written description support for the terms "an analysis section operable to determine whether or not the audio data is capable of being monitored by the receiver"; "wherein the audio-related information includes monitor information indicating whether or not the audio data is capable of being monitored by the receiver"; and "the analysis section determines whether or not the audio data is capable of being monitored by the receiver based on the monitor information"; nor is the provided description sufficient to enable one of ordinary skill in the art to implement these claimed terms, nor is the provided description sufficient to inform one of ordinary skill in the art such that such a person would reasonably conclude that the inventor had possession of the invention at the time of filing.

Claim 5 of the '224 Patent is invalid under 35 U.S.C. § 112 ¶ (1) because the claim language, when read in light of the intrinsic record and General Video's Infringement Contentions and apparent interpretation of the scope of the claim language, lacks adequate written description support for the term "wherein the audio data is muted if the monitor information indicates that the audio data is not capable of being monitored by the receiver," nor is the provided description sufficient to enable one of ordinary skill in the art to implement the claimed "wherein the audio

data is muted if the monitor information indicates that the audio data is not capable of being monitored by the receiver," nor is the provided description sufficient to inform one of ordinary skill in the art such that such a person would reasonably conclude that the inventor had possession of the invention at the time of filing.

B. Indefiniteness Under 35 U.S.C. § 112 ¶ (2)

Section 112 includes a definiteness requirement. See 35 U.S.C. § 112, ¶ (2) ("[T]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention."). "[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S.Ct. 2120, 2124 (U.S. 2014). Throughout these Invalidity Contentions, an assertion that a claim or claim language was "indefinite" under 35 U.S.C. § 112 ¶ (2) means—unless otherwise noted—that the claim, each claim containing that claim language, and each dependent claim therefrom, read by a skilled artisan at the time of the patent application, in light of the application and its Patent Office prosecution history leading to issuance of the patent:

a) failed the statute's particular and distinct claiming mandate;
b) failed to inform, with reasonable certainty, those skilled in the art at the time of the patent application of the scope of the claimed invention; or
c) failed to clearly distinguish what is claimed from what went before in the art and clearly circumscribe what is foreclosed from future enterprise.

1. '224 Patent

At least the following claim terms or phrases of the '224 Patent render the Asserted Claim of the '224 Patent invalid for indefiniteness under 35 U.S.C. § 112 ¶ (2):

Claim	Language
3	"an analysis section operable to determine whether or not the audio data is capable of being monitored by the receiver"
3	"the analysis section determines whether or not the audio data is capable of being monitored by the receiver based on the monitor information."

Claim 3 of the '224 Patent (and its respective dependent claims) are invalid for lack of definiteness because a person of ordinary skill in the art would be unable to understand the bounds of these claims as a result of the limitations identified above because, for example, the '224 Patent provides no objective standard by which one of ordinary skill in the art could determine whether the recited limitations require performance of a method step by the analysis section. *See IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377, 1384 (Fed. Cir. 2005) (A claim that "recites both a system and the method for using that system… does not apprise a person of ordinary skill in the art of its scope, and… is invalid under section 112, paragraph 2.).

2. '437 Patent

At least the following claim terms or phrases of the '437 Patent render the Asserted Claim of the '437 Patent invalid under 35 U.S.C. § 112 ¶ (2):

Claim	Language
41	"the video code words"
41	"the burst of the selected code words"

For example, the limitations identified above lack antecedent basis and thus fail to adequately define the limits of the scope of the claim.

Claim	Language
41	"video code word"
41	"generating bursts of encoded control words"
41	"first burst of the encoded control words"
41	"a first burst of the video code words"
41	"the burst of the selected code words"
41	"a second burst of the encoded control words"

Claim	Language
41	"a second burst of the video code words"

Claim 41 of the '437 Patent (and its respective dependent claims) are invalid for lack of definiteness because a person of ordinary skill in the art would be unable to understand the bounds of these claims as a result of the limitations identified above because, for example, the '437 Patent provides no objective standard by which one of ordinary skill in the art could determine what "generating bursts of encoded control words" comprises. *See, e.g.*, *Nautilus*, 134 S.Ct. at 2124 (U.S. 2014).

VII. ACCOMPANYING DOCUMENT PRODUCTION

Pursuant to the Court's Scheduling Order and subject to Defendant's reservation of rights, Defendant identifies documents produced as ASTK-GV_0017309 through ASTK-GV_0024091. Additional prior art can be found in the file history for the Asserted Patents, as well as any related patents and/or patent applications. Defendant reserves the right, to the extent permitted by the Court and the applicable statutes and rules, to rely on any such references, whether or not identified above, to establish, among other things, the scope and content of the prior art. Also, as noted above, Defendant's search for prior art references, additional documentation, and/or corroborating evidence, including witness testimony concerning prior art systems, is ongoing. Accordingly, Defendant reserves the right, to the extent permitted by the Court and the applicable statutes and rules, to continue to supplement its production as Defendant obtains additional prior art references, documentation, testimony and/or corroborating evidence concerning invalidity during the course of discovery.

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Respectfully submitted,

/s/ Robert Benson

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CERTIFICATE OF SERVICE

I hereby certify that all counsel of record who are deemed to have consented to electronic service are being served this 23rd day of June 2025 with a copy of this document via the Court's CM/ECF system.

/s/ *Robert Benson*
Robert Benson