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

MAXELL, LTD., Plaintiff, v. CORETRONIC CORP., OPTOMA CORP., Defendants.	)))))))))	Civil Action No. 5:24-cv-00088-RWS-JBB **JURY TRIAL DEMANDED**

DEFENDANTS CORETRONIC CORP.'S AND
OPTOMA CORP.'S INITIAL INVALIDITY CONTENTIONS

I. INTRODUCTION

Pursuant to the Court's Docket Control Order (Dkt. 37) and Court's Order (Dkt. 61) ("granting Motion for Extension of Time for Defendant"), to comply P.R. 3-3 and 3-4, Defendants Coretronic Corp. ("Coretronic") and Optoma Corp. ("Optoma") (collectively, "Defendants"), by and through their undersigned attorneys, hereby serve on Plaintiff Maxell, Ltd. ("Maxell" or "Plaintiff") their Initial Invalidity Contentions regarding the asserted claims identified by Plaintiff in its Infringement Contentions served October 28, 2024 and updated on November 22, 2024.

The table below summarizes the patents and claims that are presently asserted against Defendants according to Plaintiff's Infringement Contentions. Defendants provide these Contentions only for the presently asserted claims and reserve the right to supplement and/or amend these Contentions to account for any addition or withdrawal of claims that Plaintiff may be permitted or required to make.

Asserted Patent	Asserted Claims
7,159,988	1 and 7-9
7,850,313	1-3
8,593,580	1, 3-10, 11, 17, 18, 32-37, and 38
9,322,530	1, 3, 4, 7, and 9

Asserted Patent	Asserted Claims
9,547,226	8, 10, and 12
9,565,388	4, 6, 10, 16, 18, and 22
9,900,569	1-4

II. GENERAL RESERVATIONS

These Invalidity Contentions are subject to the reservations stated herein and to revision and amendment as provided in Rule 26(e) of the Federal Rules of Civil Procedure; the Local Civil Rules and Local Patent Rules of the Eastern District of Texas; the Court's claim constructions; analyses and opinions of expert witnesses concerning claim construction, infringement, invalidity, and unenforceability issues; and any position that Plaintiff takes concerning any of the foregoing.

These Contentions and accompanying production of prior art and related documents are provisional and subject to further revision including as follows: Defendants expressly reserve the right to amend these contentions and the accompanying document production should Plaintiff provide any information that it failed to provide in its disclosures or should Plaintiff amend its disclosures in any way. Further, because discovery is ongoing and because Defendants have not yet completed their search for and analysis of relevant prior art, Defendants reserve the right to revise, amend, and/or supplement the information provided herein, including by identifying, charting, and relying on additional references, should Defendants' further search and analysis yield additional information or references, consistent with the Federal Rules of Civil Procedure, local rules of this District, and orders of the Court. Further, Defendants reserve the right to revise, amend, and/or supplement when Plaintiff provides additional discovery.

Prior art not included in these Contentions, whether known or not known to Defendants, may become relevant. For example, Defendants may receive, either via informal request or pursuant to subpoena, documents from third parties who are believed to have knowledge, documentation, and/or

corroborating evidence concerning prior art listed herein and/or additional prior art. These third parties include, as applicable and without limitation, the authors, inventors, assignees, and/or licensees of the prior art references listed in these disclosures. If and to the extent Plaintiff contends any limitations of the Asserted Claims are not disclosed in the prior art identified herein, Defendants reserve their respective rights to identify other references that disclose and/or render obvious both any such allegedly missing limitations of any claims and those claims as a whole. Defendants reserve all rights to rely on any reference found in the prosecution histories of the applications leading to the Asserted Patents or otherwise identified in connection with this action.

Defendants offer these Contentions in response to Plaintiff's Infringement Contentions and base them at least in part upon claim scope and claim constructions expressly and/or impliedly asserted by Plaintiff in and through its Infringement Contentions. Defendants offer these Contentions without prejudice to any position they may ultimately take as to any claim construction issues not yet decided by the Court. Nothing herein should be construed or represented as evidencing any express or implied agreement with any of Plaintiff's claim construction or infringement positions as to any Defendant. Defendants expressly reserve the right to contest such claim constructions.

Where an individual reference may be cited with respect to fewer than all limitations of an Asserted Claim, Defendants contend that the reference renders obvious the claim under 35 U.S.C. § 103(a) by itself in view of the knowledge of a person of ordinary skill in the same filed of art or in view of admitted prior art in the Asserted Patents and further in view of each other reference and combination of references that disclose the remaining claim limitation(s), as indicated in the claim charts submitted herewith.

Defendants further intend to rely on admissions concerning the scope of the prior art relevant to the Asserted Patents found in, *inter alia*: the patent prosecution history for the Asserted Patents

and any related patents and/or patent applications; any deposition testimony of the named inventor(s) on the Asserted Patents and any related patents and/or patent applications in this action or any other action; and the papers filed and any evidence submitted by Plaintiff in connection with this action.

Defendants' claim charts cite to particular teachings and disclosures of the prior art as applied to features of the Asserted Claims. However, persons having ordinary skill in the art generally may view an item of prior art in the context of other publications, literature, products, and understanding. To understand and interpret any specific statement or disclosure within a prior art reference, such persons would rely on other information within the reference, along with other publications and their scientific or engineering knowledge. Further, where Defendants identify a particular figure in a prior art reference, the identification should be understood to encompass the caption and description of the figure and any text relating to the figure in addition to the figure itself. Similarly, where an identified portion of text refers to a figure, the identification should be understood to include the figure as well. As such, the cited portions are only examples, and Defendants reserve the right to rely on uncited portions of the prior art references and on other publications, expert testimony, and other evidence 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 any of the Asserted Claims as a whole. Defendants further reserve 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.

The references discussed in the claim charts may disclose the elements 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. Any obviousness combinations are provided in addition and in the alternative to

Defendants' anticipation contentions and are not to be construed as an admission or suggestion that any reference included in the combinations does not by itself anticipate.

Defendants reserve the right to assert that the Asserted Claims are invalid under 35 U.S.C. § 102(f) in the event Defendants obtain evidence that the inventors named in the Asserted Patents did not themselves invent the subject matter claimed in the respective patents, or that any of the Asserted Patents otherwise fails to name the correct inventor(s). Should Defendants obtain such evidence, Defendants will provide the name of any person from whom, and the circumstances under which, the alleged invention or any part of it was derived, or the name of any person who Defendants contend is inappropriately named or not named as an inventor.

Defendants also reserve their respective rights to challenge any terms of any Asserted Claims under 35 U.S.C. § 112 beyond the grounds outlined herein, including by arguing that they are indefinite, not supported by the written description, or not enabled. Nothing stated herein shall be construed as a waiver of any argument available under 35 U.S.C. §§ 101, 102, 103, and/or 112.

III. IDENTIFICATION OF PRIOR ART (P.R. 3-3(a))

Subject to Defendants' reservations of rights herein, Defendants identify the prior art of which they are presently aware and that individually or in combination(s) invalidates the Asserted Claims of the Asserted Patents and evidences the state of the art as of the earliest priority dates of each of the Asserted Claims. Defendants' identification of prior art is based on Defendants' present understanding of the Asserted Claims and any claim constructions expressed or implied in Plaintiff's Infringement Contentions.

A. Priority Dates & Applicability of the AIA

Plaintiff's Infringement Contentions assert that the Asserted Claims of the Asserted Patents are entitled to the following priority dates:

Asserted Patent	Priority Date
7,159,988 (the "'988 Patent")	November 28, 2003
7,850,313 (the "'313 Patent")	June 15, 2006
8,593,580 (the "'580 Patent")	February 5, 2010
9,322,530 (the "'530 Patent")	September 26, 2011
9,547,226 (the "'226 Patent")	November 1, 2012
9,565,388 (the "'388 Patent")	April 3, 2013
9,900,569 (the "'569 Patent")	July 4, 2014

Plaintiff's Infringement Contentions take no position on whether the Asserted Claims of the Asserted Patents are subject to the provisions of the American Invents Act. It is Defendants' position that the '988, '313, '580, '530, and '226 Patents are subject to the pre-AIA version of 35 U.S.C. § 102 and that the '388 and '569 Patents are subject to the post-AIA version of 35 U.S.C. § 102.

B. Prior Art

Defendants herein identify prior art with public availability and/or effective filing dates prior to the above-identified priority dates.

1. Patents & published patent applications

The following patents and published patent applications qualify as prior art under at least one or more of pre-AIA 35 U.S.C. §§ 102(a), 102(b), and 102(e); or one or more of post-AIA 35 U.S.C. §§ 102(a)(1) and 102(a)(2).

'988 Patent			
Patent/Publ.	**Title**	**Origin**	**Issued/Publ.**
US6808271B1 ("Kurematsu")	Projection Type Display Apparatus	U.S.A	October 26, 2004
US6028715 ("Takamoto")	Variable Magnification Optical System	U.S.A	February 22, 2000
US6094181A ("Hildebrand")	Miniature Synthesized Virtual Image Electronic Display	U.S.A	July 25, 2000
US5302983A ("Sato")	Projector	U.S.A	April 12, 1994
US6805447B2 ("Takeuchi")	Rear Projection Display Device and Projecting Method Used for the Sam	U.S.A	October 19, 2004
US20020067467A1 ("Dorval")	Volumetric Three-Dimensional Display System	U.S.A	June 6, 2002

US6715886B2 (“Cotton”)	Optical System for Display Panel	U.S.A	April 6, 2004
JPH05119283A (“Asakura”)	Optical system for projection type display device	Japan	December 13, 1999

’313 Patent			
Patent/Publ.	**Title**	**Origin**	**Issued/Publ.**
US20050275759A1 (“Itohiya ’759”)	Rear-Projection Type Imaging Apparatus	U.S.A.	December 15, 2005
JP2006047986A (“Itohiya ’986”)	Optical Device	Japan	February 16, 2006
US6542204B1 (“Ohzawa”)	Display Optical System	U.S.A.	April 1, 2003
JP2003248169A (“Karasawa”)	Projection Lens and Projector	Japan	September 5, 2003
US20050219706A1 (“Yamagishi ’706”)	Projection Lens System and Projector	U.S.A.	October 6, 2005
US20060132723A1 (“Yamagishi ’723”)	Optical System and Rear Projector	U.S.A.	June 22, 2006
US20040141157A1 (“Ramachandran”)	Image Projection System and Method	U.S.A.	July 22, 2004
JP2005173020A (“Hori”)	Projector	Japan	June 30, 2005
US20060203211A1 (“Kim”)	Focus Regulator and Projection Apparatus Having Same	U.S.A.	September 14, 2006
US6801366B2 (“Hirata ’366”)	Projection Lens System and Projection Image Display Apparatus Using the Same	U.S.A.	October 5, 2004

’580 Patent			
Patent/Publ.	**Title**	**Origin**	**Issued/Publ.**
US20030189693A1 (“Ishino”)	Lighting Device and Projection Type Image Display Device	U.S.A.	October 9, 2003
US7196354 (“Erchak”)	Wavelength-Converting Light-Emitting Devices	U.S.A.	March 27, 2007
CN101498415A (“Li ’415”)	Light Source for Improving Mixing Light Emergent Efficiency by Fluorescent Powder and Method Thereof	China	August 5, 2009
US20070182932A1 (“Bakker”)	LCD Projecting System Having Dichroic Mirrors for Polarization Conversion	U.S.A.	August 9, 2007
US20060203202A1 (“Uchiyama”)	Image Display Device and Projector	U.S.A.	September 14, 2006
US20090034284A1 (“Li ’284”)	Multicolor Illumination Device Using Moving Plate with Wavelength Conversion Materials	U.S.A.	February 5, 2009

US20030107893A1 (“Dho”)	Image Projection Apparatus and Method	U.S.A.	June 12, 2003
US20060227302A1 (“Harbers”)	Illuminators Using Reflective Optics with Recycling and Color Mixing	U.S.A.	October 12, 2006
US20090284148A1 (“Iwanaga”)	Light Source Unit and Projector	U.S.A.	November 19, 2009

’530 Patent			
Patent/Publ.	**Title**	**Origin**	**Issued/Publ.**
US20110187999A1 (“Hirata ’999”)	Projection Type Display Apparatus	U.S.A.	August 4, 2011
US20090308852A1 (“Alpay”)	Reducing Back-Reflections in Laser Processing Systems	U.S.A.	December 17, 2009
US20120008098A1 (“Akiyama’098”)	Light Source Device and Projector	U.S.A.	January 12, 2012
US20110044046A1 (“Abu-Ageel”)	High Brightness Light Source and Illumination System Using Same	U.S.A.	February 24, 2011
US20110292349A1 (“Kitano’349”)	Light Source Device, Lighting Device and Image Display Device Using Such Light Device	U.S.A.	December 1, 2011
US8783886B2 (“Huang”)	Illumination System	U.S.A.	July 22, 2014
US20110234998A1 (“Kurosaki’998”)	Light Source Unit and Projector	U.S.A.	September 29, 2011

’226 Patent			
Patent/Publ.	**Title**	**Origin**	**Issued/Publ.**
US20110187999A1 (“Hirata ’999”)	Projection Type Display Apparatus	U.S.A	August 4, 2011
US8721087B2 (“Kurosaki ’087”)	Light Source Device and Projector	U.S.A.	May 13, 2014
JP2012199075A (“Miyamae”)	Light Source Device and Projector	Japan	October 18, 2012
US20130088471A1 (“Kitano ’471”)	Light Source Device and Image Display Device	U.S.A.	April 11, 2013
US20100328628A1 (“Masuda”)	Light Source Unit and Projector	U.S.A.	December 30, 2010
US20120133904A1 (“Akiyama ’904”)	Light Source Device and Projector	U.S.A.	May 31, 2012

’388 Patent			
Patent/Publ.	**Title**	**Origin**	**Issued/Publ.**
JP2013047935A (“Sakaniwa”)	Video Processing Device, Video Display Device, and Video Processing Method	Japan	March 7, 2013
US20080056567A1 (“Kwon”)	Image Correction Method and Apparatus	U.S.A.	March 6, 2008

US6788822B1 ("Zhang")	Method and Device for Correcting Lightness of Image	U.S.A.	September 7, 2004
JP2008224797A ("Ozawa")	Image Display Apparatus and Image Display Method	Japan	September 25, 2008

'569 Patent			
Patent/Publ.	**Title**	**Origin**	**Issued/Publ.**
US20100289429A1 ("Pollmann-Retsch")	Methods of and Driving Units for Driving a Gas Discharge Lamp	U.S.A.	November 18, 2010
US20130215135A1 ("Hirabayashi")	Image Display Device and Projector	U.S.A.	August 22, 2013
JP2005241708A ("Ishitani")	Projection Display Apparatus	Japan	September 8, 2005
JP2008122746A ("Abe")	Display Device	Japan	May 29, 2008
JP2001015276A ("Kanbara")	Lighting System	Japan	January 19, 2001

2. Printed Publications

The following printed publications qualify as prior art under at least one of pre-AIA 35 U.S.C. §§ 102(a) and 102(b) or post-AIA § 102(a)(1).

'388 Patent		
Author/Editor	**Title**	**Publ. Date**
Ronny Stricker, Christian Martin, and Horst-Michael Gross	"Increasing the Robustness of 2D Active Appearance Models for Real-World Applications", Computer Vision Systems (ICVS 2009), Liege, LNCS 5815, Springer Verlag 2009	October, 2009

3. Sales activity, public use, other knowledge

The following products and services qualify as prior art under at least one or more of pre-AIA 35 U.S.C. §§ 102(a) and 102(b) or post-AIA 35 U.S.C. § 102(1)(a)

'388 Patent		
By/To	**Item Sold/Offered/Used or Information Known**	**Available Date**
Optoma Corp.	Optoma HD82/8200 Product	Available to public before February 2009.
Optoma Corp.	Optoma HD83/8300 Product	Offered for sale by no later than 2011

’569 Patent		
By/To	**Item Sold/Offered/Used or Information Known**	**Available Date**
Optoma Corp.	Optoma EH501 Product	Available to the public before December 2013.
Optoma Corp.	Optoma W316 Product	Offered for sale by no later than February 2014
Optoma Corp.	Optoma HD25 Product	Available to the public before April 2013.

None of the prior art patents and printed publications identified above that were either filed or issued (for patents) or published (for publications) before the earliest claimed priority date of the Asserted Patents appear to have been abandoned, suppressed, or concealed, so each such reference should also constitute evidence of prior invention pursuant to pre-AIA 35 U.S.C. § 102(g) as applicable to the extent such filing, issuance, or publication took place in the U.S. The persons or entities involved with each such invention include the named inventors on the above-identified patents and the authors listed on the above-identified publications. Investigation, analysis, and discovery are ongoing in this matter, and Defendants reserve all rights to supplement these Invalidity Contentions as appropriate.

IV. INVALIDITY DUE TO ANTICIPATION (P.R. 3-3(b)-(c))

Defendants herein identify the prior art thus discovered that Defendants content anticipates the Asserted Claims of the Asserted Patents. Defendants’ identification of anticipatory prior art is based on Defendants’ present understanding of the Asserted Claims prior to claim construction by the Court and in view of the apparent constructions Plaintiff is asserting in view of Plaintiff’s Infringement Contentions.

Defendants identify the following additional anticipatory prior art (“Anticipatory References”).

’226 Patent		
Asserted Claim(s)	**Anticipatory Reference**	**Claim Chart**
Claims 8 and 10	Miyamae	Exhibit E Ground 2
Claims 8, 10 and 12	Kurosaki ’087	Exhibit E Ground 8

’388 Patent		
Asserted Claim(s)	**Anticipatory Reference**	**Claim Chart**
Claims 4, 6, 10, 16, 18 and 22	Optoma HD82/8200 Product	Exhibit F-2
Claims 4, 6, 10, 16, 18 and 22	Optoma HD83/8300 Product	Exhibit F-3

’569 Patent		
Asserted Claim(s)	**Anticipatory Reference**	**Claim Chart**
Claims 1, 2, 3, and 4	Optoma EH501 Product	Exhibit G-2
Claims 1, 2, 3, and 4	Optoma W316 Product	Exhibit G-3
Claims 1, 2, 3, and 4	Optoma HD25 Product	Exhibit G-4

Depending on the Court’s construction of the Asserted Claims of the Asserted Patents, and/or positions that Plaintiff or its expert witness(es) may take concerning claim construction, infringement, and/or invalidity issues, different ones of the charted prior art references in the accompanying exhibits may be of greater or lesser relevance, and different combinations of these references may be implicated. Accordingly, the claim charts may reflect alternative applications of the prior art against the Asserted Claims.

Though the above-identified claim charts provide citations to point out where in the prior art references each element may be found, these citations are illustrative only. The references may contain other, uncited disclosures of a given claim element, and Defendants reserve all rights to rely on such other, uncited portions of these references.

V. INVALIDITY DUE TO OBVIOUSNESS (P.R. 3-3(b)-(c))

Defendants herein identify exemplary combinations of prior art references that Defendants contend render the Asserted Claims obvious (P.R. 3-(b)-(c)). Each combination of art identified herein would have no unexpected results, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1739-40 (2007) (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach). The Supreme Court has held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* at 1742.

Motivations or reasons to combine the teachings of the prior art references as described herein are found in, for example: the nature of the problem to be solved; the express, implied, and inherent teachings of the individual references themselves and the interrelated teachings of those references and of the prior art as a whole; the knowledge of persons of ordinary skill in the art; the fact that the prior art is generally directed toward the same problem, such that skilled artisans seeking to solve this problem would look to these cited references in combination; the predictability of results obtained in combining the different elements of the prior art; 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; the existence of a known need or problem in the field of endeavor at the time of the invention; the fact that the combination involves no more than applying known methods to yield predictable results, known techniques in the same way, and/or a simple substitution of one known, equivalent element for another to obtain predictable results; the tendency of known work in one field of endeavor to prompt variations based on predictable design incentives and/or market forces either in the same field or a different one; and/or the fact that there were only a finite number

of predictable solutions, such that a particular modification, substitution, or combination would have been obvious to try.

Defendants' contentions that the references in this section, in various combinations, render the Asserted Claims of the Asserted Patents obvious under 35 U.S.C. § 103 are in no way an admission or suggestion that each reference does not independently anticipate the Asserted Claims under 35 U.S.C. § 102. Any of these references may be combined with other disclosed references and/or with the knowledge of a person of ordinary skill in the art during the relevant time period to render the Asserted Claims of the Asserted Patents obvious, and, therefore, invalid.

These combinations are not intended to be exhaustive, as there are many possible combinations of these references, and it is not practical to identify and list all potentially relevant combinations, particularly at this early stage before further factual investigation and claim construction proceedings. Defendants reserve all rights to supplement the obviousness arguments set forth herein using any references listed above and any other references, including those that may become known and/or relevant during the course of discovery. Defendants further reserve all rights to rely upon combinations of references cited herein with references disclosed in the prosecution history of the Asserted Patents.

The Asserted Claims of the Asserted Patents are also invalid under 35 U.S.C. § 103 as obvious in view of each one of the references identified Section IV, supra, on their own, in view of the general knowledge and ordinary skill of the POSA, and also in combination with one or more of each other or other prior art identified in above.

A. Identification of Prior Art Combinations

Subject to Defendants' reservations of rights and based upon Defendants' present understanding of the scope and asserted meaning of the Asserted Claims, the Court's Claim Construction Order, and in view of Plaintiff's Preliminary Infringement Contentions, to the extent

that any of the Asserted Claims are not rendered invalid otherwise, for example on anticipatory grounds and/or for failure to comply with the Patent Act (including, but not limited to, 35 U.S.C. § 112), Defendants hereby identify the following illustrative combinations of prior art references that render obvious the Asserted Claims:

’988 Patent		
Asserted Claim(s)	**Prior Art Combination**	**Claim Chart**
Claims 1, 7, 8, and 9	Claims 1, 7, 8, and 9 are unpatentable under 35 U.S.C. § 103 (a) over Kurematsu in view of Takamoto and Hildebrand.	Exhibit A Ground 1
Claims 1, 7, and 9	Claims 1, 7, and 9 are unpatentable under 35 U.S.C. § 103(a) over Sato in view of Takamoto and Hildebrand.	Exhibit A Ground 2
Claim 8	Claims 8 is unpatentable under 35 U.S.C. § 103(a) over Sato in view of Takamoto, Hildebrand, and Takeuchi.	Exhibit A Ground 2
Claims 1, 7, 8, and 9	Claims 1, 7, 8, and 9 are unpatentable under 35 U.S.C. § 103(a) over Cotton in view of Takamoto and Hildebrand.	Exhibit A Ground 3
Claim 8	Claims 8 is unpatentable under 35 U.S.C. § 103(a) over Cotton in view of Takamoto, Hildebrand, and Takeuchi.	Exhibit A Ground 3
Claims 1, 7, and 8	Claims 1, 7, and 8 are unpatentable under 35 U.S.C. § 103 (a) over Asakura in view of Takamoto and Hildebrand.	Exhibit A Ground 4
Claim 9	Claims 9 is unpatentable under 35 U.S.C. § 103(a) over Asakura in view of Takamoto, Hildebrand, and Takeuchi.	Exhibit A Ground 4
Claims 1, 7, and 8	Claims 1, 7, and 8 are unpatentable under 35 U.S.C. § 103 (a) over Asakura in view of Takamoto and Dorval.	Exhibit A Ground 5
Claim 9	Claims 9 is unpatentable under 35 U.S.C. § 103(a) over Asakura in view of Takamoto, Dorval, and Takeuchi.	Exhibit A Ground 5
Claims 1, 7, 8, and 9	Claims 1, 7, 8, and 9 are unpatentable under 35 U.S.C § 103 (a) over Kurematsu in view of Takamoto and Dorval.	Exhibit A Ground 6

’313 Patent		
Asserted Claim(s)	**Prior Art Combination**	**Claim Chart**
Claims 1 and 3	Claims 1 and 3 are unpatentable under 35 U.S.C. § 103 (a) over Yamagishi ’723 in view of Itohiya ’986 and Itohiya ’759	Exhibit B Ground 1
Claim 2	Claims 2 is unpatentable under 35 U.S.C. § 103(a) over Yamagishi ’723 in view of Itohiya ’986, Itohiya ’759, and Ohzawa.	Exhibit B Ground 1
Claims 1 and 3	Claims 1 and 3 are unpatentable under 35 U.S.C. § 103 (a) over Itohiya ’759 in view of Itohiya ’986.	Exhibit B Ground 2
Claim 2	Claims 2 is unpatentable under 35 U.S.C. § 103(a) over Itohiya ’759 in view of Itohiya ’986 and Ohzawa.	Exhibit B Ground 2
Claim 1	Claims 1 is unpatentable under 35 U.S.C. § 103(a) over Karasawa in view of Yamagishi ’706 and Itohiya ’759.	Exhibit B Ground 3

’313 Patent		
Asserted Claim(s)	**Prior Art Combination**	**Claim Chart**
Claim 2	Claims 2 is unpatentable under 35 U.S.C. § 103(a) over Karasawa in view of Yamagishi ’706, Itohiya ’759, and Ohzawa	Exhibit B Ground 3
Claim 3	Claims 3 is unpatentable under 35 U.S.C. § 103(a) over Karasawa in view of Yamagishi ’706, Itohiya ’759, and Itohiya ’986.	Exhibit B Ground 3
Claims 1 and 3	Claims 1 and 3 are unpatentable under 35 U.S.C. § 103 (a) over Yamagishi ’706 in view of Itohiya ’986 and Itohiya ’759.	Exhibit B Ground 4
Claim 2	Claims 2 is unpatentable under 35 U.S.C. § 103(a) over Yamagishi ’706 in view of Itohiya ’986, Itohiya ’759, and Ramachandran.	Exhibit B Ground 4
Claim 1	Claims 1 is unpatentable under 35 U.S.C. § 103(a) over Hori in view of Yamagishi ’723.	Exhibit B Ground 5
Claim 2	Claims 2 is unpatentable under 35 U.S.C. § 103(a) over Hori in view of Yamagishi ’723 and Ramachandran.	Exhibit B Ground 5
Claim 1	Claims 1 is unpatentable under 35 U.S.C. § 103(a) over Kim in view of Yamagishi ’723.	Exhibit B Ground 6
Claim 2	Claims 2 is unpatentable under 35 U.S.C. § 103(a) over Kim in view of Yamagishi ’723 and Ramachandran.	Exhibit B Ground 6
Claim 1	Claims 1 is unpatentable under 35 U.S.C. § 103(a) over Hirata ’366 in view of Itohiya ’759.	Exhibit B Ground 7
Claim 2	Claims 2 is unpatentable under 35 U.S.C. § 103(a) over Hirata ’366 in view of Itohiya ’759 and Ramachandran.	Exhibit B Ground 7

’580 Patent		
Asserted Claim(s)	**Prior Art Combination**	**Claim Chart**
Claims 1, 3-9, 32-35, and 37-38	Claims 1, 3-9, 32-35, and 37-38 are unpatentable under 35 U.S.C. § 103 (a) over Ishino in view of Erchak.	Exhibit C Ground 1
Claims 6 and 36	Claims 6 and 36 are unpatentable under 35 U.S.C. § 103 (a) over Ishino in view of Erchak and Li ’415.	Exhibit C Ground 1
Claims 10 and 18	Claims 10 and 18 are unpatentable under 35 U.S.C. § 103 (a) over Ishino in view of Li ’415.	Exhibit C Ground 2
Claims 11 and 17	Claims 11 and 17 are unpatentable under 35 U.S.C. § 103 (a) over Ishino in view of Li ’415 and Bakker.	Exhibit C Ground 2
Claims 1, 3-9, 18, and 32-38	Claims 1, 3-9, 18, and 32-38 are unpatentable under 35 U.S.C. § 103 (a) over Ishino in view of Li ’415 and Erchak.	Exhibit C Ground 2
Claims 1, 3-9, 32-35, and 37-38	Claims 1, 3-9, 32-35, and 37-38 are unpatentable under 35 U.S.C. § 103 (a) over Uchiyama in view of Erchak.	Exhibit C Ground 3
Claims 6 and 36	Claims 6 and 36 are unpatentable under 35 U.S.C. § 103 (a) over Uchiyama in view of Erchak and Li ’415.	Exhibit C Ground 3
Claims 10 and 18	Claims 10 and 18 are unpatentable under 35 U.S.C. § 103 (a) over Uchiyama in view of Li ’415.	Exhibit C Ground 4

’580 Patent		
Asserted Claim(s)	**Prior Art Combination**	**Claim Chart**
Claims 11 and 17	Claims 11 and 17 are unpatentable under 35 U.S.C. § 103 (a) over Uchiyama in view of Li ’415 and Bakker.	Exhibit C Ground 4
Claims 1, 3-9, 18, and 32-38	Claims 1, 3-9, 18, and 32-38 are unpatentable under 35 U.S.C. § 103 (a) over Uchiyama in view of Li ’415 and Erchak.	Exhibit C Ground 4
Claims 1, 3-10, 18, and 32-38	Claims 1, 3-10, 18, and 32-38 are unpatentable under 35 U.S.C. § 103 (a) over Ishino in view of Li ’415 and Erchak.	Exhibit C Ground 5
Claims 11 and 17	Claims 11 and 17 are unpatentable under 35 U.S.C. § 103 (a) over Ishino in view of Li ’415, Erchak, and Bakker.	Exhibit C Ground 5
Claims 10 and 18	Claims 10 and 18 are unpatentable under 35 U.S.C. § 103 (a) over Ishino in view of Li ’284.	Exhibit C Ground 6
Claims 11 and 17	Claims 11 and 17 are unpatentable under 35 U.S.C. § 103 (a) over Ishino in view of Li ’284 and Bakker.	Exhibit C Ground 6
Claims 1, 3-10, 18, and 32-38	Claims 1, 3-10, 18, and 32-38 are unpatentable under 35 U.S.C. § 103 (a) over Ishino in view of Li ’284 and Erchak.	Exhibit C Ground 7
Claims 11 and 17	Claims 11 and 17 are unpatentable under 35 U.S.C. § 103 (a) over Ishino in view of Li ’284, Erchak, and Bakker.	Exhibit C Ground 7
Claims 1, 3-10, 18, and 32-38	Claims 1, 3-10, 18, and 32-38 are unpatentable under 35 U.S.C. § 103 (a) over Uchiyama in view of Li ’415 and Erchak.	Exhibit C Ground 8
Claims 11 and 17	Claims 11 and 17 are unpatentable under 35 U.S.C. § 103 (a) over Uchiyama in view of Li ’415, Erchak, and Bakker.	Exhibit C Ground 8
Claims 10 and 18	Claims 10 and 18 are unpatentable under 35 U.S.C. § 103 (a) over Uchiyama in view of Li ’284.	Exhibit C Ground 9
Claims 11 and 17	Claims 11 and 17 are unpatentable under 35 U.S.C. § 103 (a) over Uchiyama in view of Li ’284 and Bakker.	Exhibit C Ground 9
Claims 1, 3-10, 18, and 32-38	Claims 1, 3-10, 18, and 32-38 are unpatentable under 35 U.S.C. § 103 (a) over Uchiyama in view of Li ’284 and Erchak,	Exhibit C Ground 10
Claims 11 and 17	Claims 11 and 17 are unpatentable under 35 U.S.C. § 103 (a) over Uchiyama in view of Li ’284, Erchak, and Bakker.	Exhibit C Ground 10
Claims 10 and 18	Claims 10 and 18 are unpatentable under 35 U.S.C. § 103 (a) over Dho in view of Li ’415.	Exhibit C Ground 11
Claims 11 and 17	Claims 11 and 17 are unpatentable under 35 U.S.C. § 103 (a) over Dho in view of Li ’415 and Bakker.	Exhibit C Ground 11
Claims 10 and 18	Claims 10 and 18 are unpatentable under 35 U.S.C. § 103 (a) over Ishino in view of Harbers.	Exhibit C Ground 12
Claims 11 and 17	Claims 11 and 17 are unpatentable under 35 U.S.C. § 103 (a) over Ishino in view of Harbers and Bakker.	Exhibit C Ground 12
Claims 10 and 18	Claims 10 and 18 are unpatentable under 35 U.S.C. § 103 (a) over Ishino in view of Iwanaga.	Exhibit C Ground 13
Claims 11 and 17	Claims 11 and 17 are unpatentable under 35 U.S.C. § 103 (a) over Ishino in view of Iwanaga and Bakker.	Exhibit C Ground 13
Claims 10 and 18	Claims 10 and 18 are unpatentable under 35 U.S.C. § 103 (a) over Uchiyama in view of Harbers.	Exhibit C Ground 14

’580 Patent		
Asserted Claim(s)	**Prior Art Combination**	**Claim Chart**
Claims 11 and 17	Claims 11 and 17 are unpatentable under 35 U.S.C. § 103 (a) over Uchiyama in view of Harbers and Bakker.	Exhibit C Ground 14

’530 Patent		
Asserted Claim(s)	**Prior Art Combination**	**Claim Chart**
Claims 1, 3, 4 and 7	Claims 1, 3, 4 and 7 are unpatentable under 35 U.S.C. § 103(a) as obvious over Hirata ’999 in view of Alpay	Exhibit D Ground 1
Claim 3	Claim 3 is unpatentable under 35 U.S.C. § 103(a) as obvious over Hirata ’999 in view of Alpay and Akiyama ’098.	Exhibit D Ground 1
Claim 9	Claim 9 is unpatentable under 35 U.S.C. § 103(a) as obvious over Hirata ’999 in view of Alpay.	Exhibit D Ground 2(a)
Claim 9	Claim 9 is unpatentable under 35 U.S.C. § 103(a) as obvious over Hirata ’999 in view of Abu-Ageel.	Exhibit D Ground 2(b)
Claim 9	Claim 9 is unpatentable under 35 U.S.C. § 103(a) as obvious over Hirata ’999 in view of Kitano ’349.	Exhibit D Ground 2(c)
Claims 1, 3 and 4	Claims 1, 3, and 4 are unpatentable under 35 U.S.C. § 103(a) as obvious over Huang in view of Alpay	Exhibit D Ground 3
Claims 3 and 7	Claims 3 and 7 are unpatentable under 35 U.S.C. § 103(a) as obvious Huang in view of Alpay and Akiyama ’098.	Exhibit D Ground 3
Claim 9	Claim 9 is unpatentable under 35 U.S.C. § 103(a) as obvious over Huang in view of Alpay.	Exhibit D Ground 4(a)
Claim 9	Claim 9 is unpatentable under 35 U.S.C. § 103(a) as obvious over Huang in view of Abu-Ageel.	Exhibit D Ground 4(b)
Claim 9	Claim 9 is unpatentable under 35 U.S.C. § 103(a) as obvious over Huang in view of Kitano ’349 and Alpay.	Exhibit D Ground 4(c)
Claims 1, 3, 4 and 7	Claims 1, 3, 4 and 7 are unpatentable under 35 U.S.C. § 103(a) as obvious Kurosaki ’998 in view of Alpay.	Exhibit D Ground 5
Claim 3	Claim 3 is unpatentable under 35 U.S.C. § 103(a) as obvious over Kurosaki ’998 in view of Alpay and Akiyama ’098.	Exhibit D Ground 5
Claims 1, 4, 7 and 9	Claims 1, 4, 7 and 9 are unpatentable under 35 U.S.C. § 103(a) as obvious over Huang in view of Hirata ’999.	Exhibit D Ground 6
Claims 1, 4, 7 and 9	Claims 1, 4, 7 and 9 are unpatentable under 35 U.S.C. § 103(a) as obvious over Huang in view of Kurosaki ’998.	Exhibit D Ground 7
Claim 9	Claim 9 is unpatentable under 35 U.S.C. § 103(a) as obvious over Kurosaki ’998 in view of Abu-Ageel.	Exhibit D Ground 8
Claim 9	Claim 9 is unpatentable under 35 U.S.C. § 103(a) as obvious over Kurosaki ’998 in view of Kitano ’349.	Exhibit D Ground 9
Claim 9	Claim 9 is unpatentable under 35 U.S.C. § 103(a) as obvious over Kurosaki ’998 in view of Alpay.	Exhibit D Ground 10

’226 Patent		
Asserted Claim(s)	**Prior Art Combination**	**Claim Chart**
Claims 8, 10 and 12	Claims 8, 10 and 12 are unpatentable under 35 U.S.C. § 103(a) as obvious over Hirata ’999 in view of Kurosaki ’087.	Exhibit E Ground 1
Claim 12	Claim 12 is unpatentable under 35 U.S.C. § 103(a) as obvious over Miyamae in view of Kurosaki ’087.	Exhibit E Ground 2
Claims 8, 10 and 12	Claims 8, 10 and 12 are unpatentable under 35 U.S.C. § 103(a) as obvious over Kitano ’471 in view of Kurosaki ’087.	Exhibit E Ground 3
Claims 8 and 10	Claims 8 and 10 are unpatentable under 35 U.S.C. § 103(a) as obvious over Hirata ’999 in view of Masuda.	Exhibit E Ground 4
Claim 12	Claim 12 is unpatentable under 35 U.S.C. § 103(a) as obvious over Hirata ’999 in view of Masuda and Kurosaki ’087.	Exhibit E Ground 4
Claims 8, 10 and 12	Claims 8, 10 and 12 are unpatentable under 35 U.S.C. § 103(a) as obvious over Kitano ’471 in view of Masuda.	Exhibit E Ground 5
Claims 8 and 10	Claims 8 and 10 are unpatentable under 35 U.S.C. § 103(a) as obvious over Akiyama ’904 in view of Hirata ’999.	Exhibit E Ground 6
Claim 12	Claim 12 is unpatentable under 35 U.S.C. § 103(a) as obvious over Akiyama ’904 in view of Hirata ’999 and Kurosaki ’087.	Exhibit E Ground 6(a)
Claim 12	Claim 12 is unpatentable under 35 U.S.C. § 103(a) as obvious over Akiyama ’904 in view of Hirata ’999 and Kitano ’471.	Exhibit E Ground 6(b)
Claims 8 and 10	Claims 8 and 10 are unpatentable under 35 U.S.C. § 103(a) as obvious over Akiyama ’904 in view of Miyamae.	Exhibit E Ground 7
Claim 12	Claim 12 is unpatentable under 35 U.S.C. § 103(a) as obvious over Akiyama ’904 in view of Miyamae and Kurosaki ’087.	Exhibit E Ground 7(a)
Claim 12	Claim 12 is unpatentable under 35 U.S.C. § 103(a) as obvious over Akiyama ’904 in view of Miyamae and Kitano ’471.	Exhibit E Ground 7(b)

’388 Patent		
Asserted Claim(s)	**Prior Art Combination**	**Claim Chart**
Claims 4, 6 and 10	Claims 4, 6 and 10 are unpatentable under 35 U.S.C. § 103(a) as obvious over Sakaniwa in view of Kwon.	Exhibit F-1 Ground 1
Claims 4, 6 and 10	Claims 4, 6 and 10 are unpatentable under 35 U.S.C. § 103(a) as obvious over Sakaniwa in view of Zhang.	Exhibit F-1 Ground 2
Claims 4, 6 and 10	Claims 4, 6 and 10 are unpatentable under 35 U.S.C. § 103(a) as obvious Sakaniwa in view of Stricker.	Exhibit F-1 Ground 3
Claims 16, 18 and 22	Claims 16, 18 and 22 are unpatentable under 35 U.S.C. § 103(a) as obvious over Sakaniwa in view of Kwon and Ozawa.	Exhibit F-1 Ground 4
Claims 16, 18 and 22	Claims 16, 18 and 22 are unpatentable under 35 U.S.C. § 103(a) as obvious over Sakaniwa in view of Zhang and Ozawa.	Exhibit F-1 Ground 5
Claims 16, 18 and 22	Claims 16, 18 and 22 are unpatentable under 35 U.S.C. § 103(a) as obvious over Sakaniwa in view of Stricker and Ozawa.	Exhibit F-1 Ground 6

’569 Patent		
Asserted Claim(s)	**Prior Art Combination**	**Claim Chart**
Claim 1	Claims 1 is unpatentable under 35 U.S.C. § 103(a) as obvious over Pollmann-Retsch in view of Hirabayashi	Exhibit G-1 Ground 1
Claim 4	Claim 4 is unpatentable under 35 U.S.C. § 103(a) as obvious over Pollmann-Retsch in view of Hirabayashi and Isshitani.	Exhibit G-1 Ground 2
Claims 2 and 3	Claims 2 and 3 are unpatentable under 35 U.S.C. § 103(a) as obvious over Pollmann-Retsch in view of Hirabayashi, Abe and Isshitani.	Exhibit G-1 Ground 3
Claims 2 and 3	Claims 2 and 3 are unpatentable under 35 U.S.C. § 103(a) as obvious over Pollmann-Retsch in view of Hirabayashi, Isshitani and Kanbara.	Exhibit G-1 Ground 4

Although the above-identified claim charts demonstrate where in the prior art references disclose each element of the Asserted Patents, these demonstrations are illustrative only. The prior art references may contain other uncited disclosures of certain claim elements of the Asserted Patents, and Defendants reserve all rights to rely on such other uncited portions of these prior art references.

In addition to the illustrative combinations of prior art identified herein, Defendants reserve the right to rely on any other combination of any prior art references. Defendants further reserve the right to rely upon combinations disclosed within the file histories of the Asserted Patents and the prior art references cited herein. These illustrative, exemplary obviousness combinations reflect Defendants’ present understanding of the potential scope of the Asserted Claims, in view of the Court’s Claim Construction Order and Plaintiff’s application of the Asserted Claims in its Infringement Contentions, and should not be interpreted as Defendants’ acquiescence to Plaintiff’s interpretation or application of any term, element, or Asserted Claim.

B. Motivation(s) to Combine

As set forth below, the alleged inventor was attempting to solve the same or similar problems, with the same or similar needs, as those identified in the prior art and/or otherwise known to one of ordinary skill in the art in view of the prior art disclosures. Accordingly, one of ordinary skill in the

art would have been motivated to combine or had reason to combine prior art references at least as identified in the illustrative and exemplary combinations listed in the foregoing tables.

'988 Patent **Title: Projection Optical Unit and Projection Image Display Apparatus**	
Reference	**Exemplary Problem/Need Person of Ordinary Skill in the Art and/or Overlapping Fields of Invention**
Kurematsu	Kurematsu relates to a projection type display apparatus attaining a great improvement in light utilizing efficiency or the thinning of the apparatus in an oblique projection system to correct trapezoid distortion, which has overlapping fields of invention with the '988 patent and/or solves a known problem substantially identical to the '988 patent.
Takamoto	Takamoto relates to a variable magnification optical system suitable for use as a projection optical system in a projection apparatus, which has overlapping fields of invention with the '988 patent and/or has similar mechanical features with the '988 patent.
Hildebrand	Hildebrand relates to a miniature electronic display which provides a magnified and synthesized virtual image from a microdisplay using two magnification optics and an intermediate image synthesizing optic, which has overlapping fields of invention with the '988 patent and/or solves a known problem substantially identical to the '988 patent.
Sato	Sato relates to an apparatus for enlarging and projecting an image of an object, such as liquid crystal panel while preventing the projected image from being distorted, which has overlapping fields of invention with the '988 patent and/or solves a known problem substantially identical to the '988 patent.
Takeuchi	Takeuchi relates to a rear projection display device for enlarging and projecting an image on an image display element onto a projection screen, which has overlapping fields of invention with the '988 patent and/or has similar mechanical features with the '988 patent.
Cotton	Cotton relates to an optical System and method for coupling an image of an object onto an ultrathin planar optical display device which is capable of reducing or eliminating distortions that typically occur when an image is projected onto a display device that is tilted in relation to the incident image, which has overlapping fields of invention with the '988 patent and/or solves a known problem substantially identical to the '988 patent.
Asakura	Asakura relates to an optical system for projection type display devices, which is thin and for obtaining a large image, which has overlapping fields of invention with the '988 patent and/or solves a known problem substantially identical to the '988 patent.
Dorval	Dorval relates to three-dimensional displays that produce volume images by projecting a series of two-dimensional images onto a rapidly rotating projection screen and magnifies the two-dimensional images, which has overlapping fields of invention with the '988 patent and/or has similar mechanical features with the '988 patent.

’313 Patent Title: Projection Type Image Display Apparatus	
Reference	**Exemplary Problem/Need Person of Ordinary Skill in the Art and/or Overlapping Fields of Invention**
Itohiya ’759	Itohiya ’759 relates to a rear-projection type imaging apparatus which can project, and display, an enlarged image onto a screen from the rearward thereof, such as rear-projection television sets or rear projectors, which has overlapping fields of invention with the ’313 patent and/or has similar mechanical features with the ’313 patent.
Itohiya ’986	Itohiya ’986 relates to optical devices such as rear-projection televisions and rear-projection projectors or other rear-projection video equipment which project enlarged images onto a screen from the rear, which has overlapping fields of invention with the ’313 patent and/or has similar mechanical features with the ’313 patent.
Ohzawa	Ohzawa relates to a display optical system that is suitable for use in an image display apparatus, which has overlapping fields of invention with the ’313 patent and/or has similar mechanical features with the ’313 patent.
Karasawa	Karasawa relates to projection lenses and projectors using this lens to reduce the overall size of the projectors, which has overlapping fields of invention with the ’313 patent and/or solves a known problem substantially identical to the ’313 patent.
Yamagishi ’706	Yamagishi ’706 relates to a projection lens system of a projector that enlarges and projects an image displayed on a light valve, such as a liquid crystal panel or a DMD, onto a screen, which has overlapping fields of invention with the ’313 patent and/or has similar mechanical features with the ’313 patent.
Yamagishi ’723	Yamagishi ’723 relates to an optical system that magnifies and projects projection light that has been modulated by an image generating device such as a liquid crystal device, DMD, based on image information onto a screen, and to a rear projector that uses the same, which has overlapping fields of invention with the ’313 patent and/or has similar mechanical features with the ’313 patent.
Ramachandran	Ramachandran relates to a short throw projection system and method which combines optics and image processing for reducing optical path length while maintaining optimum image quality, which has overlapping fields of invention with the ’313 patent and/or solves a known problem substantially identical to the ’313 patent.
Hori	Hori relates to a projector that comprises a display element and projects an image displayed thereon which has overlapping fields of invention with the ’313 patent and/or has similar mechanical features with the ’313 patent.
Kim	Kim relates to a focus regulator of a projection apparatus for adjusting the focus of an image projected onto a screen, which has overlapping fields of invention with the ’313 patent and/or has similar mechanical features with the ’313 patent.
Hirata ’366	Hirata ’366 relates to a projection lens system that has a short projection distance and a projection image display apparatus, which has overlapping fields

	of invention with the ’313 patent. Further, Hirata ’366 shares overlapping inventorship with the ’313 patent.

’580 Patent **Title: Projection-Type Display Apparatus**	
Reference	**Exemplary Problem/Need Person of Ordinary Skill in the Art and/or Overlapping Fields of Invention**
Ishino	Ishino relates to an illuminator which emits trichromatic light including components whose wavelengths correspond to three primary colors, which has overlapping fields of invention with the ’580 patent and/or has similar technical features with the ’580 patent.
Erchak	Erchak relates to light-emitting devices, as well as related components, systems and methods, and, more particularly to light-emitting diodes (LEDs) and associated wavelength-converting regions, which has overlapping fields of invention with the ’580 patent and/or solves a known problem substantially identical to the ’580 patent.
Li ’415	Li ’415 relates to a light source module utilizing fluorescent powder excitation, and specifically to a light source structure and method for enhancing the efficiency of mixed light, which has overlapping fields of invention with the ’580 patent and/or solves a known problem substantially identical to the ’580 patent.
Bakker	Bakker relates to a transmissive projection system comprising dichroic mirrors used as polarizers for polarization conversion in a liquid crystal display (LCD) projector, which has overlapping fields of invention with the ’580 patent and/or has similar technical features with the ’580 patent.
Uchiyama	Uchiyama relates to a device that displays an image by modulating a light from a light source via plural light modulation elements and to provide an enhanced sharper image, which has overlapping fields of invention with the ’580 patent and/or solves a known problem substantially identical to the ’580 patent.
Li ’284	Li ’284 relates to devices for generating high brightness multicolor light using wavelength conversion, which has overlapping fields of invention with the ’580 patent and/or solves a known problem substantially identical to the ’580 patent.
Dho	Dho relates to an image projection apparatus and method for amplifying light quantity by using a fluorescent material, which has overlapping fields of invention with the ’580 patent and/or solves a known problem substantially identical to the ’580 patent.
Harbers	Harbers relates to light emitting diodes (LEDs) or other solid state light sources and, in particular, to collection optics for these sources for obtaining a desired emission, which has overlapping fields of invention with the ’580 patent and/or solves a known problem substantially identical to the ’580 patent.
Iwanaga	Iwanaga relates to a light source unit utilizing different phosphors for emitting light of predetermined wavelength bands and a projector which incorporates the light source unit that can maintain its performance over a long period of time, which has overlapping fields of invention with the ’580 patent and/or solves a known problem substantially identical to the ’580 patent.

’530 Patent Title: Light Source Device	
Reference	**Exemplary Problem/Need Person of Ordinary Skill in the Art and/or Overlapping Fields of Invention**
Hirata ’999	Hirata ’999 relates to a projection type display device that employs a light source, a phosphor, a plurality of lens elements such as condensing lens and projection lens, and various illumination optical systems to suppress deterioration in white balance of color images and to prevent color shading of color images, which has overlapping fields of invention with the ’530 patent and/or has similar mechanical features with the ’530 patent. Further, Hirata ’999 shares overlapping inventorship with the ’530 patent.
Alpay	Alpay relates to a laser processing system that reduces or substantially prevents laser beam back-reflection to protect the output fiber, *e.g.,* light source, which has overlapping fields of invention with the ’530 patent and/or employs a method that is substantially identical to the approach in the ’530 patent to solve a known problem and/or has similar mechanical features with the ’530 patent.
Akiyama ’098	Akiyama ’098 relates to a light source device that includes an excitation light source, a fluorescent material and a plurality of optical components so that the configuration is capable of further increasing the luminance of the light source device without degrading the light efficiency, which has overlapping fields of invention with the ’530 patent and or has similar mechanical features with the ’530 patent.
Abu-Ageel	Abu-Ageel relates to a projection systems or illumination systems utilizing violet lasers and phosphors to covert the violet laser from a first wavelength to a second wavelength, which has overlapping fields of invention with the ’530 patent and/or employs a similar arrangement of light sources to solve a known problem with the ’530 patent.
Kitano ’349	Kitano ’349 relates to a light source device that includes light sources, fluorescent materials and a plurality of optical components so that the arrangement of the optical components combines red, green and blue light to emit the combined light, which has overlapping fields of invention with the ’530 patent and/or employs a similar arrangement of light sources to solve a known problem with the ’530 patent.
Huang	Huang relates to a projector that includes reduced weight of the light emitting source and a plurality of optical components, which has overlapping fields of invention with the ’530 patent and/or employs a similar arrangement of the plurality components to solve a known problem.
Kurosaki ’998	Kurosaki ’998 relates to a light source unit employing a plurality of optical components and a luminescent plate that emits light when energized by an excitation light source, along with a projector that incorporates this light source unit, which has overlapping fields of invention with the ’530 patent and/or employs a similar arrangement of the plurality of components to solve a known problem with the ’530 patent.

’226 Patent Title: Light Source Device and Projection-Type Image Display Device	
Reference	**Exemplary Problem/Need Person of Ordinary Skill in the Art and/or Overlapping Fields of Invention**
Hirata ’999	Hirata ’999 relates to a projection type display device that employs a plurality of light sources, a plurality of display elements, and various illumination optical systems to suppress deterioration in white balance of color images and to prevent color shading of color images, which has overlapping fields of invention with the ’226 patent and/or has similar mechanical features with ’226 patent.
Kurosaki ’087	Kurosaki ’087 relates to a light source device and a projector that includes a plurality of light sources and optical components, which has overlapping fields of invention with the ’530 patent and/or employs a similar arrangement of the optical components to yield predictable results.
Miyamae	Miyamae relates to a light source device including a light source that emits excitation light, a phosphor layer that emits fluorescence when excited by the excitation light and a plurality of optical components, which has overlapping fields of invention with the ’226 patent and/or employs a similar arrangement of the optical components to yield predictable results.
Kitano ’471	Kitano ’471 relates to a light source device that includes a plurality of optical components and uses a phosphor to obtain illumination light of high brightness and high efficiency, which has overlapping fields of invention with the ’226 patent and/or employs a similar arrangement of the optical components to yield predictable results.
Masuda	Masuda relates to a light source unit that includes a wheel in which a luminescent material layer is provided in a circumferential direction, and a projector that includes the light source unit and a plurality of optical components, which has overlapping fields of invention with the ’226 patent and/or employs a similar arrangement of the optical components to yield predictable results.
Akiyama ’904	Akiyama ’904 relates to a light source device and a projector that include a plurality of optical components so that the arrangement of the optical components is capable of preventing the degradation of the luminance efficiency so that to emit the intense light, which has overlapping fields of invention with the ’226 patent and/or has similar mechanical features with the ’226 patent.

’388 Patent Title: Video Display Device	
Reference	**Exemplary Problem/Need Person of Ordinary Skill in the Art and/or Overlapping Fields of Invention**
Sakaniwa	Sakaniwa relates to a video processing unit that performs gloss enhancement processing on the input video signal to improve the image quality, which employs a method that is similar to the approach in the ’388 patent to solve a known problem and/or has overlapping fields of invention with the ’388 patent.

Kwon	Kwon relates to an image correction method and apparatus that can enhance the performance of image correction without deteriorating the image quality, which employs a method that is similar to the approach in the ’388 patent to solve a known problem and/or has overlapping fields of invention with the ’388 patent.
Zhang	Zhang relates to a method for correcting lightness of an image that provides a desired, optimum dynamic range to a digital still color picture, which employs a method that is similar to the approach in the ’388 patent to solve a known problem and/or has overlapping fields of invention with the ’388 patent.
Ozawa	Ozawa relates to an image display device and an image display method for displaying an image according to image information input from the outside, which has overlapping fields of invention with the ’388 patent and/or has similar mechanical features with the ’388 patent.

’569 Patent **Title: Projection-Type Image Display Device**	
Reference	**Exemplary Problem/Need Person of Ordinary Skill in the Art and/or Overlapping Fields of Invention**
Pollmann-Retsch	Pollmann-Retsch relates to a projection system that includes a gas discharge lamp and driving units for driving the gas discharge lamp and an image correction unit to improve the image quality based on an input image signal, which has overlapping fields of invention with the ’569 patent and/or employs a similar method to solve a known problem.
Hirabayashi	Hirabayashi relates to an image display device and a projector that both include an image processing section that performs image quality adjustment based on input parameters and both allow the user to adjust the display condition of an image to be displayed, which has overlapping fields of invention with the ’569 patent and/or employs a similar method to solve a known problem.
Ishitani	Ishitani relates to a projection display device that is capable of displaying an image with a constant brightness over a long period of time without causing white or black gradation collapse and a memory that is capable to store the image correction data, which employs a method that is substantially identical to the approach in the ’569 patent to solve a known problem and/or has overlapping fields of invention with the ’569 patent.
Abe	Abe relates to a display device that includes a discharge lamp and a time measuring unit that measures the usage time from the start of use of the discharge lamp, and the measured data will be subsequently utilized to adjust the image quality, which has overlapping fields of invention with the ’569 patent and/or employs a similar method to solve a known problem.
Kanbara	Kanbara relates to a discharge lamp lighting device that is capable of lighting the discharge lamp and controlling power supplied to the discharge lamp and includes a lighting time timer for measuring the usage time of the discharge lamp, and the measured data will be subsequently utilized to adjust the image quality which has overlapping fields of invention with the ’569 patent and/or employs a similar method to solve a known problem.

Accordingly, the teaching, suggestion, motivation, or other reason to modify or combine the prior art in the manner of the Asserted Claims can be found in the explicit and/or implicit teachings of each of the prior art 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, and from the fact that the references are directed to the same or similar or otherwise complementary optical engineering, optical science, and/or electronic engineering and one of ordinary skill in the art at the relevant time would have had reason to or otherwise been motivated by considerations such as solving existing problems, obtaining better performance, increasing ease-of-use, reducing costs, solving one or more of the above-listed problems or needs, and/or other concerns related to certain technical and/or mechanical issues, so as to combine the various teachings and disclosures and arrive at the alleged inventions of the Asserted Claims. Stated differently, the prior art references and exemplary problems/needs listed above demonstrate that there were, at the time of each alleged invention, a number of known, identified, predictable solutions that persons of ordinary skill in the art would have known how to successfully combine, making the claimed alleged inventions obvious.

Much of the prior art identified above, including in the attached claim chart Exhibits, reflects common knowledge and the state of the art prior to the filing date of each of the Asserted Patents and/or at the time each alleged invention was purportedly 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 exemplary and illustrative combinations herein does not exclude other combinations based on the claim charts attached hereto and the disclosures and teachings of the prior art references, as there are many possible prior art combinations of the references listed

herein, and it is not practical to identify and list all potentially relevant combinations – and Defendants reserve the right to do so as the cases and discovery progress.

VI. MEANS PLUS FUNCTION TERMS UNDER PRE-AIA 35 U.S.C §112 SIXTH PARAGRAPH AND/OR 35 U.S.C §112(F) (P.R. 3-3(c))

A. '988 Patent

1. Means Plus Function Terms (Pre-AIA 35 U.S.C §112 sixth paragraph)

i. "second projection optical unit" as recited in claims 1 and 7.

B. '580 Patent

1. Means Plus Function Terms (Pre-AIA 35 U.S.C §112 sixth paragraph)

i. "light separation optic system" as recited in claims 1, 10, and 32.

ii. "light modulation means" as recited in claims 1, 9, 10, 18, and 32.

iii. "projection means" as recited in claims 1, 10, and 32.

iv. "separation mirror" as recited in claims 10 and 11.

v. "light flux capturing means" as recited in claims 7 and 37.

C. '388 Patent

1. Means Plus Function Terms (35 U.S.C §112(f))

i. "first Retinex processing unit" as recited in claims 4, 6, 16, and 18.

ii. "second Retinex processing unit" as recited in claims 4, 6, 16, and 18.

iii. "video composing unit" as recited in claims 4, 6, 10, 16, 18 and 22.

D. '569 Patent

1. Means Plus Function Terms (35 U.S.C §112(f))

i. "control unit" as recited in claims 1-4.

ii. "menu screen creating unit" as recited in claim 1.

VII. INVALIDITY DUE TO INDEFINITENESS OR LACK OF WRITTEN DESCRIPTION UNDER SECTION 112 (P.R. 3-3(d))

To comply with the enablement requirement of Pre-AIA 35 U.S.C. § 112, ¶ 1 or 35 U.S.C. § 112(a), the patent must enable or teach one skilled in the field of the invention to make and use the full scope of the claimed inventions without undue experimentation. To comply with the written description requirement of Pre-AIA 35 U.S.C. § 112, ¶ 1 or 35 U.S.C. § 112(a), the patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention.

One or more Asserted Claims identified below are invalid under Pre-AIA 35 U.S.C. § 112, ¶ 1 or 35 U.S.C. § 112(a) for failing to particularly point out and distinctly claim the subject matter which the patentee regards as its alleged invention such that one skilled in the relevant art would be reasonably apprised of the bounds of the asserted claims when read in light of the specification. The Asserted Claims identified below fail to meet the requirements of Pre-AIA 35 U.S.C. § 112, ¶ 1 or 35 U.S.C. § 112(a) because the specifications of the Asserted Patents do not contain a written description of the alleged invention and do not enable a person skilled in the art to make and use the alleged invention. In particular, at least the following limitations of the Asserted Claims are not enabled and/or lack written description support. Pre-AIA 35 U.S.C. § 112, ¶ 1 or 35 U.S.C. § 112(a) requires that the specification contain a written description of the invention. The test for whether a specification adequately describes an invention 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 . . . . [T]he test requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art . . . . [It] is a question of fact." *Ariad Pharms., Inc. v. Eli Lilly and Co.*, 598 F. 3d 1336, 1351 (Fed. Cir. 2010) (en banc).

Subject to Defendants' reservation of rights, Defendants identify the following written description and enablement grounds with respect to the following Asserted Claims of the Asserted Patents. The following does not purport to list every claim limitation to the foregoing disclosed grounds. Where a particular claim term or limitation is identified, Defendants contend that the identified term or limitation, as well as the surrounding claim language in context as recited in the applicable claim, suffer from the identified Pre-AIA or Post-AIA Section 112 defect. Furthermore, where a particular claim term or limitation is identified with respect to one or more particular claim(s), Defendants contend that each other Asserted Claim that recites the same claim term or limitation, or similar claim term or limitation, is subject to the same Pre-AIA or Post-AIA Section 112 defect. Defendants also reserves the right to assert additional Pre-AIA or Post-AIA Section 112 defenses as discovery progresses.

To comply with the definiteness requirement of Pre-AIA 35 U.S.C. § 112, ¶ 2 or 35 U.S.C. § 112(b), the claims must "particularly point[] out and distinctly claim[] the subject matter which the inventor [] regards as [the] invention." As detailed below, the Asserted Claims of one or more Asserted Patents are indefinite under Pre-AIA 35 U.S.C. § 112, ¶ 2 or 35 U.S.C. § 112(b).

A. '988 Patent

1. Indefinite terms (Pre-AIA 35 U.S.C §112 second paragraph)

i. "the image display element side" as recited in claims 1 and 7.

2. Terms lacking written description (Pre-AIA 35 U.S.C §112 first paragraph)

i. "The projection image display apparatus according to claim 7, wherein an optical-axis center of said projection optical unit is made eccentric with respect to a center of the screen." as recited in claim 8.

B. ’580 Patent

1. Indefinite terms (Pre-AIA 35 U.S.C §112 second paragraph)

i. “the emitting light” as recited in claims 3, 5, 33, 35 and their respective dependent claims.

ii. “almost” as recited in claim 11.

C. ’530 Patent

1. Indefinite terms (Pre-AIA 35 U.S.C §112 second paragraph)

i. “azimuth angle” as recited in claim 3.

D. ’226 Patent

1. Indefinite terms (Pre-AIA 35 U.S.C §112 second paragraph)

i. “an emission side of the excitation light relative to the fluorescent material” as recited in claim 8.

2. Terms lacking written description (Pre-AIA 35 U.S.C §112 first paragraph)

i. “the optical member has a curvature that is set such that a light-condensing position of the excitation light is positioned on an emission side of the excitation light relative to the fluorescent material” as recited in claim 8.

ii. “at least either one of the convex lens and the concave lens has a curvature that is set so as to allow the excitation light to be made incident on the fluorescent material at a front side of the fluorescent material as a light-condensing position” as recited in claim 10.

E. ’388 Patent

1. Indefinite terms (35 U.S.C §112(b))

i. “first Retinex processing unit” as recited in claims 4, 6, 16, and 18.

ii. “second Retinex processing unit” as recited in claims 4, 6, 16, and 18.

iii. “video composing unit” as recited in claims 4, 6, 10, 16, 18 and 22.

iv. “first Retinex process” as recited in claims 4, 6, 10, 16, 18 and 22.

v. “second Retinex process” as recited in claims 4, 6, 10, 16, 18 and 22.

F. ’569 Patent

1. Indefinite terms (35 U.S.C §112(b))

i. “control unit” as recited in claims 1-4.

ii. “menu screen creating unit” as recited in claim 1.

VIII. INVALIDITY DUE TO PATENT-INELIGIBILITY

Pursuant to 35 U.S.C. § 101, the claims of a patent must be directed to patent eligible subject matter. The test for whether a claim is eligible for patent protection is set forth in *Alice Corp. v. CLS Bank International*, 573 U.S. 208 (2014). When determining whether the asserted claims are directed towards patent ineligible subject matter as a part of the first step of the *Alice* test, a Court must look not only to individual elements within the claims, but also to the character of the claims in the context of the specification to determine if “their character as a whole is directed to excluded subject matter.” *Internet Patents Corp. v. Active Network, Inc*., 790 F.3d 1343, 1346 (Fed. Cir. 2015). Furthermore, the Court must also determine whether the “claims are directed to ‘a specific means or method’ for improving technology or whether they are simply directed to an abstract end-result.” *RecogniCorp, LLC v. Nintendo Co*., 855 F.3d 1322, 1326 (Fed. Cir. 2017).

The Asserted Claims of the ‘388 Patent are invalid under 35 U.S.C. § 101 for failing to claim patent eligible subject matter. More specifically, as recited in claim 4, the ‘388 Patent is directed to a “video display device” composed of: a video input unit; two “Retinex processing units” that each perform a “Retinex process”; a “video composing unit”; and a video display units. No structure is recited for any of the “units” that make up the claimed video display device. This is therefore a case where the “technology” in question involves a system and method which is preformed using known computer hardware. Consequently, the question of patent eligibility essentially becomes whether or not the “focus of the claims is on the specific asserted improvement

in computer capabilities … or, instead, on a process that qualifies as an 'abstract idea' for which computers are invoked merely as a tool." *Enfish, LLC v. Microsoft Corp.,* 822 F.3d 1327, 1335-36 (Fed. Cir. 2016). The Asserted Claims of the '388 Patent are plainly the latter, *i.e.*, ab abstract idea for which the various "Retinex units" and "composing unit" and "video display unit" are invoked merely as tools. What is claimed in '388 Patent is simply a generic environment in which to carry out the abstract idea. *See Yu v. Apple Inc.*, 1 F.4th 1040, 1043-44 (Fed. Cir. 2021).

IX. DEFENDANTS' PRODUCTION

Defendants provide a joint production of prior art references identified herein and in the accompanying charts: CORE0012213 to CORE0015031.

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Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that, on December 27, 2024, all counsel of record who are deemed to have consented to electronic service are being served with a copy of this document via electronic mail.

/s/ Shannon Maney