

HIGHLY CONFIDENTIAL –ATTORNEYS’ EYES ONLY

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

SINOTECHNIX LLC,

Plaintiff,

v.

SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA,
INC., AND SAMSUNG DISPLAY CO.,
LTD.

Defendants.

Civil Action No. 2:24-cv-544-JRG-RSP

JURY TRIAL DEMANDED

**DEFENDANTS’ AMENDED LOCAL PATENT RULE 3-3
INVALIDITY CONTENTIONS**

Defendants Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Samsung Display Co., Ltd., (collectively, “Samsung” or “Defendants”) hereby provide their Amended P.R. 3-3 Invalidity Contentions, including charts attached as Exhibits 162-1 through 162-14, 873-1 through 873-19, 113-1 through 113-13, 626-1 through 626-20, 952-1 through 952-17, and 913-1 through 913-16 and cited herein, to Plaintiff Sinotechnix LLC (“Sinotechnix” or “Plaintiff”), with respect to the asserted claims of U.S. Patent Nos. 7,618,162 (the “162 Patent”), 7,748,873 (the “873 Patent”), 7,901,113 (the “113 Patent”), 7,951,626 (the “626 Patent”), 8,132,952 (the “952 Patent”), and 9,412,913 (the “913 Patent”) (collectively, the “Asserted Patents”) identified in Plaintiff’s P.R. 3-1 Infringement Contentions, served on October 24, 2024, and Plaintiff’s P.R. 3-1 Amended Infringement Contentions, served on March 25, 2024 (collectively, the “P.R. 3-1 Infringement Contentions”).

In its P.R. 3-1 Infringement Contentions Sinotechnix has asserted the following claims (collectively, the “Asserted Claims”) against Samsung:

F. '913 Patent

Subject to the reservation of rights set forth above and based on Samsung’s present understanding of the Asserted Claims of the Asserted Patents, and the apparent application of claim terms Plaintiff is asserting based on its Infringement Contentions, the Asserted Claims of the '913 Patent are anticipated by the following prior art references charted in Exhibits 913-1 to 913-15:

- US 2005/0280017 (“Oshio”)
- US 2007/0241362 (“Han”)
- US 2004/0000727 (“Hsu”)
- JP 2006005281 (“Iwamasa”)
- US 2003/0203539 (“Islam”)
- US 7,208,772 (“Lee II”)
- US 2007/0252250 (“Hui”)
- Maxim QFN
- Amkor MLF
- Lingsen QFN
- Carsem MLP
- Samsung LEDs
- Digimax
- Luxeon
- LN-R460D

For example, Exhibit 913-1 contains a claim chart demonstrating that Oshio disclosed, suggested, and/or rendered obvious each and every element of the Asserted Claims of the '913 Patent, at least under Plaintiff’s apparent application of its claims. Oshio is prior art to the '913 Patent. *See* Sec. III.A. As shown in Exhibit 913-1, at least under Plaintiff’s apparent application

of its claims, Oshio included all claimed features of the '913 Patent, at least under Plaintiff's apparent application of its claims.

For example, Exhibit 913-2 contains a claim chart demonstrating that Han disclosed, suggested, and/or rendered obvious each and every element of the Asserted Claims of the '913 Patent, at least under Plaintiff's apparent application of its claims. Han is prior art to the '913 Patent. *See* Sec. III.A. As shown in Exhibit 913-2, at least under Plaintiff's apparent application of its claims, Han included all claimed features of the '913 Patent, at least under Plaintiff's apparent application of its claims.

For example, Exhibit 913-3 contains a claim chart demonstrating that Hsu disclosed, suggested, and/or rendered obvious each and every element of the Asserted Claims of the '913 Patent, at least under Plaintiff's apparent application of its claims. Hsu is prior art to the '913 Patent. *See* Sec. III.A. As shown in Exhibit 913-3, at least under Plaintiff's apparent application of its claims, Hsu included all claimed features of the '913 Patent, at least under Plaintiff's apparent application of its claims.

For example, Exhibit 913-4 contains a claim chart demonstrating that Iwamasa disclosed, suggested, and/or rendered obvious each and every element of the Asserted Claims of the '913 Patent, at least under Plaintiff's apparent application of its claims. Iwamasa is prior art to the '913 Patent. *See* Sec. III.A. As shown in Exhibit 913-4, at least under Plaintiff's apparent application of its claims, Iwamasa included all claimed features of the '913 Patent, at least under Plaintiff's apparent application of its claims.

For example, Exhibit 913-5 contains a claim chart demonstrating that Islam disclosed, suggested, and/or rendered obvious each and every element of the Asserted Claims of the '913 Patent, at least under Plaintiff's apparent application of its claims. Islam is prior art to the '913

Patent. *See* Sec. III.A. As shown in Exhibit 913-5, at least under Plaintiff's apparent application of its claims, Islam included all claimed features of the '913 Patent, at least under Plaintiff's apparent application of its claims.

For example, Exhibit 913-6 contains a claim chart demonstrating that Lee II disclosed, suggested, and/or rendered obvious each and every element of the Asserted Claims of the '913 Patent, at least under Plaintiff's apparent application of its claims. Lee II is prior art to the '913 Patent. *See* Sec. III.A. As shown in Exhibit 913-6, at least under Plaintiff's apparent application of its claims, Maxim QFN included all claimed features of the '913 Patent, at least under Plaintiff's apparent application of its claims.

For example, Exhibit 913-7 contains a claim chart demonstrating that Hui disclosed, suggested, and/or rendered obvious each and every element of the Asserted Claims of the '913 Patent, at least under Plaintiff's apparent application of its claims. Hui is prior art to the '913 Patent. *See* Sec. III.A. As shown in Exhibit 913-7, at least under Plaintiff's apparent application of its claims, Hui included all claimed features of the '913 Patent, at least under Plaintiff's apparent application of its claims.

For example, Exhibit 913-8 contains a claim chart demonstrating that Maxim QFN disclosed, suggested, and/or rendered obvious each and every element of the Asserted Claims of the '913 Patent, at least under Plaintiff's apparent application of its claims. Maxim QFN was sold, offered for sale, and was known or used by others in this country before either the claimed or proper priority date of the '913 Patent. *See* Sec. III.C.14. As shown in Exhibit 913-8, at least under Plaintiff's apparent application of its claims, Maxim QFN included all claimed features of the '913 Patent, at least under Plaintiff's apparent application of its claims.

HIGHLY CONFIDENTIAL –ATTORNEYS’ EYES ONLY

For example, Exhibit 913-9 contains a claim chart demonstrating that Amkor MLF disclosed, suggested, and/or rendered obvious each and every element of the Asserted Claims of the '913 Patent, at least under Plaintiff's apparent application of its claims. Amkor MLF was sold, offered for sale, and was known or used by others in this country before either the claimed or proper priority date of the '913 Patent. *See* Sec. III.C.15. As shown in Exhibit 913-9, at least under Plaintiff's apparent application of its claims, Amkor MLF included all claimed features of the '913 Patent, at least under Plaintiff's apparent application of its claims.

For example, Exhibit 913-10 contains a claim chart demonstrating that Lingsen QFN disclosed, suggested, and/or rendered obvious each and every element of the Asserted Claims of the '913 Patent, at least under Plaintiff's apparent application of its claims. Lingsen QFN was sold, offered for sale, and was known or used by others in this country before either the claimed or proper priority date of the '913 Patent. *See* Sec. III.C.16. As shown in Exhibit 913-10, at least under Plaintiff's apparent application of its claims, Lingsen QFN included all claimed features of the '913 Patent, at least under Plaintiff's apparent application of its claims.

For example, Exhibit 913-11 contains a claim chart demonstrating that Carsem MLP disclosed, suggested, and/or rendered obvious each and every element of the Asserted Claims of the '913 Patent, at least under Plaintiff's apparent application of its claims. Carsem MLP was sold, offered for sale, and was known or used by others in this country before either the claimed or proper priority date of the '913 Patent. *See* Sec. III.C.17. As shown in Exhibit 913-11, at least under Plaintiff's apparent application of its claims, Carsem MLP included all claimed features of the '913 Patent, at least under Plaintiff's apparent application of its claims.

For example, Exhibit 913-12 contains a claim chart demonstrating that prior art Samsung LEDs disclosed, suggested, and/or rendered obvious each and every element of the Asserted

HIGHLY CONFIDENTIAL –ATTORNEYS’ EYES ONLY

Claims of the '913 Patent, at least under Plaintiff's apparent application of its claims. Prior art Samsung LEDs were sold, offered for sale, and was known or used by others in this country before either the claimed or proper priority date of the '913 Patent. See Sec. III.C.10. As shown in Exhibit 913-12, at least under Plaintiff's apparent application of its claims, the prior art Samsung LEDs disclosed, suggested, and/or rendered obvious all claimed features of the '913 Patent, at least under Plaintiff's apparent application of its claims.

For example, Exhibit 913-13 contains a claim chart demonstrating that Digimax included each and every element of the Asserted Claims of the '913 Patent, at least under Plaintiff's apparent application of its claims. Digimax was sold, offered for sale, and were known or used by others in this country before the asserted priority date of the '913 Patent. See Sec. III.C.13. As shown in Exhibit 913-13, at least under Plaintiff's apparent application of its claims, Digimax included all claimed features of the '913 Patent, at least under Plaintiff's apparent application of its claims.

For example, Exhibit 913-14 contains a claim chart demonstrating that Lumileds Luxeon included each and every element of the Asserted Claims of the '913 Patent, at least under Plaintiff's apparent application of its claims. Lumileds Luxeon was sold, offered for sale, and were known or used by others in this country before the asserted priority date of the '913 Patent. See Sec. III.C.2-5. As shown in Exhibit 913-14, at least under Plaintiff's apparent application of its claims, Digimax included all claimed features of the '913 Patent, at least under Plaintiff's apparent application of its claims.

For example, Exhibit 913-15 contains a claim chart demonstrating that Samsung LN-R460D included each and every element of the Asserted Claims of the '913 Patent, at least under Plaintiff's apparent application of its claims. Samsung LN-R460D was sold, offered for sale, and were known or used by others in this country before the asserted priority date of the '913 Patent.

HIGHLY CONFIDENTIAL –ATTORNEYS’ EYES ONLY

See Sec. III.C.24. As shown in Exhibit 913-15, at least under Plaintiff's apparent application of its claims, Samsung LN-R460D included all claimed features of the '913 Patent, at least under Plaintiff's apparent application of its claims.

The Asserted Claims of the '913 Patent are further invalid under the doctrine of anticipation by accusation. See *Vanmoor v. Wal-Mart Stores, Inc.*, 201 F.3d 1363, 1367 (Fed. Cir. 2000); *Evans Cooling Sys. Inc. v. General Motors Corp.*, 125 F.3d 1448, 1448 (Fed. Cir. 1997). Plaintiff alleges that each Asserted Claim of the '913 Patent is infringed by: “televisions or liquid crystal display modules (or their components) that incorporate ... the LEDs at issue (i.e., LEDs that are the same or reasonably similar in design and configuration as those used in the [charted products]” (the “'913 Patent Accusations”). See Mar. 24, 2025 Amended Infringement Contentions, Exhibit F. Plaintiff contends that all of Samsung's products encompassed by the '913 Patent Accusations satisfy each and every limitation of each asserted claim of the '913 Patent. *Id.* At least one product encompassed by the '913 Patent Accusations (and therefore accused of infringement), LN-R460D, is prior art to the '913 Patent, as demonstrated, for example, in Exhibit 913-15. If the Court were to accept Plaintiff's '913 Patent Accusations, all Asserted Claims of the '913 Patent are invalid due to anticipation.

**V. DISCLOSURE OF INVALIDITY DUE TO OBVIOUSNESS UNDER
35 U.S.C. § 103**

To the extent that any one of the Asserted Claims is not anticipated pursuant to 35 U.S.C. § 102 by any particular prior art reference listed in Section IV, any purported differences are such that the claimed subject matter as a whole would have been obvious to one skilled in the art at the time of the alleged invention, in view of the state of the art and knowledge of those skilled in the art under 35 U.S.C. § 103. The Asserted Claims contain nothing that goes beyond ordinary design and implementation; no Asserted Claim goes beyond combining known elements to achieve

in the art, where those alternatives include a non-solid-state white light source (such as an incandescent lamp, or a fluorescent lamp (e.g., a conventional mercury gas lamp using red and green downconversion phosphors such as europium and terbium)); combination of red, green, and blue LEDs; a blue LED chip with a yellow phosphor; and a UV or near-UV LED chip with red, green, and blue phosphors.

G. '913 Patent

Prior art references rendering the Asserted Claims of the '913 Patent obvious, alone or in combination with other references, are identified and discussed below and are included in the claim charts Exhibits 913-1 through 913-16. Exhibits 913-1 through 913-16 include exemplary claim charts for the '913 Patent showing specific combinations of references, including citations to where in the references the teachings, suggestions, and motivations to combine the references are disclosed. Further reasons to combine the references identified in Exhibits 913-1 through 913-16 include the nature of the problem being solved, the express, implied and inherent teachings of the prior art, the knowledge of persons of ordinary skill in the art, that such combinations would have yielded predictable results, and that such combinations would have represented known alternatives to a person of ordinary skill in the art.

The primary references cited in Defendants' exemplary claim charts, Exhibits 913-1 through 913-16, are Oshio, Han, Hsu, Iwamasa, Islam, Lee II, Hui, Maxim QFN, Amkor MLF, Lingsen QFN, Carsem MLP, Digimax, Luxeon, LN-R460D, and Samsung LEDs. Each of the primary references discloses and/or suggests all or, at a minimum, the vast majority of the limitations of the Asserted Claims of the '913 Patent. To the extent any claim elements are found to be missing from a particular primary reference, the claim element would have been rendered obvious by the particular primary reference in combination with other primary references and/or with secondary references identified and described in Sections V.B.20 (Light Emitting Diode

Packaging), V.B.21 (Semiconductor Packaging), V.B.22 (Leads, Lead Frames, and Lead Terminals), V.B.23 (Resins and Encapsulants), and V.B.24 (Resin-Holding Components).

Specifically, subject to the reservation of rights above and based at least on Samsung’s present understanding of the Asserted Claims of the ’913 Patent and Sinotechnix’s apparent application of its Asserted Claims, the following Asserted Claims of the ’952 Patent are rendered obvious by the specified combinations of references. These specified combinations of references are meant to be illustrative only and are not meant to be limited to only the exemplary combinations explicitly noted below. For example, each of the primary reference can be combined with any one of the specific secondary references identified in Sections V.B.20 through V.B.24.

To the extent a finder of fact finds that a limitation of a given claim was not disclosed by one of the references identified above, those claims are nevertheless unpatentable as obvious because the asserted claims contain nothing that goes beyond ordinary creativity. To the extent not anticipated, no asserted claim goes beyond combining known elements to achieve predictable results or does more than choose between clear alternatives known to those of ordinary skill in the art, particularly in view of the state of the art as reflected in the relevant references listed above in Sections V.B.20 (Light Emitting Diode Packaging), V.B.21 (Semiconductor Packaging), V.B.22 (Leads, Lead Frames, and Lead Terminals), V.B.23 (Resins and Encapsulants), and V.B.24 (Resin-Holding Components).

1. Reasons For Modifications And/Or Combinations

Applying the principles of obviousness described in Section V.A, it would have been obvious to a person of ordinary skill in the art at the time the application that issued as the ’913 Patent was filed to combine, modify, or use the teachings of the prior art to make the purported inventions of those patents, including by making each of the combinations identified above. The motivation to combine the teachings of the prior art references disclosed herein can be found in

(citation omitted). “The scope of the claims must be less than or equal to the scope of the enablement.” *Nat’l Recovery Techs., Inc. v. Magnetic Separation Sys., Inc.*, 166 F.3d 1190, 1196 (Fed. Cir. 1999).

At least the Asserted Claims referenced below are invalid because the specifications fail to provide an enabling disclosure of at least the following limitations:

1. ’162 Patent

- “said entry surface spatially distributed such that said exit surface receives said deflected light with predominantly uniform irradiance” (’162 Patent Claim 1).
- “said entry surface having first concavity facing toward said light source, and second concavity facing toward the entry surface” (’162 Patent Claims 1, 39).
- “said second concavity being substantially greater than said first concavity,” (’162 Patent Claims 1, 39).
- “said LED means and said upper and lower surfaces configured to produce a profile of bounded flux at said target surface that provides substantially uniform illuminance,” (’162 Patent Claims 31, 43).
- “said entry-surface deflection spatially distributed such that said exit surface receives said deflected light with predominantly uniform irradiance,” (’162 Patent Claim 39).

2. ’873 Patent

- “a total reflection surface with a total reflection slope with respect to a central axis of the body” (’873 Patent Claims 1, 8).

3. ’113 Patent

- “a total reflection surface with a total reflection slope with respect to a central axis of the body” (’113 Patent Claim 1).

EXHIBIT 913-8

Invalidity Claim Chart for U.S. Patent No. 9,412,913

The Maxim Quad Flatpack, No Leads Package [hereinafter Maxim QFN] is a system or product that was in public use, publicly available, offered for sale, and/or sold in the United States before the priority date of U.S. Patent No. 9,412,913 (the “’913 Patent”) and is prior art to the ’913 Patent pursuant to at least pre-AIA 35 U.S.C. §§ 102(a) and 102(b) under the ’913 Patent’s proper priority date.¹ Maxim QFN anticipates and/or renders obvious the asserted claims of the ’913 Patent under pre-AIA 35 U.S.C. §§ 102 and/or 103.

As set forth in the chart below, all the ’913 Patent’s asserted claims are anticipated and/or obvious over Maxim QFN under at least Plaintiff’s apparent claim constructions based on its P.R. 3-1 Infringement Contentions (the “Infringement Contentions”).²

The citations to portions of any reference in this chart are exemplary only. Defendants reserve the right to use the entirety of any reference described in Section IV of Defendants’ P.R. 3-3 Invalidity Contentions (the “Invalidity Contentions”) to show that the asserted claims are anticipated and/or obvious.

The structure, function, technical operation, and manufacture of Maxim QFN prior to the ’913 Patent’s proper priority date is evidenced by at least:

- The Maxim QFN products (including Maxim Punched QFN Package, Maxim Sawn QFN Package, MAX1538, and MAX14900 series)
- Public information concerning Maxim QFN, including:
 - Maxim Integrated Prods., Inc., *SMT Assembly and PCB Design Guidelines for Maxim’s Standard Wire-Bonded Quad Flatpack, No Leads (QFN) Packages* (2014) [hereinafter Maxim Design Guidelines], <https://www.analog.com/media/en/technical-documentation/app-notes/smt-assembly-and-pcb-design-guidelines-for-maxims-standard-wirebonded-quad-flatpack.pdf>.
 - Maxim Integrated Prods., Inc., *Package Outline, 40L Punch QFN* [hereinafter Maxim Package Outline], https://www.analog.com/media/en/package-pcb-resources/package/pkg_pdf/punch-qfn/21-1010.pdf (last visited Feb. 5, 2025).
 - Maxim Integrated Prods., Inc., *MAX14900E* (Apr. 2015) [hereinafter MAX14900E Datasheet], <https://www.mouser.com/datasheet/2/609/MAX14900E-3468936.pdf>.
 - Maxim Integrated Prods., Inc., *Power-Source Selector for Dual-Battery Systems* (Jan. 2004) [hereinafter Power-Source Selector], <https://www.analog.com/media/en/technical-documentation/data-sheets/MAX1538.pdf>.
 - Cheryl Tulkoff, *Manufacturing & Reliability Challenges with QFN* (ASQ Reliability Soc’y Webinar), Mar. 10, 2011 [hereinafter Tulkoff], https://www.solder.net/content/2011-03_ASQ-QFN.pdf.

¹ See, e.g., Power-Source Selector at 1 (dated 2004).

² The excerpts cited herein are exemplary. For any claim limitation, Defendants may rely on excerpts cited for any other limitation and/or additional excerpts not set forth fully herein to the extent necessary to provide a more comprehensive explanation for a reference’s disclosure of a limitation. Where an excerpt refers to or discusses a figure or figure items, that figure and any additional descriptions of that figure should be understood to be incorporated by reference as if set forth fully therein.

The structure, function, technical operation, and manufacture of Maxim QFN prior to the '913 Patent's proper priority date is further expected to be evidenced by at least:

- Documents and testimony from Maxim Integrated Products, Inc.; Analog Devices, Inc.; or their affiliates
- The knowledge of persons familiar with Maxim QFN, including without limitation its inventors.

Defendants expressly reserve the right to supplement these contentions to add additional information showing that Maxim QFN invalidates the '913 Patent's asserted claims.

To the extent that any of the below claim limitations are found to not be expressly disclosed by the below reference, Defendants contend that any such limitation would have been obvious, either based on the knowledge of one of ordinary skill in the art or based on any of the art cited in Exhibits 913-1 through 913-7 and 913-9 through 913-16 of Defendants' Invalidity Contentions, which are incorporated herein by reference. In particular, as evidenced by the below and in Sections V.B and V.G of Defendants' Invalidity Contentions, the '913 Patent is merely a collection of prior art elements that fails to meet the statutory requirement of nonobviousness under § 103, and the factors delineated in *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), weigh against a finding of nonobviousness.

For example, it would have been obvious to a person of ordinary skill in the art (a "POSITA") to combine the teaching of Maxim QFN with the teachings of the references charted as Exhibits 913-1 through 913-7 and 913-9 through 913-16; such references are in the same field of art, and discuss various techniques and improvements that would have been known to yield predictable results when applied to the technology claimed in the '913 Patent, and a person of ordinary skill therefore would have been motivated to so combine them in view of the disclosures therein.

Defendants also contend that one of ordinary skill in the art would find such limitation obvious for at least one or more of the following reasons: (1) the combination would unite old elements with no change in their respective function; (2) the combination would have been a predictable variation of a work in the same or a different field of endeavor; (3) the modification would have used a known technique to improve a similar device in the same way; (4) the modification was a known problem for which there was an obvious solution; (5) the modification would have been "obvious to try"; (6) the modification was known work in one field of endeavor that would have prompted variations of it for use in either the same or different field based on design incentives or other market forces; (7) there was an explicit teaching, suggestion, or motivation in the prior art for the modification.

Defendants are investigating this prior art and have not yet completed discovery from third parties who may have information concerning it. Defendants reserve the right to modify, amend, and/or supplement these contentions as information becomes available (e.g., witness testimony and/or non-public documentation) and as discovery proceeds.

Except where specifically noted otherwise, this chart applies the apparent constructions of claim terms as used by Plaintiff in its Infringement Contentions; such use, however, does not imply that Defendants adopt or agree with Plaintiff's constructions in any way.

EXHIBIT 913-9

Invalidity Claim Chart for U.S. Patent No. 9,412,913

The Amkor Microlead Frame Package [hereinafter Amkor MLF] is a system or product that was in public use, publicly available, offered for sale, and/or sold in the United States before the priority date of U.S. Patent No. 9,412,913 (the “’913 Patent”) and is prior art to the ’913 Patent pursuant to at least pre-AIA 35 U.S.C. §§ 102(a) and 102(b) under the ’913 Patent’s proper priority date.¹ Amkor MLF anticipates and/or renders obvious the asserted claims of the ’913 Patent under pre-AIA 35 U.S.C. §§ 102 and/or 103.

As set forth in the chart below, all the ’913 Patent’s asserted claims are anticipated and/or obvious over Amkor MLF under at least Plaintiff’s apparent claim constructions based on its P.R. 3-1 Infringement Contentions (the “Infringement Contentions”).²

The citations to portions of any reference in this chart are exemplary only. Defendants reserve the right to use the entirety of any reference described in Section IV of Defendants’ P.R. 3-3 Invalidity Contentions (the “Invalidity Contentions”) to show that the asserted claims are anticipated and/or obvious.

The structure, function, technical operation, and manufacture of Amkor MLF prior to the ’913 Patent’s proper priority date is evidenced by at least:

- The Amkor MLF products (including MLF Package, Dual Row MLF, MLF Punch Dual Row 124 LD, Routable Molded Leadframe Package (rtMLF), MLF 24 LD, MLF 48 LD Saw Singulated, MLF Punch, Chip-on-Lead, Thin MLF, Routable MLF, Multi-Chip Package, Stacked Die, Non-Exposed Pad, PPF (NiPd) Punch MLF, PPF (NiPd) Saw MLF, Small MLF, and Multi-Chip Module (MCM) rtMLF)
- Public information concerning Amkor MLF, including:
 - Ahmer Syed & WonJoon Kang, *Board Level Assembly and Reliability Considerations for QFN Type Packages*, 2003 Surface Mount Tech. Ass’n Proc. [hereinafter Syed], <https://smta.org/page/knowledge-search#search/entry-details/5e5189eab3783b085af6a352>.
 - Daeyoung Park, *High Performance, Multi-Chip Leadframe Package with Internal Connections*, Semiconductor Eng’g (Dec. 19, 2023) [hereinafter Park, High Performance], <https://semiengineering.com/high-performance-multi-chip-leadframe-package-with-internal-connections>.
 - Amkor Tech., Inc., *Data Sheet | Leadframe Products* (Feb. 2021) [hereinafter Amkor MLF Data Sheet], [https://amkor.com/external.blob.core.windows.net/amkordotcom/wp-content/uploads/2018/02/MicroLeadFrame_DS572.pdf](https://amkor.com/external/blob.core.windows.net/amkordotcom/wp-content/uploads/2018/02/MicroLeadFrame_DS572.pdf).
 - Cheryl Tulkoff, *Manufacturing & Reliability Challenges with QFN* (ASQ Reliability Soc’y Webinar), Mar. 10, 2011 [hereinafter Tulkoff], https://www.solder.net/content/2011-03_ASQ-QFN.pdf.

¹ See, e.g., Syed (dated 2003).

² The excerpts cited herein are exemplary. For any claim limitation, Defendants may rely on excerpts cited for any other limitation and/or additional excerpts not set forth fully herein to the extent necessary to provide a more comprehensive explanation for a reference’s disclosure of a limitation. Where an excerpt refers to or discusses a figure or figure items, that figure and any additional descriptions of that figure should be understood to be incorporated by reference as if set forth fully therein.

The structure, function, technical operation, and manufacture of Amkor MLF prior to the '913 Patent's proper priority date is further expected to be evidenced by at least:

- Documents and testimony from Amkor Technology, Inc. or its affiliates
- The knowledge of persons familiar with Amkor MLF, including without limitation its inventors.

Defendants expressly reserve the right to supplement these contentions to add additional information showing that Amkor MLF invalidates the '913 Patent's asserted claims.

To the extent that any of the below claim limitations are found to not be expressly disclosed by the below reference, Defendants contend that any such limitation would have been obvious, either based on the knowledge of one of ordinary skill in the art or based on any of the art cited in Exhibits 913-1 through 913-8 and 913-10 through 913-16 of Defendants' Invalidity Contentions, which are incorporated herein by reference. In particular, as evidenced by the below and in Sections V.B and V.G of Defendants' Invalidity Contentions, the '913 Patent is merely a collection of prior art elements that fails to meet the statutory requirement of nonobviousness under § 103, and the factors delineated in *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), weigh against a finding of nonobviousness.

For example, it would have been obvious to a person of ordinary skill in the art (a "POSITA") to combine the teaching of PRODUCT with the teachings of the references charted as Exhibits 913-1 through 913-8 and 913-10 through 913-16; such references are in the same field of art, and discuss various techniques and improvements that would have been known to yield predictable results when applied to the technology claimed in the '913 Patent, and a person of ordinary skill therefore would have been motivated to so combine them in view of the disclosures therein.

Defendants also contend that one of ordinary skill in the art would find such limitation obvious for at least one or more of the following reasons: (1) the combination would unite old elements with no change in their respective function; (2) the combination would have been a predictable variation of a work in the same or a different field of endeavor; (3) the modification would have used a known technique to improve a similar device in the same way; (4) the modification was a known problem for which there was an obvious solution; (5) the modification would have been "obvious to try"; (6) the modification was known work in one field of endeavor that would have prompted variations of it for use in either the same or different field based on design incentives or other market forces; (7) there was an explicit teaching, suggestion, or motivation in the prior art for the modification.

Defendants are investigating this prior art and have not yet completed discovery from third parties who may have information concerning it. Defendants reserve the right to modify, amend, and/or supplement these contentions as information becomes available (e.g., witness testimony and/or non-public documentation) and as discovery proceeds.

Except where specifically noted otherwise, this chart applies the apparent constructions of claim terms as used by Plaintiff in its Infringement Contentions; such use, however, does not imply that Defendants adopt or agree with Plaintiff's constructions in any way.

EXHIBIT 913-10

Invalidity Claim Chart for U.S. Patent No. 9,412,913

The Lingsen Quad Flat No-Lead Package [hereinafter Lingsen QFN] is a system or product that was in public use, publicly available, offered for sale, and/or sold in the United States before the priority date of U.S. Patent No. 9,412,913 (the “’913 Patent”) and is prior art to the ’913 Patent pursuant to at least pre-AIA 35 U.S.C. §§ 102(a) and 102(b) under the ’913 Patent’s proper priority date.¹ Lingsen QFN anticipates and/or renders obvious the asserted claims of the ’913 Patent under pre-AIA 35 U.S.C. §§ 102 and/or 103.

As set forth in the chart below, all the ’913 Patent’s asserted claims are anticipated and/or obvious over Lingsen QFN under at least Plaintiff’s apparent claim constructions based on its P.R. 3-1 Infringement Contentions (the “Infringement Contentions”).²

The citations to portions of any reference in this chart are exemplary only. Defendants reserve the right to use the entirety of any reference described in Section IV of Defendants’ P.R. 3-3 Invalidity Contentions (the “Invalidity Contentions”) to show that the asserted claims are anticipated and/or obvious.

The structure, function, technical operation, and manufacture of Lingsen QFN prior to the ’913 Patent’s proper priority date is evidenced by at least:

- The Lingsen QFN products (including Quad Flat No-Lead Package, Very Thin QFN (VQFN) 16L, VQFN 48L, Very Thin Small Outline No Lead (VSON), Ultra Thin QFN (UQFN), Very Very Thin QFN (WQFN), Extremely Small QFN (XQFN), Extremely Small Outline QFN (X2QFN), and RF Package)
- Public information concerning Lingsen QFN, including:
 - Lingsen Precision Indus., Inc., *VSON Package Characterization* (2011), <https://www.lingsen.com.tw/webc/html/assembly/package-3-08.aspx>.
 - Lingsen Precision Indus., Inc., *VQFN Package Characterization*, <https://www.lingsen.com.tw/webc/html/assembly/pChar/vqfn.pdf> (last visited Feb. 7, 2025).
 - Lingsen Precision Indus., Inc., *UQFN Package Characterization*, <https://www.lingsen.com.tw/webc/html/assembly/pChar/uqfn.pdf> (last visited Feb. 7, 2025).
 - Lingsen Precision Indus., Inc., *WQFN Package Characterization* (2011), <https://www.lingsen.com.tw/webc/html/assembly/package-3-09.aspx>.
 - Lingsen Precision Indus., Inc., *XQFN Package Characterization* (2011), <https://www.lingsen.com.tw/webc/html/assembly/package-3-10.aspx>.

¹ See, e.g., Yen (filed June 21, 2007).

² The excerpts cited herein are exemplary. For any claim limitation, Defendants may rely on excerpts cited for any other limitation and/or additional excerpts not set forth fully herein to the extent necessary to provide a more comprehensive explanation for a reference’s disclosure of a limitation. Where an excerpt refers to or discusses a figure or figure items, that figure and any additional descriptions of that figure should be understood to be incorporated by reference as if set forth fully therein.

- Lingsen Precision Indus., Inc., *X2QFN Package Characterization*, <https://www.lingsen.com.tw/webc/html/assembly/pChar/x2qfn.pdf> (last visited Feb. 7, 2025).
- Lingsen Precision Indus., Inc., *OTQFN Package Characterization*, <https://www.lingsen.com.tw/webc/html/assembly/pChar/otqfn.pdf> (last visited Feb. 7, 2025).
- Lingsen Precision Indus., Inc., *Packages for IoT* (2016), <https://www.sitrigroup.com/wp-content/uploads/2016/09/10.-Packages-for-IoT-Lingsen.pdf>.
- Cheryl Tulkoff, *Manufacturing & Reliability Challenges with QFN* (ASQ Reliability Soc’y Webinar), Mar. 10, 2011 [hereinafter Tulkoff], https://www.solder.net/content/2011-03_ASQ-QFN.pdf.
- Patents and patent applications, including:
 - U.S. Patent Application Publication No. 2008/0061393 [hereinafter Yen].

The structure, function, technical operation, and manufacture of Lingsen QFN prior to the ’913 Patent’s proper priority date is further expected to be evidenced by at least:

- Documents and testimony from Lingsen Precision Industries, Inc.; Lingsen America Inc.; or their affiliates
- The knowledge of persons familiar with Lingsen QFN, including without limitation its inventors.

Defendants expressly reserve the right to supplement these contentions to add additional information showing that Lingsen QFN invalidates the ’913 Patent’s asserted claims.

To the extent that any of the below claim limitations are found to not be expressly disclosed by the below reference, Defendants contend that any such limitation would have been obvious, either based on the knowledge of one of ordinary skill in the art or based on any of the art cited in Exhibits 913-1 through 913-9 and 913-11 through 913-16 of Defendants’ Invalidity Contentions, which are incorporated herein by reference. In particular, as evidenced by the below and in Sections V.B and V.G of Defendants’ Invalidity Contentions, the ’913 Patent is merely a collection of prior art elements that fails to meet the statutory requirement of nonobviousness under § 103, and the factors delineated in *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), weigh against a finding of nonobviousness.

For example, it would have been obvious to a person of ordinary skill in the art (a “POSITA”) to combine the teaching of Lingsen QFN with the teachings of the references charted as Exhibits 913-1 through 913-9 and 913-11 through 913-16; such references are in the same field of art, and discuss various techniques and improvements that would have been known to yield predictable results when applied to the technology claimed in the ’913 Patent, and a person of ordinary skill therefore would have been motivated to so combine them in view of the disclosures therein.

Defendants also contend that one of ordinary skill in the art would find such limitation obvious for at least one or more of the following reasons: (1) the combination would unite old elements with no change in their respective function; (2) the combination would have been a predictable variation of a work in the same or a different field of endeavor; (3) the modification would have used a known technique to improve a similar device in the same way; (4) the modification was a known problem for which there was an obvious solution; (5) the modification would have been “obvious to try”; (6)

EXHIBIT 913-11

Invalidity Claim Chart for U.S. Patent No. 9,412,913

The Carsem Microlead Package [hereinafter Carsem MLP] is a system or product that was in public use, publicly available, offered for sale, and/or sold in the United States before the priority date of U.S. Patent No. 9,412,913 (the “’913 Patent”) and is prior art to the ’913 Patent pursuant to at least pre-AIA 35 U.S.C. §§ 102(a) and 102(b) under the ’913 Patent’s proper priority date.¹ Carsem MLP anticipates and/or renders obvious the asserted claims of the ’913 Patent under pre-AIA 35 U.S.C. §§ 102 and/or 103.

As set forth in the chart below, all the ’913 Patent’s asserted claims are anticipated and/or obvious over Carsem MLP under at least Plaintiff’s apparent claim constructions based on its P.R. 3-1 Infringement Contentions (the “Infringement Contentions”).²

The citations to portions of any reference in this chart are exemplary only. Defendants reserve the right to use the entirety of any reference described in Section IV of Defendants’ P.R. 3-3 Invalidity Contentions (the “Invalidity Contentions”) to show that the asserted claims are anticipated and/or obvious.

The structure, function, technical operation, and manufacture of Carsem MLP prior to the ’913 Patent’s proper priority date is evidenced by at least:

- The Carsem MLP products (including Exposed Pad-MLP, MLP Quad (MLPQ), and MLP Dual (MLPD))
- Public information concerning Carsem MLP, including:
 - Carsem Sdn. Bhd., *Comprehensive User’s Guide* (Apr. 2002) [hereinafter Carsem Guide], https://web.pa.msu.edu/hep/atlas/11calo/hub/hardware/components/circuit_board/qfn_package_users_guide.pdf.
 - Carsem Sdn. Bhd., *Micro Leadframe Package* (Feb. 2020) [hereinafter Carsem MLP Data Sheet], <https://carsem.com/wp-content/uploads/2020/02/mlp-datasheet.pdf>.
 - Cheryl Tulkoff, *Manufacturing & Reliability Challenges with QFN* (ASQ Reliability Soc’y Webinar), Mar. 10, 2011 [hereinafter Tulkoff], https://www.solder.net/content/2011-03_ASQ-QFN.pdf.

The structure, function, technical operation, and manufacture of Carsem MLP prior to the ’913 Patent’s proper priority date is further expected to be evidenced by at least:

- Documents and testimony from Carsem Sdn. Bhd., Carsem Inc., or their affiliates
- The knowledge of persons familiar with Carsem MLP, including without limitation its inventors.

¹ See, e.g., Carsem Guide (dated 2002).

² The excerpts cited herein are exemplary. For any claim limitation, Defendants may rely on excerpts cited for any other limitation and/or additional excerpts not set forth fully herein to the extent necessary to provide a more comprehensive explanation for a reference’s disclosure of a limitation. Where an excerpt refers to or discusses a figure or figure items, that figure and any additional descriptions of that figure should be understood to be incorporated by reference as if set forth fully therein.

Defendants expressly reserve the right to supplement these contentions to add additional information showing that Carsem MLP invalidates the '913 Patent's asserted claims.

To the extent that any of the below claim limitations are found to not be expressly disclosed by the below reference, Defendants contend that any such limitation would have been obvious, either based on the knowledge of one of ordinary skill in the art or based on any of the art cited in Exhibits 913-1 through 913-10 and 913-12 through 913-16 of Defendants' Invalidity Contentions, which are incorporated herein by reference. In particular, as evidenced by the below and in Sections V.B and V.G of Defendants' Invalidity Contentions, the '913 Patent is merely a collection of prior art elements that fails to meet the statutory requirement of nonobviousness under § 103, and the factors delineated in *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), weigh against a finding of nonobviousness.

For example, it would have been obvious to a person of ordinary skill in the art (a "POSITA") to combine the teaching of Carsem MLP with the teachings of the references charted as Exhibits 913-1 through 913-10 and 913-12 through 913-16; such references are in the same field of art, and discuss various techniques and improvements that would have been known to yield predictable results when applied to the technology claimed in the '913 Patent, and a person of ordinary skill therefore would have been motivated to so combine them in view of the disclosures therein.

Defendants also contend that one of ordinary skill in the art would find such limitation obvious for at least one or more of the following reasons: (1) the combination would unite old elements with no change in their respective function; (2) the combination would have been a predictable variation of a work in the same or a different field of endeavor; (3) the modification would have used a known technique to improve a similar device in the same way; (4) the modification was a known problem for which there was an obvious solution; (5) the modification would have been "obvious to try"; (6) the modification was known work in one field of endeavor that would have prompted variations of it for use in either the same or different field based on design incentives or other market forces; (7) there was an explicit teaching, suggestion, or motivation in the prior art for the modification.

Defendants are investigating this prior art and have not yet completed discovery from third parties who may have information concerning it. Defendants reserve the right to modify, amend, and/or supplement these contentions as information becomes available (e.g., witness testimony and/or non-public documentation) and as discovery proceeds.

Except where specifically noted otherwise, this chart applies the apparent constructions of claim terms as used by Plaintiff in its Infringement Contentions; such use, however, does not imply that Defendants adopt or agree with Plaintiff's constructions in any way.

Claim	Claim Language	Prior Art Disclosure
1(pre)	A light emitting diode (LED) package, comprising:	Under at least the apparent construction based on Plaintiff's Infringement Contentions, and to the extent that the preamble is limiting, Carsem MLP discloses, suggests, and/or renders obvious a light emitting diode (LED) package. For example, Carsem MLP discloses, suggests, and/or renders obvious a die/diode/chip package that a POSITA would understand may include a light-emitting diode (LED).

EXHIBIT 913-12

Invalidity Claim Chart for U.S. Patent No. 9,412,913

Samsung LEDs are a system or product that was in public use, publicly available, offered for sale, and/or sold in the United States before the priority date of U.S. Patent No. 9,412,913 (the “’913 Patent”) and is prior art to the ’913 Patent pursuant to at least pre-AIA 35 U.S.C. §§ 102(a) and 102(b) under the ’913 Patent’s proper priority date.¹ Samsung LEDs anticipates and/or renders obvious the asserted claims of the ’913 Patent under pre-AIA 35 U.S.C. §§ 102 and/or 103.

As set forth in the chart below, all the ’913 Patent’s asserted claims are anticipated and/or obvious over Samsung LEDs under at least Plaintiff’s apparent claim constructions based on its P.R. 3-1 Infringement Contentions (the “Infringement Contentions”).²

The citations to portions of any reference in this chart are exemplary only. Defendants reserve the right to use the entirety of any reference described in Section IV of Defendants’ P.R. 3-3 Invalidity Contentions (the “Invalidity Contentions”) to show that the asserted claims are anticipated and/or obvious.

The structure, function, technical operation, and manufacture of Samsung LEDs prior to the ’913 Patent’s proper priority date is evidenced by at least:

- The Samsung LEDs product
- Public information concerning Samsung LEDs, including:
 - Samsung Electro-Mechs., *Light Emitting Diode - SMD LED* [hereinafter SEM SMD LED Datasheet], http://www.sem.samsung.com/cms/DownFileServlet?filePath=/file/repository/subproduct/DATASHEET_RAW/A090a0/A090a0_DA_TASHEET_RAW.pdf (last visited Jan. 21, 2025).
 - Samsung Electro-Mechs., *Light Emitting Diode Production Process* [hereinafter SEM LED Production Process], https://web.archive.org/web/20040406171953/http://www.sem.samsung.com/cms/DownFileServlet?filePath=/file/repository/product/PRODUCTION_PROCESS_RAW/A090/A090_PRODUCTION_PROCESS_RAW.pdf (last visited Jan. 21, 2025).
- Patents and patent application publications, including:
 - U.S. Patent No. 7,208,772 [hereinafter Lee II] (filed July 22, 2005, published as a printed patent application publication Mar. 2, 2006, issued Apr. 24, 2007)

¹ See, e.g., Power-Source Selector at 1 (dated 2004).

² The excerpts cited herein are exemplary. For any claim limitation, Defendants may rely on excerpts cited for any other limitation and/or additional excerpts not set forth fully herein to the extent necessary to provide a more comprehensive explanation for a reference’s disclosure of a limitation. Where an excerpt refers to or discusses a figure or figure items, that figure and any additional descriptions of that figure should be understood to be incorporated by reference as if set forth fully therein.

- o U.S. Patent No. 7,459,964 [hereinafter Kang] (filed Nov. 1, 2004, published as a printed patent application publication May 5, 2005, issued Dec. 2, 2008)

The structure, function, technical operation, and manufacture of Samsung LEDs prior to the '952 Patent's proper priority date is further expected to be evidenced by at least:

- Documents and testimony from Samsung Electronics Co., Ltd.; Samsung Electro-Mechanics; or their affiliates
- The knowledge of persons familiar with Samsung LEDs, including without limitation its inventors.

Defendants expressly reserve the right to supplement these contentions to add additional information showing that Samsung LEDs invalidates the '913 Patent's asserted claims.

To the extent that any of the below claim limitations are found to not be expressly disclosed by the below reference, Defendants contend that any such limitation would have been obvious, either based on the knowledge of one of ordinary skill in the art or based on any of the art cited in Exhibits 913-1 through 913-11 and 913-16 of Defendants' Invalidity Contentions, which are incorporated herein by reference. In particular, as evidenced by the below and in Sections V.B and V.G of Defendants' Invalidity Contentions, the '913 Patent is merely a collection of prior art elements that fails to meet the statutory requirement of nonobviousness under § 103, and the factors delineated in *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), weigh against a finding of nonobviousness.

For example, it would have been obvious to a person of ordinary skill in the art (a "POSITA") to combine the teaching of Samsung LEDs with the teachings of the references charted as Exhibits 913-1 through 913-11 and 913-16; such references are in the same field of art, and discuss various techniques and improvements that would have been known to yield predictable results when applied to the technology claimed in the '913 Patent, and a person of ordinary skill therefore would have been motivated to so combine them in view of the disclosures therein.

Defendants also contend that one of ordinary skill in the art would find such limitation obvious for at least one or more of the following reasons: (1) the combination would unite old elements with no change in their respective function; (2) the combination would have been a predictable variation of a work in the same or a different field of endeavor; (3) the modification would have used a known technique to improve a similar device in the same way; (4) the modification was a known problem for which there was an obvious solution; (5) the modification would have been "obvious to try"; (6) the modification was known work in one field of endeavor that would have prompted variations of it for use in either the same or different field based on design incentives or other market forces; (7) there was an explicit teaching, suggestion, or motivation in the prior art for the modification.

Defendants are investigating this prior art and have not yet completed discovery from third parties who may have information concerning it. Defendants reserve the right to modify, amend, and/or supplement these contentions as information becomes available (e.g., witness testimony and/or non-public documentation) and as discovery proceeds.

Except where specifically noted otherwise, this chart applies the apparent constructions of claim terms as used by Plaintiff in its Infringement Contentions; such use, however, does not imply that Defendants adopt or agree with Plaintiff's constructions in any way.

EXHIBIT 913-13

Invalidity Claim Chart for U.S. Patent No. 9,412,913

The Samsung Digimax 301 [hereinafter Digimax] is a system or product that was in public use, publicly available, offered for sale, and/or sold in the United States before the priority date of U.S. Patent No. 9,412,913 (the “’913 Patent”) and is prior art to the ’913 Patent pursuant to at least pre-AIA 35 U.S.C. §§ 102(a) and 102(b) under the ’913 Patent’s proper priority date.¹ Digimax anticipates and/or renders obvious the asserted claims of the ’913 Patent under pre-AIA 35 U.S.C. §§ 102 and/or 103.

As set forth in the chart below, all the ’913 Patent’s asserted claims are anticipated and/or obvious over Digimax under at least Plaintiff’s apparent claim constructions based on its P.R. 3-1 Infringement Contentions and its P.R. 3-1 Amended Infringement Contentions (collectively, the “Infringement Contentions”).²

The citations to portions of any reference in this chart are exemplary only. Defendants reserve the right to use the entirety of any reference described in Section IV of Defendants’ P.R. 3-3 Invalidity Contentions (the “Invalidity Contentions”) to show that the asserted claims are anticipated and/or obvious.

The structure, function, technical operation, and manufacture of Digimax prior to the ’913 Patent’s proper priority date is evidenced by at least:

- The Samsung Digimax product
- Documentation concerning Samsung Digimax, including:
 - Samsung Techwin Co., Ltd., *Samsung Camera User’s Manual Digimax 301* [hereinafter Digimax User Manual].
 - Samsung Techwin Co., Ltd., *Service Manual Digimax 202/301* [hereinafter Digimax Service Manual].
 - Michael R. Thomkins, *Samsung: Three More Digimax Cameras*, Imaging Res. (Feb. 19, 2004, 12:23 EST) [hereinafter Thomkins], <https://www.imaging-resource.com/EVENTS/PMAS04/1077226406.html>.

The structure, function, technical operation, and manufacture of Digimax prior to the ’913 Patent’s proper priority date is further expected to be evidenced by at least:

- Documents and testimony from SEC or its affiliates
- The knowledge of persons familiar with Samsung Digimax, including without limitation its inventors.

¹ See, e.g., Thomkins (dated 2004).

² The excerpts cited herein are exemplary. For any claim limitation, Defendants may rely on excerpts cited for any other limitation and/or additional excerpts not set forth fully herein to the extent necessary to provide a more comprehensive explanation for a reference’s disclosure of a limitation. Where an excerpt refers to or discusses a figure or figure items, that figure and any additional descriptions of that figure should be understood to be incorporated by reference as if set forth fully therein.

Defendants expressly reserve the right to supplement these contentions to add additional information showing that Digimax invalidates the '913 Patent's asserted claims.

To the extent that any of the below claim limitations are found to not be expressly disclosed by the below reference, Defendants contend that any such limitation would have been obvious, either based on the knowledge of one of ordinary skill in the art or based on any of the art cited in Exhibits 913-1 through 913-12 and 913-14 through 913-16 of Defendants' Invalidity Contentions, which are incorporated herein by reference. In particular, as evidenced by the below and in Sections V.B and V.G of Defendants' Invalidity Contentions, the '913 Patent is merely a collection of prior art elements that fails to meet the statutory requirement of nonobviousness under § 103, and the factors delineated in *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), weigh against a finding of nonobviousness.

For example, it would have been obvious to a person of ordinary skill in the art (a "POSITA") to combine the teaching of Digimax with the teachings of the references charted as Exhibits 913-1 through 913-12 and 913-14 through 913-16; such references are in the same field of art, and discuss various techniques and improvements that would have been known to yield predictable results when applied to the technology claimed in the '913 Patent, and a person of ordinary skill therefore would have been motivated to so combine them in view of the disclosures therein.

Defendants also contend that one of ordinary skill in the art would find such limitation obvious for at least one or more of the following reasons: (1) the combination would unite old elements with no change in their respective function; (2) the combination would have been a predictable variation of a work in the same or a different field of endeavor; (3) the modification would have used a known technique to improve a similar device in the same way; (4) the modification was a known problem for which there was an obvious solution; (5) the modification would have been "obvious to try"; (6) the modification was known work in one field of endeavor that would have prompted variations of it for use in either the same or different field based on design incentives or other market forces; (7) there was an explicit teaching, suggestion, or motivation in the prior art for the modification.

Defendants are investigating this prior art and have not yet completed discovery from third parties who may have information concerning it. Defendants reserve the right to modify, amend, and/or supplement these contentions as information becomes available (e.g., witness testimony and/or non-public documentation) and as discovery proceeds.

Except where specifically noted otherwise, this chart applies the apparent constructions of claim terms as used by Plaintiff in its Infringement Contentions; such use, however, does not imply that Defendants adopt or agree with Plaintiff's constructions in any way.

Claim	Claim Language	Prior Art Disclosure
1(pre)	A light emitting diode (LED) package, comprising:	Under at least the apparent construction based on Plaintiff's Infringement Contentions, and to the extent that the preamble is limiting, Digimax discloses, suggests, and/or renders obvious a light emitting diode (LED) package. For example, Digimax discloses, suggests, and/or renders obvious an edge-lit display comprising an LED package.

EXHIBIT 913-14

Invalidity Claim Chart for U.S. Patent No. 9,412,913

The Lumileds Luxeon® III Side-Emitter (“Luxeon”) is a system or product that was in public use, publicly available, offered for sale, and/or sold in the United States before the priority date of U.S. Patent No. 9,412,913 (the “’913 Patent”) and is prior art to the ’913 Patent pursuant to at least pre-AIA 35 U.S.C. §§ 102(a) and 102(b) under the ’913 Patent’s proper priority date.¹ Luxeon anticipates and/or renders obvious the asserted claims of the ’913 Patent under pre-AIA 35 U.S.C. §§ 102 and/or 103.

As set forth in the chart below, all the ’913 Patent’s asserted claims are anticipated and/or obvious over Luxeon under at least Plaintiff’s apparent claim constructions based on its P.R. 3-1 Infringement Contentions and its P.R. 3-1 Amended Infringement Contentions (collectively, the “Infringement Contentions”).²

The citations to portions of any reference in this chart are exemplary only. Defendants reserve the right to use the entirety of any reference described in Section IV of Defendants’ P.R. 3-3 Invalidity Contentions (the “Invalidity Contentions”) to show that the asserted claims are anticipated and/or obvious.

The structure, function, technical operation, and manufacture of Luxeon prior to the ’913 Patent’s proper priority date is evidenced by at least:

- The Luxeon product
- Public information concerning Luxeon, including:
 - Lumileds Lighting U.S., LLC, *Luxeon® III Emitter Technical Datasheet DS45* (May 28, 2004) [hereinafter Luxeon Datasheet].
 - Mark Pugh, *LED Backlighting from Revolution to Reality* (6th Ann. DisplaySearch US FPD Conf., San Diego, Cal.), 2004 [hereinafter Pugh], https://web.archive.org/web/20060111192241/http://www.lumileds.com/pdfs/TP39_US_FPD_2004.PDF.
 - Press Release, Lumileds Lighting U.S., LLC, Lumileds’ Luxeon LEDs Power World’s First LED-Based TVs from Sony (Aug. 25, 2004) [hereinafter Lumileds Press Release], https://web.archive.org/web/20051125024405/http://www.lumileds.com/newsandevents/releases/LuxeonTV8-24_F_r0825.pdf.
 - Wiep Folkerts & R. Scott West III, *LED Backlight Designs Using Luxeon High Flux Light Source Solutions* (Soc’y Info. Display, Seattle, Wash.), 2004 [hereinafter Folkerts], https://web.archive.org/web/20060112221754/http://www.lumileds.com/pdfs/Luxeon_light_source_solutions.PDF.

¹ See, e.g., Luxeon Datasheet (dated 2004).

² The excerpts cited herein are exemplary. For any claim limitation, Defendants may rely on excerpts cited for any other limitation and/or additional excerpts not set forth fully herein to the extent necessary to provide a more comprehensive explanation for a reference’s disclosure of a limitation. Where an excerpt refers to or discusses a figure or figure items, that figure and any additional descriptions of that figure should be understood to be incorporated by reference as if set forth fully therein.

- o R. Scott Kern, *Light-Emitting Diodes in Automotive Forward Lighting Applications: Materials Engineering Solutions to Fundamental Challenges* (Soc’y Auto. Eng’rs, Detroit, Mich., Paper No. 2004-01-0255), 2004 [hereinafter Kern], https://web.archive.org/web/20060514203923/http://www.lumileds.com/pdfs/techpaperspres/presentation_SAE%202004_kern.PDF.
- o Keith Scott, *From Concept to Reality to the Future* (Illuminating Eng’g Soc. N. Am., Buffalo, N.Y.), 2004 [hereinafter Scott], https://web.archive.org/web/20050818124236/http://www.lumileds.com/pdfs/TP41_IESNA_Buffalo_6-04.pdf.
- o Werner Goetz, *White Lighting (Illumination) with LEDs* (5th Int’l Conf. Nitride Semiconductors, Nara, Japan), May 2003 [hereinafter Goetz], <https://web.archive.org/web/20060524160205/http://www.lumileds.com/pdfs/techpaperspres/RumpSessionIII.PDF>.
- o Lumileds Lighting U.S., LLC, *LED Backlighting: Disruptive Technology Made Easy* (2004) [hereinafter Lumileds LED Backlighting], https://web.archive.org/web/20051212070712mp_/http://www.lumileds.com/pdfs/TP43.pdf.

The structure, function, technical operation, and manufacture of Luxeon prior to the ’913 Patent’s proper priority date is further expected to be evidenced by at least:

- Documents and testimony from Lumileds Lighting U.S., LLC or its affiliates
- The knowledge of persons familiar with Luxeon, including without limitation its inventors.

Defendants expressly reserve the right to supplement these contentions to add additional information showing that Luxeon invalidates the ’913 Patent’s asserted claims.

To the extent that any of the below claim limitations are found to not be expressly disclosed by the below reference, Defendants contend that any such limitation would have been obvious, either based on the knowledge of one of ordinary skill in the art or based on any of the art cited in Exhibits 913-1 through 913-13 and 913-15 through 913-16 of Defendants’ Invalidity Contentions, which are incorporated herein by reference. In particular, as evidenced by the below and in Sections V.B and V.G of Defendants’ Invalidity Contentions, the ’913 Patent is merely a collection of prior art elements that fails to meet the statutory requirement of nonobviousness under § 103, and the factors delineated in *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), weigh against a finding of nonobviousness.

For example, it would have been obvious to a person of ordinary skill in the art (a “POSITA”) to combine the teaching of Luxeon with the teachings of the references charted as Exhibits 913-1 through 913-13 and 913-15 through 913-16; such references are in the same field of art, and discuss various techniques and improvements that would have been known to yield predictable results when applied to the technology claimed in the ’913 Patent, and a person of ordinary skill therefore would have been motivated to so combine them in view of the disclosures therein.

Defendants also contend that one of ordinary skill in the art would find such limitation obvious for at least one or more of the following reasons: (1) the combination would unite old elements with no change in their respective function; (2) the combination would have been a predictable variation of a work in the same or a different field of endeavor; (3) the modification would have used a known technique to improve a similar device in the same way; (4) the modification was a known problem for which there was an obvious solution; (5) the modification would have been “obvious to try”; (6)

EXHIBIT 913-15

Invalidity Claim Chart for U.S. Patent No. 9,412,913

The Samsung LN-R460D LCD HDTV (“LN-R460D”) is a system or product that was in public use, publicly available, offered for sale, and/or sold in the United States before the priority date of U.S. Patent No. 9,412,913 (the “’913 Patent”) and is prior art to the ’913 Patent pursuant to at least pre-AIA 35 U.S.C. §§ 102(a) and 102(b) under the ’913 Patent’s proper priority date.¹ LN-R460D anticipates and/or renders obvious the asserted claims of the ’913 Patent under pre-AIA 35 U.S.C. §§ 102 and/or 103.

As set forth in the chart below, all the ’913 Patent’s asserted claims are anticipated and/or obvious over LN-R460D under at least Plaintiff’s apparent claim constructions based on its P.R. 3-1 Infringement Contentions and its P.R. 3-1 Amended Infringement Contentions (collectively, the “Infringement Contentions”).²

The citations to portions of any reference in this chart are exemplary only. Defendants reserve the right to use the entirety of any reference described in Section IV of Defendants’ P.R. 3-3 Invalidity Contentions (the “Invalidity Contentions”) to show that the asserted claims are anticipated and/or obvious.

The structure, function, technical operation, and manufacture of LN-R460D prior to the ’913 Patent’s proper priority date is evidenced by at least:

- The LN-R460D product
- Public information concerning LN-R460D, including:
 - Consumer Elecs. Ass’n (October 10, 2004), <https://web.archive.org/web/2004100101010723/http://www.cesweb.org/attendees/awards/innovations/CFE.asp> [hereinafter Call for Entries].
 - *LEDs Are Light Source of Choice at CES*, Buildings (Jan. 13, 2005), <https://www.buildings.com/architecture/interiors/article/55257006/leds-are-light-source-of-choice-at-ces> [hereinafter Light Source of Choice].
 - *Making Sense of It All*, Sound & Vision (Jan. 16, 2005), <https://www.soundandvision.com/content/making-sense-it-all> [hereinafter Making Sense of It All].

¹ See, e.g., Call for Entries (“The final entry deadline is October 4, 2004.”); Award Winners (“Finalists: . . . Samsung 46 Widescreen LCD HDTV w/LED Backlight LN-R460D by Samsung Electronics America”); G4 Tech (dated 2005).

² The excerpts cited herein are exemplary. For any claim limitation, Defendants may rely on excerpts cited for any other limitation and/or additional excerpts not set forth fully herein to the extent necessary to provide a more comprehensive explanation for a reference’s disclosure of a limitation. Where an excerpt refers to or discusses a figure or figure items, that figure and any additional descriptions of that figure should be understood to be incorporated by reference as if set forth fully therein.

- *Best of CES Finalists*, G4 Tech TV (2005) [hereinafter G4 Tech], https://web.archive.org/web/20050120041838/http://www.g4techtv.com/CES2005/features/50705/Best_of_CES_Finalists.html.
- *2005 Award Winners*, Consumer Elecs. Ass’n [hereinafter Award Winners], https://web.archive.org/web/20050303010540/http://www.cesweb.org/attendees/awards/best_of_ces/2004.asp (last visited Mar. 13, 2025).
- Samsung Elecs. Co., Ltd., *LN-R460D LCD-TV Service Manual* (2005) [hereinafter LN-R460D Service Manual].

The structure, function, technical operation, and manufacture of LN-R460D prior to the ’913 Patent’s proper priority date is further expected to be evidenced by at least:

- Documents and testimony from Samsung Electronics Co., Ltd.; or its affiliates (e.g., SAMSUNG-SINO_0250531 to SAMSUNG-SINO_0296282)
- Documents and testimony from Lumileds; or its affiliates
- The knowledge of persons familiar with LN-R460D, including without limitation its inventors.

Defendants expressly reserve the right to supplement these contentions to add additional information showing that LN-R460D invalidates the ’913 Patent’s asserted claims.

To the extent that any of the below claim limitations are found to not be expressly disclosed by the below reference, Defendants contend that any such limitation would have been obvious, either based on the knowledge of one of ordinary skill in the art or based on any of the art cited in Exhibits 913-1 through 913-14 and 913-16 of Defendants’ Invalidity Contentions, which are incorporated herein by reference. In particular, as evidenced by the below and in Sections V.B and V.G of Defendants’ Invalidity Contentions, the ’913 Patent is merely a collection of prior art elements that fails to meet the statutory requirement of nonobviousness under § 103, and the factors delineated in *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), weigh against a finding of nonobviousness.

For example, it would have been obvious to a person of ordinary skill in the art (a “POSITA”) to combine the teaching of LN-R460D with the teachings of the references charted as Exhibits 913-1 through 913-14 and 913-16; such references are in the same field of art, and discuss various techniques and improvements that would have been known to yield predictable results when applied to the technology claimed in the ’913 Patent, and a person of ordinary skill therefore would have been motivated to so combine them in view of the disclosures therein.

Defendants also contend that one of ordinary skill in the art would find such limitation obvious for at least one or more of the following reasons: (1) the combination would unite old elements with no change in their respective function; (2) the combination would have been a predictable variation of a work in the same or a different field of endeavor; (3) the modification would have used a known technique to improve a similar device in the same way; (4) the modification was a known problem for which there was an obvious solution; (5) the modification would have been “obvious to try”; (6)