

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GLUX VISUAL EFFECTS TECH (SHENZHEN) CO.,
LEYARD OPTOELECTRONIC CO.,
SHENZHEN LIANTRONICS CO., LTD., and
UNILUMIN GROUP CO., LTD.,
Petitioner,

v.

ULTRAVISION TECHNOLOGIES, LLC,
Patent Owner.

IPR2020-01052
Patent 9,047,791 B2

Before DENISE M. POTHIER, SCOTT A. DANIELS, and
ROBERT L. KINDER, *Administrative Patent Judges*.

POTHIER, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Glux Visual Effects Tech (Shenzhen) Co., Leyard Optoelectronic Co., Shenzhen Liantronics Co., Ltd., and Unilumin Group Co., Ltd.

(“Petitioner”)¹ requests *inter partes* review of claims 1, 4–6, 10–16, and 19–26 of U.S. Patent No. 9,047,791 B2 (Ex. 1001, “the ’791 patent”).

Paper 4 (“Petition” or “Pet.”), 1. Ultravision Technologies, LLC (“Patent Owner”) filed a Preliminary Response. Paper 8 (“Prelim. Resp.”).

Under 35 U.S.C. § 314, an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” Upon considering the Petition and Preliminary Response, we determine that Petitioner has shown that there is a reasonable likelihood that it would prevail in showing the unpatentability of claims 1, 4–6, 10–16, and 19–26 of the ’791 patent. We institute an *inter partes* review of all challenged claims of the ’791 patent.

A. Related Proceedings

The parties indicate various cases pending before the United States District for the Eastern District of Texas that are related matters. Pet. 2–3; Paper 6, 1–3. Petitioner further indicates some of these cases were consolidated with *Ultravision Technologies v. Govision, LLC*, Case No. 2:18-cv-00100-JRG-RSP (E.D. Tex.) and concern the ’791 patent. Pet. 3.

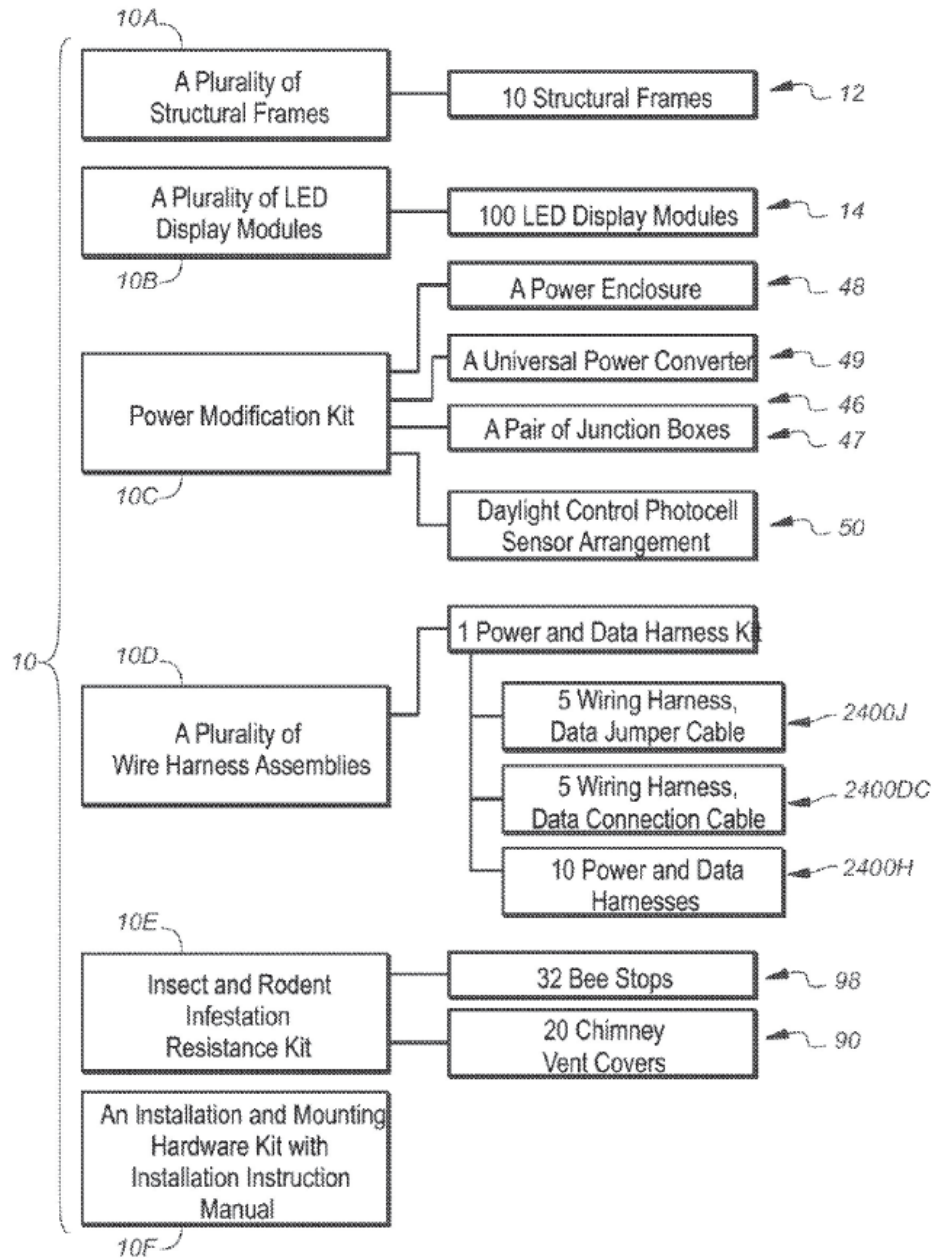
¹ Petitioner identifies Shenzhen Absen Optoelectronic Co., Absen, Inc., Ledman Optoelectronic Co., Ltd., Glux Visual Effects Tech (Shenzhen) Co., Leyard Optoelectronic Co., Shenzhen Liantronics Co., Ltd., and Unilumin Group Co., Ltd. as “potential real parties-in-interest.” Pet. 2.

B. The '791 Patent

The '791 patent issued June 2, 2015 from U.S. Application No. 14/242,654 (“the '654 application”), and was filed on April 1, 2014. Ex. 1001, codes (10), (21), (22), and (45). The '791 patent indicates the '654 application is a continuation-in-part of U.S. Patent Application No. 14/214,778, which is a continuation-in-part of U.S. Patent Application No. 14/075,308 (now U.S. Patent No. 8,824,125), which is a continuation-in-part of U.S. Application No. 14/056,017 (now U.S. Patent No. 8,824,124), which is a continuation-in-part of U.S. Application No. 14/044,620 (now U.S. Patent No. 8,929,083), which is a continuation-in-part of U.S. Application No. 13/844,832 filed on March 16, 2013. *Id.*, code (63). Additionally, the '791 patent claims the benefit of U.S. Provisional Application No. 61/950,174, which was filed on March 9, 2014. *Id.*, code (60); Pet. 12–13.

The '791 patent addresses “a retrofit kit for in field use to convert a static billboard into a dynamic electronic sign for roadside or building signage use.” *Id.*, 1:39–41. The '791 patent’s invention is directed towards the “highly desirable” and “new and improved billboard retrofit kit that can be easily and quickly installed on any structural surface, such as an existing billboard, without the need to replace or discard existing media mounting panels.” *Id.*, 1:52–56. The '791 patent states “installation of the kit . . . should not require any special installation equipment.” *Id.*, 1:63–65.

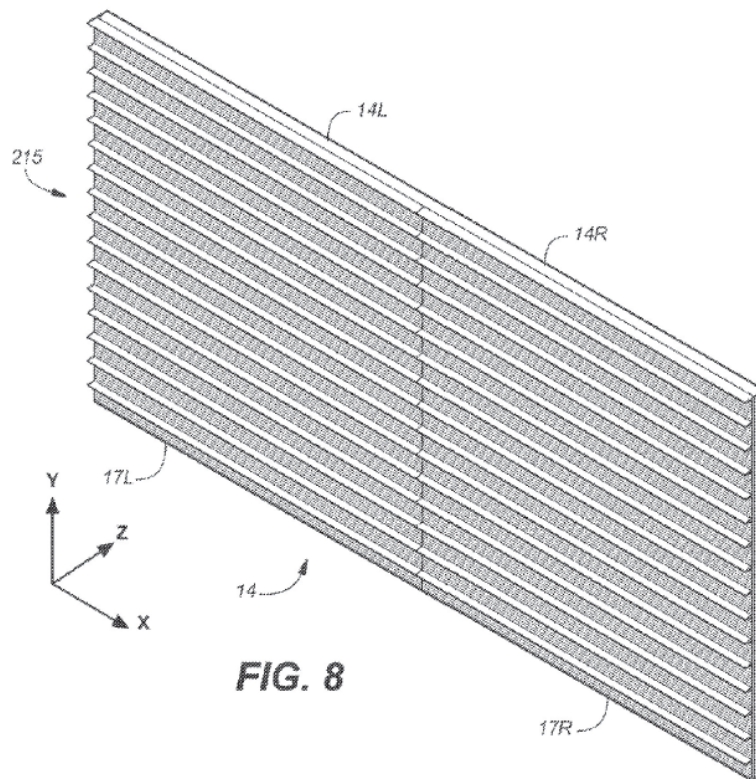
The retrofit/modification kit for converting a non-electronic billboard sign into an electronic billboard sign includes numerous components shown below in the '791 patent’s Figure 2.



The '025 patent's Figure 2 Showing a Field Modification Kit for Converting a Non-electronic Sign into an Electronic Sign

Id., 20:12–15, Fig. 2. As shown above in Figure 2, the kit includes a plurality of display modules (10B, LED Display Modules 14), a plurality of structural frames (10A, Structural Frames 12), a plurality of wire harness assemblies (10D), and an installation and mounting hardware kit (10F). *Id.*, 24:43–57, Fig. 2.

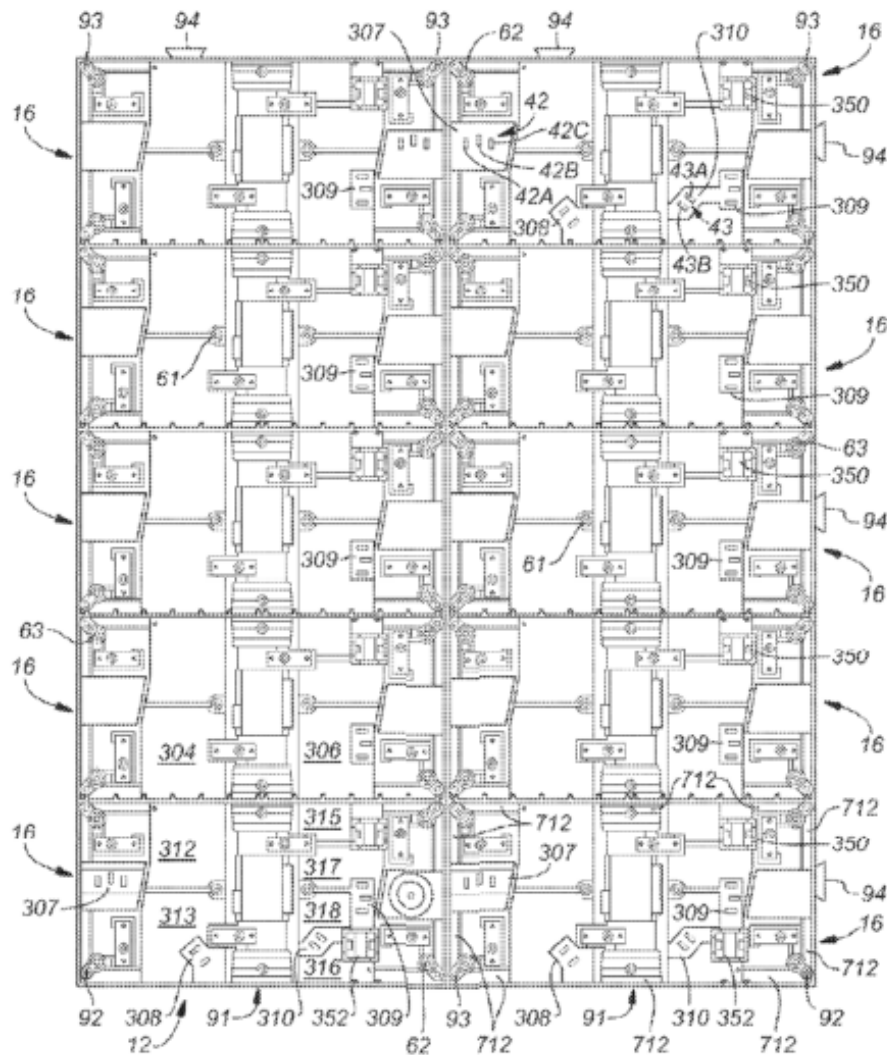
The '791 patent shows below display module 14 in Figure 8.



The '025 patent's Figure 8 Showing a Display Module.

Id., 33:39–42, Fig. 8. Display module 14 above has side by side LED boards or panels, such as left side display panel 14L and right side display panel 14R. *Id.*, 34:1–3, Fig. 8. The '791 patent explains display module 14 is “ready for quick and easy installment in a bay member 16 forming part of a structural frame 12.” *Id.*, 33:43–45.

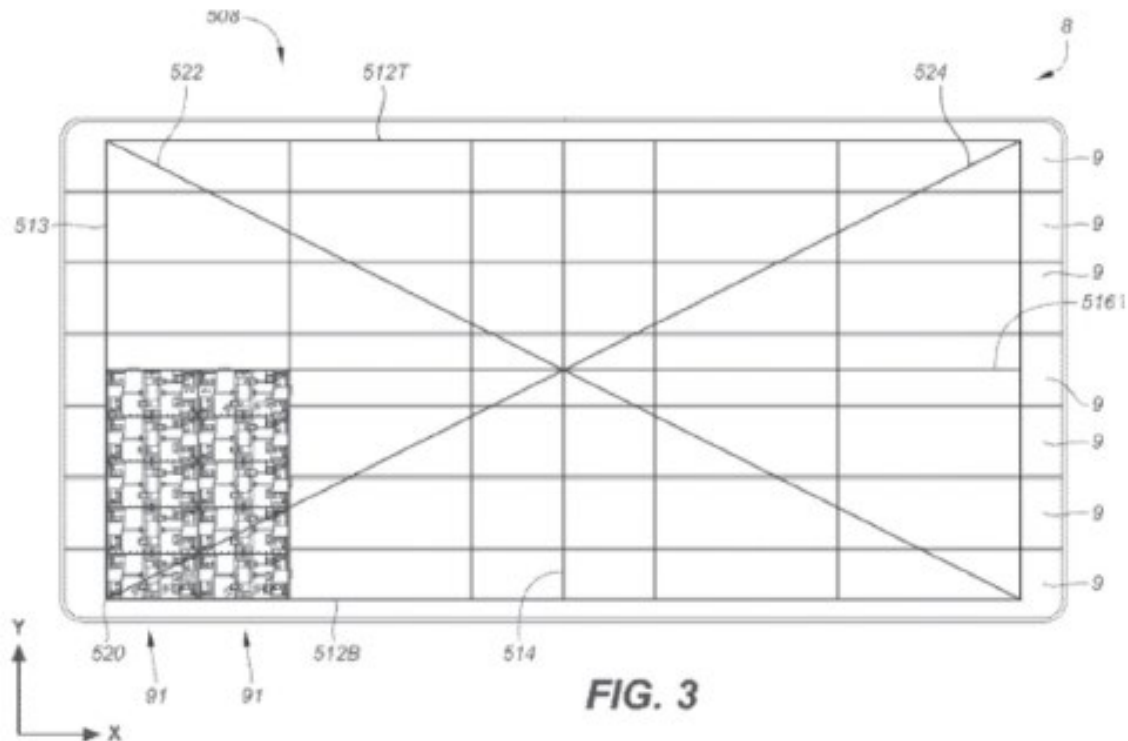
A front plane view of structural frame 12 of the plurality of structural frames 10A, shown below in Figure 23, forms part of the retrofit kit for converting a non-electronic sign into an electronic sign:



The '025 patent's Figure 23 Showing a Structural Frame of a Retrofit Kit

Id., 21:12–13, Fig. 23. Structural frame 12 shown above contains multiple structural bay members 16 that receive and secure display module 14. *Id.*, 24:60–66, 28:39–43, 28:61–63, Fig. 23. Structural frame 12 includes an array of bay members arranged in rows (e.g., 5 rows) and columns (e.g., 2 columns). *See id.*, 24:63–66, Figs. 3, 23. Each bay member may include a large centrally disposed cutout area (e.g., 9363) with sufficient width and height to define a passageway opening to enable display module 14 to be removed rearwardly and replaced. *Id.*, 71:1–4, 71:21–27, Figs. 44–45.

Figure 3 below shows a front plane view of a non-electronic billboard with one structural frame installed on a poster panel.



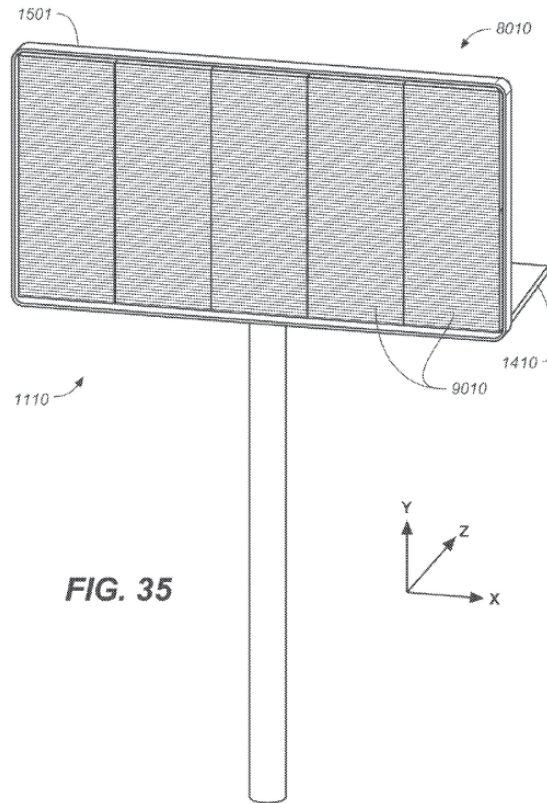
The '025 patent's Figure 3 Showing the Front Plane view
of a Non-electronic Sign

Id., 20:16–20, 23:1–4, Fig. 3. Figure 3 above shows a structural frame (e.g., 12) installed in the lower left corner adapted to receive a display module (e.g., 14). *Id.*, 25:4–8, Figs. 3, 8, 23. Figure 3 further shows chalk marks in a grid layout, indicating where the other structural frames are to be installed on the existing poster panels. *Id.*, 20:16–20, Fig. 3.

The kit also includes

a plurality of substantially identical pre-wired sign assemblies, such as an individual sign section assembly 9010 (FIG. 35) that is field ready to be loaded with display modules, such as the display module 14, and then mechanically coupled to a foundational support, such as to the poster board(s) or planar panel(s) or an existing sign support structure (FIG. 38B).

Id., 58:17–23, Figs. 35, 38B. Figure 35 below shows the front perspective view of a sectional digital billboard 8010 with sign section assemblies, such as individual sign section assembly 9010:



The '025 patent's Figure 35 Showing a Front Perspective View of a Sectional Digital Billboard with Sign Section Assembly Units.

Id., 21:47–49, 57:26–29, 58:14–19, Fig. 35. Sign assembly 9010 also includes wiring assemblies (e.g., 1500) with first portion 1500A having power extension ends for coupling to a power source derived from second portion 1500B to display modules 14. *Id.*, 63:43–52, 64:1–39, Figs. 36–37.

C. Claimed Subject Matter

Petitioner challenges claims 1, 4–6, 10–16, and 19–26 of the '791 patent. Of the contested claims, claims 1, 12, and 21 are independent claims. Claims 4–6, 10, and 11 ultimately depend from claim 1; claims 13–16, 19, and 20 depend from claim 12; claims 22–26 depend from claim 21. Independent claim 1 illustrates the claimed subject matter.

1. A modification kit for converting an existing signage mounting structure to an electronic sign comprising:
 - a plurality of display modules;
 - a plurality of sign sections each having a front-facing portion and a rear-facing portion, the front facing portion defining a two dimensional array of bays arranged in a plurality of rows along a vertical direction and a plurality of columns along a horizontal direction, each bay configured to receive one of the display modules, the rear-facing portion for mounting to a surface of the existing signage mounting structure; and
 - a plurality of power routing systems, each power routing system having a power input for coupling to a power source and a plurality of power extensions, each power extension for coupling the power source to one of the plurality of display modules.

Ex. 1001, 87:11–26.

D. Asserted Grounds of Unpatentability

Petitioner asserts that claims 1, 4–6, 10–16, and 19–26 would have been unpatentable under 35 U.S.C. § 103(a)^{2,3} based on the following grounds:

Claims Challenged	35 U.S.C. §	References
1, 4, 5, 10, 11	103(a)	Templeton, ⁴ Ordinary Skill ⁵
6, 12–16, 19–26	103(a)	Templeton, Ordinary Skill, Kludt ⁶
1, 10–13, 19, 20	103(a)	Kalua, ⁷ Ordinary Skill

Pet. 5–6.

² Although Petitioner “assume[s] solely for purposes of this IPR” that “the filing date of the ’791 patent” is “March 16, 2013” (Pet. 18), Petitioner does not concede the ’791 patent is entitled to the priority date of “the March 16, 2013 Utility Patent Application No. 13/844,832.” *Id.* at 13 n.3. Even so, Petitioner indicates “all prior art . . . predates the . . . filing date of that application.” *Id.*

³ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 103. Changes to § 103 apply to applications filed on or after March 16, 2013. Because Petitioner presumes the ’791 patent was filed on March 16, 2013, we refer to the pre-AIA version of § 103.

⁴ US 2014/0153241 A1, published June 5, 2014 (Ex. 1004).

⁵ Petitioner lists four exhibits as evidence of the “Ordinary Skill in the Art” (“Ordinary Skill”): (1) watchfire, *PriceWatcher™ Gas Price Signs, Product Fact Sheet* (2012) referred to as “the Watchfire Fact Sheet” (Ex. 1005), (2) watchfire, *Watchfire Signs by Time-O-Matic, Watchfire Headed to ISA Expo 2012, New Product Showcase* (Mar. 7, 2012) referred to as “the Watchfire Showcase” (Ex. 1006), (3) Watchfire LED Signs and Electronic Message Boards, *More New Produce News* (May 2012) (Ex. 1008), and (4) Price Watcher, LED Signs, Watchfire LED Signs, *LED Signs: Price Watcher* (Ex. 1009). The latter two references referred to as “the 5/5/12 Watchfire Website,” and all four references are collectively referred to as “the ‘Watchfire’ references” or “Watchfire.” Pet. 5, 31.

⁶ US 7,448,154 B1, issued Nov. 11, 2008 (Ex. 1010).

⁷ US 2002/0122134 A1, published Sept. 5, 2002 (Ex. 1007).

E. Testimony

Petitioner supports its challenges with a declaration of Mr. Richard Flasck. Ex. 1002 (“Flasck Declaration”).

Patent Owner provides no testimonial evidence at this point in the proceeding.

II. DISCUSSION

A. Discretionary Denial

Patent Owner asserts that the requested *inter partes* review should be denied institution because Petitioner has failed to meet its burden under 37 C.F.R. § 42.104(b)(3)–(4). Prelim. Resp. 1; *see also id.* at 3–8. Patent Owner asserts Petitioner did not propose claim constructions for the terms “display module” and “compound structural frame” found in the challenged claims even though these terms “are subject to competing claim constructions in District Court.” *Id.* at 1; *id.* at 1–2 n.1 (citing various cases pending before the Eastern District of Texas). Patent Owner further argues “the Petition departs from each construction proffered in the District Court” and instead, asks us “to apply the terms’ ordinary meaning” without explaining what the ordinary meaning of the terms would mean. *Id.* at 2; *see id.* at 6. Patent Owner asserts Petitioner’s statement that these terms should be given their ordinary meaning “abdicated [its] responsibility to show how ‘display module’ and ‘compound structural frame’ should be construed in these proceedings.” *Id.* at 4 (citing Pet. 18).

Patent Owner also contends Petitioner’s assertion that the listed references are not affected by different claim construction positions taken in underlying litigation is “unsupportable” and “irreconcilable.” *Id.* at 5; *id.* at

1–2 (quoting Pet. 18 (discussing Exs. 1003, 1013–14)), 3–4 (citing Ex. 1013, 15–16; Ex. 1014, 18, 22–26; Ex. 2001, 3). Patent Owner asserts that it is unable to challenge how the prior art is applied without Petitioner explaining what the ordinary meanings of the terms “display module” and “compound structural frame” are. *Id.* at 3, 6. Patent Owner argues Petitioner’s approach to claim construction in this proceeding “flies in the face of the Board’s rule requiring that Petitioners identify ‘(h)ow the challenged claim is to be construed’ and ‘(h)ow the construed claim is unpatentable.’” *Id.* at 6 (quoting in part 37 C.F.R. § 42.104(b)(3)–(4)).

Patent Owner further argues “the Board denied institution in substantially the same situation” in *Orthopediatrics Corp. v. K2M, Inc.*, Case IPR2018-01546, Paper 10 (PTAB Feb. 14, 2019) (Decision Denying Institution) and should reach the same result in this proceeding. *See also id.* at 6–7 (citing *Orthopediatrics Corp.*, Paper 10 at 10–12).

We determine that Petitioner complies with the applicable provisions of our rules by sufficiently identifying the claim construction it proposes as the basis for requesting review of the challenged claims. *See Western Digital Corp. v. Spex Techs, Inc.*, IPR2018-00084, Paper 14 at 10–12 (PTAB April 25, 2018) (distinguishing *Toyota Motor Corp. v. Blitzsafe Texas LLC*, IPR2016-00422, Paper 12 (PTAB July 6, 2016)). *Western Digital* states, and we agree, that “37 C.F.R. § 104(b)(3) does not require [a p]etitioner to express its subjective agreement regarding correctness of its proffered claim constructions or to take ownership of those constructions.” *Id.* at 11.

Under Rule 42.104(b)(3)–(4), a Petition must identify:

(3) How the challenged claim is to be construed. Where the claim to be construed contains a means-plus-function or

step-plus-function limitation as permitted under 35 U.S.C. 112(f), the construction of the claim must identify the specific portions of the specification that describe the structure, material, or acts corresponding to each claimed function;

(4) How the construed claim is unpatentable under the statutory grounds identified in paragraph (b)(2) of this section. The petition must specify where each element of the claim is found in the prior art patents or printed publications relied upon.

37 C.F.R. § 42.104(b)(3)–(4) (2019).

Here, the Petition complies with the requirements set forth in 37 C.F.R. § 42.104(b)(3)–(4) because the Petition identifies that, for the purposes of this proceeding, any claim term not expressly discussed should be interpreted under their ordinary and customary meaning as understood by one of ordinary skill in the art. Pet. 18. With this understanding, the Petition also identifies where each element of the claims is alleged to be found in the prior art. *See id.* at 34 (addressing “display module” for Ground 1), 41–42 (addressing “compound structural frame” for Ground 1), 51–53 (referring to Ground 1 for claims 12, 14, 15, 21, and 24 when addressing Ground 2), and 59 (addressing “display module” for Ground 3). In the context of this *inter partes* review, the rules do not require more than this. Our interpretation of the rules is consistent with its regulatory history, which indicates that the goal for setting forth claim construction is to provide sufficient notice to Patent Owner, which has been adequately accomplished here. *See* 77 Fed. Reg. 48,688; Fed. Reg. 48,699–700.

We are not persuaded by Patent Owner’s view that the rules require more under *Orthopediatrics Corp., v. K2M, Inc.* *See* Prelim. Resp. 6–7. This ruling concerned a claim term that Petitioner

identified as a means-plus-function limitation in a related litigation but did not construe in its Petition. *Orthopediatrics Corp.*, IPR2018-01546, Paper 10 at 10–11. Under the circumstances of that case, the Petition was found to be lacking because “Petitioner should have either provided reasons why these limitations are not governed by 35 U.S.C. § 112 ¶ 6, or Petitioner should have provided an explicit claim construction as required by our rules.” *Id.* at 11. Also, as identified above, § 42.104(b)(3) explicitly requires that a Petition include the proposed construction of means-plus-function terms. This type of claim term, however, was not raised as an issue in this proceeding. *See* Pet. 18–22; *see generally* Prelim. Resp.

Petitioner further provided exhibits with the Petition containing the parties’ proposed construction of certain claim terms in the ’791 patent, including “display module” and “compound structural frame,” presented in related, pending litigation. *See* Ex. 1013, 15–16 (addressing the claim terms); *see* Ex. 1014, 18–26 (same). Although the district court has construed the above-noted terms in litigation (Ex. 2001, 3), these constructions are *preliminary* (*id.* at 1).

Under these circumstances, we decline to find that Petitioner failed to meet its obligations because the Petition sufficiently states how the challenged claims are to be construed for the purposes of this proceeding. We however remind the parties that because the Board interprets claim terms in accordance with the standard used in federal district court in a civil action involving the validity or infringement of a patent, any further claim construction determinations concerning a claim term at issue in the district court litigation should be submitted

to the Board, as discussed in the Trial Practice Guide. Patent Trial and Appeal Board Consolidated Trial Practice Guide, November 2019, 47–48 (citing 37 C.F.R. § 42.100(b) (2019)).

B. Principles of Law

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

C. Level of Ordinary Skill in the Art

Petitioner asserts:

A person of ordinary skill in the art (*i.e.*, a skilled artisan, or “POSITA”) at the time of the ‘791 patent’s alleged invention would have: (i) a bachelor’s degree in mechanical engineering, electrical engineering, or physics, or undergraduate training in an equivalent field, and (ii) at least two years of experience in the design and/or implementation of LED panels . . . Additional graduate education could substitute for professional experience, and significant work experience could substitute for formal education.

Pet. 17–18 (citing Ex. 1002 ¶¶ 41–44). Patent Owner does not dispute the ordinary artisan’s skill level set forth by Petitioner. *See generally* Prelim. Resp. At this stage, we accept Petitioner’s explanation and assessment of the ordinary skill level as they are consistent with the ’791 patent and the asserted prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (prior art itself may reflect an appropriate level of skill).

D. Claim Construction

In this *inter partes* review, claims are construed using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b). *See* 37 C.F.R. § 42.100(b) (2019). The claim construction standard includes construing claims in accordance with the ordinary and customary meaning of such claims as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. *See id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005).

Petitioner propose a claim construction for the following terms in the challenged claims: (1) “a modification kit for converting an existing signage mounting structure to an electronic sign” found in independent claims 1, 12, and 21 and (2) “existing signage mounting structure” found in claims 1, 4,

and 21 or “existing signage structure” found in claim 12⁸. Pet. 18–22. For “any term not expressly discussed,” Petitioner states the claims’ terms “should be given its ordinary and customary meaning to a person of skill in the art (‘POSITA’) as of the filing date of the ’791 patent.” *Id.* at 18.

1. “[A] modification kit for converting an existing signage mounting structure to an electronic sign”

Independent claims 1, 12, and 21 recites “[a] modification kit for converting an existing signage mounting structure to an electronic sign” in each claim’s preamble. Ex. 1001, 87:11–12, 88:1–2, 88:51–52. Petitioner asserts the “preamble is limiting” because the phrase provides antecedent basis for (1) “the existing signage mounting structure” recited in the body of claims 1, 4, and 21 or (2) “the existing signage structure” recited in body of claim 12. Pet. 19. Petitioner argues further that the preamble breathes, life, and meaning into claims 1, 12, and 21, namely the retrofitting of an existing sign into a digital sign. *Id.* at 19–20 (citing *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002); Ex. 1001, 1:38–41, 1:45–46, 1:52–54, 18:48–52, 23:1–6, 24:1–11, Fig. 3). For these reasons, Petitioner asserts the preamble “should be construed to require ‘a self-contained retrofit kit for on-site use to convert an existing static non-electronic sign into an electronic sign.’” *Id.* at 21; *id.* at 19.

Petitioner proposed a similar claim construction for this phrase in district court. Ex. 1013, 14 (stating the preamble should be construed as “[a] self-contained retrofit kit for on-site use to convert an existing static non-electronic sign into an electronic sign”).

⁸ Petitioner states the language “existing signage structure” is found in claim 21. Pet. 21. We however located this claim language in claim 12.

Patent Owner provides no claim construction for this phrase. *See generally* Prelim. Resp. In the district court, Patent Owner asserted that the “preamble [is] not limiting” and should have its “plain and ordinary meaning.” Ex. 1014, 17 (emphases omitted).

The District Court preliminarily found the preamble is limiting and should be given its plain and ordinary meaning. Ex. 2001, 2.

We determine that the preamble of claims 1, 12, and 21 breathes life and meaning into the claims given that the recited “existing signage mounting structure”⁹ is found in each of these claims’ bodies. However, we decline to limit the preamble to a “self-contained retrofit” kit “for on-site use.”

At this stage of the proceedings, we determine that the phrase “[a] modification kit for converting an existing signage mounting structure to an electronic sign” in claims 1, 12, and 21 is limiting and should be given its plain and ordinary meaning.

2. “[E]xisting signage mounting structure”/
“[E]xisting signage structure”

Independent claims 1, 12, and 21 recites “an existing signage mounting structure” (claims 1, 12, and 21) and “existing signage structure” (claim 12). Ex. 1001, 87:11–12, 87:20–21, 88:1–2, 88:9, 88:51–52, 88:62. Petitioner asserts these terms “should be construed as ‘an existing non-electronic sign [mounting] structure.’” Pet. 21. Petitioner asserts the ’791 patent repeatedly and consistently describes retrofitting a non-digital sign into a digital sign as well as converting a static billboard into a dynamic

⁹ Claim 12 recites “the existing signage structure” (Ex. 1001, 88:9), not the “existing signage mounting structure” (*id.*, 88:1–2) found in its preamble.

electronic sign. *Id.* at 21–22 (citing Ex. 1001, 1:36–41, 18:20–25, 18:48–19:17, 19:47–62, 23:25–30, 23:35–39, 27:25–30, 74:56–75:8; Ex. 1014). Petitioner proposed a similar claim construction for this phrase in district court. Ex. 1013, 16 (stating “existing signage structure” should be construed “existing non-electronic sign structure”).

Patent Owner provides no claim construction for this phrase. *See generally* Prelim. Resp. In the district court, Patent Owner asserted that the phrase “existing signage structure” should have its “plain and ordinary meaning.” Ex. 1014, 27 (emphasis omitted).

The District Court preliminarily found the “existing signage [mounting] structure” should be given its plain and ordinary meaning. Ex. 2001, 3.

At this stage of the proceedings, we determine that the term “existing signage mounting structure” and “existing signage structure” in claims 1, 12, and 21 should be given their plain and ordinary meaning, which include a signage structure that already exists and is used for mounting in the case of the “existing signage mounting structure.”

3. “[D]isplay modules”

Petitioner does not propose a claim construction for the term “display modules” other than stating “any term not expressly discussed should be given its ordinary and customary meaning to a person of skill in the art.” Pet. 18; *see id.* at 18–22. Patent Owner states that Petitioner does not explain what the ordinary meaning would be. Prelim. Resp. 2–3; *see id.* at 6.

Patent Owner also argues that the term “display module” is “subject to competing claim constructions in the District Court.” *Id.* at 1. Specifically, in the district court, Patent Owner states (1) Petitioner argued the phrase

should be construed as “a sealed display module protected against weather including extreme cold and heat and having a pair of LED panels operatively coupled to a daughter board,” and (2) Patent Owner argued the same phrase should use its plain and ordinary meaning. *Id.* at 3–4 (citing Ex. 1013, 15; Ex. 1014, 18¹⁰). Patent Owner further asserts the district court issued a preliminary construction for “display module” that departs from the construction offered by both parties in litigation. *Id.* at 2; *see id.* at 5. Patent Owner states the district court construed “display module” to mean “sealed module having a pair of LED display panels operatively coupled to a daughter board.” *Id.* at 4 (citing Ex. 2001, 3).

Based on this record, we determine the phrase “display modules” should be construed under its plain and ordinary meaning. In arriving at our claim construction, we have taken into account the parties proposed constructions in district court, the district court’s preliminary construction, and the parties’ positions in this proceeding. The phrase “display module” does not explicitly recite a sealed module, a pair of LED panels, or being coupled to a daughter board. *See, e.g.*, Ex. 1001, 87:13. The ’791 patent discusses and shows display module 14 includes two side-by-side display panel assemblies (e.g., 14L, 14R) having pixels that emit different color lights and a centrally disposed daughter board (e.g., 20) but also includes other features. *See id.*, 33:39–34:63, Figs. 8–11. Yet, the additional features of display module 14 are not part of either parties or the district court’s claim construction of “display module” found in claims 1, 12, and 21.

¹⁰ Patent Owner argued for a plain and ordinary meaning for “weatherized display module(s).” Ex. 1014, 18.

We underscore that the record in this proceeding differs from that in the district court and that the court’s claim construction is a *preliminary* construction. We therefore invite the parties to present their positions, with supporting evidence, as to why the claim construction for the term “display module” in this proceeding should or should not be its plain and ordinary meaning. Notably, courts have “rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment.” *Phillips*, 415 F.3d at 1323.

At this stage of the proceedings, we determine that the term “display modules” in claims 1, 12, and 21 should be given its plain and ordinary meaning, which includes modules that display information.

4. “[C]ompound structural frame”/
“compound structural frames”

Claims 4, 5, 14, 15, and 24 recites “a compound structural frame” (claims 4 and 14) or “compound structural frames” (claims 5, 15, and 24). Ex. 1001, 87:33, 87:36, 88:21, 88:24–25, 89:14–15.

Petitioner does not propose an explicit claim construction for the term “compound structural frame,” instead stating that “any term not expressly discussed should be given its ordinary and customary meaning to a person of skill in the art.” Pet. 18; *see id.* at 18–22. Patent Owner states that Petitioner does not explain what the ordinary meaning would be. Prelim. Resp. 2–3; *see id.* at 6.

Patent Owner also argues that the term “compound structural frame” is “subject to competing claim constructions in the District Court.” *Id.* at 1. Specifically, in the district court, Patent Owner states (1) Petitioner argued the phrase should be construed as “a structural frame having a plurality of

bay members and composed of a structural foam material with a hard honeycomb type foamed inner core,” and (2) Patent Owner argued the same phrase should use its plain and ordinary meaning. *Id.* at 4 (citing Ex. 1013, 16; Ex. 1014, 22–26). Patent Owner further asserts the district court issued a preliminary construction for “compound structural frame” that departs from the construction offered by both parties in litigation. *Id.* at 2; *see id.* at 5. Patent Owner states the district court preliminary construed “compound structural frame” to mean “frame having a plurality of bay members and composed of a structural foam material.” *Id.* at 4 (citing Ex. 2001, 3).

We agree with Patent Owner that the parties have presented competing claim constructions in litigation. Petitioner argued the term “compound structural frame” should be construed as “a structural frame having a plurality of bay members and composed of a structural foam material with a hard honeycomb type foamed inner core.” Ex. 1013, 16. Patent Owner argued for a plain and ordinary meaning for the phrase “compound structural frame.” Ex. 1014, 22. We further agree with Patent Owner that that the court preliminary construe the phrase “compound structural frame” to mean “frame having a plurality of bay members and composed of a structural foam material” (Ex. 2001, 3), which differs from both parties’ proposed construction.

Based on this record, we determine the phrase “compound structural frame” should be construed under its plain and ordinary meaning. Although the ’791 patent describes compound structural frame is composed of structural foam material (Ex. 1001, 30:64–66), the recited phrase “compound structural frame” does not explicitly recite foam material, a honeycomb type, or an inner core (*see, e.g. id.*, 87:33). *See id.*, 30:63–32:31,

Fig. 23. On the other hand, the '791 patent describes compound structural frame 12 as a “compound structure” (*id.*, 28:39) containing plural structural bay members, such as structural bay member 16 (*id.*, 28:39–41, Fig. 23). Claim 1, from which claim 4 depends, also recites a sign section’s “front facing portion defin[es] a two dimensional array of bays.” *Id.*, 87:15–16. Consistent with the '791 patent’s disclosure, claim 4’s “compound structural frame” (and similar recitations in claims 4, 5, 14, 15, and 24) should be construed to include “bays” recited in claim 1 (and similar recitations in claims 12, and 21). *See, e.g., id.*, 87:15–16, 87:32–33.

In arriving at our claim construction, we have taken into account the parties’ proposed constructions in district court, the district court’s preliminary construction, and the parties’ positions in this proceeding. We underscore that the record in this proceeding differs from that in the district court and that the court’s claim construction is a *preliminary* construction. We therefore invite the parties to present their positions, with supporting evidence, as to why the claim construction for the term “compound structural frame” in this proceeding should or should not be its plain and ordinary meaning.

At this stage of the proceedings, we determine that the term “compound structural frame” and “compound structural frames” in claims 4, 5, 12, 15, and 24 should be given their plain and ordinary meaning, which includes a compound frame structure containing plural “bays” recited in claims 1, 12, and 21.

Remaining Terms

For purposes of this Decision, we determine that we need not provide an express construction for any other claim terms in the '791 patent. *Vivid*

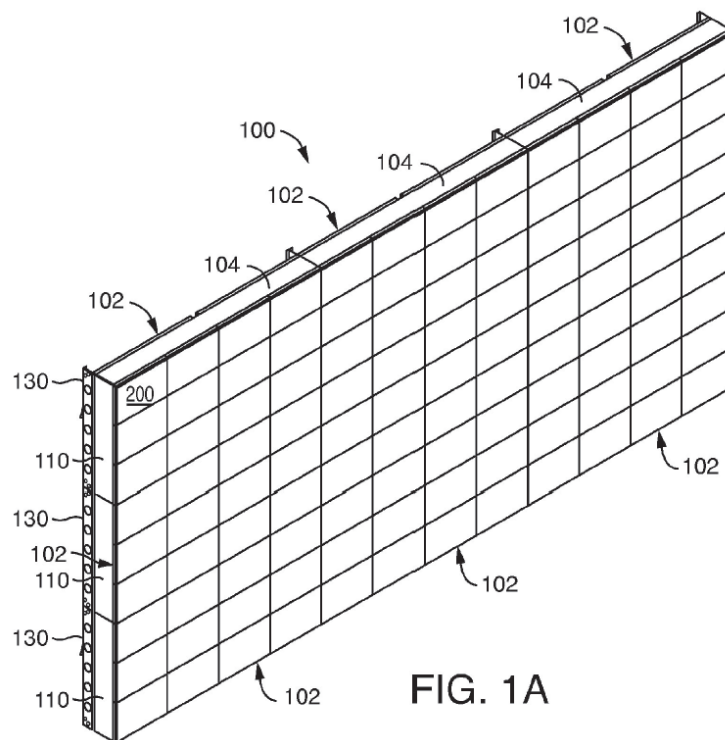
Techs., Inc. v. Am. Sci. & Eng'g, Inc., 200 F.3d 795, 803 (Fed. Cir. 1999); see also *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs.* in the context of an *inter partes* review).

E. Obviousness of Claims 1, 4, 5, 10, and 11 over Templeton in view of Ordinary Skill (the Watchfire references) (Ground 1)

1. Templeton (Ex. 1004)

Templeton is a United States Patent Application Publication issued on June 5, 2014 and was filed December 1, 2012. Ex. 1004, codes (10), (22), (43). At this juncture, Patent Owner does not dispute its prior art status. See generally Prelim. Resp.

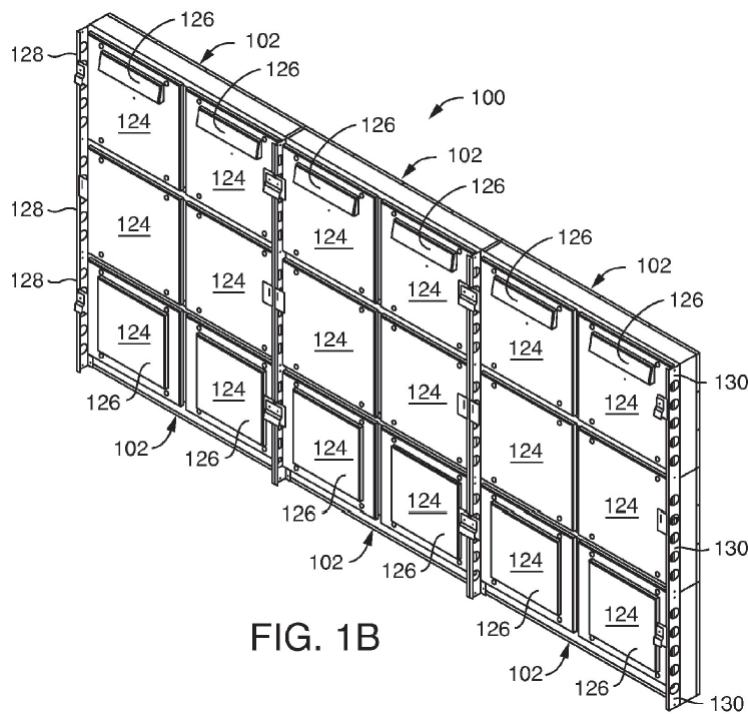
Templeton describes a display board for displaying images using light emitting diodes (LEDs) as pixels. Ex. 1004, code (57). Templeton's Figure 1A, below, shows the front side of video board 100.



Templeton's Figure 1A Showing a Video Board's Front Side.

Id., ¶¶ 9, 55, Fig. 1A. Figure 1A above shows nine modular cabinets 102, each populated with twelve video blocks 200. *Id.* ¶ 55, Fig. 1A. Templeton discloses an exemplary video block (i.e., 200) includes frame 202 “made from a polymer capable of supplying sufficient strength and rigidity” (*id.* ¶ 75) printed circuit board (PCB) 300 with LEDS 304, each constituting pixel 306 of video board 100. *Id.* ¶¶ 60–61, 75–77, Figs. 2A–F, 3D. Templeton states “video blocks 200 [can be] arranged in different configurations, including four columns of three video blocks 200. *Id.* ¶ 59.

Templeton’s Figure 1B, below, show the rear side of video board 100.



Templeton’s Figure 1B Showing a Video Board’s Rear Side.

Id. ¶¶ 10, 56, Fig. 1B. Figure 1B above shows cabinet 102’s rear face having access panels 124 covering access openings 120 and mounting beams 128 and 130. *Id.* ¶¶ 56–57, Fig. 1B.

Templeton also discloses its display board has a power supply case with power supply unit (e.g., 706) that provides power to run PCB 300 that drives a video block's LEDs 304, which produce images on video board 100. *Id.* ¶¶ 109, 113–114, code (57), Figs. 9A–E.

Templeton discusses the cabinet's modular nature “facilitates video boards with greater or fewer cabinets 102” (*id.* ¶ 59) and “allows a video board of any size to be transported from a factory to an installation site” (*id.* ¶ 60). Templeton teaches video board 100 might be installed in a location where viewers might be above (e.g., a sport stadium) or below board 100. *Id.* ¶¶ 87–88.

2. Watchfire (Exs. 1005, 1006, 1008, 1009)

Watchfire or the Watchfire references are four publications. Exs. 1005–1006, 1008–1009.

Watchfire discloses its signs serve a growing market. Ex. 1005, 1. Watchfire indicates its signs are “easy to install, maintain and operate” as well as well its “fully assembled unit is a ‘plug and play’ sign solution. It makes installation or retrofit quick, easy and affordable.” *Id.*; *see* Ex. 1006, 1 (stating Watchfire signs are “designed for simplified, economical installation.”); *see* Ex. 1008, 1 (stating its sign “simplifies installation and features user-friendly operation.”); *see* Ex. 1009, 1 (stating its “signs were designed to help our sign dealers serve a growing market). Watchfire also discusses its “signs are outdoor LED gas price displays” and “are self-contained units that are designed to fit new structures and easily retrofit into existing signs.” Ex. 1006, 1; *see* Ex. 1009, 1 (stating the Watchfire sign “is a complete, self-contained unit for simplified installation”).

3. Discussion

Petitioner contends claims 1, 4, 5, 10, and 11 are unpatentable under 35 U.S.C. § 103(a) as obvious over Templeton in view of Ordinary Skill as evidenced by Watchfire. Pet. 31–47 (citing Ex. 1002 ¶¶ 120–161). For the reasons discussed below, Petitioner has established on this record a reasonable likelihood of prevailing on its assertion that at least one of challenged claims is unpatentable.

(a) Claim 1

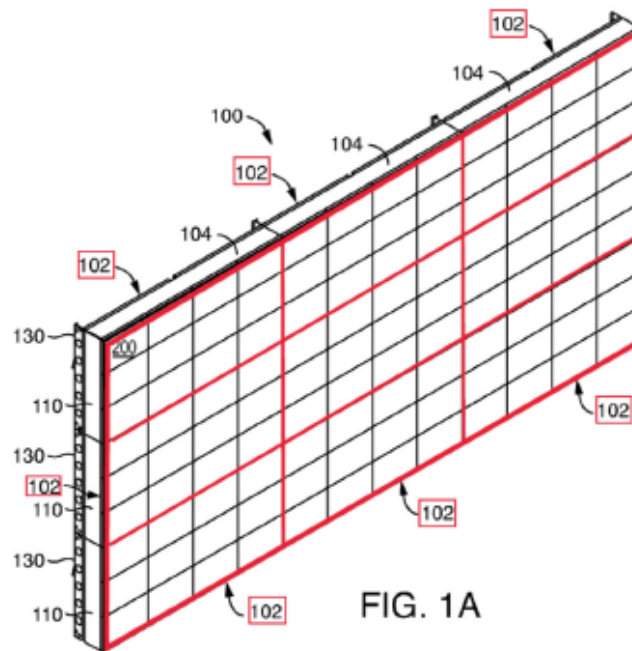
For consistency, we use nomenclature for the limitations of claim 1 similar to those presented in the Petition. *Id.* at 14–16.

(i) Preamble

Claim 1’s preamble recites “[a] modification kit for converting an existing signage mounting structure to an electronic sign.” Ex. 1001, 87:11–12. Petitioner contends that Templeton in view of Ordinary Skill as evidenced by Watchfire disclose or render obvious the preamble’s limitations. Pet. 31–34 (citing Ex. 1002 ¶¶ 121–126).

Petitioner states Templeton discloses LED displays, which collectively constitute electronic signs, and depicts an exemplary video board 100 with video blocks 200. *Id.* at 31 (citing Ex. 1004, code (57), ¶ 55, Figs. 1A–B; Ex. 1002 ¶ 122).

Templeton’s Figure 1A, annotated by Petitioner, shows video board 100 with video blocks 200 as follows:

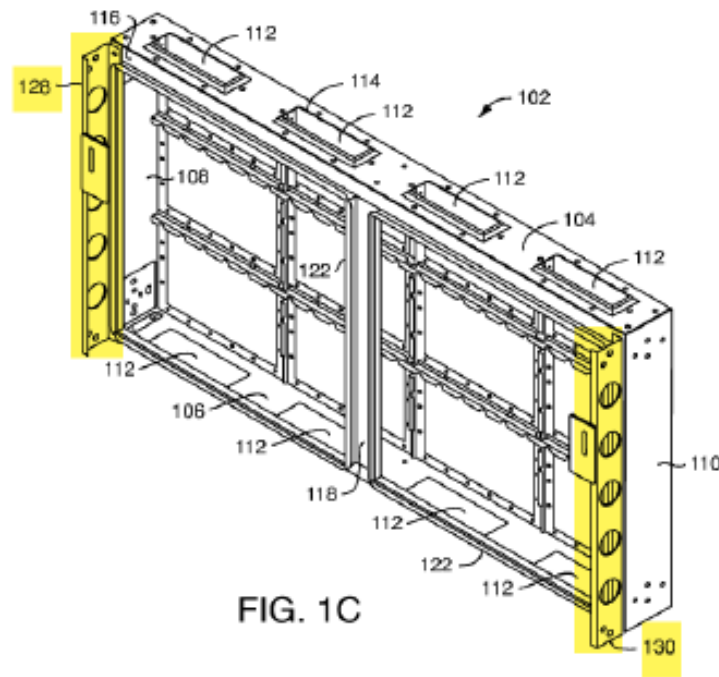


Templeton's Figure 1A (Annotated) Showing a Video Board's Front Side.

Id. at 32, Fig. 1A (annotated). According to Petitioner, the above annotated Figure 1A depicts video board 100 with nine modular cabinets 102 (boxes outlined in red shown above), and each cabinet having twelve video blocks 200 (e.g., blocks within each of the nine boxes shown above). *Id.* at 31–32 (citing Ex. 1004 ¶ 55, Figs. 1A–B; Ex. 1002 ¶ 122).

Petitioner asserts Templeton teaches cabinets 102 are easy to install and can be mounted. *Id.* at 32 (citing Ex. 1004 ¶ 60; Ex. 1002 ¶ 123). Specifically, Templeton states “[t]he modular nature of the cabinets 102 allows a video board of any size to be transported from a factory to an installation site as separate cabinets 102.” Ex. 1004 ¶ 60. Petitioner states “Templeton is agnostic as to how its display is installed.” Pet. 32.

On the other hand, Petitioner contends Templeton “shows cabinet 102 having mounting beams 128 and 130. *Id.* (citing Ex. 1004 ¶ 57; Ex. 1002 ¶ 123). Templeton's Figure 1C with annotations is reproduced below:



Templeton's Figure 1C (Annotated) Showing the Rear Side
of a Video Board's Modular Cabinet.

Id. at 33 (reproducing Ex. 1004, Fig. 1C (annotated)). Above, annotated Figure 1C includes mounting beams 128 and 130 highlighted in yellow and shows the rear side view of the modular cabinet with access panels and video blocks removed. *Id.* Petitioner contends Templeton does not restrict how a POSITA would use mounting beams 128 and 130 to mount a video board (e.g., 100) in a complete assembly. *Id.* at 32 (citing Ex. 1004 ¶ 57; Ex. 1002 20 123).

Petitioner further asserts Templeton teaches its displays are used for numerous applications, including being installed in locations where viewers are above the display (e.g., sports stadiums) or below the display (e.g., roadside billboards). *Id.* (citing Ex. 1004 ¶¶ 87–88; Ex. 1002 ¶ 123). Petitioner further asserts “[o]ne known means for mounting such pre-assembly cabinets” (e.g., Templeton’s) “was retrofitting them to existing

signage structure that is already in the field.” *Id.* at 33 (citing Ex. 1002 ¶ 124). In particular, Petitioner discusses the Watchfire references as evidence of “this known installation type.” *Id.* (citing Exs. 1005–1006; Ex. 1002 ¶ 125).

As an example, Petitioner asserts the Watchfire references teach LED displays are “self-contained units that are designed to fit new structures and easily retrofit into existing signs” (*id.* (quoting Ex. 1006, 1)) and its signs make “retrofit quick, easy and affordable” (*id.* (quoting Ex. 1005, 1)). Petitioner asserts the Watchfire references “emphasize that new LED displays could be just as easily available for retrofitting” and Templeton’s LED display design “would have been well-tailored for this type of installation because [Templeton’s] self-contained cabinets can simply be mounted to existing structure,” as evidenced by the Watchfire references. *Id.* (citing Ex. 1002 ¶ 125 (quoting Ex. 1004 ¶ 60)).

Based on the foregoing, Petitioner argues “[a] POSITA would have found it obvious that Templeton could be installed as a modification kit.” *Id.* at 34 (citing Ex. 1002 ¶ 126).

Patent Owner does not contest Petitioner’s showing regarding claim 1’s preamble. *See generally* Prelim. Resp.

Based on the current record, we are persuaded Petitioner has demonstrated sufficiently that Templeton in view of the knowledge and level of ordinary skill in the art as shown by Watchfire teach or suggest the preamble of claim 1.

(ii) “a plurality of display modules” – element [1a]

Claim 1 recites “a plurality of display modules” (“element [1a]”). Ex. 1001, 87:13. Petitioner contends Templeton in view of Ordinary Skill

teach or suggest this claimed element. Pet. 31, 34 (citing Ex. 1002 ¶¶ 122, 127–128). Petitioner argues Templeton’s Figures 1A and 1B disclose LED display modules, mapping the modules to video blocks 200 shown in the above-reproduced Figure 1A. *Id.* at 34 (citing Ex. 1004 ¶ 55, Figs. 1 A–B; Ex. 1002 ¶ 128) (reproducing Ex. 1004, Fig. 1A (annotated with a red circle around element 200)).

Patent Owner contests Petitioner’s showing as to element [1a]. Prelim. Resp. 5. Specifically, Patent Owner argues Templeton does not disclose a display module having two LED panels coupled to a daughter board. *Id.*

Above, we have construed the phrase “display module” to have its plain and ordinary meaning, which includes a module that displays information. As explained, this phrase does not require each display module to have two LED panels coupled to a daughter board. Templeton’s video blocks 200 are part of video board 100. Ex. 1004 ¶ 55. Templeton also teaches video blocks 200 comprising PCB 300 that contains LEDs 304 constituting pixel 306 to provide light and a desired color. *Id.* ¶¶ 76–77. Based on Templeton’s teachings, Templeton teaches or suggests modules (e.g., 200), each displaying information using pixels, or “a plurality of display modules” as claim 1 recites.

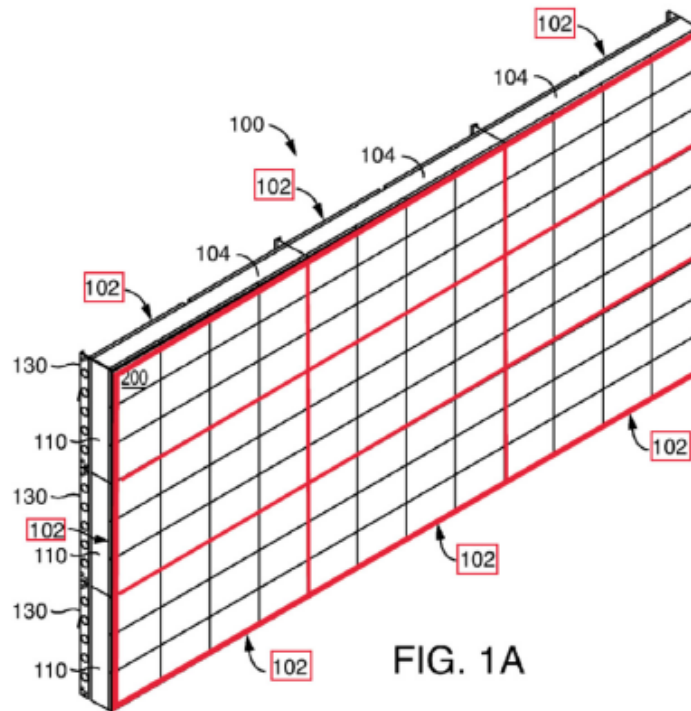
On the current record, we are persuaded Petitioner has demonstrated sufficiently that Templeton in view the knowledge and level of ordinary skill in the art as shown by Watchfire teach or suggest element [1a].

(iii) “a plurality of sign sections” – element [1b]

Claim 1 further recites “a plurality of sign sections each having a front-facing portion and a rear-facing portion” (“element [1b]”). Ex. 1001,

87:14–15. Petitioner contends Templeton with Ordinary Skill teach or suggest this claim element. Pet. 34–36 (citing Ex. 1002 ¶¶ 129–131).

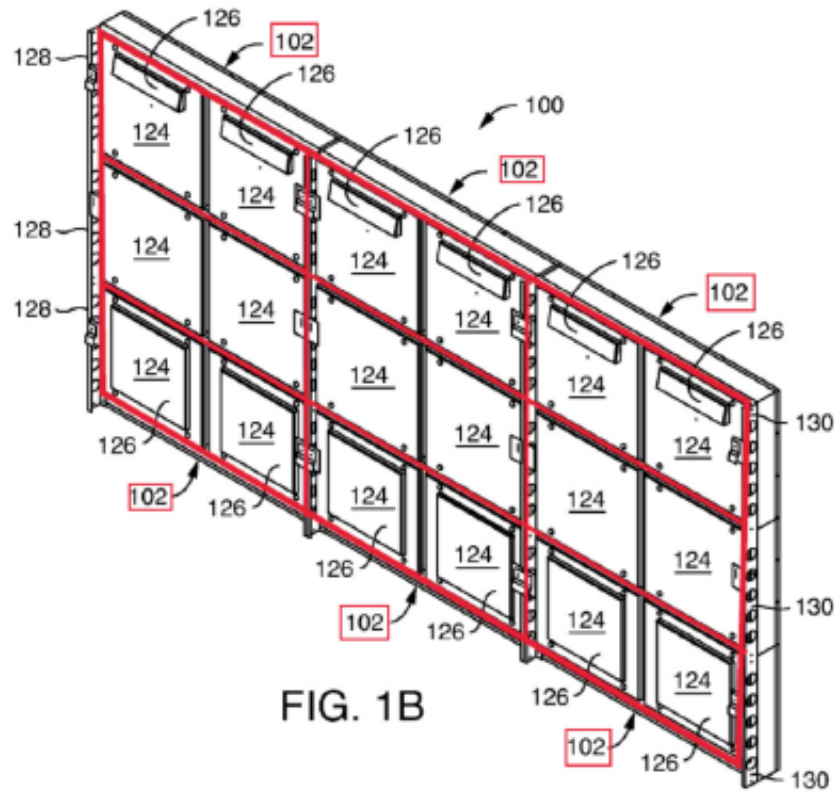
Annotated Figure 1A of Templeton, shown below, is a perspective view of the front side of a video board.



Templeton’s Figure 1A (Annotated) Showing a Video Board’s Front Side.

Ex. 1004 ¶ 9; *see* Pet. 35 (reproducing Ex. 1004, Fig. 1A (annotated)) (citing Ex. 1004 ¶ 55; Ex. 1002 ¶ 129–130). Petitioner asserts Templeton’s Figure 1A above shows the video board’s front with nine sign sections outlined in red forming nine boxes. *See id.* at 35–36 (citing Ex. 1004 ¶ 58, Figs. 1A–B).

Petitioner also reproduces Templeton’s Figure 1B with annotations below:



Templeton's Figure 1B (Annotated) Showing a Video Board's Rear Side.

Id. at 35 (reproducing Ex. 1004, Fig. 1B (annotated)). Templeton describes Figure 1B as a perspective view of the rear side of a video board. Ex. 1004 ¶ 10; Pet. 36 (citing Ex. 1004 ¶ 56; Ex. 1002 ¶ 131). As shown above, Templeton's Figure 1B shows the nine sign sections annotated as nine boxes outlined in red. *See id.* Templeton describes Figure 1B as a perspective view of the rear side of a video board. Ex. 1004 ¶ 10.

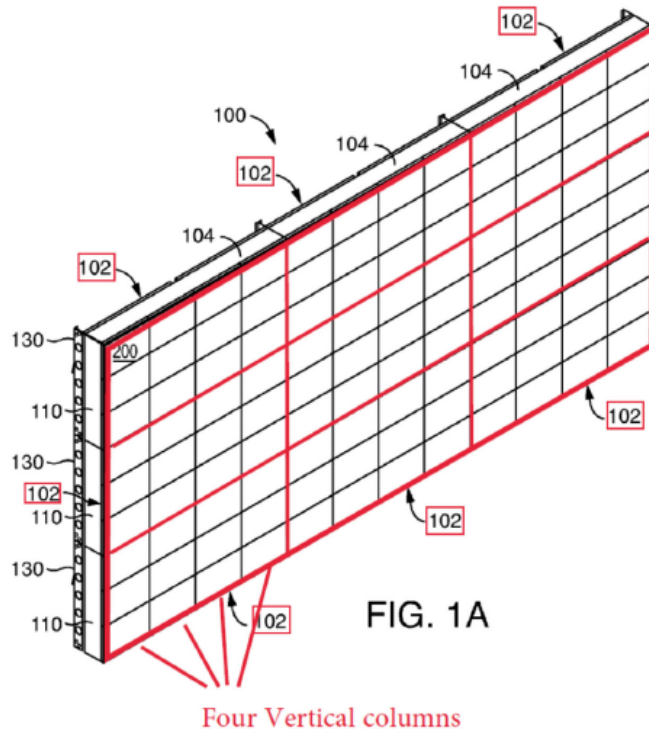
Patent Owner does not contest Petitioner's showing as to element [1b]. *See generally* Prelim. Resp.

On the current record, we are persuaded Petitioner has demonstrated sufficiently that Templeton in view of the knowledge and level of ordinary skill in the art as shown by Watchfire teach or suggest element [1b].

(iv) “*the front[-]facing portion*” – *element [1c]*

Claim 1 further recites “the front[-]facing portion defining a two dimensional array of bays arranged in a plurality of rows along a vertical direction and a plurality of columns along a horizontal direction, each bay configured to receive one of the display modules” (“element [1c]”). Ex. 1001, 87:15–19. Petitioner contends that Templeton in view of Ordinary Skill teach or suggest this claimed element. Pet. 36–37 (citing Ex. 1002 ¶¶ 132–133).

Petitioner argues Templeton discloses one bay (e.g., an aperture shown in Figure 1E) per display module (e.g., video block 200) and each bay receives a video block (e.g., 200) or “configured to receive one of the display modules” as recited. *See id.* at 36 (referring to Ex. 1004, Fig. 1E). As to the “two dimensional array of bays arranged in a plurality of rows along vertical direction and a plurality of columns along a horizontal direction” recitation, Templeton’s Figure 1A, as further annotated by Petitioner, is reproduced below:



Templeton's Figure 1A (Annotated) Showing a Video Board's Front Side to Pointing to "Four Vertical columns."

Id. at 37.

Above, Templeton's Figure 1A is annotated to show nine sign sections outlined in red as nine boxes and also includes four red lines, labeled "Four Vertical columns," directed to the lower left-most sign section. *Id.* The above figure also shows three horizontal rows and four vertical columns within the lower left-most sign section. *Id.* Based on the foregoing, Petitioner concludes that Templeton's annotated Figure 1A illustrates "two dimensional array of bays arranged in a plurality of rows along vertical direction and a plurality of columns along a horizontal direction." *See id.* at 36–37 (citing Ex.1004, Fig. 1A; Ex. 1002 ¶ 133).

Patent Owner does not contest Petitioner's showing as to element [1c]. *See generally* Prelim. Resp.

On the current record, we are persuaded Petitioner has demonstrated sufficiently that Templeton in view of the knowledge and level of ordinary skill in the art as shown by Watchfire teach or suggest element [1c].

(v) “*the rear-facing portion*” – *element [1d]*

Claim 1 further recites “the rear-facing portion for mounting to a surface of the existing signage mounting structure.” Ex. 1001, 87:19–21. Petitioner contends Templeton in view of Ordinary Skill teach or suggest this claimed element. Pet. 37–39 (citing Ex. 1002 ¶¶ 134–140).

Petitioner contends Templeton discloses cabinet 102 includes mounting beams 128 and 130, each running vertically along the cabinet’s rearward side, which assist in moving and locating the cabinets with respect to each other during video board assembly. *Id.* at 37–38 (quoting Ex. 1004 ¶ 57). Petitioner reproduces Templeton’s Figures 1B–C, which show the rear side of the video board and the rear side of a video board’s cabinet respectively (Ex. 1004 ¶¶ 10–11), and highlights mounting beams 128 and 130 in yellow. *Id.* at 38 (reproducing annotated Figures 1B–C (annotated)) (citing Ex. 1002 ¶¶ 135–136).

Petitioner explains that an ordinary skilled artisan would have recognized that Templeton’s mounting beams 128 and 130 would be attached to a beam surface of an existing signage structure, including non-electronic sign structures, “[i]n a retrofitting installation.” *Id.* at 39 (citing Ex. 1002 ¶¶ 137–140); *see* Ex. 1002 ¶ 139. Petitioner argues that “[r]etrofitting to an existing sign was known in the art as a convenient installation type” as evidenced by the Watchfire references. Pet. 39 (citing Ex. 1005, 1; Ex. 1006, 1; Ex. 1002 ¶¶ 137–140). According to the Petition and Petitioner’s expert, Mr. Flasck, the Watchfire references disclose what

was known in the art, including designing self-containing units for retrofitting into existing signs in a quick, easy, and affordable manner. Pet. 39 (citing Ex. 1002 ¶¶ 137–140); *see also* Ex. 1002 ¶¶ 137 (citing Ex. 1005, 1; Ex. 1006, 1; Ex. 1009, 1), 139 (same). Petitioner and Mr. Flasck conclude that, to the extent Templeton does not disclose mounting its cabinets to an “existing signage [mounting] structure, it would have been obvious to a POSITA that using ordinary skill in the art one could readily and easily install Templeton[’s units] using its mounting beams to a beam surface of an existing signage [mounting] surface” as evidenced by the Watchfire references. Pet. 39 (citing Ex. 1002 ¶¶ 137–140); *see* Ex. 1002 ¶¶ 137 (citing Ex. 1005, 1; Ex. 1006, 1; Ex. 1009, 1), 140. Mr. Flask further testifies that an ordinarily skilled artisan would have recognized that mounting Templeton’s cabinets to a “beam surface of an existing sign structure” would be sensible because mounting the assembly elsewhere “could result in significant damage to the structure.” Ex. 1002 ¶ 138.

Patent Owner does not contest Petitioner’s or Mr. Flask’s showing as to element [1d]. *See generally* Prelim. Resp.

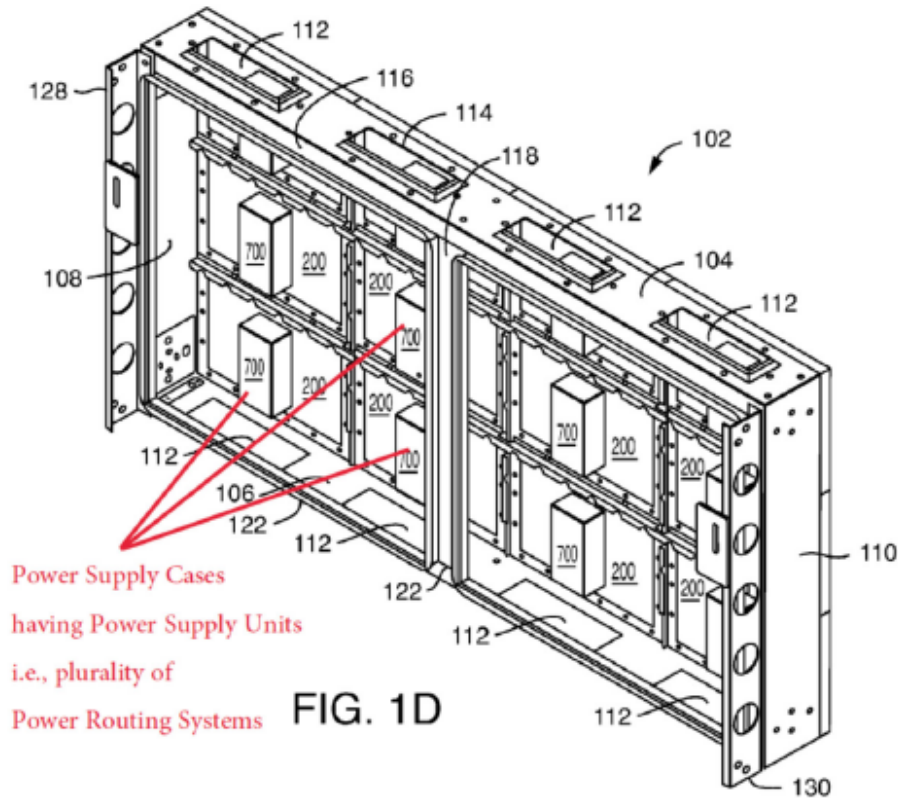
On the current record, we are persuaded Petitioner has demonstrated sufficiently that Templeton in view of the knowledge and level of ordinary skill in the art as shown by Watchfire teach or suggest element [1d].

(vi) “a plurality of power routing systems” – element [1e]

Claim 1 further recites “a plurality of power routing systems, each power routing system having a power input for coupling to a power source and a plurality of power extensions, each power extension for coupling the power source to one of the plurality of display modules” (“element [1e]”). Ex. 1001, 87:22–26. Petitioner contends Templeton with Ordinary Skill

teach or suggest this claimed element. Pet. 39–41 (citing Ex. 1002 ¶¶ 141–144).

Petitioner argues Templeton’s Figure 1D discloses multiple video blocks having “a plurality of power routing systems” as shown below:



Templeton’s Figure 1D (Annotated) Showing the Modular Cabinet’s Rear Side Populated With Video Blocks.

Id. at 40 (reproducing annotated Templeton’s Figure 1D) (citing Ex. 1004, Fig. 1D; Ex. 1002 ¶¶ 142–143). The above annotated Figure 1D shows three red lines labeled “Power Supply Cases having Power Supply Units[,], i.e., plurality of Power Routing Systems” and pointing to elements 700. *Id.* Petitioner further contends the above configuration in Templeton “also discloses a plurality of power extensions, each power extension for coupling a power source to a display module.” *Id.* (citing Ex. 1002 ¶ 144).

Petitioner further asserts Templeton discloses each video block 200 has power supply case 700 and power supply unit 706 that provides the power to run PCB 300, which in turn drives LEDs 304 and produce images on video board 100. *Id.* (citing Ex. 1004 ¶¶ 61, 109, 113, Figs. 2B, 9A–E). Petitioner also states Templeton’s “video board has a 1:1 ratio of power supply units 706 to video blocks 200,” such that several power supply units correspond to nodes associated with cabinet 102. *Id.* at 41 (quoting Ex. 1004 ¶ 114) (citing Ex. 1004, Fig. 1D; Ex. 1002 ¶ 144).

Patent Owner does not contest Petitioner’s showing as to element [1e]. *See generally* Prelim. Resp.

On the current record, we are persuaded Petitioner has demonstrated sufficiently that Templeton in view of the knowledge and level of ordinary skill in the art as shown by Watchfire teach or suggest element [1e].

Petitioner further articulates a rationale for combining Templeton with Ordinary Skill as evidenced by Watchfire and argues a POSITA would have combined their teachings with reasonable expectation of success. *Id.* at 43 (citing Ex. 1002 ¶¶ 154–160), 46 (citing *Hoffmann LaRoche v. Apotex*, 748 F. 3d 1326, 1329, 1331 (Fed. Cir. 2014)). Petitioner states Templeton teaches constructing a digital sign using easily accessible LED panels, and its design can be used in many environments, including sports stadiums and locations where viewers are below the sign (e.g., roadside billboards and stores). *Id.* at 43–44 (citing Ex. 1004 ¶¶ 87–88; Ex. 1002 ¶¶ 155, 157). Petitioner contends a POSITA would retrofit Templeton based on “aesthetics,” including a POSITA would have recognized electronic billboards are “more eye-catching to consumers than static billboards” and

the “convenience store market was ‘asking for’ LED sign solution.” *Id.* at 45 (citing Ex. 1002 ¶¶ 61–73, 157; Ex. 1018, 3¹¹; Ex. 1019¹²).

Petitioner additionally contends that applying Templeton’s teachings, which do not require any specific type of installation to retrofit an existing, non-digital sign structure (e.g., existing roadside billboards) as evidenced by the Watchfire references, to retrofit an existing sign structure would result in cost and other savings. *Id.* at 44 (quoting *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1368 (Fed. Cir. 2006)¹³) (citing Ex. 1002 ¶ 155; Ex. 1001, 1:46–52¹⁴; *In re O’Farrell*, 853 F.2d 894, 903 (Fed. Cir. 1988)), 46–47 (citing Ex. 1005, 1; Ex. 1006, 1; Ex. 1008, 1; Ex. 1009, 1; Ex. 1002 ¶¶ 155, 159–162; *Perfect Web Tech., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1328–29 (Fed. Cir. 2009)). Petitioner also argues applying retrofitting to Templeton would have been a simple substitution of one known technique (e.g., retrofit installation as evidenced by Watchfire) for another (e.g., Templeton’s installation) in to obtain

¹¹ Abbey Klaassen, 15 *Digital technologies put time on side of outdoor advertising*, ADVERTISING AGE (April 11, 2005). Petitioner mistakenly refers to page “10.” Pet. 44. Exhibit 1019 refers to this article as being on page 24. Ex. 1019, 1. We refer to the page numbering found on the bottom right of each page.

¹² Declaration of Rachel J. Watters on Authentication of Publication.

¹³ *Dystar* states “an implicit motivation to combine exists not only when a suggestion may be gleaned from the prior art as a whole, but when the ‘improvement’ is technology-independent and the combination of references results in a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient.” *Dystar*, 464 F.3d at 1368.

¹⁴ Noting, “billboard panels represent substantial capital outlays making it financially difficult, if not impossible, to discard such panels arbitrarily for replacement with digital panels.” Ex. 1001, 1:49–52.

predictable results, and the combination would have applied a known technique (e.g., retrofitting) to a known device ready for improvement. *Id.* at 45–46 (citing Manual of Patent Examining Procedure §§ 2143(I)(B), (D); Ex. 1002 ¶¶ 157–160; *KSR*, 550 U.S. at 417; *Ruiz v. AB Chance Co.*, 357 F.3d 1270, 1276 (Fed. Cir. 2004)). Petitioner further states a POSITA would have known to secure the retrofit sign to appropriate load bearing members. *Id.* at 47 (citing Ex. 1002 ¶¶ 160–61).

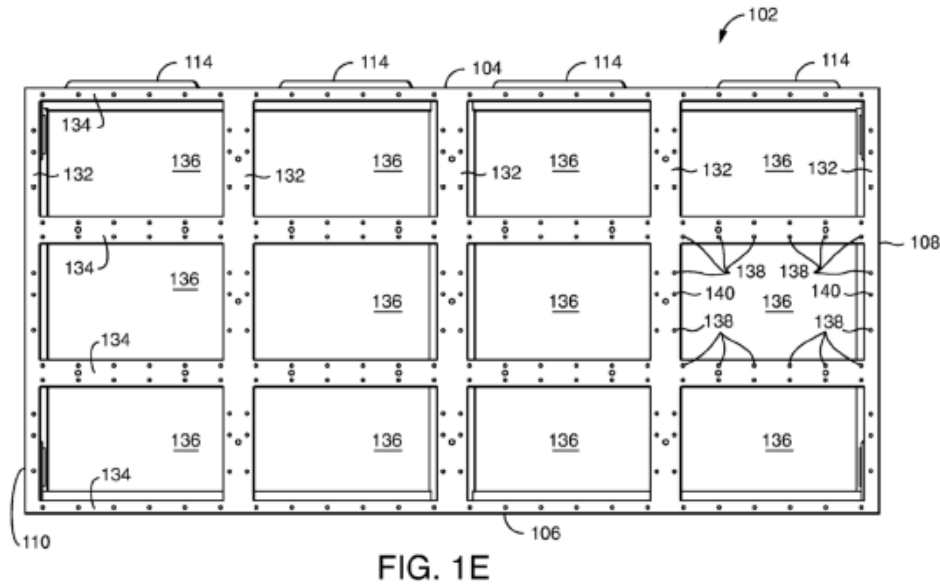
Accordingly, we determine Petitioner provides sufficient evidence and articulates sufficient reasoning to support its challenge of claim 1 as unpatentable over Templeton in view of the knowledge and level of ordinary skill in the art as shown by Watchfire.

(b) Claims 4 and 5

Claims 4 and 5 ultimately depend from claim 1 and further limit the features of claim 1. Ex. 1001, 87:31–37. Dependent claim 4, from which claim 5 further depends, recites “each rear-facing portion is a mounting structure and each front facing portion includes a compound structural frame mounted to the existing signage mounting structure.” Ex. 1001, 87:31–34. Petitioner contends Templeton in view of Ordinary Skill teach or suggest claim’s 4 and 5’s recitations. Pet. 41–42 (citing Ex. 1002 ¶¶ 145–149).

Petitioner contends Templeton discloses cabinet 102 (e.g., sign sections) includes mounting beams 128 and 130 as “rear-facing.” *Id.* at 41 (citing Ex. 1004 ¶ 57; Ex. 1002 ¶ 146); *see id.* at 33 (reproducing Ex. 1004, Fig. 1C (annotated)). Petitioner also states this “rear portion . . . can be mounted to the existing signage structure.” *Id.* at 42 (citing Ex. 1002 ¶¶ 146–148).

Petitioner further reproduces Templeton’s Figure 1E below:



Templeton's Figure 1E Showing the Cabinet's Front View.

Id. at 42 (reproducing Ex. 1004, Fig. 1E (annotated)). Petitioner states Figure 1E, above, shows “each front face of the cabinet 102 (i.e., each sign section) comprise vertical beams 132 and horizontal beams 134 for defining the apertures 136, which can accommodate three rows and four columns of apertures 136 to receive one video block 200.” *Id.* at 41; *id.* at 42 (citing 1004 ¶ 55, Fig. 1E). Petitioner asserts “the apertures are bays and the vertical and horizontal beams define a compound structural frame.” *Id.* at 42. Petitioner also argues Templeton’s Figure 1A shows the cabinets (e.g., 102) “are stacked on top of each other,” such that the compound structural frames in Templeton are “mounted along the vertical direction consistent with claim 5.” *Id.* (citing Ex. 1002 ¶ 149); *see* Ex. 1004 ¶ 56, Fig. 1A.

Patent Owner argues that “Templeton only discloses an embodiment having a frame that is ‘injection molded as a single piece from a polymer.’” Prelim. Resp. 5 (quoting Ex. 1004 ¶ [0075]). According to Patent Owner,

this structure in Templeton is not “a compound structural frame” because it does not have “bay members” and it is not “composed of a structural foam material with a hard honeycomb type foamed inner core.” *Id.* at 6 (citing Ex. 1013, 16).

Above, we have construed the phrase “compound structural frame” to have its plain and ordinary meaning, which includes a compound frame structure containing plural bays. Templeton’s Figure 1E shows cabinet 102 consisting of multiple frame members, including vertical beams 132 and horizontal beams 134 (e.g., compound frame members), and also includes apertures 136 (e.g., bays). Ex. 1004 ¶ 58, Fig. 1E. Additionally, as previously explained, the recited “compound structural frame” does not require the frame to be made from foam material or have a foamed inner core. Regardless, Templeton discloses an exemplary embodiment where a cabinet can be made of a polymer with sufficient strength and rigidity (*id.* ¶ 75), and we note that polymers include polymeric foams.

On the current record, we are persuaded Petitioner has demonstrated sufficiently that Templeton in view of the knowledge and level of ordinary skill in the art as shown by Watchfire teach or suggest claims 4 and 5.

(c) Claims 10 and 11

Claims 10 and 11 depend from claim 1 and further limit the features of claim 1. Ex. 1001, 87:63–67. We have reviewed the record. Based on the evidence and argument presented, Petitioner has sufficiently shown that Templeton in view of Ordinary Skill teach and suggest each limitation in claims 10 and 11, and has articulated sufficient reasoning, with rational underpinning, that an ordinarily skilled artisan would have combined Templeton in the manner Petitioner proposes. Pet. 42–43 (citing Ex. 1004

¶¶ 55, 78, code (57), Fig. 1A; Ex. 1002 ¶¶ 150–153). Patent Owner does not separately challenge claims 10 and 11 at this stage. *See generally* Prelim. Resp. On the current record, we are persuaded Petitioner has demonstrated adequately that Templeton in view of the knowledge and level of ordinary skill in the art as shown by Watchfire teach or suggest claims 10 and 11.

(d) Conclusion – Claims 1, 4, 5, 10, and 11

On this record and for purposes of this Decision, we are persuaded Petitioner has shown a reasonable likelihood of prevailing on its ground that claims 1, 4, 5, 10, and 11 are unpatentable over Templeton in view of the knowledge and level of ordinary skill in the art as shown by the Watchfire references.

F. Obviousness of Claims 6, 12–16, and 19–26 Over Templeton in view of Ordinary Skill, and further in view of Kludt (Ground 2)

1. Kludt (Ex. 1010)

Kludt is a United States Patent patented on November 11, 2008. Ex. 1010, codes (10), (45). At this juncture, Patent Owner does not dispute Kludt’s prior art status.

Kludt addresses a sign system (e.g., 10) with multiple components distanced from the general support structure for mounting a plurality of display panels (e.g., 14a–14n). Ex. 1010, 4:63–67, Fig. 2. One component includes “internal walkway 13 . . . for access.” *Id.*, 5:28–29, Fig. 2. Sign system 10 is “versatile for purposes of construction and for purposes of change-out,” such as display panels 14a–14n “can be readily removed and replaced from the interior of the enclosure cabinet 12.” *Id.*, 10:1–5, Fig. 2.

2. Discussion

Petitioner contends claims 6, 12–16, and 19–26 are unpatentable under 35 U.S.C. § 103(a) as obvious over Templeton in view of Ordinary Skill, and further in view of Kludt. Pet. 47–58 (citing Ex. 1002 ¶¶ 154–227). For consistency, we use nomenclature for the limitations of claims 12 and 21 similar to those presented in the Petition. *Id.* at 14–16.

We have reviewed the record. Based on the evidence and argument presented, Petitioner has sufficiently shown that Templeton in view of Ordinary Skill and Kludt collectively teach or suggest the limitations in claims 6, 12–16, and 19–26, and has articulated sufficient reasoning, with rational underpinning, that an ordinarily skilled artisan would have combined Templeton in view of Ordinary Skill and Kludt in the manner Petitioner proposes. *See id.*

For claim 6, Petitioner provides sufficient evidence to support that Templeton, Ordinary Skill, and Kludt teach or suggest its limitations. *Id.* at 48–51 (citing Ex. 1004 ¶ 56, Figs. 1B–C; Ex. 1010, 5:28–29, 10:1–5, Fig. 2; Ex. 1002 ¶¶ 185, 196–201) (reproducing Ex. 1004, Fig. 1B (highlighting two elements 124 (upper left) in orange), Figs. 1B–1C (highlighting mounting beams 128 and 130 in yellow and adding dotted red line to show extending Templeton’s outside mounting structures); Ex. 1010, Fig. 2 (highlighting elements 12d, 12f in yellow and element 13 in red)); *see also* Ex. 1002 ¶¶ 197–198 (discussing Ex. 1004 ¶ 57), 198–200 (discussing Ex. 1010, 1:11–14, 1:55–2:6, 3:1–3, 4:47–50, 4:67–5:44, 5:64–6:2, 6:20–7:3, 10:1–5, code (57), Figs. 1–3, 6–7, 11) (reproducing Ex. 1010, Figs. 1–2 (annotated)). Additionally, Petitioner articulates sufficient reasoning that an ordinarily skilled artisan would have been motivated to combine Templeton’s

teachings with Kludt, including Kludt’s type of mounting in Templeton would have provided access to Templeton’s rear access panels after installation by extending Templeton’s outside mounting structures to provide sufficient room behind the display and existing structure for rear-side servicing and replacement. *Id.* at 50–51 (citing Ex. 1010, 5:28–29, Fig. 2; Ex. 1002 ¶¶ 185, 199–201) (reproducing Ex. 1004, Figs. 1B–C (annotated); Ex. 1010, Fig. 2 (annotated))).

For independent claims 12 and 21, Petitioner refers to its discussion of “Ground 1 element [1-preamble-1c]” for “claim limitations [12-preamble-12c] and [21-preamble-21c]” and “Ground 1 element [1e]” for “claim limitations [12e and 21f].” *Id.* at 51–53 (citing Ex. 1002 ¶¶ 164–176, 192–195); *see also id.* at 14–16 (identifying elements of claims 1, 12, and 21). As to “[e]lements 12d and 21d,” Petitioner states “Templeton would be attached to a beam surface to support structural integrity as explained in Ground 1 element [1d]” (*id.* at 52 (citing Ex. 1002 ¶¶ 134–149, 177)) and refers to “Ground 2 claim 6 above” to address “Templeton’s modified retrofit design” in view of Kludt to “allow rear access for servicing” (*id.* (citing Ex. 1002 ¶¶ 178–188, 196–200)). Finally, as for element 21e (*id.*), Petitioner states Templeton in view of Ordinary Skill and Kludt teach or suggest this element “[f]or the same reasons the combination shows that the rear portion of the sign section can be attached to a sign structure to allow most of the rear surface of the rear portion to be exposed for servicing” and refers to “Ground 2, claim [6] above.” *Id.* (citing Ex. 1002 ¶¶ 189–191).

Patent Owner argues that Kludt does not disclose “display modules” as claims 12 and 21 recite because its modules do not have “two LED panels coupled to a daughter board.” Prelim. Resp. 5; *see id.* at 6. Above, we

discussed how Petitioner relied upon Templeton to teach this feature and we further determine that Templeton sufficiently teaches and suggests the recited “display modules” at this stage. We refer above for more details but also note here that, under Section (II)(D)(3), we construe the phrase “display modules” to include modules that display information, not that each display module must have two LED panels coupled to a daughter board as Patent Owner asserts.

As for claims 13–16 and 19–26, Petitioner refers to previous explanations of other claims. *Id.* at 53–54. For claims 13–15 and 22–24, Petitioner discusses Templeton discloses sign sections with multiple columns of bays and refers to claims 4 and 5 under Ground 1 (*id.* at 53 (citing Ex. 1002 ¶¶ 129–133, 171–176, 203–208)); for claim 16, Petitioner refers to claim 6 under Ground 1 (*id.* (citing Ex. 1002 ¶¶ 196–201)); for claims 19 and 25, Petitioner refers to claim 10 under Ground 1 (*id.* at 53 (citing Ex. 1002 ¶¶ 209–210)); for claims 20 and 26, Petitioner refers to claim 11 under Ground 1 (*id.* at 54 (citing Ex. 1002 ¶¶ 211–212)).

To the extent Patent Owner also argues Kludt does not teach or suggest the phrases “a compound structural frame” or “compound structural frames” as recited in claims 14, 15, and 24 (or any other claim) (*see* Prelim. Resp. 5–6), we note that Petitioner relied upon Templeton to teach these features and we further determine that Templeton sufficiently teaches and suggests these recited elements at this stage. We refer above for more details but note here that, under Section (II)(D)(4), we construe the phrase “compound structural frame” under their plain and ordinary meaning to include a compound frame structure containing plural bays.

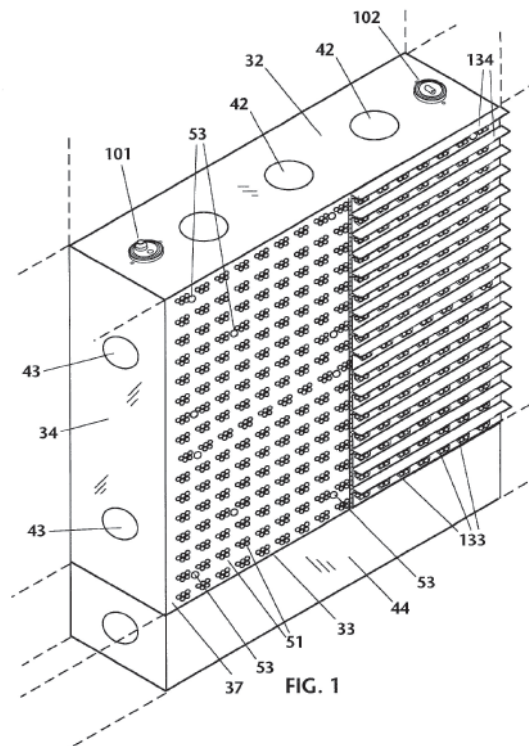
On this record and for purposes of this Decision, we are persuaded Petitioner has shown a reasonable likelihood of prevailing on its ground that claims 6, 12–16, and 19–26 are unpatentable over Templeton in view of the knowledge and level of ordinary skill in the art as shown by the Watchfire references, and further in view of Kludt.

*F. Obviousness of Claims 1, 10–13, 19, and 20 Over Kalua
in view of Ordinary Skill (Ground 3)*

1. Kalua (Ex. 1007)

Kalua is a United States Patent Application Publication published September 5, 2002. Ex. 1007, codes (10), (43). Patent Owner does not dispute Kalua’s prior art status.

Kalua describes a modular video display with multiple video image units. *Id.*, code (57). Below, Kalua shows the front perspective view of basic modular video output unit 31.



Kalua’s Figure 1 Showing a Video Module’s Front.

Id. ¶¶ 16, 43, Fig. 1. Figure 1, above, shows that each video unit (e.g., 31) has a housing, a front panel (e.g., 37), rear panel (e.g., 38) that can be opened for access, and LED circuit board having a LEDs supported in pixel array. *Id.* ¶¶ 8, 43, 49, code (57), Figs. 1–2. Each unit also includes access holes (e.g., 43) for power cables. *Id.* ¶¶ 13, 43, Fig. 1.

The video display “is highly modular in construction and adaptable to a variety of uses and installations,” “yet may be disassembled for repair and replacement of damaged components.” *Id.* ¶¶ 7, 42. Each housing includes opposed top and bottom panels (e.g., 32–33), which permit vertical stacking of multiple units. *Id.* ¶ 12, 54. Image units can be arrayed in columns and rows. *Id.* ¶ 13.

2. Discussion

Petitioner contends claims 1, 10–13, 19, and 20 are unpatentable under 35 U.S.C. § 103(a) as obvious over Kalua in view of Ordinary Skill as evidenced by Watchfire. Pet. 58–66 (citing Ex. 1002 ¶¶ 228–252). For consistency, we use nomenclature for the limitations of claims 1 and 12 similar to those presented in the Petition. *Id.* at 14–16.

(a) Claims 1 and 12

(i) Preamble

Claims 1’s and 12’s preamble recite “[a] modification kit for converting an existing signage mounting structure to an electronic sign.” Ex. 1001, 87:11–12, 88:1–2. Petitioner contends that Kalua in view of Ordinary Skill as evidenced by Watchfire teaches or suggests this recitation. Pet. 58–59 (citing Ex. 1002 ¶ 228).

Petitioner contends Kalua in view of Ordinary Skill disclose or render obvious the preamble’s limitations. *Id.* at 58 (citing Ex. 1002 ¶ 228).

Petitioner states Kalua discloses a large format and modular electronic video display that can be easily adapted for various types of uses and installation. *Id.* (citing Ex. 1007 ¶¶ 2, 7, 42; Ex. 1002 ¶¶ 230–231). Petitioner further discusses the Watchfire references, contending that these references teach LED displays that include “self-contained units designed to fit new structures and easily into existing signs.” *Id.* at 59 (quoting Ex. 1006, 1) (citing Ex. 1005, 1; Ex. 1008, 1; Ex. 1009, 1; Ex. 1002 ¶ 231). Petitioner concludes that a POSITA would have found it obvious that both Kalua’s display and Watchfire’s LED displays “could be easily adapted to mount to and retrofit existing signage.” *Id.* (citing Ex. 1002 ¶ 231).

Patent Owner does not contest Petitioner’s showing as to claim 1’s and 12’s preamble. *See generally* Prelim. Resp.

Based on the current record, we are persuaded Petitioner has demonstrated sufficiently that Kalua in view of the knowledge and level of ordinary skill in the art as shown by Watchfire teach or suggest the preamble of claims 1 and 12.

(ii) “a plurality of display modules” – elements [1a], [12a]

Claims 1 and 12 recite “a plurality of display modules.” Ex. 1001, 87:13, 88:3. Petitioner contends Kalua in view of Ordinary Skill teach or suggest these claimed elements. Pet. 59 (citing Ex. 1002 ¶ 232). Petitioner argues Kalua “describes a modular video display including a plurality of video image units.” *Id.* (citing Ex. 1007 ¶¶ 7, 42, code (57)).

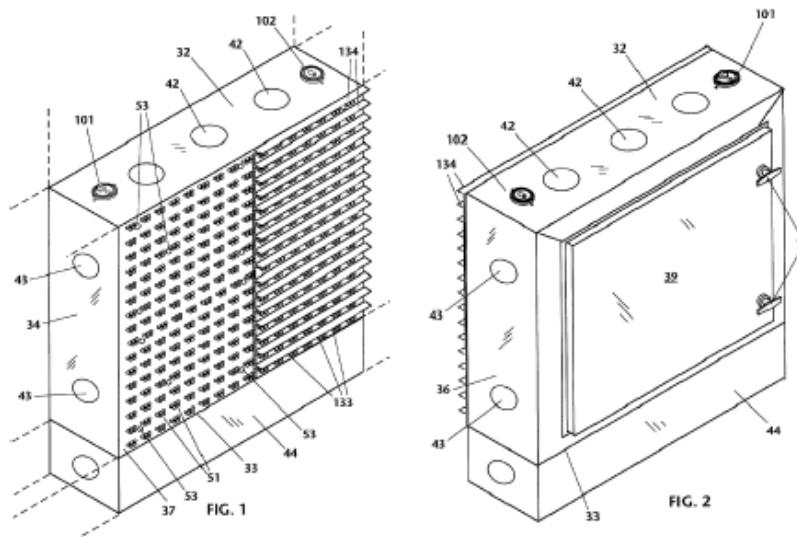
Patent Owner does not contest Petitioner’s showing as to Kalua related to the “display modules.” *See, e.g.*, Prelim. Resp. 5–6.

On the current record, we are persuaded Petitioner has demonstrated sufficiently that Kalua in view of the knowledge and level of ordinary skill in the art as shown by Watchfire teach or suggest elements [1a] and [12a].

(iii) “a plurality of sign sections” – elements [1b], [12b]

Claims 1 and 12 further recites “a plurality of sign sections each having a front” portion and “a rear” portion. Ex. 1001, 87:14–15, 88:4–5. Petitioner contends Kalua with Ordinary Skill teach or suggest these claimed elements. Pet. 59–60 (citing Ex. 1002 ¶ 233).

Petitioner asserts Kalua teaches its video imaging units are adapted to be “arrayed in columns and rows,” where each column is a “sign section” as recited. *Id.* at 59 (quoting Ex. 1007 ¶ 13) (citing Ex. 1002 ¶ 233). Petitioner states Kalua’s video imaging units are “stacked” and enclosed in a rectangular housing (e.g., a bay) with front and rear access panels. *Id.* at 59–60 (citing Ex. 1007 ¶¶ 8, 43, 45, 49, Figs. 1–2; Ex. 1002 ¶¶ 233); *see also* Ex. 1007 ¶¶ 12, 54. Petitioner reproduces Kalua’s front and rear of a video module below:



Kalua’s Figure 1 (left) and Figure 2 (right) Showing the Video Module’s Front and Rear Perspective Views Respectively.

Pet. 60, Figs. 1–2. Above, Kalua shows a front perspective view of a video module on the left and a rear perspective view of a video module on the right. Ex. 1007 ¶¶ 16–17.

Patent Owner does not contest Petitioner’s showing as to elements [1b] and [12b]. *See generally* Prelim. Resp.

On the current record, we are persuaded Petitioner has demonstrated sufficiently that Kalua in view of the knowledge and level of ordinary skill in the art as shown by Watchfire teach or suggest elements [1b] and [12b].

(iv) “the front” portion – elements [1c], [12c]

Claim 1 further recites “the front[-]facing portion defining a two dimensional array of bays arranged in a plurality of rows along a vertical direction and a plurality of columns along a horizontal direction, each bay configured to receive one of the display modules.” Ex. 1001, 87:15–19. Claim 12 recites a similar limitation. *Id.*, 88:5–8. Petitioner contends that Kalua in view of Ordinary Skill teach or suggest these claimed elements. Pet. 60 (citing Ex. 1002 ¶ 234).

Petitioner contends Kalua discloses bays arranged in columns and row and “teaches complimentary male and female guides to assure proper alignment of the arrayed bays.” *Id.* (citing Ex. 1007 ¶¶ 12–13, 54). Specifically, Kalua discusses its image units can be “stacked top to bottom” (Ex. 1007 ¶ 12; *see id.* ¶ 54) and “are arrayed in columns and rows” (*id.* ¶ 13).

Patent Owner does not contest Petitioner’s showing as to elements [1c] and [12c]. *See generally* Prelim. Resp.

On the current record, we are persuaded Petitioner has demonstrated sufficiently that Kalua in view of the knowledge and level of ordinary skill in the art as shown by Watchfire teach or suggest elements [1c] and [12c].

(v) “the rear” portion – elements [1d], [12d]

Claim 1 further recites “the rear-facing portion for mounting to a surface of the existing signage mounting structure.” Ex. 1001, 87:19–21. Claim 12 recites a similar limitation of “the rear portion configured to be attached to a beam surface of the existing signage structure to allow most of the rear surface of the rear portion to be exposed for servicing.” Ex. 1001, 88:8–11. Petitioner contends Kalua in view of Ordinary Skill teach or suggest these claimed elements. Pet. 61 (citing Ex. 1002 ¶¶ 235–239).

Petitioner contends Kalua does not disclose an installation mechanism but does state its video display is “adaptable to a variety of uses and installation.” *Id.* (quoting Ex. 1007 ¶ 7). Based on this teaching, Petitioner contends Kalua “is open to any number of installations, including the retrofitting contemplated by the ordinary skill exemplified by the Watchfire references.” *Id.* (citing Ex. 1002, ¶ 237). Petitioner argues the Watchfire references explain LED signage, like Kalua’s, can “easily retrofit into existing signs” and this retrofit can be “quick, easy, and affordable.” *Id.* (quoting Ex. 1005, 1; Ex. 1006, 1) (citing Ex. 1002 ¶ 238; Ex. 1008, 1; Ex. 1009, 1). Petitioner concludes that a POSITA would have found it obvious, using ordinary skill as evidenced by the Watchfire references, to modify Kalua easily and readily to use existing signage and mounting surfaces of a non-digital sign as an attachment or mounting. *Id.* (citing Ex. 1002 ¶ 239).

Patent Owner does not contest Petitioner's showing as to elements [1d] and [12d]. *See generally* Prelim. Resp.

On the current record, we are persuaded Petitioner has demonstrated sufficiently that Kalua in view of the knowledge and level of ordinary skill in the art as shown by Watchfire teach or suggest elements [1d] and [12d].

(vi) “a plurality of power routing systems” – elements [1e], [12e]

Claim 1 further recites “a plurality of power routing systems, each power routing system having a power input for coupling to a power source and a plurality of power extensions, each power extension for coupling the power source to one of the plurality of display modules.” Ex. 1001, 87:22–26. Claim 12 recites a similar limitation. *Id.*, 88:12–16. Petitioner contends Kalua with Ordinary Skill teach or suggest these claimed elements. Pet. 62 (citing Ex. 1002 ¶ 240).

Petitioner argues Kalua's unit “includes ‘at least one access hole in each side panel, whereby power cables and signal cables may be connected and run throughout the image units of each row in the array.’” *Id.* (quoting Ex. 1007 ¶ 13) (citing Ex. 1007 ¶ 43). Petitioner also contends Kalua teaches “a power system that routes power through multiple extension cables to a plurality of modules” in Kalua's stacked array of video imaging units and “the power source on the other end of the power cables is a power node associated with a sign section.” *Id.* (citing Ex. 1002 ¶ 241).

Patent Owner does not contest Petitioner's showing as to elements [1e] and [12e]. *See generally* Prelim. Resp.

On the current record, we are persuaded Petitioner has demonstrated sufficiently that Kalua in view of the knowledge and level of ordinary skill in the art as shown by Watchfire teach or suggest elements [1e] and [12e].

Petitioner further articulates a rationale for combining Kalua with Ordinary Skill as evidenced by Watchfire and argues a POSITA would have combined their teachings with reasonable expectation of success using the knowledge of and ordinary skilled artisan. *Id.* at 64 (citing *Hoffmann LaRoche*, 748 F. 3d at 1329, 1331), 65–66 (citing Ex. 1002 ¶¶ 250–252). Petitioner states Kalua teaches an aesthetically pleasing digital sign using LED panels that can be easily accessed for servicing, Kalua’s sign is open to multiple types of installation, and Kalua suggests a combination with other structures for retrofitting. *Id.* at 64 (citing Ex. 1002 ¶ 246; *In re O’Farrell*, 853 F.2d at 903). Petitioner notes the Watchfire references teach using an existing non-digital display as one such surface for retrofitting. *Id.* (citing Ex. 1002 ¶ 248), 66 (citing Ex. 1002 ¶ 251). Petitioner contends nature of the problem to be solved related to converting a non-electric sign into a digital display and attaching the digital display to a non-electric sign would have led a POSITA to select an appropriate load bearing member on and attachment (e.g., Kalua’s) for the existing signage. *Id.* at 64 (citing Ex. 1002 ¶ 248). Petitioner argues Kalua’s “advantageous features” (*id.* (citing Ex. 1002 ¶ 248)) would have allowed attachment to and retrofitting the existing signage “with little cost” (*id.* at 65 (citing Ex. 1002 ¶ 248; *DyStar*, 464 F.3d at 1368)).

Based on the foregoing, Petitioner argues a POSITA would have been motivated to use Kalua in view of Ordinary Skill evidenced by the Watchfire references to retrofit a non-digital sign because the “combination produces an obvious improvement in digital display[s], and the results . . . are highly predictable.” *Id.* (citing Ex. 1002 ¶ 248; *KSR*, 550 U.S. at 417). Petitioner also asserts combining Kalua in view of Ordinary Skill, as evidenced by the

Watchfire references, would have been obvious “to retrofit non-static displays could yield economic benefits as compared to constructing an entirely new sign” that can be “achieve[] with little cost or effort.” *Id.* (citing Ex. 1002 ¶ 249; *DyStar*, 464 F.3d at 1368); *id.* at 66 (citing Ex. 1002 ¶ 251). Petitioner further argues the Watchfire references reflect ordinary skill and a POSITA would have looked to the Watchfire references to inform a POSITA how to optimize Kalua’s digital display because there are only a finite number of identifiable and predictable ways to retrofit a non-digital sign. *Id.* at 65–66 (citing Ex.1002 ¶ 250; *KSR*, 550 U.S. at 421).

Accordingly, we determine Petitioner provides sufficient evidence and articulates sufficient reasoning to support its challenge of claims 1 and 12 as unpatentable over Kalua in view of the knowledge and level of ordinary skill in the art as shown by Watchfire.

(c) Claims 10, 11, 13, 19, and 20

Claims 10, 11, 13, 19, and 20 depend from claim 1 or 12 and further limit either claims 1 or 12. Ex. 1001, 87:63–67, 88:17–18, 88:46–50. We have reviewed the record. Based on the evidence and argument presented, Petitioner has sufficiently shown that Kalua in view of Ordinary Skill teach and suggest each limitation in claims 10, 11, 13, 19, and 20, and has articulated sufficient reasoning, with rational underpinning, that an ordinarily skilled artisan would have combined Kalua with Ordinary Skill in the manner Petitioner proposes. Pet. 63 (citing Ex. 1007 ¶¶ 2, 7, 13, 42, 54; Ex. 1002 ¶¶ 241–244). Patent Owner does not separately challenge Petitioner’s ground for claims 10, 11, 13, 19, and 20 at this stage. *See generally* Prelim. Resp. Accordingly, we determine Petitioner provides sufficient evidence and articulates sufficient reasoning to support its

challenge of claims 10, 11, 13, 19, and 20 as unpatentable over Kalua in view of the knowledge and level of ordinary skill in the art as shown by Watchfire.

(d) Conclusion – Claims 1, 10–13, 19, and 20

On this record and for purposes of this Decision, we are persuaded Petitioner has shown a reasonable likelihood of prevailing on its ground that claims 1, 10–13, 19, and 20 are unpatentable over Kalua in view of the knowledge and level of ordinary skill in the art as shown by the Watchfire references.

III. CONCLUSION

For the foregoing reasons, we determine that the information presented in the Petitioner establishes a reasonable likelihood that Petitioner would prevail in showing claim 1, 4–6, 10–16, and 19–26 of the '791 patent are unpatentable.

This is not a final decision as to the patentability of claims for which *inter partes* review is instituted. Our final decision will be based on the record as fully developed during trial.

IV. ORDER

Accordingly, it is:

ORDERED that pursuant to 35 U.S.C. § 314(a), an *inter partes* review is hereby instituted as to claims 1, 4–6, 10–16, and 19–26 of the '791 patent on the grounds set forth in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; the trial will commence on the entry date of this decision.

IPR 2020-01052
Patent 9,047,791 B2

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