

**UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

**Before the Honorable Monica Bhattacharyya
Administrative Law Judge**

In the Matter of

**CERTAIN PHOTOVOLTAIC
CONNECTORS AND COMPONENTS
THEREOF**

Investigation No. 337-TA-1365

**COMPLAINANT SHOALS TECHNOLOGIES GROUP, LLC'S
INITIAL POST-HEARING BRIEF**

**Shoals Technologies Group, LLC
EXHIBIT 2016
Voltage, LLC v.
Shoals Technologies Group, LLC
PGR2024-00022**

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TABLE OF ABBREVIATIONS

Abbreviation	Document	Exhibit Number
Compl.	Complaint	EDIS DOCID No. 795598
Am. Compl.	Amended Complaint	EDIS DOCID No. 800563
Resp. to Am. Compl.	Voltage's Response to Amended Complaint	EDIS DOCID No. 801958
CPre-HB	Complainant's Pre-Hearing Brief	EDIS DOCID No. 814389
RPre-HB	Respondent's Pre-Hearing Brief	EDIS DOCID No. 814384
SPre-HB	Staff's Pre-Hearing Brief	EDIS DOCID No. 814989
IMPORT	Joint Stipulation of Shoals and Voltage as to Importation, Sale, No Inventory, and No Cease and Desist Order	EDIS DOCID No. 814046

[REDACTED]

[REDACTED]

I. INTRODUCTION

In 1996, in Muscle Shoals, Alabama, Dean Solon founded what is now complainant Shoals Technologies Group, LLC. Am. Compl., ¶ 2; Tr. (Macias) at 104:13–14; JX-0217C (Solon) at 75:8–76:4. In 2003, a solar company hired Shoals to make cable assemblies for junction boxes connecting to its photovoltaic (PV) modules. JX-0217C (Solon) at 81:6–12, 84:9–11, 86:3–10. In 2005, Solon turned his and Shoals’ attention from modules to EBOS—Electrical Balance of Systems, the wiring infrastructure between modules that generate DC power from sunlight and the inverters that transform it into AC power to be fed into the “grid.” JX-0217C (Solon) at 92:2–95:4; Tr. (Macias) at 104:22–105:1; Tr. (Tolnar) at 225:21–25. This shift led ultimately to U.S. Patent No. 11,689,153 and its commercial embodiment, the Big Lead Assembly (BLA) trunk bus, which Shoals has sold since 2016. Tr. (Macias) at 119:11–13.

Shoals filed the complaints on which this investigation is premised to protect its domestic BLA industry from an influx of foreign-made infringing products. Tr. (Macias) at 143:8–144:6; Tr. (Tolnar) at 287:16–288:11; Am. Compl., ¶¶ 65, 68–72, 79–84. [REDACTED]

[REDACTED] JX-0219C (Wang) at 19:15-19.; Resp. to Am. Compl. at 51. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]. JX-0219C (Wang) at 20:16-22; Resp. to Am. Compl., App’x B (EDIS DOCID No. 801961); JX-0198C at 0021, 0076.

Shoals filed its first complaint in May 2023. *See* Compl. (EDIS DOCID No. 795598). Over the next ten months, Shoals narrowed its infringement case to nine claims (three

[REDACTED]

[REDACTED]

independent, six dependent) of the '153 patent, and Voltage narrowed its invalidity defenses to an indefiniteness allegation and a single pair of prior art references that, according to Voltage, render obvious eight of the nine asserted claims. Order Nos. 15 (EDIS DOCID No. 813762), 19 (EDIS DOCID No. 815078), and 29 (EDIS DOCID No. 817397). Those and related domestic-industry (DI) issues were tried in an evidentiary hearing conducted the week of March 18, 2024. *See Tr., generally.*

As shown during the hearing and below, infringement and technical DI come down to a claim construction issue that the *Markman* Order has already resolved in Shoals' favor, at least provisionally. *See* Order No. 16. Under that construction, Voltage's LYNX infringes and Shoals' BLA likewise practices the '153 patent. For validity, resolution of that same claim construction issue undoes Voltage's indefiniteness defense. Further, Voltage's validity expert is not skilled in the art, Voltage's art is not analogous—and even if Voltage's evidence were otherwise competent, its prior art does not render the claimed inventions obvious. Finally, no scraping at the surface can obscure the plain fact that Shoals has a thriving domestic BLA industry in Portland, Tennessee. Therefore, an initial determination should issue in Shoals' favor, finding a violation, excluding Voltage's LYNX products, and imposing a 100 percent bond during the Presidential review period.

II. BACKGROUND

A. Procedural history

The Commission instituted this Investigation by notice published in the Federal Register on June 9, 2023. 88 Fed. Reg. 37905–06. The institution was based on a complaint filed by Shoals on May 4, 2023 (Compl.), and amended on July 19, 2023 (Am. Compl.), alleging violation of Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 337.

[REDACTED]

Shoals' amended complaint asserted three patents. Am. Compl., ¶¶ 33–50. In view of Order No. 16 (EDIS DOCID No. 814515, *Markman* Order), Shoals withdrew the parent of the '153 patent, U.S. Patent No. 10,992,254. Order No. 19 (EDIS DOCID No. 815078). Order No. 20 determined that the technical prong of the DI requirement was not met for U.S. Patent No. 10,553,739. EDIS DOCID No. 815576. Thus, only the '153 patent remains.

Shoals' amended complaint also identified two sets of respondents. Am. Compl., ¶¶ 15–32. But the summary determination order on the '739 patent also disposed of Shoals' claim against the Hikam¹ respondents (Order No. 20), and thus only the Voltage respondents remain.

The target date for completion is November 12, 2024. Order No. 7.

B. The parties

Shoals is a Tennessee limited liability company, with its headquarters and principal place of business at 1400 Shoals Way, Portland, Tennessee. Am. Compl., ¶ 11. Shoals is the sole owner by assignment of the '153 patent. Am. Compl., ¶¶ 48, 50, and Exh. 22; JX-0089.0002.

[REDACTED]

[REDACTED] Am. Compl., ¶¶ 91, 93; Tr. (Macias) at 106:1–6; Tr. (Bardos) at 647:24–648:3, 648:23–649:6, 649:19–650:6. [REDACTED]

[REDACTED]

[REDACTED] Am. Compl., ¶ 12; Tr. (Bardos) at 649:8–16. But all of Shoals' research, development, testing, certification, manufacturing, and product sales and support takes place in the United States. Tr. (Macias) at 105:6–22; Tr. (Tolnar) at 221:20–24, 222:10–14; Tr. (Bardos) at 647:20–650:6, 654:11–657:10 (describing domestic activities as

¹ Respondents Hikam America, Inc., Hikam Electrónica de México, S.A. de C.V., Hikam Tecnología de Sinaloa, Hewtech Philippines Corp., Hewtech Philippines Electronics Corp., and Hewtech (Shenzhen) Electronics Co., Ltd.

[REDACTED]
[REDACTED]

depicted in CDX-0004.7); JX-0217C (Solon) at 181:20–22. Shoals is the primary operating entity of Shoals Technology Group, Inc., a publicly traded company. JX-0103.0070; JX-0112.0009; Tr. (Bardos) at 773:3.

Voltage LLC is a North Carolina limited liability company, located at 1450 Raleigh Road, Chapel Hill, North Carolina. Resp. to Am. Compl., ¶ 28. Ningbo Voltage Smart Production Co. is a limited liability company in China with a headquarters and principal place of business located at Room Nos. 102, 201, 202, Building 5 (01) Miaofengshan Rd., Beilun District, 57020 Ningbo, China. *Id.*, ¶ 30. [REDACTED]
[REDACTED]
[REDACTED]

[REDACTED] Resp. to Am. Compl., ¶¶ 8, 29; JX-0198C at 0076–77. Unless the context indicates otherwise, going forward, “Voltage” will be used to refer to both Ningbo and the LLC, collectively.

C. Overview of the technology and asserted patent claims

In a solar power installation, sunlight hitting solar modules generates direct current (DC) electricity, which is carried to an inverter that converts it to alternating current (AC) so it can be fed into the power grid, which then carries it to consumers in homes and businesses. CX-0167.0001, CX-0144.0002, 09, JX-0089 (’153 patent) at 1:25–31. “EBOS” is an acronym for “Electrical Balance Of Systems,” which encompasses the components and equipment that carries the DC electric current from the modules to the inverter. *See, e.g.*, JX-0114.0007, Tr. (Macias) at 104:21–105:1; Tr. (Brooks) at 384:13–19; Tr. (Kenny) at 1185:16–22, 1220:15–21; Tr. (Weiner) at 1262:2–13. EBOS components can include, for example, cables and wires of various sizes and lengths, joints, connectors, fuses, junction boxes, combiner boxes, switches, and ground fault detectors. *Id.*

When inventor and Shoals founder Dean Solon began working in solar, the state of the art for EBOS in utility-scale solar fields was “homerun” architecture, as illustrated in Figure 1 of the ’153 patent:

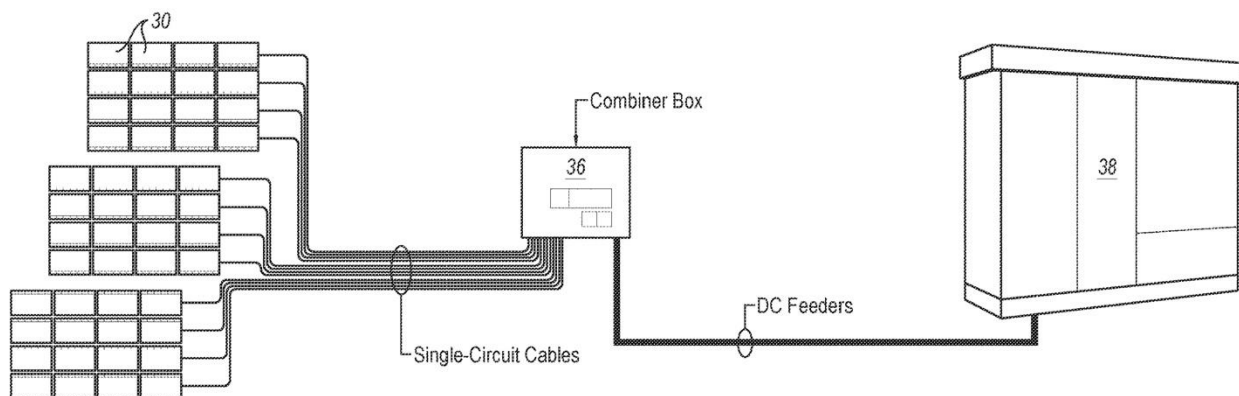


FIG. 1
Prior Art

CDX-0001C.8 (depicting JX-0089); JX-0089 (’153 patent), Fig. 1. Single-circuit cables ran “home” from panels made up of solar modules (ref. no. 30) to a combiner box (36), which combined the home runs and fed the consolidated power through a DC feeder to the inverter (38). *See, e.g.*, CX-144.0003; Tr. (Macias) at 112:17–113:13; Tr. (Tolnar) at 226:1–4. Solon’s first innovation on this architecture was to consolidate single-circuit cables into wire harnesses (34) (*see, e.g.*, JX-0217C (Mr. Solon) at 102:9–14, 103:4–15), as shown in Figure 2:

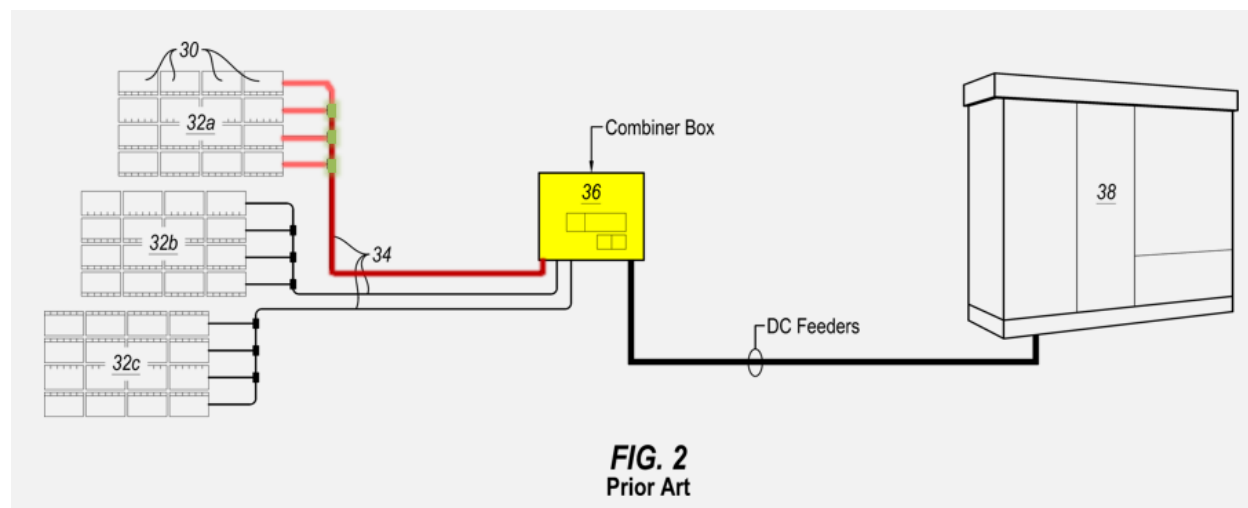
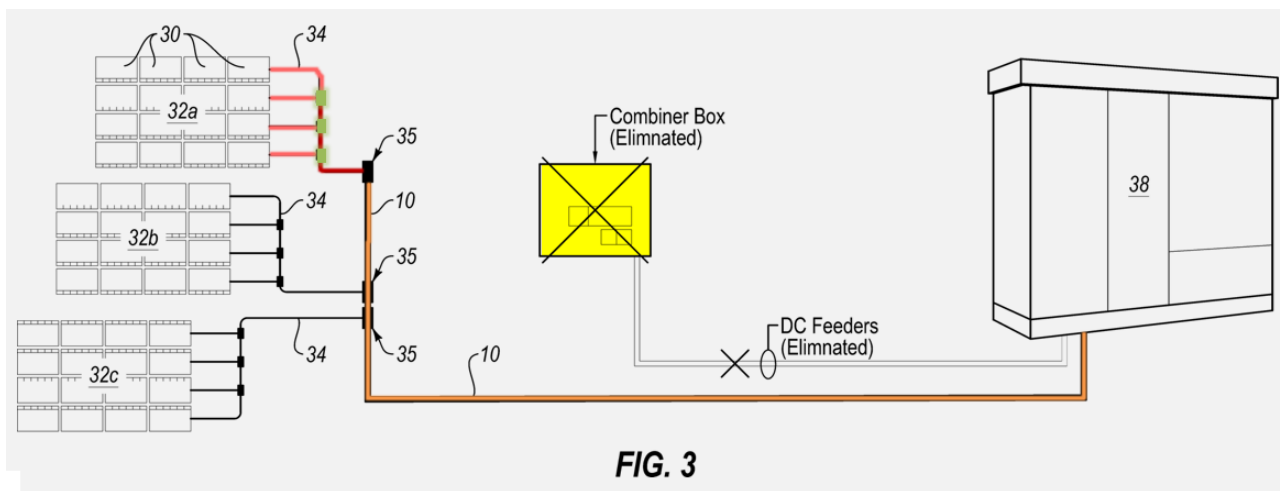


FIG. 2
Prior Art

CDX-0001C.11 (depicting annotated JX-0089); JX-0089 ('153 patent), Fig. 2 (annotated). The wire harness, shown above in red, consolidated single-circuit branch cables into a smaller number of trunk cables, each of which then carried power from an entire array (32a) to the combiner box. *Id.* As Solon testified, this invention was essentially about making the panel-to-combiner box wiring more efficient. JX-0217C (Solon) at 102:22–103:9, 103:12–104:19. As the Background section of the '153 patent explains, this round of invention is covered by Solon's U.S. Patent No. 8,604,342. JX-0089.0030 ('153 patent) at 1:25–34.

With the '153 patent, Solon went in a different direction. Instead of starting from the solar panel arrays and continuing to work toward the combiner box, Solon had the idea to start from the inverter and extend the DC feeder cable into the field, bypassing the combiner box entirely and connecting directly to the wire harness trunks (*See, e.g.*, CX-0167.0001; CX-0144.0005–10; Tr. (Macias) at 111: 10–23; Tr. (Bardos) at 662:5–10)—as shown in Figure 3, shown below in orange:



CDX-0001C.15 (depicting annotated JX-0089); JX-0089 ('153 patent), Fig. 3 (annotated). As schematically illustrated in Figure 7, a drop line (12) connects at one end to a wire harness trunk

(34 in Fig. 4; not shown in Fig. 7); and at the other end, the drop line is secured to the feeder cable (14) by means of a compression lug (20), to form a joint (17):

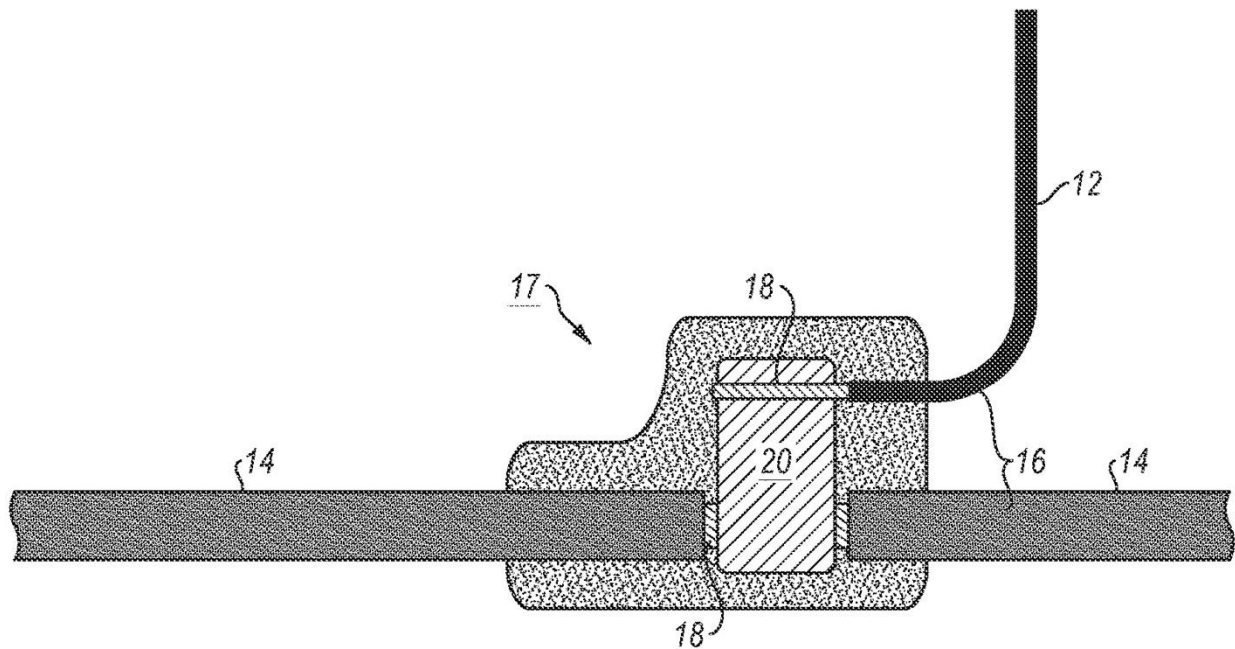


FIG. 7

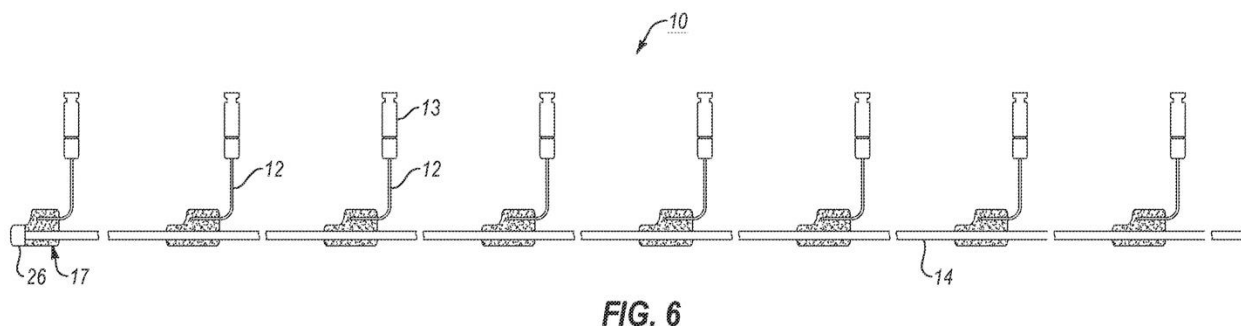
JX-0089 ('153 patent), Fig. 7.

Shoals went to trial on claims 1, 11–14, 18, 21, 23, and 24 of the '153 patent. Claims 1, 21, and 24 are independent. JX-0089 ('153 patent), claim 1. Claim 1 describes a lead assembly and focuses on the joint; it requires a feeder cable, two drop lines, an undermold, and an overmold. *Id.* Claims 21 and 24 are directed to a broader solar power system, of which the lead assembly and its joints are a part; and instead of requiring the joint to have both undermold and overmold, like claim 1, claims 21 and 24 require only that the joint have a “primary” mold. *Id.* at claim 21, claim 24.

D. The products at issue

As mentioned, Shoals' DI product is its BLA; Voltage's accused product is its LYNX. The products at issue are *not* individual joints; rather, the products are complete assemblies (*i.e.*,

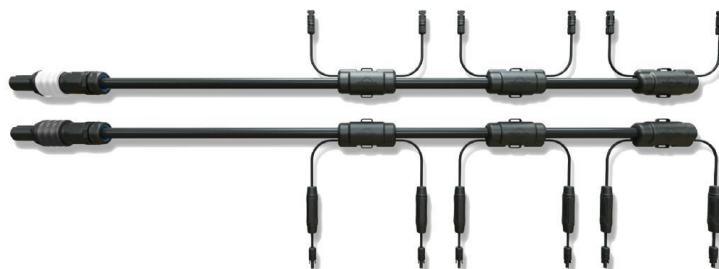
the “A” in BLA stands for “Assembly”) that include a feeder cable with multiple joints. Patent Figure 6 is instructive: ²



JX-0089 (’153 patent), Fig. 6. The patent uses reference number 10 to indicate the lead assembly and reference number 17 to indicate a particular joint on the assembly. JX-0089 (’153 patent) at 4:17, 23. Shoals’ BLA and Voltage’s LYNX are commercial embodiments of the patent’s lead assembly, not its individual joints. Shoals calls its individual joints “mold drops,” not BLAs;

See e.g., Tr. (Macias) at 119:14–120:11, 135:25–136:12; Tr. (Brooks) at 392:3–393:22, 394:17–395:15; Tr. (Bardos) at 658:2–19 (regarding BLA); . For the sake of clarity, individual molds or individual trunk busses corresponding to the Voltage LYNX Trunk Bus will be referred to herein as “LYNX mold drops.”

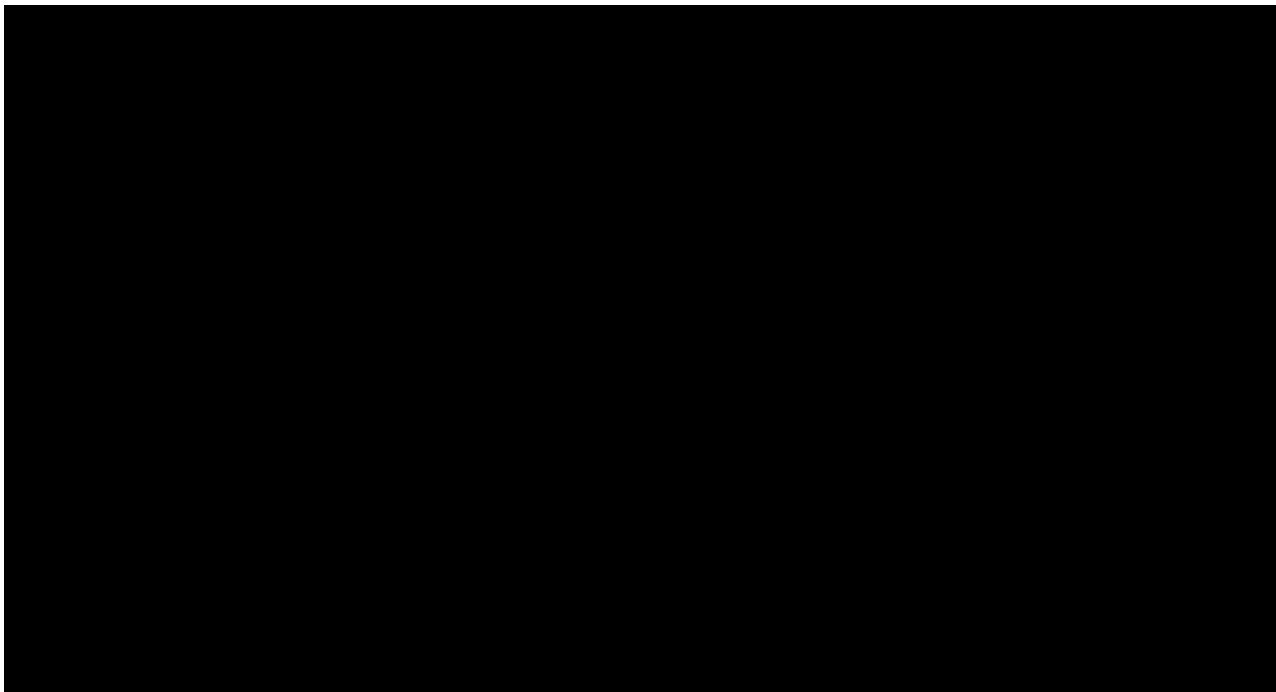
A typical pair of BLAs, with three mold drops each, is shown below.



² Unlike Figure 6, each BLA and LYNX joint generally has multiple drop lines, not just one.



See, e.g., CX-0167.0001; JX-0099.0007–08. Each BLA shown above includes three mold drops along the feeder cable, each of the mold drops has two drop lines; the drop lines of the bottom BLA (the positive BLA) also have inline fuses. *Id.* The BLAs shown above are exemplary. In reality, each BLA is designed for a particular solar installation. *See, e.g.*, Tr. (Bardos) 650:8–2. As such, each BLA includes multiple mold drops, and each of the mold drops included in a BLA may include disparate numbers of drop lines based on the individual solar installation design, among other considerations. *Id.* Below is an internal view of a bisected BLA mold drop, showing the feeder cable and four drop lines, two on each side:

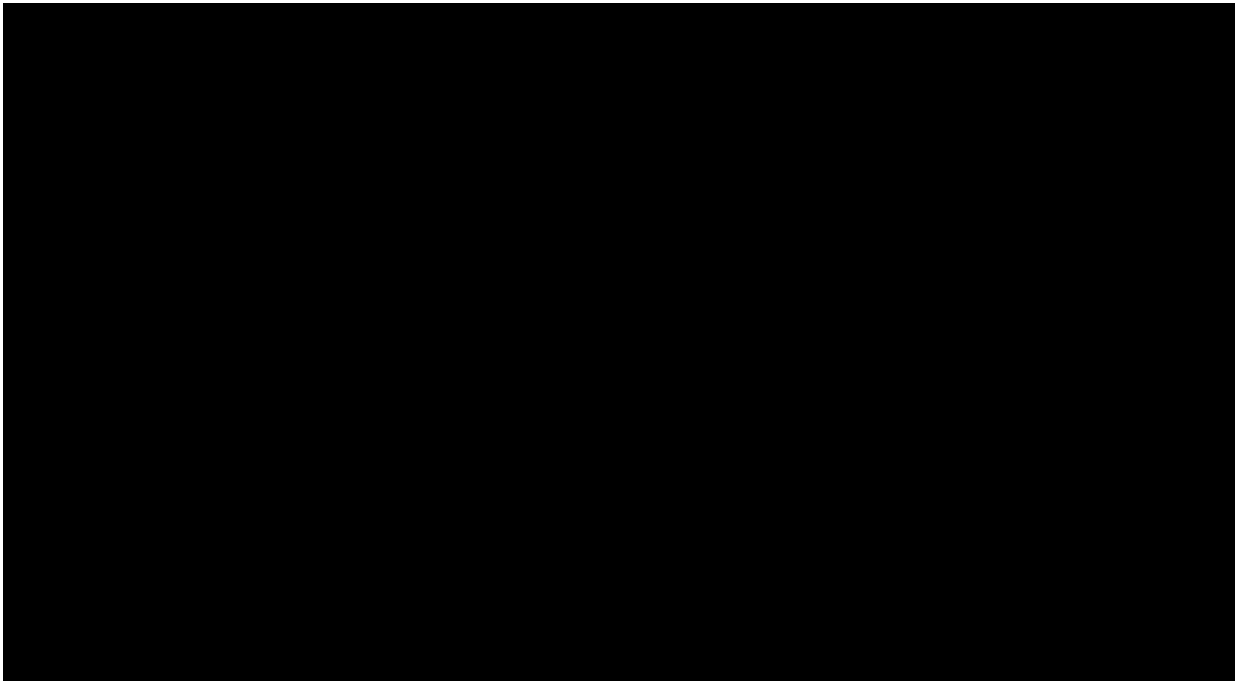


JX-0121 (with annotations); *see also* CPX-0036.1C. Each BLA mold drop may be made with up to eight drop lines that each electrically connect with the feeder cable via the compression lug.

Likewise, a typical Voltage LYNX product is shown below:

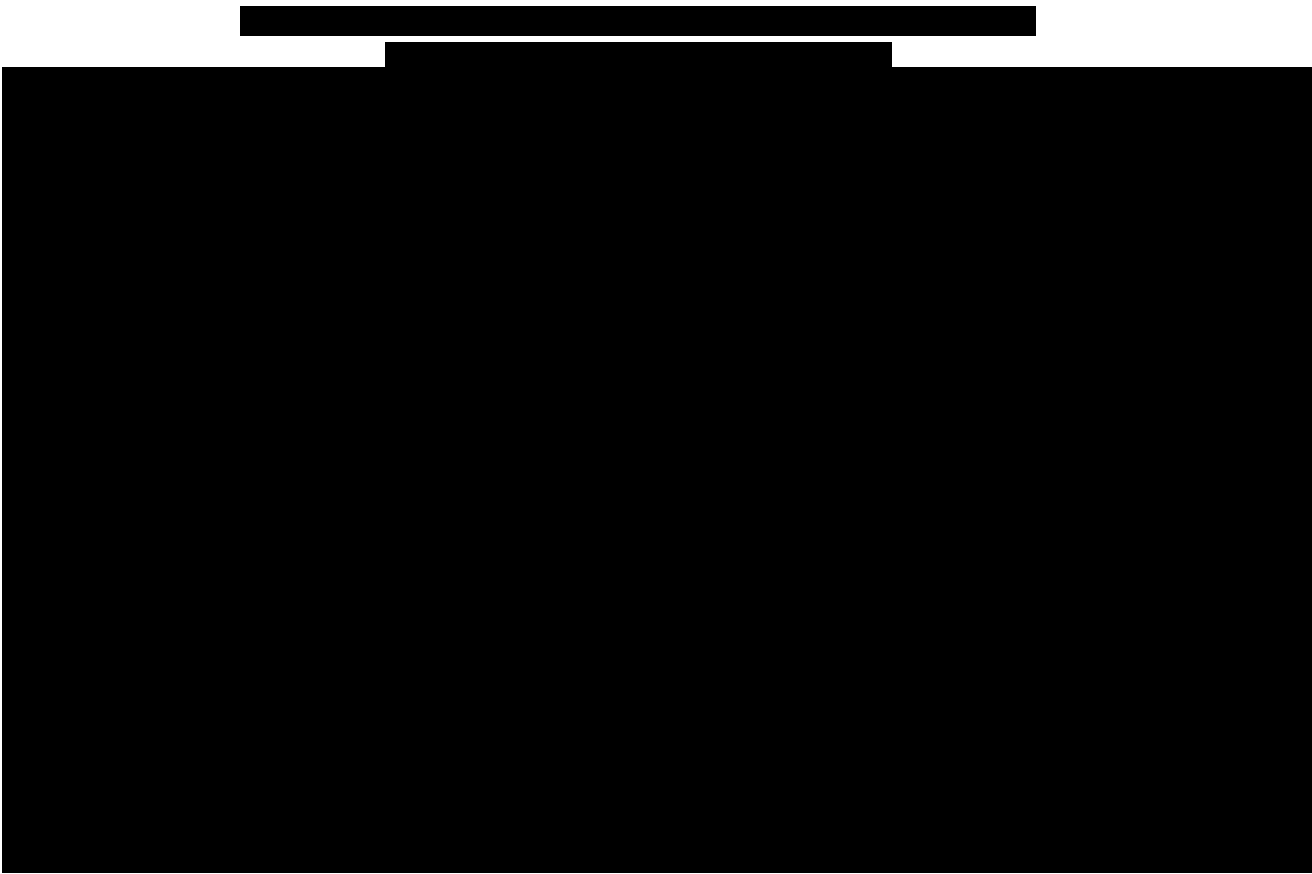
[REDACTED]

[REDACTED]



JX-0159C.0008. [REDACTED]

[REDACTED] Below are similar pictures of an example LYNX mold drop. In the example shown below, the LYNX mold drop includes four drop lines: Each of the four drop lines is electrically connected to the feeder cable via the compression lug. The LYNX mold drop shown below includes both a LYNX mold drop and a cross section of the same type of LYNX mold drop (*i.e.*, the same number of drop lines and size of feeder cable).



CPX-0030 (with annotations).

Voltage's own patent filings show it developed its LYNX with both Shoals' BLA *and* Shoals' patents in mind. Note the angle of the LYNX drop lines, relative to the feeder cable. Shoals' U.S. Patent No. 10,992,254, the parent of the '153 patent, issued on April 27, 2021, with claims that require a drop-line aperture that is *parallel to* the feeder-cable aperture. Less than three months later, on July 21, 2021, Voltage filed a provisional patent application on its trunk bus system that tried to distinguish the Voltage design from a prior art "present product" with an "undermold," "overmold" and a "parallel structure." CX-350.0010-11. A year later, Voltage filed its non-provisional application, elaborating on the distinction and explaining that the Voltage design does not have a "disadvantageous" "parallel structure":

Previously, certain truck [sic] busses have been utilized that employ a parallel structure. Disadvantageously, in previous designs, the branch cable (smaller wire) must be bent at least twice—one ~90 degree bend to move the branch cable conductor down to the trunk cable (larger wire) and a

[REDACTED]

second ~90 degree bend to align the branch cable with the trunk cable to facilitate electrical contact between the two.

CX-349.00022. The application was filed with an information disclosure statement that identified the '254 patent and *no other* prior art references. CX-349.0002. [REDACTED]

[REDACTED]

[REDACTED] The asserted claims of the '153 patent, however, do not include the parallel-apertures limitation.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

III. JURISDICTION AND IMPORTATION

Section 337 proceedings are *in rem*, making *in personam* jurisdiction unnecessary. *Sealed Air Corp. v. Int’l Trade Comm’n*, 645 F.2d 976, 981 (C.C.P.A. 1981). Here, it is undisputed that Voltage manufactures, imports, and sells for importation or after importation into the United States the accused LYNX products, over which the Commission has *in rem* jurisdiction.

[REDACTED] . [REDACTED]

[REDACTED] and thus satisfies the importation requirement under 19 U.S.C. § 1337(a)(1)(B), [REDACTED]

[REDACTED] [REDACTED]

IV. CLAIM CONSTRUCTION

Construction of the aperture-related claim terms is dispositive of infringement and technical DI. Before turning to those terms and their construction, Shoals first considers the definition of a person of ordinary skill in the art (POSA) and other, less critical claim construction issues.

A. Level of ordinary skill

The *Markman* Order provisionally adopts the following POSA definition:

A person of ordinary skill in the art would have had at least a bachelor’s degree in mechanical or electrical engineering or a related scientific field and at least two years experience working with photovoltaic systems and electrical wiring, with recognition that more education could substitute for experience and that experience combined with training could substitute for formal education.

Order No. 16 at 12. Shoals understands “electrical wiring” in the phrase, “photovoltaic systems and electrical wiring,” to refer to electrical wiring in the context of photovoltaic systems, rather than electrical wiring more generally. Based on this understanding, Shoals does not propose any modifications to the definition.

B. “primary mold”

The *Markman* Order held that “the term ‘primary mold’” should be construed as a ‘mold fully encasing the nexus and substantially sealing the nexus from external environmental conditions,” with the further explanation that “[t]o the extent there is more than one mold with these characteristics, the ‘primary mold’ is the innermost of such molds.” Order No. 16 at 37.

C. “aperture” terms

All the independent claims of the ’153 patent use the term “aperture.” The table below includes the aperture limitations for all three independent claims, with variations bolded:

Claim 1	Claim 21	Claim 24
a first aperture extending completely through the undermold and having a first diameter, wherein the feeder cable extends through the first aperture along a first longitudinal axis	a first aperture extending completely through the primary mold and having a first diameter, wherein the feeder cable extends through the first aperture	a first aperture extending completely through the primary mold and having a first diameter, wherein the feeder cable extends through the first aperture along a first longitudinal axis;
a second aperture extending partially through the undermold and having a second diameter different than the first diameter, wherein the drop line extends from the second aperture along a second longitudinal axis	a second aperture extending partially through the primary mold and having a second diameter smaller than the first diameter, wherein the drop line extends into the second aperture	a second aperture extending partially through the primary mold and having a second diameter smaller than the first diameter, wherein the drop line extends into the second aperture along a second longitudinal axis
a third aperture extending partially through the undermold and having a third diameter different than the first diameter, wherein a second drop line extends from the third aperture along a third longitudinal axis	a third aperture extending partially through the primary mold and having a third diameter smaller than the first diameter, wherein the second drop line extends into the third aperture	the second drop line extends into a third aperture defined by the primary mold along a third axis

[REDACTED]

[REDACTED]

Each claim requires three apertures, one for the feeder cable and two more for drop lines. They differ, however, in three ways. First, claim 1 defines the apertures with respect to the *undermold*, while claims 21 and 24 define them with respect to the *primary* mold. Second, claims 1 and 24 recite axes along which the drop lines extend, either *from* (claim 1) or *into* (claim 24) the drop line apertures; claim 21 does not recite axes. Third, claim 1 requires the drop-line apertures to have a diameter *different* than the diameter of the feeder-cable aperture; claims 21 and 24 require the drop-line aperture to be *smaller*.

Voltage and Staff have argued that the aperture terms are indefinite. The *Markman* Order provisionally rejected this contention: “at least at this stage of the investigation, the evidence does not clearly and convincingly show that the ‘aperture’ terms are indefinite.” Order No. 16 at 41. Instead of finding the term indefinite, the Judge “construe[d] ‘aperture’ as the ‘entire pathway of the [feeder cable or drop line] within the [undermold or primary mold], when viewed as if the [feeder cable or drop line] were removed.” *Id.* (text bracketed as in original).

Beyond that, as the *Markman* Order observes:

The parties do not appear to fundamentally dispute the meaning of “first aperture extending [... completely]”; all parties appear to agree that the first aperture follows the feeder cable, which must extend from one side of the mold through the nexus (*e.g.*, a compression lug) and then through to the other side of the mold.

Order No. 16 at 48. However, there is a “dispute as to ‘extending partially,’” concerning “how to determine where drop line apertures (‘second’ or ‘third’ apertures) terminate.” *Id.* at 49. In the *Markman* Order, the Judge “tentatively” held “that the ‘second aperture’ and ‘third aperture’ terms correspond to the pathway in the undermold/primary mold of the claimed ‘first drop line’ and ‘second drop line,’ respectively.” *Id.* at 49.

[REDACTED]

[REDACTED]

Shoals agrees with the *Markman* rulings on the aperture terms. Voltage and Staff presented no new evidence at trial to justify any revision of those rulings. Shoals understands that nonetheless, Voltage (and maybe Staff³) continue(s) to assert “aperture” is indefinite. But Voltage and Staff have been less clear about how they now contend the aperture terms should be construed, if the *Markman* ruling of no indefiniteness stands. They argue that somehow the second and third apertures are pathways for drop line *wires*—rather than for drop lines, as determined by the *Markman* Order. They are driven to this contention because their noninfringement and technical DI theories require it. But they have not been clear about whether they intend to get to that conclusion by expressly challenging the *Markman* Order’s constructions of “aperture” or “extending partially,” or by belatedly proposing a new construction of “drop line” or “drop.”⁴

³ Staff counsel argued at trial that the asserted claims are not invalid. See SDX-0001C.3 (depicting summary of Staff’s positions); Tr. (Staff) at 83:9–13 (“Staff expects the evidence will demonstrate that the asserted claims are . . . not invalid based on indefiniteness.”). But other aspects of his trial presentation suggest he may be reverting to his advocacy of indefiniteness.

⁴ Dr. Cameron provided no opinion in her expert report or deposition that there is any difference between “drop” and “drop line” and, as a result, was precluded from doing so at the hearing. See Tr. (Cameron) at 1081:7–1083:7. Further, “drop” and “drop line” were never proposed by any party as terms that needed to be construed at *Markman* or through hearing briefing. See JX-0254. Nor did Voltage propose a construction (or basis for construction) of “drop” or “drop line” in Voltage’s pre-hearing brief as required under Ground Rule 9.2. Order No. 2. Based on the evidence in the record, it is entirely unclear what distinction, if any, Voltage is trying to draw, and it would be untimely and prejudicial to allow Voltage to introduce claim construction positions for the first time post-hearing. See, e.g., *Certain Flash Memory & Prod. Containing Same*, Inv. No. 337-TA-685, ID, 2011 WL 1208948 at *18 (Feb. 28, 2011) (“This post -hearing argument by Spansion regarding prior filtering is a new claim construction that respondents unsuccessfully attempted to raise during the hearing. See Tr. (Kenny) 1214-1244. The argument was untimely then, and it is no less untimely now. In fact, Spansion concedes that its attempt to change the claim construction was denied and yet it attempts to do so once again in its post-hearing brief. Spansion’s second attempt to change its position is also denied.”).

[REDACTED]

[REDACTED]

1. The intrinsic evidence forecloses Voltage's and Staff's one-wire-per-aperture theory.

Whichever course they choose, however, it will be foreclosed by the intrinsic evidence. First, the patent explicitly makes clear that a single wire can form two drop lines. For example, the patent describes both Figure 37 and Figure 53, reproduced below, as: “a *dual drop lead assembly ... with wires exposed at nexus*”⁵:

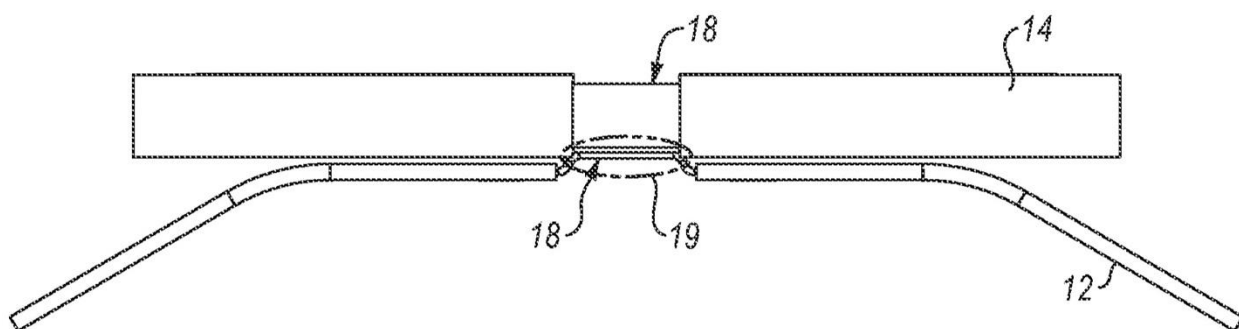


FIG. 37

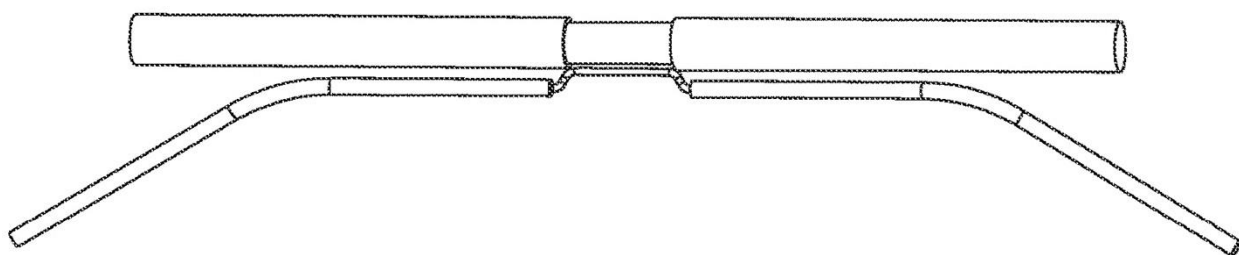


FIG. 53

JX-0089 at 3:16–17, 52–53 (first italics added). Indeed, during prosecution of the parent '254 patent, the examiner observed that Figure 37 (among others) shows “two drop lines ... joined to a feeder cable at the nexus.” JX-0085.0087. And both figures show a single wire forming the two drop lines.

⁵ The descriptions differ only in feeder cable size: the feeder cable of Figure 37 is described as 750 MCM, that of Figure 53 as 250 MCM.

[REDACTED]

[REDACTED]

Second, the specification expressly articulates a one-to-one correlation between drop lines and solar array wire harness connections: “each drop line is connected to a solar array”; “each drop line includes a drop line connector for fast and easy connection to the wire harness”; “[e]ach drop line 12 terminates in drop line connector 13, which connects drop line 12 to wire harness connector 35.” JX-0089, Abstract; 2:9–10; 4:64–65. The patent counts drop lines by counting the number of wire harness connections, with each connection corresponding to one drop line, not by counting the number of wires that the drop lines are made of. Further underscoring the distinction between wires and the drop lines they form, during prosecution of the parent ’254 patent the examiner also repeatedly referred to “the wires/conductor used to form the drop lines and feeder cables.” JX-0085.196, 201, 232, 289, 295.

Finally, the claim language expressly ties the second and third apertures to drop lines, not wires. Thus, claim 1 recites “a second aperture ... wherein the drop line extends from the second aperture” and “a third aperture ... wherein a second drop line extends from the third aperture”; claim 21 recites “a second ... wherein the drop line extends into the second aperture” and “a third aperture ... wherein the second drop line extends into the third aperture”; and claim 24 recites “a second aperture ... wherein the drop line extends into the second aperture” and “a second drop line ... wherein the second drop line extends into a third aperture.”

All this is consistent with the *Markman* Order and inconsistent with Voltage’s and Staff’s effort to identify the second and third apertures by reference to wires. Indeed, as the *Markman* Order points out, as of the *Markman* hearing, at least, *everyone* agreed—even Voltage⁶ and

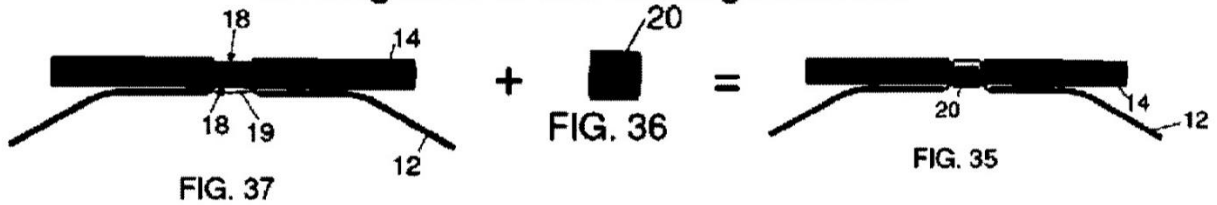
⁶ Even further, Voltage acknowledged at the hearing that “*the solar industry* would characterize these as two different drop lines.” JX-0298 (*Markman* Hrg. Tr.) at 184:7–24 (referring to drop lines formed from the same cable) (emphasis added).

Staff—that “multiple drop lines ... may ... be comprised of a single cable.” Order No. 16 at 49. Voltage’s and Staff’s new position is directly contrary to what they agreed to then.

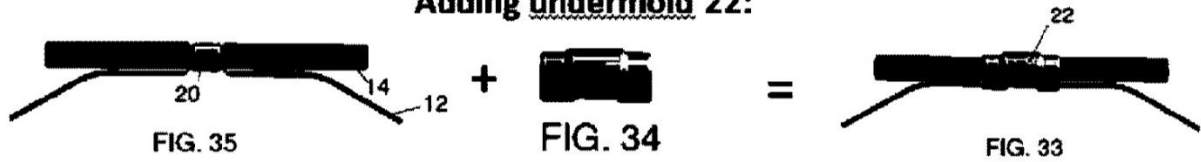
At trial, rather than confront the contrary intrinsic evidence, Voltage and Staff tried to evade or ignore it. For example, Staff asked Voltage’s Dr. Cameron to agree that in Figure 35, “the drop line is the entire drop line and the entire wire extending all the way from the left, all the way to the right,” even though the patent expressly describes that figure as a “*dual drop*” embodiment. Tr. (Cameron) at 1144:4–13; JX-0089 at 3:12–13 (*italics added*). Even more egregiously, when testifying on direct examination about Figure 37, Dr. Cameron took aim at an animated slide series in Shoals’ opening that shows how Figure 37 relates to the figures that precede it. *See* CDX-0001C.32, 33 (depicting animation of Figures 31–37 of JX-0089). Figure 37 (reproduced above) is important because it exposes the nexus, which is covered by other structures in preceding figures, and it unmistakably shows that at the nexus, a single wire forms two drop lines.

The Shoals opening slides that Dr. Cameron took issue with illustrate how the earlier figures build on Figure 37. *See id.* According to Dr. Cameron, those slides were wrong because Figure 37 “is not linked to the previous ones in the patent”; Dr. Cameron concedes that Figures 29, 33, and 35 “are linked together” but insists that Figure 37 “is not” linked to them. Tr. (Cameron) at 1064:14–19. But the specification *does* link those figures by expressly describing all four of them as “depict[ing] a dual drop lead assembly for 750MCM cable.” JX-0089 at 2:66–67, 3:8–9, 3:12–13, 3:16–17. Further, during prosecution of the parent ’254 patent, the applicant expressly linked them in precisely the same way as Shoals’ opening slides, by showing how Figure 35 is what results from covering the nexus 19 of Figure 37 with the compression lug 20 of Figure 36:

Covering nexus 19 with securing means 20:



Adding undermold 22:

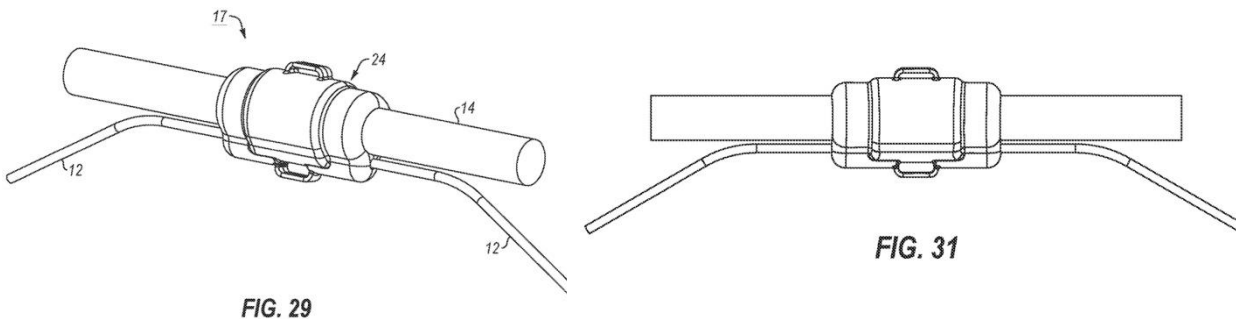


Adding overmold 24:



JX-0085.0128. The intrinsic evidence thus definitively and unmistakably links a single wire, as shown in Figure 37, to two drop lines, as also shown in Figures 35, 33, and 31.

Figure 29 reinforces the point. As shown below, Figure 29 is a perspective view of Figure 31:



See also JX-0089 at 2:66–67, 3:3–4 (“FIG. 29 depicts a dual drop lead assembly for 750MCM cable”; “FIG. 31 depicts a dual drop lead assembly for 750MCM cable with overmold shown”).



Reinforcing the connection between Figure 29 and the other relevant figures, as shown above, the prosecution history links Figures 31 and 35 to 37; and the specification, in turn, extends that linkage to Figure 29: “As shown in FIG. 35, the drop line and feeder cable are held together by compression lug 20, which is surrounded by undermold 22 (FIG. 33), which is surrounded by overmold 24 (FIG. 29).” JX-0089 at 2:58–61. Figure 29 has two distinctly labeled drop lines, and the specification explicitly states that “dual drop lines 12” are “shown in FIG. 29.” *Id.* at 5:4.

In sum, the intrinsic evidence conclusively establishes a firm distinction between wires and the drop lines they form; and it demonstrates that a single wire may form two distinct drop lines—each with its own partially extending aperture.

As part of their about-face, it appears Voltage and Staff might now intend to argue an inconsistency between saying, on the one hand, that a mold drop with a single drop-line wire has two drop lines and two apertures, and on the other hand that it has only a single feeder cable and a single aperture for that cable. To a POSA who not only sees wires but also understands their use, however, there is no contradiction. Each drop line has its own connector that connects it to its own solar array. Current from the array flows *from* that connector *to* the nexus. Tr. (Macias) at 124:24–125:9; Tr. (Brooks) at 421:7–16. That flow of current *from* a connector *to* the nexus individuates the drop line. Tr. (Brooks) at 428:7–12, 512:17–513:7, 586:3–9. The current carried by the feeder cable, however, flows in one direction from where the cable enters the mold, then through the nexus, to where the cable leaves the mold. Thus, its current flows at one end *to* the nexus and at the other end, *away* from the nexus. Therefore, a POSA sees two drop lines leading to the nexus but only one feeder cable passing through the nexus.

[REDACTED]

[REDACTED]

2. Voltage’s new indefiniteness theory also fails.

It also appears that Voltage (and maybe Staff) may argue that uncertainty about precisely where drop lines end renders the claims indefinite. This, too, would fail. A patent should include “claims particularly pointing out and distinctly claiming the subject matter which the inventor ... regards as the invention.” 35 U.S.C. § 112(b). This is the definiteness requirement. *See Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 902 (2014). “The object of the patent law in requiring the patentee to ‘particularly point out and distinctly claim ... his invention or discovery,’ is not only to secure to him all to which he is entitled, but to apprise the public of what is still open to them.” *McClain v. Ortmayer*, 141 U.S. 419, 424 (1891) (quoted in *Nautilus*, 572 U.S. at 909).

Here, one of Shoals’ experts, William Brooks, testified that the drop line ends (or begins) within the nexus, explaining that there is no specific point within the nexus that can be said to be the terminus of the drop line. Tr. (Brooks) at 553:7–557:3; RDX-0013 (document annotated by Mr. Brooks on cross-examination, to show path of first drop line); RDX-0014 (same, for second drop line). Voltage’s rebuttal expert on infringement, Dr. Cameron, testified to her *agreement* that the first and second drop lines each end in the middle of the compression lug. Tr. (Cameron) at 1127:14–1128:5; *see also* Tr. (Cameron) at 1158:13–1160:17; CDX-0020 (document annotated by Dr. Cameron in deposition testimony played for impeachment at cited trial transcript pages). This testimony does not render the claims indefinite because it does not create any uncertainty about what the claims leave open to the public. So long as each drop line ends within the nexus, the aperture associated with each drop line will likewise extend no farther than its drop line, and neither aperture will extend completely through the undermold.

V. INFRINGEMENT

A. Legal Standard

An infringement analysis requires two separate steps: first, the court must construe the claims asserted to be infringed as a matter of law in order to establish their meaning and scope; second, the claims as construed are compared to the allegedly infringing device or process. *Texas Instruments Inc. v. Cypress Semiconductor Corp.*, 90 F.3d 1558, 1563–64 (Fed. Cir. 1996); *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 379 (1996). To literally infringe, the accused device or process must contain every limitation of the asserted claim. *See Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1535 (Fed. Cir. 1991). Even if the accused device or process does not literally infringe, it may infringe under the doctrine of equivalents if the differences between the claimed invention and the accused device or process are “insubstantial.” *Hilton Davis Chem. Co. v. Warner–Jenkinson Co.*, 62 F.3d 1512, 1518 (Fed. Cir. 1995); *see also Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1310 (Fed. Cir. 2005) (to prove direct infringement, it must be established that “one or more claims of the patent read on the accused device literally or under the doctrine of equivalents”). Findings on infringement, whether literal or under the doctrine of equivalents, are questions of fact. *Oak Tech., Inc. v. Int’l Trade Comm’n*, 248 F.3d 1316, 1325 (Fed. Cir. 2001).

Sometimes a device only needs to be “capable of operating” according to a claimed limitation for a finding of infringement, depending on the claim language, *i.e.*, according to the functional terms recited in the claim. *Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1204–05 (Fed. Cir. 2010); *INVT SPE LLC v. Int’l Trade Comm’n*, 46 F. 4th 1361, 1375–76 (Fed. Cir. 2022). Where claim language recites capability, as opposed to actual operation, an apparatus that is reasonably capable of performing the claimed functions without significant alterations can

[REDACTED]
[REDACTED]

infringe those claims. *INVT SPE LLC*, 46 F. 4th at 1375–76. Apparatus claims cover what a device is, not what a device does, and the focus of apparatus claims is the structure, and not the operation or use. *Id.* (citing *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1468 (Fed. Cir. 1990)).

A party may also be liable for contributory infringement if that party sells, or offers to sell, a material or apparatus for use in practicing a patented process. *I4i Ltd. P'ship v. Microsoft Corp.*, 598 F.3d 831, 850–51 (Fed. Cir. 2010); 35 U.S.C. § 271I. That material or apparatus must be a material part of the invention, have no substantial noninfringing uses, and be known by the party to be especially made or especially adapted for use in an infringement of such patent. 35 U.S.C. § 271I; *Cross Med. Prods.*, 424 F.3d at 1312. To prevail on contributory infringement in a Section 337 case, the complainant must show: (1) there is an act of direct infringement in violation of Section 337; (2) the accused device has no substantial non-infringing uses; and (3) the accused infringer imported, sold for importation, or sold after importation within the United States, the accused components that contributed to another's direct infringement. *See* 19 U.S.C. § 1337(a)(1)(B); *DSU Med. Corp. v. JMS Co.*, 471 F.3d 1293, 1303 (Fed. Cir. 2006); *see also Ricoh Co., Ltd. v. Quanta Computer Inc.*, 550 F.3d 1325, 1337 (Fed. Cir. 2008) (stating that an accused infringer “should not be permitted to escape liability as a contributory infringer merely by embedding [the infringing product] in a larger product with some additional, separable feature”). Additionally, 35 U.S.C. section 271(b) provides that “[w]hoever actively induces infringement of a patent shall be liable as an infringer.”

B. LYNX infringes.

“Issues of infringement and validity ‘are analyzed in great part from the perspective of a person of ordinary skill in the art,’ such that a witness who is ‘not qualified as an expert by

[REDACTED]

[REDACTED]

knowledge, skill, experience, training, or education in the pertinent art ... [cannot] assist the trier of fact to understand the evidence or to determine a fact in issue.’” *HVLPO2, LLC v. Oxygen Frog, LLC*, 949 F.3d 685, 688–89 (Fed. Cir. 2020) (quoting *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1361–62 (Fed. Cir. 2008) and Fed. R. Evid. 702)) (internal quotations omitted). “Thus, ‘it is an abuse of discretion to permit a witness to testify as an expert on the issues of noninfringement or invalidity unless that witness is qualified as an expert in the pertinent art.’” *Id.* at 689 (quoting *Sundance, Inc.*, 550 F.3d at 1363).

The Judge heard evidence from Shoals’ proffered technical expert, William Brooks, of his status as a licensed professional engineer, his education, and his 36 years of experience designing, building, and inspecting utility-scale solar photovoltaic systems. Tr. (Brooks) at 381:21–385:15; JX-0239 (Brooks CV). Mr. Brooks testified that his experience included working with the parts of those systems that transmit solar energy from the solar panels to the electrical grid, known in the industry as EBOS. Tr. (Brooks) at 384:13–19. Mr. Brooks further testified to his multiple professional certifications and leadership roles within the PV industry, including development of the UL 9703 technical standard covering wire harnesses related to solar photovoltaic systems (Tr. (Brooks) at 386:6–388:11), which is the standard governing the products-at-issue in this Investigation. Mr. Brooks also noted that his work with the Institute of Electrical and Electronics Engineers (IEEE) has been focused on the utility interconnections standards critical to the viability of solar photovoltaic systems as a utility-scale alternative source for electrical power. Tr. (Brooks) at 388:12–23. On the basis of this evidence, and without objection, the Judge admitted Mr. Brooks as “an expert on photovoltaic solar energy systems, EBOS, and the electrical wiring for such systems.” Tr. (Brooks) at 388:24–389:7.

Mr. Brooks and Shoals' other technical expert witness, Josh Weiner, were the only experts to testify at the hearing whose qualifications aligned with the Judge's determination that the level of skill in the art required "at least two years experience [or educational equivalent] working with photovoltaic systems." *Markman* Order⁷ at 12; Tr. (Brooks) at 390:2–8 (Mr. Brooks confirming such alignment); Tr. (Weiner) at 1262:19–1263:16 (Mr. Weiner admitted as "an expert in photovoltaic solar energy systems, EBOS, and the electrical wiring for solar systems," and confirming ability to testify from that perspective); Tr. (Cameron) at 1046:2–10 (Voltage's expert, Dr. Cameron, admitted only as an "expert in mechanical engineering and electrical connectors"); Tr. (Kenny) at 1169:2–7 (Voltage's expert, Dr. Kenny, admitted only as "an expert in the fields of physics and electrical and mechanical engineering and systems, and not ruling on whether he qualifies as a person of ordinary skill in the art"); *see also* Tr. (Brooks) at 389:16–22 (Mr. Brooks stating he has never heard of Dr. Cameron or Dr. Kenny in his 36 years working in the solar industry).

Mr. Brooks proceeded to testify that he was engaged by Shoals to study the Voltage and Shoals trunk bus products and to evaluate whether they practice the claims of the '153 patent, that he had applied the plain meaning of the claim language in developing the infringement opinions stated in his expert report, and that the constructions subsequently stated in the *Markman* Order for "aperture," "[second/third] aperture ... extending partially," and "primary mold" had not changed his opinions insofar as they relate to claims 1, 11, 12, 13, 14, 18, 21, 23, and 24 of the '153 patent. Tr. (Brooks) at 390:9–392:2. Mr. Brooks expressly confirmed that the "entire pathway" construction of "aperture" does not alter his conclusions because it aligns with the "all or part of the pathway" construction he had earlier applied. Tr. (Brooks) at 391:6–

⁷ Order No. 16 (Feb. 20, 2024).

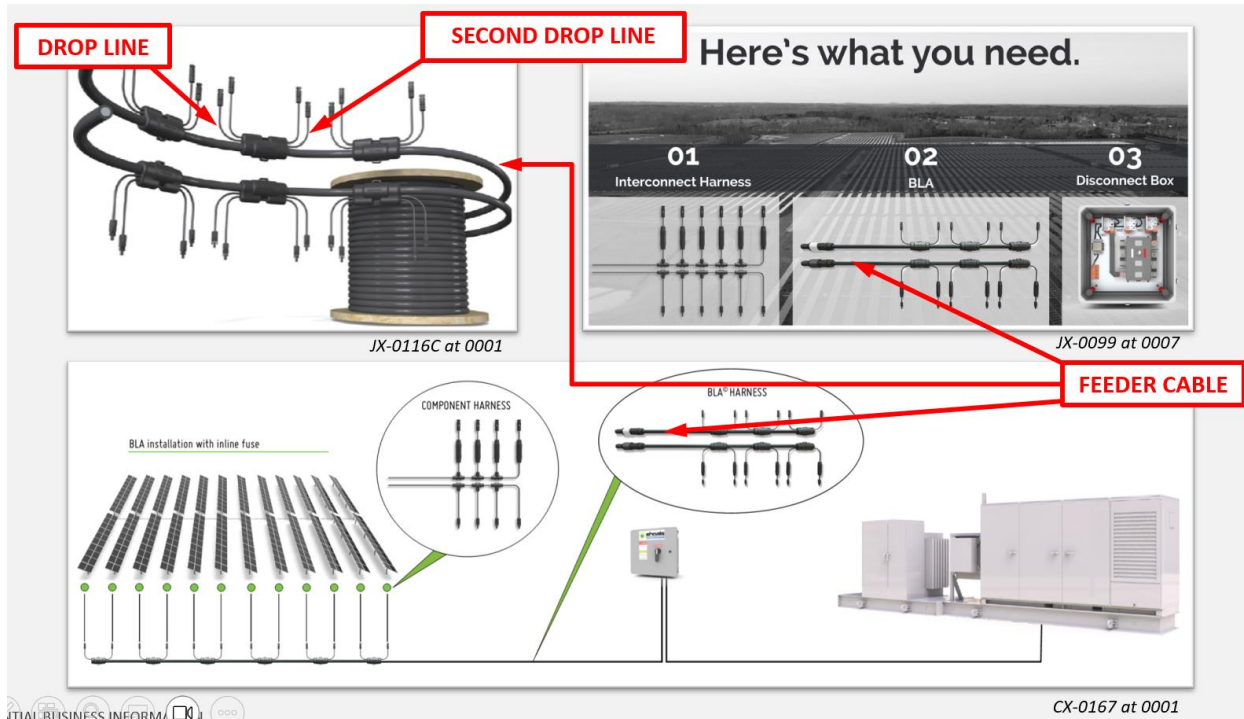
391:23. This is so because “all” and “entire” mean the same thing, and there are no “parallel” limitations for the apertures of the asserted claims of the ’153 patent, so the “entire pathway” requirement does not affect the infringement read in the least.

In forming his opinions, Mr. Brooks reviewed the ’153 patent (JX-0089) and its prosecution history (JX-0088, JX-0085) and determined that the claims at issue all center on certain structural features of the BLA, and the structural relationships among them, namely: a feeder cable, a drop line, a drop line connector, a second drop line, a nexus, an undermold, a first aperture, a second aperture, a third aperture, and an overmold. Tr. (Brooks) at 406:2–407:1.

Before turning to his claim-by-claim analysis, Mr. Brooks summarized some of the things that helped inform his opinions as to both the Shoals domestic industry products and the Voltage products accused of infringement. Starting with the Shoals products, and using his demonstrative slides and a number of exhibits (CDX-0005C at 0007–0008 (depicting CPX-0036 and annotated excerpts of JX-0116C at 0001, JX-0099 at 0007, and CX-0167 at 0001); CPX-0036), Mr. Brooks explained the features of Shoals’ BLA, emphasizing that each BLA is an “assembly” typically made up of multiple mold drops, and that it is not precisely correct to refer to an individual mold drop, such as CPX-0036, shown immediately below, as a “BLA,” shown thereafter. Tr. (Brooks) at 392:3–396:10.

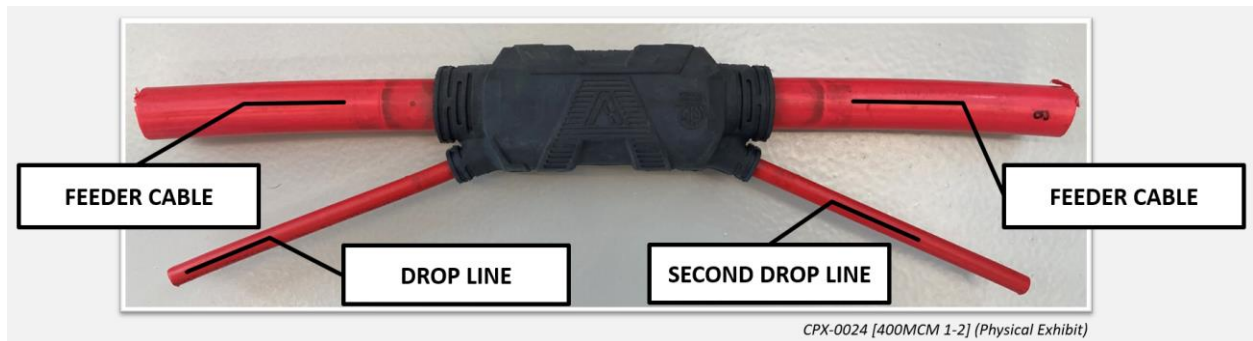
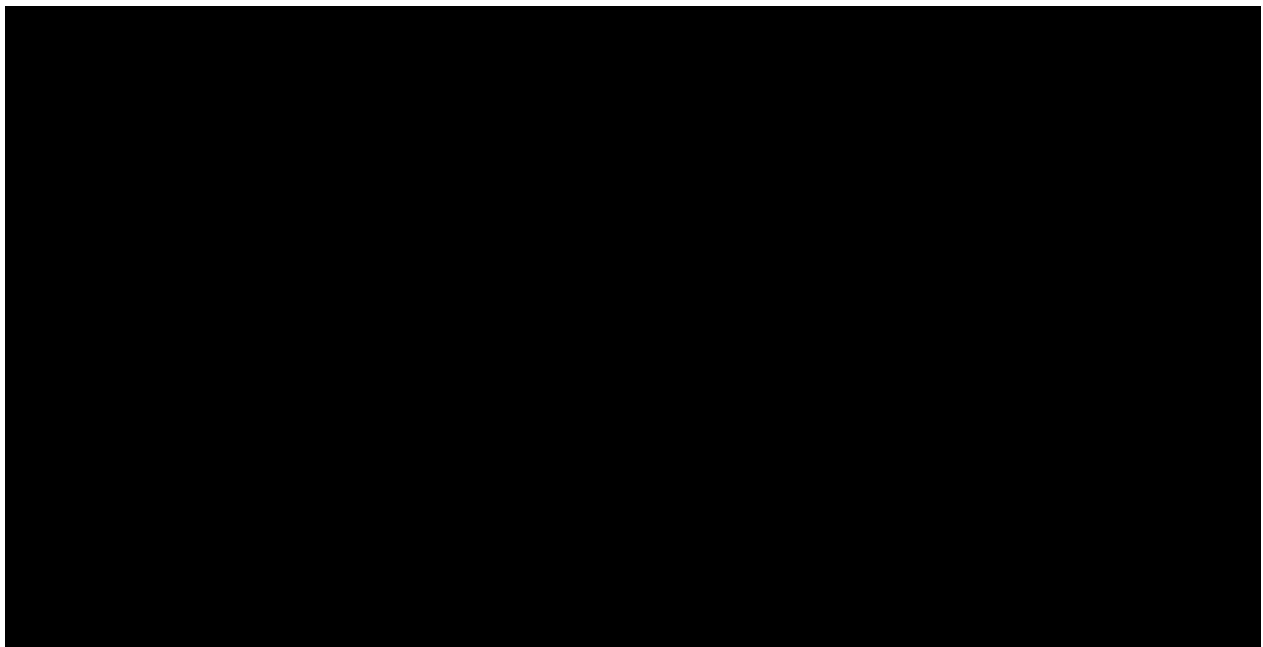


CPX-0036 [Shoals BLA Drop Mold] (Physical Exhibit)



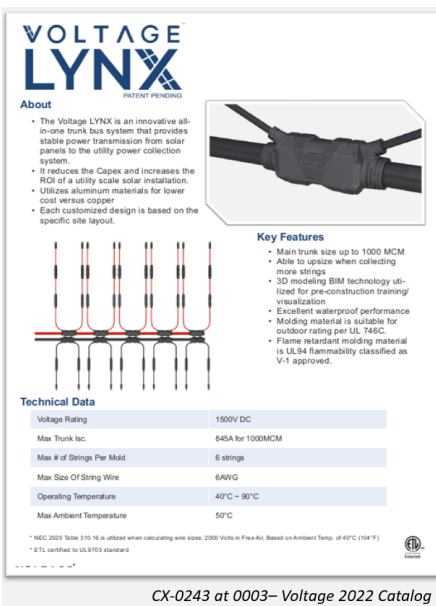
Turning to the Voltage LYNX product, Mr. Brooks explained that it too is a lead assembly, sometimes called a trunk bus, and, like the BLA, typically incorporates multiple mold drops positioned along a single feeder cable spanning dozens or hundreds of feet. Tr. (Brooks) at 396:11–397:6, 398:8–400:16; *see also* Tr. (Ge) at 963:20–964:12 ([REDACTED]). He again illustrated with his demonstrative slides a Voltage LYNX mold drop physical exhibit, and other Voltage documentation. CDX-0005C at 0008 (depicting annotated excerpts of JX-0116C at 0001, JX-0099 at 0007, and CX-0167 at 0001) and 0009 (depicting CPX-0024 with annotations); CPX-0024; JX-0159C at 0008. The image immediately below shows a single LYNX mold drop—this one having two drop lines. Tr. (Brooks) at 396:16–397:6. The image after that, from an actual Voltage installation for [REDACTED] Voltage lead assembly; so-called because [REDACTED], consisting of [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED] Tr. (Brooks) at 398:8–399:5,
401:13–16; JX-0159C at 0008.



Importantly, Mr. Brooks also explained that [REDACTED]
[REDACTED]
[REDACTED]” Tr. (Brooks) at 400:14–401:4. He thus
confirmed that [REDACTED] Tr.
(Brooks) at 401:9–12.

Mr. Brooks testified that he learned from Voltage's 2022 catalog and other documents that Voltage calls its mold drops "molds" or "overmolds,"⁸ that each one can have up to 6 "strings" or "inputs," i.e., drop lines, no larger than 6 AWG, and that each can have a feeder cable, or "trunk," sized larger than the drop lines, ranging from a fairly small 1/0 AWG up to an extremely large 1000 MCM. Tr. (Brooks) at 401:17–403:4; CDX-0005C at 0011 (depicting excerpt of CX-0243.0003) and 0012 (depicting excerpt of JX-0139C at. 0004). This information is covered in a single page of each of the referenced exhibits, in combination with the "ETL" certification logo and accompanying claim of being "certified to UL9703 standard," and an image of just one or two of the drop-line-number-plus-feeder-cable-size combinations, which indicates that Voltage regards all the molds as effectively the same regardless of cable size or number of drop lines.



⁸ [REDACTED] refers to the mold in each drawing as [REDACTED] JX-0159C at, e.g., 0008.

[REDACTED]

Other documents Mr. Brooks reviewed provided computer renderings of the LYNX system in use and informed him that Voltage touts LYNX as eliminating “multiple traditional components on a utility scale solar installation,” just as Shoals markets its BLA system as eliminating the need for combiner boxes and excessive wiring and cabling. Tr. (Brooks) at 403:5–406:1; CDX-0005C at 0013 (depicting excerpt of CX-0244 at 0001), 0014 (depicting excerpt of CX-0353C at 0001, 0009), 0015 (depicting excerpt of JX-0138C at 0006).

To conduct his infringement analysis, Mr. Brooks examined nearly twenty different LYNX mold configurations having 2, 4, and 6 drop lines, and feeder cable sizes ranging from 2/0 AWG to 750 MCM.⁹ He testified that he received these over the course of several months and understood from the accompanying cover letters that they had been supplied by Voltage’s counsel. Tr. (Brooks) at 408:10–409:6; CX-0570; RX-0337C; RX-0339C. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] RX-0399C (letter dated Nov. 20, 2023). The images below show, for one representative mold, a “complete product” on the left and “an incomplete product (*i.e.*, mid-production sample)” on the right (from the set retained by Voltage’s counsel):

[REDACTED]

[REDACTED]



RPX-0022
[400 MCM, 2-drop, complete]



RPX-0023
[400 MCM, 2-drop, mid-production]

In an email to Shoals' counsel, Voltage's counsel provided a table with the representation that the table [REDACTED]

[REDACTED] that [REDACTED]

[REDACTED] and that [REDACTED]

[REDACTED] CX-0738C ([REDACTED]

[REDACTED] emphasis added).

Mr. Brooks testified that he examined all these sample configurations by bisecting one of each with a band saw, lengthwise, to allow inspection of the structure and structural relationships pertinent to the asserted claims, *i.e.*, the apertures formed in the undermold by at least two drop lines and the feeder cable, and the nexus where these three structures are electrically coupled. Tr. (Brooks) at 407:2–13, 409:7–16. In most cases, he bisected only the mid-production (undermold) version, but for some he bisected the complete (overmold) version as well. Tr. (Brooks) at 409:10–16; 431:24–432:14. Finding no differences among them vis-à-vis these structures and structural relationships, Mr. Brooks selected one representative LYNX *mold drop* as the focus of his infringement analysis, CPX-0024.1C,¹⁰ but also relied on documentation and images of other

¹⁰ For the LYNX mold drops offered into evidence by Shoals, a “.1” appended to a CPX number indicates that the mold has been cut open to expose its internal workings. Voltage regards the bisected samples as CBI, so each also bears a “C” to designate it as such. The same number

[REDACTED]

sample configurations as appropriate to illustrate infringement by the LYNX *lead assembly*. Tr. (Brooks) at 407:14–408:9 (regarding selection of CPX-0024.1C as representative sample), 409:24–410:11 (same),¹¹ 420:3–424:12 (citing CX-0244, JX-0159C, JX-0210C, CX-0483, JX-0154, JX-0345C), 420:23–432:14 (citing CPX-0016.1C, CPX-0018.1C, CPX-0019.1C, CPX-0025.1C, CPX-0034.1C).

1. LYNX infringes claim 1.

The following table gives the language of claim 1, with limitations “numbered” for ease of reference:

- | | |
|----------------|--|
| [1.pre] | A lead assembly for use in a solar energy installation including: |
| [1.a] | a drop line terminating at a drop line connector, the drop line connector configured to connect with a central trunk of a wire harness, the central trunk of the wire harness having a plurality of branches that each are configured to electrically connect to a separate solar panel contained in an array of a plurality solar panels; |
| [1.b] | a feeder cable electrically coupled to the drop line at a nexus; |
| [1.c] | an undermold that fully encases the nexus, the undermold further comprising: |
| [1.d] | a first aperture extending completely through the undermold and having a first diameter, wherein the feeder cable extends through the first aperture along a first longitudinal axis; and |
| [1.e] | a second aperture extending partially through the undermold and having a second diameter different than the first diameter, wherein the drop line extends from the second aperture along a second longitudinal axis; |
| [1.f] | a third aperture extending partially through the undermold and having a third diameter different than the first diameter, |

without the “.1” indicates an intact version of a mold having the same drop line and cable size configuration.

¹¹ Mr. Brooks’ decision regarding the representativeness of his selected LYNX mold sample is supported by a preponderance of the evidence, as discussed in section V.B.10, below.

- 
- [1.g]** wherein a second drop line extends from the third aperture along a third longitudinal axis; and
 - [1.h]** an overmold surrounding the undermold and forming an undermold-overmold interface at an outer surface of the undermold.

Limitation [1.pre] indicates that the claim is directed to a *lead assembly*, not a mold drop.

Limitations [1.a]–[1.h] describe a mold structure (*i.e.*, mold drop) on the lead assembly. The claim as a whole is directed to a lead assembly having a mold drop—whether one such mold drop, or more than one, does not matter—that meets limitations [1.a]–[1.h].

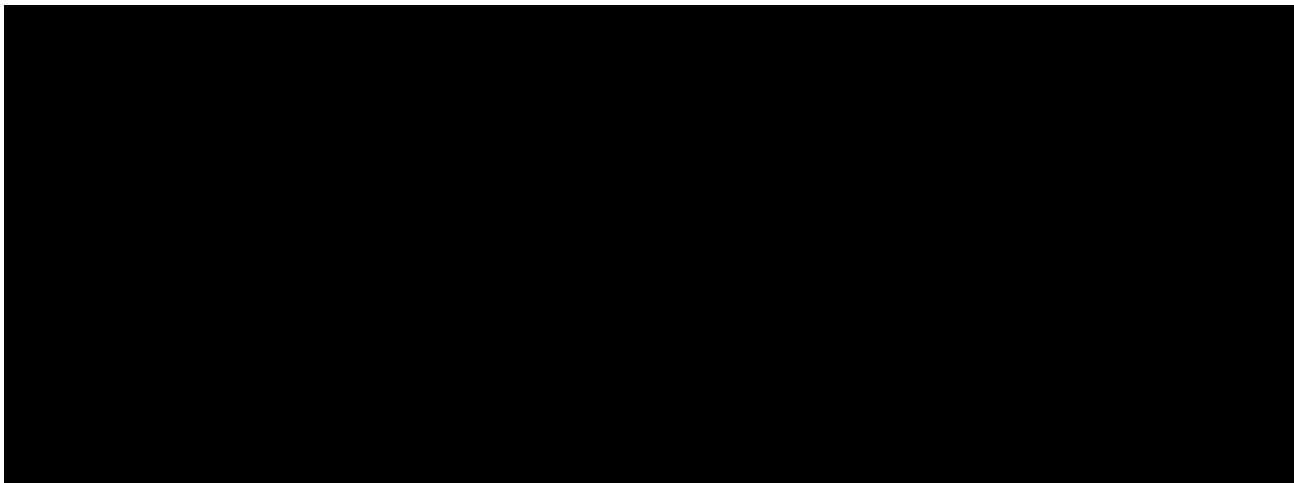
a. The only disputed limitations are the second- and third-aperture limitations; that LYNX meets the rest is undisputed.

No one disputes that LYNX is a lead assembly for use in a solar installation, as specified by [1.pre]. *See, e.g.*, Tr. (Brooks) at 899:14–900:20 (Voltage co-founder Ms. Ge describing use of LYNX with multiple mold drops in solar power system, using computer animation demonstrative exhibit). Mr. Brooks provided detailed testimony, aided by his demonstrative slides, for each of the remaining elements of claim 1. Tr. (Brooks) at 420:3–433:2. As noted above, he used a 400 MCM, 2-drop, mid-production version of CPX-0024, which he numbered CPX-0024.1C. Tr. (Brooks) at 407:14–408:9, 409:24–410:11. By way of overview, below are cross-sections of three of the complete mold drops from a LYNX lead assembly, having both undermold and overmold, and compression lug, labeled to indicate a drop line [1.a] (dashed diagonal green line, left), feeder cable [1.b] (dashed green horizontal line), undermold [1.c] (lighter colored inner material, labeled), first aperture [1.d] (bounded with blue horizontal lines, with yellow vertical bar to indicate diameter), second aperture [1.e] (diagonal yellow highlighting, left), third aperture [1.f] (diagonal yellow highlighting, right), second drop line

[REDACTED]

[REDACTED]

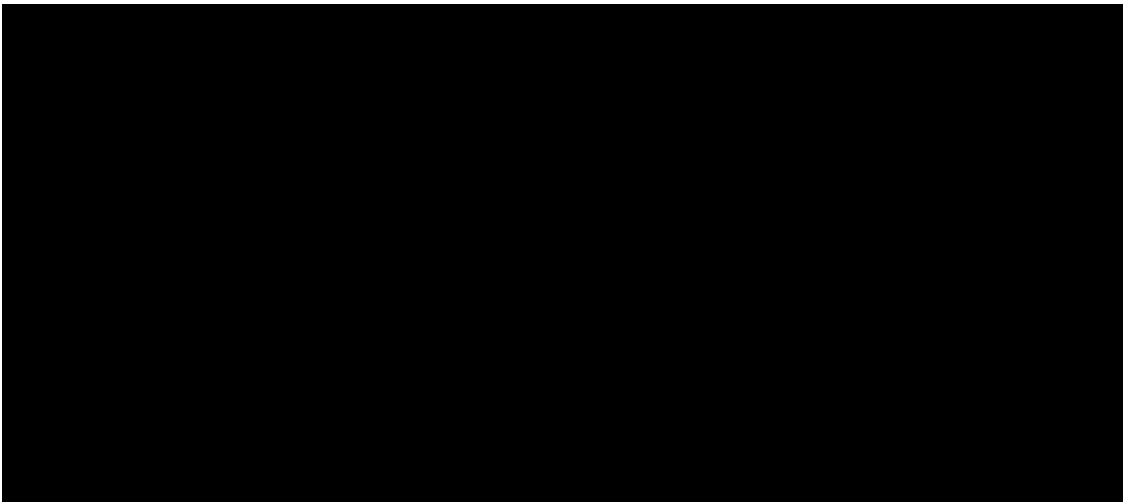
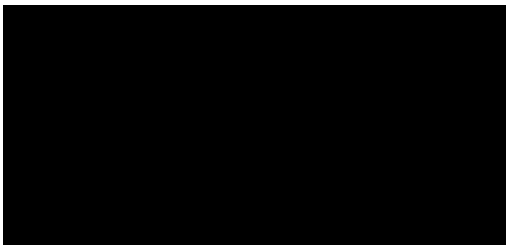
[1.g] (dashed diagonal green line, right), and overmold [1.h] (darker colored outer material, labeled):



The evidence set forth in the table below further establishes, without contradiction, that the structures indicated satisfy limitations [1.a], [1.b], [1.c], [1.d], and [1.g]. Limitations [1.e] and [1.f] are taken up in the next section.

[1.a]	Mr. Brooks testified that the LYNX lead assembly shown at Voltage’s website (CX-0244 at 0002) has multiple mold drops, each having at least two drop lines, with each drop line terminating in a PV connector. Tr. (Brooks) at 420:7–421:1. He further testified that Ms. Ge’s deposition testimony (JX-0210C at 117:21–25) regarding CPX-0040 (CX-0483), [REDACTED] (JX-0159C at 0044), and Voltage’s Intertek certification report (JX-0154C at 0012–0014), along with [REDACTED] [REDACTED] (JX-0345C at ¶¶ 16, 17, 23–26), confirmed his opinion that each LYNX mold drop includes at least one drop line terminating at a drop line connector configured to connect with a wire harness used in a solar power system. Tr. (Brooks) at 421:17–423:22.
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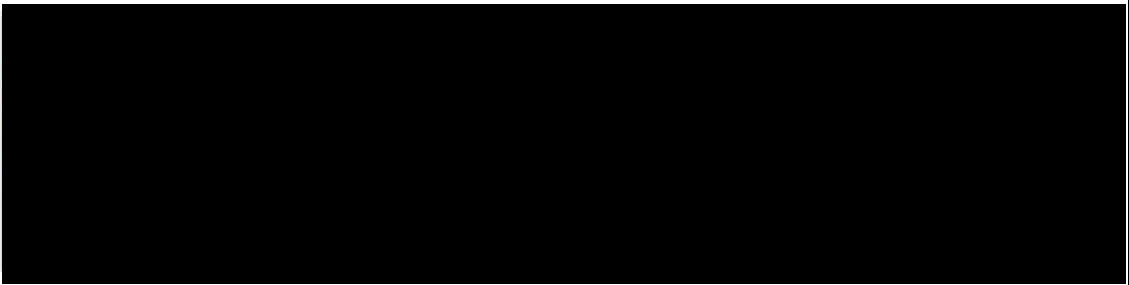
	<p>In addition, Voltage co-founder Ms. Ge testified that CPX-0040 is a LYNX mold having drop lines and connectors (Tr. (Ge) at 956:24–957:11), that LYNX is used in solar energy systems (Tr. (Ge) at 900:4–24), and that the very purpose of a drop line is to transmit electricity from a solar panel to a trunk bus (Tr. (Ge) at 956:7–19).</p> <p>Voltage’s technical expert, Dr. Cameron, did not comment on whether LYNX meets the requirements of limitation [1.a].</p>
[1.b]	<p>Mr. Brooks testified that the [REDACTED] (JX-0159C) show consistent use of a feeder cable in the LYNX system to connect multiple molds, with nearly every mold having at least two drop lines. Tr. (Brooks) at 423:23–424:6. In particular, the shop drawing at page 44 of JX-0159C shows a mold having four inputs, <i>i.e.</i>, drop lines, which join with the feeder cable that runs horizontally and, in this layout, carries the electrical power from right to left. Tr. (Brooks) at 424:7–12. To show that the drop line and feeder cable are electrically coupled at a nexus, Mr. Brooks turned to the representative LYNX mold CPX-0024.1C, shown below with CPX-0024, and indicated the nexus where the drop lines are clearly in contact with the feeder cable within the compression lug. Tr. (Brooks) at 424:13–425:7.</p>

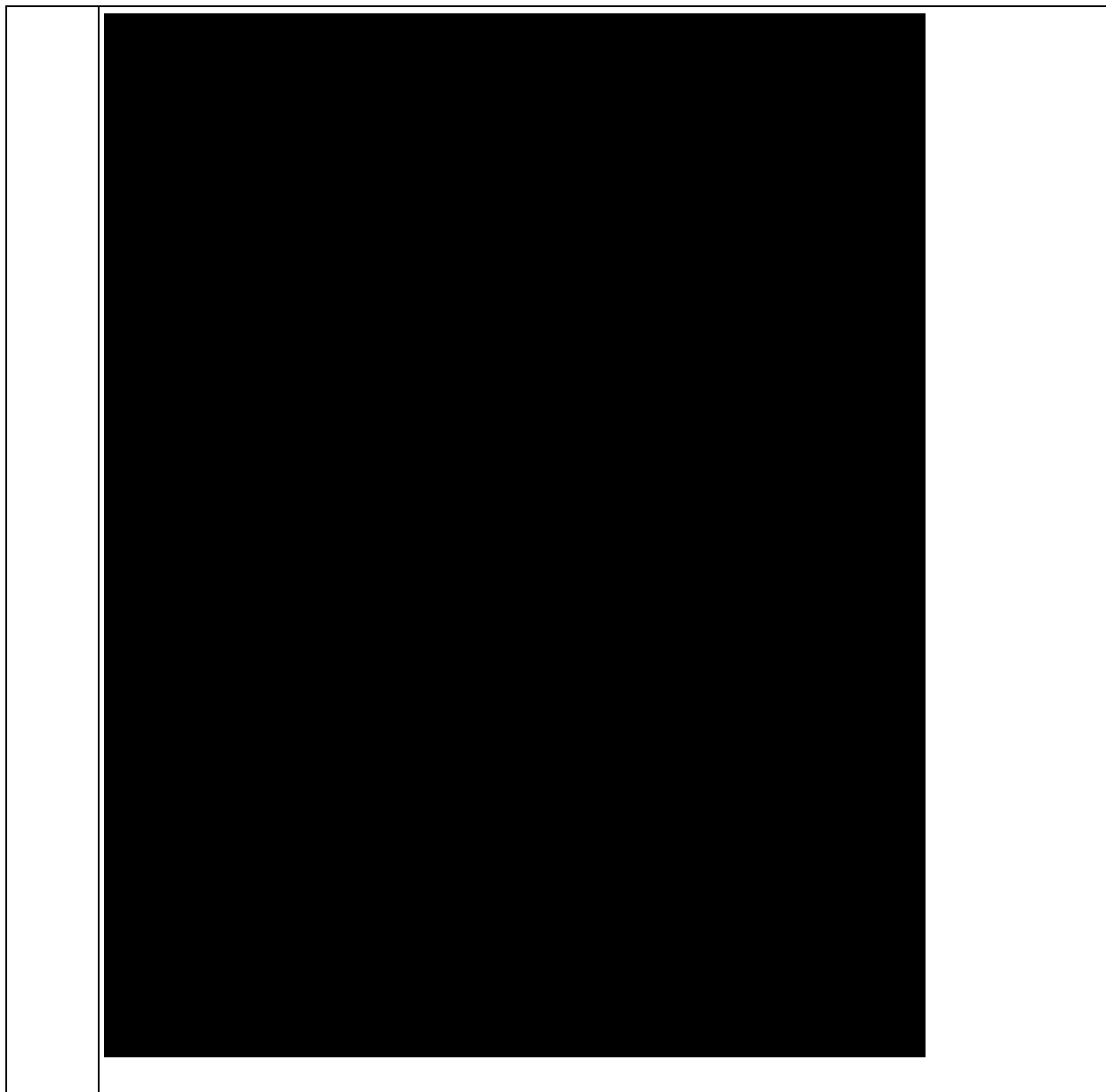
	<div data-bbox="302 218 1419 716" data-label="Image"></div> <p data-bbox="305 737 1416 848">Dr. Cameron did not comment on whether LYNX meets the requirements of limitation [1.b].</p>
<p data-bbox="203 919 272 951">[1.c]</p>	<p data-bbox="305 919 1360 1171">Mr. Brooks next pointed to the undermold, using a photograph he took of the mid-production version of CPX-0024 before he cut it open to make CPX-0024.1C, and explained that it clearly fully encases the nexus, as shown below on the right with nexus indicated by the blue box. Tr. (Brooks) at 425:8–21.</p> <div data-bbox="305 1213 883 1415"><p data-bbox="315 1339 431 1409">Undermold fully encasing the nexus</p></div> <div data-bbox="906 1192 1409 1434" data-label="Image"></div> <p data-bbox="305 1528 1416 1787">Though not clear, Dr. Cameron appeared to opine at the hearing that the undermold does not encase the nexus if the “[second/third] aperture” is construed as not following the drop line into the nexus. Tr. (Cameron) at 1076:13–23. She states that Mr. Brooks “is saying that, okay, I’m going to stop the aperture here because once – I’m still in the</p>

	<p>drop line here, but now I’m no longer within the inner mold. And so he is literally trying to tell you that this part of the drop line, which is at the nexus, is not within the inner mold, but somehow the nexus is completely encased.” <i>Id.</i> This view seems to be based on a misstatement of Mr. Brooks’ opinion regarding the relationship between the aperture and the undermold, which is the same as what is stated in the <i>Markman</i> Order: “the pathway in the undermold/primary mold of the claimed ‘first drop line’ and ‘second drop line,’ respectively.” <i>Markman</i> Order at 40–41, 49; Tr. (Brooks) at 390:14–392:2, 426:2–8, 599:6–11. The second and third apertures are formed by the <i>pathway through the undermold, not through the nexus</i>; that is why the aperture stops at the nexus even though the drop line continues into the nexus. In any case, Dr. Cameron’s apparent opinion is premised entirely on claim construction and Voltage’s dispute with the <i>Markman</i> Order. She does not purport to state that the undermold of the LYNX mold fails to fully encase the nexus where the drop lines and feeder cable are electrically coupled.</p>
<p>[1.d]</p>	<p>Using the image of CPX-0024.1C below on the left, Mr. Brooks identified a first aperture extending completely through the undermold and having a first diameter, wherein the feeder cable extends through the first aperture along a first longitudinal axis. Tr. (Brooks) at 425:22–427:1. While doing so, he again confirmed that he was applying the <i>Markman</i> Order constructions for “aperture.” Tr. (Brooks) at 426:2–8. The image of CPX-0024.1C on the right provides a closer look at the aperture (bounded with blue lines), its “first diameter” (yellow bar), and its longitudinal axis (dashed green line).</p>

[REDACTED]
[REDACTED]

	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED] Tr. (Cameron) at 1076:6–8.</p>
[1.g]	<p>Mr. Brooks identified a second drop line extending from a third aperture along a third longitudinal axis in CPX-0024.1C, as shown below. Tr. (Brooks) at 428:19–429:5. Voltage disputes the “third aperture” component of limitation [1.g], but not the rest.</p> <p>I [REDACTED]</p> <p>[REDACTED] Tr. (Ge)</p> <p>at 917:25–918:11, 955:3–24, 967:23–968:3. Voltage’s technical expert on validity issues, Dr. Kenny, conceded the ’153 patent itself describes two separate drop lines made from one single and continuous wire as two separate drop lines. Tr. (Kenny) at 1255:3–1256:3. Mr. Brooks likewise testified to his opinion that those of skill in the art would readily consider two drop lines made with a single wire to still be two separate drop lines. Tr. (Brooks) at 429:6–430:22. Similarly, Mr. Weiner, Shoals’ technical expert on validity issues, testified that the wire depicted in Figure 35 is two drop lines. Tr. (Weiner) at 1316:25–1317:6.</p>

	
[1.h]	<p>Mr. Brooks also identified the overmold surrounding the undermold of the LYNX mold. His bisected sample was made from the mid-production version of CPX-0024 and thus had no overmold, and his overmolded version of CPX-0024 was and is still intact, and used at the hearing. <i>E.g.</i>, Tr. (Brooks) at 396:16–397:6. Mr. Brooks therefore used the five overmolded samples that he had cut open to demonstrate the presence of the overmold and its relation to the undermold. Tr. (Brooks) at 430:23–432:14. CPX-0034.1C, shown immediately below, is one of the 600 MCM 4-drop molds sent to him in August 2023, which he sliced perpendicularly. <i>See</i> CX-0570.</p>  <p>The other four samples, which were bisected, are shown below.</p>



- b. Voltage's and Staff's argument that LYNX does not meet the second- and third-aperture terms depends on construing claim language wrongly.**

Nor is it disputed that the mold drop shown above includes *a second aperture extending through the undermold and having a second diameter different than the first diameter, wherein the drop line extends from the second aperture along a second longitudinal axis as well as a third aperture extending through the undermold and having a third diameter different than the*

[REDACTED]
[REDACTED]

first diameter, wherein a second drop line extends from the third aperture along a third longitudinal axis. Nonetheless, Voltage and Staff argue that limitations [1.e] and [1.f] are not satisfied because the LYNX's drop-line apertures, as *they* identify them, extend *completely through*, rather than *partially through*, the undermold.

More specifically, [REDACTED]
[REDACTED]
[REDACTED]—as shown above. According to Voltage's and Staff's noninfringement theory, because the wire of which the drop lines are formed extends through (not *partially through*) the undermold, so too does the aperture. Shoals does not know how Voltage and Staff will defend this theory in their post-hearing briefs. But Shoals does know that it cannot be defended without adopting an incorrect claim construction and ignoring the testimony of all the technical experts.

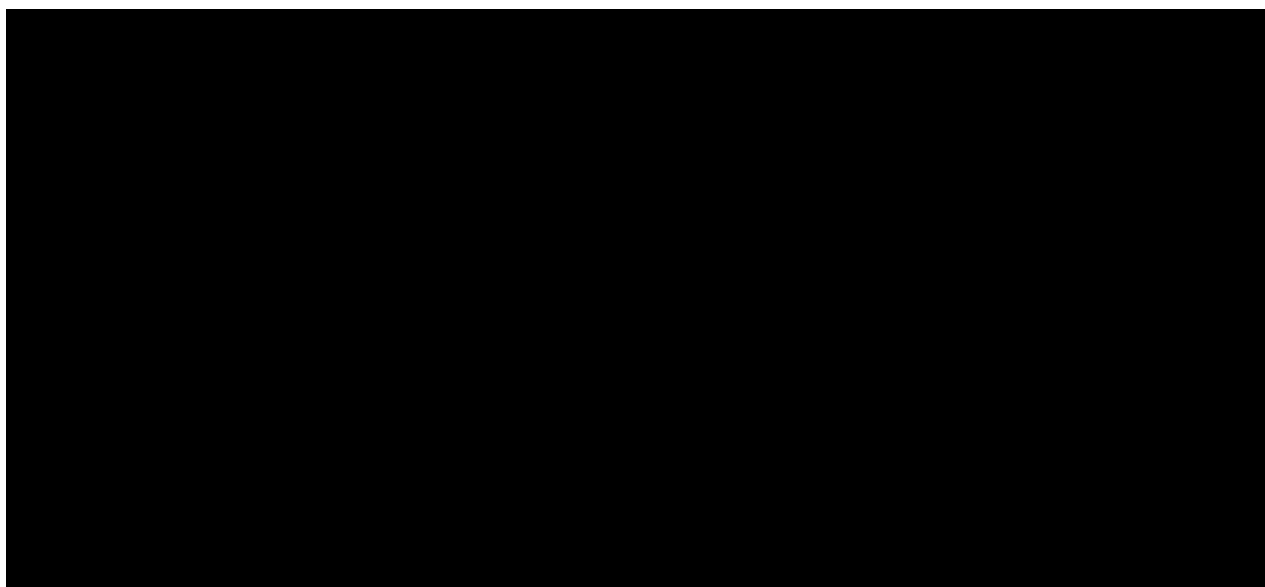
Voltage and Staff might try to defend this theory by saying that wires and drop lines have a one-to-one correspondence, and thus a single wire running through the undermold forms a single drop line. This would contradict what they said in their prehearing briefs and at the *Markman* hearing. See RPre-HB at 151, 159 ([REDACTED]
[REDACTED]
[REDACTED]); SPre-HB at 70 ([REDACTED]
[REDACTED]); *Markman* Order at 49 (quoting counsel). It would also contradict the patent specification and prosecution history, which as shown above establish that a single wire can form two drop lines.

The other way to defend this noninfringement theory would be to say that there is a one-to-one correspondence between apertures and wires rather than between apertures and drop lines.

[REDACTED]

But this contradicts the claim language, which as shown above ties the apertures to drop lines and makes no mention of wires.

With claim terms interpreted and applied as required by the intrinsic evidence, there can be no dispute that LYNX meets the second- and third-aperture limitations. Mr. Brooks testified to the presence of each in CPX-0024.1C using the images below (Tr. (Brooks) at 427:2–430:22), while explaining that a person of ordinary skill in the art would understand that each drop line “must end inside the nexus in order to deliver the electricity that it’s collected into the feeder cable,” (Tr. (Brooks) at 428:7–12), and that the aperture, “if we’re looking at it from the inside, would start at the nexus and move outward,” (Tr. (Brooks) at 428:13–18).



But he further testified that the meaning of aperture is in no way muddled by the drop line having no specific end point, beyond somewhere inside the nexus. Tr. (Brooks) at 609:10–14. Using RDX-0011 and RDX-0012, which he had marked up at Voltage counsel’s request to show the drop line ending within the nexus, Mr. Brooks delineated the second and third apertures on the left and right side, respectively, of CPX-0024.1C using yellow highlighting:

[REDACTED]

Tr. (Brooks) at 609:15–610:3; RDX-0011 and RDX-0012 (both annotated by Mr. Brooks at Voltage counsel’s request). His annotations in this regard were consistent with those he made in his deposition and with the *Markman* Order, despite being deposed several weeks before the *Markman* Order issued. Tr. (Brooks) at 610:4–611:5. Thus, the only disputed limitations, limitations [1.e] and [1.f], are met.

2. Fused LYNX infringes claim 11.

Claim 11 depends from claim 1, and further recites that “the drop line includes a fuse.” Mr. Brooks testified that Voltage’s LYNX trunk bus assembly includes drop lines having fuses on the positive cable. Tr. (Brooks) at 433:3–20. The fused drop lines are touted at Voltage’s website (CX-0244 at 0002) and fused drop lines are visible and described for every positive lead assembly (or lead assembly section) [REDACTED] (JX-0159C at, *e.g.*, 0009). There is no dispute from Dr. Cameron or from any other Voltage witnesses that the LYNX system features fused drop lines. Notably, there is no validity challenge to claim 11 beyond Voltage’s strained effort to find indefiniteness where none exists.

3. LYNX infringes claim 12.

Claim 12 depends from claim 1, and further recites that the “lead assembly combines power received from the plurality of solar panels and conducts that power directly to an inverter electrically connected to the feeder cable.” Mr. Brooks testified that this limitation is met [REDACTED] [REDACTED] (JX-0345C) and because this is the very reason such systems exist.

[REDACTED]
[REDACTED]

Tr. (Brooks) 433:21–434:8. No Voltage witness testified that this limitation is not satisfied. *See also* JX-0138C at 0007–0009 (showing LYNX in use in solar system); JX-0159C (same).

Indeed, Ms. Ge testified that the drop lines collect power from the solar panels and transmit the power to the LYNX and then to the inverter and grid. Tr. (Ge) at 956:7–19.

4. LYNX infringes claim 13.

Claim 13 depends from claim 1, and further recites that:

the second drop line terminates at a second drop line connector, the second drop line connector configured to connect with a central trunk of a second wire harness, the central trunk of the second wire harness having a plurality of branches the each are configured to electrically connect to a separate solar panel contained in a second array of a plurality of solar panels.

Mr. Brooks testified that this limitation is met [REDACTED]
(JX-0345C). Tr. (Brooks) at 434:9–21. No Voltage witness testified that this limitation is not satisfied. *See also* CX-0244 (Voltage website touting use of LYNX in utility-scale solar photovoltaic power systems); *see also* Tr. (Ge) at 956:7–19.

5. LYNX infringes claim 14.

Claim 14 depends from claim 13, and further recites that “the lead assembly is configured to combine electrical power received from the array of solar panels and the second array of solar panels at the *nexus* and to deliver the combined electrical power to an inverter that is in electrical communication with the feeder cable.” Mr. Brooks testified that this limitation is [REDACTED]
[REDACTED] (JX-0345C, ¶¶ 25–26). Tr. (Brooks) at 434:22–435:9. He also testified that “the reason why these exist and the shop drawings we had showed this and all my cuts that showed the connection of drop lines to nexuses and the documentation from the manufacturer that shows the use of these products.” Tr. (Brooks) at 435:10–15. No

[REDACTED]
[REDACTED]
Voltage witness testified that this limitation is not satisfied. *See also* JX-0159C ([REDACTED]
[REDACTED]); CPX-0024.1C (showing nexus).

6. LYNX infringes claim 18.

Claim 18 depends from claim 15, which depends from claim 1. Claim 15 further recites that “the second drop line includes a section of exposed wire at the *nexus* so as to be electrically connected to the feeder cable,” and claim 18 adds the further limitation that “the electrical coupling between the feeder cable, the drop line and the second drop line at the *nexus* is secured with at least one of a compression lug, a solder connection, a splice, and a crimp.”

Mr. Brooks testified that claim 15 is met because the second drop line clearly includes a section of exposed wire at the nexus to facilitate an electrical connection with the feeder cable, visible in CPX-0024.1C and in Voltage documents. Tr. (Brooks) at 435:16–436:24; JX-0143C; JX-0151C; CX-0327C. Claim 18 is met because [REDACTED]
[REDACTED] Tr. (Brooks) at 436:25–438:5; CX-0327C.

7. LYNX infringes claim 21.

The following table gives the language of claim 21, with limitations “numbered” for ease of reference:

- | | |
|-----------------|--|
| [21.pre] | A solar power system comprising: |
| [21.a] | a plurality of solar panels each electrically coupled to one of a plurality of branches of a wire harness to form a first solar array; |
| [21.b] | a lead assembly comprising: |
| [21.c] | a drop line electrically connected to a central trunk of the wire harness and configured to receive power from the plurality of solar panels; |
| [21.d] | a second drop line electrically connected to a central trunk of a second wire harness and configured to receive power from a plurality of solar panels in a second solar array; |
| [21.e] | a feeder cable, the feeder cable electrically connected to the drop line and the second drop line at a nexus; and |
| [21.f] | a primary mold that fully encases the nexus so as to substantially seal the nexus from external environmental conditions, the primary mold further comprising: |
| [21.g] | a first aperture extending completely through the primary mold and having a first diameter, wherein the feeder cable extends through the first aperture; |
| [21.h] | a second aperture extending partially through the primary mold and having a second diameter smaller than the first diameter, wherein the drop line extends into the second aperture and |
| [21.i] | a third aperture extending partially through the primary mold and having a third diameter smaller than the first diameter, wherein the second drop line extends into the third aperture. |

In general, the infringement analysis and evidence for claim 21 closely tracks those for claim 1.

More precisely, the analysis and evidence for limitations [21.e] through [21.i] closely track those for claim 1, with the LYNX structure that was identified as the undermold for purposes of claim 1 also meeting the primary-mold limitations of claim 21. Limitations [21.pre] through [21.d], in

turn, are established by stipulation. Tr. (Brooks) at 438:6–439:9; JX-0345C at ¶¶ 23–26; *see also* Tr. (Cameron) at 1126:7–11 (admitting no opinion regarding element [21.a]). As with claim 1, the only real dispute is over the second- and third-aperture limitations, limitations [21.h] and [21.i], and whether a single wire passing through the primary mold can form two drop lines, each with its own aperture extending only partially through that mold. The table below identifies the hearing testimony and other evidence that satisfy limitations [21.e] through [21.i] of claim 21:

[21.e]	Tr. (Brooks) at 439:10–25; <i>see also</i> evidence described at section V.B.1.a and in the table therein at element [1.b].
[21.f]	Tr. (Brooks) at 439:25–14; <i>see also</i> evidence described at section V.B.1.a and in the table therein at element [1.c].
[21.g]	Tr. (Brooks) at 440:15–23; <i>see also</i> evidence described at section V.B.1.a and in the table therein at element [1.d].
[21.h]	Tr. (Brooks) at 440:23–442:2; <i>see also</i> evidence described at section V.B.1.b directed to element [1.e].
[21.i]	Tr. (Brooks) at 442:3–17; <i>see also</i> evidence described at section V.B.1.b directed to element [1.f] and at section V.B.1.a in the table therein at element [1.g].

Similar to claim 1, no one has undisputed that the second- and third-aperture structures have smaller diameters than the first diameter, and that the drop line and second drop line extend into the second and third aperture, respectively. As with claim 1, Voltage and Staff argue that the second- and third-aperture limitations nonetheless are not met because they allege that the apertures are co-extensive with the wire of which the drop lines are formed, and therefore extend

[REDACTED]

[REDACTED]

completely through rather than *partially through* the primary mold. As shown above, this argument necessarily presumes an incorrect claim construction. Therefore, Voltage’s and Staff’s noninfringement argument for claim 21 fails, and LYNX infringes claim 21 for the same reasons it infringes claim 1. *See* Section V.B.1, *supra*.

8. LYNX infringes claim 23.

Claim 23 depends from claim 21, and further recites “a secondary mold surrounding the primary mold and forming an undermold-overmold interface at an outer surface of the primary mold.” The overmold identified above, in connection with claim 1, constitutes a secondary mold that surrounds the primary mold of claim 21; and the two molds form an interface at the outer surface of the primary mold. Tr. (Brooks) at 442:18–443:4; *see also* evidence described at section V.B.1.aV.B.1.a and in the table therein at element [1.h].

9. LYNX infringes claim 24.

The following table gives the language of claim 24, with limitations “numbered” for ease of reference:

- | | |
|-----------------|--|
| [24.pre] | A solar power system comprising: |
| [24.a] | a plurality of solar panels electrically coupled by a wire harness to form a first solar array; |
| [24.b] | a lead assembly comprising: |
| [24.c] | a first drop line electrically connected to the wire harness and configured to receive power from the plurality of solar panels; |
| [24.d] | a feeder cable, the feeder cable electrically connected to the drop line at a nexus; |
| [24.e] | a primary mold that fully encases the nexus so as to substantially seal the nexus from external environmental conditions, the primary mold further comprising: |

- [24.f] a first aperture extending completely through the primary mold and having a first diameter, wherein the feeder cable extends through the first aperture along a first longitudinal axis;
- [24.g] a second aperture extending partially through the primary mold and having a second diameter smaller than the first diameter, wherein the drop line extends into the second aperture along a second longitudinal axis and
- [24.h] a second drop line electrically connected to a second wire harness that connects to a plurality of solar panels,
- [24.i] the second drop line electrically coupled to the feeder cable at the nexus fully encased by the primary mold,
- [24.j] wherein the second drop line extends into a third aperture defined by the primary mold along a third axis.

The infringement analysis and evidence for claim 24 closely tracks those for claim 21. In addition to the evidence and arguments stated below, elements [24.a], [24.b], [24.c] and [24.h] are met [REDACTED] (JX-0345C), ¶¶ 23–26. Tr. (Brooks) at 443:5–22, 445:18–24; *see also* Tr. (Cameron) at 1129:11–20 (admitting no opinion regarding element [24.a]).

Limitations [24.pre], [24.b], and [24.e]. *See* Tr. (Brooks) at 443:5–22, 444:7–19.

Limitations [24.pre], [24.b], and [24.e] are identical to limitations [21.pre], [21.b], and [21.f], respectively. Therefore, the evidence marshaled in connection with claim 21, above, shows that LYNX meets the corresponding limitations of claim 24, as well.

Limitation [24.a]. *See* Tr. (Brooks) at 443:5–22. This limitation of claim 24 is very similar to limitation [21.a]. Limitation [24.a] requires:

a plurality of solar panels electrically coupled *by* a wire harness to form a first solar array;

And limitation [21.a], with variations from limitation [24.a] italicized, requires:

a plurality of solar panels *each* electrically coupled *to one of a plurality of branches of* a wire harness to form a first solar array;

[REDACTED]

Limitation [21.a] is more specific than limitation [24.a] because it requires the electrical coupling to be to a wire harness *branch*. Because, as shown above, LYNX meets the more specific limitation [21.a], it also meets the more general limitation [24.a]. *See also* Tr. (Cameron) at 1129:11-20 (admitting no opinion regarding element [24.a]).

Limitation [24.c]. *See* Tr. (Brooks) at 443:5–22. Limitations [24.c] and [21.c], with variations between them italicized, are respectively:

[24.c] a *first* drop line electrically connected to the wire harness and configured to receive power from the plurality of solar panels;

[21.c] a drop line electrically connected to *a central trunk of* the wire harness and configured to receive power from the plurality of solar panels;

As with limitations [24.a] and [21.a], limitation [24.c] is more general than limitation [21.c], which specifically requires electrical connection to *a central trunk of* the wire harness rather than to the wire harness more generally; therefore, the evidence marshaled above in connection with the more specific limitation [21.c] also establishes that LYNX meets limitation [24.c].

Limitations [24.d] and [24.i]. *See* Tr. (Brooks) at 443:23–444:6, 445:25–446:27.

Limitations [24.d] and [21.e], again with variations italicized, are respectively:

[24.d] a feeder cable, the feeder cable electrically connected to the drop line at a nexus;

[21.e] a feeder cable, the feeder cable electrically connected to the drop line *and the second drop line* at a nexus;

Thus, limitation [21.e] requires electrical coupling with both the first and second drop lines, while limitation [24.d] requires only electrical coupling only with one drop line. However, limitation [24.i] recites:

[24.i] the second drop line electrically coupled to the feeder cable at the nexus fully encased by the primary mold,

[REDACTED]
[REDACTED]

Thus, the evidence marshaled above in connection with limitation [21.e] also establishes that LYNX meets limitations [24.d] and [24.i].

Limitation [24.f]. See Tr. (Brooks) at 444:25–445:6. Limitations [24.f] and [21.g], with variations italicized, are:

a first aperture extending completely through the primary mold and having a first diameter, wherein the feeder cable extends through the first aperture *along a first longitudinal axis*;

a first aperture extending completely through the primary mold and having a first diameter, wherein the feeder cable extends through the first aperture;

The only difference between the two is limitation [24.f], which recites a longitudinal axis of the first aperture. Limitation [24.f] is met because the first aperture of the LYNX products has a first longitudinal axis. See evidence described at section V.B.1.aV.B.1.a and in the table therein at element [1.d].

Limitation [24.g]. See Tr. (Brooks) at 445:7–17. See also evidence described at section V.B.1.aV.B.1.b directed to element [1.e].

Limitation [24.h]. See Tr. (Brooks) at 445:18–24. This limitation is met [REDACTED]

[REDACTED]. JX-0345C.

Limitation [24.j]. See Tr. (Brooks) at 446:8–13. See also evidence described at section V.B.1.aV.B.1.b directed to element [1.f].

10. Shoals’ infringement case is fully representative.

Mr. Brooks’ analysis of the LYNX mold having two drop lines and a 400 MCM feeder cable (CPX-0024.1C) is representative of all LYNX molds having at least two drop lines, regardless of feeder cable size, and establishes infringement by any LYNX lead assembly having at least one such mold on it.

Mr. Brooks stated in his expert report and at the hearing that he examined all the LYNX mold drop samples that were provided to him, as explained in section V, above, at page 31, and found no differences among them as far as the structure and structural relationships at issue in the claims. Tr. (Brooks) at 409:24–410:11. That is, every mold he examined had a feeder cable electrically coupled with at least two drop lines at a nexus encased in an undermold that was surrounded by an overmold, as required by the claims of the '153 patent, so a detailed infringement analysis of one is representative of the rest. Mr. Brooks' analysis meets the standard for representativeness. See *Certain Lithium-Ion Battery Cells, Battery Modules, Battery Packs, Components Thereof, & Prod. Containing the Same*, Inv. No. 337-TA-1181, ID, 2021 WL 1784561 at *20–21 (Mar. 31, 2021) (“The Federal Circuit has affirmed infringement findings based on ‘an expert testifying in detail about a particular device and then stating that the same analysis applies to other allegedly infringing devices that operate similarly, without discussing each type of device in detail.’”) (quoting *TiVo, Inc. v. EchoStar Comm. Corp.*, 516 F.3d 1290, 1308 (Fed. Cir. 2008)).

This is especially true where, as here, there is no evidence that the differences between the products would render one of the products noninfringing. *Certain Lithium-Ion Battery Cells*, 2021 WL 1784561 at *20–21. Voltage has never presented evidence or even argued as much, choosing instead to simply insist, without support, that Mr. Brooks' analysis was not sufficiently representative. See, e.g., *Certain Gas Spring Nailer Prod. & Components Thereof*, Inv. No. 337-TA-1082, USITC Pub. No. 5075, 2020 WL 8641615 at *96–97 (June 1, 2020) (finding burden satisfied when “Respondent does not assert that the NT1850DE product is not actually representative of the NT1865DM, NT1865DMA, NR1890DC, and NR1890DR products, nor

[REDACTED]
[REDACTED]
does it present any such evidence. It only argues that Complainant has not met its burden of showing representativeness.”).

If Voltage somehow did not understand how Mr. Brooks could view the samples as having no differences among them as far as the structure and structural relationships at issue in the claims, it could have sought clarity at Mr. Brooks’ deposition. Voltage instead did just the opposite by asking Mr. Brooks to confirm *only* the words in his expert report and actively directing him *not* to provide any explanation.¹²

JX-0206C (Brooks) at 343:6–344:5 (emphasis added).

By the time of his expert report (and subsequent deposition), Mr. Brooks had many reasons for his opinion that his analysis was sufficiently representative of all the accused LYNX products. He testified about these at the hearing. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED] Tr. (Brooks) at 401:17–403:4;
CX-0243 at 0003; JX-0139C at 0004. Voltage says nothing in these marketing materials to suggest that these combinations of drop line numbers and feeder cable sizes function differently

¹² “Q. ... And you write in paragraph 59: ‘Regarding the Voltage Trunk Bus products originally accused of infringement, I have examined all that were provided to me and find no differences among them as far as the structure and structural relationships at issue in the claims of the ’254 and ’153 patents.’ Do you see that? A. Yes. ... Q. ... *I don't want an explanation.* But any explanation of how you arrived at 59, that’s not disclosed in your report. Is that right? A. It is not.” JX-0206C (Brooks) at 343:6–344:5 (emphasis added). Mr. Brooks later clarified: “I think [paragraph] 63 and the claim charts and the exhibits provide adequate explanation. And that’s the intention of those things.” *Id.* at 345:13–24.

Mr. Brooks also testified that [REDACTED]
[REDACTED]. Tr. (Brooks) at 419:5–420:2. Voltage had provided a
table in response to Shoals’ interrogatory no. 1 asking for a list of “Accused Products” (defined
using the same language as the published scope of the investigation).¹³ [REDACTED]
[REDACTED] (JX-0198C at 0013–
0014)¹⁴ [REDACTED]

Mr. Brooks also testified that the Intertek report documenting Voltage's efforts to certify the LYNX mold under UL 9703 for use in utility-scale photovoltaic systems further supported

14 [REDACTED]
[REDACTED]
[REDACTED] JX-0198C at 0019–0020. [REDACTED]

[REDACTED]
[REDACTED]

his conclusion that any one configuration is suitably representative of all configurations (having at least two drop lines). Tr. (Brooks) at 411:2–419:4; JX-0154C. He explained the significance of obtaining such certification as a pre-requisite before commercial solar companies will use the LYNX product, and the need to re-certify for any changes that could be deemed material. Tr. (Brooks) at 411:6–413:9, 418:14–419:4; JX-0154C at 0055. Certification allows the applicant to brand its product with the ETL certification mark, but the applicant promises, in exchange, to not use that mark on products that Intertek has not seen or tested. Tr. (Brooks) at 418:4–13; JX-0154C at 0054. Mr. Brooks testified that this undertaking effectively “locks that product, and we can’t change it,” without taking the changed product back to Intertek to evaluate the change. Tr. (Brooks) at 418:14–419:4; JX-0154C at 0055. The nature of the change is immaterial; it could be “a change in the mold, a change in the material, a change in the number of drop lines, whatever it is ... we have to bring it to them ... because then it has to be reevaluated to [determine] whether or not it needs to be tested again.” Tr. (Brooks) at 418:21–419:4. Voltage acknowledged the same through testimony of Ms. Ge. Tr. (Ge) at 982:11–16.

[REDACTED]
[REDACTED]
[REDACTED] JX-0154C at 0002 (emphasis added); Tr. (Brooks) at 415:9–22. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] JX-0154C at 0053 (emphasis added); Tr. (Brooks) at 417:9–418:3.
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Tr. (Ge) at 981:2–14. [REDACTED]

[REDACTED]

[REDACTED]

JX-0154C at 0004, 0006. [REDACTED]

[REDACTED] Tr. (Brooks) at 414:24–415:8;

JX-0154C at 0003 ([REDACTED])

[REDACTED]).

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

JX-0154C at 0034, 0035; Tr. (Brooks) at 414:6–23. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] JX-0154C at
0011.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] JX-0154C.

Moreover, Voltage has marked the very configuration deemed representative by Mr. Brooks with the ETL certification logo, along with all other LYNX mold configurations produced in this case; something it certainly would not dare do unless each is truly representative of, and represented by, every other configuration. *See, e.g.*, RPX-0010 (3/0, 2-drop); RPX-0012 (3/0, 4-drop); RPX-0014 (4/0, 4-drop); RPX-0016 (250 MCM, 2-drop); CPX-0022 (250 MCM, 4-drop); CPX-0024 (400 MCM, 2-drop); RPX-0026 (500 MCM, 2-drop); CPX-0027 (500 MCM, 4-drop); RPX-0030 (500 MCM, 6-drop); CPX-0016 (600 MCM, 4-drop); CPX-0031 (750 MCM, 2-drop).

Finally, Mr. Brooks testified to having cut open and examined every Voltage sample LYNX mold that he received. Tr. (Brooks) at 407:14–408:9, 409:24–410:5.¹⁵ He walked through each one at the hearing and stated his opinion that they are all alike vis-à-vis the requirements of the claims at issue. That is, they all have at least two drop lines that are electrically coupled with a feeder cable at a nexus that is fully encased by an undermold that is surrounded by an overmold, and that the pathway of the feeder cable through the undermold, in every sample, forms an aperture entirely through the undermold, while the respective pathways of the two drop lines in every sample each forms an aperture partially through the undermold that terminates at the nexus, where each drop line meets the feeder cable. Tr. (Brooks) at 446:14–451:21. Cable size makes no difference, nor does the number of drop lines, so long as there are at least two. Tr. (Brooks) at 447:25–448:25.

¹⁵ Notably, Dr. Cameron’s noninfringement opinions for all LYNX products were based on her examination of similar samples. Tr. (Cameron) at 1100:5–11. Dr. Cameron did not visit Voltage’s facilities or talk to any Voltage employees. Tr. (Cameron) at 1121:7–18.

[REDACTED]

[REDACTED]

The table below illustrates Mr. Brooks’ opinions regarding infringement by these other configurations and, importantly, graphically demonstrate the similarity among them regarding the claimed structures. The annotations in any given configuration can essentially be lifted and applied to any other with only minor adjustments for size. The annotation scheme is the same as used and explained above at page 34. Both Voltage and Shoals have offered physical exhibits of each, so the column on the right provides a cross-reference. The “representative of” column states the representations made by Voltage in CX-0738C, discussed earlier.

Feeder Size (# of Drop Lines)	Representative of (per CX-0738C)	Brooks Sample	Other PX Nos.
2/0 (1-2)	1/0: up to 2 branches 2/0: up to 2 branches	[REDACTED]	CPX-0017 RPX-0008 RPX-0009
3/0 (1-2)	3/0: up to 2 branches		RPX-0010 RPX-0011
3/0 (1-4)	3/0: 3 or 4 branches		RPX-0012 RPX-0013

Feeder Size (# of Drop Lines)	Representative of (per CX-0738C)	Brooks Sample	Other PX Nos.
4/0 (1-4)	4/0: up to 4 branches		RPX-0014 RPX-0015
250 (1-2)	250 MCM: up to 2 branches		RPX-0016 RPX-0017
250 (1-4)	250 MCM: up to 4 branches		CPX-0022 RPX-0018 RPX-0019
300 (1-2)	300 MCM: up to 3 branches		CPX-0023 RPX-0020 RPX-0021
400 (1-2)	350 MCM: up to 2 branches 400 MCM: up to 2 branches		CPX-0024 RPX-0022 RPX-0023



Feeder Size (# of Drop Lines)	Representative of (per CX-0738C)	Brooks Sample	Other PX Nos.
400 (1-6)	350 MCM: up to 6 branches 400 MCM: up to 6 branches		CPX-0025 RPX-0024 RPX-0025
500 (1-2)	500 MCM: up to 2 branches		CPX-0026 RPX-0026 RPX-0027
500 (1-4)	500 MCM: up to 4 branches		CPX-0027 RPX-0028 RPX-0029



Feeder Size (# of Drop Lines)	Representative of (per CX-0738C)	Brooks Sample	Other PX Nos.
500 (1-6)	500 MCM: up to 6 branches		CPX-0028 RPX-0030 RPX-0031
600 (1-2)	600 MCM: up to 2 branches		CPX-0029 RPX-0032 RPX-0033
600 (1-4)	600 MCM: up to 4 branches		CPX-0034.1C CPX-0016.1C CPX-0016 RPX-0034 RPX-0035

Feeder Size (# of Drop Lines)	Representative of (per CX-0738C)	Brooks Sample	Other PX Nos.
750 (1-2)	750 MCM: up to 4 branches		CPX-0031 RPX-0036 RPX-0037

The evidence presented at the hearing and recounted above establishes by a preponderance that the CPX-0024.1C sample LYNX mold analyzed by Mr. Brooks and found to be infringing is representative of the other LYNX mold samples. There are no differences among them concerning the structure and structural relationships at issue in the asserted claims, as graphically demonstrated above, and there is no evidence to the contrary. This, combined with Voltage’s own treatment of all LYNX mold configurations as fungible and the assertions of representativeness made to and accepted by Intertek for the critical UL 9703 certification required to enter the U.S. PV market, makes it far more likely than not that CPX-0024.1C is indeed representative of the other LYNX mold samples. *Certain Gas Spring Nailer Prod.*, 2020 WL 8641615 at *96–97 (representativeness established by a preponderance of the evidence).

C. Voltage did not prove that AD LYNX satisfies the *Milk* factors.

Voltage also asks the Judge to rule that its AD LYNX is a noninfringing design around.

[T]he test for determining whether a respondent has met its burden for adjudication of a redesigned or alternative product includes four factors: (1) whether the product is within the scope of the investigation; (2) whether it has been imported; (3) whether it is sufficiently fixed in design; and

[REDACTED]
[REDACTED]

(4) whether it has been sufficiently disclosed by respondent during discovery.

Certain Human Milk Oligosaccharides and Methods of Producing the Same, Inv. No. 337-TA-1120, Comm’n Op. at 18, 2020 WL 3073788, at *9 (June 8, 2020). Shoals does not dispute that AD LYNX is within the scope of this investigation, and therefore subject to any exclusionary order that may issue. But because Voltage has not met its burden on the other three *Milk* factors, the question of whether the AD LYNX might somehow avoid infringement should not be reached.

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] CDX-0005C.18–19 (excerpts of RX-0337C and RX-0339C); RX-0337C; RX-0339C; Tr. (Brooks) at 408:2–409:9.

[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

JX-0156C; *see also* RPre-HB at 163. [REDACTED]

[REDACTED] *See* RPre-HB at 162–166, 205;

SPre-HB at 72–76. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

CPX-0033C.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Tr. (Brooks) at 463:15–22; *see also* CDX-0005C.111 (depicting CPX-33C).

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

CPX-0032C. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[illegible]

[REDACTED]

[REDACTED]

[REDACTED] *See Unmanned Aerial*

Vehicles, Comm'n Op. at 25. [REDACTED]

[REDACTED]

[REDACTED]
[REDACTED]

[REDACTED]

RPX-0041C; Tr. (Brooks) at 409:13–16. [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Tr. (Brooks) at 452:18–453:2; *see also* CDX.0005C.108 (depicting RPX-41C).

[REDACTED]
[REDACTED]
[REDACTED] See Tr. (Brooks) at
464:21–465:22 ([REDACTED])
[REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] *Id.* (“[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Underscoring the insufficient fixation of Voltage’s alternative design, consider what enforcement of an exclusion order exempting AD LYNX would entail. Voltage could not credibly certify (and neither Shoals nor Customs are able to verify by visual inspection¹⁷) that any given shipment of AD LYNX products conformed to the design depicted on paper. And as argued below, in connection with remedy, any exclusion order should require Voltage to provide representative mold drop samples to Shoals for analysis, because Shoals cannot obtain samples on the open market. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

¹⁷ See Tr. (Brooks) at 453:9–18, 453:21–454:7, 565:23–566:7; Tr. (Cameron) at 1142:2–8.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

D. AD LYNX infringes, in any event.

Voltage's AD LYNX meets each of the limitations of claims 21 and 24 as shown with respect to the infringement analysis for the LYNX (*see* Sections V.B.7 and V.B.9, *supra*) applying the Judge's construction of "primary mold."

The *Markman* Order construction of "primary mold" is "mold fully encasing the nexus so as to substantially seal the nexus from external environmental conditions," with the qualifier, "[t]o the extent there is more than one mold with these characteristics, the 'primary mold' is the innermost of such molds." *Markman* Order at 37. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Tr. (Brooks) at 464:2–15. [REDACTED]

[REDACTED]

[REDACTED] *Id.* [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Tr. (Ge) at 971:11–972:9. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

██████████

██████████

Tr. (Ge) at 987:1–988:7.

Tr. (Ge) at 982:11–16.

JX-0154C at 0004 and 0011.

Tr. (Cameron) at 1128:20–1129:2.

[REDACTED]

[REDACTED]

(May 12, 2011) (quoting 19 U.S.C. § 1337(a)(2)) (“*Digital Imaging Devices*”). This DI requirement has a technical prong and an economic prong. *Id.* To satisfy the technical prong, Shoals must show that it practices at least one claim of the ’153 patent. Here, Shoals proved at trial that the BLA it makes and sells is covered by at least claims 1 and 21 of the ’153 patent.

A. Shoals’ BLA practices claim 1.

For convenient reference, here again is the text of claim 1, with limitations “numbered”:

- [1.pre]** A lead assembly for use in a solar energy installation including:
 - [1.a]** a drop line terminating at a drop line connector, the drop line connector configured to connect with a central trunk of a wire harness, the central trunk of the wire harness having a plurality of branches that each are configured to electrically connect to a separate solar panel contained in an array of a plurality solar panels;
 - [1.b]** a feeder cable electrically coupled to the drop line at a nexus;
 - [1.c]** an undermold that fully encases the nexus, the undermold further comprising:
 - [1.d]** a first aperture extending completely through the undermold and having a first diameter, wherein the feeder cable extends through the first aperture along a first longitudinal axis; and
 - [1.e]** a second aperture extending partially through the undermold and having a second diameter different than the first diameter, wherein the drop line extends from the second aperture along a second longitudinal axis;
 - [1.f]** a third aperture extending partially through the undermold and having a third diameter different than the first diameter,
 - [1.g]** wherein a second drop line extends from the third aperture along a third longitudinal axis; and
 - [1.h]** an overmold surrounding the undermold and forming an undermold-overmold interface at an outer surface of the undermold.

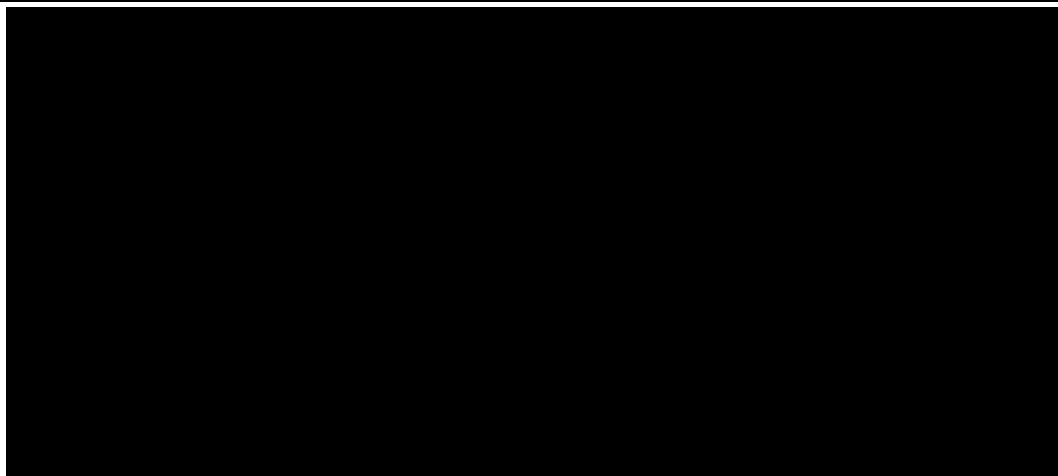
[REDACTED]

Similar to what was presented above in connection with infringement,¹⁸ the table below sets forth evidence that the BLA meets those limitations:

[1.pre]	Shoals president Mr. Tolnar testified as to the BLA’s use in photovoltaic installations. Tr. (Tolnar) at 225:10–226:25.
[1.a]	<p>JX-0163 shows a BLA mold drop with eight drop lines (black wires):</p> <div data-bbox="423 625 1317 1020"></div> <p>Below, left, is an annotated version of JX-0121, which is a picture of a lengthwise cross-section of CPX-0036.1C, which is a BLA mold drop with four drop lines:</p>

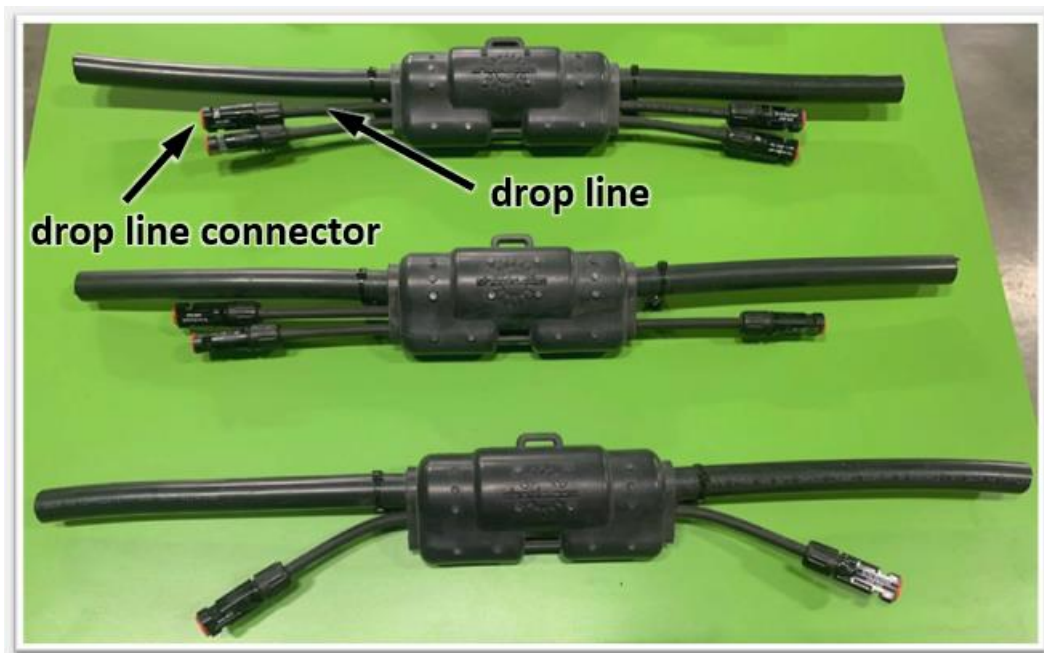
¹⁸ *Certain Elec. Devices with Image Processing Sys., Components Thereof, & Associated Software*, Inv. No. 337-TA-724, Ord. No. 29: ID, 2011 WL 1336531 at *4 n.4 (Mar. 11, 2011) (“The test for claim coverage for purposes of technical domestic industry requirement is the same as that for infringement, although is broader in that technical domestic industry may be satisfied by a finding that any one claim of an asserted patent is met.”).

[REDACTED]



Above, right, is a picture of a crosswise cross-section of CPX-0036.6, which is a BLA mold drop with two drop lines. As Mr. Brooks testified, in the fully assembled product, the BLA drop lines terminate in connectors that are “configured to connect with a central trunk of a wire harness, the central trunk of the wire harness having a plurality of branches that each are configured to electrically connect to a separate solar panel contained in an array of a plurality solar panels.” Tr. (Brooks) at 472:1–19; *see also* CX-0167 and JX-0115.0018.

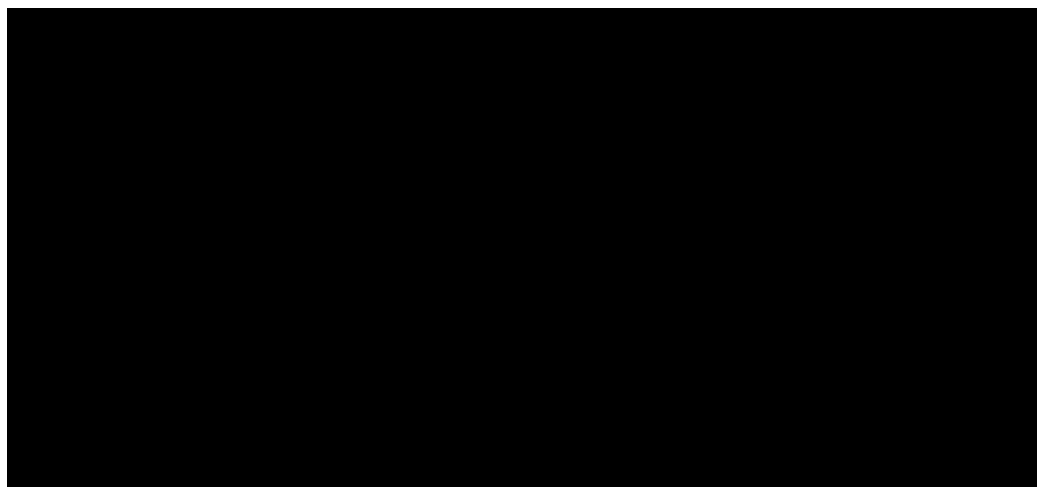
Shown below is a picture of a BLA mold drop including drop lines terminating in drop line connectors.



JX-0186 (annotated).

[1.b]

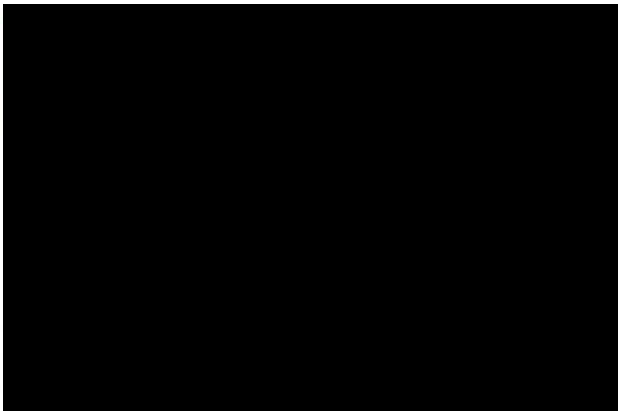
JX-163, above, also shows a feeder cable (red wire) running through the mold drop. A feeder cable also is visible in the lengthwise cross-section of CPX-0036.1C and CPX-0036.6, depicted below left and right, respectively:



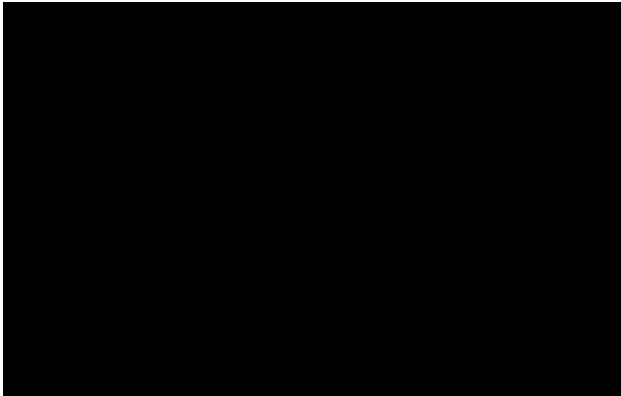
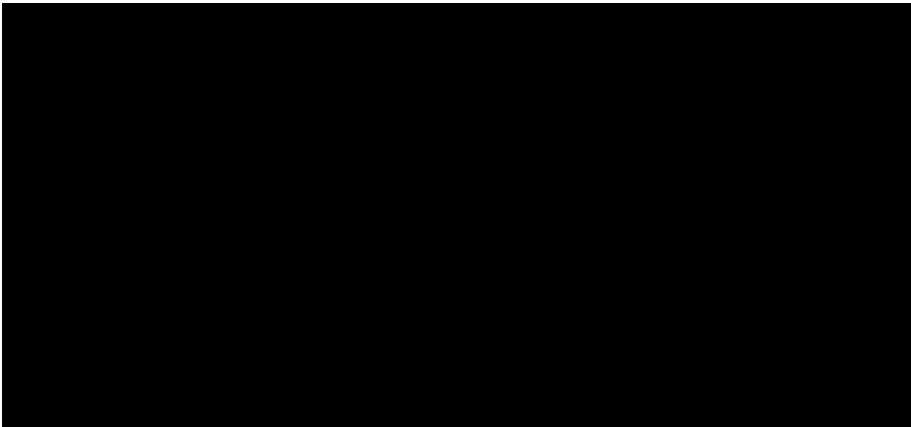
Further, a nexus is visible in the lengthwise cross-section of CPX-0036.1C. As Mr. Brooks testified, the feeder cable and drop line are electrically coupled at the nexus.

[REDACTED]

	<p>Tr. (Brooks) at 473:4–13. Although not visible in the other pictures, its existence may be inferred from the functioning of the product: without a nexus, at which the drop line and feeder cable are electrically connected, the BLA would not function. See Tr. (Brooks) at 428:10–12, 502:5–15.</p>
<p>[1.c]</p>	<p>Similar to JX-163, above, JX-162, below, shows the undermold of an eight-drop BLA mold drop:</p> <p>[REDACTED]</p> <p>As Mr. Brooks testified, because the nexus cannot be seen, it is fully encased by the undermold. Tr. (Brooks) at 473:17–25, 474:13–14. Below is a picture of a lengthwise cross-section of CPX-0036.1C, showing nexus fully encased by undermold:</p> <p>[REDACTED]</p>

	<p>As Mr. Brooks testified: “in the cross-section we see ... the nexus ... and then the undermolding material is this slightly lighter gray color, and then we have a darker gray or almost black color for the outer mold.” Tr. (Brooks) at 474:1–5; <i>see also</i> Tr. (Brooks) at 474:14.</p>
<p>[1.d]</p>	<p>As illustrated in the picture of the lengthwise cross-section of CPX-0036.1C below, the BLA mold drop has a first aperture (bounded by blue lines) extending completely through the undermold and having a first diameter (yellow), wherein the feeder cable extends through the first aperture along a first longitudinal axis (green):</p>  <p><i>See</i> Tr. (Brooks) at 474:15–475:1.</p>
<p>[1.e], [1.f], [1.g]</p>	<p>As illustrated in the picture of the lengthwise cross-section of CPX-0036.1C below, in addition to the first aperture with first diameter and first longitudinal axis, any BLA mold drop with at least two drop lines will also have second and third apertures (also yellow) from which a drop line and a second drop line extend along second and third longitudinal axes, each such aperture with a diameter different than the first diameter:</p>



	 <p>See also Tr. (Brooks) at 475:20–478:22. As with Voltage’s LYNX products, the second and third apertures of the BLA mold drops extend only <i>partially</i> through the undermold because they are bounded at one end by the outermold and at the other by the nexus. Tr. at 476:19–477:12, 478:7–22.</p>
[1.h]	<p>Yellow lines in the picture below, left of lengthwise cross-section CPX-0036.1C and below, right of crosswise cross-section of CPX-0036.6 separate undermold from overmold, and mark the interface (at the outer surface of the undermold) between them:</p>  <p>See also Tr. (Brooks) at 474:1–11; 478:23–479:9</p>

In sum, claim 1 of the ’153 patent reads on Shoals’ BLA.

[REDACTED]

B. Shoals' BLA practices claim 21.

For convenient reference, here again is the text of claim 21, with limitations “numbered”:

- [21.pre]** A solar power system comprising:
- [21.a]** a plurality of solar panels each electrically coupled to one of a plurality of branches of a wire harness to form a first solar array;
- [21.b]** a lead assembly comprising:
- [21.c]** a drop line electrically connected to a central trunk of the wire harness and configured to receive power from the plurality of solar panels;
- [21.d]** a second drop line electrically connected to a central trunk of a second wire harness and configured to receive power from a plurality of solar panels in a second solar array;
- [21.e]** a feeder cable, the feeder cable electrically connected to the drop line and the second drop line at a nexus; and
- [21.f]** a primary mold that fully encases the nexus so as to substantially seal the nexus from external environmental conditions, the primary mold further comprising:
- [21.g]** a first aperture extending completely through the primary mold and having a first diameter, wherein the feeder cable extends through the first aperture;
- [21.h]** a second aperture extending partially through the primary mold and having a second diameter smaller than the first diameter, wherein the drop line extends into the second aperture and
- [21.i]** a third aperture extending partially through the primary mold and having a third diameter smaller than the first diameter, wherein the second drop line extends into the third aperture.

As with the infringement analysis for LYNX, the technical DI analysis and evidence for claim 21 closely tracks those for claim 1. The table below identifies the hearing testimony and other evidence that show the BLA practices claim 21:

[21.pre], [21.a]	Tr. at (Brooks) 479:15–480:6; CX-0167; <i>see also</i> evidence described <i>supra</i> at section VI.A and in the table therein at element [1.pre].
[21.b], [21.c], [21.d]	Tr. at (Brooks) 480:7–20; CX-0167; <i>see also</i> evidence described <i>supra</i> at section VI.A and in the table therein at element [1.a].
[21.e]	Tr. at (Brooks) 480:21–481:4; <i>see also</i> evidence described <i>supra</i> at section VI.A and in the table therein at element [1.b].
[21.f]	Tr. at (Brooks) 481:5–17; <i>see also</i> evidence described <i>supra</i> at section VI.A and in the table therein at element [1.c].
[21.g]	Tr. at (Brooks) 481:18–23; <i>see also</i> evidence described <i>supra</i> at section VI.A and in the table therein at element [1.d].
[21.h], [21.i]	Tr. at (Brooks) 482:4–483:19; <i>see also</i> evidence described <i>supra</i> at section VI.A and in the table therein at element [1.e], [1.f], and [1.g].

In sum, claim 21 of the '153 patent also reads on Shoals' BLA.

C. Shoals' technical DI showing is fully representative.

1. The evidence establishes a representative technical DI case with or without Mr. Brooks' opinion on the subject.

The representativeness question comes down to this: whether the evidence presented makes it more likely than not that all BLA products, or at least those BLAs that have at least one

[REDACTED]

[REDACTED]

mold drop with at least two drop lines,¹⁹ have the molds and apertures required by the asserted technical DI claims, 1 and 21. *Certain Gas Spring Nailer Prod.*, 2020 WL 8641615 at *96–97 (representativeness established by a preponderance of the evidence); see *LaLonde v. Sec’y of Health & Hum. Servs.*, 746 F.3d 1334, 1338 (Fed. Cir. 2014) (“the burden of showing something by a preponderance of the evidence ... simply requires the trier of fact to believe that the existence of a fact is more probable than its nonexistence”). The preponderance standard requires evidence, but not certainty. *LaLonde*, 746 F.3d at 1338 (“The petitioner is not required to prove the case to a level of scientific certainty.”). The direct evidence presented in the section above is accompanied by a raft of circumstantial evidence recounted below. Taken together, it readily tips the evidentiary scale in Shoals’ favor—especially when combined with the failure of both Voltage and Staff to present any evidence or even argument that cable size, number of drop lines in excess of two, or mold size and shape affect the technical DI analysis in any way whatsoever. *Hale v. Department of Transp., F.A.A.*, 772 F.2d 882, 885 (Fed. Cir. 1985) (“An unrebutted prima facie case is necessarily, by definition, a ‘preponderance’ of the evidence.”).

There are two facts that make it more likely than not that all BLAs and the majority of their component mold drops practice claims 1 and 21 of the ’153 patent: (1) the very purpose of the BLA is to serve as a many-to-one harness in utility-scale PV installations (see Tr. (Tolnar) at 275:10–13), which means it is in actual use in that capacity and functions for that purpose, and (2) BLA is certified to UL 9703 by Intertek, which means its molds safely and effectively conduct electricity.

¹⁹ As shown in section VIII.A.4.a, below, in connection with economic DI, there is no evidence that Shoals ever sold *any* BLAs that do not have at least one mold drop with at least two drop lines, especially in any non-negligible quantity.

[REDACTED]
[REDACTED]

The fact that BLA is purpose-built for use in utility-scale solar power installations makes it more likely than not that each BLA embodies every element of claims 1 and 21 except the molding elements and the drop line aperture elements, which are addressed below. There is no real dispute about BLA's real-world use, but there is evidence to prove it nonetheless.

There is evidence of just who it is that is using BLA. Mr. Macias testified that "[t]he market for the BLA product would be utility-scale solar farms," which are solar farms that generate more than one million watts of power and can get up to hundreds or thousands of acres, or square miles. Tr. (Macias) at 128:18–129:7; *see also* Tr. (Tolnar) at 221:6–19. BLA customers are the utility project owners or the engineering, procurement, and construction (EPC) companies that design and build such projects. Tr. (Macias) at 129:8–24. Using an investor slide presentation, Mr. Macias explained that the industry reception for BLA has been tremendous because "[i]t's revolutionized the way that we think about or -- think about how we install conventional solar plants and reimagine it in a way that is a lot simpler to install." Tr. (Macias) at 129:25–132:12 (JX-0114 at 0022, CX-0256). [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED] Tr. (Tolnar) at 278:16–284:12 (JX-0128C).

There is also evidence of how BLA works. Mr. Macias walked through several documents that show how BLA mold drops connect to wire harnesses via drop lines to collect power coming from solar panels and to convey that power down a feeder cable to an inverter. Tr. (Macias) at 107:24–112:16 (CX-0167), 112:17–114:22 (CX-0144), 114:23–118:25 (JX-0114), 119:13–122:12 (CX-0235). It is abundantly clear by this point that BLA is in actual use by utility-scale providers of solar energy, [REDACTED]

[REDACTED] Tr. (Macias) at 133:11-136:12 (CX-0266C).

This evidence of real-world use makes it more likely than not that BLA meets every element of claims 1 and 21 except those dealing with the molds and the drop line apertures. Using the numbering assigned in sections V.B.1 and V.B.7, above, BLA meets the preamble limitations [1.pre] and [21.pre] because it is clearly a lead assembly for use in solar energy installations. It meets the solar panels, solar array, and wire harness with trunk and branches limitations of [1.a] and [21.a] because the evidence shows it is designed to be used and is actually used with these things.

For the same reason, BLA meets the drop line limitations of [1.a], [21.c], and [21.d]; the drop lines must connect to (or be configured to connect to) the wire harnesses, or the BLA would not be able to get the electricity from the solar panels to the feeder cable. The evidence above of its successful use and enthusiastic adoption shows that it does in fact do so. The drop lines must also be electrically coupled (or connected) to the feeder cable, per limitations [1.b] and [21.e], because the evidence shows BLA does what it is supposed to do, and does it well. That would not be true if the feeder cable were not in electrical contact with the drop lines. The first aperture is formed by the pathway of the feeder cable through the undermold or primary mold, and that pathway in a functioning BLA having multiple mold drops must extend completely through the undermold. The feeder cable has to enter and exit every mold drop along the entire length of the BLA, except the end cap mold, or the feeder cable could not convey electricity it has collected from the drop lines to the inverter. The success of the BLA shows that the feeder cable does in

[REDACTED]
[REDACTED]

fact perform as advertised, and that proves that the first aperture formed by the feeder cable extends completely through the undermold / primary mold, as required by limitations [1.d] and [21.g]. Evidence of actual use of the BLA also establishes that the drop lines have smaller, and therefore different, diameters than the feeder cable, as required by limitations [1.d], [1.e], [1.f], [21.g], [21.h], [21.i]. Tr. (Brooks) at 421:2–6 ([REDACTED])

[REDACTED]

[REDACTED]).

Turning to the remaining claim elements, directed to the molding and the apertures that extend partially though the undermold / primary mold, BLA’s Intertek certification makes it more likely than not that all BLAs meet these limitations. As explained generally by Mr. Brooks in discussing Voltage’s Intertek certification, and specifically by Messrs. Macias, Tolnar, and Bardos regarding that of Shoals, certification to UL 9703 by a qualified certifying agency like Intertek is an indispensable component of trading in the EBOS space. UL 9703 covers “distributed generation wiring harnesses,” which includes the BLA. Tr. (Macias) at 171:23–172:7, 215:19–216:12; Tr. (Tolnar) at 227:1–228:8, 229:11–231:14; Tr. (Bardos) at 681:17–694:1; Tr. (Brooks) at 411:6–419:4. Certification signifies that the product has passed a battery of tests to ensure that they both continue to conduct electricity after bouts of extreme heat, cold, or trauma, and that they do so safely without posing a risk of sparking a fire or delivering a shock to field personnel. For BLA, certification is evidence that its molds protect and encase the electrical coupling at the nexus of the feeder cable and drop lines, so that electricity continues to flow through the wires and cables, and risk of harm to people or property is avoided.

UL 9703 certification involves coordination with Intertek to select some representative configurations for testing. [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] JX-0118C at 0001, 0078; *see* Tr. (Bardos) at 685:16–688:20 ([REDACTED]); *see also* Tr. (Tolnar) at 227:1–231:11 (Mr. Tolnar regarding same).

[REDACTED]
[REDACTED] Common to all, however, is the use of a lug to electrically couple the drop lines to the feeder cable. [REDACTED]

[REDACTED] thus confirming that each lug, feeder cable, and drop line configuration is representative of the others, for purposes of UL 9703 certification.

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] *Id.* at 0026, 0027.

[REDACTED]

[REDACTED]
[REDACTED]

The Intertek report also describes the undermold and overmold material. [REDACTED]

[REDACTED]

[REDACTED] JX-0118C at

0023. [REDACTED]

Id.

[REDACTED]

[REDACTED] See JX-0118C at 0072–0077. [REDACTED]

[REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] *Id.* at 0027 ([REDACTED]).

[REDACTED]

[REDACTED]

[REDACTED]

Intertek certification to UL 9703 assures that the nexus of the drop lines and the feeder cable that are in electrical contact is fully encased and substantially sealed from external environmental conditions. [REDACTED]

[REDACTED]

[REDACTED]

JX-0118C at 0023. Passing the electrical tests assures that the molds can still convey power from the drop lines to the feeder cable, as intended and expected.

The BLA undermold or primary mold that use the lugs and mold materials approved by Intertek are necessarily effective at “fully encas[ing] the nexus” and “substantially seal[ing] the nexus from external environmental conditions,” as required by the patent. This tends to prove that all BLA mold drops meet the requirements of limitations [1.c] and [21.f]. The drop lines that forge a pathway through the undermold or primary mold do so to reach the feeder cable, and the UL 9703 tests confirm their success in that journey. The apertures formed by the drop lines can only extend partially through the undermold or primary mold, because they terminate in the

[REDACTED]
[REDACTED]

nexus. Limitations [1.e], [1.f], [1.g], [21.h], and [21.i] are thus satisfied. The UL 9703 tests also confirm the use of both an overmold and an undermold as required by element [1.h], as each is required in the “critical components” section of the Intertek report. JX-0118C at 0023.

This evidence of Intertek certification and industry adoption strongly suggests that all BLA molds meet the technical DI requirement. This is not to say, of course, that everything that does what it is supposed to do in a utility-scale solar installation and is also Intertek certified to UL 9703 necessarily practices claims 1 and 21 of the ’153 patent. It is circumstantial evidence that, when read with the technical DI analysis provided by Mr. Brooks at the hearing and recounted above, and combined with the testimony from Messrs. Macias and Tolnar that the BLA molds do not differ from one another internally (Tr. (Macias) at 126:23–127:15, Tr. (Tolnar) 231:23–233:17), makes it far more likely than not that the inner workings of all the molds are the same, regardless of cable size or number of drop lines, so long as there are at least two. On the other hand, Voltage has provided no testimony or evidence to the contrary. *See, e.g., Certain Gas Spring Nailer Prod.*, 2020 WL 8641615 at *96–97 (finding burden satisfied when “Respondent does not assert that the NT1850DE product is not actually representative of the NT1865DM, NT1865DMA, NR1890DC, and NR1890DR products, nor does it present any such evidence. It only argues that Complainant has not met its burden of showing representativeness.”).

2. Mr. Brooks’ original technical DI analysis can stand on its own as representative.

The evidence—both at the hearing and leading up to it—was devoid of anything suggesting a meaningful difference from one mold drop configuration to another, among those Shoals has made and sold, as it pertains to the claims of the ’153 patent. There has never been any dispute that they are used in utility-scale solar installations as effective conveyors of DC

[REDACTED]

power, or that each mold drop can have up to eight drop lines, with each drop line ferrying electricity collected from solar panels to a feeder cable passing through the mold drop. The only dispute has been about the inner workings of the mold drop—how and where within the mold the drop lines meet up with the feeder cable. Because the claims require just two drop lines plus a mold that fully encases the nexus where they meet the feeder cable, an analysis that shows two drop lines meeting a feeder cable within a fully encasing mold proves that Shoals practices the only part of the claims even arguably in dispute. If there are more than two drop lines, that does not matter, so long as at least two reach the feeder cable at a nexus fully encased by a mold. *Cf.* Tr. (Brooks) at 448:16–25 (Mr. Brooks regarding same as to infringement analysis). Nor does the size of the feeder cable matter, so long as it differs from the size of the two drop lines recited by the claims.

For that reason, Mr. Brooks’ analysis presented above was and remains a representative technical DI analysis. As he explained at his deposition, any Shoals mold drop having at least two drop lines practices the patent:

I’ll go back to the obvious statement, maybe. But the picture -- the photo was to show that there was at least a first drop line and a second drop line, and then it’s extremely obvious, just from visually looking at these, that three is greater than two and four is greater than three; which, by definition, practices those three products and every product larger than that,

JX-0206C at 270:17–271:10. As he did at the hearing, he recounted the range of Shoals products he had personally seen in use in the field, personally inspected, cut open, and seen at the Shoals factory being manufactured, and concluded that:

[REDACTED]

JX-0206C at 278:5–10; *see also*, Tr. (Brooks) at 467:7–469:7 (CDX-0005C.116, describing CPX-0036, CPX-0036.1, CPX-0036.2, CPX-0036.3, CPX-0036.4, CPX-0036.6), 469:19–470:2 (describing CPX-0036.5), 469:8–17, 470:3–14 (

). Mr. Brooks also explained that he selected a 4-drop configuration because it was the most common and thus the most representative:

I will tell you, just to add on to what I just said there: You get a lot of drop lines that are very difficult to cut. So -- but we represented a four-drop line would probably be the most common that you'd ever see because these typically run down the center of a row, and then they've got -- they go out to either side.

JX-0206C at 274:22–275:3; *see also* Tr. (Brooks) at 470:15–471:4 (selected 4-drop CPX-0036.1 for claim chart analysis). So Mr. Brooks used a cut open 4-drop mold to demonstrate its inner workings, but he also used other configurations to show things like an intact undermold and overmold pair. CDX-0005C at 122 (depicting annotated JX-0163, JX-0121, and CPX-0036.1C), 123 (depicting annotated JX-0243C.0003, JX-0162, JX-0120, and CPX-0036.1C), 124 (depicting annotated JX-0243C.0004, JX-0162, JX-0120, CPX-0036.1C, JX-0118C.0011). He also relied on some Shoals documents, like the BLA data sheet, that tout the benefits of BLA and its component mold drops monolithically, while acknowledging the range of available configurations, including up to eight drop lines and feeder cable sizes up to 600 MCM:

			TECHNICAL SPECS	STG.BLA
			Voltage Rating	600 VDC / 1000 VDC / 1500 VDC
			Max. Isc (Trunk)	Up to 615A*
			Max. OCPD Per String	50A
			Max. Trunk Cable Size	600 MCM
			Number of Input Circuits	Customer Specific
			Max. Ambient Temp. Rating	50°C

CDX.0005C.118 (JX-0119).

[REDACTED]

In the face of facts that emerged at Mr. Brooks’ deposition readily establishing at least a prima facie case for a representative analysis, it was incumbent on Voltage and Staff to come forward with something to suggest otherwise. They failed to do so, and that fact should be considered and weighed in deciding whether it is more likely than not that Mr. Brooks’ analysis was sufficiently representative. *Hale*, 772 F.2d at 885 (“An unrebutted prima facie case is necessarily, by definition, a ‘preponderance’ of the evidence.”).²⁰

VII. VALIDITY

Voltage alleges that claims 1, 12–14, 21 and 23–24 of the ’153 patent would have been obvious under 35 U.S.C. § 103 in view of the Yamawaki (U.S. Patent No. 6,268,559) (RX-0052) and Shao (Chinese Patent No. 2785100) (RX-0097) references.²¹ Each of the challenged claims is valid over the asserted Yamawaki and Shao combination for numerous reasons. First, Voltage has alleged invalidity from the perspective of an expert who does not qualify as a person of ordinary skill in the pertinent art, and thus that testimony is unreliable and should be excluded. *See HVLPO2, LLC*, 949 F.3d at 688–89 (“a witness who is ‘not qualified as an expert by knowledge, skill, experience, training, or education in the pertinent art ... [cannot] assist the trier of fact to understand the evidence or to determine a fact in issue’”) (quoting *Sundance, Inc.*, 550 F.3d at 1361–62 and Fed. R. Evid. 702). Second, Shao is not analogous art, and would not have

²⁰ When the ’254 patent was still at issue, Voltage may have had something to say in rebuttal—for example, about whether the number of drop lines could impact the “parallel” or “concentric” limitations of that patent. But the investigation has been terminated as to that patent (and also as to claim 8 of the ’153 patent, which has a “substantially parallel” limitation) (*See* Order No. 19, EDIS DOCID 815078, terminating ’254 patent; *see also* Order No. 29, EDIS DOCID 817397, terminating claim 8 of the ’153 patent). With regard to the ’153 patent claims that remain at issue, Voltage can have no rebuttal to offer.

²¹ The validity of claim 11 of the ’153 patent is unchallenged in view of any prior art reference(s). Voltage’s allegations that claims are invalid due to indefiniteness under 35 U.S.C. § 112 are addressed at section IV.

been considered by a POSA to which the invention pertains and is thus unavailable for purposes of an obviousness determination. Even if available (which it is not), Voltage fails to support its obviousness allegations with evidence to demonstrate that a POSA would have been motivated, without the benefit of hindsight, to modify Yamawaki, or to combine Yamawaki with Shao. Finally, even if a combination was plausible, Yamawaki and Shao still fail to teach key elements of the claims, including, *inter alia*, a “lead assembly” that is electrically connected to a “wire harness” by way of a “drop line”; an electrical connection between a feeder cable and at least two drop lines at a “nexus”; an “undermold” that fully encases the nexus; or any type of “aperture,” that extends completely or partially through the mold. For at least these reasons, Voltage has not carried its burden to show, by clear and convincing evidence, that the claims of the ’153 patent are invalid as obvious.

A. Legal Standard

Because patents are presumed valid, 35 U.S.C. § 282, a challenger at the ITC must prove invalidity by clear and convincing evidence. *Guangdong Alison Hi-Tech Co. v. Int’l Trade Comm’n*, 936 F.3d 1353, 1359 (Fed. Cir. 2019) (citing *One-E-Way, Inc. v. Int’l Trade Comm’n*, 859 F.3d 1059, 1062 (Fed. Cir. 2017)).

Whether a claimed invention would have been obvious is a question of law, based on factual determinations regarding the scope and content of the prior art, differences between the prior art and the claims at issue, the level of ordinary skill in the pertinent art, the motivations to modify or combine prior art, and any objective indicia of non-obviousness. *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013). A threshold inquiry is identifying a POSA, and then asking the legal question of whether the claimed invention would have been obvious to that POSA. In doing so, it is assumed that the POSA has knowledge of all prior art that is analogous

[REDACTED]

to the field of the subject patent, and then determining whether the POSA would have had a motivation to combine that prior art in the specific way claimed in the patent and have a reasonable expectation of success. Whether a skilled artisan would have been motivated to combine prior art references is a question of fact. *Ariosa Diagnostics v. Veerinata Health, Inc.*, 805 F.3d 1359, 1364 (Fed. Cir. 2015). Importantly, “obviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention.” *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (emphasis in original). Thus, a party asserting obviousness must present sufficient evidence that one of ordinary skill in the art would have had a motivation to combine prior art references, and would have understood how to combine the references to render the claimed invention obvious. *Vizio, Inc. v. Int’l Trade Comm’n*, 605 F.3d 1330, 1343 (Fed. Cir. 2010). Voltage has failed to make that showing here.

B. Voltage’s proffered expert, Dr. Kenny, does not qualify as a POSA and thus cannot provide a legally adequate perspective into the validity of the ’153 patent.

A threshold inquiry when assessing obviousness is to ask the legal question of whether the claimed invention would have been obvious to a POSA. Voltage has failed to offer *any* analysis of invalidity from the perspective of a POSA in the field of the ’153 patent. As admitted by Voltage’s expert Dr. Kenny, there is no dispute as to the pertinent field of the ’153 patent: methods and apparatus for a lead assembly for use in a solar energy installation, solar power systems and a method of construction a solar power installation. Tr. (Kenny) at 1230:1–24. Yet Dr. Kenny, although certainly qualified in other areas, admits that he has “no experience with photovoltaic systems.” Tr. (Kenny) at 1231:22–24. By extension, he also admits that he is not a POSA under the preliminary definition of a POSA set forth in the *Markman* Order, which states:

[REDACTED]

[REDACTED]

A person of ordinary skill in the art would have had at least a bachelor's degree in mechanical or electrical engineering or a related scientific field and ***at least two years' experience working with photovoltaic systems*** and electrical wiring, with recognition that more education could substitute for experience and that experience combined with training could substitute for formal education.

Order No. 16 at 12 (emphasis added). Dr. Kenny admits that he does not have any experience with photovoltaic systems, professional or otherwise. *See, e.g.*, Tr. (Kenny) at 1187:1–11, 1221:3–19, 1226:8–1229:22, 1228:20–1229:2. In addition, Dr. Kenny is not able to substitute the apparent and admitted lack of practical experience with additional education because he has no education, formal or otherwise, related to PV systems and electrical wiring of PV systems as it relates to the '153 patent. Tr. (Kenny) at 1187:1–11, 1221:3–19.

When asked by Judge Bhattacharyya about the extent of his experience with photovoltaic systems, Dr. Kenny alluded to some “classes” regarding the underlying semiconductor physics. *See, e.g.*, Tr. (Kenny) at 1187:1–11. He then admitted that this “experience” has nothing to do with the so-called “back-of-glass” wiring (or EBOS) aspect of photovoltaic systems—the admitted field of the '153 patent. Tr. (Kenny) at 1221:3–19. Dr. Kenny also testified that he has not authored any papers that include solar-related subject matter; that he has not participated in symposia related to solar installations; and that he has not testified as an expert witness in any solar cases. Tr. (Kenny) at 1226:8–1229:22. He agreed that the word “solar” does not appear on his C.V., and that he has not consulted or advised on the design or implementation of a solar installation of any size. In fact, Dr. Kenny testified that his *only* PV experience was related to personal use of “low-power applications for consumer-grade electronics” – *e.g.*, charging phones and camping trips. Tr. (Kenny) at 1228:20–1229:2.

[REDACTED]

Nor does Dr. Kenny have the type of education—formal or otherwise— that might substitute for experience. Order No. 16 at 12. He stated, for example, that rather than taking classes related to electrical wiring in PV systems, he “took classes and used solar and other related semiconductor devices in which electrons flow through band structures . . .” Tr. (Kenny) at 1187:1-11. He admitted that this training was “not part of the EBOS system” but rather related to “what goes on *in* the solar panels.” Tr. (Kenny) at 1221:3–19 (*italics added*). Dr. Kenny testified explicitly that he did not take any “classes that were specific to *any content* that is related to installing or building solar installations.” Tr. (Kenny) at 1229:14–16 (*italics added*). In addition to his lack of formal collegiate education regarding solar installations, Dr. Kenny admitted that he does not have any solar-related certifications or accreditations, nor does he have any working knowledge of codes or standards that relate to solar prior to his work on this case such as, for example, sections of the National Electrical Code (NEC) that govern solar installations. *See* Tr. (Kenny) at 1229:18–22.

Dr. Kenny’s lack of experience and training in anything solar-related clearly informs and guides his interpretation of the patent and the alleged prior art. As one example, Dr. Kenny testified that he worked through his understanding of “aperture” as used in the claims based on his familiarity with the field of optics which was, by his own admission, informed by his background in general physics. Tr. (Kenny) at 1225:25–1226:7. Stated differently, rather than interpreting the claims from the perspective of a skilled artisan in the solar industry, Dr. Kenny’s analysis was performed from the perspective of one skilled instead in general physics related to the field of optics. *Id.*

In sum, Dr. Kenny admits that he does not have experience or educational training in the field of the ’153 patent. The record also demonstrates that his experience and education do not

[REDACTED]

meet the minimum levels articulated by the Judge in her *Markman* Order. As such, Dr. Kenny cannot qualify as a person of skill in the relevant art under the Judge's proposed definition. Thus, although Dr. Kenny purports to opine that all the asserted claims of the '153 patent are invalid, those opinions are not credible because that analysis must be from the perspective of a POSA as of the effective filing date of the patent at issue. 35 U.S.C. § 103 (obviousness); *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 908 (U.S., 2014) (indefiniteness). Moreover, his lack of specialized knowledge prevents him from helping the trier of fact to understand the evidence or to determine a fact in issue." See Fed. R. Evid. 702(a); *HVLPO2, LLC*, 949 F.3d at 688–89.

Dr. Kenny's lack of relevant training or experience in photovoltaic systems is in sharp contrast to Shoals' own expert, Joshua Weiner. Mr. Weiner is a trained astrophysicist, and has 20 years of experience in design, engineering, procurement, training, and teaching in the field of photovoltaic systems, including EBOS. Tr. (Weiner) at 1257:15–19, 1257:25–1259:12, 1262:2–16. Moreover, he holds relevant certifications in the solar field, and has worked on thousands of solar projects, from residential to utility scale. See Tr. (Weiner) at 1259:13–25; 1260:3–23. He is also intimately familiar with published codes and regulations pertinent to the solar field. Tr. (Weiner) at 1261:18–1262:1. Lastly, he has been admitted in this Investigation as an expert "in photovoltaic solar energy systems, EBOS, and the electrical wiring for solar systems," has at least the level of ordinary skill in the art as defined by the Judge, and has offered his opinions of validity with that perspective in mind. See Tr. (Weiner) at 1263:1–16. For all the reasons articulated above, Dr. Kenny should not be considered a POSA with respect to the '153 patent

[REDACTED]

and Shoals renews its motion to exclude any opinions offered by Dr. Kenny as an allegedly skilled artisan with respect to the '153 patent and its validity.²²

C. Voltage’s obviousness argument is premised on at least one prior art reference—Shao—that is not analogous to the field of the '153 patent and should thus be disregarded.

Not only must obviousness be assessed from the perspective of a POSA, it must be assessed from the perspective of prior art that is *analogous* to the field of the subject patent. The purpose of the analogous art test for obviousness is to examine whether a reference can be considered as prior art to the challenged patent in the first place. *Sanofi-Aventis Deutschland GmbH v. Mylan Pharmaceuticals Inc.*, 66 F.4th 1373, 1377 (Fed. Cir. 2013); *see also In re Wood*, 599 F.2d 1032 (C.C.P.A. 1979) (“[t]he rationale behind this rule precluding rejections based on combination of teachings of references from nonanalogous arts is the realization that an inventor could not possibly be aware of every teaching in every art.”). “Two criteria have evolved for determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor’s endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.” *In re Clay*, 966 F.2d 656, 658-59 (Fed. Cir. 1992). Further, “whether prior art is analogous is determined with the foresight of a person of ordinary

²² On February 26, 2024, Shoals filed a motion *in limine* (Mot. Dkt. 1365-024) to exclude or limit testimony from Thomas Kenny (EDIS Doc. ID 814959). In her order of March 8, 2024 (Order No. 26), Judge Bhattacharyya denied the motion *in limine*. Order No. 26 at 3. However, the order noted that “a more detailed consideration of the definition of a POSA is warranted” and that the “parties should address this issue in post-hearing briefs, with citations to relevant record evidence.” *Id.* Further, that “[i]f the evidence ultimately shows that he does not have the requisite education and/or experience, then his testimony will not be relied upon as evidence of the perspective of a skilled artisan.” *Id.* at 3–4. The record evidence demonstrates that Dr. Kenny does not have the required education and/or experience of a POSA, and his testimony is not reliable for purposes of evaluating the validity of the claims of the '153 patent.

[REDACTED]

[REDACTED]

skill, not with the hindsight of the inventor’s successful achievement.” *Netflix, Inc. v. DivX, LLC* 80 F.4th 1352, 1358 (Fed. Cir. 2023) (citations omitted). Because the Shao reference is from a different field of endeavor than the ’153 patent and is not pertinent to the problem addressed by the inventor of the ’153 patent, it is not analogous art and should not be considered as prior art to the ’153 patent.

1. The Shao reference and the ’153 patent are in different fields of endeavor.

None of the evidence presented at trial establishes that Shao is in the same field of endeavor as the ’153 patent.

According to Voltage’s expert, Dr. Kenny, the field of endeavor for the ’153 patent is “solar energy installation, solar power system, and methods of constructing a solar power installation” or “methods and apparatus for a lead assembly for use in a solar energy ... installation -- solar power systems and a method of constructing a solar power installation.” Tr. (Kenny) at 1230:1–24. On this, Shoals’ expert, Joshua Weiner, agrees. He testified that the ’153 patent is in the field of utility-scale solar power installation. *See*, Tr. (Weiner) at 1260:2–1261:17, 1264:2–5, 1284:23–1285:3.

In contrast, the record is clear that Shao has nothing to do with solar applications, and Dr. Kenny agrees: “[t]here’s no mention of solar technology in the Shao patent.” Tr. (Kenny) at 1202:21–23. Moreover, Dr. Kenny offered no testimony that provides any explanation as to why solar energy installations are in the same field of endeavor as Shao, other than noting that it concerns “power distribution in electrical wiring systems” and thus would be “interesting to

consider . . . in the case of the '153." Tr. (Kenny) at 1202:24–1203:3. Nothing else was offered by Dr. Kenny as to field of endeavor.²³

Shoals' expert, Mr. Weiner, at least agrees with Dr. Kenny on one point. He testified that that Shao suggests no application to a solar environment or solar installation, "[t]he word 'solar' doesn't show up once – nowhere." Tr. (Weiner) at 1285:4–5, 1283:11–14. *See Airbus S.A.S. v. Firepass Corp.*, 941 F.3d 1374, 1380 (Fed. Cir. 2019) (holding that for patent disclosing a fire prevention and suppression system, that reference disclosing equipment for providing hypoxic air in an enclosed area for the purposes of athletic training or therapy did not qualify as analogous prior art under the field of endeavor test, supported by substantial evidence; reference was expressly directed to exercise equipment and failed to mention the word 'fire' even a single time).

However, while Dr. Kenny offered no testimony explaining why the field of the '153 patent (solar energy installations) could be said to be in the same field as Shao (AC power distribution), Mr. Weiner testified at length why a POSA would conclude that Shao is not applicable to solar applications and why one of skill in the art *would not* look to Shao to inform

²³ Dr. Kenny attempts to downplay the fact that Shao has nothing to do with solar by arguing that one of the "classification" categories searched by the examiner of the application that resulted in the '153 patent included "categories of ordinary electrical wiring, power distribution, and cabling", *i.e.*, ostensibly non-solar areas. However, just because a reference is categorized in a non-solar classification does not necessarily mean it has no relation to solar. The United States Court of Customs and Patent Appeals cautioned against relying on classification of prior art as a basis for assessing analogous art. *See, e.g., In re Ellis*, 476 F.2d 1370, 1372 (C.C.P.A. 1973) (similarities and differences in structure and function carry far greater weight than where a reference is classified); *see also In re Huene*, 2000 WL 1141047 at *5 (Fed. Cir. 2000). (unpublished) (citing *In re Mlot-Fijalkowski*, 676 F.2d 666, 670 n.5, (C.C.P.A. 1982) ("Such evidence is inherently weak also, because considerations in forming a classification system differ from those relating to a person of ordinary skill seeking solution for a particular problem.")). The USPTO has since memorialized this cautionary note in the Manual of Patent Examining Procedure. *See* MPEP 2141.01(a).

[REDACTED]

[REDACTED]

solar component design decisions. *See* Tr. (Weiner) at 1284:2–5. First, Mr. Weiner notes that Shao discloses a device intended specifically for AC power *distribution* within a multistory building (*e.g.*, vertically between floors of a building), which has nothing to do with DC power *consolidation* from wire harnesses as addressed by the ’153 patent. Tr. (Weiner) at 1282:22–1283:10. Second, Mr. Weiner noted that Shao concerns only AC power distribution, and that AC components generally have no applicability to design decisions within a DC power system, the environment of a solar power system, *i.e.*, the types of systems at issue here. Tr. (Weiner) at 1284:2–22. Third, Mr. Weiner pointed out that the invention of Shao is intended for AC power distribution *within* a building – in sharp contrast to solar components which are intended for outdoor use and subject to extreme environmental factors. Tr. (Weiner) at 1283:22–24. The Shao reference and the ’153 patent are demonstrably in different fields of endeavor. Dr. Kenny offers no reasoning to support his single conclusory statement to the contrary. In contrast, Shoals’ expert, Josh Weiner, offers fact-based reasons as to why Shao is in a different field of endeavor and why a POSA would not consider it applicable to the field of the ’153 patent. *See Airbus S.A.S.*, 941 F.3d at 1383 (the analogous arts inquiry “should take into account any relevant evidence in the record cited by the parties to demonstrate the knowledge and perspective of a person of ordinary skill in the art.”). On this basis, Shao is not analogous to the ’153 patent, and should be excluded.

2. The ’153 patent and the Shao reference are directed to different problems.

A prior art reference might be analogous if it is reasonably pertinent to the problem with which the inventor is involved. *In re Clay*, 966 F.2d at 659. However, the Shao reference and the ’153 patent are directed to entirely different problems, and thus cannot be said to be analogous under this test.

[REDACTED]

Voltage's expert, Dr. Kenny, never directly addresses the question of whether the Shao reference is reasonably pertinent to the particular problem with which the inventor of the '153 patent was involved. In fact, Dr. Kenny never specifically articulates the problem addressed by the inventor of the '153 patent. Instead—and although his logic is not entirely clear—Dr. Kenny *appears* to reason that since Shao describes certain “benefits and features” that are similar to benefits and features of the '153 patent, then the references are analogous. Tr. (Kenny) at 1207:22–1208:12. Specifically, Dr. Kenny offers up a new test. He hypothesizes that since Shao provides a description of “benefits that include improvements in sealing moisture proofing, waterproofing, and improving the maintenance characteristics of the cable junction,” then it is necessarily pertinent to the problem of the '153 patent because the '153 patent “discusses the benefits of reducing the large numbers of wires and cables that might be replaced with harnesses and lead assemblies, which also leads to lower costs and easier, simpler installations, better maintenance, and other benefits in the field . . . [s]o these all relate to the same family of problems.” Tr. (Kenny) at 1207:22–1208:12.

The comparison is illogical on its face (what does waterproofing and improved maintenance characteristics have to do with reducing wires?), and it certainly does not demonstrate that Shao is reasonably pertinent to the *particular* problem with which the inventor of the '153 patent was involved. *See In re Clay*, 966 F.2d at 659 (the relevant question for determining whether art is analogous is the “particular problem with which the inventor is involved”). In fact, the '153 patent *actually* states the problem being solved: “there is a need for a device that renders a combiner box unnecessary.” JX-0089 ('153 patent) at 1:55–56. Dr. Kenny ignores this fact. Instead, he testified only that Shao and the '153 patent “sought to . . . improve[]” “*similar* . . . benefits and features,” and “relate to the same *family* of problems.” Tr. (Kenny) at

[REDACTED]

1208:4–12 (*italics added*). A breezy reference to vague and abstract familial similarity is not clear and convincing evidence of being involved with the same particular problem. Indeed, each of the references address a different problem altogether: Yamawaki addresses the reduction of wire runs from solar panels with a customizable wire harness, while Shao addresses a power distribution cable with a prefabricated bidirectional K-shaped branch. These problems are entirely different from the problem addressed by the '153 patent (elimination of a combiner box).

In contrast to Dr. Kenny's lack of testimony on this particular point, Shoals' expert testified directly and persuasively that Shao and the '153 patent are *not* directed to the same problem. According to Mr. Weiner:

The '153 patent is focused on how to get power from solar panel arrays all the way over to an inverter without using a combiner box.

The Shao patent focuses on enabling single-branch joints by combining them into a double-branch AC power distribution system between floors of a building. It's trying to reduce the number of joints and creating a more compact structure that's tighter inside of a building.

...

Two different problems.

Tr. (Weiner) at 1285:8–17.

In sum, the evidence provided by Voltage does not show by clear and convincing evidence that Shao is analogous art to the '153 patent. Specifically, the evidence does not show that (1) Shao is from the same field of endeavor of the '153 patent, or that (2) Shao is reasonably pertinent to the particular problem with which the inventor of the '153 patent was involved. *In re Clay*, 966 F.2d at 658–59. In contrast, Shoals has provided expert testimony demonstrating that Shao is not analogous. On this record, Shao should not be considered as prior art to the '153 patent.

[REDACTED]

[REDACTED]

D. Voltage did not prove by clear and convincing evidence that a POSA would have been motivated to combine Yamawaki and Shao with a reasonable expectation of success.

Even assuming for purposes of argument that Dr. Kenny qualifies as a POSA (he does not), and that the Shao reference is analogous to the field of the subject patent (it is not), Voltage fails to show that a POSA would be motivated to combine Yamawaki with Shao. The key question in this regard is whether a POSA, armed with the knowledge of the prior art, would have been motivated to combine the prior art in the specific way claimed in the patent and have a reasonable expectation of success in doing so. Importantly, there must be some reason or rationale that would have prompted the POSA to select and combine the specific teachings from the prior art to arrive at the claimed invention. *See Belden Inc.*, 805 F.3d at 1073. As emphasized by the Supreme Court in its *KSR* decision, “a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418, 127 S. Ct. 1727 (2007). Rather, there must be a reason (or motivation) provided for a person of ordinary skill in the art to combine those elements in the claimed manner. *Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016). The Court in *KSR* explained that such evidence of motivation-to-combine is a necessary element in proving a combination patent obvious, and the Court justified the requirement based upon the theory of hindsight bias: “[a] factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning.” *KSR*, 550 U.S. at 421.

First, Voltage presented no evidence that a POSA would be motivated to combine Yamawaki with Shao. Second, there cannot be a reasonable expectation of success in the

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combination of Yamawaki and Shao because combining Yamawaki with Shao in the ways proposed by Dr. Kenny is not technically viable.

1. Voltage offers no evidence that a POSA would be motivated to combine Yamawaki with Shao.

In his testimony, Dr. Kenny offered no viable rationale for combining Yamawaki and Shao. Indeed, his testimony illustrates the precise need for evidence of a motivation-to-combine: avoidance of the hindsight bias cautioned against by the Court in *KSR*. Dr. Kenny’s analysis is premised on demonstrating that each of the elements of the claims of the ’153 patent elements was, independently, known in the prior art (here, Yamawaki and Shao) and then asserting that the claims are obvious. He offers no viable reason (or motivation) for combining the references.

For example, Dr. Kenny purports to identify the presence of certain elements of the ’153 patent claims in Yamawaki: “lead assembly” (Tr. (Kenny) at 1203:6–8); “first drop line/first drop line connector” (Tr. (Kenny) at 1203:12–17); “wire-harness” (Tr. (Kenny) at 1203:18–24); “feeder cable” (Tr. (Kenny) at 1204:7–12); “nexus” (*Id.*); “undermold” (Tr. (Kenny) at 1204:14–20); “first aperture” (Tr. (Kenny) at 1204:21–25); “second aperture” (Tr. (Kenny) at 1205:4–11); “overmold” (Tr. (Kenny) at 1205:18–24).²⁴ Dr. Kenny—acknowledging the absence of certain elements of the claim in Yamawaki—next turns to Shao, and purports to identify the presence of additional elements: “second aperture” (Tr. (Kenny) at 1206:2–12); “third aperture/second drop line” (Tr. (Kenny) at 1206:13–22); and “second/third diameter different from first diameter” (Tr. (Kenny) at 1206:7–17).

Dr. Kenny attempts to explain “two different motivations” for combining Yamawaki and Shao (Tr. (Kenny) at 1207:3), but both “reasons” are inadequate as a matter of law. First, he

²⁴ As discussed below, Shoals and its expert disagree with Dr. Kenny’s interpretation of Yamawaki and its teachings.

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states that the reason “can be that the prior art references are from the same field.” Tr. (Kenny) at 1207:3–5. Even assuming that the prior art references are from the same field (they are not), that fact alone does not provide a reason to combine references. *See Securus Techs., Inc. v. Glob. Tel*Link Corp.*, 701 F. App’x 971, 977 (Fed. Cir. 2017). (stating that “a broad characterization of [the cited references] as both falling within the same alleged field . . . without more, is not enough for [the petitioner] to meet its burden of presenting a sufficient rationale to support an obviousness conclusion.”); *see also Microsoft Corp. v. Enfish, LLC*, 662 Fed. Appx. 981, 990 (Fed. Cir. 2016) (“[The] Board correctly concluded that [the petitioner] did not articulate a sufficient motivation to combine. With respect to [certain challenged claims], [the petitioner] gave no reason for the motivation of a person of ordinary skill to combine [the two references] except that the references were directed to the same art or same techniques....”).

Second, Dr. Kenny testified that “it’s reasonably pertinent to consider combining one reference with the other in order to obtain the benefits that are of mutual interest.” Tr. (Kenny) at 1207:5–8. This also finds no basis in law. If understood correctly, Dr. Kenny seems to allege that Yamawaki and Shao would be combined so as to obtain benefits that are of mutual interest. Even if Dr. Kenny was able to identify such “benefits” that are of mutual interest (which is not clear from his testimony), that would not be a sufficient reason to combine the references for purposes of achieving the invention claimed in the ’153 patent. “When an obviousness challenge asserts a combination of identified prior art, the motivation-to-combine portion of the inquiry is whether a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention.” *Axonics, Inc. v. Medtronic, Inc.*, 73 F.4th 950, 957 (Fed. Cir. 2023). The inquiry is not whether a relevant artisan would combine a first reference’s feature

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with a second reference's feature to meet requirements of the first reference that are not requirements of the claims at issue. *Id.*

Here, Dr. Kenny offers no reason why Shao would have been combined with Yamawaki in order to meet the requirements of the claims at issue, *i.e.*, the requirement that a second and third aperture have different diameters from the first aperture; that there be a third aperture; and that there be a second drop line. He certainly offers no reasoning as to why the combination would be premised on “benefits” of mutual interest as they pertain to the requirements of the claims. As such, Voltage, through Dr. Kenny, has failed to establish a legally viable reason (or motivation) that a person of ordinary skill in the art to combine the Yamawaki and Shao references in the manner required by the claimed invention.

Dr. Kenny's proposed rationale for combining Yamawaki and Shao fails for other reasons as well. For example, Dr. Kenny actually testified that Yamawaki does not “disclose any motivation to increase the number of drop lines in one [branch junction].” Tr. (Kenny) at 1246:14–22. In response to Staff stating that there “may not be proper motivation to combine Yamawaki with Shao,” Dr. Kenny stated merely that a skilled artisan “would *notice* that it *might* be possible to have multiple drop lines from a single [branch junction], and that Shao brings some ideas about how to accomplish that.” Tr. (Kenny) at 1247:22–1248:6. (*italics added*). *Noticing* that it *might* be possible to combine Yamawaki with some ideas from Shao is a far cry indeed from clear and convincing evidence that a POSA would have been motivated to combine Yamawaki with Shao. The cases are clear on this point. “[O]bviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention.” *Belden Inc.*, 805 F.3d at 1073 (*emphasis in original*).

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According to Dr. Kenny, Shao would have made it obvious to add a third aperture to Yamawaki because Yamawaki's cable assemblies would benefit from "reducing the number of outleads" thereby "mak[ing] the system easier to mount and use." Tr. (Kenny) at 1207:22–24. Dr. Kenny cites no evidence that a POSA at that time would recognize any such alleged benefit. Indeed, Yamawaki, as explained below, does not teach reducing, but instead increasing the number of junctions and wires in a rooftop solar installation. In contrast, Shao explicitly teaches that its goal is to reduce the number of joints needed (one joint per two floors, versus two joints, one per floor).

2. A POSA would not have a reasonable expectation of success in the proposed Yamawaki – Shao combination because the combination is not technically viable.

A finding of obviousness at the time of the invention requires a plausible rationale as to why modifying one prior art reference in view of another prior art reference would have worked. *Broadcom Corp. v. Emulex Corp.*, 732 F.3d 1325, 1335 (Fed. Cir. 2013). If the record does not show any reasonable expectation that making a significant change to one reference would have been successful, then the burden of proof with respect to invalidity has not been met. *Id.* It is often necessary to further explain how one of ordinary skill would actually make an alleged combination or modification of prior art references. *See ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.*, 694 F.3d 1312, 1327 (Fed. Cir. 2012) (noting that the "expert failed to explain how specific references could be combined"); *Cheese Sys., Inc. v. Tetra Pak Cheese and Powder Sys., Inc.*, 725 F.3d 1341, 1354 (Fed. Cir. 2013) (affirming summary judgment of nonobviousness where asserted prior art references did not provide adequate explanation or guidance regarding how to make necessary modifications to arrive at claimed invention).

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Dr. Kenny’s fundamental misread of Yamawaki—which may be due to his lack of institutional, solar knowledge—has led to several conclusions regarding the combination of Yamawaki and Shao that are simply untenable both as a technical matter and as a matter of common sense to a skilled artisan. Indeed, the combination of Yamawaki with Shao would foreclose the novelty provided by Yamawaki’s wire harness. As such, Voltage has not shown a reasonable expectation of success in the combination.

Dr. Kenny proposes that one of ordinary skill would:

(1) Pre-manufacture the wire harnesses in Yamawaki to introduce the crimping and molding processes used to electrically connect the trunk and branch cables in Shao. (Tr. (Kenny) at 1209:6–12);

(2) Increase the wire size of the trunk cable in Yamawaki (or decrease the size of the branch cables) thereby causing the alleged aperture sizes through the branch to be different (Tr. (Kenny) at 1205:12–17); and,

(3) Add an additional alleged aperture through the branch junction 33 to accommodate a second drop line (Tr. (Kenny) at 1206:2–22).

However, each modification to Yamawaki proposed by Dr. Kenny in light of Shao would eliminate the purpose and technical viability of Yamawaki. As Mr. Weiner testified, bolstered by his experience in designing thousands of residential solar installations (Tr. (Weiner) at 1258:15–18, 1260:6–8), a POSA would not combine Yamawaki with Shao because “ultimately . . . [the combination would] break what Yamawaki is trying to teach.” Tr. (Weiner) at 1269:9–13.

First, a POSA would not pre-manufacture (or, using the terminology of Shao, “prefabricate”) the wire harnesses of Yamawaki like the Shao power cable and K-shaped branch because doing so would obviate the utility explicitly taught in Yamawaki; namely, the flexible

and adaptable nature of the wire harnesses. Tr. (Weiner) at 1287:12–15; *see also* RX-0052.024 (Yamawaki) at 4:1–4 (the “lengths of the trunk and branch cables can be adjusted according to the layout or configuration of the photovoltaic modules or module units, and the photovoltaic modules can be increased for extension or rearranged with ease.”).

Dr. Kenny acknowledges that “Yamawaki provides sort of limited description of the interior structure of the [branch junction 33].” Tr. (Kenny) at 1209:6–8. The figures of the branch junction 33, for example, only illustrate dotted lines showing an apparent electrical connection between the trunk cables and the branch cable as shown, for example, below:

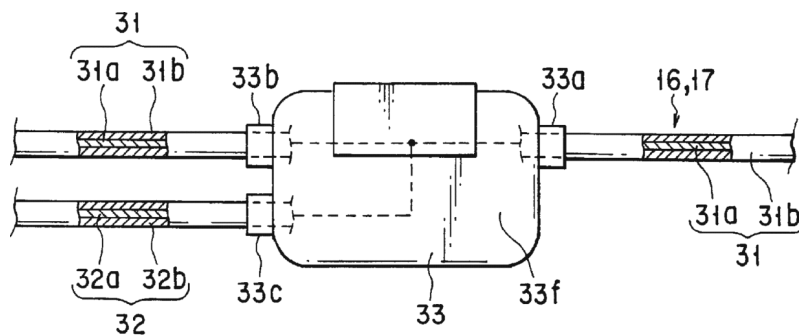
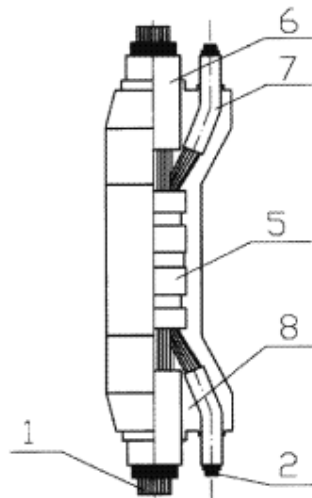


FIG. 9A

RX-0052.007 (Yamawaki), FIG. 9A. Yamawaki teaches that each of the cables are cut to a desired length (in accordance with the layout of a given rooftop configuration) and then plugged into the respective branch cable connecting portions (33a), (33b), and (33c). Tr. (Weiner) at 1274:11–1275:10. Yamawaki teaches that this process is to occur *on site* to conform with the unique nature of each rooftop. Tr. (Weiner) at 1273:23–25, 1287:22–25. As Mr. Weiner testified, “Yamawaki says, show up with all your equipment, but field assemble it, because every rooftop is different and [one] needs a flexible, adaptable [harness] to solve the residential problem.” Tr. (Weiner) at 1287:22–1288:1.

By contrast, Shao teaches the “manufacturing all of the [K-shaped junctions] *offsite* in a manufacturing facility” which enables efficient installation of the junctions in buildings. *See* Tr. at 1287:12–21; *see also* RX-0097.0005 (Shao) (“The power cable is premanufactured in a factory and fast to lay and mount . . .”). The K-shaped junction includes a trunk conductor and two branch conductors that are electrically connected using a crimp. *See, e.g.*, RX-0097.0005 (Shao). As Dr. Kenny testified, Shao also teaches a molding over the conductors which is “described as a sheath made of injection molded material” Tr. (Kenny) 1215:15–19; *see also* RX-0097.0005 (Shao). The basic structure of the K-junction taught in Shao is shown, for example, below:



RX-0097.008 (Shao), FIG. 1. Aside from the issue of whether Shao is analogous art (it is not), using the crimped and molded structure of Shao in connection with Yamawaki would break the teachings and benefits of Yamawaki. Tr. (Weiner) at 1269:9–13.

Mr. Weiner noted that “a crimped wire would fix [] branch junctions along the trunk” which is contrary to the purpose of Yamawaki which is “to allow flexibility and adaptability” of the branch junctions 33 along the trunk cables. Tr. (Weiner) at 1287:12–15. The same is true of

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the injection molding process that Dr. Kenny insists one of ordinary skill would use by stating, for example, that “the *crimping* and *molding* process around the [branch junction 33] could be applied [to improve] the interior structure of Yamawaki.” Tr. (Kenny) at 1209:8–12 (italics added). However, the use of injection molding would similarly fix the branch junctions (33) in place thereby compromising the flexible nature of the Yamawaki wire harness. The proposed modification by Kenny does not improve the interior structure of the Yamawaki branch junction; it renders it inoperable for its intended purpose.

In addition, one would be unable to insert the branch and trunk cables as taught by Yamawaki if the branch junction 33 was prefabricated and injection molded over the branch and trunk cables. Therefore, not only would the crimping and molding in Shao eliminate many of the benefits of Yamawaki, crimping and molding the branch junction 33 flies directly in the face of what Yamawaki teaches which includes the insertion of cables into the branch junction 33. RX-0052.024 (Yamawaki) at 10:19–32.

Second, even if apertures were taught in Yamawaki—which they are not (Tr. (Weiner) at 1287:1–2)—a POSA would not look to Shao to increase (or decrease) the wire size and, consequently, the aperture size of either the trunk cables or the branch cables in Yamawaki. In support of his assertion, Dr. Kenny testified:

Yamawaki itself doesn’t describe the diameters of the cables but ... one of ordinary skill would understand that it’s often convenient to have the branch cables be smaller than the trunk cables just because of the increase in current that’s carried in the trunk relative to the branch.

Tr. (Kenny) at 1205:12–17. Dr. Kenny offers no support for his conclusion that the “convenience” of having smaller branch cables would be applicable to the system of Yamawaki, and Yamawaki provides no such teaching. Moreover, Dr. Kenny fails to consider in his analysis

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the context with which the wire harness in Yamawaki would be used—a residential solar installation. For residential solar installations, Mr. Weiner explained, one would need a “standardized product or service that can somehow morph or adapt to any kind of rooftop. And that’s a tricky challenge.” Tr. (Weiner) at 1270:23–25. Indeed, as Mr. Weiner testified, the wire harness in Yamawaki seeks to “*standardize* all the cables” and “make them *smaller*” to improve, for example, “flexibility around rooftops with tight corners and to get into buildings more efficiently.” Tr. (Weiner) at 1287:3–8 (*italics added*). Mr. Weiner testified that using larger wire would make the “wire harder to bend” and would increase the size of the “holes in the side of the house.” Tr. (Weiner) at 1287:9–11. The concept of increasing the cable sizes is not only absent from any discussion in Yamawaki, but it also does not make sense to a skilled artisan designing residential systems for many of the same reasons. *Id.*

Third, a POSA would not look to Shao to introduce a second drop line and/or a third aperture to the branch junction 33 of Yamawaki as Dr. Kenny proposes. *See* Tr. (Kenny) at 1213:22–1214:2. Dr. Kenny asserts that one would add a second drop line and a third aperture to the branch junction 33 in Yamawaki because doing so would “reduc[e] the number of wires” and “allow [the wire harnesses] to be more easily laid or set up.” Tr. (Kenny) at 1207:11–17. Again, Dr. Kenny fundamentally misunderstands that Yamawaki teaches a flexible, adjustable, and field-customizable wire harness. Mr. Weiner explained that Shao is interested in “consolidating two joints together [whereas] Yamawaki wants them distributed.” Tr. (Weiner) at 1288:2–6. He further explained that if an installer could only install two-branch, branch junctions (33) (i.e., a branch junction 33 with two branch cables) one “would have [many] longer branch cables, and that was . . . one of the many problems – Yamawaki wanted to solve.” Tr. (Weiner) at 1288:7–10. Just like the crimping, the molding, and the increased wire sizes, creating a branch junction

33 with two or more branches defeats the flexibility and adaptability Yamawaki itself touts as part of its inventive concept.

Furthermore, Mr. Weiner testified to the fact that even after Dr. Kenny's testimony, he was still unsure of how one would physically connect portions of Shao with Yamawaki. Tr. (Weiner) at 1288:11–24. Dr. Kenny fails to confront this issue or to otherwise address whether a POSA would have had an expectation of success, and whether it would have been a reasonable expectation. The law requires clear and convincing evidence of this issue and any alleged motivations to combine or modify to match the claim elements. *Guangdong Alison Hi-Tech Co.*, 936 F.3d at 1359. Further, “[a] finding that a reference teaches away can preclude a finding that the reference renders a claim obvious.” *In re Chapman*, 595 F.3d 1330, 1337 (Fed. Cir. 2010). “An inference of nonobviousness is especially strong where the prior art's teachings undermine the very reason being proffered as to why a person of ordinary skill would have combined the known elements.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1326 (Fed. Cir. 2009). A reference may teach away when a person of ordinary skill is discouraged from following the path set out in the reference. *Id.* With no plausible evidence to show the existence of such a motivation at the time of the effective filing date, the only reasonable conclusion is that Dr. Kenny's stated rationales are hindsight driven. In addition, Dr. Kenny's lack of specificity with regard to how one would actually combine Yamawaki and Shao indicates that a skilled artisan would not have understood how to combine the references in order to render the claims obvious as required by law.

E. Even if there was a reason to combine Yamawaki and Shao, and even if a POSA would have a reasonable expectation of success in the combination, the

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combination still fails to teach many elements of the asserted claims in the '153 Patent.

Even if Voltage identified a legally sufficient reason to combine Yamawaki with Shao (which it has not), the evidence offered at trial does not satisfy Voltage's burden of proving invalidity by clear and convincing evidence because the proposed Yamawaki/Shao combination still fails to teach many of the elements required by the asserted claims of the '153 patent. First, Yamawaki teaches a wire harness, not a lead assembly. Second, Yamawaki does not teach any apertures or molds (*i.e.*, an undermold and/or an overmold) as recited in the asserted claims of the '153 Patent.

1. Yamawaki teaches a wire harness, not a lead assembly as required by the claims.

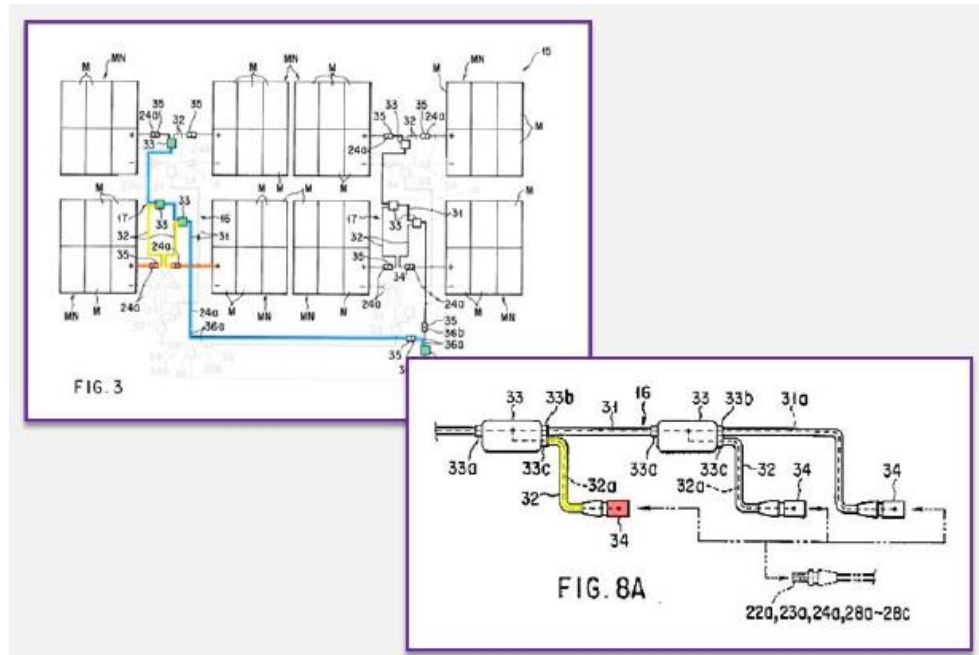
To begin, Mr. Weiner testified that there is a difference between a wire harness and a lead assembly of the sort described in the '153 patent. Tr. (Weiner) at 1264:6–1265:25. A wire harness is designed to group the outputs of individual solar panels in a solar array whereas a lead assembly, as claimed, consolidates the power from wire harnesses. *Cf.* Tr. (Weiner) at 1265:4–25 with Tr. (Weiner) at 1267:16–25. And, as Mr. Weiner testified, the definition of a solar module, solar panel, and solar array are all strictly defined in the NEC. Tr. (Weiner) at 1265:1–3. The different definitions are consistent with how the '153 patent uses the terms. *Id.* Broadly speaking, a group of solar modules makes up a solar panel and a group of solar panels makes up a solar array. Tr. (Weiner) at 1264:6–17. The distinction is made clear in the claims, which state that the drop line connector (associated with the lead assembly) is configured to connect to the central trunk of a wire harness and the wire harness has multiple branches where each branch is configured to electrically connect to a separate solar panel. JX-0089 ('153 patent), claim 1.



see also RX-0052.023 (Yamawaki), at 7:64–67. Each solar panel above includes six solar modules (*i.e.*, the smaller rectangles grouped together to form solar panels and denoted at ‘M’). *Id.* The output from each individual solar panel is connected to a separate branch cable and then grouped to the trunk cable by way of branch junctions “J1”, “J2”, and “J3.” *See* Tr. (Weiner) at 1272:15–20.

The wire harness in Yamawaki is functionally equivalent to the wire harness shown, for example, in Figure 2 of the ’153 patent. Tr. (Weiner) at 1274:2–5; JX-0089 (’153 patent), Fig. 2. The difference in Yamawaki is that the wire harness is adjustable to conform to individual layouts of solar panels on individual rooftops. Tr. (Weiner) at 1273:23–1274:1–5. Otherwise, the functionality of the wire harness in Yamawaki was already contemplated in the ’153 patent as prior art. Tr. (Weiner) at 1274:2–5; JX-0089 (’153 patent), Figs. 1 and 2. Yamawaki acknowledges as much: “according to the present invention, there is provided a wiring apparatus, whereby the respective output terminals of a plurality of generating sections [solar panels], each including photovoltaic modules, are connected to one another . . . [so the] number of wiring apparatuses that extend from the terminals of the photovoltaic modules or module units into a building can be reduced.” RX-0052.024 (Yamawaki) at 3:16–37.

In contrast, Dr. Kenny—without describing any distinction between wire harnesses and lead assemblies—characterizes the wire harness in Yamawaki as a lead assembly by simply applying the terms of the ’153 patent. For example, Dr. Kenny highlights the figures below with the blue line indicating a “feeder cable” (actually a trunk line of a wire harness), the yellow line indicating a “drop line” (actually a branch cable of a wire harness), and the red connector indicating a “drop line connector” (actually a branch line connector of a wire harness connected to the output of a solar panel).



RDX-0003.0075 (depicting RX-0052 with annotations); RX-0052 (Yamawaki), Figs. 3 and 8A (annotated). As explained above with respect to Mr. Weiner’s annotated version of Figure 3, Yamawaki’s wiring apparatus connects to individual solar panels (denoted as a collection of solar modules “M” connected to form solar panels “MN”) just like the wire harness described in the ’153 patent. *Cf.* RX-0052.023 (Yamawaki) at 7:64–67 with JX-0089 (’153 patent), Fig. 2. Dr. Kenny does not offer any support or explanation as to why he considers the wire harness a lead assembly given that the claims require that a lead assembly connect to wire harnesses, not solar panels. Based on its design and function, the wiring apparatus in Yamawaki is a wire harness articulated as the first element of the first claim in the ’153 patent, not a lead assembly. Tr. (Weiner) at 1272:5–8. Therefore, Yamawaki cannot teach any of the elements of the asserted claims directed to a lead assembly; as Mr. Weiner testified, “Yamawaki only discloses a wire harness. So anything I do with Shao, I’m still working in the context of a wire harness, not a lead assembly.” Tr. (Weiner) at 1269:6–8.

2. Yamawaki does not teach apertures or an undermold/overmold as required by the claims of the '153 patent.

Yamawaki is chiefly related to an adjustable wire harness for use in rooftop solar installations. The adjustable wire harness Yamawaki proposes is a wire harness that an installer can adjust in order to “elongate or shorten the trunk cables [and branch cables] to any length.” Tr. (Weiner) at 1271:7–18; *see also* RX-0052.021 (Yamawaki) at 3:67–4:4, 19:32–35. The adjustability of the wire harness is facilitated by the design of the branch junction (33) which allows branch cables and trunk cables to be cut to a desired length, and then inserted (plugged) into connecting portions of the branch junction (33). Tr. (Weiner) at 1274:11–1275:10. For example, Yamawaki teaches:

The trunk cable 31 is inserted in each of the trunk cable connecting portions 33a and 33b. One end portion of the branch cable 32 is inserted in the branch cable connecting portion 33c.

RX-0052.024 (Yamawaki) at 10:27–30. An annotated version used by Mr. Weiner as a demonstrative of the branch junction of Figure 9A is shown below:

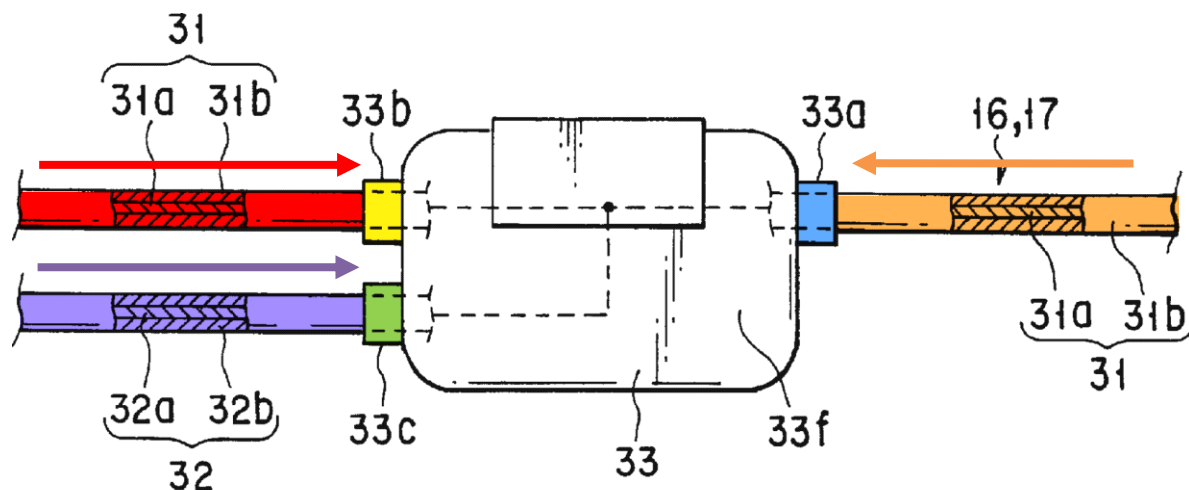
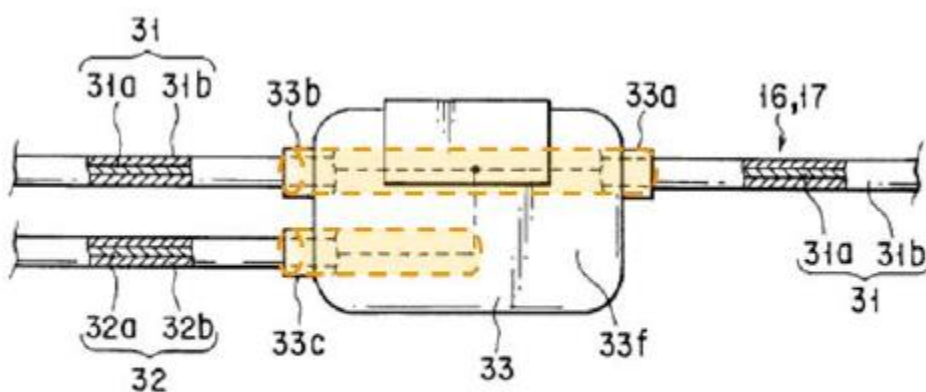


FIG. 9A

CDX-0016.17 (depicting annotated RX-0052); RX-0052 (Yamawaki), Fig. 9A (annotated).

As shown above, Yamawaki teaches that the red cable, the orange cable, and the purple cable are all different cable sections. Tr. (Weiner) at 1274:11–1275:10; RX-0052 (Yamawaki) at 10:27–30. Each of the cables is cut to a desired length (in accordance with the layout of a given rooftop configuration) and then plugged into the respective branch cable connecting portions (33a), (33b), and (33c). *Id.* Thereafter, the cable connecting portions (33a), (33b), and (33c) and the cables (trunk cables and branch cables) are thermowelded together. *Id.*; RX-0052 (Yamawaki) at 10:36–44. As such, the branch cables and the trunk cables can be any length such that “the branch junction could be located anywhere along [the] trunk line.” Tr. (Weiner) at 1271:9–12. Stated differently, Yamawaki proposes “bringing the branch junction to the solar panels by adjusting branch and trunk cable length, not the solar panels to the branch junction.” Tr. (Weiner) at 1271:13–14.

Dr. Kenny does not accurately characterize the branch junction (33) where the electrical connection is facilitated between trunk cables and branch cables. For example, as shown below, Dr. Kenny superimposes his understanding of Yamawaki on the figures.



[REDACTED]

RDX-0003C.0080 (depicting annotated RX-0052); RX-0052 (Yamawaki), FIG. 9A (annotated).

Dr. Kenny testified, referring to the annotated figure above, that “the first aperture . . . is highlighted in orange. . . [and is] aligned with the so-called trunk line of Yamawaki [and] *feeds all the way through*” the branch junction. Tr. (Kenny) at 1214:10–17 (emphasis added). When asked, Dr. Kenny testified that he believed the cable 31 on the left and the cable 31 on the right are the “same cable.” Tr. (Kenny) at 1232:25–1233:6. However, Dr. Kenny’s annotations are misleading, and his assertions find no support in Yamawaki.²⁵

Yamawaki teaches that the branch cables and trunk cables are all inserted into the branch junction (33) via branch cable connecting portions (33a), (33b), and (33c). Tr. (Weiner) at 1274:11–24; RX-0052.024 (Yamawaki) at 10:19–32. As such, the trunk cable 31 cannot be one continuous cable. Tr. (Weiner) at 1279:11–25 (“Yamawaki teaches inserting the cables from the outside, from both directions, two separate cables”). Yamawaki does not teach the internal structure of the branch junction (33) other than stating that an electrical connection is made between the branch cable and trunk cables. See Tr. (Weiner) at 1281:7–11. However, Yamawaki does clearly teach that each cable is inserted into the branch junction (33) and then each end is thermowelded (RX-0052.024 (Yamawaki) at 10:33–40) which, at the very least, means that the trunk cable does not extend all the way through the branch junction as Dr. Kenny insists.

²⁵ Dr. Kenny’s insistence that Yamawaki teaches a single trunk cable 31 that extends completely through the branch junction 33 is yet another indicator of his lack of qualifications in this area and thus highlights his inability to perform a validity analysis from the perspective of a POSA (as discussed above in section VII.B). In contrast, Shoals’ expert Mr. Weiner was able to discern the true structure of the trunk cable 31 (two cable sections) and the adjustable branch junction 33 in part due to the explicit teaching in Yamawaki (RX-0052.024 (Yamawaki) at 10:27–30) and also in large part due to his experience designing and installing residential solar installations. See e.g., Tr. (Weiner) at 1279:5–1281:11 (“[t]hread[ing] a cable through 33 is, if you think—it’s really ridiculous . . . I can’t tell you how crazy that sounds to me being someone of ordinary skill in the art. I don’t know anybody who would do that.”).

[REDACTED]

[REDACTED]

What's more, there cannot be apertures as taught in the '153 patent because the branch junction (33) is not molded over the trunk and branch cables. Tr. (Weiner) at 1279:1–10. As Dr. Kenny pointed out, Yamawaki calls the branch junction (33e) a “molded body” (Tr. (Kenny) at 1204:16–20) which Mr. Weiner clarified would apply to any plastic piece or part. Tr. (Weiner) at 1279:5–10. Because one inserts cables into the branch junction 33 via branch cable connecting portions (33a), (33b), and (33c), the branch junction (33) cannot be molded over the cables. Tr. (Weiner) at 1279:1–10. Therefore, the branch junction (33) seems to be a plastic box into which the cables are inserted. Apertures cannot be created by the branch cables and trunk cables because there is no undermold/primary mold with which to create the apertures. *Id.* Therefore, contrary to Dr. Kenny's testimony, the trunk cables do not form an aperture that extends completely through the undermold/primary mold and the branch cable does not form a second aperture that extends partially through the undermold/primary mold. Further, even if Yamawaki is modified based on Shao so that an additional branch cable was added to the branch junction 33 of Yamawaki, the second branch cable would not correspond to a third aperture just as the trunk cables and first branch cable do not correspond to a first and second aperture in the manner required by the claims of the '153 Patent. “Yamawaki does not teach apertures, plain and simple.” Tr. (Weiner) at 1280:19–20.

In short, and in view of the evidence presented, even if Voltage could show a motivation to combine Yamawaki with Shao, the combination is still missing many of the claim elements of the asserted claims in the '153 Patent. As such, Voltage has not borne its burden of proving by clear and convincing evidence that the claims of the '153 patent are rendered obvious by the combination of Yamawaki and Shao.

[REDACTED]

[REDACTED]

F. The objective indicia of non-obviousness are compelling.

The obviousness inquiry requires the analysis of objective indicia (also referred to as secondary considerations of non-obviousness), including commercial success, long-felt but unsolved needs, the failure of others, skepticism or disbelief before the invention, and copying by others in the industry. *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1129 (Fed. Cir. 2000). The court must consider such objective indicia as part of the obviousness analysis; it is inappropriate to review these factors only after a preliminary obviousness determination. See *In re Cyclobenzaprine Hydrochloride Extended-Release Patent Litig.*, 676 F.3d 1063, 1075 (Fed. Cir. 2012). Indeed, “evidence rising out of the so-called ‘secondary considerations’ must always when present be considered en route to a determination of obviousness” as such evidence “may often be the most probative and cogent evidence in the record.” *Id.* at 1075-76 (quoting *Stratoflex, Inc. v Aeroquip. Corp.*, 713 F.2d 1530, 1538-39 (Fed. Cir. 1983)).

Here, the non-obviousness of the asserted claims is strongly supported by a number of objective indicia of non-obviousness. At least Ben Macias, Jeff Tolnar, Dominic Bardos, and Clarke Nelson testified that the following secondary considerations show that the ’153 patent claims are not obvious: (a) long-felt but unmet need, (2) industry skepticism, (3) industry praise, and (4) commercial success. Their testimony was not rebutted by any Voltage witnesses or experts.

1. The BLA satisfied a long-felt but unmet need.

Before the Shoals BLA, there was a long-felt need to combine power in a distributed manner and deliver that combined power to an inverter without using a combiner box. Tr. at 1285:6–10. At the time of the ’153 patent, a home run configuration for utility-scale PV

[REDACTED]

[REDACTED]

installations required hundreds (or even thousands) of wire runs from each solar panel to a combiner box, that had to be connected by licensed electricians. JX-0089.0030 ('153 patent) at 1:25–31, 1:63–2:8; JX-0089.0032 ('153 patent) at 6:16–19; JX-0089.0004 ('153 patent), Fig. 1; JX-0113.0018 (Investor Presentation); JX-0217C (Solon) at 390:16–391:3. Combiner boxes were necessary in such PV installations because energy coming from solar arrays must be combined prior to going to the inverter. JX-0089.0030 ('153 patent) at 1:44–47. These PV installations were prone to damage and costly to maintain due to problems with combiner boxes. *Id.* at 1:47–54; Tr. (Tolnar) at 267:1–268:3, 270:24–271:16.

The '153 patent and the Shoals BLA addressed this need by eliminating the need for a conventional combiner box and thereby avoiding the problems associated with it. JX-0089.0030 ('153 patent) at 1:63–2:8; JX-0089.0032 ('153 patent) at 6:16–19; CX-0144.0007 (Marketing Presentation); JX-0128C.0045 (GRAPH report)²⁶. The BLA effectively combines the power from a string of solar panels and consolidates it directly to the feeder cable for delivery to an inverter, eliminating the need for multiple wire runs to a combiner box, which had to be installed by licensed electricians. JX-0103.0008–0010 (2022 Annual Report); JX-0113.0018 and JX-0113.0021 (Investor Presentation); JX-0217C (Solon) at 169:15–170:11, 390:11–391:3; Tr. (Macias) at 116:2–10; Tr. (Tolnar) at 267:1–269:7; Tr. (Bardos) at 712:2–23; JX-0115.0046 (Photo). The molded structure of the BLA ensures an adequate electrical connection between the drop line and feeder cable, protecting them from environmental factors. JX-0089.0032 ('153 patent) at 6:3–13; Tr. (Tolnar) at 269:8–270:4; Tr. (Brooks) at 588:14–15; Tr. (Bardos) at 673:12–674:7. By providing an electrical junction from the wire harness, the BLA revolutionized

²⁶ [REDACTED]

[REDACTED] Tr. (Tolnar) at 277:12–23.

[REDACTED]
[REDACTED]

how utility-scale PV installations are installed. Tr. (Macias) at 129:25–130:7; Tr. (Tolnar) at 279:8–15; JX-0221C at 300:11–301:21; JX-0217C at 365:2–366:8. [REDACTED]
[REDACTED] JX-0128C.0053 ([REDACTED]). Thus, the long-felt, unmet need supports a finding of non-obviousness.

2. The BLA met and overcame industry skepticism.

Shoals' BLA harness was met with skepticism by customers and competitors in the photovoltaic industry. Tr. (Tolnar) at 223:3–224:21; JX-0217C (Solon) at 366:2–8 and 371:11–13. [REDACTED]
[REDACTED] JX-0221C (Whitaker) at 300:12–301:6. [REDACTED]
[REDACTED]
JX-0128C.0019, 0049–0050, 0079, 0070 ([REDACTED]
[REDACTED]
[REDACTED]). Customers were also skeptical of adoption because not enough people had experience with the BLA system. JX-0128C.0050. And customers did not believe that the BLA value proposition would outweigh the cost. JX-0128C.0050 and 0072; JX-0221C (Whitaker) at 300:12–301:6. [REDACTED]
[REDACTED] JX-0221C (Whitaker) at 299:18–300:6 (discussing CX-0450C.0008); *see also* CX-0450C.0008; Tr. (Tolnar) at 273:5–24.
[REDACTED] Tr. (Tolnar) at 281:23–282:22, 283:13–284:1. This indicia evidence supports non-obviousness.

3. The BLA garnered significant industry praise.

Shoals' BLA has seen significant praise from customers and others in the photovoltaic industry. For example, the leading photovoltaic trade magazine, PV Magazine, named Shoals'

[REDACTED]
[REDACTED]

BLA as the winner of the PV Magazine Award under the Balance of Systems category. CX-0256; Tr. (Macias) at 130:8–131:24; Tr. (Nelson) at 1324:17–19; JX-0221C (Whitaker) at 293:12–294:6. [REDACTED] JX-0221C (J. Whitaker) at 293:13–294:6.

[REDACTED]

[REDACTED] JX-0128C.0005 and 0045 (GRAPH). [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] JX-0128C.0018, 0048, 0070

([REDACTED]

[REDACTED]), and 0072; *see also* Tr. (Tolnar) at 280:22–281:22. [REDACTED]

[REDACTED] JX-0128C.0055.

[REDACTED]

[REDACTED] JX-0128C.0038 and 0053 ([REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] The industry praise of the BLA weighs against obviousness.

4. The BLA has had great commercial success.

Shoals' commercial success is attributable to the BLA. *See, e.g.*, JX-0128C.0005

([REDACTED]

[REDACTED]). In fact, Mr. Macias testified that

Shoals' marketing is focused on the benefits of the '153 patent, as embodied by the BLA. Tr.

[REDACTED]
[REDACTED]

(Macias) at 108:3–11, 112:17–114:22, 115:22–118:25, 119:14–22; *see also* CX-0167 (Marketing Document); CX-0144 (Marketing Presentation); JX-0114 (Investor Presentation); CX-0235 (BLA Data Sheet). Mr. Bardos further testified that at trade shows Shoals educates customers regarding the benefits of the BLA, which are the same benefits as the '153 patent. Tr. (Bardos) at 710:10–712:23; *see also* JX-0089.0030 ('153 patent) at 1:63–2:8; JX-0089.0032 ('153 patent) at 6:16–19. In addition, customers recognize that the BLA provides the claimed '153 benefits. *See* JX-0128C.0072 (GRAPH) ([REDACTED])

[REDACTED]).

[REDACTED]
[REDACTED] JX-0221C (Whitaker) at 299:21–301:21. [REDACTED]
[REDACTED] JX-0128C.0053 ([REDACTED]).

Moreover, the BLA has been successful due to the reliability of the mold technology. Tr. (Tolnar) at 269:5–270:4. The commercial success of the BLA is directly attributable to the merits of the '153 patent invention and thus further demonstrates that the claimed invention would not have been obvious. *See Polaris Indus. Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1073 (Fed. Cir. 2018).

The BLA has achieved widespread commercial success in the photovoltaic industry based on these '153 benefits. The BLA has achieved high customer demand, significant sales and revenue, high volumes of products sold, and is approaching 50 percent market share. Tr. (Tolnar) at 222:15–223:2. [REDACTED] JX-283C; JX-0126C; Tr. (Nelson) at 1321:8–14; *see also* CDX-0019C.2 ([REDACTED]) [REDACTED] JX-0126C and JX-0277C; JX-0277C. [REDACTED] JX-0128C.0040.

[REDACTED]
[REDACTED]

Shoals continues to successfully convert customers to the BLA, and as a result, Shoals has a significant backlog of awarded and in-progress projects, which reflect [REDACTED]
[REDACTED]. Tr. (Tolnar) at 272:6–274:21; JX-0113.0026 and 0035; *see also* JX-0128C.0030, 0016; Tr. (Tolnar) at 279:18–280:21; Tr. (Nelson) at 1322:20–1324:8; CDX-0003C.16 (displaying totals based on data in JX-0134C ([REDACTED]), JX-0271C, JX-0276C); CDX-0019C.8 (displaying totals based on data in JX-0091C ([REDACTED]
[REDACTED]), JX-0134C, JX-0195C, JX-0270C–271C, JX-0276C, JX-0215C). Further, [REDACTED]
[REDACTED]. JX-0128C.0038.

The commercial success of the BLA can also be measured [REDACTED]
[REDACTED], which are a component of an older, alternative solution to Shoals' BLA system. Tr. (Nelson) at 1321:18–1322:19; CDX-0019C.6 ([REDACTED]
[REDACTED]
[REDACTED] based on JX-0194C, JX-0283C, JX-0277C, JX-0126C (“Revenue Pivots”), JX-0094C–0097C, JX-0102–JX-0103); JX-0194C; JX-0283C; JX-0277C; JX-0126C; JX-0094C; JX-0095C; JX-0096C; JX-0102; JX-0103. [REDACTED]
[REDACTED]

[REDACTED]. *Id.* Further, the BLA outperformed the market as adoption of the BLA increased despite the price premium over alternatives. Tr. (Tolnar) at 282:23–283:12 and 285:11–286:1; JX-0107.0013 (S-1); JX-0112.0027 (“[REDACTED]
[REDACTED] ... driven by higher sales volumes as a result of increased demand for solar EBOS generally and our combine-as-you-go system solutions specifically and to a lesser extent increased pricing”); JX-0128C.0030 and 0072 ([REDACTED]); JX-0221C (Whitaker) at 299:21–301:21;

[REDACTED]

Transocean v. Maersk Drilling, 699 F.3d 1340, 1350 (Fed. Cir. 2012) (commercial success shown by customer demand and market premium paid for product).

The overwhelming commercial success of the BLA supports non-obviousness.

5. There is a clear nexus between the objective indicia and the patented invention.

“[T]here is a presumption of nexus ... when the patentee shows that the asserted objective evidence is tied to a specific product and that product ‘is the invention disclosed and claimed in the patent.’” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1329–30 (Fed. Cir. 2016); *Polaris Indus, Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1072–73 (Fed. Cir. 2018). Here, a nexus is presumed because the BLA practices the asserted claims (*see* Section VI, *supra* (Technical DI)), and the BLA enables all the benefits addressed by the ’153 patent, including durability, easy installation, and elimination of the combiner box. JX-0089.0030 (’153 patent) at 1:55–59; JX-0089.0032 at 6:10–13. Shoals is therefore entitled to a presumption of nexus. As such, the burden shifts to Respondents to show that the objective evidence “was due to extraneous factors other than the patented invention.” *WBIP*, 829 F.3d at 1329. But, “[t]he presumed nexus cannot be rebutted with mere argument; evidence must be put forth.” *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1130 (Fed. Cir. 2000).

Voltage’s only criticism seems to be that the benefits of the ’153 patent are attributable to the combine-as-you-go system in general, not any specific attribute of the BLA. Yet, Voltage provided no evidence or testimony establishing that the benefits are attributable to the combine-as-you-go system generally, rather than the BLA, even though the BLA is the central, indispensable component of that system. To the contrary, the evidence in the record—specifically, testimony and evidence from Messrs. Macias, Tolnar, Bardos, Whitaker, Solon, and Nelson—support that the BLA enables the claimed benefits. Tr. (Macias) at 108:3–11, 112:17–

[REDACTED]
[REDACTED]

114:22, 115:22–118:25, 119:14–22; Tr. (Tolnar) at 266:8–20, 267:1–272:5, 278:19–279:17; Tr. (Brooks) at 403:16–404:12; Tr. (Bardos) at 645:25–646:10, 662:1–19, 712:2–23; Tr. (Weiner) at 1285:6–10, 1322:12–19; JX-0221C (Whitaker) at 300:11–301:21; JX-0217C (Solon) at 365:2–366:8, 370:9–371:13. Thus, there is a strong nexus between the objective indicia and the BLA. *WBIP*, 829 F.3d at 1329 (“However, a patent challenger cannot successfully rebut the presumption with argument alone—it must present evidence.”) (citing *Brown & Williamson*, 229 F.3d at 1130).

VIII. ECONOMIC DOMESTIC INDUSTRY

“The purpose of the domestic industry requirement is to prevent the ITC from becoming a forum for resolving disputes brought by foreign complainants whose only connection with the United States is ownership of a U.S. patent.” *Certain Battery-Powered Ride-On Toy Vehicles*, Inv. No. 337-TA-314, USITC Pub. No. 2420, ID at 21 (Aug. 1991). Shoals is a domestic complainant, root and branch, not a foreign one; and its ownership of a U.S. patent is an outgrowth of its substantial domestic industry, rather than the other way around. Shoals’ DI products were invented in Tennessee. JX-0217C (Solon) at 181:20–22. The DI products are made in Tennessee. Tr. (Macias) at 106:1–6; Tr. (Bardos) at 647:24–648:3, 648:23–649:6, 649:19–650:6. Shoals continues to develop and improve the DI products, and that all happens in Tennessee. Tr. (Bardos) at 647:20–650:6, 654:11–657:10 (describing domestic activities as depicted in CDX-0004.7). Even Voltage’s expert could not bring himself to deny the existence of a domestic industry. Tr. (Clarke) at 1020:11–14. The DI requirement simply could not be applied to bar Shoals from relief, as proposed by Voltage and Staff, without entirely severing that requirement from its very reason for being and transforming it into a pointless obstacle to relief for domestic companies being harmed by unfair foreign competition.

[REDACTED]

[REDACTED]

As set forth above, Shoals established *technical* DI by showing its BLA is covered by the '153 patent. To establish *economic* DI, Shoals must show, “with respect to the article protected by the patent,” “(A) significant investment in plant and equipment; (B) significant employment of labor or capital; or (C) substantial investment in its exploitation, including engineering, research and development, or licensing.” 19 U.S.C. § 1337(a)(3). Because the requirement is disjunctive, satisfaction of any one of those subsections is sufficient to satisfy the economic prong. *Digital Imaging Devices*, ID at 306. Further, “Commission precedent permits complainants to present evidence of their U.S. investments using methods and approaches that are appropriate to the facts of a particular investigation.” *Certain Movable Barrier Operator Sys. and Components Thereof*, Inv. No. 337-TA-1118, Comm’n Op., at 23 (Jan. 12, 2021). A precise accounting is not necessary, as most people do not document their daily affairs in contemplation of possible litigation. *Certain Stringed Musical Instruments and Components Thereof*, Inv. No. 337-TA-586, USITC Pub. No. 4120, Comm’n Op., at 25-26, 2009 WL 5134139 at *17 (Dec. 1, 2009).

Here, “with respect to the [BLA],” Shoals has proven both “significant investment in plant and equipment” and “significant employment of labor or capital.” See 19 U.S.C. § 1337(a)(3). Specifically, Shoals CFO Dominic Bardos competently testified to extensive investments and Shoals expert Clarke Nelson properly classified and allocated those expenses. On the other hand, Voltage’s challenges to Shoals economic domestic industry attempt to impose an allocation standard and level of precision far beyond the “reasonable allocation” required by the Commission. See *Certain Solid State Storage Drives, Stacked Elecs. Components, & Prods. Containing Same*, Inv. No. 337-TA-1097, Comm’n Op. at 21 (June 29, 2018) (“[A]ll that is

[REDACTED]
[REDACTED]

required is the use of reasonable allocations for the purposes of establishing the economic prong of the domestic industry requirement.”).

A. Shoals has significant domestic investments in BLA plant and equipment.

Shoals makes the BLA at two plants in Portland, Tennessee: Plant 1, [REDACTED], and Plant 4, [REDACTED] Tr. (Macias) at 106:1–6; Tr. (Bardos) at 648:23–649:6, 649:19–650:6; Tr. (Nelson) at 824:24–825:7, 828:20–24. Shoals’ expert, Mr. Nelson, divided Shoals’ plant and equipment investments into three categories: (1) acquisition costs; (2) rent; and (3) other plant expenses. CDX-0012C.7 (totals based on data in JX-0091C, JX-0134C, JX-0195C, JX-0270C–271C, JX-0276C, JX-0215C). He also divided those investments into time periods: pre-2019, 2019, 2020, 2021, and 2022. *Id.* Mr. Nelson’s analysis, further described below, shows more than [REDACTED] in plant and equipment investments.

1. Shoals’ expert gave a proper accounting of acquisition costs.

Mr. Nelson sourced all his acquisition-cost calculations to Shoals’ audited fixed-asset list, as testified to by Mr. Bardos. *See* Tr. (Bardos) at 697:11–25 and 696:2–14. For allocation, he further subdivided acquisition costs into four sub-categories: (i) Plant 1; (ii) manufacturing equipment dedicated to BLA production; (iii) equipment supporting manufacturing operations in Plant 4; and (iv) equipment supporting manufacturing operations either in Plant 1, or in Plants 1 and 4 more generally. Mr. Nelson allocated [REDACTED] of subcategory (ii) to the BLA. Tr. (Nelson) at 822:15–21. He allocated a portion of subcategory (iii) to the BLA, that portion corresponding to the BLA footprint within Plant 4—*i.e.*, a percentage he determined by dividing the square footage of Plant 4 that is dedicated to BLA production by Plant 4’s total square footage. Tr. (Nelson) at 822:21–823:1; *see also* CDX-0012C.8 (totals based on data included in JX-0091C, JX-0134C, JX-0195C, JX-0270C–271C, JX-0276C, JX-0215C). *See Certain Silicon Microphone*

[REDACTED]
[REDACTED]

Packages, Inv. No. 337-TA-888, 2014 WL 2738540, at *3–5 (May 8, 2014) (Commission precedent supports allocation based on square footage). Mr. Nelson allocated subcategories (i) and (iv) using the BLA footprint within Plant 1—*i.e.*, a percentage that was determined by dividing the square footage of Plant 1 that is dedicated to BLA production by Plant 1’s total square footage. Tr. (Nelson) at 823:6–15; *see also* CDX-0012C.9 (totals based on data included in JX-0091C, JX-0134C, JX-0195C, JX-0270C–271C, JX-0276C, JX-0215C). Mr. Nelson thus arrived at the following:

[REDACTED]

JX-0091C, [REDACTED]; JX-0195C.0003; JX-0270C; *see also* CDX-0012C (depicting totals).

Shoals’ investments in purchasing Plant 1 (and leasing Plant 4, as discussed below) are necessary for manufacture of the BLA. As Mr. Bardos testified, all the space allocated to the BLA (and even some unallocated space) is necessary for the [REDACTED] manufacture of the BLA, as well as pre- and post-manufacturing staging. Tr. (Bardos) at 649:19–650:20, 663:2–20, 664:1–19, 665:21–667:6, 671:3–676:4, 744:10–745:1, 754:15–24.

As Mr. Nelson explained, his allocation of acquisition costs likely undercounted BLA investments, in two ways. First, his [REDACTED] BLA footprint was calculated using [REDACTED]’s *entire* square footage, even though about [REDACTED] square feet of the plant is dedicated to office and administrative space that is not supported by, for example, the forklifts which were allocated according to the [REDACTED] footprint. Tr. (Nelson) at 823:17–824:3, 824:15–21. Second, the BLA footprint for [REDACTED]—and thus the BLA footprint for [REDACTED] combined—is higher than

the [REDACTED] BLA footprint; but Mr. Nelson used the lower [REDACTED] footprint to allocate *all* equipment that was not clearly specific to [REDACTED]. Tr. (Nelson) at 824:4–11.

Voltage’s expert, Andrew Clarke, takes issue with Mr. Nelson allocating some of [REDACTED]’s acquisition cost to the BLA, because [REDACTED] and BLA production did not start ramping up until 2017. But there is no suggestion that the value of [REDACTED] *declined* between [REDACTED] and 2017, and the fact that Shoals put it to other productive uses in that interval makes it no less significant to BLA production than it would have been if Shoals had bought it in 2017.

Further, [REDACTED].²⁷ That was a time when “all commercial real estate segments experienced a net annual loss of anywhere between 25 to 67%, except for self-storage, which posted a gain of 5% in 2008.”²⁸ Thus, if anything, the price to acquire a comparable facility in 2017 would have been greater than Shoals paid [REDACTED]; and therefore the age of this investment *understates* its true value to the BLA.

2. Shoals’ expert properly allocated a portion of [REDACTED] rent to the BLA.

The next category of plant and equipment expenses is rent for [REDACTED]. Shoals’ expert allocated to the BLA a share of this rent, corresponding to the [REDACTED] BLA footprint. Tr. at 824:24–825:7; *see also* CDX-0012C.10 (displaying totals based on data in JX-0134C ([REDACTED])

²⁷ According to the Federal Reserve, “[t]he Great Recession began in December 2007 and ended in June 2009.” <https://www.federalreservehistory.org/essays/great-recession-of-200709#:~:text=The%20Great%20Recession%20began%20in,notably%20severe%20in%20several%20respects.> *See also* *Mobility Workx, LLC v. Unified Pats., LLC*, 15 F.4th 1146, 1151 (Fed. Cir. 2021) (judicial notice may be taken at any stage of a proceeding); *Certain Lens-Fitted Film Packages*, Inv. No. 337-TA-406, EDIS DOCID 188134 (taking judicial notice of Moody’s AAA corporate bond rate, as requested in a posthearing reply brief).

²⁸ <https://www.investnext.com/sponsor-resources/investing-in-commercial-real-estate-during-a-recession/#:~:text=During%20the%20Great%20Recession%2C%20all,gain%20of%205%25%20in%202008.>

[REDACTED]
[REDACTED]
[REDACTED] Tab), JX-0271C, JX-0276C). For 2022, the year that Shoals began making BLA in [REDACTED], the allocated share of rent is [REDACTED]. JX-0271C.0002. Voltage's expert challenges Mr. Nelson's calculation of that footprint, as explained below; but he does not otherwise question Mr. Nelson's data and methodology for the rent expense.

3. Shoals' expert made a proper allocation of plant expenses.

The third category of plant and equipment expenses that Mr. Nelson allocated are plant expenses, consisting of five sub-categories: (i) real estate and property taxes; (ii) repairs and maintenance; (iii) utilities; (iv) tooling charges; and (v) factory supplies. Through Mr. Bardos, Mr. Nelson sourced the underlying data for subcategory (i) to county records and the remaining subcategories to Shoals' general ledger. *See* Tr. (Bardos) at 713:22–714:7; 699:3–17.

Mr. Nelson allocated real estate and property taxes for [REDACTED] using the [REDACTED] BLA footprint percentage described above. Tr. (Nelson) at 825:15–23; *see also* CDX-0012C.12 (displaying totals based on data in JX-0134C ([REDACTED] Tab), JX-0271C, JX-0276C).

[REDACTED]
[REDACTED]. Mr. Nelson allocated these expenses according to a percentage that he calculated by dividing the BLA's [REDACTED] footprint by the combined square footage of [REDACTED]. Tr. (Nelson) at 825:24–826:24; *see also* CDX-0012C.13, 14 (displaying totals based on data in JX-0134C ([REDACTED] Tab), JX-0271C, JX-0276C). Voltage's expert does not question the underlying data for these calculations, or the use of a footprint to allocate them; however, as explained below, he does challenge how that footprint is calculated.

Tooling charges are [REDACTED]
[REDACTED]

[REDACTED]
[REDACTED]

[REDACTED] Tr. (Bardos) at 707:16–21. Mr. Nelson allocated tooling charges according to the share of revenues contributed by BLA—*i.e.*, according to a percentage that he calculated by dividing BLA revenues by [REDACTED]. Tr. (Nelson) at 826:25–827:18; *see also* CDX-0012C.15 (displaying totals based no data in JX-0134C ([REDACTED] Tab), JX-0271C, JX-0276C). Voltage’s expert does not question either the date or the use of revenue share for this calculation.

Finally:

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Tr. (Bardos) at 708:4–15; *see also* Tr. (Bardos) at 674:25–675:22 (describing the factory supplies depicted on CDX-0004C.14 based on data in JX-0134C ([REDACTED] Tab), JX-0271C, JX-0276C). Mr. Nelson allocated factory supplies using the same BLA revenue-share percentage as tooling charges. Tr. (Nelson) at 827:19–828:7; *see also* CDX-0012C.16 (displaying totals based on data in JX-0134C ([REDACTED]” Tab), JX-0271C, JX-0276C. Although Voltage prepared a slide for its expert to use in addressing factory supplies, *see* RDX-0015C.0016, he gave no testimony about them, *see* 1003:19–1004:15. *See also Certain Plastic Encapsulated Integrated Cirs.*, Inv. No. 337-TA-315, Ord. No. 38, 1991 WL 788723, at *42 (Nov. 20, 1991) (plant expenses such as lease or purchase costs, repairs, maintenance, supply costs, etc., are relevant to domestic industry).

Altogether, then, Shoals’ plant expense investments are:

[REDACTED]

[REDACTED]

[REDACTED]

CDX-0012C.17 (depicting excerpts from JX-0134C ([REDACTED]) JX-0271C, and JX-0276C and calculation of [REDACTED] BLA footprint percentage); JX-0271C; JX-0276C.

4. The “questions” posed by Voltage’s expert present no genuine issues.

Shoals’ total plant and equipment expenses, as set forth above, are:

[REDACTED]

See also, Tr. (Nelson) at 829:21–830:1; CDX-0012C.17 (displaying totals based on data in JX-0091C, JX-0134C, JX-0195C, JX-0270C–271C, JX-0276C, JX-0215C). The reliability of Mr. Nelson’s data stands unchallenged; and Mr. Clarke, Voltage’s expert, does not contradict Mr. Nelson’s conclusions. However, Mr. Clarke presented certain “questions” about Mr. Nelson’s allocation methodology, some of which were echoed by Staff. One such “question” was about including an allocation for the 2008 purchase of Plant 1, which is disposed of above. As shown below, none of Mr. Clarke’s other “questions” casts any real doubt on the significance of Shoals’ investments, either. And, importantly, Mr. Clarke does not present any alternative analysis or quantification of his own. Tr. (Clarke) at 1023:18–1024:5.

[REDACTED]

[REDACTED]

a. Any investment in non-DI products is *de minimis*.

First, Mr. Clarke speculated that Mr. Nelson’s calculations might sweep in some investment in two purportedly non-practicing products, Shoals’ Electric Vehicle Big Lead Assembly (EV BLA)²⁹ and what Mr. Clarke called a “one-drop BLA.” With regard to the EV BLA, Shoals produced [REDACTED] EV BLAs in 2022, and [REDACTED] in prior years. JX-0126C, [REDACTED] tab; Tr. (Bardos) at 677:25–678:6. Indeed, Mr. Clarke conceded that he does not dispute the EV BLA numbers. Tr. (Clarke) at 1029:20–1030:1. That same year, Shoals produced [REDACTED] BLAs. *Id.* Thus, Shoals’ EV BLA production accounted for about [REDACTED] of its overall production in 2022, and [REDACTED] in prior years.³⁰ If a pro rata reduction in Shoals’ 2022 investments were to be applied, it would be about [REDACTED].

Mr. Clarke’s question about so-called one-drop BLAs rests on confusion about the product that Shoals sells. Specifically, it is premised on Mr. Clarke’s mistaken belief that Shoals sells individual mold drops, including molds with only one drop line, rather than BLAs of which any particular mold drop is just one part. Tr. (Clarke) at 1031:6–18; *see also* Tr. (Macias) at 217:21–218:9 (“[A] BLA product is prefabricated cut-to-length solution that has a number of mold drops and various input leads along the length of that BLA completed solution.”). Shoals may have sold a few BLAs that have a mold drop that has only a single drop line. Tr. (Macias) at 128:10–12; Tr. (Tolnar) at 316:21–23 (“Q. In fact, you do sell a single-drop BLA. Yes or no? A. No. We have one that I’m aware of in five years.”), 338:13–19. However, if Shoals were to sell a

²⁹ Notably, Voltage’s contention that the EV-BLA does not practice the ’153 patent—for economic DI purposes—is at odds with Voltage’s emerging position that the ’153 is not limited to solar installations—for invalidity purposes.

³⁰ In 2023, [REDACTED]
[REDACTED]

[REDACTED]
[REDACTED]

BLA that includes a one-drop mold, that one-drop mold would be at one end or the other of a BLA with a long feeder cable that includes other molds, too. Tr. (Tolnar) at 337:21–338:19; Tr. (Macias) at 218:10-17 (common for BLA to have multiple mold drops with different numbers of drop lines). Thus the BLA itself is not a one-drop BLA; and because it has mold drops with multiple drop lines, the BLA practices the patent. Only a BLA that has *only* molds with one drop line each would fall outside the scope of the patent, and as Mr. Bardos testified, there are no such revenues or investments to exclude:

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Tr. (Bardos) at 804:22–805:6; *see also* Tr. (Bardos) at 658:2–19, 753:21–754:5.

[REDACTED], there is *no* evidence that Shoals has ever sold such a product—and indeed such a product would run counter to the point of the BLA, because [REDACTED]

[REDACTED]

[REDACTED] Tr. (Tolnar) at 338:9–12; *see also* Tr. (Tolnar) at 275:7–13. [REDACTED]

[REDACTED] Tr. (Bardos) at 742:11–744:9. To put that in perspective, from 2019 to 2022, Shoals sold [REDACTED] BLAs for [REDACTED]. JX-0126C, [REDACTED] tab. As a percentage of either units sold or revenues, that [REDACTED] amounts to [REDACTED] of Shoals’ BLA sales. [REDACTED]

[REDACTED]
[REDACTED]

In sum, if there were merit to Mr. Clarke's first set of "questions," they would justify nothing more than [REDACTED]
[REDACTED]

b. A few months' gap between Shoals' last audited financials and Shoals' filing of its initial complaint is inconsequential.

Mr. Clarke next points out that Shoals' investment data runs through the end of 2022, but Shoals did not file its first complaint in this proceeding until May 4, 2023. As Mr. Bardos explained, however, as of the filing date, Shoals had no audited financials for 2023. Tr. (Bardos) at 696:15–23. Because there is not so much as a hint of a dramatic dropoff or other shift in Shoals' investments at the beginning of 2023, the passage of a few months between the latest data presented and Shoals' initial complaint is inconsequential. *See Certain Television Sets, Television Receivers, Television Tuners, & Components Thereof*, Inv. No. 337-TA-910, 2015 WL 6755093, at *36 (Oct. 30, 2015) (past expenditures may be considered, so long as they pertain to the complainant's industry and the complainant continues to make qualifying investments at the time the complaint is filed). Further, Shoals has provided ample evidence and testimony that its domestic activities continue to grow. Tr. (Bardos) at 650:22–651:5 (expansion into Plant 6), 806:14–22 (growing number of domestic employees); JX-0112; JX-0113; CX-0261C.

c. Shoals' expert properly included staging areas in his footprint calculations.

Mr. Clarke next complains that some of the [REDACTED] and [REDACTED] square footage allocated to the BLA is used to stage raw materials needed for production and to assemble orders prior to shipment. According to Mr. Clarke, these areas are for "warehousing and distribution." Tr. (Clarke) at 1001:13. But Shoals' source document identifies this space as "Raw

[REDACTED]
[REDACTED]

Materials/Finished Good.” JX-0091C, [REDACTED] tab, cell D6. And the Bardos declaration to which Voltage’s counsel tried to source Mr. Clarke’s description characterizes the space as “attributable to warehouse space for the raw materials and finished goods.” Tr. (Clarke) at 1033:16–17.

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] As Mr. Bardos explained:

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Tr. (Bardos) at 650:8–20; *see also* Tr. (Bardos) at 664:1–665:4 (describing post-production staging in CDX-0004C.9) and 674:18–676:4 (describing post-production staging in CDX-0004C.14). Unlike the “warehousing and distribution” space with which Mr. Clarke tries to confuse it, these staging areas are [REDACTED]

[REDACTED] Tr. (Bardos) at 703:24–704:1; *see also* Tr. (Bardos) at 744:10–745:1 (describing the necessity of pre-production staging). Therefore, these pre-production and post-production staging spaces are properly included in Shoals’ DI investments. *See, e.g., Certain Loom Kits for Creating Linked Articles*, Inv. No. 337-TA-923, Comm’n Op. at 30 (Feb.

[REDACTED]

[REDACTED]

3, 2015) (costs associated with warehousing storage to enable domestic assembly activities supported economic domestic industry); *see also Certain Collapsible Sockets for Mobile Elec. Devices & Components Thereof*, Inv. No. 337-TA-1056, Comm’n Op., 2018 WL 7680630, at *12 (July 9, 2018) (a wide variety of activities qualify as domestic industry activities, including supply chain, operation management, and capital spending thereon).

B. Shoals has significant domestic investments in BLA labor and capital.

Under Mr. Bardos’ direction, Shoals gathered data, primarily from its [REDACTED], on three broad categories of employees: direct manufacturing labor, indirect manufacturing labor, and sales, general, and administrative (SG&A) labor. *See* JX-0133C; Tr. at 714:8–717:5. By interviewing *current* research and development (R&D) personnel, Mr. Bardos and his team then identified [REDACTED] who had performed significant R&D on the DI products, between 2019 and 2022, for separate analysis, as detailed below.³¹ Tr. at 732:7–733:10. Mr. Nelson then further analyzed and categorized that data, for allocation purposes, into five categories of compensation and two categories of expense, as described below. As additional capital investments, Mr. Bardos also testified to, and Mr. Nelson also allocated, trade show and SG&A expenses. All were properly attested to by Mr. Bardos and allocated by Mr. Nelson.

1. Shoals’ expert properly accounted for Shoals’ BLA labor investments.

The five *compensation* categories Mr. Nelson used are: direct manufacturing, indirect manufacturing, R&D, sales and project management, and administrative labor. The two *expense* categories are: direct, corresponding to the direct manufacturing compensation category, and non-direct, covering the other four categories of compensation.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

a. Shoals' expert properly allocated direct manufacturing labor compensation.

Shoals' direct labor force consists of [REDACTED]

[REDACTED]

[REDACTED] Tr. (Bardos) at 727:25–728:5. [REDACTED]

[REDACTED]

[REDACTED] *Id.* at 728:6–11. Mr.

Nelson then properly allocated to the BLA [REDACTED] of the compensation associated with these positions, from 2019 to 2022, as follows:

[REDACTED]

JXJ-0272C.0002; *see also* CDX-0012C.20 (displaying totals based on data in JX-0133 ([REDACTED]
[REDACTED] Tab), JX-0272C, JX-0196C).

b. Shoals' expert properly allocated indirect manufacturing labor compensation.

[REDACTED]

[REDACTED] Tr. (Bardos) at 729:4–8. [REDACTED]

[REDACTED]

[REDACTED] *Id.* at 729:9–13. Because that indirect labor was overseeing both BLA production and the manufacture of other products, Mr. Nelson allocated only a portion of the compensation associated with those positions to the BLA, according to the BLA share of Shoals' overall revenues from its [REDACTED], as follows:

[REDACTED]

JXJ-0272C.0002; Tr. (Nelson) at 831:15–832:4; *see also* CDX-0012C.22 (displaying totals based on data in JX-0133C ([REDACTED] Tab), JX-0272C, JX-0196C, JX-0276C).

c. Shoals and its expert properly allocated R&D labor compensation.

As explained above, Shoals’ first step in determining R&D labor compensation was to interview current R&D personnel in order to identify current and former personnel who had participated in R&D relating to the DI products. Tr. (Bardos) at 733:5–10. Shoals then applied two allocations. First, again based on interviews of current R&D personnel,³² Shoals developed estimates for how much of each identified employee’s time was spent on DI-product R&D, in each year. *Id.* at 733:22–734:10. Shoals then developed estimates for how much of its R&D time the R&D team spent on the BLA, for each year. *Id.* at 734:11–18. Shoals’ expert then tallied the BLA-related R&D compensation for those employees, as determined by Shoals’ two-step allocation, as follows:

[REDACTED]

³² Although Voltage has criticized this methodology because Shoals only interviewed current employees, more is not required by the Commission. *Certain Digital Video Receivers & Related Hardware & Software Components*, Inv. No. 337-TA-1103, ID, 2019 WL 2953269 at *157–158 (June 4, 2019) (rejecting criticism of DI expenditure allocation based on interviews of current managers only).

[REDACTED]
[REDACTED]
Mr. Clarke next argues that [REDACTED]

[REDACTED] Tr. (Clarke)
at 1006:18–20. Specifically: [REDACTED]
[REDACTED]
[REDACTED] *Id.* at 1006:21–1008:9.

On direct examination, Mr. Bardos specifically confirmed the [REDACTED] allocation for each of these individuals. Tr. (Bardos) at 734:21–735:9. Voltage could have asked Mr. Bardos about any perceived discrepancy between the underlying spreadsheets, either on cross or in deposition, but chose not to. Mr. Bardos’ expressly and specifically affirmed testimony that the allocation for these individuals should be credited over Mr. Clarke’s deliberately unexplored and unasked “questions.”

Finally, Mr. Clarke points out: [REDACTED]
[REDACTED] Tr. (Clarke) at 1008:13–15.
But Mr. Clarke’s questioning (or even disapproval) of [REDACTED]
[REDACTED] is no grounds for disputing that Shoals made the investments claimed in the BLA. The economic DI inquiry is as to the *significance* of Shoals’ investments, not Mr. Clarke’s opinions as to their reasonableness [REDACTED].

d. Shoals’ expert properly allocated sales and project management labor compensation.

For allocation purposes, Mr. Nelson further analyzed and sorted the general SG&A compensation category into two subcategories: sales and project management, and administrative. Sales and project management labor [REDACTED]
[REDACTED] of
the BLA. See Tr. (Bardos) at 736:14–16. Shoals’ [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] See Tr. (Bardos) at 664:20–665:4. Because sales and project management specifically [REDACTED]
[REDACTED] Tr. (Bardos) at 736:14, Mr. Nelson used Shoals’ [REDACTED] to allocate sales and project management labor compensation to the BLA, resulting in the following:

[REDACTED]

JX-0272C.0002; Tr. (Nelson) at 833:9–25; *see also*, CDX-0012C.24 (displaying totals based on data in JX-0133C, JX-0272C, JX-0196C, JX-0276C). *See Certain Solid State Storage Drives, Stacked Elecs. Components, and Prods. Containing the Same*, Inv. No. 337-TA-1097, Comm’n Op., at 5-14, 2018 WL 4300500, at *13 (June 29, 2018) (marketing and sales activity cognizable as economic DI).

e. Shoals’ expert properly allocated administrative labor compensation.

The final category of labor compensation that Mr. Nelson allocated is for administrative labor. This captures everyone who supports BLA production, other than direct, indirect, R&D, and sales and project management personnel. *See* Tr. (Bardos) at 735:20–736:4. These are people who perform [REDACTED] that support Shoals’ worldwide operations—operations that are dominated by, but not limited to, BLA production in Tennessee. Tr. (Bardos) at 736:21–737:3. Because these personnel support Shoals’ worldwide operations, Mr. Nelson

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]:
[REDACTED]

Tr. (Nelson) at 834:1–10; JX- 0272C; JX-0196C; *see also* CDX-0012C.25 (displaying totals based on data in JX-0133C, JX-0272C, JX-0196C, JX-0276C).

Other than complaining about Shoals’ R&D labor calculations, the only other labor category that Voltage’s expert testified against at trial is Shoals’ compensation (and related expenses) for SG&A generally, including both its sales and project management and its administrative subcategories. According to Mr. Clarke, [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED] Tr. (Clarke) at 1010:1–15. It’s hard to know what to make of this because Mr. Nelson *did* calculate SG&A labor and expenses separately. *See* Sections VIII.B.1.d, *supra*, and VIII.B.3, *infra*.

Further, the governing statute identifies “labor or capital” as a single category of investment, without breaking out SG&A as a separate category. *See* 19 U.S.C. § 1337(a)(3)(B). Finally, the size of Shoals’ [REDACTED] is a mark of how significant its domestic manufacturing and customer support operations are, rather than the reverse: if Shoals were merely passing along imported goods to the domestic market, its administrative overhead would be significantly smaller; conversely, managing a substantial manufacturing and customer support operation takes more administration than merely brokering imported goods. *See* Tr. (Bardos) at

[REDACTED]
[REDACTED]
897:4–14; *see also* Tr. at 801:13–19 ([REDACTED])
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]). *See Certain Movable Barrier Operator Sys.*, Inv. No. 337-TA-1118, Remand ID, 2020 WL 6156600, at *18 (July 10, 2020) (activities that are critical to commercialization and sale support domestic industry).

f. Shoals’ expert properly allocated direct labor expenses.

In addition to compensation, Shoals also made additional labor-related investments in payroll taxes and benefits. *See Certain Movable Barrier Operator Sys. & Components Thereof*, Inv. No. 337-TA-1118, Comm’n Op., 2022 WL 20585214, at *79 (expenditures for labor and capital include employee compensation and related benefits). Shoals also invested in [REDACTED]
[REDACTED]
[REDACTED] Shoals employees. Tr. (Bardos) at 665:16–19, 733:10–11. Mr. Nelson allocated a portion of Shoals’ total Tennessee direct labor benefits, payroll taxes, and contract labor to the BLA, using a percentage that he calculated by [REDACTED]
[REDACTED], resulting in the following:

[REDACTED]
JX-0272C.0002; Tr. (Nelson) at 830:22–831:14; *see also* CDX-0012C.21 (displaying labor totals based on data in JX-0133C, JX-0272C, JX-0196C). *See Certain Wet Dry Surface Cleaning*

[REDACTED]
[REDACTED]

Devices, ID, Inv. No. 337-TA-1304, 2023 WL 2824398 at *159–160 (Mar. 24, 2023) (contract labor appropriately included in domestic industry analysis); *Certain Movable Barrier Operator Sys. & Components Thereof*, Inv. No. 337-TA-1209, Ord. No. 12 (ID), 2021 WL 2155165 at *7 (Apr. 26, 2021) (finding significant investments in labor costs “including salaries, wages, benefits, contract labor, and commissions”).

g. Shoals’ expert properly allocated non-direct labor expenses.

The final category of labor expense that Mr. Nelson allocated to the BLA is a share of Shoals’ payroll taxes and benefits for all categories of labor *other than* direct labor. Similar to how he allocated *direct labor* expenses, Mr. Nelson tallied [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] resulting in the following:

[REDACTED]

JX-0133C, JX-0272C, JX-0196C; *see also* CDX-0012C.26 (displaying subtotals based on data in JX-0133C, JX-0272C). Other than registering his general suspicion about the magnitude of Shoals’ SG&A investments, as discussed above, Voltage’s expert did not address these calculations at trial.

Altogether, then, Shoals’ allocated labor investments, including both compensation and expenses, are as follows:

[REDACTED]

[REDACTED]

[REDACTED]

2. Shoals' expert properly allocated trade show expenses.

Shoals' President and CFO both testified about the importance of trade shows to Shoals' BLA marketing efforts. Tr. (Tolnar) at 356:9–12, 359:8–360:6; Tr. (Bardos) at 710:11–712:1. *See Certain Compact Fluorescent Reflector Lamps, Products Containing Same & Components Thereof*, Inv. No. 337-TA-872, Pub. No. 4854, 2018 WL 11202376, at *58 (Nov. 1, 2018) (counting trade show expenses as domestic labor and capital investments). To allocate trade show expenses, Mr. Nelson used the [REDACTED] that is described above, in connection with other allocations, resulting in the following:

[REDACTED]

JX-0268C.0002; Tr. (Nelson) at 835:25–836:12; *see also* CDX-0012C.27 (displaying totals based on data in JX-0134C, JX-0275C–276C).

[REDACTED]
[REDACTED]

At trial, Staff denigrated these as a chance to [REDACTED] Tr. (Tolnar) at 360:7–15. But Mr. Bardos testified that [REDACTED]
[REDACTED]. Tr. (Bardos) at 711:14–25. And in any event, precedent supports counting even travel and entertainment expenses, to the extent they pertain to the complainant’s industry with respect to the articles protected by the asserted intellectual property rights. *Certain Integrated Circuits & Prods Containing the Same*, Inv. No. 337-TA-1148, Order No. 38, 2019 WL 7288999 at *5–6 (Nov. 4, 2019); *see, e.g., Certain Collapsible Sockets for Mobile Electronic Devices and Components Thereof*, Inv. No. 337-TA-1056, Comm’n Op. at 19-20 (July 9, 2018) (“In the case at hand, PopSockets is not relying solely on marketing and sales expenditures to satisfy the economic prong. While PopSockets has included sales and marketing expenditures, it has also provided evidence of significant expenditures in its employment of labor in other qualifying activities. . . .”).

For his part, Voltage’s expert alleged that [REDACTED]
[REDACTED]
[REDACTED] Tr. (Clarke) at 1010:22–24. But [REDACTED]
[REDACTED]
[REDACTED] See Tr. (Tolnar) at 358:6–359:1. Thus, no international trade show expenses were claimed by Shoals, and no exclusion is necessary.

3. Shoals’ expert properly allocated SG&A expenses.

The final category of labor and capital investment that Mr. Nelson allocated is SG&A expenses. These include: advertising and promotion, computer and internet expenses, dues and subscriptions, insurance, marketing, office supplies, outside contract services, other supplies, and

[REDACTED]
[REDACTED]
travel expenses. JX-0275C.0002. The outside contract services component, in particular, includes [REDACTED]
[REDACTED]

Tr. (Bardos) at 709:18–24. *All* the outside contract services vendors are domestic. Tr. (Bardos) at 709:25–710:9. Because these services support Shoals’ worldwide operations, Mr. Nelson allocated them using [REDACTED], just as he allocated [REDACTED], resulting in the following:

[REDACTED]

JX-0275C.0002; *see also* CDX-0012C.28 (displaying totals based on data in JX-0134C, JX-0275C, JX-0276C). *See Certain Collapsible Sockets for Mobile Elec. Devices & Components Thereof*, Inv. No. 337-TA-1056, Comm’n Op., at 19–20, 2018 WL 7680630, at *12 (July 9, 2018) (capital spending on fixtures, furniture, software, and equipment used for design, engineering, and operation management support domestic industry); *see also Certain Multi-Stage Fuel Vapor Canister Sys. & Activated Carbon Components Thereof*, Inv. No. 337-TA-1140, ID, 2020 WL 1026313 at *123–124 (Jan. 28, 2020) (recognizing that “the Commission has shown latitude in including sales, marketing, or general administrative investments when they are provided in support of qualifying activities” and finding that “[g]iven the undisputed evidence that qualifying manufacturing activities occur at each of Ingevity’s *** and *** locations, and G&A, IT, and finance are understandably connected thereto, they may be counted for economic prong purposes under the Commission’s flexible analysis.”). Other than

[REDACTED]

mentioning contract services as part of his general critique of the magnitude of Shoals' SG&A investments, as discussed above, Voltage's expert did not comment on these calculations at trial.

Altogether, then, Shoals' labor and capital investments are:

[REDACTED]

C. Shoals' investments are quantitatively and qualitatively significant.

The significance of Shoals' investments is apparent. First and foremost, because the BLA is manufactured *only* in Tennessee, using *only* domestic plant and equipment, and *only* domestic labor and capital, Shoals' Tennessee investments both in plant and equipment and in labor and capital are each *significant* and indeed *indispensable* to the DI products. *See also* CDX-0012C.31 (displaying totals based on data in JX-0192C, CX-0115, CX-0259C, JX-0103). So far as Shoals is aware, economic DI has never *not* been found, where *all* the manufacturing plant and equipment, or *all* the labor and capital, are domestic.

Voltage has never contested that Shoals' investments are entirely domestic. Voltage complains that Shoals has not performed a quantitative analysis of its domestic activity as against its foreign activity. Such analysis is not required. *Certain Encapsulated Integrated Cir. Devices*

³³ [REDACTED]

[REDACTED] *See* CDX-0012C.29 (summary of data in JX-0091C, JX-0126C, JX-0133C, JX-0134C, JX-0195C, JX-0270C, JX-0271C, JX-0272C, JX-0196C, JX-0197C, JX-0275C, JX-0276C).

[REDACTED]
[REDACTED]

& *Prod. Containing Same*, Inv. No. 337-TA-501, Comm’n Opinion, 2014 WL 12935964 at *18–19 (Apr. 28, 2014) (“the comparative analysis of domestic to foreign economic activity ... is not mandatory, but rather is one of the factors the Commission can utilize in its analysis to ensure ... a thorough examination ... in the context of the industry, the article of commerce, and the realities of the marketplace.”). [REDACTED]

[REDACTED]

[REDACTED]

Another quantitative gauge of significance is how the complainant’s domestic activities add value to the products. See *Certain Printing and Imaging Devices and Components Thereof*, Inv. No. 337-TA-690, Comm’n Op., at 27, 30; *Certain Table Saws Incorporating Active Injury Mitigation Technology and Components Thereof*, Inv. No. 337-TA- 965, Order No. 10, ID at 17 (Apr. 27, 2016), *not reviewed*, Notice (Apr. 21, 2016) (finding quantitative significance of labor by comparing to gross sales). Here, as summarized in the table below, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

CDX-0012C.32 (displaying totals based on data in JX-0126C, JX-0278C, JX-0277C); Tr. (Nelson) at 838:20–839:16. This underscores that Shoals is no mere importer and reseller of goods: if it were then it could [REDACTED]

[REDACTED]

[REDACTED] See Tr. (Nelson) at 838:20–839:16.

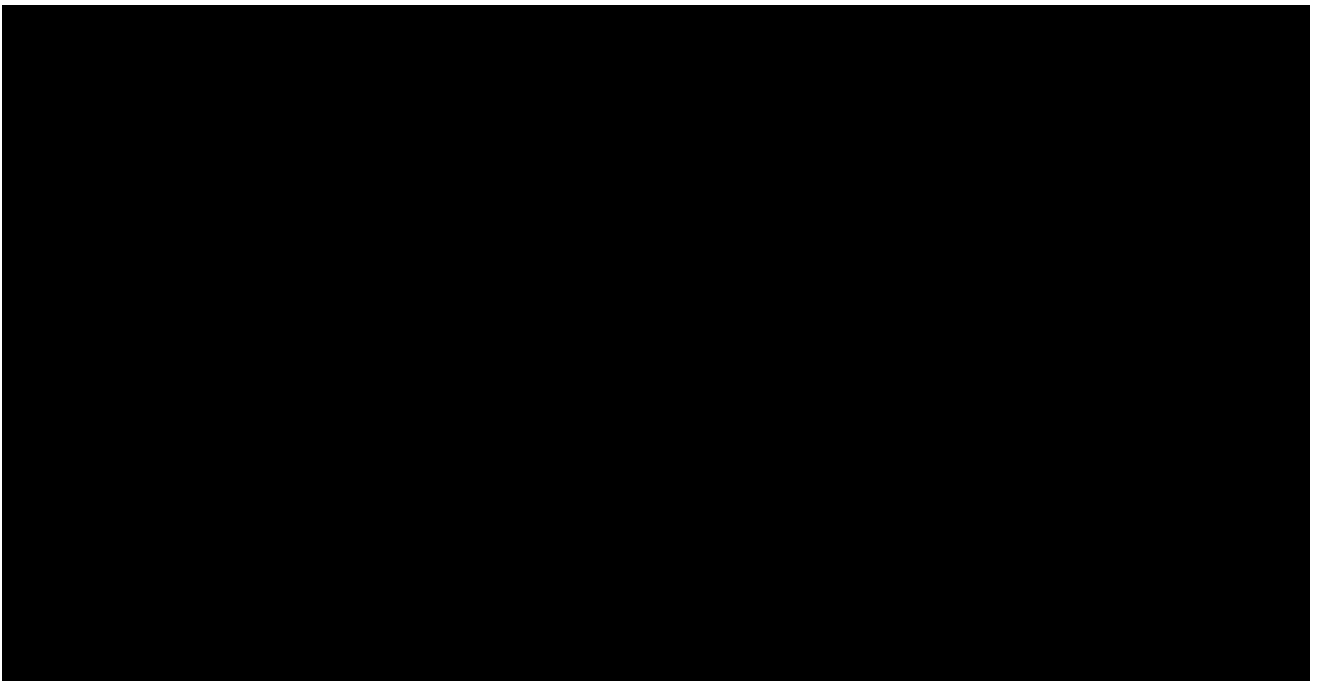
[REDACTED]
[REDACTED]
Voltage's expert testified that an [REDACTED]

[REDACTED] Tr. (Clarke) at 1012:21–22. Specifically, according to Mr. Clarke, Mr. Nelson should have compared [REDACTED]
[REDACTED]

[REDACTED] Tr. (Clarke) at 1014:2–10. If Mr. Clarke thought that comparison would be instructive, he could have performed it. That other comparisons *could have been* but were not made, by Voltage's expert, does not deprive the comparison that *was made* by Shoals' expert of any of its force. The fact that [REDACTED]

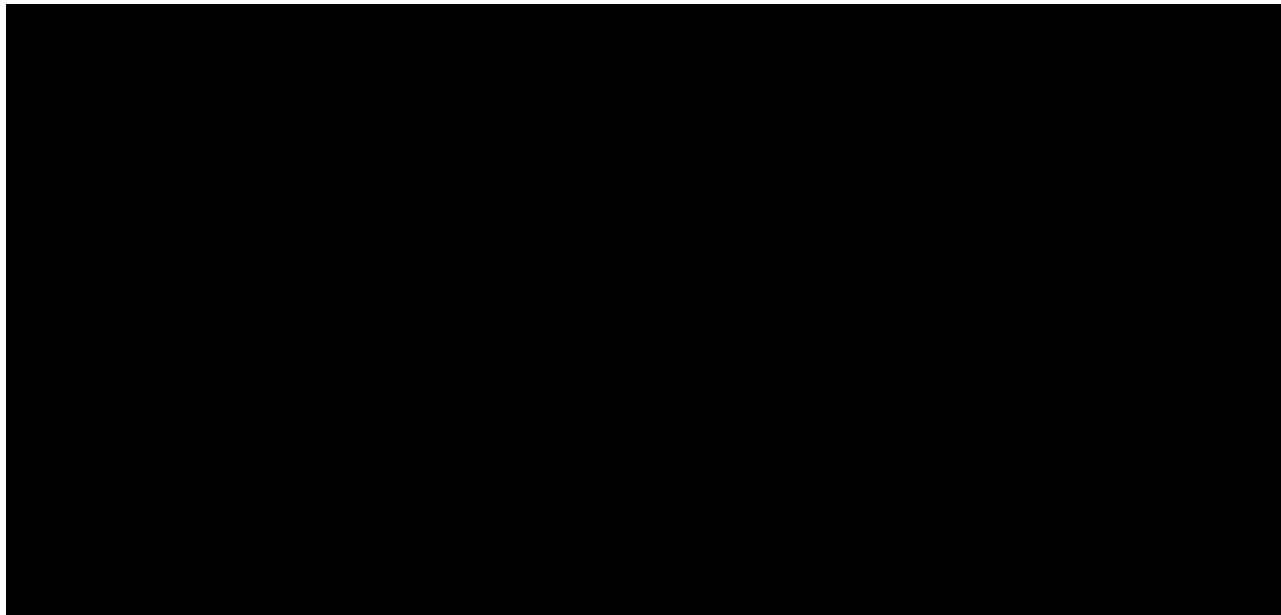
[REDACTED] is a compelling quantitative indicator of significance.

Qualitatively, the BLA manufacturing done in Tennessee, by domestic labor using domestic plant and equipment, is driving Shoals' overall growth and success. At trial, Shoals' expert graphically illustrated this significance in two ways. The following pie charts show BLA revenue as [REDACTED]:



[REDACTED]

CDX-0012C.34 (illustrating portions of data in JX-0134C, JX-0094C–097C, JX-0102, JX-0103, JX-0276C); Tr. (Nelson) at 840:11–841:25. That BLA revenues grew dramatically as a share of overall Shoals revenue, even as overall Shoals revenue also grew, shows that BLA growth is not a beneficiary or by-product of Shoals growth but instead is a driver of that growth. *See also* Tr. at 840:11–21. The following bar graph illustrates a related trend:



CDX-0012C.35 (illustrating portions of data in JX-0134C, JX-0094C, JX-0095C, JX-0096C, JX-0097C, JX-0102, JX-0103, JX-0276C); Tr. (Nelson) at 840:11–841:25. This graph illustrates that BLA growth had [REDACTED]

[REDACTED].

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED] [REDACTED]

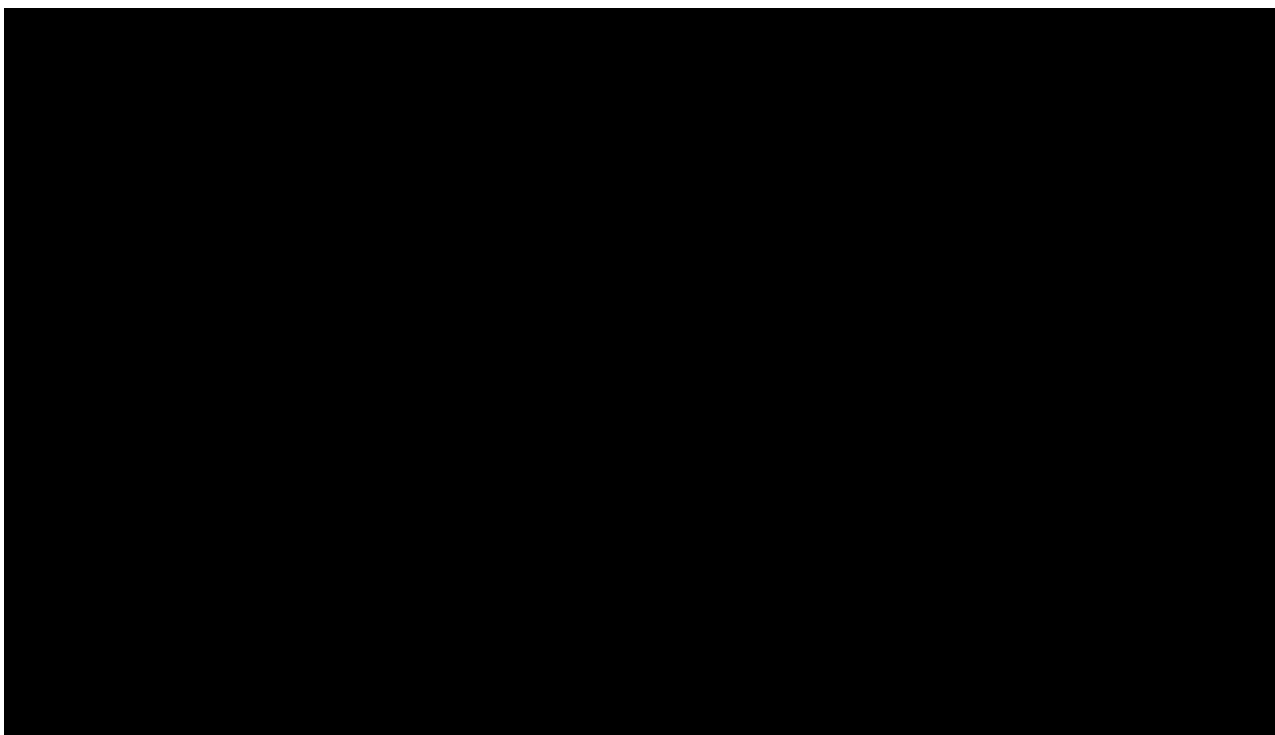
[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] *See Certain Mobile Phones and Table Computers, All With Switchable Connectivity*, Inv. No. 337-TA-1301, ID (Order No. 25) at 5 (Aug. 17, 2022) *unreviewed in relevant part by Comm’n Notice* (Sept. 9, 2022) (“A complainant can show that its activities are significant by showing how those activities are important to the articles protected by the patent in the context of the company’s operations, the marketplace, or the industry in question.”).

Finally, focusing more specifically on Shoals’ labor investments, Shoals’ expert illustrated as follows the relative magnitudes of Shoals’ manufacturing labor, on the one hand, and its sales and project management labor, on the other:



CDX-0012C.33 (depicting subtotals based on data in JX-0192C, JX-272C, JX-0196C). Similar to Mr. Nelson’s value-add analysis, the point is that if, rather than having a significant domestic manufacturing operation, Shoals were solely or even primarily a conduit for goods entering the

[REDACTED]
[REDACTED]
country from abroad, then manufacturing labor would not so heavily preponderate over sales labor. This is yet another compelling indicator of quantitative significance.

On cross-examination, Voltage's counsel proposed [REDACTED]
[REDACTED]

[REDACTED] Tr. (Nelson) at 853:4–856:4. This misses the point. As Mr. Nelson testified on re-direct, [REDACTED]

[REDACTED] Tr. (Nelson) at 897:4–14. Given that fact, and what Mr. Nelson is trying to measure, it makes no sense to change the calculation in a way that penalizes Shoals for having the [REDACTED] that it needs and has precisely because it is more focused on *making* something in America rather than merely importing something [REDACTED] for resale.

If Shoals' purely domestic vertically integrated manufacturing operation is not a domestic industry, what is?

IX. REMEDY

Because Voltage is competing unfairly by infringing the '153 patent, an order (LEO) excluding Voltage's LYNX should issue. Although the order should include a certification procedure, the order should not permit Voltage to use that procedure for the AD LYNX or any other redesigns that have not been adjudicated as non-infringing. The order should not include any carveout for fulfillment of existing contracts. And if the exclusionary order exempts AD LYNX, based on a determination that it is noninfringing, then the order should require Voltage to provide to Shoals samples drawn randomly from its production runs, for analysis (including destructive analysis).

[REDACTED]

Finally, a 100 percent bond should be required, during the Presidential review period (PRP).

A. An exclusionary order should issue.

“If the Commission determines, as a result of an investigation under this section, that there is a violation of this section, it shall direct that the articles concerned, imported by any person violating the provision of this section, be excluded from entry into the United States ...” 19 U.S.C. §1337(d)(1). There are exceptions—relating to “the public health and welfare, competitive conditions in the United States economy, the production of like or directly competitive articles in the United States, and United States consumers,” *see id.*—but none apply. Voltage presents no evidence that such an exemption is needed, *see Certain Cloud-Connected Wood-Pellet Grills and Components Thereof*, Inv. No. 337-TA-1237, Comm’n Op. at 13, 2022 WL 1732625 at *6–7 (May 24, 2022), and in any event, a public interest analysis is not before the Judge at this time, *see id.* at *6, n.9.

1. Voltage’s request to exclude fulfillment of “contracts entered into prior to the Target Date” should be denied.

Voltage does not invoke any of the exceptions as a reason not to issue a LEO. But in Respondents’ Pre-hearing Brief, Voltage did argue for two carveouts: “a service and repair exception” and delaying “the effective date of any exclusion order ... to permit respondents to deliver products to customers under contracts entered into prior to the Target Date.” RPre-HB at 239. Shoals does not oppose a service and repair exception.

However, the effective date should not be delayed. Voltage’s request for this delay comes with an element of bad faith. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

exception to complete pending contracts when “Respondents have not provided sufficient evidence of either pending contracts or purchase orders in existence, nor have they provided any reason why such contracts being fulfilled would be justified.”) (citing *Certain Road Milling Machines & Components Thereof*, Inv. No. 337-TA-1067, Comm’n Op. at 14-15, 2019 WL 8883974 at *7’8 (Aug. 7, 2019) (rejecting exception for shipments “scheduled for delivery” because it “would potentially circumvent the exclusion order,” particularly where respondent failed to identify what the shipments entailed or how many shipments the exception would permit)).

2. Were the AD LYNX to be excluded, Voltage should be required to continually produce samples for analysis.

As shown above, AD LYNX should not be adjudicated as noninfringing: first, whether AD LYNX infringes at all should not be determined because Voltage has not carried its burden to prove satisfaction of the *Milk* factors; second, were the issue reached, the AD LYNX should be found to infringe. *See* Section V.D, *supra*. However, were the AD LYNX found to be noninfringing, exemption of AD LYNX from the LEO should be conditioned on Voltage providing to Shoals samples randomly drawn from its production, on a regular basis, for analysis (including destructive analysis).

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] And Shoals would not be able to obtain AD

LYNX samples on the open market. Therefore, were AD LYNX to be exempt from the LEO based on Voltage's noninfringement theory, Voltage should be required to provide samples to Shoals, drawn randomly from its production runs, for Shoals to analyze (cut open) to verify that the products being imported truly conform to the allegedly noninfringing design.

B. Voltage should be required to post 100 percent bond.

Voltage should be required to post bond in order to continue importing and selling the LYNX during the 60-day PRP. *See* 19 U.S.C. § 1337(j). The purpose of the bond requirement is to protect Shoals from injury during the PRP, *id.*, and to “offset any competitive advantage resulting from the unfair method of competition or unfair act enjoyed by persons benefiting from the importation,” *Certain Dynamic Random Access Memories, Components Thereof & Prods. Containing Same*, Inv. No. 337-TA-242, Comm’n Op., 1987 WL 450856, at *95 (Sept. 21, 1987); *Certain Automotive Parts*, Inv. No. 337-TA-557, Comm’n Op., 2007 WL 2021234, at *13 (Jul. 5, 2007); *see also* 19 C.F.R. § 210.42(a)(1)(ii), § 210.50(a)(3).

Here, the bond should be set at 100 percent. First, Shoals is selling to many of the same customers as Voltage, and therefore in competition with Voltage. Tr. (Macias) at 143:8–144:6, 142:5–21; Tr. (Tolnar) at 273:5–24, 297:14–23; Tr. (Nelson) at 842:17–18; CDX-0012C.37 (displaying assertions based, in part, on JX-0192C, JX-0126C, JX-0155C). Second, [REDACTED] Am. Compl., ¶ 50; Tr. (Nelson) at 842:18–20.

Finally, when reliable price information is available, a bond amount can be set to eliminate any price differential between the domestic and the imported infringing product. *Certain Digital Satellite Sys. Receivers and Components Thereof*, Inv. No. 337-TA-392, USITC Pub. No. 3418, 2001 WL 535427 at *336 (Apr. 1, 2001). But where such information is not

[REDACTED]
[REDACTED]

available, Commission precedent is that bond should be set at 100 percent. *Certain Semiconductor Memory Devices and Prods. Containing Same*, Inv. No. 337-TA-414, 1999 WL 1267282 at *6 (Dec. 13, 1999); *Certain Flash Memory Circuits and Prods. Containing Same*, Inv. No. 337-TA-382, USITC Pub. 3046, Comm’n Op. at 26–27 (July 1997). Similarly, where pricing information is available but variations in pricing make price comparisons complicated and difficult, the Commission typically has set a 100 percent bond. *See Certain Microsphere Adhesives, Process for Making Same, and Prods. Containing Same, Including Self-Stick Repositionable Notes*, Inv. No. 337-TA-366, Comm’n Op., at 24–25 (Dec. 15, 1995); *see also Certain Digital Multimeters and Prods. with Multimeter Functionality*, Inv. No. 337-TA-588, Comm’n Op., at 12–13 (June 3, 2008) (finding 100 percent bond where each respondent set its price differently, preventing clear price differentials).

[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED] Respondents try to blame Shoals for this, arguing that [REDACTED]
[REDACTED] RPre-HB at 242. But Shoals *could not* conduct such an analysis because, as its expert testified and showed, [REDACTED]
[REDACTED]. *See* Tr. (Nelson) at 843:3–844:5; CDX-0012C.38, 39 (depicting BLA invoice cross-section from JX-0126C [REDACTED]).

As Mr. Macias testified:

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
Tr. (Macias) at 135:15–24. And this is not an issue only on Shoals’ side: the same holds true for Voltage. Tr. (Nelson) at 844:19–845:15; CDX-0012C.40, 41 (depicting [REDACTED] from JX-0155C); JX-0211C (Joseph) at 152:11–22 ([REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]). Even further, there is no way to compare the products on a per-product basis. As Messrs. Macias, Tolnar, and Bardos testified, a BLA can have various numbers of mold drops with different distances between them and each having different numbers of drop lines. Tr. (Macias) at 121:2–4, 135:20–136:12; Tr. (Tolnar) at 337:9–20; Tr. (Bardos) at 776:1–7. The same is true for the Voltage LYNX. JX-0211C (Joseph) at 104:9–16, 137:11–16, 151:23–153:16; *see also e.g.*, JX-0159C ([REDACTED] drawings) at 0004–0096. Moreover, even if a one-to-one comparison were possible, neither [REDACTED] that would enable such a comparison. Tr. (Bardos) at 670:8–24, 739:8–740:1, 754:23–24 ([REDACTED] [REDACTED]), 776:8–777:6; Tr. (Macias) at 213:25–214:10; Tr. (Nelson) at 844:19–845:17 (regarding Voltage invoices); *see also* JX-0155C.

Voltage’s expert deceptively suggested that a differential is not feasible because Shoals had not produced sufficient pricing data (Tr. (Clarke) at 1018:12–1019:8), but that is simply untrue. It is undisputed that both Shoals and Voltage produced invoice data for [REDACTED] [REDACTED]. *See* JX-0126C ([REDACTED]); *see also* JX-0155C. And Shoals’ expert reviewed the voluminous invoice data for both parties and tried to (but could not)

[REDACTED]
[REDACTED]

determine a price differential. Tr. (Nelson) at 843:3–845:17. On the other hand, although Voltage insists a price differential can be calculated, Voltage’s expert never attempted to provide one. Tr. (Clarke) at 1024:10–14.

With no defensible average sales price on either side, there can be no defensible price differential between them. Therefore, bond should be set at 100 percent. *See e.g., Certain Balanced Armature Devices, Prod. Containing Same, & Components Thereof*, Comm’n Op., Inv. No. 337-TA-1186, 2021 WL 5104810 at *25–26 (Oct. 29, 2021) (imposing a 100 percent bond where, among other things, the price of each model varied greatly between customers and there were hundreds of models with different features and prices); *Certain Automated Mech. Transmission Sys. for Medium- Duty & Heavy-Duty Trucks & Components Thereof*, Inv. No. 337-TA-503, USITC Pub. No. 3934, 2007 WL 4473082 at *12 (Aug. 1, 2007) (setting a 100 percent bond given the “circumstances of sale unique to each transaction”); *Certain Elec. Connectors & Cages, Components Thereof, & Prod. Containing the Same*, Comm’n Op., Inv. No. 337-TA-1241, 2022 WL 5145157 at *28–29 (Sept. 30, 2022) (setting 100 percent bond where pricing of accused products and domestic industry products was driven by a variety of factors making a reliable price differential impracticable).

X. CONCLUSION

As explained here, the evidence establishes that a violation of Section 337 has occurred, and the Judge should recommend an appropriate limited exclusion order to protect Shoals’ domestic industry and curtail Respondents’ infringement.

Dated: April 12, 2024

Respectfully submitted,

/s/ Charles S. Barquist

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In the Matter of

**CERTAIN PHOTOVOLTAIC
CONNECTORS AND COMPONENTS
THEREOF**

Investigation No. 337-TA-1365

CERTIFICATE OF SERVICE

I, hereby certify that on this day, May 7, 2024, a true and correct copy of the foregoing
has been served on the following as indicated:

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