

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

**EIDOS DISPLAY, LLC, and
EIDOS III, LLC**

Plaintiffs,

vs.

AU OPTRONICS CORPORATION, et al.,

Defendants.

§
§
§
§
§
§
§
§
§
§
§

No. 6:11cv201 JRG-JDL

JURY DEMANDED

MEMORANDUM OPINION AND ORDER

On October 21, 2015, Defendant Chunghwa Picture Tubes, Ltd. (“CPT”) and Defendants Hannstar Display Corporation and Hannspree North America, Inc. (“Hannstar”) (collectively, “Defendants”) filed separate motions to construe the term “gate wiring.” (Doc. Nos. 520, 521.) Plaintiffs Eidos Display, LLC and Eidos III, LLC (“Eidos”) filed a collective response (Doc. No. 538), to which Defendants filed separate replies (Doc. Nos. 549, 551), and Plaintiffs filed a collective sur-reply (Doc. 560). On February 4, 2016, the Court held a claim construction hearing on the term “gate wiring,” whereat the Court took in testimony from the parties’ experts. Because the Court construes the term “gate wiring” as set forth herein, Defendants’ Motions (Doc. Nos. 520, 521) are **GRANTED-IN-PART** and **DENIED-IN-PART**.

BACKGROUND

On April 12, 2013, this Court issued its claim construction opinion construing the disputed terms of U.S. Patent No. 5,879,958 (“the ’958 Patent”). (Doc. No. 184.) During the original claim construction hearing, the Court previously had proposed a construction for the term “gate wiring” as “a patterned, electrically conductive material that conveys gate signals to gate electrodes.” (Doc. No. 184, at 12.) However, for reasons explained during the claim

construction hearing, the Court declined to construe the term “gate wiring” in its original claim construction opinion. (Doc. No. 184, at 12.) Both sides’ experts have since provided expert reports incorporating the Court’s proposed construction. In light of those reports, Defendants have now asked the Court to construe the term “gate wiring” to resolve a dispute amongst the experts regarding the interpretation of “gate wiring.”

CLAIM CONSTRUCTION PRINCIPLES

“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). The Court examines a patent’s intrinsic evidence to define the patented invention’s scope. *Id.* at 1313–14; *Bell Atl. Network Servs., Inc. v. Covad Commc’ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). Intrinsic evidence includes the claims, the rest of the specification and the prosecution history. *Phillips*, 415 F.3d at 1312–13; *Bell Atl. Network Servs.*, 262 F.3d at 1267. The Court gives claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int’l Trade Comm’n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003).

Claim language guides the Court’s construction of claim terms. *Phillips*, 415 F.3d at 1314. “[T]he context in which a term is used in the asserted claim can be highly instructive.” *Id.* Other claims, asserted and unasserted, can provide additional instruction because “terms are normally used consistently throughout the patent.” *Id.* “[C]laims ‘must be read in view of the specification, of which they are a part.’” *Id.* (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995)). “[T]he specification ‘is always highly relevant to the claim

construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.” *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002).

The specification may also resolve ambiguous claim terms “where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone.” *Teleflex, Inc.*, 299 F.3d at 1325. For example, “[a] claim interpretation that excludes a preferred embodiment from the scope of the claim ‘is rarely, if ever, correct.’” *Globetrotter Software, Inc. v. Elam Computer Group Inc.*, 362 F.3d 1367, 1381 (Fed. Cir. 2004) (quoting *Vitronics Corp.*, 90 F.3d at 1583). But, “[a]lthough the specification may aid the court in interpreting the meaning of disputed language in the claims, particular embodiments and examples appearing in the specification will not generally be read into the claims.” *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988); *see also Phillips*, 415 F.3d at 1323.

Although, “less significant than the intrinsic record in determining the legally operative meaning of claim language,” the Court may rely on extrinsic evidence to “shed useful light on the relevant art.” *Phillips*, 415 F.3d at 1317 (quotation omitted). Technical dictionaries and treatises may help the Court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but such sources may also provide overly broad definitions or may not be indicative of how terms are used in the patent. *Id.* at 1318. Similarly, expert testimony may aid the Court in determining the particular meaning of a term in the pertinent field, but “conclusory, unsupported assertions by experts as to the definition of a claim term are not useful.” *Id.*

In patent construction, “subsidiary fact finding is sometimes necessary” and the court “may have to make ‘credibility judgments’ about witnesses.” *Teva v. Sandoz*, 135 S.Ct. 831, 838 (2015). In some cases, “the district court will need to look beyond the patent’s intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period.” *Id.* at 841. “If a district court resolves a dispute between experts and makes a factual finding that, in general, a certain term of art had a particular meaning to a person of ordinary skill in the art at the time of the invention, the district court must then conduct a legal analysis: whether a skilled artisan would ascribe that same meaning to that term *in the context of the specific patent claim under review.*” *Id.* (emphasis in original). When the court makes subsidiary factual findings about the extrinsic evidence in consideration of the “evidentiary underpinnings” of claim construction, those findings are reviewed for clear error on appeal. *Id.*

DISCUSSION

A. Overview of the Patent-in-Suit

U.S. Patent No. 5,879,958 (“the ’958 Patent”) is titled “Method of Producing an Electro-Optical Device” and relates to the process of forming circuitry used in controlling liquid crystal displays (“LCD”). Specifically, the ’958 Patent relates to the process for forming an array of thin film transistors (“TFT”) and pixel electrodes that are used to control the light emission of an LCD. Notably, the ’958 Patent contains 17 embodiments (identified as A-S) providing various manufacturing processes that reduce the number of photolithographic steps. *See* ’958 Patent at 4:50–14:18 (describing processes with four or five lithographic steps as opposed to seven).

Claim 1 is the only issued claim in the ’958 Patent. Claim 1 recites as follows:

1. A method for producing an electro-optical device in which an electro-optical material is put between

a pair of substrates opposed to each other, at least a portion of opposing surfaces of the substrates is insulative, a plurality of source wirings and a plurality of gate wirings are formed crossing each other on the surface of one of said pair of substrates and a transparent pixel electrode and a thin film transistor are formed at each of the crossing points between the source wirings and the gate wirings, wherein the method comprises:

- a step G1 of forming a first metal film on the surface of said one substrate,
- a first photolithographic step G2 of patterning the first metal film to form a gate electrode and a gate wiring,
- a step G3 of forming a first insulator film, a semiconductor film and an ohmic contact film on the surface of said one substrate after the first photolithographic step,
- a second photolithographic step G4 of patterning the semiconductor active film and the ohmic contact film to form a semiconductor portion above the gate electrode in a state isolated from other portions,
- a step G5 of forming a second metal film on the surface of said one substrate after the second photolithographic step,
- a third photolithographic step G6 of patterning the second metal film and the ohmic contact film to form a source electrode, a drain electrode and a channel portion,
- a step G7 of forming a passivation film on the surface of said one substrate after the third photolithographic step, and
- a fourth photolithographic step G8 of patterning the passivation film to form a contact hole reaching the gate wiring, a contact hole reaching the drain electrode and a contact hole for source wiring and gate wiring connection terminals,

a step G9 of forming a transparent conductive film on the surface of said one substrate after the fourth photolithographic step, and a fifth photolithographic step G10 of patterning the transparent conductive film to form a transparent pixel electrode.

'958 Patent at 58: 5–47.

B. “gate wiring”

In the briefing, the parties proposed constructions for the term “gate wiring” as set forth below:

Claim Language	Plaintiffs’ Proposal	CPT’s Proposal	Hannstar’s Proposal
“gate wiring”	“a patterned, electrically conductive material that conveys gate signals”	“an electrically-conductive pathway that conveys gate signals from gate connection terminal to the gate electrodes” ¹	“a patterned electrically-conductive material that connects and conveys gate signals from a gate wiring connection terminal to a gate electrode” ²

As an initial matter, the parties agree that the “gate wiring” is “electrically conductive” and that it “conveys gate signals.” The parties’ dispute is really focused on what it means to “convey gate signals,” *i.e.*, whether “gate wiring” merely “conveys gate signals” or whether it must “convey gate signals from a gate wiring connection terminal to a gate electrode.” The

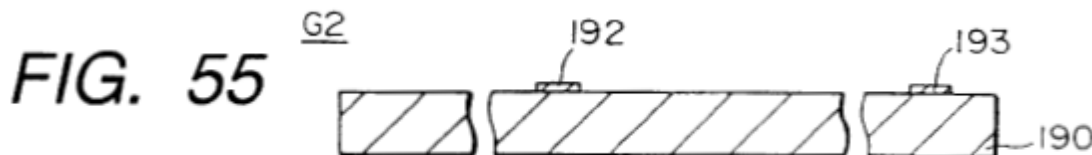
¹ In its opening motion, CPT requested that the Court could adopt its previously proposed construction with the “clarification that the function of a specific structure, not merely that it is electrically connected to other structures, defines whether a structure is ‘gate wiring.’” (Doc. No. 521, at 4.) In its reply brief, CPT still requested such clarification, but suggested that the appropriate construction should include “(1) ‘an electrically-conductive pathway that conveys gate signals’ (2) ‘from gate wiring connection terminals’ (i.e., from gate drivers) (3) ‘to gate electrodes.’” (Doc. No. 551, at 2.) Accordingly, CPT’s proposed construction is set forth as such above.

² Defendant Hannstar originally proposed the term gate wiring mean “an electrically-conductive pathway directly connecting and conveying gate signals between a gate wiring connection terminal and a gate electrode” in its opening brief. (Doc. No. 520, at 2.) However, in its reply brief, it modified its proposed construction to the construction set forth herein. (Doc. No. 549, at 1.)

intrinsic record being entirely devoid of ascribing meaning to the “conveyance of gate signals,” the Court took in extrinsic evidence in the form of expert testimony regarding the meaning of the term “gate wiring” as it would have been understood in the art at the relevant time. For the reasons explained herein, the Court is unable to resolve the ultimate factual dispute between the experts regarding “conveying gate signals,” but, in view of the intrinsic record and the testimony of the experts, rejects the Defendants’ proposed construction as too limiting.

In the briefing, Defendants first argued that claim 1 recites that “gate wiring” and “gate electrodes” as two different structures and therefore asked the Court to resolve whether the “gate wiring” is a separate structure from the “gate electrode.” (Doc. No. 520, at 4.) However, based on the testimony received from the experts at the hearing, it became apparent that there was in fact no dispute in this regard.

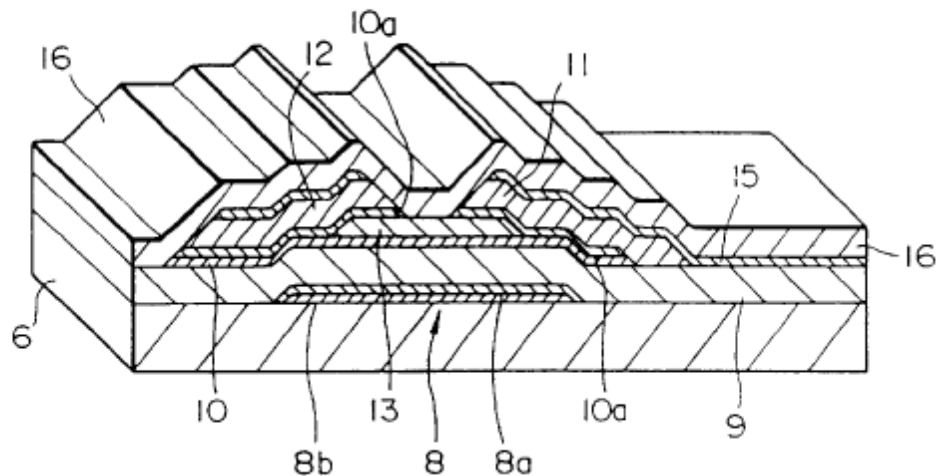
First, the intrinsic record discloses the gate electrode 192 and the gate wiring 193 as part of the same continuous structure formed over the substrate 190 in a single patterning step:



(’958 Patent, Fig. 55; 35:49-51 (“the photoresist is peeled off to form a gate electrode 192 and a gate wiring 193 shown in FIG. 55 on the substrate 190.”).)³ Similarly, the specification discloses relevant prior art where the gate wiring and the gate electrode are a part of the same structure. In Figure 171, for example, the gate wiring 8b is a subcomponent of the gate electrode 8:

³ The Court notes that, taken at face value, Figure 55 appears to show separate structures for the gate electrode 192 and the gate wiring 193. However, to reach the conclusion that these are separate structures based on this figure alone would be in error. Plaintiffs’ expert provided uncontested testimony that Figure 55 shows just one angled slice of the circuit, and that at other points on the circuit these structures connect and are *one in the same*. (Tr. at 24:19-25:25.) As discussed further below, Defendants’ expert agreed that these structures could be and often were the same. (Tr. at 50:19–52:4; 58:1–16.) Moreover, as discussed above, the intrinsic record makes clear that the gate electrode and gate wiring depicted in Figure 55 are formed of the same continuous metal in the same patterning step.

FIG. 171
PRIOR ART



(’958 Patent, Fig. 171; 1:54–56 (“the gate electrode 8 has a double structure comprising a gate insulator film 8a of an upper layer and a gate wiring 8b of a lower layer...”).)

Second, both experts provided testimony that a person of ordinary skill in the art at the time would have understood that the gate wiring and the gate electrode could be part of the same structure. Plaintiffs’ expert testified that the gate electrode and gate wiring are commonly understood to be part of a connected structure and testified regarding Figure 55 that the ’958 Patent discloses the gate electrode and gate wiring as the same structure. (Tr. at 24:19–25:25.) Defendants’ expert also testified that the gate wiring and the gate electrode can be part of the same structure and further testified that circuits are oftentimes purposely designed that way to achieve a brighter picture. (Tr. at 50:19–52:4; 58:1–16.) While Defendants’ expert also testified that Claim 1 distinguishes the “gate wiring” and “gate electrode” by function, he did not explain how. (Tr. at 44:16–24.) Nor did he sufficiently explain why a person of ordinary skill in the art would consider the “gate wiring” and “gate electrode” to be distinct structures, but instead

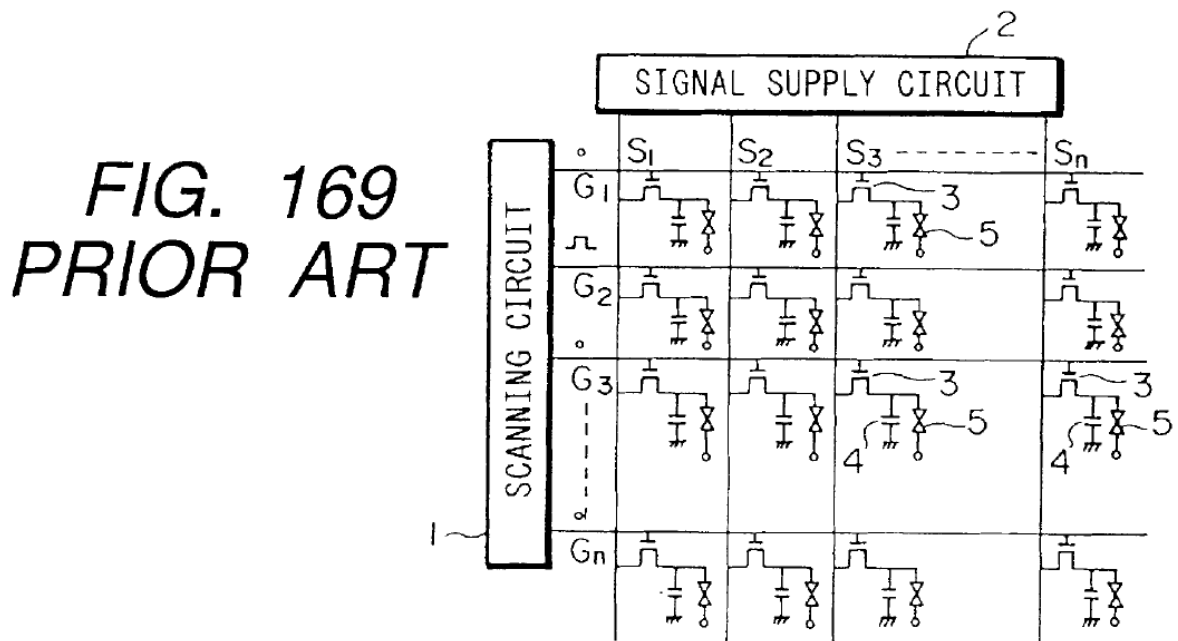
described how a designer might think of the structures according to function. (Tr. at 59:16–60:20.) Yet, Defendants’ expert did not describe the distinct functions in detail or explain why a person of ordinary skill in the art would understand the structures must be separate, as Defendants’ propose. The Court finds this testimony conclusory and ultimately inconsistent with the specification and with his own testimony regarding examples of circuits where the gate electrode and the gate wiring were a part of the same structure. (Tr. at 50:19–52:4.)

Accordingly, the Court finds that both the intrinsic and extrinsic record make clear that the “gate wiring” and “gate electrode” can be a part of the same structure.

As emphasized by the expert testimony provided at the hearing, the parties’ dispute really surrounds the function of gate wiring and what it means to “convey gate signals,” *i.e.*, whether “gate wiring” merely “conveys gate signals” or whether it must “convey gate signals from a gate wiring connection terminal to a gate electrode.” (Tr. at 58:1–59:15.) But Claim 1 does not claim “gate wiring” in a functional manner; it claims “gate wiring” as a structure that is patterned in photolithographic step G2. (’958 Patent at 58:17-18 (“a first photolithographic step G2 of patterning the first metal film to form a gate electrode and a gate wiring”).) Not surprisingly, nowhere in the intrinsic record does the ’958 Patent discuss gate wiring as conveying a gate signal, let alone describe what it means to convey a gate signal. That function is simply not the focus of the ’958 Patent, which is aimed at reducing production costs for electro-optical devices by reducing the number of photolithographic steps involved on the processing end. (’958 Patent at 4:26-36.) It was for this reason the Court found it necessary to receive testimony from the experts regarding how a person of ordinary skill in the art would have understood the term “gate wiring” at the time of invention.

The Court cannot resolve the parties' underlying factual dispute as a matter of law. However, based on the intrinsic record and the testimony provided, the Court rejects Defendants' proposed limitation that the gate wiring conveys gate signals "from a gate wiring connection terminal to a gate electrode." For the reasons explained herein, Defendants' proposed construction is too limiting and excludes an embodiment disclosed in the '958 Patent that was known in the art.

While the intrinsic record is silent regarding the function and path of "gate wiring," Figure 169 shows known prior art where the gate wiring (G_1, G_2, \dots, G_n) continues beyond the last electrode (e.g., S_n):



('958 Patent, Fig. 169; 1:19-28 ("In FIG. 169, a plurality of gate wirings G_1, G_2, \dots, G_n electrode and a plurality of source wirings S_1, S_2, \dots, S_n are wired in a matrix...").) The Court acknowledges that this is just a patent drawing of prior art that is not necessarily intended to be drawn with precision to scale or depiction. See *Hockerson-Halberstadt, Inc. v. Avia Group Int'l, Inc.*, 222 F.3d 951, 956 (Fed. Circ. 2000) ("it is well established that patent drawings do not

define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue.”). While the precise nature of scaled dimensions is not at issue here, what is at issue is whether the gate wiring can continue beyond the terminal gate electrode, as it is depicted in Figure 169. Although Figure 169 depicts a drawing that would support Plaintiffs’ position, the specification is otherwise entirely silent on this issue. The specification does not discuss the pathway of gate wiring, describe the gate wiring in Figure 169 in detail, or discuss the conveyance of gate signals in the circuit. Accordingly, due to the lack of description in the specification, the Court found it appropriate to solicit testimony from the experts regarding what would have been known to a person of ordinary skill in the art at the time.

Plaintiffs’ expert testified that a circuit design, such as that shown in Figure 169, was commonly known in the art as an “active matrix.” (Tr. at 15:10–17:9.) Plaintiffs’ expert further explained that once voltage is put on the wire it appears everywhere on the individual wire to which it is applied. (Id.) In other words, the gate signal is conveyed beyond the last electrode. Defendants’ expert agreed that the gate wiring, as labeled in Figure 169 of the ’958 Patent, continues beyond the last gate electrode in this disclosure, and agreed that for practical purposes the wiring often continues beyond the gate electrode for circuit design purposes. (Tr. at 40:13–19; 56:11–58:3.) What Defendants’ expert ultimately disputes is whether the wire continuing beyond the last electrode conveys gate signals. (Tr. at 61:3–62:1.) That factual dispute between the experts is one the Court cannot resolve as *a matter of law* from the intrinsic record.⁴

⁴ Nothing in the intrinsic record provides any support to resolve the dispute regarding where the gate signal is conveyed. Indeed, as discussed above, whether gate signals are conveyed beyond the last electrode has little to do with the claimed subject matter of the ’958 Patent, which is aimed at reducing the number of photolithographic steps in processing TFT arrays. (’958 Patent at 4:26-36.) As such, the ’958 Patent makes no mention of gate signals and is entirely devoid of any description of the meaning of “convey.”

However, based on the intrinsic record, which was further clarified by the testimony of the experts, the Court must reject Defendants' proposed construction as a matter of law.

The Court finds that adopting Defendants' proposal "a patterned electrically-conductive material that connects and conveys gate signals from a gate wiring connection terminal to a gate electrode" is too limiting. This construction would potentially read out the disclosed embodiment in Figure 169 that was indisputably well known in the art at the time. Here, the nature of this disclosure, on which the specification was otherwise silent, was confirmed by the testimony of the experts. Plaintiffs' expert provided credible testimony that a person of ordinary skill in the art would have understood the continuation of gate wiring in a commonly known design, wherein the gate signal can be carried beyond the gate electrode. (Tr. at 15:10–17:9.) For these reasons, the Court finds the record supports the rejection of Defendants' construction, which requires termination of the gate signal at a gate electrode.

Accordingly, the Court rejects Defendants' proposal and adopts the following as the meaning of "gate wiring": "a patterned, electrically conductive material that conveys gate signals."

CONCLUSION

For the foregoing reasons, the Court adopts the construction of "gate wiring" set forth above. Defendants' Motions (Docs. No. 520, 521) are **GRANTED-IN-PART** and **DENIED-IN-PART** as directed herein.

So ORDERED and SIGNED this 18th day of February, 2016.



JOHN D. LOVE
UNITED STATES MAGISTRATE JUDGE