

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

PHENIX LONGHORN LLC,

Plaintiff,

v.

AU OPTRONICS CORPORATION,
HISENSE ELECTRONICA MEXICO,
S.A. DE C.V., HISENSE USA
CORPORATION, HISENSE VISUAL
TECHNOLOGY CO., LTD., and DOES 1–10,

Defendants.

CIVIL CASE NO. 2:23-cv-00477-RWS-RSP

JURY TRIAL DEMANDED

PHENIX LONGHORN LLC,

Plaintiff,

v.

INNOLUX CORPORATION and
DOES 1–10,

Defendants.

CIVIL CASE NO. 2:23-cv-00478-RWS-RSP

JURY TRIAL DEMANDED

**PLAINTIFF PHENIX LONGHORN LLC'S
REPLY CLAIM CONSTRUCTION BRIEF**

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Plaintiff Phenix Longhorn, LLC (“Phenix”) submits this Reply Claim Construction Brief to Defendants’ Responsive Claim Construction Brief (AUO Dkt. 141, Innolux Dkt. 104).

I. THE ’305 PATENT

A. “non-volatile storage cells”

As explained in Phenix’s Opening Brief (AUO Dkt. 134, Innolux Dkt. 96), Phenix requests the Court adopt its prior construction of this term. (Dkt¹. 134 at 6-7, Dkt. 134-4 at 18-25). Defendants’ proposed construction is not supported by the intrinsic evidence and is based on a misreading of the ’305 Patent as purportedly “teach[ing] away” from the use of digital memory.² See Dkt. 141 at 4. But the Court’s prior decision rejected this very same “teaches away” argument because “[t]he alleged disparagement is not a general disparagement of digital circuits because the prior art that is criticized includes both analog and digital approaches” and “[n]owhere in the specification is there any contrasting between analog and digital storage cells.” Dkt. 134-4 at 24. The Court further determined that the “Digital to Analog Converters (DACs) all could perform this function in some ways better than the Select-On-Test resistors, but the cost is unacceptable” statement in the ’305 Patent’s “Description of Related Art” is not an explicit or inferred disavowal of digital storage cells because it “does not clearly indicate that replacing the resistors with programmable storage cells that store digital values is unacceptable or that the invention does not include digital storage cells.” *Id.* at 25. Defendants fail to cite to any evidence in the claims, specification, or prosecution history to show otherwise.

¹ All Dkt. cites are to the AUO Docket.

² Dependent claim 4 weighs against Defendants’ construction because it limits the “non-volatile storage cells” to “hold analog voltage values.” ’305 Patent at Claim 4. In contrast, independent claim 1 references a broader non-volatile storage cell that is not limited by the “hold analog voltage values” limitation. *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 910 (Fed. Cir. 2004) (“[W]here the limitation that is sought to be ‘read into’ an independent claim already appears in a dependent claim, the doctrine of claim differentiation is at its strongest.”).

Further, Defendants assert that the term must be limited to an “analog” solution because the specification lacks written description or enablement support for a digital solution. Dkt. 141 at 5-6. Defendants are wrong. *See Intel Corp. v. VIA Techs., Inc.*, 319 F.3d 1357, 1366 (Fed. Cir. 2003) (holding that the internal circuitry of an electronic device need not be disclosed in the specification if a POSA would understand how to build and modify the device). In any event, whether the claim is adequately supported is a factual issue that is not addressed during claim construction proceedings. *SAS Inst., Inc. v. World Programming Ltd.*, No. 2:18-CV-295-JRG, 2020 WL 569856, at *18-19 (E.D. Tex. Feb. 5, 2020) (rejecting enablement indefiniteness arguments at claim construction).

Defendants also rely on *Power Integrations* and *Techtronic* to support their “teaching away” argument, but both cases are distinguishable. In *Power Integrations*, the Court faulted the PTAB’s use of the “broadest reasonable interpretation,” which resulted in a construction not supported by the specification and claim language. *In re Power Integ’ns, Inc.*, 884 F.3d 1370, 1375-77 (Fed. Cir. 2018). And in *Techtronic*, the Court found that the patent disavowed coverage of wall consoles lacking a passive infrared detector because the entire specification described the invention as having the placement of the detector in the wall console. *Techtronic Indus. Co. v. Int’l Trade Comm’n*, 944 F.3d 901, 908-09 (Fed. Cir. 2019). By contrast, here the ’305 Patent describes an integrated circuit that “can be programmed to output a set of gamma correction reference voltages” to be used in a display. Dkt. 134-2 at 2:16-19. It further teaches that the “voltage value is stored in non-volatile, programmable memory,” which the Court found may store either analog or digital values. *Id.* at 2:19-22.

B. “connected to” and “coupled to”

As discussed in the Opening Brief, these terms should be accorded their plain and ordinary meaning because the terms are used in a straightforward manner. *See* Dkt. 134 at 8-9. Defendants

did not identify intrinsic support for their proposed construction and instead only point to *other cases* with *other facts* that they believe should be applied to limit the scope of the terms of the '305 Patent. *See* Dkt. 141 at 6-9. Defendants' omission of any intrinsic support stands in stark contrast to the term's straightforward use in the claims. Dkt. 134 at 8-9. Further, claim 8's recitation of "an output pin **connected to** an output **through** a second multiplexer" directly contradicts Defendants' construction. Dkt. 134-2 at Claim 8 (emphasis added). Defendants' reliance on *Arigna* is misplaced. *See* Dkt. 141 at 9. In *Arigna*, the Court discredited the statement—"a control voltage [that] is **connected to** the positive electrode . . . **via** a resistor"—because it was found only in the prosecution history and not in the claim language. *See Arigna Tech. Ltd. v. Nissan Motor Co.*, No. 2:22-CV-126, 2022 WL 1449701, at *4-5 (E.D. Tex. May 9, 2022) (emphasis added). By contrast, the differentiating language in the '305 Patent is found in the language of the claim itself and must therefore be afforded deference because the "[d]ifferences among claims can [] be a useful guide in understanding the meaning of particular claim terms." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005).

Defendants' other assertions only serve to muddy the jury's understanding of the term. For example, Phenix does not argue that the terms should be given any construction. *See* Dkt. 141 at 9. Rather, Phenix believes the jury would be best served by the terms being given their plain and ordinary meaning due to their straightforward use in the claim language. Dkt. 134 at 8.

C. "multiplexer"

Defendant AUO fails to provide any intrinsic support for adding a negative limitation—"excluding a I2C serial bus"—to the Court's prior construction of the term "multiplexer" and the Court should reject AUO's proposal. *See* Dkt. 141 at 10-11. AUO seeks to limit the term's scope and exclude an I2C serial bus from the term's definition without any explanation. Dkt. 141 at 10.

For this reason, AUO's construction should be rejected outright. Further, defining the term based on what it is *not*, would only serve to confuse the jury. Defendants do not dispute that the Court's "existing construction [] captures the inherent function of selection," thus conceding that Phenix's proposal to clarify the Court's prior construction³ is proper. *Id.* As such, Phenix's proposed addition will assist the jury in understanding that the "inherent" meaning of "multiplexer."⁴

D. "bank(s)"

There is no support in the intrinsic record for AUO's request to limit the non-volatile storage cells to those organized into an "n by m matrix format." AUO's assertion that "claim 1 was allowed only when the examiner added 'wherein said non-volatile storage cells are organized into two or more banks of cells,'" mischaracterizes the prosecution history. *See* Dkt. 141 at 11-12, Dkt. 141-11. Claim 1 was amended to include the allowable subject matter from original dependent claim 6. *Compare* Ex. A at 3 and 9 *with* Dkt. 141-11 at AUO_0000590. And since dependent claim 6 was originally allowed by the examiner, no narrowing statements were made during prosecution. As such, nothing in the intrinsic record supports AUO's assertion that "bank(s)" be "arranged in n by m matrix format." AUO thus only offers extrinsic evidence to support its proposed construction. However, reliance on such extrinsic evidence is not appropriate to support claim construction unless it is first shown the claim term is ambiguous, which is not the case here. *See Philips*, 415 F.3d at 1318 ("[W]hile extrinsic evidence can shed useful light on the relevant art, we have explained that it is less significant than the intrinsic record in determining the legally operative

³ As stated in Phenix's Opening Brief, Phenix's addition of the term "selectively" to the Court's prior construction is required in light of recent challenges to the claim scope in one of Defendants' (now denied) Petition for *inter partes* review. *See* Dkt. 134 at 10-11.

⁴ Dr. Min's misapplication of "selectively" is of no moment as neither Innolux's nor Phenix's experts struggled to understand the term's purpose and the term's plain meaning.

meaning of claim language.”). More importantly, AUO’s contention that the term is ambiguous is directly contradicted by Innolux’s position that the term does not require construction.

E. “external source for the high voltage programming means”

Innolux’s proposed construction does not clarify the term “external”—which is already readily understandable by a jury—but instead seeks to limit the term by restricting it to be “not inside *or a part of*” an integrated circuit. *See* Dkt. 141 at 13-14 (emphasis added). And the intrinsic record does not support Innolux’s position. For example, Innolux’s citation to the specification’s description that “V_{pp} is supplied from an external source, an IC or other means” mirrors the use of the term in the claim language but does not contain any disclaimer that “external” cannot be a “part of” the integrated circuit. *See* Dkt. 134-2 at 6:30-32. Each of Innolux’s additional citations fails for the same reason. *See* Dkt. 141 at 14 (citing Dkt. 134-2 at 6:25-30, FIGS. 4A-4B). Further, Innolux’s proposal would lead to additional disputes and jury confusion about instances where a voltage source may be “not inside” of the integrated circuit, but still “a part of” its overall structure. Innolux also feigns confusion of “what the ‘source for the high voltage programming means’ is external to.” Dkt. 141 at 14. But when read in its entirety, the claim language is clear: “[t]he integrated circuit of claim 1 wherein said circuits for programming require an external source for the high voltage programming means.” Dkt. 134-2 at Claim 5. The jury will understand the claim’s straightforward language—including the term “external”—and Innolux’s narrow interpretation of the term only introduces unwarranted confusion to the claim.

II. THE ’788 PATENT

A. “Gamma reference control capability”

Defendants’ assertion that this term is indefinite is unfounded. This term is clear to a POSA and does not require construction. Dkt. 134 at 15-18. Moreover, Defendants have not overcome the presumption that “gamma reference control capability” is not a means-plus-function limitation

because it does not use the term “means.” See *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015). Instead, Defendants argue that terms that do not recite “means” must be construed as means-plus-function simply because they contain functional language. Dkt. 141 at 15-18. That would turn *Williamson* on its head. Indeed, the Federal Circuit has held that “the mere fact that the disputed limitations incorporate functional language does not automatically convert the words into means for performing such functions.” *Zeroclick, LLC v. Apple Inc.*, 891 F.3d 1003, 1008 (Fed. Cir. 2018); see also Dkt. 134-4 at 11 (“But § 112 ¶ 6 does not apply to all functional claim language.”).

Without any support, Defendants assert that “the term ‘capability’ is a nonce word like ‘module’ and ‘mechanism.’” Dkt. 141 at 16. In *Williamson*, the term “module” was found to be a well-known nonce word that can operate as a substitute for “means.” *Williamson*, 792 F.3d at 1350. Unlike “module,” “gamma reference control capability” is not a means-plus-function term and the surrounding claim language recites sufficiently definite structure. See *Mad Dogg Athletics, Inc. v. Peloton Interactive, Inc.*, No. 2:20-CV-00382-JRG, 2021 WL 3200994, at *13-14 (E.D. Tex. July 28, 2021) (finding that “a mechanism that provides resistance to the flywheel and that is manually adjustable by the rider to vary the pedaling resistance” was not a means-plus-function term). The claimed method recites “*providing said display with gamma reference control capability* which is electrically reprogrammable and non-volatile.” The noun that is being described to have a “gamma reference control capability” is the “display.” In this respect, the term read in context is “reasonably used as a name to denote a class of structures and therefore sufficiently . . . maintain[s] the presumption against § 112, ¶ 6.” See also *Personalized Media Commc’ns, LLC v. Int’l Trade Comm’n*, 161 F.3d 696, 705 (Fed. Cir. 1998) (finding a functional constraint to “further narrows the scope of those structures covered by the claim and makes the term more definite”). Thus, the

term should be construed to have its plain and ordinary meaning because Defendants have not overcome the presumption that the term is not a means-plus-function term.

B. “control circuit”

This term is sufficiently clear and does not require construction. Defendants conveniently omit the fact that *the Court* has already construed other “circuit” terms in the ’305 Patent and found them to be sufficiently definite. Dkt. 134-4 at 27-35 (finding “circuits for programming” in the ’305 Patent not indefinite). Defendants’ position that the term “circuit” can only “*sometimes*” connote structure (Dkt. 141 at 18) is disingenuous. Dkt. 134-4 at 32 (“The Federal Circuit has *repeatedly and consistently* found that, in the electronic arts, “circuit” or “circuitry” terms connote sufficient structure to avoid means-plus-function claiming.”) (emphasis added). Tellingly, Defendants go so far as to substituting the term “circuit” with the term “module” that does not appear in the claim language at all. Dkt. 104 at 18.

Defendants’ attempts to distinguish *Apex* and *MIT* notably fail to include express claim language from those cases and merely characterize it as “circuit” being accompanied by “more descriptive, structural modifier or was used in a specification that provided context and examples giving the term structural meaning” Dkt. 141 at 19. The term at issue in *Apex* was “interface circuit,” *Apex Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1374 (Fed. Cir. 2003), and the term at issue in *MIT* was “aesthetic correction circuitry,” *MIT & Elecs. for Imaging, Inc. v. Abacus Software*, 462 F.3d 1344, 1355 (Fed. Cir. 2006). Defendants’ logic fails because in *MIT* even though “aesthetic correction” is, as Defendants’ put it, “purely functional” (Dkt. 141 at 19), the Court found it to be sufficiently definite to not invoke means-plus-function. *MIT*, 462 F.3d at 1356 (citing *Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1320 (Fed. Cir. 2004) (“[W]hen the structure-connoting term ‘circuit’ is coupled with a description of the circuit’s operation,

sufficient structural meaning generally will be conveyed to persons of ordinary skill in the art, and § 112 ¶ 6 presumptively will not apply.”)). As to *Apex*, “interface” is no more “descriptive” or “structural” than “control.” Lastly, Defendants’ reliance on *Ergo Licensing*, which construes “control” in the context of *admittedly means-plus-claims* (e.g., “control means” and “programmable control means”) is misplaced as “control circuit” does not recite “means.” See *Ergo Licensing, LLC v. CareFusion 303, Inc.*, 673 F.3d 1361, 1363 (Fed. Cir. 2012).

C. **“means for executing a predetermined algorithm”/ “means for executing a predetermined algorithm according to a predetermined criteria and data sensed by said at least one sensor / means for executing said predetermined algorithm”**

Defendants argue that these terms require disclosure of a specific source code algorithm. But these limitations are not directed to a specific algorithm that must be performed to optimize the gamma reference voltage levels. Rather, the limitation **“optimizing said gamma reference voltage levels using means for executing a predetermined algorithm** according to a predetermined criteria and data sensed by said at least one sensor” are about a structure that is capable of being programmed to the desired gamma reference voltage level. As discussed in Phenix’s Opening Brief, it is the “means for executing a predetermined algorithm” that allows for the programming circuit’s outputs to the desired (i.e., optimized) gamma reference voltage values. Dkt. 134 at 20-22. As set forth in the specification, the function of executing a predetermined algorithm is performed by the “programming interface”—the construction offered by Phenix. *Id.* In other words, this is a specific structure disclosed in the specification (programming interface) that performs the function of executing a predetermined algorithm according to a predetermined criteria and data sensed by said at least one sensor. Thus, no disclosure of a specific algorithm is required. See *Nevro Corp. v. Bos. Sci. Corp.*, 955 F.3d 35, 42-43 (Fed. Cir. 2020) (finding that no disclosure of specific algorithm when the identified structure is not a general-purpose computer or

processor); *Qualcomm Inc. v. Intel Corp.*, 6 F.4th 1256, 1267 (Fed. Cir. 2021) (“Because power tracker 582 is not a general-purpose computer, it does not trigger the algorithm requirement of *WMS Gaming[, Inc. v. Int’l Game Tech.]*, 184 F.3d 1339, 1342 (Fed. Cir. 1999)].”).⁵

D. “predetermined algorithm”

Defendants argue that the specification does not teach a specific algorithm. As discussed above, because the structure subject to the means-plus-function term is not a general-purpose computer, but a specific programming interface, the specification need not disclose a specific algorithm. *See supra* § II.C. Moreover, Defendants’ reliance on *Kaavo*, is misplaced. The claims at issue in *Kaavo* involved a software application for use in cloud computing, and in the context of the specification, the court concluded that there was no guidance in the specification to allow a POSA to understand the term. *Kaavo Inc. v. Amazon.com Inc.*, No. 14-CV-353-LPS-CJB, 2018 WL 3025040, at *3 (D. Del. June 18, 2018). Unlike in *Kaavo*, the ’788 Patent provides a POSA with guidance as to the meaning and guidance of the term. *See* Dkt. 141-7 at ¶¶ 48-50. For example, the specification provides a POSA with guidance on how to program individual cells by initiating predetermined voltage pulses. Dkt. 134-4 at 6:1-31. The specification also provides exemplary variables such as programming voltage amplitude, rise and fall time of the pulse, and pulse duration that can be considered when programming the integrated circuit but “each of these variables is influenced by design and process parameters of the particular wafer fabrication facility.” *Id.* at 6:32-64. There is no requirement that the specification teach a specific “predetermined algorithm” in order to render this term understandable by a POSA. *See Freeny v.*

⁵ Innolux mischaracterizes the PTAB’s Decision Denying Institution. Institution was denied because the petition was facially deficient under 37 C.F.R. § 42.104(b)(3). Dkt. 141-8 at 23 (“For the foregoing reasons, we determine that the Petition fails to satisfy the requirements of 37 C.F.R. § 42.104(b)(3) [B]ased on this failure *alone*, we decline to institute an inter partes review.”) (emphasis added).

Murphy USA Inc., No. 2:13-CV-791-RSP, 2015 WL 294102, at *25 (E.D. Tex. Jan. 21, 2015) (finding “price change algorithm” definite, reasoning “[w]hile the specification may not provide flow charts or detailed algorithms citing every line of a computer program, the specification provides guidance to this term”).

E. “optimizing said gamma reference voltage levels”

Innolux argues the term is indefinite because it is a term of degree. But the surrounding claim language and specification sufficiently describe what “optimizing said gamma reference voltage levels” means, which is the user’s desired gamma reference voltage level. Dkt. 134 at 25-26. As such, there is no requirement for the specification to provide a measurable criteria, tolerance range, or numerical threshold for the gamma reference voltage levels because such levels can vary depending on the user (e.g., panel manufacturer’s display requirement). *Id.* The case law cited by Innolux is distinguishable because, in those cases, what was being optimized/tuned was truly measured by subjective standards. *See* Dkt. 141 at 27-29. Indeed, even AUO concedes that this term is definite.

F. “gamma reference voltage levels”

Defendants’ argument mirrors its arguments for the ’305 Patent’s “non-volatile storage cell” claim term, seeking to limit the term to only analog memory cells. As this Court has already found and as discussed above and in Phenix’s Opening Brief, the specification (which is shared between the ’788 and ’305 Patents) does not support such limitations. Dkt. 134-4 at 24. Thus, Defendants proposed limitations to only analog embodiments should be rejected. *Id.*

Dated: July 21, 2025

Respectfully submitted,

By: /s/ Eric H. Findlay
Eric H. Findlay
Texas Bar No.: 00789886

Email: efindlay@findlaycraft.com
T: (903) 534-1100
FINDLAY CRAFT, P.C.
7270 Crosswater Avenue, Suite B
Tyler, Texas 75703

Fabio E. Marino (Lead Attorney) *
California Bar No.: 183825
Email: Fabio.Marino@wbd-us.com
T: (408) 720-3436
WOMBLE BOND DICKINSON (US) LLP
1279 Oakmead Parkway
Sunnyvale, CA 94085

Steven M. Levitan *
California Bar No.: 148716
Email: Steve.Levitan@wbd-us.com
T: (408) 341-3045
WOMBLE BOND DICKINSON (US) LLP
50 California Street, Ste. 2750
San Francisco, CA 94111

Rodney Miller *
Texas Bar No.: 24070280
Kate Johnson **
Georgia Bar No.: 110551
WOMBLE BOND DICKINSON (US) LLP
1331 Spring Street, NW, Ste. 1400
Atlanta, GA 30309
T: 404-879-2435
Email: Rodney.Miller@wbd-us.com
Email: Kate.Johnson@wbd-us.com

John H. Wright III **
Illinois Bar No.: 6339840
WOMBLE BOND DICKINSON (US) LLP
555 Fayetteville Street, Ste 1100
Raleigh, NC 27601
T: (919) 755-2155
Email: John.Wright@wbd-us.com

Daniel M. Attaway**
Delaware Bar. No. 5130
WOMBLE BOND DICKINSON (US) LLP
1313 N. Market Street, Ste 1200
Wilmington, DE 19801
T: (302) 252-4320

*Admitted to the Eastern District of Texas

**Admitted Pro Hac Vice

Email: Daniel.Attaway@wbd-us.com

***ATTORNEYS FOR PLAINTIFF
PHENIX LONGHORN LLC***

CERTIFICATE OF SERVICE

I hereby certify that on July 21, 2025, I electronically filed the foregoing document with the Clerk of the Court using the CM/ECF system, which will send notification of such filing *via* electronic mail to all counsel of record.

/s/ Eric H. Findlay
Eric H. Findlay

EXHIBIT A



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors: Orlando, *et al.*

Attorney Docket No.: ALTA-P007

Serial No.: 10/746,333

Group Art Unit: 2629

Filed: 12/23/2003

Examiner: Sheng, Tom V.

Title: GAMMA REFERENCE VOLTAGE GENERATOR

AMENDMENT

The Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In Response to the Office communication of September 6, 2006, please amend the above-identified application as follows:

Amendments to the Drawings begins on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 9 of this paper.

Conclusion begins on page 11 of this paper.

Amendments to the Drawings:

Figure 1 has been amended to add the legend "-- Prior Art --" as suggested by Examiner.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of the claims in the application.

Listing of Claims:

1. (Currently Amended) An integrated circuit for producing voltage signals on a plurality of outputs comprising:

a plurality of non-volatile storage cells;

circuits for programming coupled to a multiplexer for addressing and

programming said storage cells, wherein the addressing is based on a

plurality of inputs;

drivers connected to said storage cells and to the plurality of outputs; and

the plurality of inputs connected to said multiplexer for addressing said storage cells,

wherein said voltage signals are gamma reference voltage signals for
determining actual driving voltages of columns of a display.

2. (Original) The integrated circuit of claim 1 wherein said non-volatile storage cells are reprogrammable.
3. (Withdrawn) The integrated circuit of claim 1 wherein said voltage signals are gamma reference voltage signals for driving columns of a display.
4. (Original) The integrated circuit of claim 1 wherein said non-volatile storage cells hold analog voltage values which are a constant fraction of said gamma reference voltage signals.
5. (Original) The integrated circuit of claim 1 wherein said circuits for programming require an external source for the high voltage programming means.
6. (Original) The integrated circuit of claim 2 wherein said reprogrammable, non-volatile storage cells are organized into one or more banks of cells wherein each bank contains a predetermined gamma reference voltage signal display condition; and means to switch between the banks based on one or more external signals is provided on said integrated circuit.
7. (Original) The integrated circuit of claim 6 wherein said means to switch between banks can have a switching time from about 10 msec to about one second.
8. (Withdrawn) A method of testing a liquid crystal display requiring gamma reference voltage correction comprising the steps:

- a. manufacturing said display with gamma reference control capability
which is electrically reprogrammable and non-volatile;
- b. testing said display with at least one sensor with optical input;
- c. varying gamma reference voltage levels on columns of said display;
- d. using a predetermined algorithm to optimize said gamma reference
voltage levels to criteria sensed by said at least one sensor; and
- e. storing said gamma reference voltage levels in said gamma reference
control capability.

9. (Withdrawn) The method of claim 8 wherein the method is repeated more than once under different ambient or display conditions to generate at least one different set of gamma reference voltage levels stored in said gamma reference control capability.

10. (Withdrawn) A method of adjusting a liquid crystal display with gamma reference voltage correction capability comprising the steps:

- a. manufacturing said display with gamma reference control capability which is
electrically reprogrammable and non-volatile and including at least one
sensor on said display to sense at least one ambient condition and means
to adjust the gamma reference level based on the output of the sensor;
- b. said sensor sensing at least one ambient condition;
- c. said adjusting means selecting a set of gamma reference voltage levels based
on said sensor output and predetermined instructions; and

d. storing said set of gamma reference voltage levels in said electrically

reprogrammable and non-volatile gamma reference control capability.

11. (Withdrawn) A method of programming one or more gamma reference voltage generator integrated circuits attached to a liquid crystal display comprising the steps:

a. selecting one or more columns on said liquid crystal display;

b. applying one or more different gamma voltages to said liquid crystal display columns;

c. storing said applied gamma voltages in reprogrammable, nonvolatile storage cells in said gamma reference voltage generator integrated circuits appropriate to said selected columns;

d. applying one or more optimization criteria algorithms to said selected column optical emission;

e. modifying said one or more different applied gamma voltages based on said one or more optimization criteria algorithms;

f. programming said applied gamma voltages in storage cells in said gamma reference voltage generator integrated circuits appropriate to said selected columns; and

g. repeating steps (d) through (f) until said one or more optimization criteria have been satisfied.

12. (Withdrawn) The method of claim 11 wherein said gamma reference voltage generator integrated circuit requires an external source for the high voltage programming means.
13. (Withdrawn) A liquid crystal display with gamma reference voltage correction capability which is electrically reprogrammable and non-volatile wherein the gamma reference voltage correction capability contains one or more sets of analog voltage levels for optimizing the column voltages under one or more display conditions.
14. (Currently Amended) A method of programming a gamma reference voltage generator integrated circuit comprising the steps:
- a. selecting a predetermined address using all address lines;
 - b. taking ~~the~~ a programming pin high;
 - c. selecting a predetermined group of storage addresses using a predetermined subset of the address lines;
 - d. taking the programming pin high to latch the predetermined group of storage address;
 - e. selecting a predetermined storage cell address using all of the address lines;
 - f. programming ~~said~~ an applied gamma voltage[[s]] in the selected storage cell
by applying incremental voltage pulses from the programming line;
 - g. monitoring the result of said incremental voltage pulses by reading ~~the~~ an output buffer line associated with said selected storage cell; and



h. continuing the incremental voltage pulses from the programming line until the output buffer line associated with said selected storage cell achieves a predetermined value.

15. (Currently Amended) The method of claim 14 wherein said gamma reference voltage generator integrated circuit requires an external source for the supplying high voltage to the programming pin means.

16. (Currently Amended) An integrated circuit for producing voltage signals on a plurality of outputs comprising:

a plurality of non-volatile storage cells;

circuits for programming coupled to a multiplexer for addressing and

programming said storage cells, wherein the addressing is based on a plurality of inputs;

drivers connected to said storage cells and to the plurality of outputs;

the plurality of inputs connected to said multiplexer for addressing said storage cells; and

an output pin connected to an output ~~buffer~~ through a second multiplexer connected to all output ~~buffers~~ wherein said output pin is at an the output buffer voltage level of said output when said integrated circuit is in the programming mode for said output ~~buffer~~.

17. (Original) The integrated circuit of claim 16 wherein said non-volatile storage cells are reprogrammable.

18. (Original) The integrated circuit of claim 16 wherein said voltage signals are gamma reference voltage signals for driving columns of a display.
19. (Original) The integrated circuit of claim 16 wherein said non-volatile storage cells hold analog voltage values which are a constant fraction of said gamma reference voltage signals.
20. (Currently Amended) The integrated circuit of claim 16 wherein said circuits for programming require an external source for ~~the~~ supplying high voltage ~~programming~~ means.
21. (Original) The integrated circuit of claim 17 wherein said reprogrammable, non-volatile storage cells are organized into one or more banks of cells wherein each bank contains a predetermined gamma reference voltage signal display condition; and means to switch between the banks based on one or more external signals is provided on said integrated circuit.
22. (Original) The integrated circuit of claim 21 wherein said means to switch between banks can have a switching time from about 10 msec to about one second.

Remarks/Arguments

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application and indicating that claims 3, 4, 6, 7 and 14-22 contain allowable subject matter.

Claim Amendments

Claim 1 has been amended to include the allowable subject matter of dependent claim 3 and to eliminate the insufficient antecedent issue of claim 4 and the indefinite issue of claim 1.

Claims 3 and 8-13 have been withdrawn from further consideration

Claim 14 has been amended to eliminate the insufficient antecedent basis issue.

Claim 15, 16 and 20 have been amended to eliminate the indefinite issue.

No new matter has been added in any of the aforementioned amendments.

Claim Rejections – 35 USC §112

Claims 4, 12 and 14 are rejected under 35 USC 112, second paragraph, for insufficient antecedent basis. Claim 4 depends from claim 1 which has been amended to eliminate the insufficient antecedent basis issue. Claim 12 has been withdrawn and the rejection is moot. Claim 14 has been amended to eliminate the insufficient antecedent basis issue. Accordingly, the withdrawal of the rejection is respectfully requested.

Claims 1-7, 12 and 16-22 are rejected under 35 USC 112, second paragraph, as being indefinite. Claims 1 and 16 have been amended to eliminate the indefinite issue. Claims 3 and 12 have been withdrawn and the rejection is moot. Claims 2, 4-7 depend, directly or indirectly,

from claim 1. Claims 17-22 depend, directly or indirectly, from claim 16. Accordingly, the withdrawal of the rejection is respectfully requested.

Claim Rejections – 35 USC §102

Claims 1, 2 and 5 are rejected under 35 USC 102(b) as being anticipated by US Patent to Steffensmeier, number 6,373,478 B1 (Steffensmeier). As discussed above, independent claim 1 has been amended to include the allowable subject matter of cancelled dependent claim 3. Thus, amended independent claim 1 is now allowable. Further, dependent claims 2 and 4-7 are also allowable for at least the same reasons as the amended independent claim 1. In view of the above, the aforementioned rejection is now moot. Accordingly, withdrawal of this rejection is respectfully requested.

Claim Rejections – 35 USC §103

Claims 8-13 are rejected under 35 USC 103(a) as being unpatentable. Claims 8-13 have been withdrawn from further consideration therefore the rejection is now moot. Accordingly, withdrawal of this rejection is respectfully requested.

Conclusion

In view of the foregoing, Applicants believe that all of the claims 1, 2, 4-7 and 14-22 are now in condition for allowance and respectfully request the Examiner to issue a timely Notice of Allowance. If for any reason, the Examiner believes any of the claims are not in condition for allowance, he is encouraged to phone the undersigned at (650) 325-4999 so that any remaining issues may be resolved.

The above changes are believed not to add new matter, as support is found in the specification.

Respectfully submitted,



Dennis S. Fernandez, ESQ

Reg. No. 34,160

Date: 12/14/2006

Address: **FERNANDEZ & ASSOCIATES, LLP**
Patent Attorneys

Customer No: **22877**

Phone: (650) 325-4999
Fax: (650) 325-1203
Email: iploft@iploft.com