

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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INNOLUX CORPORATION

Petitioner,

v.

PHENIX LONGHORN LLC,

Patent Owner

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Case No. IPR2025-00044

U.S. Patent No. 7,557,788

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**DECLARATION OF JOSEPH C. MCALEXANDER**

I, Joseph McAlexander, hereby declare as follows:

## **I. INTRODUCTION**

1. I have been retained by Phenix Longhorn LLC (“Phenix” or “Patent Owner”) concerning the above-captioned Petition for *Inter Partes* Review (“IPR”) proceeding involving U.S. Patent No. 7,557,788 (“the ’788 Patent”) (EX1001).

2. I have been asked by Patent Owner to offer opinions regarding the ’788 Patent and Claims 1-3 and 5-6 (the “Challenged Claims”) of the ’788 Patent, as set forth in Innolux Corporation’s (“Innolux” or “Petitioner”) Petition for IPR (“the Petition”).

3. This declaration contains statements of my opinions formed to date and the associated reasoning in support of my opinions. I reserve the right to offer additional opinions based on further review of the materials of this case, or any related proceedings, including opinions and/or testimony of other relevant witness, including other expert witnesses retained in this matter.

4. The statements contained herein and referenced in Phenix’s Patent Owner’s Preliminary Response include my opinions and the bases for my opinions.

5. I am being compensated by Patent Owner at my standard hourly consulting rate of \$625.00 per hour for my time spent on this matter. My compensation is not contingent on the outcome of the IPR or on the substance of my opinions.

6. I have no financial interest in Patent Owner.

## **II. EDUCATION AND WORK HISTORY**

7. I am a Registered Professional Engineer (#79454) and the President of McAlexander Sound, Inc. I hold a Bachelor of Science degree in Electrical Engineering from North Carolina State University. I am a member of a number of professional organizations, including the Institute of Electrical and Electronics Engineers, Inc. (IEEE) and the National Society of Professional Engineers. I have been associated with the integrated circuit and electronics industry as a designer and consultant for the past fifty-two (52) years. I am a named inventor on thirty-one (31) U.S. patents and a number of foreign patents, including patents directed to current sensors, motion sensors, timing and voltage/current control, signal generation and detection, and conditional response circuits.

8. My skills and experience are in areas of circuit design, simulation, layout and analysis, device fabrication and assembly, testing, marketing, control system design and analysis, manufacturing operations, and respective areas of quality, reliability, and defect/failure analysis. Specifically, I have:

- designed and managed development, testing, and evaluation of devices including Dynamic Random Access Memories (DRAMs), Static Random Access Memories (SRAMs), Charge Coupled Devices (CCDs), Shift Registers (SRs), and functional circuits including I/O buffers for address and

data, decoders, clocks, sense amplifiers, fault tolerant, parallel-to-serial data paths for video applications, level shifters, converters, pumps, and logic, as well as wireless communication systems and MEMs applications;

- managed operations including engineering, training, and quality assurance for device fabrication, assembly, test, analysis, and reliability assessment, as well as manufacturing control;
- performed testing, analysis, and control involving use of mechanical calibration and measuring equipment, including optical, scanning e-beam, IR, capacitive, and laser using phase contrast and Fast Fourier Transform (FFT) for High Aspect Ratio Inspection (HARI) applications; audio and video system design and installation;
- taught courses in solid state device physics, integrated circuit design, integrated circuit fabrication, and statistical control;
- provided expert services, investigating both process and design technologies of various devices (microprocessor and controller, memory, programmable logic, card, tag, module, mixed signal, custom, and other), systems (PC and peripheral, computer, control, laser measurement, switch, architecture, software, and other), and consumer products (medical, TV, telephone, VCR, facsimile, copier, lighting, game, pressure sensors, and other); provided nuclear radiation hardness testing services for military and space clients;

managed the design and installation of audio sound and video systems for private and commercial enterprises.

9. I also have experience performing intellectual property valuation and patent portfolio work for companies. For example, when I worked at RMC Management, I conducted numerous patent portfolio valuations and negotiated licenses. Also, I was part of a consultant team with ST Microelectronics that performed patent portfolio valuations and negotiated licenses on behalf of ST Microelectronics.

10. Because of my background, training, and experience, I am qualified to provide the expert opinions within this declaration regarding the technology described and claimed in the '788 Patent. A more detailed record of my professional qualifications is set forth in the attached Appendix A, which is my curriculum vitae, including a list of publications, awards, research grants, and professional activities.

### **III. MATERIALS CONSIDERED**

11. In forming my opinions, I have reviewed the '788 Patent and its prosecution history. I have also reviewed and considered the references cited by the Petitioner, the Petition itself, the Declaration of Dr. R. Jacob Baker (EX1003) submitted with the Petition, and other documents and information as set forth in this declaration and contained in the Table of Exhibits provided with Phenix's Patent Owner's Preliminary Response.

12. In reaching my opinions, I have relied upon my experience in the field and also considered the viewpoint of a person of ordinary skill in the art (“POSITA”) at the time of the earliest claimed priority date of the ’788 Patent. As explained below, I am familiar with the level of a person of ordinary skill in the art regarding the technology at issue as of that time.

#### **IV. BACKGROUND**

##### **A. The ’788 Patent**

13. The ’788 Patent, entitled “Gamma Reference Voltage Generator,” was filed on May 1, 2007, and claims priority to a provisional application filed on June 11, 2003, and names Richard V. Orlando and Trevor A. Blyth as co-inventors. See EX1001 at 1. The ’788 Patent discloses a programmable integrated circuit comprising non-volatile storage cells which can be programmed with gamma reference voltages via a multiplexer and then output to displays, including LCDs. See EX1001, 2:16-38. The claims of the ’788 Patent are directed to methods of programming and calibrating such displays. See EX1001, 7:23 – 8:48.

14. The ’788 Patent has 6 claims, with 3 independent claims (claims 1, 3 and 5). For the sake of clarity, I use the same limitation numbers for the claims of the ’788 Patent as provided by Petitioner. Petition at vi-vii.

15. The ’788 Patent was filed on May 1, 2007 (Appl. No. 11/743,014) and is, therefore, subject to pre-AIA review.

**B. Person of Ordinary Skill in the Art**

16. I am informed and understand that, in the field of patent law, a POSITA is a hypothetical person who is presumed to have known the relevant art at the time of the invention. I understand that the facts that may be considered in determining the level of ordinary skill in the art include: (a) the types of problems encountered in the art; (b) prior art solutions to those problems; (c) the rapidity with which innovations are made; (d) the sophistication of the technology at issue; and (e) the educational level of active workers in the field.

17. I am informed that the “time of invention” I should use for the purpose of providing my opinions in this declaration is June 11, 2003, the date of the filing of Provisional Patent Application No. 60/477,680 (the “’680 Provisional Application”).

18. In forming my opinions expressed in this declaration, I relied upon my knowledge, skill, experience, training, and education in the relevant field of the art, and have considered the viewpoint of a POSITA at the time of invention. My opinions, therefore, represent the view of a POSITA as of June 11, 2003.

19. I am informed that Petitioner’s definition of a POSITA requires “at least a bachelor of science degree in physics, electrical engineering, or the equivalent thereof and three (3) years of experience in circuit design or display technologies.” Petition at 12. Additionally, I am informed that Petitioner’s definition of a POSITA

also requires a “knowledge of integrated circuits, gamma correction, and storage of gamma correction voltage values within memory, and would have understood how to search available literature for relevant publications.” *Id.*

20. For the sole purpose of addressing the Petition, I agree to Petitioner’s proposed definition of a POSITA and further agree to apply the same definition. I may, however, offer additional or different definitions of a POSITA in other related matters based on review of the materials in those cases.

21. It is my opinion that I qualify as a POSITA under Petitioner’s proposed definition.

**C. Priority Date**

22. I understand that, for purposes of this *inter partes* review, Petitioner assumes that the ’788 Patent is entitled to a priority date of June 11, 2003 because the ’788 Patent claims priority to the ’680 Provisional. Petition at 10-11. I agree.

**D. The Examiner’s Review**

23. I understand that the application resulting in the ’788 Patent (Patent Application No. 11/743,014) was filed on May 1, 2007. I further understand that, on July 22, 2008, the Examiner entered a Non-Final Office Action rejecting all claims under 35 U.S.C. § 103. EX1002, 92-98.

24. Notably, I understand that the two prior art references relied on by the Examiner in rejecting the claims are the subject of this Petition. Specifically, Claims

1 and 3-5 were rejected under 35 U.S.C. § 103 as being unpatentable over Liaw (*id.* at 94-96), while Claims 2 and 6 were rejected under 35 U.S.C. § 103 as being unpatentable over Liaw in view of Matsui (*id.* at 97).

25. I understand that, on October 22, 2008, Applicant filed a response to the Non-Final Rejection. *Id.* at 69-80. Claims 1 and 4 were amended to correct non-substantive errors; Claims 2, 3, and 6 were left unchanged; and Claim 5 was amended to delete “wherein said means for executing said predetermined algorithm is not required subsequent to the calibrating step.” *Id.* at 70-73. With respect to Claim 1, Applicant demonstrated that Liaw failed to disclose the preamble— “[a] method of calibrating a liquid crystal display to a desired gamma curve to compensate for panel to panel manufacturing.” *Id.* at 75. Further, Applicant demonstrated that Liaw “does not disclose providing gamma reference control capability ‘which is electrically reprogrammable and non-volatile.’” *Id.* As stated by Applicant, “automatically programmed does not follow from electrically reprogrammable” as “[r]e-programmable indicates that the gamma reference control parameters can be changed to suit a changed requirement.” *Id.*

26. I understand that, after correcting non-substantive errors with the drawings, a Notice of Allowance was entered on March 5, 2009 (*id.* at 48-50), and the ’788 Patent issued on July 7, 2009 (*id.* at 39).

**E. Prior IPR Proceeding**

27. I understand that a family member of the '788 Patent, U.S. Patent No. 7,233,305 (the "'305 Patent), has previously been the subject to an earlier filed IPR in *Wistron Corporation v. Phenix Longhorn, LLC*, IPR2018-01255 ("the Wistron petition"). *Wistron Corporation v. Phenix Longhorn*, IPR2018-01255, Paper No. 14, at 6 (the "Previous Institution Decision").

28. I understand that the Board declined to institute an *inter partes* review based on the Wistron Petition. *See* EX2002. I further understand that the Wistron Petition relied on one reference cited by Petitioner in this Petition (*i.e.*, the Da Costa reference). *See id.* I understand that, as part of the Board's denial, it found Da Costa insufficient to render the '788 Patent's parent—the '305 Patent—obvious in a prior *inter partes* review. *See* EX2003.

**F. Alleged Prior Art**

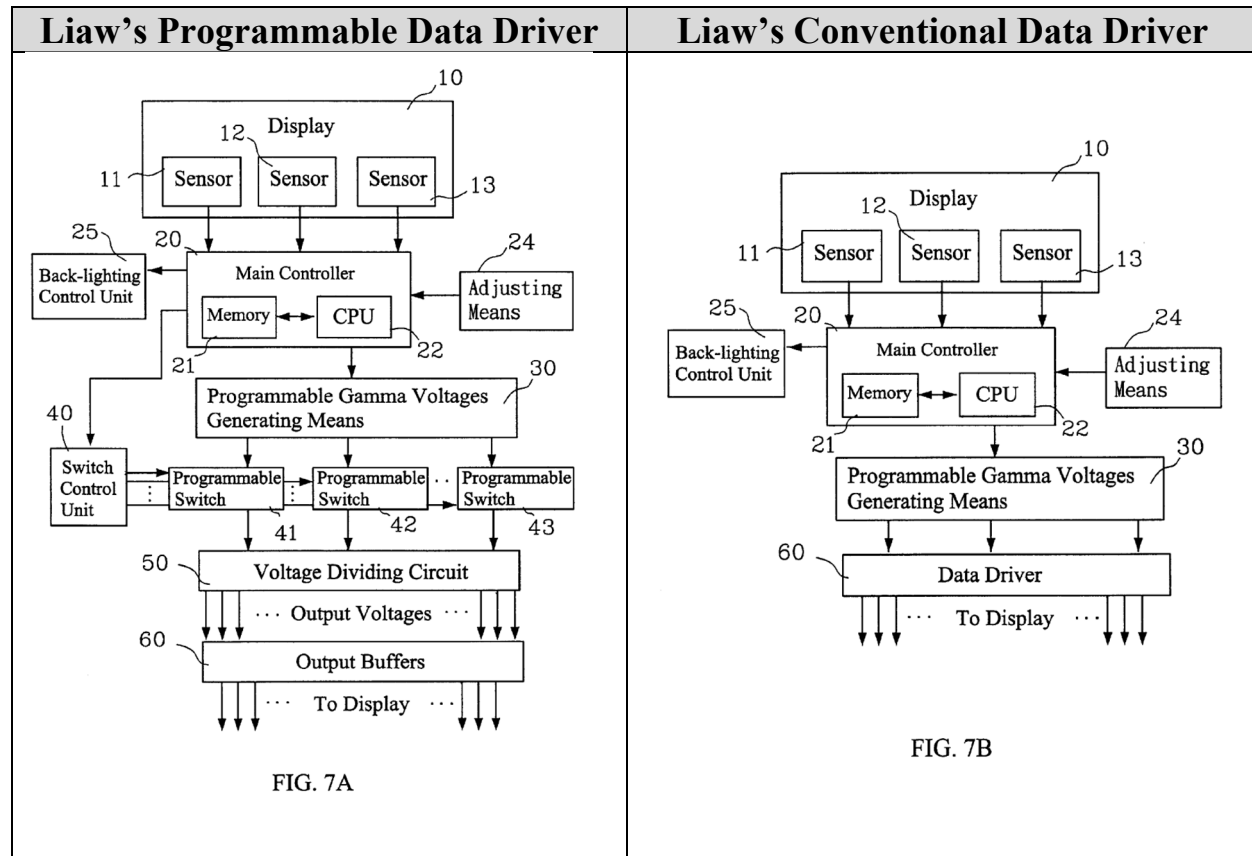
29. Petitioner's cited prior art consists of four alleged prior art references, arranged in various suggested combinations: U.S. Patent 6,593,934 ("Liaw"); U.S. Patent 6,271,825 ("Greene"); U.S. Patent 6,100,879 ("Da Costa"); and U.S. Patent 5,754,150 ("Matsui").

**1. Liaw Summary**

30. It is my understanding that Liaw was already overcome during prosecution of the '788 Patent. EX1002, pp.74-79. Liaw describes "an automatic

Gamma correction system in which a novel display driving circuitry is designed with a digital/analog converter (DAC), wherein the Gamma reference voltages as well as the corresponding gray-scale values are adjustable.” EX1005, Abstract. Liaw describes a dynamic or “automatic” system for gamma correction that uses programmable switches to adjust both grey-scale and gamma voltages to adjust “display parameters” as needed during operation. Liaw would not be consulted or relevant for the purposes of calibrating gamma voltages in the manufacturing process, as described in the ’788 Patent.

31. For example, Liaw describes “an automatic Gamma parameter correction system” with specific focus on its “*novel data driver* [] designed with a digital/analog converter (DAC).” EX1005, 2:27-32; FIG. 7A (emphasis added). Liaw additionally describes the use of a “conventional data driver” as part of its “Gamma correction system.” *Id.* at FIG. 7B.



EX1005, FIGS. 7A, 7B.

32. Liaw's "programmable Gamma Voltage generating means 30" is composed of a digital-to-analog converter (DAC) connected to a plurality of buffers, so as to output the Gamma reference voltages by adjusting the received destination function of the Gamma voltage output by the main controller 20." *Id.* at 7:1-5. As demonstrated in FIG. 11:

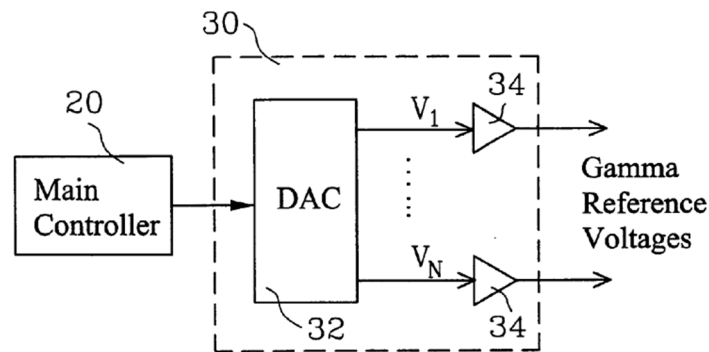


FIG. 11

EX1005, FIG. 11.

33. Outputs from “programmable Gamma Voltage generating means 30” are sent to “programmable switches 41, 42 and 43” which are also connected to a “switch control unit 40.” *Id.* at 7:6-13.

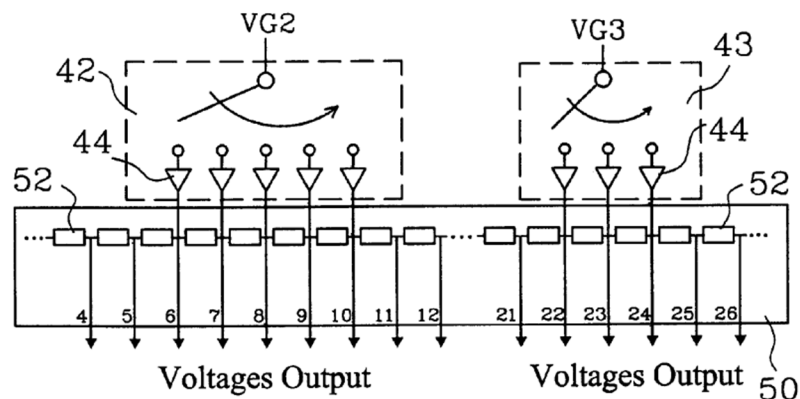


FIG. 13

EX1005, FIG. 13.

34. Liaw’s “programmable switches” further include a “voltage dividing circuit 50 having a series divided voltage points” which “applies the Gamma

reference voltages to the corresponding divided voltage points according to the corresponding gray-scale signals delivered from the central process unit (CPU) 22.”

*Id.* at 7:18-24. Liaw’s CPU 22 may adjust the Gamma reference voltages and the corresponding gray-scale signals via the voltage dividing circuit 50’s digital-to-analog converter (DAC). *Id.* at 7:18-28.

35. Liaw also describes a “main controller 20, connected to the sensors 11, 12 and 13” where “[t]he sensors 11, 12 and 13 can be light sensors, temperature sensors, pixel voltage sensors, or a pixel charging/discharging current sensors used for measuring at least one parameter.” *Id.* at 8:49-61. The “main controller 20” of Liaw “serve[s] as a main control circuit for the system, and further including a central process unit 22 and a memory 21 for parameter calculation and data storage.” *Id.* Liaw further describes a “Gamma parameter correction method,” as set forth in FIG. 14:

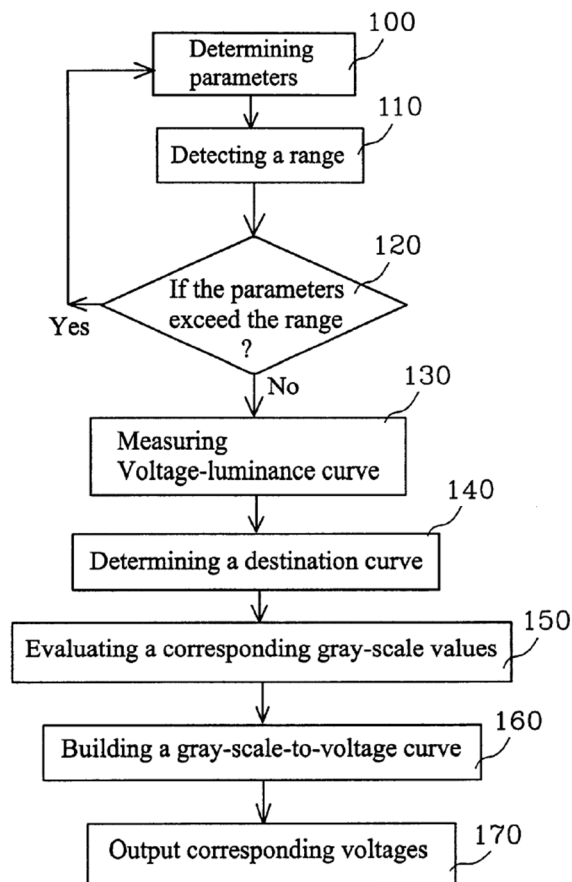


FIG. 14

EX1005, FIG. 14.

36. Liaw's "Gamma parameter correction method" serves to determine a "gray-scale-to-voltage transfer curve" "according to the voltage-to-luminance curve of the display" such that the "gray-scale values can be optimized by using computer software and then loaded into the display circuit." *Id.* at 10:10:4-22. Thereafter, Liaw describes "interconnecting the Gamma reference voltages and the corresponding gray-scale values by using the programmable switches 41, 42, 43 and the switch control unit 40, so as to build up a gray-scale-to-voltage curve." *Id.* 10:23-

27. Finally, Liaw describes “outputting a corresponding voltage to the series of output buffers 60 by using the voltage dividing circuit 50 according to the input gray-scale value of the image.” *Id.* at 10:33-35.

## 2. Greene Summary

37. Greene describes “methods and apparatus for the correction of spatial non-uniformities in brightness that arise from materials, manufacturing, operational and lighting parameter variations in electronic color, flat-panel displays,” including an “[a]pparatus for an automatic self-calibrating function.” EX1006, Abstract. Specifically, Greene describes “different methods for keeping the resultant luminance substantially constant using active control means.” *Id.* at 8:45-49. Greene discloses “[f]our different methods for controlling luminance” based on the measurement and modification of “Weber’s Fraction” which is “[t]he ability of the human eye to discriminate between two luminances.” *Id.* at 7:52-53. Greene’s four methods include: (i) “uniform color coordinates and uniform primary luminances,” (ii) “uniform color coordinates and non-uniform primary luminances,” (iii) “uniform primary luminances and non-uniform color coordinates,” and (iv) “non-uniform color coordinates and non-uniform primary luminances.” *Id.*

38. For Greene’s second method, Greene describes a system wherein luminance can be measured for each pixel and the associated luminance values

stored in memory. Subsequently these luminance values can be normalized via Greene's cited equation (5):

$$R' = RL_R / L_R'$$

$$G' = GL_G / L_G'$$

$$B' = BL_B / L_B'$$

EX1006, (Equation 5) 9:50-57.

39. Greene additionally describes a “self-calibrating display” embodiment of its second method, wherein “[t]he brightness measurements and parameter computations can be made automatically under the control of a built-in controller periodically, or as initiated by the user, each having color coordinates.” *Id.* at 11:26-29. As part of this referred to “self-calibrating display” Greene refers to a “photodetector 72” that is “movably mounted” to an x-y arm assembly to provide the “measured data” for normalization using Equation (5). *Id.* at 11:30-36.

### 3. Da Costa Summary

40. I understand that in denying the Wistron Petition for the '305 Patent—the parent patent of the '788 Patent—the Board extensively reviewed the Da Costa reference and described it as generally discussing “[a] smart controller chip for controlling an active matrix display” wherein “[t]he combination of D/A [digital/analog] analog circuitry and standard digital logic makes the controller uniquely suited for addressing all the panel control needs both for the normal digital

functions but also for control of the analog aspects of the panel, like display gamma.”

EX2002, pp.25-32 (citing EX1007, Abstract, 2:37-41).

41. Da Costa’s preferred “display control system 200” is provided in Figure 2:

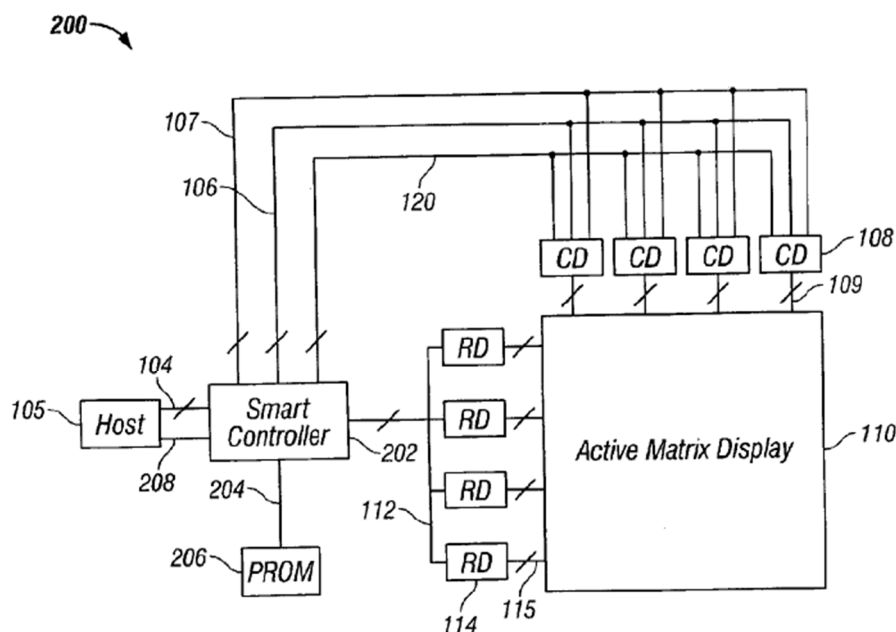


FIG. 2

EX1007, FIG. 2.

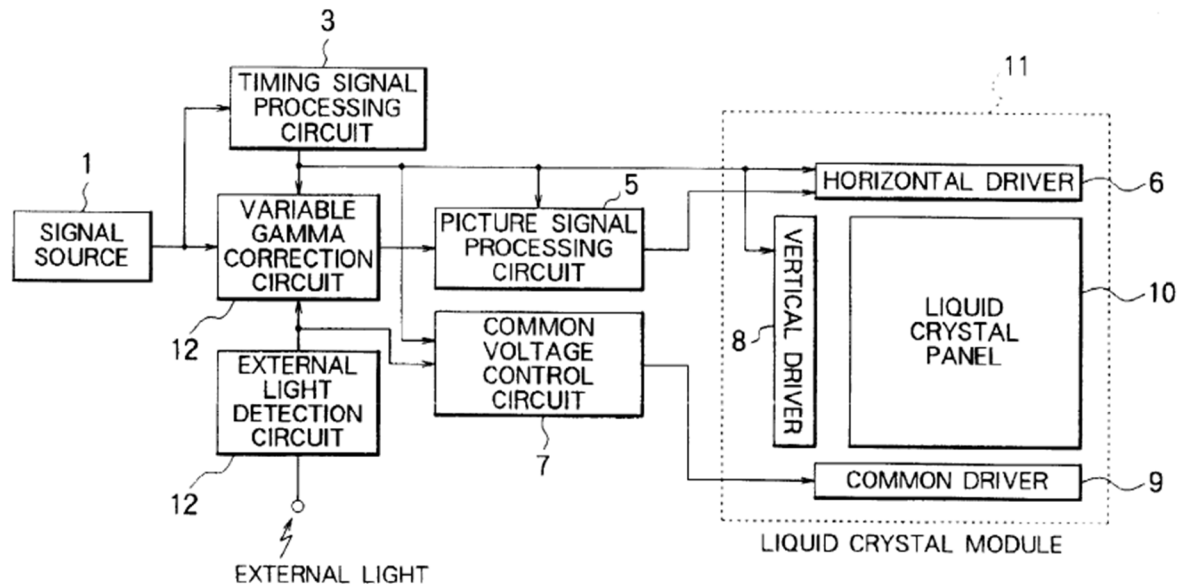
42. The display control system 200 “drives relatively high-power programmable analog reference levels via lines 120 to column drivers 108 without using the external reference circuitry 116 which is required in the conventional system 100.” *Id.* at 4:50-54. Da Costa describes that its smart controller 202 is “programmed initially via the first serial bus 204 by the external PROM 206” using

“[a] typical industry standard serial bus and protocol.” *Id.* at 4:57-63. Da Costa also describes the use of a “second serial bus 208” which “is used to communicate information between the first smart controller 202 and the host system 105” and thereby “dynamically modify the analog reference levels and the column and row control signals output by the first smart controller 202” “to adjust operating characteristics of the display to suit particular applications and compensate for environmental changes.” *Id.* at 5:1-12.

#### **4. Matsui Summary**

43. It is my understanding that Matsui was already overcome during prosecution of the '788 Patent. EX1002, pp.79. Matsui describes a “luminance adjusting apparatus” to “narrow the output dynamic range of a picture signal processing section and decreasing the cost of a horizontal driver.” EX1008, Abstract. Specifically, Matsui describes a “luminance adjusting apparatus” which “comprises a variable gamma correction circuit 12 for synchronizing an inflection point of a gamma correction curve with a common voltage generated by the common voltage control circuit 7.” *Id.* at 10:7-10. Matsui also describes the use of “an external light detection circuit 13 as shown in FIG. 4 and constituted so as to change *inflection points* [sic] of the variable gamma correction circuit 12 and common voltages.” *Id.* at 10:54-60 (emphasis added).

FIG. 4



EX1008, FIG. 4.

### 5. Lack of a Motivation to Combine

44. It is my opinion that a POSITA would not have been motivated to combine any of the four alleged prior art references (Liaw, Greene, Da Costa, and Matsui) because each of the references are directed to different technical objectives.

45. The '788 Patent teaches the use of reprogrammable and non-volatile storage utilized for the purposes of calibrating gamma voltages in the manufacturing process, as described in the '788 Patent. EX1001, 2:23-28 ("The device incorporates a programming interface to allow the programming of the buffer outputs to the desired values during manufacturing and test of the panel. Multiple sets of gamma

values can be programmed and stored to provide optimized gamma correction curves for different user or application requirements.”).

46. It is my opinion that each of Petitioner’s cited references are directed to dynamically altering calibration of displays and therefore would not have been consulted by a POSITA for the purposes of calibrating gamma voltages in the process of manufacturing the displays, as described in the ’788 Patent. EX1001, 2:23-28.

47. Liaw is directed to “an automatic Gamma parameter correction system” wherein the automatic correction system “provides a greater degree of freedom for the realization of the correction of Gamma parameters.” EX1005, 2:27-28; 12:9-15.

48. Greene is directed to an “[a]pparatus for an automatic self-calibrating function.” EX1006, Abstract. Specifically, Greene describes a “self-calibrating display” wherein “[t]he brightness measurements and parameter computations can be made automatically under the control of a built-in controller periodically, or as initiated by the user, each having color coordinates.” *Id.* at 11:26-29.

49. Da Costa describes a “smart controller chip for controlling an active matrix display” wherein the chip may “dynamically modify the analog reference levels and the column and row control signals output by the first smart controller 202” “to adjust operating characteristics of the display to suit particular applications and compensate for environmental changes.” EX1007 at 5:1-12.

50. Matsui describes that “[i]n the case of the luminance adjusting apparatus of the present invention, external light is detected by adjustment means, inflection points of a gamma correction curve and common electrode voltage are synchronously changed in accordance with the detection result and thereby luminance adjustment is performed.” “Therefore, it is possible to automatically perform luminance adjustment correspondingly to changes of the peripheral condition used.” EX1008, 7:31-39.

51. It is my opinion, therefore, that a POSITA would not have been motivated to consult the teachings of *automatic* or *dynamically* adjusting circuitry because such references were unlikely to—and in the cited instances, do not—contain the reprogrammable and non-volatile storage required to implement the methods of the ’788 Patent.

## V. LEGAL PRINCIPLES

52. I am informed and understand that a patent claim is invalid as obvious under 35 U.S.C. § 103 if the differences between the claimed invention and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art. I am informed and understand that a claimed invention composed of several elements is not proven obvious merely by demonstrating that each of its elements was known independently in the prior art. A patent challenger must identify a reason that would

have prompted a person of ordinary skill in the relevant field to combine the elements. In determining whether a claimed invention is obvious, each claim must be considered separately, and hindsight may not be used, but only what was known at the time of the invention.

53. I am informed and understand that in making a determination whether a given patent claim is obvious, one must take into account (1) the scope and content of the prior art; (2) the differences between the prior art and the claims; (3) the level of ordinary skill in the art; and (4) any objective evidence (called “secondary considerations”) that may have existed at the time of the invention and afterwards that shed light on the nonobviousness of the claimed invention, including: (a) whether the invention was commercially successful as a result of the merits of the claimed invention; (b) whether the invention satisfied a long-felt need; (c) whether others had tried and failed to make the invention; (d) whether others copied the invention; (e) whether the invention achieve unexpected results; (f) whether others in the field praised the invention; among others.

## **VI. CLAIM CONSTRUCTION**

### **A. Proposed Claim Constructions**

54. I understand that claim terms are typically given their ordinary and customary meaning, as would have been understood by a POSITA at the time of invention. I also understand that the claim term may be construed in view of the

language of the claims, the patent's specification, the patent's prosecution history, and the knowledge of a POSITA at the time of invention. I have applied this understanding to my analysis and in developing my opinions.

55. For the purpose of aiding the Board's review, I provide herein descriptions of how a POSITA would interpret certain claim terms.

**1. "operating means for executing one or more optimization criteria algorithms based on optical emission corresponding to said selected columns"**

56. I understand that Petitioner proposes that the term "operating means for executing one or more optimization criteria algorithms based on optical emission corresponding to said selected columns" in claim limitation 3[4] to mean "programming interface which executes an optimization algorithm." Petition at 14.

57. I am informed that Patent Owner does not take a position on the construction of this term. For the purpose of my review applied solely for the present Petition, I have applied Petitioner's proposed construction of the term, but take no position as to its accuracy. I do note that the references cited in Petitioner's Grounds do not disclose any "programming interface which executes an optimization algorithm."

## **VII. PETITIONER'S ASSERTED GROUNDS**

58. I understand that Petitioner provided the following Grounds for the Board's review:

| Ground | Claims       | References                                                                  |
|--------|--------------|-----------------------------------------------------------------------------|
| 1      | 1–3, and 5-6 | Liaw (EX1005) in view of Greene (EX1006)                                    |
| 2      | 1–3, and 5-6 | Greene (EX1006) in view of Da Costa (EX1007)                                |
| 3      | 1–2, and 5-6 | Liaw (EX1005) in view of Greene (EX1006) in further view of Matsui (EX1008) |
| 4      | 1–2, and 5-6 | Liaw (EX1005) in view of Da Costa (EX1007)                                  |

**A. Patent Owner’s Demonstration that All Grounds Fail to Identify a Construction for An Independent Claim Term**

59. Petitioner did not provide a proposed construction for the term “means for executing a predetermined algorithm according to a predetermined criteria and data sensed by said at least one sensor,” contained in independent claims 1 and 5 of the ’788 Patent. Solely for the purpose of addressing this Petition, I interpreted the claim term consistent with the disclosures of the claim language, specification, and prosecution history.

**B. GROUND 1 – Liaw (EX1005) in view of Greene (EX1006)**

60. Ground 1 of the Petition relies upon the combination of Liaw and Greene. It is my opinion that Petitioner’s alleged combination of Greene and Liaw are deficient and do not render the Challenged Claims obvious.

61. I understand that Liaw was already before the Examiner and was the basis of a rejection that was subsequently overcome during prosecution. EX1002,

74-79, 92-98. It is my opinion, therefore, that for the same reasons that Liaw failed to teach the limitations of the Challenged Claims during prosecution, it likewise cannot provide a basis for institution in this Petition.

62. It is also my opinion that Petitioner fails to identify how Greene would cure the established deficiencies of Liaw, and therefore this Ground is deficient.

**1. A POSITA Would Not Have Looked to Liaw and Greene and Would Likewise Not Combine Them.**

63. It is my opinion that Liaw and Greene both teach away from the teachings of the '788 Patent and are further incompatible with one another. As described in detail above, both references are directed to automatic and synchronous gamma correction. *See supra*, at Section IV.F.5. A POSITA, therefore, would not have looked to Liaw or Greene to implement the reprogrammable and non-volatile functionality of the teachings in the '788 Patent.

64. The Petition omits any discussion of how or why a POSITA would have been motivated to incorporate any alleged reprogrammable or non-volatile functionality from Greene into Liaw. *See* Petition at 25-27. As the Applicant demonstrated, Liaw does not contain any reprogrammable or non-volatile functionality, as required by the claims. *See* EX1002, pp.74-79. Petitioner's failure to demonstrate a motivation to combine any such functionality in Greene with the system in Liaw renders Ground 1 deficient.

65. Further, a POSITA would not have combined Liaw and Greene because their dynamic and automation calibration functions would be redundant and would not provide any added benefit to their descriptions. It is my opinion that Petitioner's assertions otherwise seek to impermissibly read features of dynamic gamma correction onto the '788 Patent's reprogrammable and non-volatile system.

**2. Liaw and Greene do not disclose the “reprogrammable and non-volatile” integrated circuit requirements as recited by Independent Claim Limitations 1[1], 3[3], and 5[1].**

66. It is my opinion that Petitioner fails to demonstrate that Liaw and Greene, if combined, would disclose each of the challenged claims.

67. Liaw does not disclose a method for calibration wherein the gamma reference control capability is “reprogrammable and non-volatile” as required by each of the independent claims. EX1001, Claims 1[1], 3[3], and 5[1]. Liaw's omission of this claim limitation was raised—and not disputed by the Examiner—in prosecution of the '788 Patent. EX1002, pp.74-79. Petitioner concedes that “Liaw does not explicitly state that storage is non-volatile.” Petition at 28.

68. Greene does not cure this deficiency as its lone mention of “non-volatile random-access memory (NV-RAM)” is not for the programming and storage of gamma voltage information, as the independent claims of the '788 Patent require, but instead for the measured luminance information output by the pixels. EX1006, 10:14-18. Greene recites the use of “non-volatile random-access memory (NV-

RAM)” to store “[l]uminance” that is “measured, after the display is fabricated, for each pixel.” *Id.* The fundamental difference between Greene’s “NV-RAM” and the “reprogrammable and non-volatile” memory of the ’788 Patent is consistent with the objectives of each reference. Greene seeks to use the stored information to calculate “luminance ratios” which are then processed through a “scaler/adder 56 to normalize the color coordinates according to Equations (5).” *Id.* at 10:59-62.

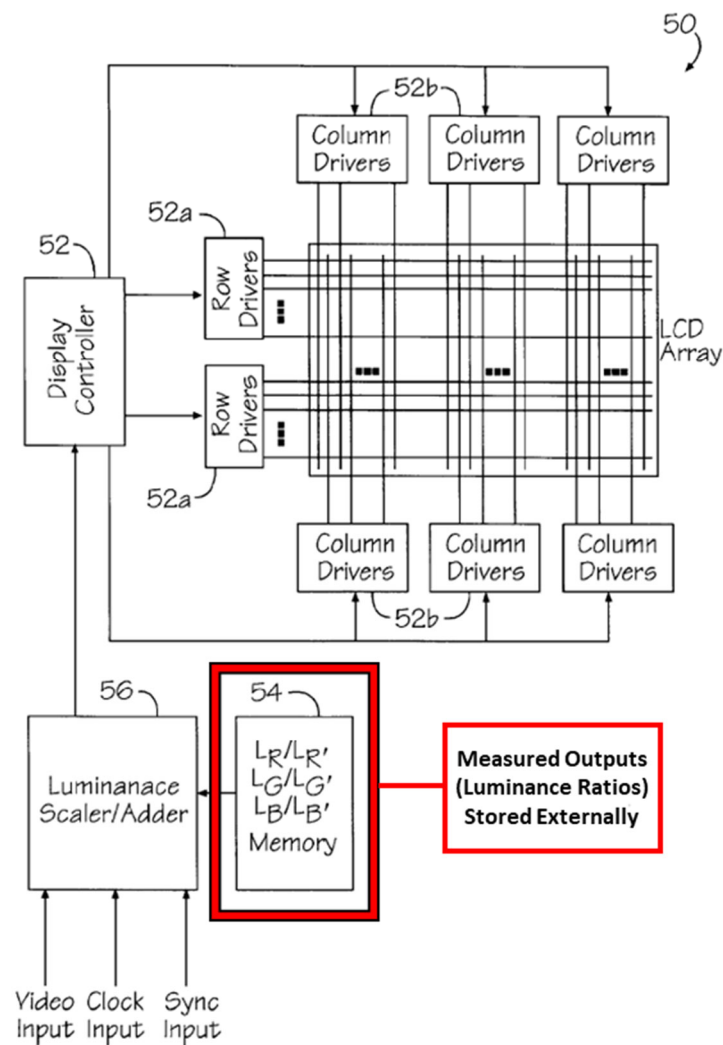


Figure 4

EX1007, FIG. 4 (annotated).

69. Greene’s “luminance ratios are stored in a central random access memory 54” and thereby store these ratios—and not any gamma reference voltages—apart from the controller circuitry. EX1006, 10:53-54. Greene, therefore, describes that the measured *outputs* of the display may be stored in its “NV-RAM,” but fails to recite any “reprogrammable and non-volatile” memory for the *inputs* of any “gamma reference control capability” as the claims require.

70. It is my opinion that Petitioner has further failed to address why or how Liaw would utilize any such “reprogrammable and non-volatile” memory, as it would be contrary to the objectives that Liaw seeks to fix. *See* Petition at 28-29. Specifically, Liaw is directed to dynamic, real-time gamma correction. EX1005, 2:27-28; 12:9-15. Greene also describes a dynamic gamma correction method, where the gamma correction “can be made automatically under the control of a built-in controller periodically, or as initiated by the user” after the device is powered on. EX1006, 11:25-29. By contrast, the ’788 Patent’s reprogrammable and non-volatile memory is useful in situations where the gamma voltages need to be stored even when the power is removed from the device entirely, thereby not requiring any additional calculations every time a panel is powered on. EX1001, 2:23-28 (“The device incorporates a programming interface to allow the programming of the buffer outputs to the desired values during manufacturing and test of the panel. Multiple

sets of gamma values can be programmed and stored to provide optimized gamma correction curves for different user or application requirements.”).

71. A POSITA would not have sought to modify the dynamic teachings of Liaw with the reusable and reprogrammable storage properties required by the claims, as the two references take fundamentally different approaches to gamma correction. *See supra*, at Section VII.B.1. Instead of addressing this internal inconsistency between Liaw and the '788 Patent, Petitioner simply assumes that, because Greene recites the use of miscellaneous non-volatile memory for storing output data, it could be applied to Liaw, but as explained above, a POSITA would have found no motivation to do so, and Petitioner has not shown otherwise.

**3. Liaw and Greene do not disclose a “means for executing said predetermined algorithm” as recited by Independent Claim Limitations 1[4] and 5[5].**

72. It is my opinion that Liaw and Greene both fail to disclose, or otherwise make obvious, the use of a “means for executing a predetermined algorithm according to a predetermined criteria and data sensed by said at least one sensor” as required by claim limitations 1[4] and 5[5]. EX1001, Claims 1 and 5.

73. As noted in Section VII.A above, Petitioner does not provide any construction for this claim term. Nevertheless, it is my opinion that Liaw does not disclose claim limitations 1[4] and 5[5].

74. I disagree with Petitioner's contention that Liaw's "main controller (20) includes a CPU (22) that executes optimization algorithms to determine gamma reference voltages based on sensed voltage-to-luminance data from the sensors and predetermined criteria like desired luminance and contrast." Petition at 31. Petitioner has not demonstrated that the alleged CPU (22) implements any "predetermined algorithm" as the claim term requires. A POSITA would have understood that Liaw's cursory reference to "[o]ptimizing (by using programs)" as insufficient to be considered disclosure of the use of a "predetermined algorithm according to a predetermined criteria," as recited by the claim limitations.

75. It is my opinion that Greene does not disclose claim limitations 1[4] and 5[5]. I disagree with Petitioner's attempts to point to Greene's alleged "scaling and interpolation process" as meeting the claim limitation's "predetermined algorithm according to a predetermined criteria and data sensed by at least one sensor." Petition at 31.

76. Greene's "scaling and interpolation process," however, implements only "normalization" of the color coordinates by the "Luminance Scaler/Adder 56" prior to sending the color coordinates to the "Display Controller 52." EX1006, 10:48-11:4. For example, Greene states "[t]he stored luminance ratios are then used by the video or luminance scaler/adder 56 to normalize the color coordinates according to Equations (5) for a normally light display." *Id.* at 10:59-62. Petitioner

has not demonstrated that the alleged Luminance Scaler/Adder 56 implements any “predetermined algorithm” as the claim term requires.

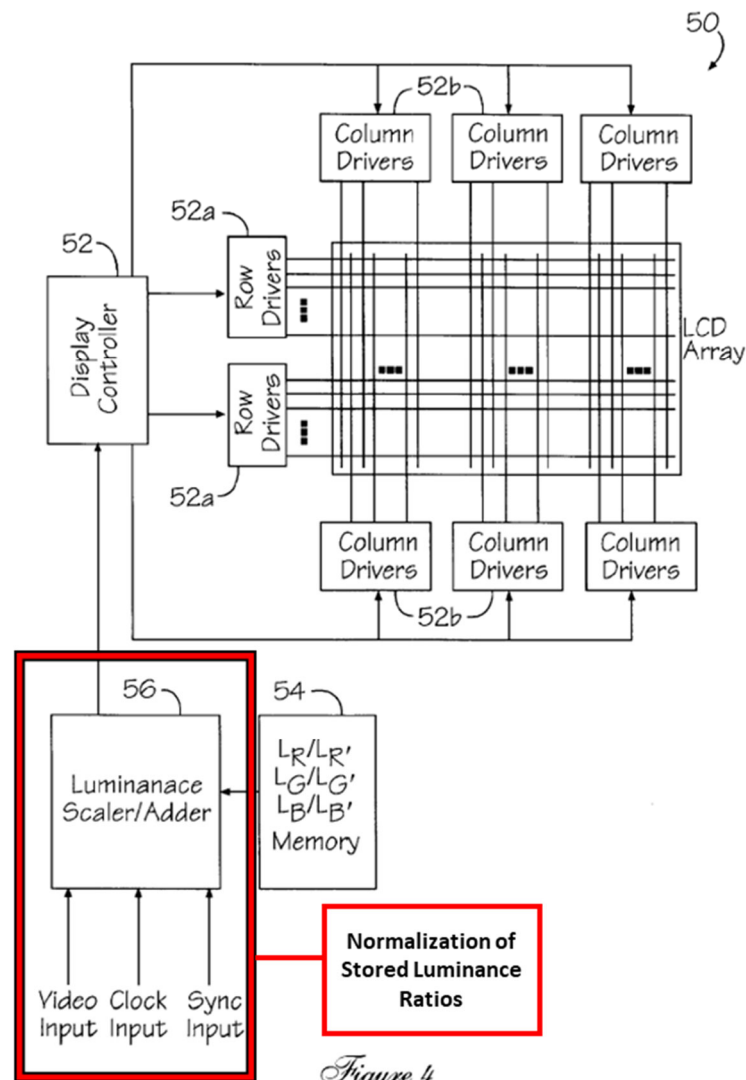


Figure 4

EX1007, FIG. 4 (annotated).

77. Petitioner fails to explain why a POSITA would have understood that the plain scaling of values is “executing a predetermined algorithm according to a predetermined criteria” as recited by claim limitations 1[4] and 5[5].

**C. Ground 2 – Greene (EX1006) in view of Da Costa (EX1007)**

78. Ground 2 of the Petition relies upon the combination of Greene and Da Costa. It is my opinion that Petitioner’s alleged combination of Greene and Da Costa is deficient and do not render the Challenged Claims obvious.

**1. A POSITA Would Not Have Looked to Greene and Da Costa and Would Likewise Not Combine Them.**

79. It is my opinion that a POSITA would not have consulted Da Costa for the same reasons a POSITA would not have consulted Liaw, because both references are directed to real-time, dynamic gamma correction instead of the reprogrammable stored gamma correction methods of the ’788 Patent. *See supra*, at Section VII.B.1.

80. Da Costa describes that “[s]oftware in the host system is also able to program the internal registers of the smart controller chip via an interface between the host system and the smart controller chip. By programming these registers with digital values which correspond to analog reference levels, the system software is able to dynamically modify operating characteristics of the display, such as the display gamma curve. Thus, dynamic adjustments may be made to suit particular applications being run on the host or to compensate for changes in the environment of the display panel.” EX1007, 5:1-12.

81. Further, Da Costa describes that “[c]ontrolling the gamma display through the analog reference levels for the column drivers is a superior way to control the display gamma and has a big advantage over control by the color look-

up table (CLUT) method. Using color look-up tables to achieve non-linear gammas results in a large number of DAC values that have the same transmission value. This is a big price to pay in flat panel displays where the DAC value is typically limited to 64 levels. Instead, by adjusting the analog reference levels, all DAC values correspond to unique transmission values. Furthermore, using the method of adjusting the analog reference levels allows the analog reference levels to be set by software in the host system 105 so that the user may adjust the display gamma depending on the application in use.” *Id.* at 11:15-33

82. Thus, a POSITA would have understood that Da Costa is directed to account for *changes in the environment* using dynamic gamma correction, and not the correction of display-to-display variations introduced in the manufacturing process using reprogrammable non-volatile storage, as claimed in the ’788 Patent.

**2. Greene and Da Costa do not disclose the “reprogrammable and non-volatile” integrated circuit requirements as recited by Independent Claim Limitations 1[1], 3[3], and 5[1].**

83. It is my opinion that Greene and Da Costa do not disclose the reprogrammable and non-volatile” integrated circuit requirements as recited by Independent Claim Limitations 1[1], 3[3], and 5[1].

84. As discussed in Section VII.B.2 above, Greene recites the use of “non-volatile random-access memory (NV-RAM)” to store “[l]uminance” that is “measured, after the display is fabricated, for each pixel.” EX1006, 10:14-18. A

POSITA would have understood that storage of such display output information is not the same as the storage of “reprogrammable and non-volatile” gamma voltage information, as required by the ’788 Patent’s independent claim limitations.

85. Da Costa describes the use of “registers” to store gamma correction information. EX1007, 6:56-61. Da Costa, however, only describes the *external* PROM used to program these registers—and not the registers themselves—as having non-volatile memory. *Id.*

86. Thus, I disagree with Petitioner’s arguments that the “registers can be programmed via an external PROM or internal flash memory, both of which are non-volatile,” as it contradicts Da Costa itself. Petition at 55. Da Costa describes that its smart controller 202 is “programmed initially via the first serial bus 204 by the external PROM 206” using “[a] typical industry standard serial bus and protocol.” *Id.* at 4:57-63. As provided in Figure 2:

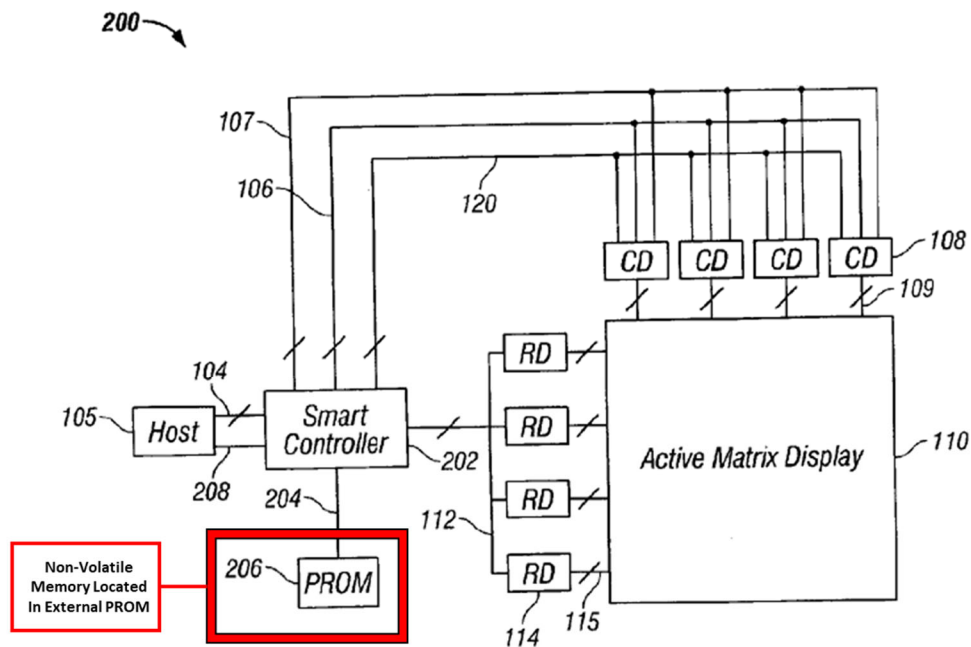


FIG. 2

EX1007, FIG. 2 (annotated).

87. Da Costa describes the external PROM as an external “programmable read-only memory chip” that programs the “smart controller” via the first input serial bus. *Id.* at 4:33-37, 57-67. Da Costa further describes that “[a]lternatively, the register input circuitry may receive digital values from the flash memory.” *Id.* at 4:36-39; 6:56-62. In either instance, a POSITA would have understood that the flash memory or PROM used to program the registers is external and, therefore, the “smart controller” itself does not disclose a system that meets the claim limitations of the ’788 Patent.

88. Da Costa's failure to disclose "reprogrammable non-volatile" memory as part of its system stems from the fact that Da Costa is directed to be "able to dynamically modify operating characteristics of the display, such as the display gamma curve" and thereby allow for "dynamic adjustments [to] be made to suit particular applications being run on the host or to compensate for changes in the environment of the display panel." EX1007, 5:1-12. A POSITA would have recognized that Da Costa, which is focused on dynamically altering its gamma values, would not need a reprogrammable and nonvolatile capacity within the system itself.

89. Further, claim limitation 3[3] of the '788 Patent recites the "storing said applied gamma voltages in reprogrammable, nonvolatile cells in said gamma reference voltage generator integrated circuits." EX1001, Claim 3. Da Costa does not disclose any "reprogrammable, nonvolatile cells *in said gamma reference voltage generator integrated circuits*;" instead, Petitioner incorrectly points to alleged non-volatile memory that is external to the "smart controller" entirely. Petition at 58.

**3. Greene and Da Costa do not disclose a "means for executing said predetermined algorithm" as recited by Independent Claim Limitations 1[4] and 5[5].**

90. It is my opinion that Greene and Da Costa both fail to disclose, or otherwise make obvious, the use of a "means for executing a predetermined

algorithm according to a predetermined criteria and data sensed by said at least one sensor” as required by claim limitations 1[4] and 5[5]. EX1001, Claims 1 and 5 of the ’788 Patent.

91. For the same reasons discussed in detail in Section VII.B.3 above, Greene does not disclose claim limitations 1[4] and 5[5] of the ’788 Patent.

92. Petitioner omits any discussion of whether Da Costa discloses claim limitation 1[4], rendering its challenge to that claim limitation materially deficient. *See* Petition at 56.

93. It is my opinion that Da Costa does not disclose claim limitation 5[5]. EX1001, Claim 5. Petitioner concedes that “Da Costa does not expressly mention using sensor data.” Petition at 60. Da Costa does not mention the use of any sensors at all. *See* EX1007. Petitioner instead relies on Da Costa’s description that its display outputs may “compensate for environmental changes” and must then require an “optimization process to achieve desired display performance.” Petition at 60 (citing EX1007, 5:8-12). I understand that Petitioner’s argument is essentially that the ability to “compensate for environmental changes” inherently includes “optimization process to achieve desired display performance” that further incorporates the use of sensor data. *Id.*

94. A POSITA would not have considered it inherent that a display’s ability to “compensate for environmental changes” inherently utilizes sensor data. A

POSITA would have understood that many types of feedback could be used to “dynamically modify [the] outputs” as Da Costa describes. *Id.* For example, temperature, voltage, and physical constraints of the circuits themselves could provide a basis for “dynamically modifying [the] outputs” as Petitioner claims and, therefore, it is not inherent that Da Costa would utilize sensor data. Thus, a POSITA would not have read Da Costa to require the use of a sensor, contrary to Petitioner’s contention.

95. Additionally, Petitioner’s arguments suffer from hindsight bias and attempt to reverse engineer Da Costa to meet the claim limitations of the ’788 Patent.

**D. Ground 3 – Liaw (EX1005) in view of Greene (EX1006) in further view of Matsui (EX1008)**

96. Ground 3 of the Petition relies upon the combination of Liaw, Greene, and Matsui. It is my opinion that Petitioner’s alleged combination of Liaw, Greene, and Matsui is deficient and do not render the Challenged Claims obvious.

97. As described in Section IV.D above, I understand that Liaw was already before the Examiner and was the basis of a rejection that was subsequently overcome during prosecution. EX1002, 92-98. It is my opinion, therefore, that for the same reasons that Liaw failed to teach the limitations of the Challenged Claims during prosecution, it likewise cannot provide a basis for institution in this Petition.

98. For the same reasons as Ground 1, a POSITA would not have been motivated to combine Liaw with Greene. *See supra*, at Section VII.B.1.

99. A POSITA would find Matsui's system further inapplicable and redundant to those in Liaw and Greene, as Matsui describes a system where "a gamma correction curve and common electrode voltage are synchronously changed in accordance with the detection result and thereby luminance adjustment is performed" and "[t]herefore, it is possible to automatically perform luminance adjustment correspondingly to changes of the peripheral condition used." EX1008, 7:31-39.

100. It is also my opinion that Petitioner fails to identify how Matsui would cure the established deficiencies of Liaw and, therefore, this Ground is deficient.

**1. Petitioner Fails to Cure the Deficiencies of Liaw and Matsui identified in Prosecution.**

101. As described in detail above, Petitioner asserts Matsui for the same purpose and disclosure identified by the Examiner during prosecution. *See supra*, at Section IV.D. It is my opinion that Petitioner's failure to correct or discuss *how* or *why* the examiner was incorrect or how the disclosures of Greene would otherwise correct this duplicative argument already addressed by the office, renders Petitioner's Ground 3 deficient.

**2. Liaw, Greene, and Matsui do not disclose the “reprogrammable and non-volatile” integrated circuit requirements as recited by Independent Claim Limitations 1[1], 3[3], and 5[1].**

102. For the same reasons discussed in response to Petitioner’s Ground 1, it is my opinion that Liaw and Greene fail to disclose claim limitations 1[1], 3[3], and 5[1]. *See supra* at VII.B.2.

103. Petitioner concedes that Matsui does not disclose the use of “reprogrammable and non-volatile” memory, but instead asserts that “a POSITA would have understood that the adjusted settings would need to be retained when power is removed for the adjustments to be useful, *implying some form of non-volatile storage.*” Petition at 64. Matsui’s alleged optimization does not “imply some form of non-volatile storage” is present, despite Petitioner’s expert’s hindsight.

104. Matsui teaches away from the use of “reprogrammable and non-volatile” memory as it describes two methods for correction: 1) a “manually adjustable” system, and 2) a “synchronously” adjusting system based on detection of light intensity around apparatus. EX1008, 6:16-24. In either system, a POSITA would have readily understood that there is no need to reprogram or store gamma voltages after the device is powered off, because the system will still need to be “manually” or “synchronously” adjusted once turned back on.

105. The dynamic character of Matsui’s apparatus is the objective. For example, it describes “synchronously adjusting” the luminance based on a detected

tilt of the display screen. EX1008, 6:25-30. Thus, a POSITA would not have sought to add reprogrammable and non-volatile storage to Matsui's dynamically adjusting apparatus.

**3. Liaw, Greene, and Matsui do not disclose a “means for executing said predetermined algorithm” as recited by Independent Claim Limitations 1[4] and 5[5].**

106. For the same reasons discussed in response to Petitioner's Ground 1, it is my opinion that Liaw and Greene fail to disclose claim limitations 1[4] and 5[5]. *See supra* at VII.B.3.

107. Petitioner omits any discussion of whether Matsui discloses claim limitations 1[4] and 5[5], rendering its challenge to those claim limitations materially deficient. *See* Petition at 64, 69-70.

**E. Ground 4 – Liaw (EX1005) in view of Da Costa (EX1007)**

108. Ground 4 of the Petition relies upon the combination of Liaw and Da Costa. It is my opinion that Petitioner's alleged combination of Liaw and Da Costa is deficient and does not render the Challenged Claims obvious.

109. As described in Section IV.D above, I understand that Liaw was already before the Examiner and was the basis of a rejection that was subsequently overcome during prosecution. EX1002, 92-98. It is my opinion, therefore, that for the same reasons that Liaw failed to teach the limitations of the Challenged Claims during prosecution, it likewise cannot provide a basis for institution in this Petition.

110. It is also my opinion that Petitioner fails to identify how Da Costa would cure the established deficiencies of Liaw and, therefore, this Ground is deficient.

**1. Liaw and Da Costa do not disclose the “reprogrammable and non-volatile” integrated circuit requirements as recited by Independent Claim Limitations 1[1], 3[3], and 5[1].**

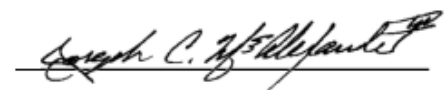
111. For the same reasons discussed in response to Petitioner’s Grounds 1 and 2, Liaw and Da Costa fail to disclose claim limitations 1[1], 3[3], and 5[1]. *See supra* at Sections VII.B.2 and VII.C.2.

**2. Liaw and Da Costa do not disclose a “means for executing said predetermined algorithm” as recited by Independent Claim Limitations 1[4] and 5[5].**

112. For the same reasons discussed in response to Petitioner’s Grounds 1 and 2, Liaw and Da Costa fail to disclose claim limitations 1[4] and 5[5]. *See supra* at Sections VII.B.3 and VII.C.3.

I hereby declare that all statements of my knowledge made in this declaration are true and that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: 3/12/2025



Joseph McAlexander

# APPENDIX

## A

**PROFESSIONAL SUMMARY**

Currently a Registered Professional Engineer (#79454) and recognized as an inventor on 31 US and a number of foreign patents, I am President of McAlexander Sound, Inc., and the Managing Director of McAlexander Sound Pte Ltd. I have focused my expertise to support a number of clients in product, process, and operations analysis and investigation. Fifty-two years of experience in microcircuit and semiconductor technologies has developed my skills in areas of circuit design and analysis, device fabrication and assembly, testing, marketing, control system design and analysis, manufacturing operations and respective areas of quality, reliability, and defect / failure analysis. I am also the President and CEO of MDFHoldings, Inc., an IP holding company currently engaged in the field of GPS Tracking, and was formerly, among others, a Manager with QM Partners, LP, supporting clients in IP management and licensing. I have:

- designed and managed development, testing, and evaluation of devices including Dynamic Random Access Memories (DRAMs), Static Random Access Memories (SRAMs), Charge Coupled Devices (CCDs), Shift Registers (SRs), and functional circuits including I/O buffers for address and data, decoders, clocks, sense amplifiers, fault tolerant, parallel-to-serial data paths for video applications, level shifters, converters, pumps, and logic, as well as wireless communication systems and MEMs applications;
- designed, built, and managed 4 physical / chemical analysis laboratories to assess cause of defect and reliability of products, including nanostructure integrated circuits, systems, and product packaging;
- managed operations including engineering, training, and quality assurance for device fabrication, assembly, test, analysis, and reliability assessment, as well as manufacturing control, each of which involved both volatile and non-volatile memory; testing, analysis, and control involving use of mechanical calibration and measuring equipment, including optical, scanning e-beam, IR, capacitive, and laser using phase contrast and Fast Fourier Transform (FFT) for High Aspect Ratio Inspection (HARI) applications; audio and video system design and installation;
- taught courses in solid state device physics, integrated circuit design, integrated circuit fabrication, and statistical control;
- provided expert services, investigating both process and design technologies of various devices (microprocessor and controller, memory, programmable logic, card, tag, module, mixed signal, custom, and other), systems (PC and peripheral, computer, control, laser measurement, switch, architecture, software, and other), and consumer products (medical, TV, telephone, VCR, facsimile, copier, lighting, game, and other);
- provided nuclear radiation hardness testing services for military and space clients; and

**PROFESSIONAL SUMMARY**

- managed the design and installation of audio sound and video systems for private and commercial enterprises.

From 1986-1990, I was Executive Vice President of EPI Technologies, Inc., prior to joining the staff at Cochran Consulting, Inc. where I served as senior managing consultant from 1991-2002. From 1972 to 1986, I was employed by Texas Instruments Incorporated.

**EXPERIENCE PROFILE**

1988-present

**McAlexander Sound, Inc. (McASI) - Richardson, TX**  
**President**

- o System, Product, and Process investigation, expert witness services for protection of intellectual property;
- o Patent portfolio development and valuation;
- o Product liability and insurance claim investigation, expert witness services for matters involving such claims;
- o Quality Systems consulting and engineering;
- o Radiation Hardness Testing Technical Representative;
- o Acoustic system design/installation
- o Technical Advisor in High Aspect Ratio and Surface Contour Measurement using Direct-to-Digital Holography.

2005-present

**McAlexander Sound Pte Ltd - Singapore**  
**Managing Director**

- o System, Product, and Process investigation, expert witness services for protection of intellectual property;
- o Patent portfolio development and valuation;
- o Contract consultation;
- o Not assigned any patents and is not engaged in any IP related licensing or litigation activities.

2002-present

**MDFHoldings, Inc. – Las Vegas, NV**  
**CEO**

- o IP holding and licensing company;
- o Assigned U.S. Patent Nos. 7,340,260 and 7,657,265 and EP 1 557 058 B1, each related to an object locating system;
- o Has not been and is not engaged in any IP related litigation or licensing activities.

2006-2020

**QM Partners, L.P. – Texas**  
**Manager**

- o Management of development, licensing, prosecution and exploitation of assigned intellectual property;
- o Not assigned any patents and is not engaged in any IP related licensing or litigation activities.

**EXPERIENCE PROFILE** (continued)

- 2006-2020      **Guardian Technologies, LLC – Texas**  
**Manager**
- o IP holding and licensing company;
  - o Litigated U.S. Patent No. 5,657,076 related to security surveillance 2009-2011 (patent expired 2015);
  - o Assigned U.S. Patent No. 8,334,775 related to RFID tracking (reassigned 2020 to personal);
  - o Not engaged in any IP related licensing or litigation activities.
- 2006-2020      **Appropriate Holdings, LLC – Delaware**  
**Manager**
- o IP holding company;
  - o Not assigned any patents, has not been and is not engaged in any IP related licensing or litigation activities.
- 1996-2010      **RMC Management, LLP - Plano, TX**  
**Partner**
- o Asset management.
- 1991-2002      **Cochran Consulting, Inc. (CCI) - Richardson, TX**  
**Managing Consultant**
- o System, Product, and Process investigation, expert witness services for protection of intellectual property;
  - o Design, process, and product reliability;
  - o Defect and failure analysis.
- 1986-Nov'90      **EPI Technologies, Inc. - Richardson, TX**  
**Executive Vice President and Company Officer**
- o Managed Advanced Technology Div., QA, and Engineering, including software program development;
  - o Developed strategic, space/energy market growth plans;
  - o Negotiated the acquisition of and managed a radiation company;
  - o Designed and managed physical analysis, radiation effects, and environmental stress laboratories, including optical and e-beam measurement;
  - o Achieved > 30% annual revenue growth and profitability for each laboratory the first 12 months;

**EXPERIENCE PROFILE** (continued)

- o Product and Process investigation services for protection of intellectual property.

1972 – 1986      **Texas Instruments, Inc.** - Dallas/Houston, TX; Singapore

'84 - '86      **Quality/Reliability Assurance Manager, TI Dallas** Advanced DRAM semiconductor wafer fabrication facility

- o Developed/implemented on-line, computerized SPC software tools for dimensioning analysis and control and pattern recognition;
- o Coordinated people development, design-of-experiments;
- o Managed chemical and physical analysis laboratories;
- o Implemented control systems to assure product, process, material, equipment, and facility compliance, including Cost of Quality analysis.

'82 - '84      **Quality/Reliability Assurance and Engineering Manager, TI Singapore** assembly/test facility

- o Developed, implemented, and operated an effective Quality/Reliability Assurance program for assembly processing including optical pattern recognition for equipment registration;
- o Supervised 225 people for 7 day/week operation, including QRA, Computer Systems software development, and Training;
- o Trained engineers in Solid State Physics, device fabrication, and statistical process control.

'81 - '82      **Engineering Operations Manager, TI Houston**

- o Managed DRAM memory product cost center;
- o Responsible for division test software generation, product assembly and test quality / yield, cost reduction and quality improvement;
- o Provided technical customer interface for marketing;
- o Coordinated TI Singapore engineering test/assembly.

'79 - '81      **Product Engineering Manager, TI Houston**

- o Responsible for yield improvement, technical customer interface, quality improvement, design evaluation, and device characterization for DRAM and CCD products;
- o Developed device specifications and test software.

**EXPERIENCE PROFILE** (continued)

'72 - '79

**Design Section Manager / Engineer, TI Houston**

- o Responsible for design and development, process compatibility, production introduction of Dynamic Ram products;
- o Activities included electrical and physical layout, SPICE model simulation, test program generation, and product implementation for MOS Dynamic Ram products.

1969 - 1972

**U. S. Army - Coventry, Rhode Island; Seoul, Korea  
Captain, Air Defense Artillery**

- o Served one year as Communications Officer in Korea;
- o Served two years as Tactical Officer, New England Defense.

**ORGANIZATIONS, PUBLICATIONS, EDUCATION****PROFESSIONAL ORGANIZATIONS AND AWARDS**

- 1 - Institute of Electrical and Electronics Engineers, Inc. (IEEE), Senior Member. Societies:  
Computer, Electron Devices, Solid State Circuits
- 2 - Licensing Executives Society (LES)
- 3 - National Society of Professional Engineers
- 4 - Texas Board of Professional Engineers, Registered License #79454
- 5 - American Society of Civil Engineers
- 6 - Architectural Engineering Institute
- 7 - 2000/2001 Nationwide Register's Who's Who in Executives and Businesses
- 8 - 1996/1997 Strathmore's Who's Who Registry of Business Leaders

**PUBLICATIONS**

- 1- NUS Proceedings of Engineering Convention '83, Aug '83, pgs. 139-142, The Memory Challenge.
- 2- Archives of Biochemistry and Biophysics, Dec'81, Vol. 212, No. 2, Equilibrium Constants under Physiological Conditions for the Reactions of D-3-Phosphoglycerate Dehydrogenase and L-Phosphoserine Aminotransferase.
- 3- International Electron Devices Meeting, Dec '79, pgs. 355-357, Sub 100ns 16K x 1 MOS Dynamic RAM Using a Grounded Substrate.

**EDUCATION PROFILE**

- |             |                                                                                                                                                                                                                                            |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1980 - 1985 | Taught Solid State Device Physics, Semiconductor Processing, Circuit Design Techniques, and Statistical Quality Control Methods<br><br>Effectiveness Training and Japanese Manufacturing Techniques, Participative Problem Solving courses |
| 1975 - 1976 | 1.5 years Graduate Study in Neural Science, the University of Texas Graduate School of Biomedical Science                                                                                                                                  |
| 1965 - 1969 | BSEE, North Carolina State University                                                                                                                                                                                                      |

**PATENTS (US-31, Foreign-8)**

|              |                                                                                          |
|--------------|------------------------------------------------------------------------------------------|
| 4,239,993    | (1980) High Performance Dynamic Sense Amplifier with Active Loads                        |
| 4,280,070    | (1981) Balanced Input Buffer Circuit for Semiconductor Memory                            |
| 4,288,706    | (1981) Noise Immunity in Input Buffer Circuit for Semiconductor Memory                   |
| 4,370,575    | (1983) High Performance Dynamic Sense Amplifier with Active Loads                        |
| 4,418,293    | (1983) High Performance Dynamic Sense Amplifier with Multiple Column Outputs             |
| 4,533,843    | (1985) High Performance Dynamic Sense Amplifier with Voltage Boost for Row Address Lines |
| 4,543,500    | (1985) High Performance Dynamic Sense Amplifier Voltage Boost for Row Address Lines      |
| 4,543,501    | (1985) High Performance Dynamic Sense Amplifier with Dual Channel Grounding Transistor   |
| 4,748,349    | (1988) High Performance Dynamic Sense Amplifier with Voltage Boost for Row Address Lines |
| 6,172,640 B1 | (2001) Pet Locator                                                                       |
| 6,236,358 B1 | (2001) Mobile Object Locator                                                             |
| 6,421,001 B1 | (2002) Object Locator                                                                    |
| 6,441,778 B1 | (2002) Pet Locator                                                                       |
| 6,480,147 B2 | (2002) Portable Position Determining Device                                              |
| 6,518,919 B1 | (2003) Mobile Object Locator                                                             |
| 6,771,213 B2 | (2004) Object Locator                                                                    |
| 6,859,171 B2 | (2005) Mobile Object Locator                                                             |

**PATENTS (continued)**

|                 |                                                                                                                               |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------|
| 7,113,126 B2    | (2006) Portable Positioning Determining Device                                                                                |
| 7,179,674 B2    | (2007) Bi-Directional Released-Beam Sensor                                                                                    |
| 7,209,075 B2    | (2007) Mobile Object Locator                                                                                                  |
| 7,324,044 B2    | (2008) Object Locator                                                                                                         |
| 7,336,227 B2    | (2008) Portable Position Determining Device                                                                                   |
| 7,340,260 B2    | (2008) System and Method for Tracking the Location of Multiple Mobile Radio Transceiver Units (assigned to MDFHoldings, Inc.) |
| 7,353,706 B2    | (2008) Weighted Released-Beam Sensor                                                                                          |
| 7,397,097 B2    | (2008) Integrated Released Beam Layer Structure Fabricated in Trenches and Manufacturing Method Thereof                       |
| 7,564,405 B2    | (2009) Object Locator                                                                                                         |
| 7,657,265 B2    | (2010) System and Method for Tracking the Location of Multiple Mobile Radio Transceiver Units (assigned to MDFHoldings, Inc.) |
| 7,760,137 B2    | (2010) Portable Positioning Determining Device                                                                                |
| 7,764,228 B2    | (2010) Portable Positioning Determining Device                                                                                |
| 7,989,906 B2    | (2011) Bi-Directional released-Beam Sensor                                                                                    |
| 8,334,775 B2    | (2012) RFID-Based Asset Security and Tracking System, Apparatus and Method (assigned to personal)                             |
| JP 55-053640 B4 | (1980) Defect Resistant Semiconductor Memory Cell                                                                             |
| JP 59-044720 B4 | (1984) Semiconductor High Speed Read/Write Memory Unit                                                                        |
| DE2935121 C2    | (1980) Clock Voltage Generator for Semiconductor Memory with Reduced Power Dissipation                                        |
| DE3043651 A1    | (1981) Clock Voltage Generator for Semiconductor Memory with Reduced Power Dissipation                                        |

**PATENTS** (continued)

- |                 |                                                                                                                                                                                                                                |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GB2032211 B2    | (1980) High Performance Dynamic MOS Read/Write Memory                                                                                                                                                                          |
| EP 1 557 058 B1 | (2011) System and method for tracking the location of multiple mobile radio transceiver units (assigned to MDFHoldings, Inc.)<br>[States: AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU<br>IE IT LI LU MC NL PT RO SE SI SK TR] |
| EP 1 676 809 B1 | (2010) Weighted released-beam sensor<br>[States: DE FR GB IT]                                                                                                                                                                  |
| EP 1 676 810 B1 | (2010) Bi-directional released-beam sensor<br>[States: DE FR GB IT]                                                                                                                                                            |

**CASES**

Cases over at least the past 7 years, either active or closed, in which I have signed a Protective Order, have testified as an expert either at a trial, hearing, or deposition, or have submitted statements / opinions by declaration, affidavit, or report, are:

| <b>CASE<sup>1</sup></b>                                                | <b>CASE NUMBER</b>                   | <b>LOCATION</b> | <b>YEAR</b> | <b>TYPE<sup>2</sup></b> |
|------------------------------------------------------------------------|--------------------------------------|-----------------|-------------|-------------------------|
| Kangaroo Media* v. Immersion Entertainment<br>(*firm: Kenyon & Kenyon) | 2:12-cv-00382-JFC, 2:14-cv-01536-JFC | WD PA           | 2012 - 2016 | P,t                     |
| (Audio/Video Entertainment System patent)                              |                                      |                 |             |                         |
| Securus* v. Global<br>(*firm: Gruber)                                  | 3:13-CV-03009-K                      | ND TX           | 2014 - 2017 | P,t                     |
| (Patents related to telecom systems)                                   |                                      |                 |             |                         |
| Global v. Securus*<br>(*firm: Gruber)                                  | 3:14-CV-0829-K, 3:13-CV-00713-JRS    | ND TX / ED VA   | 2014 - 2017 | P                       |
| (Patents related to telecom systems)                                   |                                      |                 |             |                         |
| Advanced Audio Devices*<br>(*firm: Clark Hill PLC)                     | IPR2014-01155                        | USPTO PTAB      | 2014 - 2016 | P,t                     |
| (Patent 7,289,393 related to music jukebox)                            |                                      |                 |             |                         |
| Advanced Audio Devices*<br>(*firm: Clark Hill PLC)                     | IPR2014-01156                        | USPTO PTAB      | 2014 - 2016 | P,t                     |
| (Patent 7,817,502 related to a personal digital stereo player)         |                                      |                 |             |                         |
| Advanced Audio Devices*<br>(*firm: Clark Hill PLC)                     | IPR2014-01157                        | USPTO PTAB      | 2014 - 2016 | P,t                     |
| (Patent 7,933,171 related to a personal digital stereo player)         |                                      |                 |             |                         |
| Advanced Audio Devices*<br>(*firm: Clark Hill PLC)                     | IPR2014-01158                        | USPTO PTAB      | 2014 - 2016 | P,t                     |
| (Patent 8,400,888 related to a personal digital stereo player)         |                                      |                 |             |                         |

<sup>1</sup> \* = Client

<sup>2</sup> P=Patent, C=Contract, ©=Copyright, TS=Trade Secret, AT=Antitrust; CA=Class Action; t=testified, TH=Trial/Hearing

## Cases (continued)

| CASE <sup>1</sup>                                                                                                  | CASE NUMBER               | LOCATION       | YEAR        | TYPE <sup>2</sup> |
|--------------------------------------------------------------------------------------------------------------------|---------------------------|----------------|-------------|-------------------|
| One-E-Way* v. Sony, Sennheiser, BlueAnt, Creative Tech, Beats, Jawbone, Jabra (*firm: Knobbe Marten, Olson & Bear) | 337-TA-943                | ITC (Pender)   | 2014 - 2018 | P,t               |
| (Patents related to bluetooth configured headphones)                                                               |                           |                |             |                   |
| Omega* v. Calamp                                                                                                   | 6:13-cv-1950-Orl-31DAB    | MD, FL         | 2015 - 2016 | P,t,TH            |
| (Patents related to vehicular control systems and tracking)                                                        |                           |                |             |                   |
| AVM* v. Intel (*firm: Boies, Schiller & Flexner)                                                                   | 1:15-cv-00033-RGA         | DE             | 2015 - 2016 | P,t,TH            |
| (Patent related to dynamic logic circuits)                                                                         |                           |                |             |                   |
| Allure Energy* v. Honeywell (*firm: McKool Smith)                                                                  | 1:15-cv-00079-RP          | WDTX, Austin   | 2015 - 2017 | P                 |
| (Smart Thermostat)                                                                                                 |                           |                |             |                   |
| IV* v. Toshiba (*firm: Desmarais)                                                                                  | 13-cv-453-SLR-SRF         | DE             | 2015 - 2017 | P,t,TH            |
| (NAND Flash)                                                                                                       |                           |                |             |                   |
| IMS v. Micron* (*Weil Gotchal/ Orrick)                                                                             | 1:14-cv-01480-RGA         | DE             | 2015 - 2022 | P,t               |
| (Patents related to flash memory)                                                                                  |                           |                |             |                   |
| Honeywell v. Allure* (*firm: Dickinson Wright)                                                                     | IPR201501248, 01251,01253 | USPTO PTAB     | 2015 - 2017 | P                 |
| (Smart Thermostat)                                                                                                 |                           |                |             |                   |
| Blitzsafe* v Honda (*firm: Brown Rudnick)                                                                          | 2:15-cv-01274-JRG-RSP     | EDTX, Marshall | 2015 - 2017 | P,t               |
| (Patents related to audio device integration systems)                                                              |                           |                |             |                   |
| Blitzsafe* v Hyundai (*firm: Brown Rudnick)                                                                        | 2:15-cv-01275-JRG-RSP     | EDTX, Marshall | 2015 - 2017 | P,t               |
| (Patents related to audio device integration systems)                                                              |                           |                |             |                   |

## Cases (continued)

| CASE <sup>1</sup>                                                     | CASE NUMBER               | LOCATION                       | YEAR           | TYPE <sup>2</sup> |
|-----------------------------------------------------------------------|---------------------------|--------------------------------|----------------|-------------------|
| Blitzsafe* v Nissan<br>(*firm: Brown Rudnick)                         | 2:15-cv-01276-<br>JRG-RSP | EDTX, Marshall                 | 2015 -<br>2017 | P,t               |
| (Patents related to audio device integration systems)                 |                           |                                |                |                   |
| Blitzsafe* v Toyota<br>(*firm: Brown Rudnick)                         | 2:15-cv-01277-<br>JRG-RSP | EDTX, Marshall                 | 2015 -<br>2017 | P,t               |
| (Patents related to audio device integration systems)                 |                           |                                |                |                   |
| Blitzsafe* v VW<br>(*firm: Brown Rudnick)                             | 2:15-cv-01278-<br>JRG-RSP | EDTX, Marshall                 | 2015 -<br>2017 | P,t               |
| (Patents related to audio device integration systems)                 |                           |                                |                |                   |
| 3rd Eye Surveillance* v<br>Stealth<br>(*firm: Kennedy Law)            | 6:14-cv-00162<br>JDL      | EDTX, Tyler                    | 2015 -<br>2016 | P                 |
| (Patents related to real-time image processing to response agency)    |                           |                                |                |                   |
| 3rd Eye Surveillance* v<br>Vision Video<br>(*firm: Kennedy Law)       | 6:14-cv-00161-<br>JDL     | EDTX, Tyler                    | 2015 -<br>2016 | P                 |
| (Patents related to real-time image processing to response agency)    |                           |                                |                |                   |
| 3rd Eye Surveillance* v Ft<br>Worth / e-Watch<br>(*firm: Kennedy Law) | 6:14-cv-00725             | EDTX, Tyler                    | 2015 -<br>2017 | P,t,TH            |
| (Patents related to real-time image processing to response agency)    |                           |                                |                |                   |
| 3rd Eye Surveillance* v<br>United States<br>(*firm: Kennedy Law)      | 1:15-cv-00501-<br>CFL     | Court of Federal<br>Claims, DC | 2015 -         | P,t,TH            |
| (Patents related to real-time image processing to response agency)    |                           |                                |                |                   |
| Hitachi v TPV*<br>(*firm: O'Melveny & Myers)                          | 2:14-cv-1121-<br>JRG-RSP  | EDTX, Marshall                 | 2015 -<br>2016 | P                 |
| (Patent related to LCD power and signal board arrangement)            |                           |                                |                |                   |

## Cases (continued)

| CASE <sup>1</sup>                                                      | CASE NUMBER           | LOCATION                     | YEAR        | TYPE <sup>2</sup> |
|------------------------------------------------------------------------|-----------------------|------------------------------|-------------|-------------------|
| Nidec Motor v Broad Ocean Motor*<br>(*firm: Locke Lord)                | 2:15-cv-00443         | EDTX, Marshall               | 2016        | P                 |
| (Patent related to blower motor control for HVAC)                      |                       |                              |             |                   |
| TracBeam* v T-Mobile<br>(*firm: Dovel & Luner)                         | 6:14-cv-678-RWS       | EDTX, Tyler                  | 2016        | P,t               |
| (Patents related to geographic location estimates)                     |                       |                              |             |                   |
| SMS v Emerson*<br>(*firm: Davidson Berquist)                           | 2:15-cv-00032-RWS-RSP | EDTX, Marshall               | 2016        | P                 |
| (Patent related to a method of monitoring a protected space)           |                       |                              |             |                   |
| Prong v Sorias*<br>(*firm: Gottlieb, Rackman & Reisman)                | IPR2015-01317         | USPTO PTAB                   | 2016        | P                 |
| (Patent related to attachable mobile charger)                          |                       |                              |             |                   |
| Skyline Software Systems v Duane Morris*<br>(*firm: Venable)           | 2015-08868            | Circuit Court Fairfax County | 2016        | P                 |
| (3D mapping technology)                                                |                       |                              |             |                   |
| SignalQuest v Oncque*<br>(*firm: Duane Morris)                         | 11-cv-00392-JL        | NH                           | 2016        | P                 |
| (Patents related to vibration switches)                                |                       |                              |             |                   |
| TiVo v Samsung*<br>(*firm: Fish & Richardson)                          | 2:15-CV-1503          | EDTX, Marshall               | 2016        | P                 |
| (Patent related to multimedia signal processing)                       |                       |                              |             |                   |
| Richtek v uPi*<br>(*firm: Hogan Lovells)                               | C 09-05659 WHA LB     | NDCA, SF                     | 2016        | P                 |
| (Patents related to converter channel current balance and PWM circuit) |                       |                              |             |                   |
| Paice* v VW, Porsche, Audi<br>(*firm: Fish & Richardson)               | 337-TA-998            | ITC                          | 2016 – 2017 | P                 |
| (Patents related to hybrid vehicle technology)                         |                       |                              |             |                   |

## Cases (continued)

| CASE <sup>1</sup>                                                              | CASE NUMBER           | LOCATION         | YEAR        | TYPE <sup>2</sup> |
|--------------------------------------------------------------------------------|-----------------------|------------------|-------------|-------------------|
| Biosonix v Hydrowave*<br>(*firm: Bradley)                                      | 4:16-cv-00139-RC      | EDTX, Sherman    | 2016 - 2017 | P                 |
| (Patent related to underwater sound listening and generation)                  |                       |                  |             |                   |
| Univ of S FL* v Fujifilm<br>(*firm: Dickinson Wright)                          | 8:16-cv-01194-MSS-TGW | MDFL, Tampa      | 2017        | P                 |
| (Patent related to Workstation Interface – Digital Mammography)                |                       |                  |             |                   |
| Univ of S FL * v BRIT<br>(*firm: Dickinson Wright)                             | 8:16-cv-03109-MSS-TGW | MDFL, Tampa      | 2017        | P,t               |
| (Patent related to Workstation Interface – Digital Mammography)                |                       |                  |             |                   |
| Nokia v Apple                                                                  | 337-TA-1038           | ITC              | 2017        | P                 |
| (Patent related to controllable bias mode oscillator)                          |                       |                  |             |                   |
| Univ of IL v Micron*<br>(*firm: Fish & Richardson)                             | 2:11-cv-02288-SLD-JAG | CDIL, Rock Falls | 2017        | P, C              |
| (Patents and contract related to use of deuterium in semiconductor processing) |                       |                  |             |                   |
| ZiiLabs v AMD*<br>(*firm: O'Melveny & Myers)                                   | 337-TA-1037           | ITC-Shaw         | 2017        | P                 |
| (Patents related to graphics processors)                                       |                       |                  |             |                   |
| MTL* v Sandisk<br>(*firm: Tensegrity)                                          | 337-TA-1034           | ITC-Lord         | 2017        | P,t               |
| (Patents related to flash memory)                                              |                       |                  |             |                   |
| Razberi v Dynacolor*<br>(*firm: McDole Williams)                               | 01-16-0003-3734       | AAA              | 2017 - 2018 | C,TS,t, TH        |
| (Arbitration related to contractual obligations)                               |                       |                  |             |                   |
| Seed Spring* v Microsoft<br>(*firm: Dovel)                                     | 6:17-cv-427-RWS       | EDTX, Tyler      | 2017        | P                 |
| (Patents related to Wirelss Location)                                          |                       |                  |             |                   |
| TracBeam* v Microsoft<br>(*firm: Dovel)                                        | 6:17-cv-426-RWS       | EDTX, Tyler      | 2017        | P                 |
| (Patents related to Wirelss Location)                                          |                       |                  |             |                   |

## Cases (continued)

| CASE <sup>1</sup>                                            | CASE NUMBER              | LOCATION       | YEAR           | TYPE <sup>2</sup> |
|--------------------------------------------------------------|--------------------------|----------------|----------------|-------------------|
| TracBeam* v Cisco<br>(*firm: Dovel)                          | 6:17-cv-525-RWS          | EDTX, Tyler    | 2017 -<br>2018 | P                 |
| (Patents related to Wirelss Location)                        |                          |                |                |                   |
| Arris* v Sony<br>(*firm: Fish & Richardson)                  | 337-TA-1060              | ITC-Lord       | 2017           | P,t               |
| (Patent related to Broadcast Signals)                        |                          |                |                |                   |
| Vivint* v Alarm.com<br>(*firm: Weil)                         | 2:15-cv-00392-<br>CW-BCW | UT             | 2017 -<br>2023 | P,t               |
| (Patents related to Electronic Message Delivery)             |                          |                |                |                   |
| Blitzsafe* v Bosch<br>(*firm: Brown Rudnick)                 | 2:17-cv-00105-<br>JRG    | EDTX, Marshall | 2017 -<br>2019 | P,t               |
| (Patents related to audio device integration systems)        |                          |                |                |                   |
| Blitzsafe* v Daimler &<br>Mercedes<br>(*firm: Brown Rudnick) | 2:17-cv-00422-<br>JRG    | EDTX, Marshall | 2017 –<br>2019 | P                 |
| (Patents related to audio device integration systems)        |                          |                |                |                   |
| Blitzsafe* v BMW<br>(*firm: Brown Rudnick)                   | 2:17-cv-00418-<br>JRG    | EDTX, Marshall | 2017 -<br>2019 | P                 |
| (Patents related to audio device integration systems)        |                          |                |                |                   |
| Blitzsafe* v Mazda<br>(*firm: Brown Rudnick)                 | 2:17-cv-00423-<br>JRG    | EDTX, Marshall | 2017 -<br>2019 | P                 |
| (Patents related to audio device integration systems)        |                          |                |                |                   |
| Blitzsafe* v Mitsubishi<br>(*firm: Brown Rudnick)            | 2:17-cv-00430-<br>JRG    | EDTX, Marshall | 2017 -<br>2019 | P                 |
| (Patents related to audio device integration systems)        |                          |                |                |                   |
| Blitzsafe* v Subaru<br>(*firm: Brown Rudnick)                | 2:17-cv-00421-<br>JRG    | EDTX, Marshall | 2017 -<br>2019 | P,t               |
| (Patents related to audio device integration systems)        |                          |                |                |                   |

## Cases (continued)

| CASE <sup>1</sup>                                                         | CASE NUMBER       | LOCATION       | YEAR        | TYPE <sup>2</sup> |
|---------------------------------------------------------------------------|-------------------|----------------|-------------|-------------------|
| Blitzsafe* v Tata & Jaguar<br>(*firm: Brown Rudnick)                      | 2:17-cv-00424-JRG | EDTX, Marshall | 2017 - 2019 | P                 |
| (Patents related to audio device integration systems)                     |                   |                |             |                   |
| Blitzsafe* v Volvo<br>(*firm: Brown Rudnick)                              | 2:17-cv-00420-JRG | EDTX, Marshall | 2017 - 2019 | P                 |
| (Patents related to audio device integration systems)                     |                   |                |             |                   |
| AGIS* v Huawei<br>(*firm: Brown Rudnick)                                  | 2:17-00513-JRG    | EDTX, Marshall | 2017 - 2018 | P,t               |
| (Patents related to Patents related to interactive remote communications) |                   |                |             |                   |
| AGIS* v HTC<br>(*firm: Brown Rudnick)                                     | 2:17-00514-JRG    | EDTX, Marshall | 2017 - 2019 | P,t               |
| (Patents related to Patents related to interactive remote communications) |                   |                |             |                   |
| AGIS* v LG<br>(*firm: Brown Rudnick)                                      | 2:17-00515-JRG    | EDTX, Marshall | 2017 - 2019 | P,t               |
| (Patents related to Patents related to interactive remote communications) |                   |                |             |                   |
| AGIS* v Apple<br>(*firm: Brown Rudnick)                                   | 2:17-00516-JRG    | EDTX, Marshall | 2017 - 2019 | P,t               |
| (Patents related to Patents related to interactive remote communications) |                   |                |             |                   |
| AGIS* v ZTE<br>(*firm: Brown Rudnick)                                     | 2:17-00517-JRG    | EDTX, Marshall | 2017 - 2019 | P                 |
| (Patents related to Patents related to interactive remote communications) |                   |                |             |                   |
| Arya v Dufossat*<br>(*firm: Robert Sueiro)                                | 4:16-cv-03595     | SDYX, Houston  | 2017 -      | TS,C,t            |
| (Dispute related to Trade Secrets)                                        |                   |                |             |                   |
| Seven Networks v Samsung*<br>(*firm: Fish & Richardson)                   | 2:17-cv-00441-JRG | EDTX, Marshall | 2017 - 2018 | P,t               |
| (Patents related to Power Management of Mobile Networks)                  |                   |                |             |                   |

## Cases (continued)

| CASE <sup>1</sup>                                               | CASE NUMBER       | LOCATION           | YEAR        | TYPE <sup>2</sup> |
|-----------------------------------------------------------------|-------------------|--------------------|-------------|-------------------|
| ZF Micro Solutions* v. Tat Investment<br>(*firm: Berger)        | 1-09-CV-134970    | Santa Clara County | 2018        | C,t,TH            |
| (Business tort, unfair practice)                                |                   |                    |             |                   |
| Univ of S FL* v Fujifilm<br>(*firm: Dickinson Wright)           | 3:18-cv-00215-AVC | Connecticut        | 2018        | P,t               |
| (Patent related to Workstation Interface – Digital Mammography) |                   |                    |             |                   |
| Univ of S FL* v BRIT<br>(*firm: Dickinson Wright)               | 3:18-CV-0250-K    | NDTX, Dallas       | 2018 - 2019 | P,t               |
| (Patent related to Workstation Interface – Digital Mammography) |                   |                    |             |                   |
| Cypress Insurance v Hynix*<br>(*firm: Bird Marella)             | C17-467 RAJ       | WDWA, Seattle      | 2018 - 2019 | C,t,TH            |
| (Contract dispute related to product delivery)                  |                   |                    |             |                   |
| Belliveau* v BARCO<br>(*firm: McKool)                           | 1:17-CV-00379-SS  | WDTX, Austin       | 2018        | C,t               |
| (Patent portfolio licensing dispute)                            |                   |                    |             |                   |
| MPS* v Intersil<br>(*firm: Perkins)                             | 16-1125-LPS       | DE                 | 2018 - 2021 | TS,t              |
| (Trade Secret dispute)                                          |                   |                    |             |                   |
| GoGo v Squire Patton Boggs*<br>(*firm: Cozen O'Connor)          | 2016-L-007789     | Cook County, IL    | 2018 - 2019 | P                 |
| (Patent Malpractice claim)                                      |                   |                    |             |                   |
| X2Y* v Intel<br>(*firm: Dovel)                                  | 3:18-cv-1394-HZ   | DOR, Portland      | 2018 - 2020 | P                 |
| (Patents related to package layer metalization)                 |                   |                    |             |                   |
| Power Integration* v ON Semi<br>(*firm: Fish & Richardson)      | 5:16-cv-06371-BLF | NDCA, San Jose     | 2019        | P,t               |
| (Patents related to power converter regulation)                 |                   |                    |             |                   |

## Cases (continued)

| CASE <sup>1</sup>                                            | CASE NUMBER           | LOCATION       | YEAR        | TYPE <sup>2</sup> |
|--------------------------------------------------------------|-----------------------|----------------|-------------|-------------------|
| ON Semi v Power Integration*<br>(*firm: Fish & Richardson)   | 1:17-cv-00247-LPS-CJB | DE             | 2019        | P,t               |
| (Patents related to power converter regulation)              |                       |                |             |                   |
| Semcon* v Amazon<br>(*firm: Brown Rudnick)                   | 2:18-CV-00192-JRG     | EDTX, Marshall | 2019        | P                 |
| (Patent related to Adaptive Power Control)                   |                       |                |             |                   |
| Semcon* v Asustek<br>(*firm: Brown Rudnick)                  | 2:18-CV-00193-JRG     | EDTX, Marshall | 2019        | P                 |
| (Patent related to adaptive power control)                   |                       |                |             |                   |
| Semcon* v Kyocera<br>(*firm: Brown Rudnick)                  | 2:18-CV-00197-JRG     | EDTX, Marshall | 2019        | P                 |
| (Patent related to adaptive power control)                   |                       |                |             |                   |
| Innovation Sciences* v Amazon<br>(*firm: Davidson Berquist)  | 4:18-cv-00474-ALM     | EDTX, Sherman  | 2019 - 2020 | P,t,TH            |
| (Patent related to Internet communication)                   |                       |                |             |                   |
| Innovation Sciences* v HTC<br>(*firm: Davidson Berquist)     | 4:18-cv-00476-ALM     | EDTX, Sherman  | 2019 - 2020 | P,t               |
| (Patent related to Internet communication)                   |                       |                |             |                   |
| Innovation Sciences* v Resideo<br>(*firm: Davidson Berquist) | 4:18-cv-00475-ALM     | EDTX, Sherman  | 2019 - 2020 | P,t               |
| (Patent related to Internet communication)                   |                       |                |             |                   |
| Innovation Sciences* v Vector<br>(*firm: Davidson Berquist)  | 4:18-cv-00477-ALM     | EDTX, Sherman  | 2019        | P                 |
| (Patent related to Internet communication)                   |                       |                |             |                   |

## Cases (continued)

| CASE <sup>1</sup>                                                    | CASE NUMBER                                             | LOCATION          | YEAR        | TYPE <sup>2</sup> |
|----------------------------------------------------------------------|---------------------------------------------------------|-------------------|-------------|-------------------|
| CXT* v JC Penny<br>(*firm: Brown Rudnick)                            | 2:18-cv-00171-RWS-RSP (lead)<br><br>2:18-CV-233-RWS-RSP | EDTX, Marshall    | 2019 - 2020 | P,t               |
| (Patents related to storage management and information distribution) |                                                         |                   |             |                   |
| Photonics* v Lenovo<br>(*firm: Brown Rudnick)                        | 1:18-cv-00489-MN                                        | DE                | 2019        | P                 |
| (Patents related to GDS-II Layout)                                   |                                                         |                   |             |                   |
| Quest NetTech Corp* v Apple<br>(*firm: Brown Rudnick)                | 2:19-CV-00118-JRG                                       | EDTX, Marshall    | 2019 - 2020 | P                 |
| (Patent related to programmable credit card system)                  |                                                         |                   |             |                   |
| Pilot, Inc.* v Schumacher<br>(*firm: Bradford)                       | 1:19-cv-05982-EEC                                       | NDIL, Eastern Div | 2019 - 2921 | P                 |
| (Patents related to battery chargers)                                |                                                         |                   |             |                   |
| Vocalife* v Amazon<br>(*firm: Brown Rudnick)                         | 2:19-cv-00123-JRG                                       | EDTX, Marshall    | 2019 - 2020 | P,t,TH            |
| (Patent related to microphone array)                                 |                                                         |                   |             |                   |
| Semcon* v Vuitton<br>(*firm: Brown Rudnick)                          | 2:19-CV-00122-JRG                                       | EDTX, Marshall    | 2019        | P,t               |
| (Patent related to adaptive power control)                           |                                                         |                   |             |                   |
| Semcon* v Shenzhen<br>(*firm: Brown Rudnick)                         | 2:18-CV-00196-JRG                                       | EDTX, Marshall    | 2019        | P,t               |
| (Patent related to adaptive power control)                           |                                                         |                   |             |                   |
| Ultravision* v GoVision<br>(*firm: Brown Rudnick)                    | 2:18-cv-00100-JRG-RSP                                   | EDTX, Marshall    | 2019        | P                 |
| (Patents related to modular display panels and LED lighting)         |                                                         |                   |             |                   |
| Ultravision* v Shenzhen<br>(*firm: Brown Rudnick)                    | 2:18-cv-00103-JRG-RSP                                   | EDTX, Marshall    | 2019        | P                 |
| (Patents related to modular display panels and LED lighting)         |                                                         |                   |             |                   |

## Cases (continued)

| CASE <sup>1</sup>                                            | CASE NUMBER           | LOCATION       | YEAR        | TYPE <sup>2</sup> |
|--------------------------------------------------------------|-----------------------|----------------|-------------|-------------------|
| Ultravision* v Aoto<br>(*firm: Brown Rudnick)                | 2:18-cv-00113-JRG-RSP | EDTX, Marshall | 2019        | P                 |
| (Patents related to modular display panels and LED lighting) |                       |                |             |                   |
| Ultravision* v Leyard<br>(*firm: Brown Rudnick)              | 2:18-cv-00102-JRG-RSP | EDTX, Marshall | 2019        | P                 |
| (Patents related to modular display panels and LED lighting) |                       |                |             |                   |
| Ultravision* v NEC<br>(*firm: Brown Rudnick)                 | 2:18-cv-00150-JRG-RSP | EDTX, Marshall | 2019        | P                 |
| (Patents related to Modular Display Panels and LED lighting) |                       |                |             |                   |
| Ultravision* v Prismaflex<br>(*firm: Brown Rudnick)          | 2:18-cv-00108-JRG-RSP | EDTX, Marshall | 2019        | P                 |
| (Patents related to modular display panels and LED lighting) |                       |                |             |                   |
| Ultravision* v Unilumin<br>(*firm: Brown Rudnick)            | 2:18-cv-00116-JRG-RSP | EDTX, Marshall | 2019        | P                 |
| (Patents related to modular display panels and LED lighting) |                       |                |             |                   |
| Ultravision* v Yaham<br>(*firm: Brown Rudnick)               | 2:18-cv-00118-JRG-RSP | EDTX, Marshall | 2019        | P                 |
| (Patents related to modular display panels and LED lighting) |                       |                |             |                   |
| Ultravision* v Absen<br>(*firm: Brown Rudnick)               | 2:18-cv-00112-JRG-RSP | EDTX, Marshall | 2019        | P                 |
| (Patents related to modular display panels and LED lighting) |                       |                |             |                   |
| Birchett* v City of Fort Worth<br>(*firm: Kennedy Law)       | DC-19-06941           | Dallas County  | 2019        | C,t               |
| (Whistleblower)                                              |                       |                |             |                   |
| Innovation Sciences* v HTC<br>(*firm: Davidson Berquist)     | 337-TA-1180           | ITC            | 2020 - 2021 | P,t               |
| (Patent related to wireless communication)                   |                       |                |             |                   |

## Cases (continued)

| CASE <sup>1</sup>                                                    | CASE NUMBER           | LOCATION       | YEAR        | TYPE <sup>2</sup> |
|----------------------------------------------------------------------|-----------------------|----------------|-------------|-------------------|
| Innovation Sciences* v Resideo<br>(*firm: Davidson Berquist)         | 337-TA-1180           | ITC            | 2020        | P,t               |
| (Patent related to Internet communication)                           |                       |                |             |                   |
| CXT* v Neiman Marcus<br>(*firm: Brown Rudnick)                       | 2:19-cv-00270-RWS-RSP | EDTX, Marshall | 2020        | P                 |
| (Patents related to storage management and information distribution) |                       |                |             |                   |
| CXT* v General Nutrition<br>(*firm: Brown Rudnick)                   | 2:19-cv-00271-RWS-RSP | EDTX, Marshall | 2020        | P                 |
| (Patents related to storage management and information distribution) |                       |                |             |                   |
| CXT* v Steven Madden<br>(*firm: Brown Rudnick)                       | 2:19-cv-00272-RWS-RSP | EDTX, Marshall | 2020        | P                 |
| (Patents related to storage management and information distribution) |                       |                |             |                   |
| Consolidated* v Amazon<br>(*firm: Devlin Law)                        | 1:19-cv-01715-RGA     | DE             | 2020 – 2021 | P,t               |
| (Patents related to on-line shopping)                                |                       |                |             |                   |
| Consolidated* v Ford<br>(*firm: Devlin Law)                          | 1:19-cv-01916-RGA     | DE             | 2020 - 2021 | P,t               |
| (Patents related to on-line shopping)                                |                       |                |             |                   |
| Consolidated* v JC Penney<br>(*firm: Devlin Law)                     | 1:19-cv-01918-RGA     | DE             | 2020 - 2021 | P,t               |
| (Patents related to on-line shopping)                                |                       |                |             |                   |
| Consolidated* v Ebay<br>(*firm: Devlin Law)                          | 1:19-cv-01580-RGA     | DE             | 2020 - 2021 | P,t               |
| (Patents related to on-line shopping)                                |                       |                |             |                   |
| Consolidated* v Walmart<br>(*firm: Devlin Law)                       | 1:19-cv-01581-RGA     | DE             | 2020 - 2021 | P,t               |
| (Patents related to on-line shopping)                                |                       |                |             |                   |

## Cases (continued)

| CASE <sup>1</sup>                                         | CASE NUMBER       | LOCATION       | YEAR        | TYPE <sup>2</sup> |
|-----------------------------------------------------------|-------------------|----------------|-------------|-------------------|
| Semcon* v TCT Mobile<br>(*firm: Brown Rudnick)            | 2:18-CV-00194-JRG | EDTX, Marshall | 2020        | P                 |
| (Patent related to adaptive power control)                |                   |                |             |                   |
| BNR v Samsung*<br>(*firm: Fish & Richardson)              | 2:19-cv-00286-JRG | EDTX, Marshall | 2020        | P                 |
| (Patents related to portable communication devices)       |                   |                |             |                   |
| AGIS* v Google<br>(*firm: BRudnick, Fabricant)            | 2:19-cv-00361-JRG | EDTX, Marshall | 2020 - 2022 | P,t               |
| (Patents related to interactive remote communications)    |                   |                |             |                   |
| AGIS* v Waze<br>(*firm: BRudnick, Fabricant)              | 2:19-cv-00359-JRG | EDTX, Marshall | 2020 - 2022 | P,t               |
| (Patents related to interactive remote communications)    |                   |                |             |                   |
| Burke* v City of Fort Worth<br>(*firm: Kennedy Law)       | DC-19-07239       | Dallas County  | 2020        | C,t               |
| (Whistleblower)                                           |                   |                |             |                   |
| Infinera v Oyster Optics*<br>(*firm: Davidson Berquist)   | IPR2020-00325     | PTAB           | 2020        | P,t               |
| (Patent related to fiber optic telecommunications)        |                   |                |             |                   |
| Blitzsafe* v GM<br>(*firm: Fabricant)                     | 2:19-cv-00377-JRG | EDTX, Marshall | 2020        | P,t               |
| (Patents related to audio device integration systems)     |                   |                |             |                   |
| Blitzsafe* v FCA<br>(*firm: Fabricant)                    | 2:19-cv-00378-JRG | EDTX, Marshall | 2020        | P,t               |
| (Patents related to audio device integration systems)     |                   |                |             |                   |
| Kuster v Western Digital*<br>(*firm: Shearman & Sterling) | 6:20-cv-00563     | WDTX, Waco     | 2020        | P,t               |
| (Patent related to memory stack storage)                  |                   |                |             |                   |

## Cases (continued)

| CASE <sup>1</sup>                                      | CASE NUMBER                | LOCATION           | YEAR           | TYPE <sup>2</sup> |
|--------------------------------------------------------|----------------------------|--------------------|----------------|-------------------|
| TruSun* v Eaton<br>(*firm: Duane Morris)               | 6:19-cv-00656-<br>ADA      | WDTX, Waco         | 2020 -<br>2022 | P,t               |
| (Patent related to a light-generating system)          |                            |                    |                |                   |
| RJR v PMI*<br>(*firm: Latham Watkins)                  | 1:20-cv-00393-<br>LO-TCB   | EDVA, Alexandria   | 2020 -<br>2022 | P,t,TH            |
| (Patents related to e-cigarette controls)              |                            |                    |                |                   |
| Koss* v Apple et al<br>(*firm: K L Gates)              | 6:20-cv-00665              | WDTX, Waco         | 2020 -<br>2022 | P,t               |
| (Patents related to Wireless Headphones)               |                            |                    |                |                   |
| Koss* v Bose<br>(*firm: K L Gates)                     | 6:20-cv-00661              | WDTX, Waco         | 2020           | P                 |
| (Patents related to Wireless Headphones)               |                            |                    |                |                   |
| Ipcom v Sprint et al (Nokia*)<br>(*Alston Bird)        | 2:20-cv-321                | EDTX, Marshall     | 2020 -<br>2022 | P                 |
| (Patents related to CDMA communication)                |                            |                    |                |                   |
| Ipcom v Verizon et al<br>(Nokia*)<br>(*Alston Bird)    | 2:20-cv-323                | EDTX, Marshall     | 2020 -<br>2022 | P                 |
| (Patents related to CDMA communication)                |                            |                    |                |                   |
| Pilot* v CarKu<br>(*firm: Bradford / Sheridan)         | 7131799991                 | Amazon Arbitration | 2020           | P,t               |
| (Patent related to jump starters)                      |                            |                    |                |                   |
| MPS* v Meraki<br>(*firm: Perkins Coie)                 | 6:2020cv00876-<br>ADA      | WDTX, Waco         | 2020 -<br>2022 | P,TS,C            |
| (Patents related to synchronous rectifier control)     |                            |                    |                |                   |
| AGIS* v Uber<br>(*firm: Fabricant)                     | 2:21-cv-00026-<br>JRG-RSP) | EDTX, Marshall     | 2021           | P                 |
| (Patents related to interactive remote communications) |                            |                    |                |                   |

## Cases (continued)

| CASE <sup>1</sup>                                      | CASE NUMBER                    | LOCATION               | YEAR           | TYPE <sup>2</sup> |
|--------------------------------------------------------|--------------------------------|------------------------|----------------|-------------------|
| AGIS* v WhatsApp<br>(*firm: Fabricant)                 | 2:21-cv-00029-<br>JRG-RSP)     | EDTX, Marshall         | 2021           | P                 |
| (Patents related to interactive remote communications) |                                |                        |                |                   |
| One E-Way* v Apple<br>(*firm: Knobbe Martin)           | 2:20-cv-06339-<br>JSK-PD       | CDCA                   | 2021 -<br>2023 | P,t               |
| (Patent related to Bluetooth Headphones)               |                                |                        |                |                   |
| BMW v Omega Patents*<br>(*firm: Allen Dyer)            | IPR2021-00181                  | PTAB                   | 2021 -         | P,t               |
| (Patent related to remote start)                       |                                |                        |                |                   |
| Pilot* v The NOCO Co<br>(*firm: Bradford / Sheridan)   | 2:20-cv-01452-<br>SRB          | AZ                     | 2021 -<br>2023 | P,t               |
| (Patents related to auto chargers)                     |                                |                        |                |                   |
| Express Mobile* v Atlassian<br>(*firm: Mololamken)     | 6:20-cv-00805-<br>ADA          | WDTX, Austin           | 2021           | P                 |
| (Patents related to browser-based web site generation) |                                |                        |                |                   |
| AGIS* v Lyft<br>(*firm: Fabricant)                     | 2:21-cv-00024-<br>JRG-RSP      | EDTX, Marshall<br>NDCA | 2021 -<br>2022 | P                 |
| (Patents related to interactive remote communications) |                                |                        |                |                   |
| AGIS* v T-Mobile<br>(*firm: Fabricant)                 | 2:21-cv-00072-<br>JRG-RSP      | EDTX, Marshall         | 2021           | P                 |
| (Patents related to interactive remote communications) |                                |                        |                |                   |
| Altria* v RJR<br>(*firm: Weil Gotshal)                 | 1:20-cv-00472                  | MDNC                   | 2021 -<br>2022 | P,t,TH            |
| (Patents related to e-cig)                             |                                |                        |                |                   |
| One E-Way* v Apple<br>(*firm: Knobbe Martin)           | IPR2021-00283<br>IPR2021-00286 | PTAB                   | 2021 -<br>2022 | P,t               |
| (Patent related to Bluetooth Headphones)               |                                |                        |                |                   |

## Cases (continued)

| CASE <sup>1</sup>                                             | CASE NUMBER                                                                                                                          | LOCATION           | YEAR           | TYPE <sup>2</sup> |
|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------|-------------------|
| Altria* v RJR<br>(*firm: Weil Gotshal)                        | IPR2021-00650<br>IPR2021-00652<br>IPR2021-00725<br>IPR2021-00744<br>IPR2021-00745<br>IPR2021-00746<br>IPR2021-00747<br>IPR2021-00793 | PTAB               | 2021 -<br>2022 | P,t,TH            |
| (Patents related to e-cig control)                            |                                                                                                                                      |                    |                |                   |
| Kiwi Connection* v Anker<br>(*firm: Bradford)                 | 8519300821                                                                                                                           | Amazon Arbitration | 2021           | P,t               |
| (Patent related to bidirectional connector)                   |                                                                                                                                      |                    |                |                   |
| Kiwi Connection* v JBL<br>(*firm: Bradford)                   | 8674855301                                                                                                                           | Amazon Arbitration | 2021           | P,t               |
| (Patent related to bidirectional connector)                   |                                                                                                                                      |                    |                |                   |
| Platform Science v<br>Omnitracs*<br>(*firm: Kirkland & Ellis) | IPR2020-0187<br>IPR2020-1517<br>IPR2020-1518                                                                                         | PTAB               | 2021 –<br>2022 | P,t               |
| (Patent related to critical event reporting)                  |                                                                                                                                      |                    |                |                   |
| Netlist v Samsung*<br>(*firm: Bird Marella)                   | 8:20-cv-993-MCS                                                                                                                      | CDCA, Southern     | 2021           | C,t               |
| (Contract dispute)                                            |                                                                                                                                      |                    |                |                   |
| Monterey Research* v<br>(*firm: Desmarais)                    | IPR 2021-00119<br>IPR 2021-00120<br>IPR 2021-00172                                                                                   | PTAB               | 2021 -<br>2022 | P,t               |
| (Patents related to semiconductor processing)                 |                                                                                                                                      |                    |                |                   |
| Apple / Bose v Koss*<br>(*firm: K L Gates)                    | IPR2021-00255<br>IPR2021-00297<br>IPR2021-00305<br>IPR2021-00381<br>IPR2021-00592                                                    | PTAB               | 2021 -<br>2022 | P,t               |
| (Patents related to Wireless Headphones)                      |                                                                                                                                      |                    |                |                   |

## Cases (continued)

| CASE <sup>1</sup>                                      | CASE NUMBER                                                      | LOCATION       | YEAR           | TYPE <sup>2</sup> |
|--------------------------------------------------------|------------------------------------------------------------------|----------------|----------------|-------------------|
| Vocalife* v Amazon2<br>(*firm: Fabricant)              | 2 :20-cv-00401-<br>JRG-RSP                                       | EDTX, Marshall | 2021 -<br>2023 | P,t               |
| (Patent related to microphone array)                   |                                                                  |                |                |                   |
| Vocalife* v Google<br>(*firm: Fabricant)               | 2 :21-cv-00124-<br>JRG-RSP                                       | EDTX, Marshall | 2021 -<br>2023 | P,t               |
| (Patent related to microphone array)                   |                                                                  |                |                |                   |
| Luxshare* v Amphenol<br>(*firm: K L Gates)             | IPR2022-00132                                                    | PTAB           | 2021 -<br>2022 | P,t               |
| (Patent related to high performance connector)         |                                                                  |                |                |                   |
| Vervain v Micron*<br>(*firm: Orrick)                   | 6:20-cv-487-<br>ADA                                              | WDTX, Waco     | 2021 -<br>2023 | P,t               |
| (Patents related to MLC & SLC endurance)               |                                                                  |                |                |                   |
| Express Mobile* v Dropbox<br>(*firm: Mololamken)       | 3:21-cv-01145                                                    | NDCA           | 2021           | P                 |
| (Patents related to browser-based web site generation) |                                                                  |                |                |                   |
| Lexmark v Universal<br>Imaging*<br>(*firm: Allen Dyer) | 8:18-cv-1047-T-<br>17AEP                                         | MDFL, Tampa    | 2021 -<br>2023 | P                 |
| (Patents related to printer cartridge authentication)  |                                                                  |                |                |                   |
| Pilot* v The NOCO Co<br>(*firm: Bradford / Sheridan)   | IPR2021-00777<br>IPR2021-01232<br>IPR2023-00167<br>IPR2023-00810 | PTAB           | 2021           | P,t               |
| (Patents related to auto chargers)                     |                                                                  |                |                |                   |
| Delta T* v MacroAir<br>(*firm: Latham/VedderPrice)     | 5:20-cv-00728-<br>GW-GJS                                         | CDCA, LA       | 2022 -<br>2023 | P                 |
| (Patents related to fan sensors and control)           |                                                                  |                |                |                   |
| MPS* v Dong & Sheng<br>(*firm: Perkins Coie)           | 4 :20-cv-6752-<br>JSW                                            | NCCA, Oakland  | 2022 -<br>2023 | P, TS             |
| (Patents related to synchronous rectifier control)     |                                                                  |                |                |                   |

## Cases (continued)

| CASE <sup>1</sup>                                                         | CASE NUMBER           | LOCATION           | YEAR        | TYPE <sup>2</sup> |
|---------------------------------------------------------------------------|-----------------------|--------------------|-------------|-------------------|
| Vocalife* v Sonos<br>(*firm: Fabricant)                                   | 2 :21-cv-00129-JRG    | EDTX, Marshall     | 2022        | P,t               |
| (Patent related to microphone array)                                      |                       |                    |             |                   |
| Vocalife* v Bose<br>(*firm: Fabricant)                                    | 2 :21-cv-00128-JRG    | EDTX, Marshall     | 2022        | P,t               |
| (Patent related to microphone array)                                      |                       |                    |             |                   |
| Enovsys* v T-Mobile<br>(*firm: Eichmann)                                  | 2:21-cv-00368-JRG     | EDTX, Marshall     | 2022        | P,t               |
| (Patents related to precise location determination and secure disclosure) |                       |                    |             |                   |
| Enovsys* v Verizon<br>(*firm: Eichmann)                                   | 2:21-cv-00315-JRG-RSP | EDTX, Marshall     | 2022        | P,t               |
| (Patents related to precise location determination and secure disclosure) |                       |                    |             |                   |
| Lyft v AGIS*<br>(*firm: Fabricant)                                        | 5 :21-cv-04653-BLF    | NDCA, San Jose     | 2022 - 2023 | P                 |
| (Patents related to interactive remote communications)                    |                       |                    |             |                   |
| Vocalife* v Amazon<br>(*firm: Fabricant)                                  | IPR2021-01331         | PTAB               | 2022        | P,t               |
| (Patent related to microphone array)                                      |                       |                    |             |                   |
| MPS* v Meraki<br>(*firm: Perkins Coie)                                    | 4:22-cv-01986 JSW     | NDCA, Oakland      | 2022 - 2023 | P,TS,C            |
| (Patents related to synchronous rectifier control)                        |                       |                    |             |                   |
| Signode v Polychem*<br>(*firm: Latham)                                    | 1 :22-cv-00519-UNA    | DE                 | 2022        | P                 |
| (Patents related to a strapping apparatus)                                |                       |                    |             |                   |
| Pilot* v Hulkman<br>(*firm: BRADFORD)                                     | 10427111251           | Amazon Arbitration | 2022        | P,t               |
| (Patent related to jump starters)                                         |                       |                    |             |                   |

## Cases (continued)

| CASE <sup>1</sup>                                                                       | CASE NUMBER               | LOCATION       | YEAR           | TYPE <sup>2</sup> |
|-----------------------------------------------------------------------------------------|---------------------------|----------------|----------------|-------------------|
| Netlist v Samsung*<br>(*firm: Fish & Richardson)                                        | 2:21-cv-463               | EDTX, Marshall | 2022 -<br>2024 | P,t,TH            |
| (Patents related to DIMM DDR3 signal timing, power management, and rank multiplication) |                           |                |                |                   |
| Orange* v Autel<br>(*firm: Sughrue Mion)                                                | 2 :21-cv-240              | EDTX, Marshall | 2022 -<br>2023 | P,t,TH            |
| (Patent related to Tire Pressure Monitoring Systems)                                    |                           |                |                |                   |
| Bell Power v MPS*<br>(*firm: Perkins Coie)                                              | 6 :21-cv-00655-<br>ADA    | WDTX, Waco     | 2022 -         | P                 |
| (Patents related to power converter/regulator control)                                  |                           |                |                |                   |
| VPR v Jupiter*<br>(*firm: Noroozi PC)                                                   | 2:20-CV-02185-<br>DJH     | AZ             | 2023 -         | P,t               |
| (Patent related to electronic vape device with air flow sensor)                         |                           |                |                |                   |
| Multimodal* v Guangdong<br>(*firm: Fabricant)                                           | 2:21-cv-00436-<br>JRG-RSP | EDTX, Marshall | 2023           | P                 |
| (Patents related to communication over a network, call completion)                      |                           |                |                |                   |
| Multimodal v ZTE<br>(*firm: Fabricant)                                                  | 2:21-cv-00437-<br>JRG-RSP | EDTX, Marshall | 2023           | P                 |
| (Patents related to communication over a network, call completion)                      |                           |                |                |                   |
| Entropic* v Charter<br>Communications et al.<br>(*firm: K L Gates)                      | 2 :22-cv-00125-<br>JRG    | EDTX, Marshall | 2022           | P                 |
| (Patents related to modems and broadband content distribution)                          |                           |                |                |                   |
| Oasis Tooling* v Global<br>Foundries U.S.<br>(*firm: Kramer Levin)                      | 22-00312-CJB              | DE             | 2022 -<br>2024 | P,t               |
| (Patents related to chip design process workflow)                                       |                           |                |                |                   |
| Oasis Tooling* v Siemens<br>Industry Software<br>(*firm: Kramer Levin)                  | 22-00151-CJB              | DE             | 2022 -<br>2024 | P,t               |
| (Patents related to chip design process workflow)                                       |                           |                |                |                   |

## Cases (continued)

| CASE <sup>1</sup>                                               | CASE NUMBER                      | LOCATION     | YEAR        | TYPE <sup>2</sup> |
|-----------------------------------------------------------------|----------------------------------|--------------|-------------|-------------------|
| AGIS* ITC<br>(*firm: Fabricant)                                 | 337-TA-1347                      | ITC          | 2023        | P                 |
| (Patents related to Location-Sharing Systems)                   |                                  |              |             |                   |
| Monterey* v Nanya<br>(*firm: Desmarais)                         | 19-2090-NIQA-LAS                 | DE           | 2023 – 2024 | P                 |
| (Patents directed to semiconductor technology)                  |                                  |              |             |                   |
| Geotab v Omega*<br>(*firm: Allen Dyer)                          | IPR2023-00504                    | PTAB         | 2023        | P,t               |
| (Patent related to multi-vehicle communication)                 |                                  |              |             |                   |
| Adv Lighting Concepts* v mate<br>(*firm: Munsch)                | IPR2023-01264                    | PTAB         | 2023        | P                 |
| (Patent related to LED drivers)                                 |                                  |              |             |                   |
| SitePro* v Waterbridge<br>(*firm: Perkins Coie)                 | 6:23-cv-00115-ADA-DTG            | WDTX, Waco   | 2023        | P,TS,C            |
| (Patents and Trade Secrets related to remote delivery control)  |                                  |              |             |                   |
| Nanya v Monterey*<br>(*firm: Botos Churchill)                   | EPR 6,825,526C1<br>EPR 6,680,516 | USPTO        | 2023        | P,t               |
| (Patents directed to semiconductor technology)                  |                                  |              |             |                   |
| ICPillar* v ARM<br>(*firm: Eichmann)                            | 6_23-cv-00115-ADA-DTG            | WDTX, Austin | 2023 - 2024 | P                 |
| (Patents related to computer method for IC design)              |                                  |              |             |                   |
| GoTV Streaming v Netflix*<br>(*firm: Wilkie Farr)               | EPR 8478245<br>EPR 8989715       | USPTO        | 2023        | P,t               |
| (Patent related to rendering content on a wireless device)      |                                  |              |             |                   |
| Greenthread v MPS*<br>(*firm: Perkins Coie)                     | 23-579-RGA                       | DE           | 2024        | P                 |
| (Patents related to semiconductor structure with graded doping) |                                  |              |             |                   |

## Cases (continued)

| CASE <sup>1</sup>                                          | CASE NUMBER                    | LOCATION        | YEAR           | TYPE <sup>2</sup> |
|------------------------------------------------------------|--------------------------------|-----------------|----------------|-------------------|
| MPS* v REED<br>(*firm: Perkins Coie)                       | 23-1155-JFM                    | DE              | 2023 -         | P,t               |
| (Patent related to bootstrap refresh control)              |                                |                 |                |                   |
| Verizon v Omega*<br>(*firm: Allen Dyer)                    | IPR2023--01162                 | PTAB            | 2023 -         | P,t               |
| (Patent related to multi-vehicle communication)            |                                |                 |                |                   |
| MOSAID v MediaTek*<br>(*firm: Fish & Richardson)           | 2:23-cv-00129-<br>JRG-RSP      | EDTX, Marshall  | 2023 -<br>2024 | P                 |
| (Patents related to IC Power Management)                   |                                |                 |                |                   |
| GoTV Streaming v Netflix*<br>(*firm: Wilkie Farr)          | 2 :22-cv-07556-<br>RGK-SHK     | CDCA            | 2023           | P                 |
| (Patent related to rendering content on a wireless device) |                                |                 |                |                   |
| Lifetime* v Qima<br>(*firm: Fabricant)                     | 2:23-cv-00216-<br>JRG          | EDTX, Marshall  | 2024           | P,t               |
| (Patents related to Quality Management)                    |                                |                 |                |                   |
| Stellar* v Motorola Solutions<br>(*firm: Devlin)           | 4:23-cv-00750-<br>SDJ          | EDTX, Sherman   | 2024 -         | P                 |
| (Patents related to write protect recording)               |                                |                 |                |                   |
| Enovsys* v Lyft<br>(*firm: Seth Law)                       | 23-cv-05157-EJD                | NDCA, San Jose  | 2024           | P                 |
| (Patents related to mobile unit tracking)                  |                                |                 |                |                   |
| ARM v ICPillar*<br>(*firm: Lowenstein)                     | IPR2024-00476<br>IPR2024-00566 | PTAB            | 2024           | P,t               |
| (Patents related to computer method for IC design)         |                                |                 |                |                   |
| Maxell v TCL*<br>(*firm: King & Spalding)                  | 5:23-CV-00108-<br>RWS-JBB      | EDTX, Texarkana | 2024 -         | P,t               |
| (Patents related to image display apparatus)               |                                |                 |                |                   |
| Enovsys* v Uber<br>(*firm: Seth Law)                       | 23-cv-04549-EJD                | NDCA, San Jose  | 2024           | P                 |
| (Patents related to mobile unit tracking)                  |                                |                 |                |                   |

## Cases (continued)

| CASE <sup>1</sup>                                | CASE NUMBER                                     | LOCATION    | YEAR   | TYPE <sup>2</sup> |
|--------------------------------------------------|-------------------------------------------------|-------------|--------|-------------------|
| Uber v Enovsys*<br>(*firm: Seth Law)             | IPR2024-00825<br>IPR2024-00826<br>IPR2024-00827 | PTAB        | 2024 - | P,t               |
| (Patents related to mobile unit tracking)        |                                                 |             |        |                   |
| JUUL v NJOY*<br>(*firm: Weil Gotshal)            | 337-TA-1368<br>IPR2024-00231                    | ITC<br>PTAB | 2024   | P,t,TH            |
| (Patent related to vaping devices)               |                                                 |             |        |                   |
| RJR v Guangdong et al.*<br>(*firm: Mei & Mark)   | 337-TA-1410                                     | ITC         | 2024 - | P,t               |
| (Patent related to vaping devices)               |                                                 |             |        |                   |
| RJR v Kangvape*<br>(*firm: Fish & Richardson)    | 337-TA-1410                                     | ITC         | 2024 - | P,t               |
| (Patent related to vaping devices)               |                                                 |             |        |                   |
| RJR v Breeze et al.*<br>(*firm: Goodwin Procter) | 337-TA-1410                                     | ITC         | 2024 - | P,t               |
| (Patent related to vaping devices)               |                                                 |             |        |                   |
| RJR v Pastel et al.*<br>(*firm: Keller Heckman)  | 337-TA-1410                                     | ITC         | 2024 - | P,t               |
| (Patent related to vaping devices)               |                                                 |             |        |                   |
| RJR v Shenzhen Yanyang et al.*<br>(*firm: Rimon) | 337-TA-1410                                     | ITC         | 2024 - | P,t               |
| (Patent related to vaping devices)               |                                                 |             |        |                   |
| RJR v Maduro*<br>(*firm: Thompson Hine)          | 337-TA-1410                                     | ITC         | 2024 - | P,t               |
| (Patent related to vaping devices)               |                                                 |             |        |                   |
| RJR v TheSy*<br>(*firm: Thompson Hine)           | 337-TA-1410                                     | ITC         | 2024 - | P,t               |
| (Patent related to vaping devices)               |                                                 |             |        |                   |

## Cases (continued)

| CASE <sup>1</sup>                               | CASE NUMBER               | LOCATION       | YEAR   | TYPE <sup>2</sup> |
|-------------------------------------------------|---------------------------|----------------|--------|-------------------|
| RJR v SV3*<br>(*firm: Sterne Kessler)           | 337-TA-1410               | ITC            | 2024 - | P,t               |
| (Patent related to vaping devices)              |                           |                |        |                   |
| REED v MPS*<br>(*firm: Perkins Coie)            | IPR2024-00871             | PTAB           | 2024 - | P,t               |
| (Patent related to bootstrap refresh control)   |                           |                |        |                   |
| Phenix* v AU Optronics<br>(*firm: Womble Bond)  | 2:23-cv-00477-<br>RWS-RSP | EDTX, Marshall | 2024 - | P                 |
| (Patents related to Gamma reference generation) |                           |                |        |                   |
| Phenix* v Innolux<br>(*firm: Womble Bond)       | 2:23-cv-00478-<br>RWS-RSP | EDTX, Marshall | 2024 - | P                 |
| (Patents related to Gamma reference generation) |                           |                |        |                   |

**Cases (continued)**

I have worked with other clients in various areas of my expertise, including “system, product, and process investigation,” “patent valuation,” “product liability and insurance claim investigation,” “quality systems consulting and engineering,” and “IP licensing.” This work generally relates to patents and/or trade secrets and may involve analysis of products either defensively or offensively. In no case does any of the work involve design of circuits, processes, packaging, software, or systems.

Non-confidentially, I have represented a radiation effects testing company, ICS Radiation Technology. Further, I have worked with investment companies, such as Hatcreek Partners, reviewing potential investment opportunities, and have participated as a technical advisor to nLine Corporation, a company that developed a product for semiconductor wafer inspection using holographic High Aspect Ratio Inspection (HARI) technology. Work associated with each of these matters occurred more than 10 years ago.

These and other non-confidentially related companies are:

The Aspire International Foundation (2019-present)

- Partner;
- Rediscovering and redefining identity and purpose through experiential equine learning programs;
- Not assigned any patents and not engaged in any IP related activities.

Casualty Consulting Group of America (2013-present)

- Partner;
- Assessment of structural damage caused by extreme weather events;
- Not assigned any patents and not engaged in any IP related activities.

VCSY (2013-2020)

- Advisory board Member;
- Technology related to encrypted communication.

Bethel Cannon Group / Bethel Cannon Holdings (2011-present)

- Partner;
- Counseling / Event / Retreat Center / Hunting Lodge;
- Not assigned any patents and not engaged in any IP related activities.

Spirit Song Youth Equestrian Academy / Spirit Song Holdings (2011-present)

- CEO;
- Equine Assisted Learning Program for abused / traumatized youth, families, corporations, and churches;
- Not assigned any patents and not engaged in any IP related activities.

**Cases (continued)****E<sup>3</sup>A (2016-present)**

- President (2018-2023);
- Certification training of Equine Practitioners;
- Not assigned any patents and not engaged in any IP related activities.

**Novo Tellus Capital Partners (2016-2017)**

- Novo Tellus is an investment firm. I served as a technical advisor in reviewing the technology and contracts of investment opportunities.

**UTAC (2008-2016)**

- Technical consultant in matters related to packaging test and assembly, patents, and contracts.

**ICS Radiation Technology (1988-2009)**

- Consulting work related to nuclear radiation effects testing.

**Creative Management Consultants (CMC) (2003-2004)**

- Consulting work related to Internet services, such as access service to clients and web site hosting services; providing business co-op services and internet product purchasing sites.

**Hatcreek Partners (1999-2003)**

- Hatcreek Partners is an investment firm. I served as a technical advisor in reviewing the technology of investment opportunities.

**nLine Corporation (1999-2003)**

- Member of Technical Advisory Board;
- nLine Corp.'s business related to semiconductor holographic High Aspect Ratio Inspection (HARI) technology.

**Texas Instruments (pre 2002)**

- Patent evaluation and application consulting.

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