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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/743,014	05/01/2007	Richard V. Orlando	PHL19003USU	5927
116438	7590	01/08/2024	EXAMINER	
Apogee Law Group 26895 Aliso Creek Road Suite 104 Aliso Viejo, CA 92656			SHENG, TOM V	
			ART UNIT	PAPER NUMBER
			2629	
			NOTIFICATION DATE	DELIVERY MODE
			01/08/2024	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@goapogee.com
jcwilk@goapogee.com
mara@goapogee.com



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
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Alexandria, VA 22313-1450
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In re Patent No.: 7,557,788 :
Issue Date: July 07, 2009 :
Application No.: 11/743,014 : NOTICE
Filed: May 01, 2007 :
Attorney Docket No.: PHL19003USU :

This is a notice regarding the request for acceptance of a fee deficiency submission under 37 CFR 1.28(c) filed October 05, 2023.

The Office no longer investigates or rejects original or reissue applications under 37 CFR 1.56. **1098 Off. Gaz. Pat. Office 502 (January 3, 1989)**. Therefore, nothing in this Notice is intended to imply that an investigation was done.

The fee deficiency submission under 37 CFR 1.28(c) is hereby **ACCEPTED**.

This application is no longer entitled to small entity status. Accordingly, all future fees paid in this application must be paid at the undiscounted rate.

Inquiries related to this communication should be directed to Dale Hall, Paralegal Specialist at (571) 272-3586.

***/Dale A. Hall/
Paralegal Specialist, OPET***



UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/743,014	05/01/2007	Richard V. Orlando	PHL19003USU

116438
Apogee Law Group
26895 Aliso Creek Road
Suite 104
Aliso Viejo, CA 92656

CONFIRMATION NO. 5927
IMPROPER CPOA LETTER



OC00000063501909

Date Mailed: 10/20/2023

NOTICE REGARDING POWER OF ATTORNEY

This is in response to the power of attorney filed 10/06/2023. The power of attorney in this application is not accepted for the reason(s) listed below:

- The revocation is not signed by the applicant or the assignee of the entire interest.

/hteffer/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

8791
WOMBLE BOND DICKINSON (US) LLP
ATTN: IP DOCKETING
P.O. Box 570489
ATLANTA, GA 30357-0037
UNITED STATES

Under the Paperwork Reduction Act of 1995 no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**PATENT - POWER OF ATTORNEY
OR
REVOCATION OF POWER OF ATTORNEY
WITH A NEW POWER OF ATTORNEY
AND
CHANGE OF CORRESPONDENCE ADDRESS**

Patent Number	7,557,788
Issue Date	July 7, 2009
First Named Inventor	Richard V. ORLANDO
Title	GAMMA REFERENCE VOLTAGE GENERATOR
Attorney Docket No.	115013P002

I hereby revoke all previous powers of attorney given in the above-identified patent.

☐ A Power of Attorney is submitted herewith.

OR
☒ I hereby appoint Practitioner(s) associated with the Customer Number identified in the box at right as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

8791

OR
☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Please recognize or change the correspondence address for the above-identified patent to:

☒ The address associated with the above-identified Customer Number.

OR
☐ The address associated with the Customer Number identified in the box at right:

☐ Firm or
☐ Individual Name

Address

City

State

Zip

Country

Telephone

Email

I am the:

☐ Applicant.

OR

☒ Patent owner.

Statement under 37 CFR 1.73(c) (Form PTO/AIA/56) submitted herewith or filed on _____

SIGNATURE of Applicant or Patent Owner

Signature

Name

Date

Telephone

Title and Company

PHENIX LONGHORN, LLC

NOTE: Signatures of all the applicants or patent owners of the entire interest or their representative(s) are required. If more than one signature is required, submit multiple forms, check the box below, and identify the total number of forms submitted in the blank below.

☒ A total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-8199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	48691142
Application Number:	11743014
International Application Number:	
Confirmation Number:	5927
Title of Invention:	GAMMA REFERENCE VOLTAGE GENERATOR
First Named Inventor/Applicant Name:	Richard V. Orlando
Customer Number:	116438
Filer:	Lester Vincent/Linda Quintana
Filer Authorized By:	Lester Vincent
Attorney Docket Number:	PHL19003USU
Receipt Date:	06-OCT-2023
Filing Date:	01-MAY-2007
Time Stamp:	17:33:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Assignee showing of ownership per 37 CFR 3.73	115013P002373cStatement-AppendixA.pdf	2003289	no	4
			98fb878c6ab4b463b8c99e30beebb16ac719ffb6		

Warnings:

Information:					
2	Power of Attorney	PhenixLonghornP002POAExecuted.pdf	654735	no	1
			4739ea9e27cb2aa815585a1fa164a99113cac399		
Warnings:					
Information:					
Total Files Size (in bytes):				2658024	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)Applicant/Patent Owner: PHENIX LONGHORN, LLCApplication No./Patent No.: 7,557,788Filed/Issue Date: June 19, 2007Titled: GAMMA REFERENCE VOLTAGE GENERATORPHENIX LONGHORN, LLC, a company

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose one of options 1, 2, 3 or 4 below):

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
- ☐ The extent (by percentage) of its ownership interest is _____. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose one of options A or B below):

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
- B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Richard V. ORLANDO and Trevor A. BLYTH To: ALTA ANALOG, INC.The document was recorded in the United States Patent and Trademark Office at
Reel 019233, Frame 0515, or for which a copy thereof is attached.2. From: ALTA ANALOG, INC. To: COMERICA BANKThe document was recorded in the United States Patent and Trademark Office at
Reel 024630, Frame 0270, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Innolux Corporation Exhibit 1002, Page 7

STATEMENT UNDER 37 CFR 3.73(c)

3. From: ALTA ANALOG, INC. To: Richard ORLANDO and AVM CAPITAL LP

The document was recorded in the United States Patent and Trademark Office at
Reel 033360, Frame 0474, or for which a copy thereof is attached.

4. From: AVM CAPITAL LP To: Maury DOMENGEAUX

The document was recorded in the United States Patent and Trademark Office at
Reel 036114, Frame 0576, or for which a copy thereof is attached.

5. From: ALTA ANALOG, INC. To: Richard V. ORLANDO and AVM CAPITAL LP

The document was recorded in the United States Patent and Trademark Office at
Reel 036142, Frame 0214, or for which a copy thereof is attached.

6. From: COMERICA BANK To: ALTA ANALOG, INC.

The document was recorded in the United States Patent and Trademark Office at
Reel 036067, Frame 0288, or for which a copy thereof is attached.

☒ Additional documents in the chain of title are listed on a supplemental sheet(s).

☒ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Lester J. Vincent/

October 6, 2023

Signature

Date

Lester J. Vincent

31,460

Printed or Typed Name

Title or Registration Number

APPENDIX A TO STATEMENT UNDER 37 CFR 3.73(c)

A chain of title of the patent application/patent identified above to the current assignee (continued):

7. From: Richard V. ORLANDO and Maury DOMENGEAUX To: PHENIX, LLC

The document was recorded in the United States Patent and Trademark Office at

Reel 036114, Frame 0930, or for which a copy thereof is attached.

8. From: AVM CAPITAL LP To: Maury DOMENGEAUX

The document was recorded in the United States Patent and Trademark Office at

Reel 037961, Frame 0726, or for which a copy thereof is attached.

9. From: ALTA ANALOG, INC. To: Richard V. ORLANDO and AVM CAPITAL LP

The document was recorded in the United States Patent and Trademark Office at

Reel 037960, Frame 0875, or for which a copy thereof is attached.

10. From: Richard V. ORLANDO and Maury DOMENGEAUX To: PHENIX, LLC

The document was recorded in the United States Patent and Trademark Office at

Reel 037961, Frame 0718, or for which a copy thereof is attached.

11. From: PHENIX, LLC To: PHENIX LONGHORN, LLC

The document was recorded in the United States Patent and Trademark Office at

Reel 040834, Frame 0069, or for which a copy thereof is attached.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

CERTIFICATE OF EFS-WEB TRANSMISSION

I hereby certify that this correspondence is being submitted electronically via EFS Web on the date shown below.

Linda Quintana
(Name)

/Linda Quintana/
(Signature)

October 5, 2023
(Date)

Attorney Docket No.: 115013P002

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor : Richard V. ORLANDO
Appl. No. : 11/743,014
Filed : May 01, 2007
For : GAMMA REFERENCE
VOLTAGE GENERATOR
U.S. Patent No. : 7,557,788

Examiner: Tom V. SHENG
Art Unit: 2629
Confirmation No.: 5927

E-Filed via EFS Web
Mail Stop: Petition
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PETITION UNDER 37 CFR 1.28(C) FOR FEE DEFICIENCY PAYMENT

Petition Examiner:

I. Notification of Loss of Small Entity Status

Patentee hereby notifies the United States Patent and Trademark Office (PTO) that small entity status is no longer appropriate for this patent. Patentee asserts that Patentee will pay undiscounted fees for this patent.

II. Fee Deficiency Payment

Patentee asserts that small entity status was previously established in good faith and that the PTO was through error not notified of a loss of small entity status. See 37 CFR 1.28(c).

Pursuant to 37 CFR § 1.28(c), please charge our Deposit Account No. 09-0528 in the amount of the fee deficiency, representing the difference in fees originally paid as a small entity and the current large-entity fees. The following chart itemizes the amounts for the above-identified patent and sets forth the total deficiency owed.

III. Chart of Itemization of Fee Deficiency Owed

Fee Description or Type	Current Fee Amount	Amount Previously Paid	Date Previously Paid	Deficiency Owed
7.5 Year Maintenance Fee	\$3,760.00	\$1,800.00	02/15/2019	\$1,960.00
Petition for Delayed Payment	\$2,100.00	\$1,000.00	02/15/2019	\$1,100.00
11.5 Year Maintenance Fee	\$7,700.00	\$3,850.00	07/06/2021	\$3,850.00
Surcharge (11.5 year) Late Payment	\$ 500.00	\$ 250.00	07/06/2021	\$ 250.00
Total Deficiency Owed (sum of all entries in "Deficiency Owed" column)				\$7,160.00

Please charge the total fee deficiency owed of \$7,160.00 to Deposit Account No. 09-0528.

If there are any additional fees owed, please charge Deposit Account No. 09-0528.

Respectfully submitted,

WOMBLE BOND DICKINSON (US) LLP

Date: October 5, 2023

/Lester J. Vincent/
Lester J. Vincent
Reg. No. 31,460

Attn: IP Docketing
P.O. Box 570489
Atlanta, GA 30357
(408) 720-8300

Electronic Acknowledgement Receipt

EFS ID:	48686540
Application Number:	11743014
International Application Number:	
Confirmation Number:	5927
Title of Invention:	GAMMA REFERENCE VOLTAGE GENERATOR
First Named Inventor/Applicant Name:	Richard V. Orlando
Customer Number:	116438
Filer:	Lester Vincent/Linda Quintana
Filer Authorized By:	Lester Vincent
Attorney Docket Number:	PHL19003USU
Receipt Date:	05-OCT-2023
Filing Date:	01-MAY-2007
Time Stamp:	19:34:20
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Petition for review by the Office of Petitions	115013P002_PetitionForFeeDeficiencyPayment.pdf	216258 d60ff07046fa8d6f45e0d62be9d04e57a1cd0a	no	2

Warnings:

Information:	
Total Files Size (in bytes):	216258
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.	

U.S. POSTAGE >> PITNEY BOWES
ZIP 22206 \$ 000.50⁰
02 4W
00003555069 FEB 22 2019



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PORTUNITY EMPLOYER

BC: 22313145050 *2472-03733-02-23
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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/743,014	05/01/2007	Richard V. Orlando	ALTA-P007B

ALTA ANALOG, INC.
1737 NORTH FIRST STREET
SUITE 620
SAN JOSE, CA 95112



CONFIRMATION NO. 5927
POWER OF ATTORNEY NOTICE



Date Mailed: 02/25/2019

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 02/14/2019.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/cvorachack/



UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/743,014	05/01/2007	Richard V. Orlando	ALTA-P007B

CONFIRMATION NO. 5927

POA ACCEPTANCE LETTER



OC000000106098216

116438
Apogee Law Group
26895 Aliso Creek Road
Suite 104
Aliso Viejo, CA 92656

Date Mailed: 02/25/2019

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 02/14/2019.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/cvorachack/



UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/743,014	05/01/2007	Richard V. Orlando	ALTA-P007B

ALTA ANALOG, INC.
1737 NORTH FIRST STREET
SUITE 620
SAN JOSE, CA 95112

CONFIRMATION NO. 5927
POWER OF ATTORNEY NOTICE



OC000000106098202

Date Mailed: 02/25/2019

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 02/14/2019.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/cvorachack/

PETITION TO ACCEPT UNINTENTIONALLY DELAYED PAYMENT OF MAINTENANCE FEE IN AN EXPIRED PATENT (37 CFR 1.378(b))				
Patent Number	Issue Date	Application Number	Filing Date	Docket Number (if applicable)
7557788	07-Jul-2009	11743014	01-May-2007	
CAUTION: Maintenance fee (and surcharge, if any) payment must correctly identify: (1) the patent number and (2) the application number of the actual U.S. application leading to issuance of that patent to ensure the fee(s) is/are associated with the correct patent. 37 CFR 1.366(c) and (d).				
Applicants claims the following fee status:				
☒ Small Entity				
☐ Micro Entity				
☐ Regular Undiscounted				
Applicants selects the following :				
☐ 3 1/2		☒ 7 1/2		☐ 11 1/2
PETITION FEE The petition fee required by 37 CFR 1.17(m) (Fee Code 1558/2558) must be paid as a condition of accepting unintentionally delayed payment of the maintenance fee.				
MAINTENANCE FEE (37 CFR 1.20(e)-(g)) The appropriate maintenance fee must be submitted with this petition.				
STATEMENT THE UNDERSIGNED CERTIFIES THAT THE DELAY IN PAYMENT OF THE MAINTENANCE FEE TO THIS PATENT WAS UNINTENTIONAL				
PETITIONER(S) REQUEST THAT THE DELAYED PAYMENT OF THE MAINTENANCE FEE BE ACCEPTED AND THE PATENT REINSTATED				
THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES 37 CFR 1.378(c) states: "Any petition under this section must be signed in compliance with 37 CFR 1.33(b) ."				
I certify, in accordance with 37 CFR 1.4(d)(4) that I am				
☒ An attorney or agent registered to practice before the Patent and Trademark Office who has been given power of attorney in this application. ☐ An attorney or agent registered to practice before the Patent and Trademark Office ☐ A sole patentee ☐ A joint patentee; I certify that I am authorized to sign this submission on behalf of all the other patentees as evidenced by the power of attorney in the application ☐ A joint patentee; all of whom are signing this e-petition ☐ The assignee of record of the entire interest that qualifies as an authorized party under 37 CFR 1.33(b)				

Attorney			
A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature			
Signature	/Francisco A. Rubio-Campos/		
Name	Francisco A. Rubio-Campos	Registration Number	45358

Electronic Patent Application Fee Transmittal

Application Number:	11743014			
Filing Date:	01-May-2007			
Title of Invention:	GAMMA REFERENCE VOLTAGE GENERATOR			
First Named Inventor/Applicant Name:	Richard V. Orlando			
Filer:	Francisco Rubio-Campos			
Attorney Docket Number:	ALTA-P007B			
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
MAINTENANCE FEE DUE AT 7.5 YEARS	2552	1	1800	1800
PET. DELAY PYMT MAINTAIN PATENT IN FORCE	2558	1	1000	1000
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				2800



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

In re Patent No.	7557788	:
Issue Date:	July 7,2009	:
Application No.	11743014	:DECISION GRANTING PETITION
Filed:	May 1,2007	:UNDER 37 CFR 1.378(b)
Attorney Docket No.	ALTA-P007B	:

This is a decision on the electronic petition, filed February 15,2019 ,under 37 CFR 1.378(b) to accept the unintentionally delayed payment of the 7.5 year maintenance fee for the above-identified patent.

The petition is **GRANTED**.

The maintenance fee is accepted, and the above-identified patent reinstated as of February 15,2019 . This decision also constitutes notice that the fee has been accepted. An electronic copy of the petition and this decision has been created as an entry in the Image File Wrapper. Nevertheless, petitioner should print and retain an independent copy.

Telephone inquiries related to this electronic decision should be directed to the Electronic Business Center at 1-866-217-9197.

Electronic Acknowledgement Receipt

EFS ID:	35159456
Application Number:	11743014
Patent Number:	7557788
Confirmation Number:	5927
Petition Issued Date:	February 15,2019
Title of Invention:	GAMMA REFERENCE VOLTAGE GENERATOR
First Named Inventor/Applicant Name:	Richard V. Orlando
Correspondence Address:	- - - - - - -
Filer:	Francisco Rubio-Campos
Filer Authorized By:	
Attorney Docket Number:	ALTA-P007B
Receipt Date:	15-FEB-2019
Filing Date:	01-MAY-2007
Time Stamp:	00:40:58
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
------------------------	-----

Payment Type	CARD
Payment was successfully received in RAM	\$ 2800
RAM confirmation Number	021519INTEFSW00444800
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Petition automatically granted by EFS	petition-request.pdf	32628	no	2
			8312c48b0dbbdeb9b144593f0b2e1455a24b0822		

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	31913	no	2
			30cdae2fc6e46ed29635cff0afb8b822f4d8a6c8		

Warnings:

Information:

Total Files Size (in bytes):	64541
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Under the Paperwork Reduction Act of 1995, no person is required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

☒ Practitioners associated with Customer Number: 116438

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number

Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

☒ The address associated with Customer Number: 116438

OR

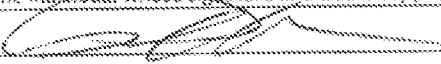
☐ Firm or individual name		
Address		
City	State	Zip
Country		
Telephone		Email

Assignee name and address: Phenix Longhorn, LLC, 2325 Oak Alley, Tyler, TX 75703

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of the practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee.

Signature 	Date 2/14/19
Name Richard V. Orlando	Telephone (408) 499-8455
Title President - Phenix Longhorn, LLC	

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 18 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)Applicant/Patent Owner: Phenix Longhorn, LLCApplication No./Patent No.: 11/743,014 / 7,557,788Filed/Issue Date: 5/1/07 / 7/7/09Titled: Gamma Reference Voltage GeneratorPhenix Longhorn LLC, a Limited Liability Corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
- ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
- B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Orlando, Richard V & Blyth, Trevor A To: Alta Analog, IncThe document was recorded in the United States Patent and Trademark Office at
Reel 019233, Frame 0515, or for which a copy thereof is attached.2. From: Alta Analog, Inc. To: Comerica BankThe document was recorded in the United States Patent and Trademark Office at
Reel 024630, Frame 0270, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Innolux Corporation Exhibit 1002, Page 27

STATEMENT UNDER 37 CFR 3.73(c)

3. From: Alta Analog, Inc To: Orlando, Richard

The document was recorded in the United States Patent and Trademark Office at
Reel 033360, Frame 0474, or for which a copy thereof is attached.

4. From: AVM Capital LP To: Domengeaux, Maury

The document was recorded in the United States Patent and Trademark Office at
Reel 036114, Frame 0576, or for which a copy thereof is attached.

5. From: Alta Analog, Inc. To: Orlando, Richard

The document was recorded in the United States Patent and Trademark Office at
Reel 036142, Frame 0214, or for which a copy thereof is attached.

6. From: Comerica Bank To: Alta Analog, Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 036067, Frame 0288, or for which a copy thereof is attached.

☒ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Francisco A. Rubio-Campos, Reg. No. 45,358/

2/14/19

Signature

Date

Francisco A. Rubio-Campos

USPTO Reg. No. 45,358

Printed or Typed Name

Title or Registration Number

STATEMENT UNDER 37 CFR 3.73(c)

(Continued)

7. From: Orlando, Richard & Domengeaux, Maury
To: Phenix LLC

The document was recorded in the United States Patent and Trademark Office at
Reel: 036114, Frame: 0930

8. From: AVM Capital, LP
To: Domengeaux, Maury

The document was recorded in the United States Patent and Trademark Office at
Reel: 037961, Frame: 0726

9. From: Alta Analog, Inc.
To: Orlando, Richard

The document was recorded in the United States Patent and Trademark Office at
Reel: 037960, Frame: 0875

10. From: Orlando, Richard
To: Phenix, LLC

The document was recorded in the United States Patent and Trademark Office at
Reel: 037961, Frame: 0718

11. From: Phenix, LLC
To: Phenix Longhorn , LLC

The document was recorded in the United States Patent and Trademark Office at
Reel: 040834, Frame: 0069

Electronic Acknowledgement Receipt

EFS ID:	35159411
Application Number:	11743014
International Application Number:	
Confirmation Number:	5927
Title of Invention:	GAMMA REFERENCE VOLTAGE GENERATOR
First Named Inventor/Applicant Name:	Richard V. Orlando
Correspondence Address:	ALTA ANALOG, INC. - 1737 NORTH FIRST STREET SUITE 620 SAN JOSE CA 95112 US 408-441-9600 -
Filer:	Francisco A. Rubio-Campos
Filer Authorized By:	
Attorney Docket Number:	ALTA-P007B
Receipt Date:	14-FEB-2019
Filing Date:	01-MAY-2007
Time Stamp:	23:57:51
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	PLL19001USU_POA.pdf	365539	no	1
			2ba963a19a9c1b67d8c0e01bc22b25f3af304464		
Warnings:					
Information:					
2	Assignee showing of ownership per 37 CFR 3.73	PLL19001USU_37CFR3-73.pdf	2618758	no	3
			2ac363204fe609cac8e046a9a02c9aaca34d8418		
Warnings:					
Information:					
Total Files Size (in bytes):			2984297		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT2945585

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	SECURITY INTEREST
CONVEYING PARTY DATA	
Name	Execution Date
ALTA ANALOG INC	06/27/2014
RECEIVING PARTY DATA	
Name:	RICHARD ORLANDO
Street Address:	24020 SUMMIT WOODS DR
City:	LOS GATOS
State/Country:	CALIFORNIA
Postal Code:	95033
Name:	AVM CAPITAL LP
Street Address:	14375 SARATOGA AVENUE
Internal Address:	SUITE 104
City:	SARATOGA, CA
State/Country:	CALIFORNIA
Postal Code:	95070
PROPERTY NUMBERS Total: 8	
Property Type	Number
Patent Number:	8194015
Patent Number:	8188952
Patent Number:	7557788
Patent Number:	7554843
Patent Number:	7233305
Patent Number:	7061380
Patent Number:	6985372
Patent Number:	6693828
CORRESPONDENCE DATA	
Fax Number:	(408)353-8707
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
Phone:	408-499-8455
Email:	rorlando@alta-analog.com
Correspondent Name:	RICHARD V ORLANDO

Address Line 1:	24020 SUMMIT WOODS DR
Address Line 4:	LOS GATOS, CALIFORNIA 95033

NAME OF SUBMITTER:	RICHARD V ORLANDO
---------------------------	-------------------

SIGNATURE:	/Richard V. Orlando/
-------------------	----------------------

DATE SIGNED:	07/18/2014
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	This document serves as an Oath/Declaration (37 CFR 1.63).
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Total Attachments: 5

source=Alta Notice of Default#page1.tif

source=Alta Demand for Delivery#page1.tif

source=Alta Demand for Delivery#page2.tif

source=Alta Demand for Delivery#page3.tif

source=Alta Demand for Delivery#page4.tif

June 17, 2014

VIA HAND DELIVERY

Attn: Richard Orlando, President
Alta Analog, Inc.
24020 Summit Woods Drive
Los Gatos, CA 95033

Re: Notice of Default Under Provisions of Security Agreement Between Richard Orlando and AVM Capital LP, as secured parties, and Alta Analog, Inc., as debtor

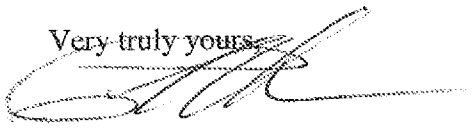
Dear Alta Analog, Inc.:

This is to advise you that you are in default under the terms of the security agreement between Richard Orlando and AVM Capital LP, on the one hand, and Alta Analog, Inc., on the other hand, dated June 30, 2010, and as amended by the Modification One To The Third Amended Security Agreement And The Reimbursement Agreement dated October 31, 2011 ("Security Agreement"). You are in default of the Security Agreement because failure to pay sums when due. As of June 1, 2014, the amount due Richard Orlando was \$409,799.39.

If you have not cured this default by June 27, 2014, we will take all appropriate steps to enforce our security interest, including without limitation giving notice to account debtors pursuant to U.C.C. § 9607(a)(1), repossession of the collateral pursuant to U.C.C. § 9609, public or private sale of the collateral pursuant to U.C.C. § 9610, and strict foreclosure of the collateral under U.C.C. § 9622.

If you have any questions regarding this notice or the nature of your default, please contact the undersigned immediately. We look forward to your prompt response.

Very truly yours,

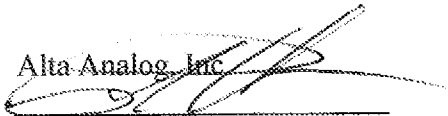


RICHARD ORLANDO

Acknowledgment of Receipt:

Dated: 6/17/2014

Alta Analog, Inc.



Richard Orlando
President

June 27, 2014

VIA HAND DELIVERY

Attn: Richard Orlando, President
Alta Analog, Inc.
24020 Summit Woods Drive
Los Gatos, CA 95033

Re: Demand for Delivery of Possession of Collateral

Dear Alta Analog, Inc.:

This is to advise you that you are in default under the terms of the security agreement between Richard Orlando and AVM Capital LP, on the one hand, and Alta Analog, Inc., on the other hand, dated June 30, 2010, and as amended by the Modification One To The Third Amended Security Agreement And The Reimbursement Agreement dated October 31, 2011 ("Security Agreement"). Further, you have failed to cure the default within the period specified in the Security Agreement.

Pursuant to California U.C.C. § 9609, this letter constitutes written demand that you turn over possession of the following collateral to the secured party:

- PATENT NO. 8,194,015 (Reduction of the effect of AVDD power supply variation on gamma reference voltages and the ability to compensate for manufacturing variations);
- PATENT No. 8,188,952 (System and method for reducing LCD flicker);
- PATENT NO. 7,557,788 (Gamma reference voltage generator);
- PATENT NO. 7,554,843, Serial bus incorporating high voltage programming signals);
- PATENT NO. 7,233,305 (Gamma reference voltage generator);
- PATENT NO. 7,061,380 (Monitoring and recording tag with RF interface and indicator for fault event);

Attn: Richard Orlando, President

Alta Analog, Inc.

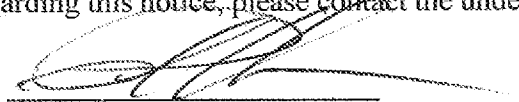
Page 2 of 2

- PATENT NO. 6,985,372 (Analog content addressable memory (CAM) employing analog nonvolatile storage);
- PATENT NO. 6,693,828 (Method for compensating field-induced retention loss in non-volatile storage with reference cells); and
- Various Product Inventory (Wafer and Packaged)

If you fail to deliver possession of the collateral to the undersigned on or before June 27, 2014, and we are forced to file a lawsuit to obtain possession of the collateral, all attorney's fees we incur in obtaining possession of the collateral will be included in the debt secured by the collateral pursuant to the terms of the Security Agreement.

If you have any questions regarding this notice, please contact the undersigned.

Dated: June 27, 2014



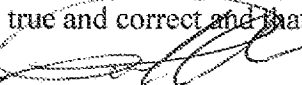
Richard Orlando

I, Richard Orlando, declare and state that:

1. I am the President of the Debtor Alta Analog, Inc. ("Debtor") and am duly authorized to make this declaration and take the actions described herein on the Debtor's behalf.
2. Richard Orlando and AVM Capital LP are the secured parties under the terms of a security agreement between Richard Orlando and AVM Capital LP, on the one hand ("Secured Party"), and Alta Analog, Inc., on the other hand, dated June 30, 2010, and as amended by the Modification One To The Third Amended Security Agreement And The Reimbursement Agreement dated October 31, 2011 ("Security Agreement"), pursuant to which the Debtor granted to Secured Party a security interest in the following collateral:
 - PATENT NO. 8,194,015 (Reduction of the effect of AVDD power supply variation on gamma reference voltages and the ability to compensate for manufacturing variations);
 - PATENT No. 8,188,952 (System and method for reducing LCD flicker);
 - PATENT NO. 7,557,788 (Gamma reference voltage generator);
 - PATENT NO. 7,554,843, Serial bus incorporating high voltage programming signals);
 - PATENT NO. 7,233,305 (Gamma reference voltage generator);
 - PATENT NO. 7,061,380 (Monitoring and recording tag with RF interface and indicator for fault event);
 - PATENT NO. 6,985,372 (Analog content addressable memory (CAM) employing analog nonvolatile storage);
 - PATENT NO. 6,693,828 (Method for compensating field-induced retention loss in non-volatile storage with reference cells); and
 - Various Product Inventory (Wafer and Packaged)
3. The Debtor has defaulted in its obligations under the Security Agreement.
4. Pursuant to the provisions of Division 9 of the California Uniform Commercial Code, the Debtor renounces its rights to require that the Secured Party comply with the provisions in Chapter 6 of Division 9 relating to disposition of the collateral.
5. The Debtor waives any and all rights the Debtor may have to redeem the collateral under both the terms of the Security Agreement and the provisions of California U.C.C. § 9623.

6. In accordance with the provisions of California U.C.C. § 9629, in consideration of the Debtor's renunciation of its rights under Chapter 6 of Division 9 of the California Uniform Commercial Code, Secured Party waives any right to a deficiency on the debt secured by the collateral.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration was executed on June 27, 2014 at Los Gatos, California.


Richard Orlando

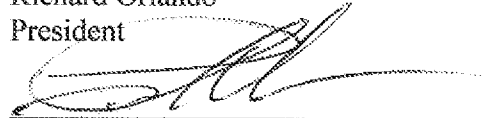
IT IS SO AGREED

Dated: 6/27/2014

Alta Analog, Inc.


Richard Orlando
President

Dated: 6/27/2014


Richard Orlando



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/743,014	07/07/2009	7557788	ALTA-P007B	5927

7590 06/17/2009
ALTA ANALOG, INC.
1737 NORTH FIRST STREET
SUITE 620
SAN JOSE, CA 95112

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Richard V. Orlando, Los Gatos, CA;
Trevor A. Blyth, Sandy, UT;



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
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Bib Data Sheet

CONFIRMATION NO. 5927

SERIAL NUMBER 11/743,014	FILING OR 371(c) DATE 05/01/2007 RULE	CLASS 345	GROUP ART UNIT 2629	ATTORNEY DOCKET NO. ALTA-P007B
APPLICANTS Richard V. Orlando, Los Gatos, CA; Trevor A. Blyth, Sandy, UT;				
** CONTINUING DATA ***** This application is a CON of 10/746,333 12/23/2003 PAT 7,233,305 which claims benefit of 60/477,680 06/11/2003				
** FOREIGN APPLICATIONS *****				
IF REQUIRED, FOREIGN FILING LICENSE GRANTED** SMALL ENTITY ** ** 05/21/2007				
Foreign Priority claimed ☐ yes ☐ no 35 USC 119 (a-d) conditions met ☐ yes ☐ no ☐ Met after Allowance Verified and Acknowledged _____ Examiner's Signature _____ Initials _____		STATE OR COUNTRY CA	SHEETS DRAWING 6	TOTAL CLAIMS 6
INDEPENDENT CLAIMS 3				
ADDRESS ALTA ANALOG, INC. 1737 NORTH FIRST STREET SUITE 620 SAN JOSE, CA95112				
TITLE GAMMA REFERENCE VOLTAGE GENERATOR				
FILING FEE RECEIVED 425	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit	

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
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22877 7590 03/05/2009

FERNANDEZ & ASSOCIATES LLP
 1047 EL CAMINO REAL
 SUITE 201
 MENLO PARK, CA 94025

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/743,014	05/01/2007	Richard V. Orlando	ALTA-P007B	5927

TITLE OF INVENTION: GAMMA REFERENCE VOLTAGE GENERATOR

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$755	\$0	\$0	\$755	06/05/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
SHENG, TOM V	2629	345-089000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☒ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1. FERNANDEZ & ASSOCIATES, LLP

2. _____

3. _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

ALTA ANALOG, INC.

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

SAN JOSE, CA

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☒ Issue Fee

☐ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

☐ A check is enclosed.

☒ Payment by credit card. Form PTO-2038 is attached. VIA EFS-web.

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 500482 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature



Date

6/5/2009

Typed or printed name

DENNIS S. FERNANDEZ

Registration No.

34,160

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CHANGE OF CORRESPONDENCE ADDRESS *Application*

Address to:
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Application Number	11/743,014
Filing Date	05/01/2007
First Named Inventor	Richard V. Orlando
Art Unit	2629
Examiner Name	Sheng, Tom V.
Attorney Docket Number	ALTA-P007B

Please change the Correspondence Address for the above-identified patent application to:

☐ The address associated with
Customer Number:

OR

☒ Firm or
Individual Name Alta Analog, Inc.

Address 1737 North First Street, Suite 620

City San Jose

State
CA

Zip 95112

Country USA

Telephone (408) 441-9600

Email

This form cannot be used to change the data associated with a Customer Number. To change the data associated with an existing Customer Number use "Request for Customer Number Data Change" (PTO/SB/124).

I am the:

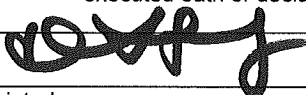
☐ Applicant/Inventor

☐ Assignee of record of the entire interest.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

☒ Attorney or agent of record. Registration Number 34,160

☐ Registered practitioner named in the application transmittal letter in an application without an executed oath or declaration. See 37 CFR 1.33(a)(1). Registration Number _____

Signature



Typed or Printed
Name

Dennis S. Fernandez

Date 6/5/2009

Telephone 650-325-4999

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐

*Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Electronic Patent Application Fee Transmittal

Application Number:	11743014			
Filing Date:	01-May-2007			
Title of Invention:	GAMMA REFERENCE VOLTAGE GENERATOR			
First Named Inventor/Applicant Name:	Richard V. Orlando			
Filer:	Dennis Fernandez/Miles Hopkins			
Attorney Docket Number:	ALTA-P007B			
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	2501	1	755	755
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				755

Electronic Acknowledgement Receipt

EFS ID:	5468190
Application Number:	11743014
International Application Number:	
Confirmation Number:	5927
Title of Invention:	GAMMA REFERENCE VOLTAGE GENERATOR
First Named Inventor/Applicant Name:	Richard V. Orlando
Customer Number:	22877
Filer:	Dennis Fernandez/Miles Hopkins
Filer Authorized By:	Dennis Fernandez
Attorney Docket Number:	ALTA-P007B
Receipt Date:	05-JUN-2009
Filing Date:	01-MAY-2007
Time Stamp:	22:59:37
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$755
RAM confirmation Number	6089
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part (.zip) (if appl.)	Pages (if appl.)
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1	Miscellaneous Incoming Letter	ALTA- P007B_Transmittal_6-5-2009. pdf	127827 300c9e92253f063958c1dc040326abfb76d32448	no	1
Warnings:					
Information:					
2	Issue Fee Payment (PTO-85B)	ALTA- P007B_PTOL-85B_6-5-2009.pdf	163540 5011df82040a09e509b7c614dc24d2182210fe22	no	1
Warnings:					
Information:					
3	Change of Address	ALTA-P007B_SB122_6-5-2009. pdf	113109 8b583cc511274e0a09d5f4c1056b300ad3295e4b	no	1
Warnings:					
Information:					
4	Fee Worksheet (PTO-875)	fee-info.pdf	29842 ab4094943028e0221c10fce1504e2bb3c1d06558	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			434318		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

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**TRANSMITTAL
FORM**

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

3

Application Number

11/743,014

Filing Date

05/01/2007

First Named Inventor

Richard V. Orlando

Art Unit

2629

Examiner Name

Sheng, Tom V.

Attorney Docket Number

ALTA-P007B

ENCLOSURES (Check all that apply)☐

Fee Transmittal Form

☐

Fee Attached

☐

Amendment/Reply

☐

After Final

☐

Affidavits/declaration(s)

☐

Extension of Time Request

☐

Express Abandonment Request

☐

Information Disclosure Statement

☐

Certified Copy of Priority Document(s)

☐Reply to Missing Parts/
Incomplete Application☐Reply to Missing Parts
under 37 CFR 1.52 or 1.53☐

Drawing(s)

☐

Licensing-related Papers

☐

Petition

☐Petition to Convert to a
Provisional Application☐

Power of Attorney, Revocation

☐

Change of Correspondence Address

☐

Terminal Disclaimer

☐

Request for Refund

☐

CD, Number of CD(s) _____

☐ Landscape Table on CD☐

After Allowance Communication to TC

☐Appeal Communication to Board
of Appeals and Interferences☐Appeal Communication to TC
(Appeal Notice, Brief, Reply Brief)☐

Proprietary Information

☐

Status Letter

☒Other Enclosure(s) (please identify
below):

PTOL-85 Part B - Fees Transmittal

Issue Fee Payment - \$755

SB122 - Change of Correspondence Address

Remarks

If Applicant has inadvertently miscalculated the required fee, the Commissioner is hereby authorized to charge any necessary amount associated with this communication or credit any overpayment to Deposit Account No: 500482.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name

Fernandez & Associates, LLP

Signature



Printed name

Dennis S. Fernandez

Date

6/5/2009

Reg. No.

34,160

CERTIFICATE OF TRANSMISSION/MAILING

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NOTICE OF ALLOWANCE AND FEE(S) DUE

22877 7590 03/05/2009

FERNANDEZ & ASSOCIATES LLP
1047 EL CAMINO REAL
SUITE 201
MENLO PARK, CA 94025

EXAMINER

SHENG, TOM V

ART UNIT

PAPER NUMBER

2629

DATE MAILED: 03/05/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

11/743,014

05/01/2007

Richard V. Orlando

ALTA-P007B

5927

TITLE OF INVENTION: GAMMA REFERENCE VOLTAGE GENERATOR

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$755	\$0	\$0	\$755	06/05/2009

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

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B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

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CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

22877 7590 03/05/2009

FERNANDEZ & ASSOCIATES LLP
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SUITE 201
MENLO PARK, CA 94025

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(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

11/743,014 05/01/2007 Richard V. Orlando ALTA-P007B 5927

TITLE OF INVENTION: GAMMA REFERENCE VOLTAGE GENERATOR

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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nonprovisional YES \$755 \$0 \$0 \$755 06/05/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
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SHENG, TOM V 2629 345-089000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

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- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

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Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/743,014	05/01/2007	Richard V. Orlando	ALTA-P007B	5927
22877	7590	03/05/2009	EXAMINER	
FERNANDEZ & ASSOCIATES LLP 1047 EL CAMINO REAL SUITE 201 MENLO PARK, CA 94025			SHENG, TOM V	
			ART UNIT	PAPER NUMBER
			2629	
DATE MAILED: 03/05/2009				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	11/743,014	ORLANDO ET AL.	
	Examiner	Art Unit	
	TOM V. SHENG	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendments filed 12/8/08 & 10/22/08.
2. ☒ The allowed claim(s) is/are 1-6.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. ☐ Notice of References Cited (PTO-892) | 5. ☐ Notice of Informal Patent Application |
| 2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date ____. |
| 3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date ____ | 7. ☐ Examiner's Amendment/Comment |
| 4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. ☐ Examiner's Statement of Reasons for Allowance |
| | 9. ☐ Other ____. |

/Richard Hjerpe/
Supervisory Patent Examiner, Art Unit 2629

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	4233	(345/89,690 348/254,674 358/519).ccs.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 15:55
S2	98	(calibrat\$3 adjust\$4 optimiz \$5) with gamma with voltage with (sens\$3 detect \$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 15:59
S3	8	S2 and S1	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 15:59
S4	3	S3 and @ad<="20030611"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 16:00
S5	3	(calibrat\$3 adjust\$4 optimiz \$5) with gamma with voltage with (sens\$3 detect \$3) with (column pixel)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 16:06
S6	108	(calibrat\$3 adjust\$4 optimiz \$5) with gamma with (sens \$3 detect\$3) with (column pixel)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 16:21
S7	5	S6 and S1	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 16:21
S8	443	(calibrat\$3 adjust\$4 optimiz \$5 correct\$3) near8 gamma same (sens\$3 detect\$3) near5 (column pixel)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 16:33
S9	26	S8 and S1	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 16:34
S10	23	S9 not (S4 S5 S7)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 16:34
S11	12	S10 and @ad<="20030611"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 16:34
S12	2	09/224168	US-PGPUB; USPAT	OR	ON	2009/02/23 17:03

S13	67	("20010010551" "3719922" "3927308" "4038685" "4057830" "4131919" "4420773" "4445189" "4456931" "4602291" "4614966" "4803554" "4875098" "4989179" "5034804" "5047861" "5049983" "5055930" "5155584" "5164915" "5264944" "5272535" "5274457" "5280358" "5289286" "5295077" "5295485" "5317407" "5339275" "5519654" "5541653" "5576757" "5585846" "5606365" "5619445" "5644636" "5680341" "5687115" "5739850" "5745409" "5760727" "5777923" "5818757" "5867430" "5901086" "5910913" "5923585" "5969986" "6104437" "6134145" "6175937" "6177956" "6282462" "6433823" "6487116" "D389501").PN. OR ("6760068").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2009/02/23 17:08
S14	0	S8 and S13	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 17:09
S15	6607	(calibrat\$3 adjust\$4 optimiz \$5 correct\$3) near8 gamma same (sens\$3 detect\$3)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 17:09
S16	3	S15 and S13	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 17:09
S17	2	(S16 S12) and (column with voltage)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 17:14
S18	185299	(sensor detector) with (outside external)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 17:15
S19	0	(S16 S12) and S18	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 17:16

S20	8	(orlando-richard-v blyth-trevor-a).in.	US-PGPUB; USPAT	OR	ON	2009/02/23 17:19
S21	3	(calibrat\$3 adjust\$4 optimiz \$5) with gamma with voltage same (sens\$3 detect \$3) with (column pixel) with display	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 18:41
S22	10	(calibrat\$3 adjust\$4 optimiz \$5 correct\$3) with gamma with voltage same (sens\$3 detect\$3) with (column pixel) with display	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 18:42
S23	1	S22 and @ad<="20030611"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 18:42
S24	0	(calibrat\$3 adjust\$4 optimiz \$5 correct\$3) with gamma with voltage same test\$3 with (column pixel) with display	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 18:47
S25	0	feedback\$3 with gamma with voltage same test\$3 with (column pixel) with display	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/23 18:48
S26	74	(calibrat\$3 adjust\$4 optimiz \$5 correct\$3) with gamma with voltage same (sens\$3 detect\$3) with display	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/24 10:39
S27	2993	gamma with (stor\$3 program \$4) with memory	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/24 10:39
S28	19	S26 and S27	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/24 10:40
S29	9	S28 and @ad<="20030611"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/24 10:40
S30	1	09/816511	US-PGPUB; USPAT	OR	ON	2009/02/24 11:03
S31	31	((calibrat\$3 adjust\$4 optimiz \$5 correct\$3) near8 gamma same (sens\$3 detect\$3) near5 (column pixel)).clm.	US-PGPUB; USPAT	OR	ON	2009/02/24 11:46
S32	8	(orlando-richard-v blyth-trevor-a).in.	US-PGPUB; USPAT	OR	ON	2009/02/24 11:46
S33	0	S31 and S32	US-PGPUB; USPAT	OR	ON	2009/02/24 11:46

S34	4241	(345/89,690 348/254,674 358/519).ccls.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/24 11:47
S35	10	S31 and S34	US-PGPUB; USPAT	OR	ON	2009/02/24 11:47
S36	43	(calibrat\$3 adjust\$4 optimiz \$5 correct\$3) with gamma adj3 voltage same ((column (data signal)) adj (line electrode)) with display	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/24 12:08
S37	95	(calibrat\$3 adjust\$4 optimiz \$5 correct\$3) with gamma adj3 voltage same ((column (data signal)) adj (line electrode))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/24 12:08
S38	38	S37 and @ad<="20030611"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/24 12:08
S39	38	gamma adj3 voltage with determin\$5 with (column pixel signal adj (line electrode))	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/24 14:08
S40	13	S39 and @ad<="20030611"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/24 14:09
S41	2	gamma adj3 voltage with manufactur\$3 with (variation difference)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/24 14:34
S42	105	gamma adj3 voltage and manufactur\$3 with (variation difference)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/24 14:35
S43	21	S42 and S34	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/24 14:36
S44	3	S43 and @ad<="20030611"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2009/02/24 14:36

2/ 28/ 09 1:33:03 PM

C:\Documents and Settings\tsheng\My Documents\EAST\workspaces\11743014.wsp

<i>Index of Claims</i> 	Application/Control No. 11743014	Applicant(s)/Patent Under Reexamination ORLANDO ET AL.
	Examiner TOM V SHENG	Art Unit 2629

✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

☐ Claims renumbered in the same order as presented by applicant				☐ CPA		☐ T.D.		☐ R.1.47		
CLAIM		DATE								
Final	Original	07/18/2008	02/28/2009							
1	1	✓	=							
2	2	✓	=							
3	3	✓	=							
4	4	✓	=							
5	5	✓	=							
6	6	✓	=							

<i>Issue Classification</i> 	Application/Control No. 11743014	Applicant(s)/Patent Under Reexamination ORLANDO ET AL.
	Examiner TOM V SHENG	Art Unit 2629

[illegible][illegible]

/TOM V SHENG/ Examiner.Art Unit 2629		2/28/2009		Total Claims Allowed:	
(Assistant Examiner)		(Date)		6	
/RICHARD HJERPE/ Supervisory Patent Examiner.Art Unit 2629		03/02/2009		O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)		(Date)		1	2

Search Notes 	Application/Control No. 11743014	Applicant(s)/Patent Under Reexamination ORLANDO ET AL.
	Examiner TOM V SHENG	Art Unit 2629

SEARCHED			
Class	Subclass	Date	Examiner
345	89, 690	7/17/08, 2/24/09	TS
348	254, 674		
358	519		

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Class/Subclass with text	7/17/08, 2/24/09	TS
Inventor(s)	7/18/08, 2/24/09	TS

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
345	89, 690	2/24/09	TS
348	674		

/T. V. S./ Examiner.Art Unit 2629	
--------------------------------------	--

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**TRANSMITTAL
FORM**

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

1

Application Number

11/743,014

Filing Date

05/01/2007

First Named Inventor

Orlando et al.

Art Unit

2629

Examiner Name

Sheng, Tom

Attorney Docket Number

ALTA-P007B

ENCLOSURES (Check all that apply)☐

Fee Transmittal Form

☐

Fee Attached

☒

Amendment/Reply

☐

After Final

☐

Affidavits/declaration(s)

☐

Extension of Time Request

☐

Express Abandonment Request

☐

Information Disclosure Statement

☐

Certified Copy of Priority Document(s)

☐Reply to Missing Parts/
Incomplete Application☐Reply to Missing Parts
under 37 CFR 1.52 or 1.53☐

Drawing(s)

☐

Licensing-related Papers

☐

Petition

☐Petition to Convert to a
Provisional Application☐Power of Attorney, Revocation
Change of Correspondence Address☐

Terminal Disclaimer

☐

Request for Refund

☐

CD, Number of CD(s) _____

☐

Landscape Table on CD

☐

After Allowance Communication to TC

☐Appeal Communication to Board
of Appeals and Interferences☐Appeal Communication to TC
(Appeal Notice, Brief, Reply Brief)☐

Proprietary Information

☐

Status Letter

☒Other Enclosure(s) (please identify
below):Response to Notice of Non-Compliant
Amendment

Remarks

Should Applicant inadvertently miscalculated the required fee, the Commissioner is hereby authorized to charge any necessary amount associated with this communication or credit any overpayment to Deposit Account No: 500482.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name

Fernandez & Associates, LLP

Signature

/Dennis S. Fernandez/

Printed name

Dennis S. Fernandez

Date

12/8/2008

Reg. No.

34,160

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature

Typed or printed name

Date

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors:	Blyth, et al.	Attorney Docket:	ALTA-P007B
Serial No.:	11/743,014	Art Unit:	2629
Filed:	05/01/2007	Examiner:	Sheng, Tom V
Title:	Gamma Reference Voltage Generator		

RESPONSE

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

Sir:

In response to the Notice of Non-Compliant Amendment Mailed November 12, 2008, Applicant respectfully requests reconsideration of the pending rejections and reexamination of the present application in view of the following remarks:

Remarks begin on page 2 of this paper.

Conclusion begins on page 3 of this paper.

REMARKS

In the Notice of Non-Compliant Amendment, it is stated that Figures 2 through 6 are not properly identified in the top margin in compliance with 37 CFR 1.121(d).

Figures 2 through 6 were submitted in error as no changes have been made to the originally submitted Figures 2 through 6.

Figure 1 was amended and properly identified in the top margin as “REPLACEMENT SHEET”.

In compliance with 37 CFR 1.121, Applicant is not resubmitting Figure 1.

Figures 1-6 remain in the Application.

CONCLUSION

In view of the foregoing, the Applicant believes that all of the drawings, i.e. figures 1-6 are now in condition for allowance and respectfully request the Examiner to issue a timely Notice of Allowance in this case. If for any reason, the Examiner believes any of the drawings are not in condition for allowance, he is encouraged to call the undersigned attorney at 650-325-4999 so that any remaining issues may be resolved.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

____/Dennis S. Fernandez/____
Dennis S. Fernandez
Reg. No. 34,160

Date: __12/8/2008____

Address: **FERNANDEZ & ASSOCIATES LLP**
Patent Attorneys
1047 El Camino Real
Menlo Park, CA 94025

Customer No: **22877**

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

Electronic Acknowledgement Receipt

EFS ID:	4416218
Application Number:	11743014
International Application Number:	
Confirmation Number:	5927
Title of Invention:	Gamma Reference Voltage Generator
First Named Inventor/Applicant Name:	Richard V. Orlando
Customer Number:	22877
Filer:	Dennis Fernandez/Louisa Toy
Filer Authorized By:	Dennis Fernandez
Attorney Docket Number:	ALTA-P007B
Receipt Date:	08-DEC-2008
Filing Date:	01-MAY-2007
Time Stamp:	18:20:24
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	ALTA-P007B_E-Transmittal.pdf	54123 697889d82d83a69e7b85c609e967e061c4bd4461	no	1

Warnings:

Information:

2	Miscellaneous Incoming Letter	ALTA-P007B_Response.pdf	20293 aafc1648deb6601cb49a3da1b7d99bdea10b48f	no	3
Warnings:					
Information:					
Total Files Size (in bytes):				74416	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



UNITED STATES PATENT AND TRADEMARK OFFICE

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22877 e 11/12/2008

FERNANDEZ & ASSOCIATES LLP
1047 EL CAMINO REAL
SUITE 201
MENLO PARK, CA 94025

Paper No.

Application No.:	11/743,014 	Date Mailed:	11/12/2008
First Named Inventor:	Orlando, Richard, V.	Examiner:	SHENG, TOM V
Attorney Docket No.:	ALTA-P007B	Art Unit:	2629
Confirmation No.:	5927	Filing Date:	05/01/2007

Please find attached an Office communication concerning this application or proceeding.

Commissioner for Patents

Notice of Non-Compliant Amendment (37 CFR 1.121)	Application No. 11/743,014	Applicant(s) ORLANDO ET AL.	
		Art Unit 2100	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

The amendment document filed on 22 October, 2008 is considered non-compliant because it has failed to meet the requirements of 37 CFR 1.121 or 1.4. In order for the amendment document to be compliant, correction of the following item(s) is required.

THE FOLLOWING MARKED (X) ITEM(S) CAUSE THE AMENDMENT DOCUMENT TO BE NON-COMPLIANT:

- ☐ 1. Amendments to the specification:
 - ☐ A. Amended paragraph(s) do not include markings.
 - ☐ B. New paragraph(s) should not be underlined.
 - ☐ C. Other _____.
- ☐ 2. Abstract:
 - ☐ A. Not presented on a separate sheet. 37 CFR 1.72.
 - ☐ B. Other _____.
- ☒ 3. Amendments to the drawings:
 - ☒ A. The drawings are not properly identified in the top margin as "Replacement Sheet," "New Sheet," or "Annotated Sheet" as required by 37 CFR 1.121(d).
 - ☐ B. The practice of submitting proposed drawing correction has been eliminated. Replacement drawings showing amended figures, without markings, in compliance with 37 CFR 1.84 are required.
 - ☒ C. Other See Continuation Sheet.
- ☐ 4. Amendments to the claims:
 - ☐ A. A complete listing of all of the claims is not present.
 - ☐ B. The listing of claims does not include the text of all pending claims (including withdrawn claims)
 - ☐ C. Each claim has not been provided with the proper status identifier, and as such, the individual status of each claim cannot be identified. Note: the status of every claim must be indicated after its claim number by using one of the following status identifiers: (Original), (Currently amended), (Canceled), (Previously presented), (New), (Not entered), (Withdrawn) and (Withdrawn-currently amended).
 - ☐ D. The claims of this amendment paper have not been presented in ascending numerical order.
 - ☐ E. Other: _____.
- ☐ 5. Other (e.g., the amendment is unsigned or not signed in accordance with 37 CFR 1.4): For further explanation of the amendment format required by 37 CFR 1.121, see MPEP § 714.

TIME PERIODS FOR FILING A REPLY TO THIS NOTICE:

1. Applicant is given **no new time period** if the non-compliant amendment is an after-final amendment or an amendment filed after allowance, or a drawing submission (only) If applicant wishes to resubmit the non-compliant after-final amendment with corrections, the **entire corrected amendment** must be resubmitted.
2. Applicant is given **one month**, or thirty (30) days, whichever is longer, from the mail date of this notice to supply the correction, if the non-compliant amendment is one of the following: a preliminary amendment, a non-final amendment (including a submission for a request for continued examination (RCE) under 37 CFR 1.114), a supplemental amendment filed within a suspension period under 37 CFR 1.103(a) or (c), and an amendment filed in response to a Quayle action. If any of above boxes 1 to 4 are checked, the correction required is only the corrected section of the non-compliant amendment in compliance with 37 CFR 1.121.

Extensions of time are available under 37 CFR 1.136(a) only if the non-compliant amendment is a non-final amendment or an amendment filed in response to a Quayle action.

Failure to timely respond to this notice will result in:

Abandonment of the application if the non-compliant amendment is a non-final amendment or an amendment filed in response to a Quayle action; or

Non-entry of the amendment if the non-compliant amendment is a preliminary amendment or supplemental amendment.

Legal Instruments Examiner (LIE), if applicable /BRENDA L. TURNER/

Telephone No: (571)272-3614

Continuation of 3. Other: Figures 2 through 6 are not properly identified in the top margin .

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 11/743,014		Filing Date 05/01/2007		☐ To be Mailed	
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)		SMALL ENTITY ☒		OR		OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)				
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A		N/A					
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A		N/A					
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A		N/A					
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$	=	OR	X \$	=			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$	=		X \$	=			
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).									
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))										
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL				
APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT	10/22/2008	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)		
	Total (37 CFR 1.16(i))	* 6	Minus	** 20	= 0	X \$26 =	0	OR	X \$	=
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0	X \$110 =	0	OR	X \$	=
☐ Application Size Fee (37 CFR 1.16(s))										
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))										
						TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	
(Column 1)			(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)		
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$	=	OR	X \$	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$	=	OR	X \$	=
☐ Application Size Fee (37 CFR 1.16(s))										
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))										
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.										

Legal Instrument Examiner:
/BRENDA L. TURNER/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors:	Orlando, et al.	Attorney Docket:	ALTA-P007B
Serial No.:	11/743,014	Art Unit:	2629
Filed:	05/01/2007	Examiner:	Sheng, Tom V
Title:	Gamma Reference Voltage Generator		

RESPONSE

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

Sir:

In response to the NON-FINAL Office Action Mailed July 22, 2008, Applicant respectfully requests reconsideration of the pending rejections and reexamination of the present application in view of the following remarks:

Claims in the listing of claims begin on page 2.

Remarks begin on page 6 of this paper.

Conclusion begins on page 12 of this paper.

Amendment to the Claims:

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

Listing of Claims

What we claim is:

1. (Currently Amended) A method of calibrating a liquid crystal display to a desired gamma curve to compensate for panel to panel manufacturing variations comprising the steps:
 - a. providing said display with gamma reference control capability which is electrically reprogrammable and non-volatile;
 - b. testing said display with at least one sensor with optical input, wherein said sensor is separate from said display;
 - c. varying gamma reference voltage levels on columns of said display by a control circuit, wherein said control circuit is separate from said display;
 - d. optimizing said gamma reference voltage levels using means for executing a predetermined algorithm according to a predetermined criteria and data sensed by said at least one sensor, wherein said means for executing said predetermined algorithm is separate from said display to achieve the desired gamma curve; and

e. storing said gamma reference voltage levels in said gamma reference control capability.

2. (Original) The method of claim 1 wherein the method is repeated more than once under different ambient display conditions to generate at least one different set of gamma reference voltage levels stored in said gamma reference control capability.

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

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

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

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

d. operating means for executing one or more optimization criteria

algorithms based on optical emission corresponding to said selected columns, wherein said means for executing said one or

more optimization criteria algorithms is separate from said liquid crystal display;

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

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

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

4. (Currently Amended) The method of claim 3 wherein said gamma reference voltage generator integrated circuit requires an external source for [[the]] high voltage programming means.

5. (Currently Amended) A method for a liquid crystal display, comprising:

providing said liquid crystal display with gamma reference control capability which is electrically reprogrammable and non-volatile;

calibrating said liquid crystal display comprising:

a. testing said liquid crystal display with at least one sensor with optical input;

b. varying gamma reference voltage levels on columns of said liquid crystal display;

c. optimizing said gamma reference voltage levels using means for executing a predetermined algorithm according to a predetermined criteria and data sensed by said at least one sensor, ~~wherein said means for executing said predetermined algorithm is not required subsequent to the calibrating step;~~ and

d. storing said gamma reference voltage levels in said gamma reference control capability;

retrieving said gamma reference voltage levels from said gamma reference control capability; and

displaying an image on said liquid crystal display based on said gamma reference voltage levels.

6. (Original) The method of claim 5, wherein the calibrating step is repeated more than once under different ambient display conditions to generate at least one different set of gamma reference voltage levels stored in said gamma reference control capability.

REMARKS

Claims 1, 4, and 5 have been amended. Claims 1-6 remain in the Application.

Drawings

FIG. 1 in the drawings has been amended in compliance with 37 CFR 1.121(d) and 37 CFR 1.84(c). A request for allowance is hereby made.

Claim Rejections—35 USC§ 103(a)

Claims 1, 3, 4, and 5 are rejected under 35 USC 103(a) as being unpatentable over Liaw et al (US 6,593,934 B1)

Regarding claim 1, claim 1 of Applicant's teaching recites the following:

A method of calibrating a liquid crystal display to a desired gamma curve to compensate for panel to panel manufacturing variations comprising the steps:

- a. providing said display with gamma reference control capability which is electrically reprogrammable and non-volatile;
- b. testing said display with at least one sensor with optical input, wherein said sensor is separate from said display;
- c. varying gamma reference voltage levels on columns of said display by a control circuit, wherein said control circuit is separate from said display;
- d. optimizing said gamma reference voltage levels using means for executing a predetermined algorithm according to a predetermined criteria and data sensed by said at least one sensor, wherein said means for executing said predetermined algorithm is separate from said display to achieve the desired gamma curve; and
- e. storing said gamma reference voltage levels in said gamma reference control capability.

The cited reference of Liaw does not disclose “A method of calibrating a liquid crystal display to a desired gamma curve to compensate for panel to panel manufacturing variations” as recited in Applicant’s claim 1. The cited reference (col. 1, lines 15-20) only discloses that the realization of the correction of Gamma parameters has become a key technique. The cited reference does not disclose calibration to compensate for panel to panel manufacturing variations. The cited reference also does not disclose providing gamma reference control capability “which is electrically reprogrammable and non-volatile”. Col. 5, line 62 through col. 6 lines 2 only discloses the “structure of the automatic Gamma parameter system”. While the cited reference does not disclose or suggest control capability which is non-volatile, automatically programmed does not follow from electrically re-programmable. Firstly, non-volatile would mean that, once programmed, even when power is disconnected, the programmed parameters are saved. Re-programmable indicates that the gamma reference control parameters can be changed to suit a changed requirement. The cited reference of Liaw does not disclose or suggest that the structure of the automatic Gamma parameter system includes “gamma reference control which is electrically reprogrammable and non-volatile” as recited in Applicant’s claim 1. Additionally, the cited reference only discloses sensors as being inside or outside the display, not that the sensors are separate from the display as recited by Applicant. Further, the cited reference does not teach or suggest that “gamma reference voltage levels on *columns* of said display” is varied, as recited by Applicant. The cited reference (col. 6, lines 21-25 and lines 37-56) only discloses determining “Gamma reference voltage range according to luminance, contrast and color temperature.”

In the Office Action, it is acknowledged that Liaw does not disclose a non-volatile memory. Applicant asserts that it would not be obvious for a person having ordinary skill in the art to use a non-volatile memory in light of the cited reference of Liaw.

Obviousness is precluded because the cited reference explicitly discloses the structure of an automatic gamma parameter system, in which system, parameters are pre-loaded to adapt to various conditions. Further, the cited reference does not disclose re-programmability as recited by Applicant's claim 1. In such a scenario, there would be no need for a non-volatile memory because each time the system is started, gamma correction will be automatic, based on current parameters.

Consequently, and in light of the above, Applicant's claim 1 is not obvious in view of Liaw. Applicant thus respectfully requests that a 103 rejection to claim1 be withdrawn and a notice of allowance be made.

As for claim 3, claim 3 of Applicant's teaching recites the following:

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

- a. selecting one or more columns on said liquid crystal display;
- b. applying one or more different gamma voltages to said liquid crystal display columns;
- c. storing said applied gamma voltages in reprogrammable, nonvolatile cells in said gamma reference voltage generator integrated circuits appropriate to said selected columns;
- d. operating means for executing one or more optimization criteria
algorithms based on optical emission corresponding to said selected columns, wherein said means for executing said one or

more optimization criteria algorithms is separate from said liquid crystal display;

- e. modifying said one or more different applied gamma voltages based on said one or more optimization criteria algorithms;
- f. programming said applied gamma voltages in storage cells in said gamma reference voltage generator integrated circuits appropriate to said selected columns; and
- g. repeating steps (d) through (f) until said one or more optimization criteria have been satisfied.

Applicant recites selecting one or more columns on the liquid crystal display, applying gamma voltages to the columns, storing the applied voltages in non-volatile memory, modifying the applied voltages base on optimization criteria, programming the applied voltages in storage cells corresponding to selected columns, and repeating the said steps till the optimization criteria have been satisfied. The cited reference of Liaw only discloses an “automatic Gamma parameter correction system with a digital/analog converter (DAC), wherein the Gamma reference voltage and the corresponding gray-scale value is adjustable.” It is not inherent in the cited reference that the adjustable gamma voltages are applied specifically to selected liquid crystal display columns, can be stored in reprogrammable non-volatile cells that correspond to selected columns, and are modified based on optimization criteria and then programmed into storage cells that correspond to selected columns. Applicant’s claim 3 is thus not obvious in light of the cited reference of Liaw.

Consequently, and in light of the above, Applicant respectfully requests that a 103(a) rejection to claim 3 be withdrawn, and a notice of allowance be made.

As for claim 4, Applicant's claim 4 is dependent upon claim 3, and as shown above, claim 3 is not obvious in light of the cited reference of Liaw. Therefore, Applicant's claim 4 is not obvious for at least the same reasons as claim 3. Further, Applicant's claim 4 recites a high voltage programming means. The Office Action acknowledges that the cited reference of Liaw discloses only gamma reference voltage levels programmed in memory 21 and would not require a high voltage source for programming. Clearly, the cited reference of Liaw does not render obvious Applicant's claim 4 because Liaw explicitly states that a high voltage source for programming would not be required. This is contrary to Applicant's teaching, and clearly teaches away from Applicant's claim 4.

Consequently, and in light of the above, Applicant's claim 4 is not obvious in light of the cited reference of Liaw. Therefore, Applicant respectfully requests that a 103(a) rejection to claim 4 be withdrawn, and a notice of allowance be made.

As for claim 5, claim 5 corresponds closely with claim 1, and is thus not obvious for the same rationale as that presented for claim 1. Further, the cited reference of Liaw does not disclose "gamma reference control capability which is electrically reprogrammable and non-volatile" and neither does it disclose calibration by "varying gamma reference voltage levels on columns of said liquid crystal display". While there could be alternate methods of calibration, the method of Applicant's claim 5 is not disclosed by the cited reference of Liaw. Additionally, steps 160 and 170 of FIG. 14 in the cited reference merely illustrate building a gray-scale to voltage curve and outputting corresponding voltages, not "displaying an image on said liquid crystal display based on

said gamma reference voltage levels” as recited in Applicant’s claim 5. In light of the above, claim 5 is not obvious in view of the teachings of Liaw.

Consequently, Applicant respectfully requests that a 103(a) rejection to claim 5 be withdrawn, and a notice of allowance be made.

Claims 2 and 6 are rejected under 35 USC 103(a) as being unpatentable over Liaw as applied to claims 1 and 5 and further in view of Matsui (US 5,754,150).

As shown above, claims 1 and 5 are not obvious over Liaw. As for claims 2 and 6, the Office Action acknowledges that Liaw does not teach the impact of ambient lighting and thus does not teach repeating more than once under different ambient display conditions to generate at least one different set of gamma reference voltage levels stored in said gamma reference control capability as claimed. While Matsui teaches gamma correction, the cited reference of Matsui only discloses coupling an external light detection circuit 13 with the variable gamma correction circuit 12 so as to be able to change inflection points of the variable gamma correction circuit 12. A change of inflection points of the variable gamma correction circuit may not necessarily be a change in ambient display conditions. Further, the combination of cited references does not disclose or suggest the generation of “at least one different set of gamma reference voltage levels stored in said gamma reference control capability” as recited by Applicant’s claims 2 and 6. Thus, the combination of Liaw and Matsui does not render obvious Applicant’s claims 2 and 6.

Consequently, and in light of the above, Applicant respectfully requests that a 103(a) rejection to claims 2 and 6 be withdrawn, and a notice of allowance be made.

CONCLUSION

In view of the foregoing, the Applicant believes that all of the claims are now in condition for allowance and respectfully request the Examiner to issue a timely Notice of Allowance in this case. If for any reason, the Examiner believes any of the claims are not in condition for allowance, he is encouraged to call the undersigned attorney at 650-325-4999 so that any remaining issues may be resolved.

The above changes are believed not to add new matter, as support is found in the specification. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

____/Dennis S. Fernandez/_____
Dennis S. Fernandez
Reg. No. 34,160

Date: ____10/22/2008_____

Address: **FERNANDEZ & ASSOCIATES LLP**
Patent Attorneys
1047 El Camino Real
Menlo Park, CA 94025

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Fax: (650) 325-1203
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Electronic Acknowledgement Receipt

EFS ID:	4160825
Application Number:	11743014
International Application Number:	
Confirmation Number:	5927
Title of Invention:	Gamma Reference Voltage Generator
First Named Inventor/Applicant Name:	Richard V. Orlando
Customer Number:	22877
Filer:	Dennis Fernandez/Louisa Toy
Filer Authorized By:	Dennis Fernandez
Attorney Docket Number:	ALTA-P007B
Receipt Date:	22-OCT-2008
Filing Date:	01-MAY-2007
Time Stamp:	19:25:48
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	ALTA-P007B_E-Transmittal.pdf	26206 079cda8c70d8bf718e9387e3c9f5c62ae0b47bd8	no	2

Warnings:

Information:

2	Amendment/Req. Reconsideration-After Non-Final Reject	ALTA-P007B_OAR.pdf	46466	no	12
			79828e1d2dcc4dcdbeb73cc9e0fd764f9c1d744d		
Warnings:					
Information:					
3	Drawings-only black and white line drawings	ALTA-P007B_Figures.pdf	93515	no	6
			6d0e593b8e99c9d2e7fa1efea52eb1156202dd70		
Warnings:					
Information:					
Total Files Size (in bytes):			166187		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Orlando, et al.
Serial No.: 11/743,014
Filed: 05/01/2007
For: Gamma Reference Voltage Generator
Confirmation No. 5927

Attorney Docket No. ALTA-P007B
Examiner: Sheng, Tom
Art Unit: 2629

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

ATTN: Mail Stop Amendment

SUPPLEMENTAL AMENDMENT TRANSMITTAL LETTER

Dear Sir:

1. **TRANSMITTED DOCUMENTS:** the following documents relating to the above-identified patent application are being transmitted herewith.

- ☒ a. An Amendment for this application: 12 pages.
☒ b. Replacement Drawings: 6 sheets.
☐ c. A Petition For Extension of Time For Response under 37 CFR 1.136(a) incorporated herein.
☐ d. An Information Disclosure Statement under 37 CFR 1.97(b) 1.97(c)
☐ e. \$ to cover required fees of this correspondence.

2. **APPLICANT FILING STATUS:**

- ☐ a. Applicant is a Large Entity.
☒ b. Applicant is a Small Entity.

3. **EXTENSION OF TIME:**

- ☐ a. Applicant petitions for an extension of time under 37 C.F. R. 1.136 for the total number of months checked below (fees pursuant to 37 C.F.R. 1.17(a)-(d).

<u>Extension of Time</u>	<u>Large Entity Fee</u>	<u>Small Entity Fee</u>
i. One (1) month .	<u> </u> \$ 120.00	<u> </u> \$ 60.00
ii. Two (2) month .	<u> </u> \$ 450.00	<u> </u> \$ 225.00
iii. Three (3) month .	<u> </u> \$ 1,020.00	<u> </u> \$ 510.00

Extension Time Fee Total: \$

- ☒ b. Applicant believes that no extension of time is required. However, this conditional petition is being made in case Applicant has inadvertently overlooked the need for a petition for extension of time, the Commissioner is hereby authorized to charge any necessary amount associated with this communication or credit any overpayment to **Deposit Account No: 500482**.

4. FEE CALCULATION:

The fee for claims (37 C.F.R. 1.16(b)-(d)) has been calculated as shown below:

Fee Items	Claims Remaining After Amendment	Highest Number of Claims Previously Paid	Present Extra Claims	Fee Rate	Total
a. Total Claims	6	- 6=	0	x \$ 50.00 Large Entity x \$ 25.00 Small Entity	\$0.00
b. Independent Claims	3	- 3 =	0	x \$200.00 Large Entity x \$100.00 Small Entity	\$0.00
c. Multiple Dependent Claims Added By This Amendment				x 360.00 Large Entity x 180.00 Small Entity	\$0.00
d. Extension of Time Fee Total, if any, from above EXTENSION OF TIME section 3a.					\$0.00
e. Additional Fees Required With This Correspondence i) 1.17 (p) Fee for Information Disclosure under 1.97(c)					\$0.00
f. Total Fees					\$0.00

5. PAYMENT OF FEES

The full fee due in connection with this communication is provided as follows:

___ The Commissioner is hereby authorized to charge the fees associated with this communication or credit any overpayment to **Deposit Account No: 500482**. A duplicate copy of this authorization is enclosed.

___ \$ _____ for the above specified Total Fee is transmitted. However, should Applicant inadvertently miscalculated the required fee, the Commissioner is hereby authorized to charge the necessary additional amount associated with this communication or credit any overpayment to **Deposit Account No: 500482**.

X Applicant does not believe that any payment of fee is needed in association with this communication. However, should Applicant inadvertently miscalculated the required fee, the Commissioner is hereby authorized to charge any necessary amount associated with this communication or credit any overpayment to **Deposit Account No: 500482**.

Please direct all correspondence concerning the above-identified application to the following address:

CUSTOMER NO: 22877

FERNANDEZ & ASSOCIATES, LLP

Patent Attorneys

Phone: (650) 325-4999

Fax: (650) 325-1203

Respectfully submitted,

/Dennis S. Fernandez/
Dennis S. Fernandez, ESQ.
Registration No. 34,160

10/22/2008
Date

REPLACEMENT SHEET

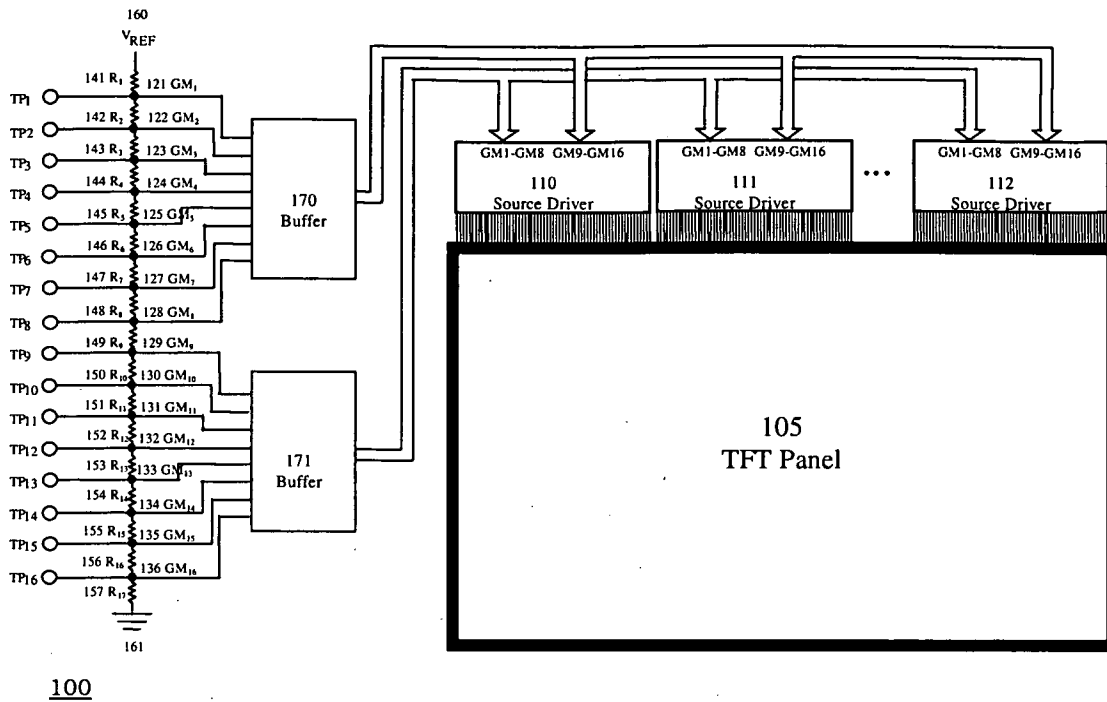
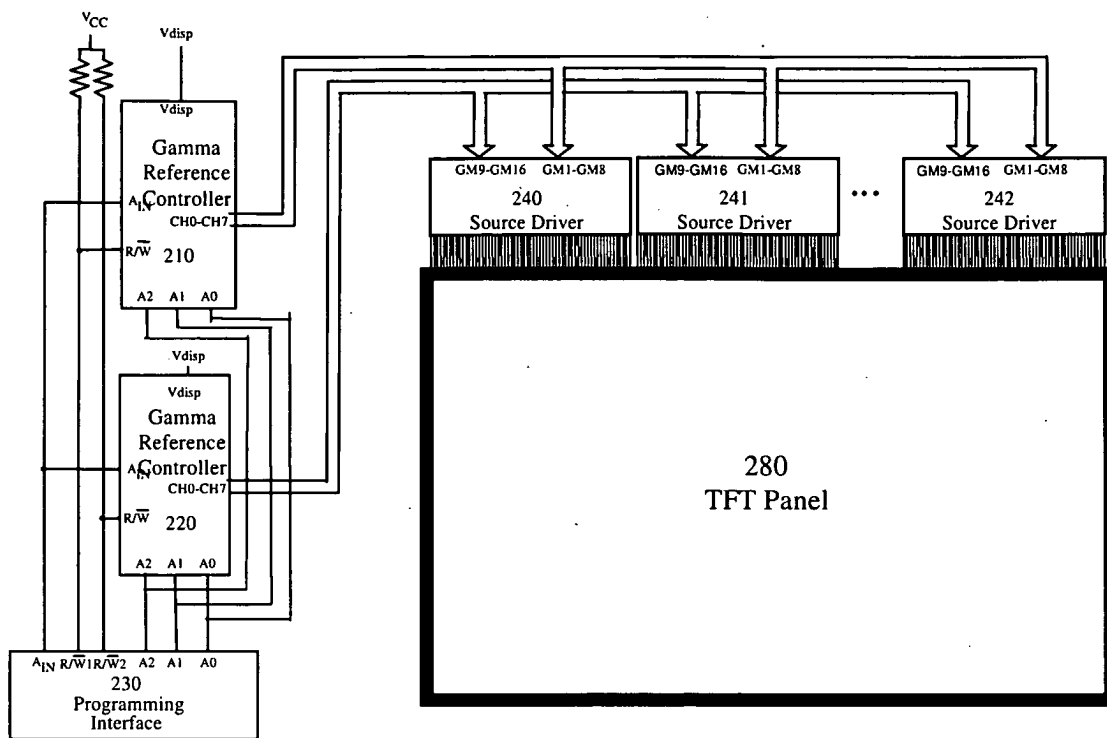
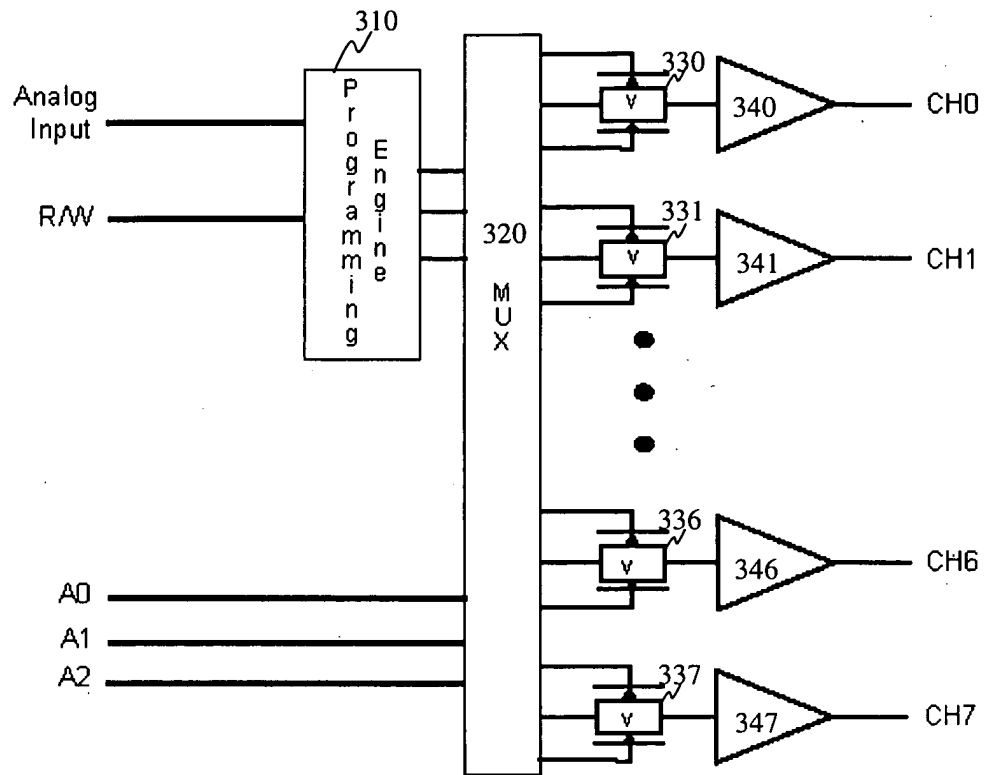


FIG. 1 (Prior Art)



200

FIG. 2



300

FIG. 3

FIG. 4A

PIN DESCRIPTIONS

Name	Description	Value Range	Function
VDD	Digital Supply Input	3V to 3.3V	
CH0-CH17	Analog Outputs	0V -VREF-0.2	Analog Output Voltage Channels
B0-B2	Bank Select	CMOS Inputs	Selects which output is placed in tracking mode or is written to during a write operation
VREFH	Output High Level Reference	5-13.5 Volts	Sets the highest voltage for the output channels.
A _{OUT}	Analog Output	0.2V-VREFH-0.2	Outputs the current value of the selected channel of the selected bank during programming
V _{PP}	Programming Voltage	10-14Volts	Provides the programming voltage and timings needed to program the analog memory cells. Also used to enter operating modes other than read.
A0-A1	Address Inputs	TTL	Used to Select Programming Modes and Locations to be written

FIG. 4B

Pinout

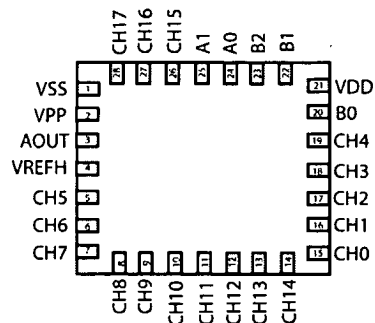


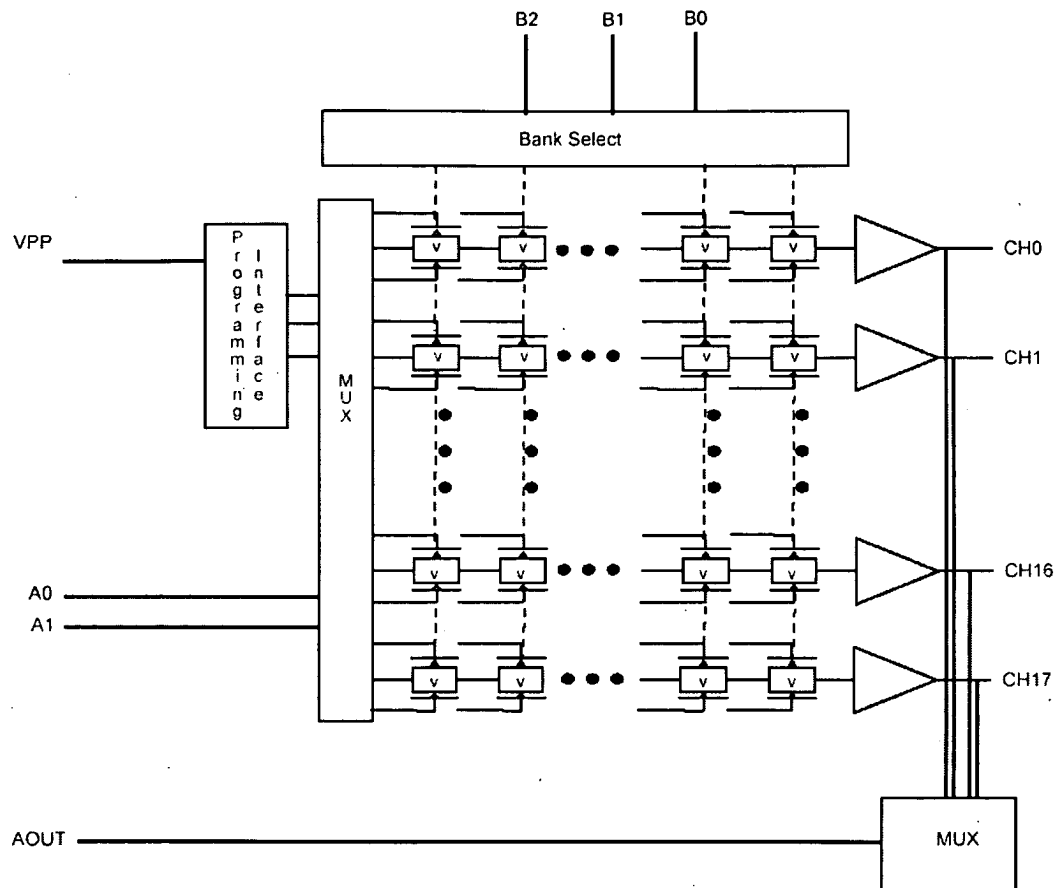
FIG. 5

ELECTRICAL PARAMETERS

Symbol	Parameter		Min	Typ	Max	Units	Condition
V_{IL}	Input Low Voltage	A0-A2			V _{DD} x 0.3	V	
V_{IH}	Input High Voltage	A0-A2	V _{DD} x 0.7			V	
V_{OLA}	Output Low Voltage	AOUT, CH0- CH17	0.2			V	I _{OL} = 10mA
V_{OHA}	Output High Voltage	AOUT, CH0- CH17			V _{REFH} - 0.2	V	I _{OH} = - 10mA
I_{IL}	Input Leakage Current				±1.0	µA	
I_{DD}	V _{DD} Current (Operating)				1.5	mA	R _{EXT} = ∞
I_{SB}	V _{DD} Current (Standby)				10	µA	
I_{VREFH}	VREF Current				190	mA	
V_{PP}	VPP Range		10		14	V	
V_{AC}	Accuracy		15			mV	
V_{drift}	Output Drift				70	µV	10 Years at 125 Deg C
PSRR	Power Supply Rejection Ratio		45	60		DB	VDD = 3.3-5.5V
T_{damp}	Bank Switch Damp Time		10			msec	

FIG. 6

BLOCK DIAGRAM (AG1818)



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 11/743,014		Filing Date 05/01/2007		☐ To be Mailed			
APPLICATION AS FILED – PART I												
(Column 1)			(Column 2)		SMALL ENTITY ☒ OR			OTHER THAN SMALL ENTITY				
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)		
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A			N/A			
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A			N/A			
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A			N/A			
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$	=		X \$	=		X \$	=		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$	=		X \$	=		X \$	=		
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).											
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))												
* If the difference in column 1 is less than zero, enter "0" in column 2.												
APPLICATION AS AMENDED – PART II												
(Column 1)			(Column 2)		(Column 3)			SMALL ENTITY OR			OTHER THAN SMALL ENTITY	
AMENDMENT	10/22/2008	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	* 6	Minus	** 20	=	0		X \$	=		X \$	=
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	=	0		X \$	=		X \$	=
	☐ Application Size Fee (37 CFR 1.16(s))											
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))											
	TOTAL ADD'L FEE											
(Column 1) (Column 2) (Column 3)												
AMENDMENT	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	*	Minus	**	=		X \$	=		X \$	=	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		X \$	=		X \$	=	
	☐ Application Size Fee (37 CFR 1.16(s))											
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))											
	TOTAL ADD'L FEE											
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.												

Legal Instrument Examiner:
/BRENDA L. TURNER/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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11/743,014

05/01/2007

Richard V. Orlando

ALTA-P007B

5927

22877 7590 07/22/2008
FERNANDEZ & ASSOCIATES LLP
1047 EL CAMINO REAL
SUITE 201
MENLO PARK, CA 94025

EXAMINER

SHENG, TOM V

ART UNIT

PAPER NUMBER

2629

MAIL DATE

DELIVERY MODE

07/22/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 11/743,014	Applicant(s) ORLANDO ET AL.	
	Examiner TOM V. SHENG	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 May 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) ☒ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413) |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) ☐ Information Disclosure Statement(s) (PTO/SB/08) | 5) ☐ Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) ☐ Other: _____ |

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liaw et al. (US 6,593,934 B1), hereinafter Liaw.

As for claim 1, Liaw teaches a method of calibrating a liquid crystal display (column 1 lines 15-20) to a desired gamma curve to compensate for panel to panel manufacturing variations comprising the steps:

a. providing said display with gamma reference control capability (automatic gamma parameter correction system; fig. 7A & 7B; column 5 line 62 through column 6

line 2) which is electrically reprogrammable (automatic gamma correction means automatically programmed when initiated);

b. testing said display (to obtain the voltage-to-luminance curve) with at least one sensor (sensors 11-13; column 6 lines 2-12) with optical input (light sensors; column 6 lines 13-16), wherein said sensor is separate from said display (can be outside the display);

c. varying gamma reference voltage levels on columns of said display (evaluated/determined gamma reference voltages; specifically voltage data; column 6 lines 21-25 and 37-56) by a control circuit (CPU 22 of main controller 20), wherein said control circuit is separate from said display (not part of display 10 as shown);

d. optimizing said gamma reference voltage levels (column 6 lines 48-56) using means (CPU 22 and memory 21) for executing a predetermined algorithm (flow chart of fig. 14; column 9 line 6 through column 10 line 52) according to a predetermined criteria (destination curve) and data sensed (measured voltage-luminance curve) by said at least one sensor (sensors 11-13), wherein said means for executing said predetermined algorithm is separate from said display to achieve the desired gamma curve (not part of display 10 as shown); and

e. storing said gamma reference voltage levels in said gamma reference control capability (stored specifically in memory 21; column 6 lines 31-33).

Liaw does not teach that the memory 21 is non-volatile. On the other hand, one of ordinary skill in the art would recognize that LCD has a non-uniform gamma characteristics that would require gamma correction and that a non-volatile memory

would serve to avoid the need to setting gamma reference voltages every time the display is powered up.

Therefore, it would have been obvious to have a liquid crystal display with automatic gamma correction as above and with a non-volatile memory for storing the reference gamma voltage levels because of the applicability in LCD and the convenience of using a non-volatile memory.

As for claim 3, in the case of selecting all the columns of the display (i.e. the whole display), it is inherent of Liaw that default gamma voltages would be applied initially (or the gamma voltages used in a previous calibration) in the process of measuring the voltage-to-luminance curve.

As for claim 4, the gamma reference voltage levels are programmed in memory 21 and would not require a high voltage source for programming. On the other hand, it would have been obvious, that for certain types of memory, a high voltage for the programming is necessary and is well known. Therefore, it would have been obvious for such a need depending on the type of memory used.

Claim 5 corresponds closely with claim 1 and is rejected per the rationale of rejection of claim 1. Moreover, it is inherent that the optimizing of the gamma reference voltages is not required subsequent to calibration. Moreover, steps 160 and 170 of fig. 14 clearly teach the retrieving of gamma reference voltage levels and subsequent displaying of an image based on the gamma reference voltage levels.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liaw as applied to claims 1 and 5 above, and further in view of Matsui (US 5,754,150).

As for claims 2 and 6, Liaw teaches the use of light sensors 11-13 to obtain the voltage-to-luminance curve of the display. However, Liaw does not teach the impact of ambient lighting and thus does not teach repeating more than once under different ambient display conditions to generate at least one different set of gamma reference voltage levels stored in said gamma reference control capability, as claimed.

Matsui also teaches gamma correction. Moreover, he teaches coupling an external light detection circuit 13 with the variable gamma correction circuit 12 so as to be able to change inflection points of the variable gamma correction circuit 12 (fig. 4; column 10 lines 54-60). In other words, the gamma correction curve or gamma reference voltage levels are adjusted based on respective ambient display condition.

Therefore, it would have been obvious to one of ordinary skill in the art to incorporate Matsui's external light detection into Liaw's display, as this further provides capability to adjust gamma correction according to different ambient display condition, thus resulting in an optimal display independent of ambient lighting condition.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TOM V. SHENG whose telephone number is (571)272-7684. The examiner can normally be reached on 9:00am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe can be reached on (571) 272-7691. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tom Sheng

/Richard Hjerpe/
Supervisory Patent Examiner, Art Unit 2629

Notice of References Cited	Application/Control No. 11/743,014		Applicant(s)/Patent Under Reexamination ORLANDO ET AL.	
	Examiner TOM V. SHENG		Art Unit 2629	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,593,934	07-2003	Liaw et al.	345/590
*	B	US-5,754,150	05-1998	Matsui, Takao	345/89
*	C	US-6,373,478	04-2002	Steffensmeier, Martin J.	345/204
*	D	US-7,233,305	06-2007	Orlando et al.	345/89
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



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BIB DATA SHEET

CONFIRMATION NO. 5927

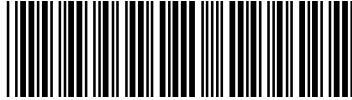
SERIAL NUMBER 11/743,014	FILING or 371(c) DATE 05/01/2007 RULE	CLASS 345	GROUP ART UNIT 2629	ATTORNEY DOCKET NO. ALTA-P007B		
APPLICANTS Richard V. Orlando, Los Gatos, CA; Trevor A. Blyth, Sandy, UT; ** CONTINUING DATA ***** This application is a CON of 10/746,333 12/23/2003 PAT 7,233,305 which claims benefit of 60/477,680 06/11/2003 ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** ** SMALL ENTITY ** 05/21/2007						
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☐ No Verified and Acknowledged <u>/TOM V SHENG/</u> Examiner's Signature		☐ Met after Allowance Initials	STATE OR COUNTRY CA	SHEETS DRAWINGS 6	TOTAL CLAIMS 6	INDEPENDENT CLAIMS 3
ADDRESS FERNANDEZ & ASSOCIATES LLP 1047 EL CAMINO REAL SUITE 201 MENLO PARK, CA 94025						
TITLE Gamma Reference Voltage Generator						
FILING FEE RECEIVED 425	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit			

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S3	0	11/743014	US-PGPUB; USPAT	OR	ON	2008/07/17 11:06
S4	1	"6593934".pn.	USPAT	OR	ON	2008/07/17 14:00
S5	1	10/746333	US-PGPUB; USPAT	OR	ON	2008/07/17 14:03
S6	3842	(345/89,690 348/254,674 358/519).ccls.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2008/07/17 14:35
S7	7110	(ambien\$2 outside external surrounding) with gamma	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2008/07/17 14:36
S9	20559	gamma near5 correct\$3	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2008/07/17 14:37
S10	1101	S7 and S9	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2008/07/17 14:38
S11	123	S10 and S6	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2008/07/17 14:38
S12	67	S11 and @ad<="20030611"	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2008/07/17 14:38
S13	8	(orlando-richard-v blyth- trevor-a).in.	US-PGPUB; USPAT	OR	ON	2008/07/18 09:31
S14	7110	(ambien\$2 outside external surrounding) with gamma	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2008/07/18 09:31
S15	20559	gamma near5 correct\$3	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2008/07/18 09:31
S16	1101	S14 and S15	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT	OR	ON	2008/07/18 09:31
S17	1	S13 and S16	US-PGPUB; USPAT	OR	ON	2008/07/18 09:31

7/18/08 9:46:41 AM

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<i>Index of Claims</i> 	Application/Control No. 11743014	Applicant(s)/Patent Under Reexamination ORLANDO ET AL.
	Examiner TOM V SHENG	Art Unit 2629

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47										
CLAIM		DATE								
Final	Original	07/18/2008								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								

Search Notes 	Application/Control No. 11743014	Applicant(s)/Patent Under Reexamination ORLANDO ET AL.
	Examiner TOM V SHENG	Art Unit 2629

SEARCHED			
Class	Subclass	Date	Examiner
345	89, 690	7/17/08	TS
348	254, 674		
358	519		

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Class/Subclass with text	7/17/08	TS
Inventor(s)	7/18/08	TS

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
11/743,014	05/01/2007	2629	425	ALTA-P007B	6	3

CONFIRMATION NO. 5927

22877

FERNANDEZ & ASSOCIATES LLP
1047 EL CAMINO REAL
SUITE 201
MENLO PARK, CA94025

FILING RECEIPT

Date Mailed: 05/21/2007

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).**

Applicant(s)

Richard V. Orlando, Los Gatos, CA;
Trevor A. Blyth, Sandy, UT;

Assignment For Published Patent Application

Alta Analog, Inc., San Jose, CA

Power of Attorney: The patent practitioners associated with Customer Number 22877

Domestic Priority data as claimed by applicant

This application is a CON of 10/746,333 12/23/2003
which claims benefit of 60/477,680 06/11/2003

Foreign Applications

If Required, Foreign Filing License Granted: 05/21/2007

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is
US11/743,014

Projected Publication Date: Request for Non-Publication Acknowledged

Non-Publication Request: Yes

Early Publication Request: No

**** SMALL ENTITY ****

Title

Gamma Reference Voltage Generator

Preliminary Class

345

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

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DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, postal address and citizenship are as stated below next to my name.

I believe that I am the original, first and sole inventor (if only one name is listed below) or an original first and joint inventor (if multiple names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

GAMMA REFERENCE VOLTAGE GENERATOR

the specification of which is attached hereto unless the following information is indicated:

_____ was filed on _____;
as United States Application Number _____ or PCT International Application Number _____;
and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendments referred to above.

I acknowledge the duty to disclose information that is material to patentability as defined in 37 CFR 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified, as so indicated below, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)			Priority Claimed
_____	_____	_____	_____ Yes _____ No
(Application No.)	(Country)	(Month/Day/Year Filed)	

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

_____	_____
(Application No.)	(Month/Day/Year Filed)

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information that is material to patentability as defined in 37 C.F.R. 1.56 that became available between the filing date of the prior application and the national or PCT International filing date of this application.

10/746,333	12/23/2003	Pending
(Application No.)	(Month/Day/Year Filed)	(Status - patented, pending, abandoned)

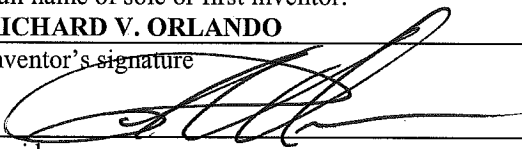
I hereby appoint the practitioners associated with the customer number **22877** to prosecute this application and to transact all business in the United States Patent and Trademark Office.

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and beliefs are believed to be true; and further that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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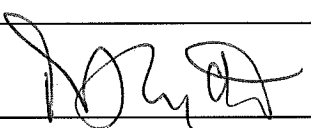
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and beliefs are believed to be true; and further that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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REQUEST AND CERTIFICATION UNDER 35 U.S.C. 122(b)(2)(B)(i)	First Named Inventor		Orlando, et al.
	Title	Gamma Reference Voltage Generator	
	Atty Docket Number		ALTA-P007B

I hereby certify that the invention disclosed in the attached application **has not and will not be** the subject of an application filed in another country, or under a multilateral agreement, that requires publication at eighteen months after filing. I hereby request that the attached application not be published under 35 U.S.C. 122(b).

05/01/2007

Date



Signature

Behfar Bastani-Booshehri, Reg. No. 52,599

Typed or printed name

This request must be signed in compliance with 37 CFR 1.33(b) and submitted with the application **upon filing**.

Applicant may rescind this nonpublication request at any time. If applicant rescinds a request that an application not be published under 35 U.S.C. 122(b), the application will be scheduled for publication at eighteen months from the earliest claimed filing date for which a benefit is claimed.

If applicant subsequently files an application directed to the invention disclosed in the attached application in another country, or under a multilateral international agreement, that requires publication of applications eighteen months after filing, the applicant **must** notify the United States Patent and Trademark Office of such filing within forty-five (45) days after the date of the filing of such foreign or international application. **Failure to do so will result in abandonment of this application (35 U.S.C. 122(b)(2)(B)(iii)).**

Burden Hour Statement: This collection of information is required by 37 CFR 1.213(a). The information is used by the public to request that an application not be published under 35 U.S.C. 122(b) (and the PTO to process that request). Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This form is estimated to take 6 minutes to complete. This time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: P.O. Box 1450, Alexandria, VA 22313-1450.

Application Data Sheet

Application Information

Filing Date::	05/01/2007
Application Type::	Continuation
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Application

5

for

United States Non-Provisional Utility Patent

Title:

Gamma Reference Voltage Generator

10

Inventors:

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15

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Gamma Reference Voltage Generator

Cross-Reference to Related Application

This application claims priority under 35 U.S.C. § 120 from and is a continuation application of U.S. Patent Application No. 10/746,333 filed December 23, 2003, which
5 claims priority from U.S. Provisional Application Serial No. 60/477,680 filed on 06/11/2003.

Field of the Invention

The invention relates generally to the field of liquid crystal displays, and more
10 particularly to TFT flat panel displays and a method of generating a gamma reference voltage.

Description of Related Art

Gamma Correction has long been a problem for the manufacturers of Thin Film Transistor (TFT) Flat Panel Displays. The Gamma Correction curve becomes more
15 complex as the display resolution increases. Each display often has a different response to the gamma correction reference voltages, resulting in the need to generate specific gamma reference voltages for each model of display as well as compensating for display to display variation due to manufacturing process variations.

A traditional approach to the Gamma Reference Generation problem has been to
20 use Select-On-Test Resistors. These resistors allow the reference voltages to be fine-

tuned to the requirements of the individual display. The testing, selection and mounting of these resistors has become a major production problem since the process is a manual one and prohibits automated assembly and test. In addition, once the resistors are mounted on the display PC board, the resistors cannot be easily changed to meet the
5 growing requirements of individual customers for a specific Gamma characteristic.

Of course, even with the manual labor involved, Select-On-Test resistors are still the least expensive solution to this problem. Devices such as potentiometers, Electrically Erasable Potentiometers (E2POTS), digitally-controlled potentiometers (DCPs) and Digital to Analog Converters (DACs) all could perform this function in some ways better
10 than the Select-On-Test resistors, but the cost is unacceptable.

FIG. 1 is a block diagram illustrating a conventional gamma reference circuit for a TFT display 105 using Select-On-Test-Resistors. In this case, source drivers 110, 111, ... and 112 require a total of 16 gamma reference voltages 121 GM_1 , 122 GM_2 , 123 GM_3 , 124 GM_4 , 125 GM_5 , 126 GM_6 , 127 GM_7 , 128 GM_8 , 129 GM_9 , 130 GM_{10} , 131 GM_{11} , 132
15 GM_{12} , 133 GM_{13} , 134 GM_{14} , 135 GM_{15} and , 136 GM_{16} . The gamma reference voltages are derived by a resistive divider of 17 resistors 141 R_1 , 142 R_2 , 143 R_3 , 144 R_4 , 145 R_5 , 146 R_6 , 147 R_7 , 148 R_8 , 149 R_9 , 150 R_{10} , 151 R_{11} , 152 R_{12} , 153 R_{13} , 154 R_{14} , 155 R_{15} , 156 R_{16} , 157 R_{17} connected between a reference voltage 160 and ground 161. Since the loading of the source drivers 110, 111, and 112 changes dynamically, it is not possible to
20 simply connect the resistive divider 141 R_1 , 142 R_2 , 143 R_3 , 144 R_4 , 145 R_5 , 146 R_6 , 147 R_7 , 148 R_8 , 149 R_9 , 150 R_{10} , 151 R_{11} , 152 R_{12} , 153 R_{13} , 154 R_{14} , 155 R_{15} , 156 R_{16} , 157

R₁₇ to the inputs of the source drivers 110, 111, and 112, and some type of buffering are used, such gamma reference buffer ICs 170 and 171.

Initially the PC board is assembled without the resistors. An external test apparatus drives the test points TP1-TP16 until the desired Gamma correction is
5 achieved. The values of the TP voltages are then used to calculate the resistors needed for the particular display under test (DUT) and the resistors are mounted on the PC board.

More recently quite complex approaches to Gamma correction have been published. U.S. 6,593,934 (1) and U.S. 6,046,719 (2) are examples of inventions which eliminate the "select-on-test" resistors. Both inventions teach quite complex digital
10 approaches to this "analog" problem; consequently both inventions are quite expensive.

Accordingly, it is desirable to design a gamma reference architecture that automates gamma adjustment and provides reprogrammable capability and achieves acceptable cost.

SUMMARY OF THE INVENTION

The invention is a programmable buffer integrated circuit which can be programmed to
15 output a set of gamma correction reference voltages to be used in Liquid Crystal Displays (LCDs). Once programmed, the buffer will continuously output the programmed value; if power is removed, since the voltage value is stored in non-volatile, programmable memory, the gamma correction is retained. The device incorporates a programming interface to allow the programming of the buffer outputs to the desired values during
20 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.

In the preferred embodiment, the present invention allows automated assembly of an entire PC board, automated test and gamma adjustment, smaller and thinner physical
5 size, lower power consumption, reprogrammable and non-volatile settings. Furthermore, the present invention advantageously allows a stand-alone solution such that it is not necessary to incorporate a micro controller unit (MCU).

Other structures and methods are disclosed in the detailed description below. This summary does not purport to define the invention. The invention is defined by the
10 claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a prior art block diagram illustrating a conventional gamma reference circuit for a TFT display using Select-On-Test-Resistors.

FIG. 2 is an architectural diagram illustrating a gamma reference circuit
15 employing gamma reference controllers for a TFT display in accordance with one embodiment of the invention.

FIG. 3 is a block diagram illustrating one embodiment of a gamma reference controller in accordance with the invention.

FIG. 4A and FIG. 4B are descriptions of one alternative pin out.

FIG. 5 shows exemplary electrical parameter specifications of one embodiment.

FIG. 6 is an alternative block diagram of one embodiment of the invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

Figure 2 is an architectural diagram, 200, illustrating a gamma reference circuit
5 implementation employing gamma reference controllers, 210 and 220, for a TFT panel
280. The gamma reference circuit comprises a first gamma reference controller 210, a
second gamma reference controller 220, a programming interface 230, source drivers 240,
241, and 242, and a TFT panel 280. The gamma reference controller 210 drives a first set
of eight gamma reference voltages GM1 – GM8 to the source drivers 240, 241, ... and
10 242. The gamma reference controller 220 drives a second set of eight gamma reference
voltages GM9 – GM 16 to the source drivers 240, 241, ...and 242.

The Programming Interface 230 comprises a common Analog Input (A_{IN}) which
will be used to set the reference voltage level, three address inputs (A_0 , A_1 , and A_2) to
determine which reference level is being written and a R/W control signal for each of the
15 first gamma reference controller 210 and second gamma reference controller 220, in this
case two, that are on the board.

During normal operation, the R/W pin is pulled High and the reference voltage
outputs will reflect the value last programmed into the nonvolatile memory cells.

The writing or programming operation is accomplished by first selecting the
20 output or channel of the device to be programmed with the A2-A0 inputs. At this point,

R/W on the device to be written is driven low and the device enters Tracking Mode. During Tracking Mode, the output of the selected channel tracks the input voltage on the Analog Input. (An optional internal voltage multiplier converts the 0-3V Analog Input to a 0-10Volt output.)

5 Once the desired voltage is found by varying the Analog Input for a particular channel, the R/W signal is driven high and the value on the Analog Input is written into the nonvolatile memory for the output channel selected by the A2-A0 inputs.

In this manner, each of the gamma reference voltages can be written in a sequential manner during display testing.

10 Alternatively, the first gamma reference controller 210 and second gamma reference controller 220 can be pre-loaded with a default configuration, which is close to historical values for the majority of displays. In this approach, only those parameters that need to be adjusted are changed in testing.

The first gamma reference controller 210 and second gamma reference controller
15 220 provide the manufacturers of TFT displays a solution to the setting of the gamma reference voltages. Automated testing of the displays and re-programming of the gamma characteristics is enabled, even after the display is completed. The first gamma reference controller 210 and second gamma reference controller 220 provide reduced overall implementation costs, reduced power consumption, reduced physical size and flexibility
20 over the traditional Select-On-Test resistor techniques.

FIG. 3 is a block diagram illustrating one embodiment of a gamma reference controller 300. The gamma reference controller 300 comprises a programming engine or interface 310, a mux 320, programmable analog floating gate memory cells 330, through 337, and drivers 340 through 347. The programming engine 310, coupled to the mux, comprises an Analog Input which will be used to set the reference voltage level and a R/W control signal for a corresponding gamma reference controller. The mux 320 connects signals from the programming engine 310 to any one of the programmable analog floating gate memory cells 330 through 337, depending on three address inputs (A_0 , A_1 , and A_2). Address inputs are used to select which cell is being written to at any time.

Each output is internally connected to an analog storage cell which can be written with analog values, for example, of 1024 step (10 Bit) resolution. The outputs, channel 0 (CH0), channel 1 (CH1), ... channel 6 (CH6), and channel 7 (CH7), are intended to directly drive the reference voltage inputs of the source driver IC. An internal voltage multiplier, having a multiplication factor M, produces an output of zero up to typically 13.5 or alternatively 16 Volts. In FIG. 3, the channel 0, CH0, is driven by a driver 340, which connects to the programmable analog floating gate memory cells 330. The channel 1, CH1, is driven by a driver 341, which connects to the programmable analog floating gate memory cells 331. The channel 6, CH6, is driven by a driver 346, which connects to the programmable analog floating gate memory cells 336. The channel 7, CH7, is driven by a driver 347, which connects to the programmable analog floating gate memory cells 337.

During read mode, all channels continuously output their corresponding stored voltages. Applying a logic "0" to the R/W pin initiates a track and write cycle and the RDY\ pin goes to logic "1". The addressed channel now outputs a voltage which is equal to the voltage applied to the Vin pin, multiplied by the voltage multiplication factor M.

- 5 The channel address may be changed during tracking mode. At the rising edge of R/W a write cycle is initiated and the present voltage applied to Vin is automatically stored in the analog memory corresponding to the addressed channel. Completion of the write cycle is indicated by a high to low transition at the RDY pin.

Table 1

Name	Description	Value Range	Function
VDD	Supply Input	3V to 5.5V	
Vdisp	Display Supply	10V to 12V	
R/W	Read/Write	CMOS Input	When driven to an active low input, places the selected output into tracking mode. The Rising Edge of R/W writes the voltage on the analog input into the appropriate analog memory location
Rdy	Device Ready	TTL Compatible Output	
VSS	Ground		
CH0-CH7	Analog Outputs	0V –10V	Analog Output Voltage Channels
VIN	Analog Input	0V –3V	Analog Input Voltage
A0-A3	Address Inputs	CMOS Inputs	Selects which output is placed in tracking mode or is written to during a write operation

Table 1 shows an alternative example of the pin descriptions for a gamma reference controller.

Table 2

<u>Symbol</u>	Parameter	Min	Typ	Max	Units	Condition
V_{IL}	Input Low Voltage			$V_{DD} \times 0.3$	V	
V_{IH}	Input High Voltage	$V_{DD} \times 0.7$			V	
V_{OutL}	Analog Output Low Voltage $V_{in}=0.1V$ $V_{disp}=10V$		0.33		V	$I_{OL} = 10mA$
V_{OutH}	Analog Output High Voltage $V_{in}=3V$ $V_{disp}=10V$		10		V	$I_{OH} = -10mA$
V_{OL}	Logic Output Low Voltage			0.4	V	$I_{OL} = 0.3mA$
V_{OH}	Logic Output High Voltage	$V_{DD}-0.8$			V	$I_{OH} = -250\mu A$

Symbol	Parameter	Min	Typ	Max	Units	Condition
I_{IL}	Input Leakage Current			± 1.0	μA	
I_{DD}	V_{DD} Current(Operating)			0.8	mA	$R_{EXT} = \infty$
				1.0	mA	$R_{EXT} = \infty$
				1.5	mA	$R_{EXT} = \infty$
I_{SB}	V_{DD} Current (Standby)			10	μA	
V_{IN}	V_{IN} Range	0		$V_{DD} - 0.8$	V	
R_{IN}	V_{IN} Input Resistance	1.0			$M\Omega$	
AV_{IN}	Channel Gain		3.3		V/V	V_{IN} to V_{OUT}

Table 2 shows an alternative example of the electrical parameters for a gamma reference controller.

5 Examples of eight to eighteen channel Gamma reference controllers have been used; clearly larger ones, 256 channels and higher, are encompassed by the invention. Various output voltage ranges are optional as well, 0 - 5V up to 0 - 16V, depending on the display requirements. Specific ranges or limits of the various parameters are used

herein as examples of different embodiments and are not intended to limit the scope of the invention.

In one embodiment of the invention, the integrated circuit, termed the AG1818, is a programmable gamma reference generator with integrated output buffers to directly drive the source driver inputs of a display; in one embodiment the display is a TFT LCD. The circuit requires a single 3.3 volt supply, 1.5 mA operating current and consumes 10 μ A in standby mode. FIG. 4A and 4B show an alternative pin out of this embodiment.

Eighteen output channels are provided with an output range of 0 to 13.5 Volts and a drive capability of 10 milli-amps. Each output is internally connected to an analog nonvolatile storage cell which can be written with 1,024 analog values, providing 10 bit resolution, or, said another way, to better than 15 mV resolution. The output of these analog nonvolatile memory cells is internally buffered to allow for the high voltages and current needed to directly drive the reference inputs on the source drivers. The outputs can be programmed from 0.2 volts to 0.2 volts below the VREFH value. FIG. 5 shows representative electrical specifications.

In one embodiment the AG1818 has capacity to store and retrieve eight independent banks or groups of reference voltages. The banks of gamma voltages are stored and selected through the three address inputs B0, B1, B2. This allows the gamma voltages to be changed either for dynamic gamma correction or application based gamma variation. This feature can also be used to switch between different gamma settings based

on the information to be displayed for implementing dynamic gamma correction. A block diagram in FIG. 6 illustrates one alternative embodiment.

During read mode, all channels continuously output their corresponding stored
5 voltages based on the bank selected by the B0 - B2 address inputs. When deemed appropriate an internal damping circuit creates a slow transition, about 10 msec., between banks to prevent disruptive display artifacts caused by rapid transitions on the gamma reference voltages during operation. Alternative damping circuits may be employed which allow the transition between banks to be considerably slower, for instance, one
10 second, as may be required by the display manufacturer's requirements.

An independent programming interface allows the device to be programmed in-situ thus providing the ability to individually program or adjust the gamma reference voltages for an individual display. The device can also be programmed prior to mounting on the pc board or display. The programming interface consists of four signals. The V_{PP}
15 is a high voltage input used to select the programming mode and also provides the high voltage pulses used to program the individual cells. In the AG1818 embodiment, V_{PP} is supplied from an external source, an IC or other means. The A_{OUT} analog output is used to read the cell which is currently being programmed to verify the write operation and proper output voltage level. The A0 through A1 inputs are used in conjunction with the
20 B0-B2 inputs to select the location to be written.

One alternative method of programming the individual cells starts by placing A0, A1, B0, B1, B2 lines in the (1,1,1,1,1) state and taking the V_{PP} pin high; this places the AG1818 in the Program mode; the read mode is the default mode. Next the particular bank is addressed through B0-B2; V_{PP} is pulsed again, latching the bank address. Next
5 the cell to be programmed in the selected bank is addressed using the A0, A1, B0, B1, B2 lines; V_{PP} is pulsed again, a third time. At this point programming of the selected storage cell is initiated by pulsing V_{PP} with adjustable voltage pulses between approximately 8 and 14 volts. When the selected cell has achieved the desired voltage level the A0, A1, B0, B1, B2 lines are again placed in the (1,1,1,1,1) state; the V_{PP} pin is pulsed; this
10 returns the AG1818 to the read mode. Programming of additional cells proceeds from the beginning sequence; any order of programming storage cells, random or sequential, can be applied.

Key variables in the programming process are programming voltage amplitude, rise and fall time of the pulse, and pulse duration; each of these variables is influenced by
15 design and process parameters of the particular wafer fabrication facility. Real time monitoring of the cell voltage level is accomplished through the A_{OUT} pin which reflects the cell voltage as it is in the output buffer which is the voltage which will be applied to the display column. The use of the A_{OUT} pin provides an essential countermeasure to the vagaries of the design and fabrication processes. Independent of what voltage actually is
20 stored in the cell the Aout pin gives the ability for closed loop programming such that a precise gamma reference voltage is provided to a specific column. As mentioned previously, this programming step can take place prior to mating the gamma reference

chip with a display wherein a predetermined set of voltage values is stored. Alternatively, the programming can take place after the gamma reference chip and display are mated; in this case the display quality can be evaluated as the gamma reference chip is being programmed if required.

5 One knowledgeable in the art that understands that other addressing schemes, such as a serial one, are possible, enabling an overall reduction in the pin count. Having bank switching capability ensures that the optimum gamma curve is used for each individual display and eliminates the need for re-work due to display manufacturing process variations. A PC based programming interface is available for prototyping and
10 gamma optimization. This PC programming interface may be an alternative source of the V_{PP} signals. Display optimization algorithms may be located in such a PC which also may be connected to monitors feeding back data from the display during the optimization tuning at time of manufacture.

This invention also enables several additional features for the user and
15 manufacturer. Automating the testing of a panel can be achieved with optical sensors and feedback to the gamma correction section of the display. Once the optical sensors have modulated gamma reference voltage levels for the columns to achieve the predetermined light matching for the display these values can be saved in the gamma reference circuitry. In this way different application conditions can be pretested and stored. For the user, a
20 sensor can be supplied with the display which responds to the temperature, lighting or

other conditions present. The output of the sensor can be matched to a predetermined application condition which selects the corresponding gamma value set.

The above embodiments are only illustrative of the principles of this invention and are not intended to limit the invention to the particular embodiments described.

- 5 Although the above embodiment describes the application of a gamma trimster for a TFT display, one of skill in the art should know that the present invention can be practiced in various types of displays and screens. Accordingly, various modifications, adaptations, and combinations of various features of the described embodiments can be practiced without departing from the scope of the invention as set forth in the appended claims.

Claims

What we claim is:

1. A method of calibrating a liquid crystal display to a desired gamma curve to
5 compensate for panel to panel manufacturing variations comprising the steps:
 - a. providing said display with gamma reference control capability
which is electrically reprogrammable and non-volatile;
 - b. testing said display with at least one sensor with optical input, wherein
said sensor is separate from said display;
 - 10 c. varying gamma reference voltage levels on columns of said display by a
control circuit, wherein said control circuit is separate from said
display;
 - d. optimizing said gamma reference voltage levels using means for
executing a predetermined algorithm according to a predetermined
15 criteria and data sensed by said at least one sensor, wherein said
means for executing said predetermined algorithm is separate from
said display to achieve the desired gamma curve; and
 - e. storing said gamma reference voltage levels in said gamma reference
control capability.

2. The method of claim 1 wherein the method is repeated more than once under different ambient display conditions to generate at least one different set of gamma reference voltage levels stored in said gamma reference control capability.

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

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

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

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

d. operating means for executing one or more optimization criteria

algorithms based on optical emission corresponding to said selected columns, wherein said means for executing said one or more optimization criteria algorithms is separate from said liquid crystal display;

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

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

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

5

4. The method of claim 3 wherein said gamma reference voltage generator
integrated circuit requires an external source for the high voltage programming
means.

5. A method for a liquid crystal display, comprising:

10

providing said liquid crystal display with gamma reference control capability
which is electrically reprogrammable and non-volatile;

calibrating said liquid crystal display comprising:

a. testing said liquid crystal display with at least one sensor with optical
input;

15

b. varying gamma reference voltage levels on columns of said liquid
crystal display;

c. optimizing said gamma reference voltage levels using means for
executing a predetermined algorithm according to a predetermined
criteria and data sensed by said at least one sensor, wherein said

means for executing said predetermined algorithm is not required
subsequent to the calibrating step; and

d. storing said gamma reference voltage levels in said gamma reference
control capability;

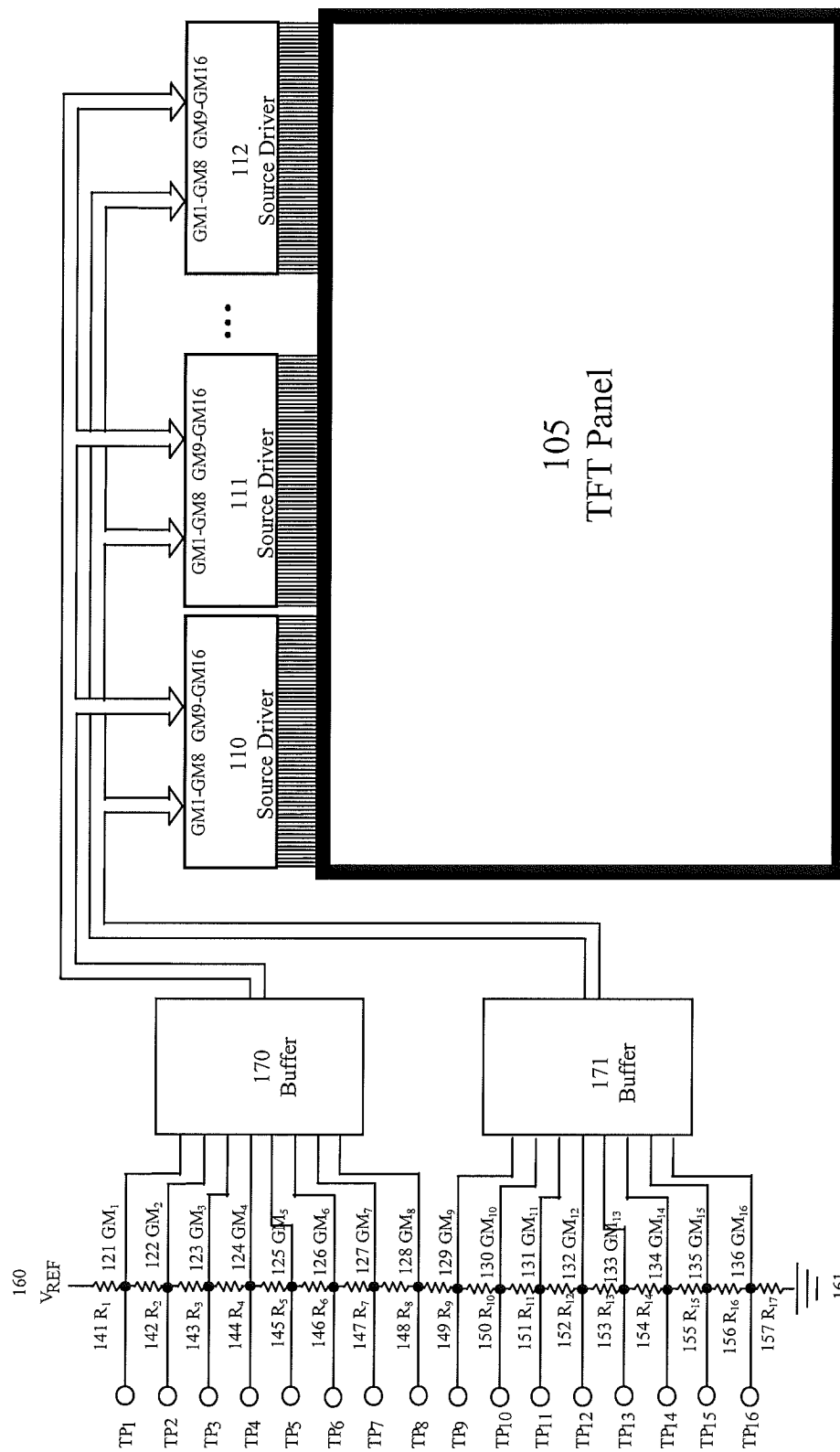
5 retrieving said gamma reference voltage levels from said gamma reference
control capability; and

displaying an image on said liquid crystal display based on said gamma reference
voltage levels.

6. The method of claim 5, wherein the calibrating step is repeated more than
10 once under different ambient display conditions to generate at least one different
set of gamma reference voltage levels stored in said gamma reference control
capability.

ABSTRACT

A programmable buffer integrated circuit which can be programmed to output a set of gamma correction reference voltages to be used in LCD displays. Once programmed, the buffers will continuously output the programmed value. 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 values can be programmed to provide different gamma correction curves for different user or application requirements.



100

FIG. 1

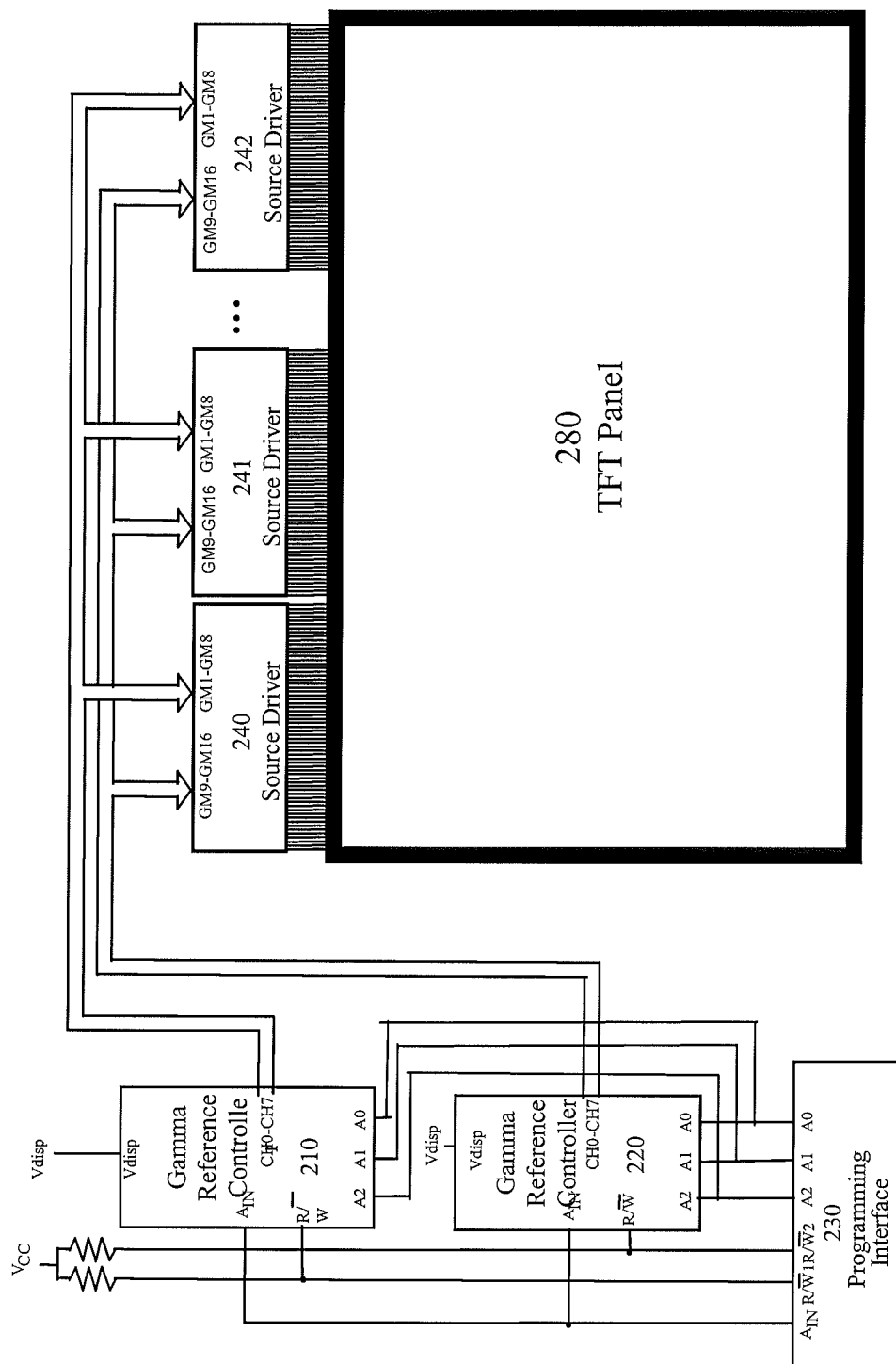
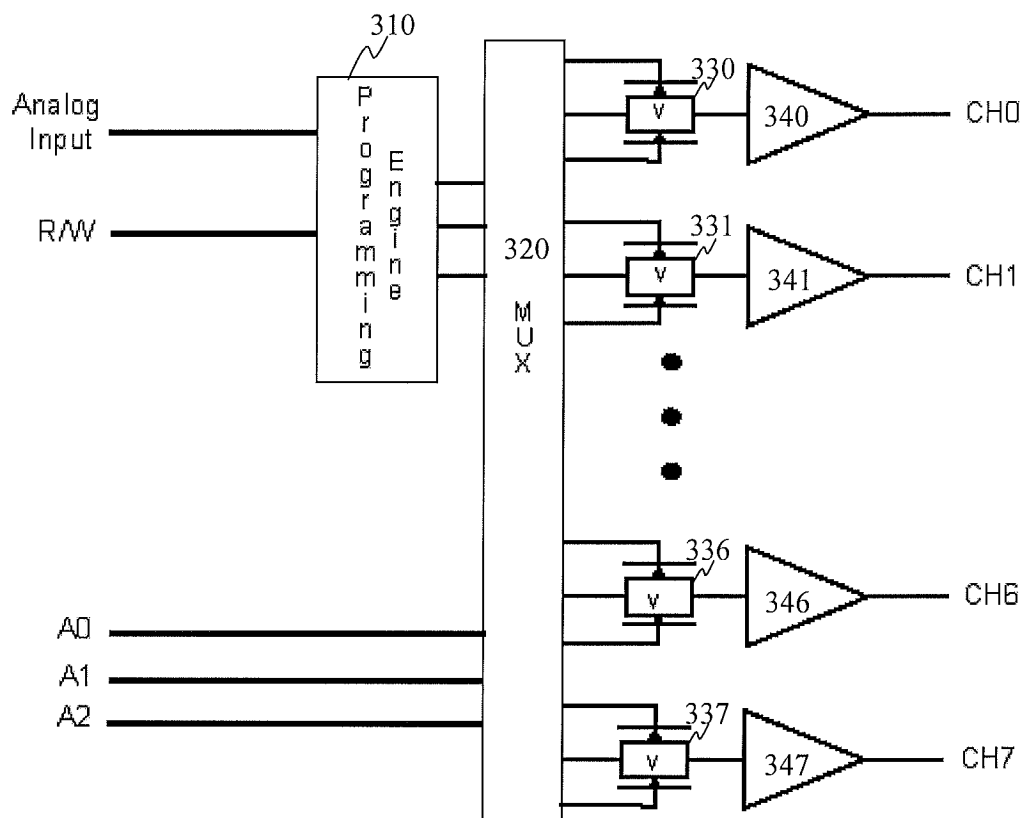


FIG. 2



300

FIG. 3

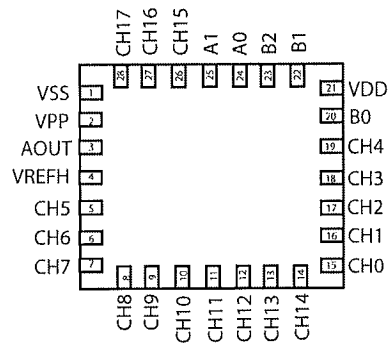
FIG. 4A

PIN DESCRIPTIONS

Name	Description	Value Range	Function
VDD	Digital Supply Input	3V to 3.3V	
CH0-CH17	Analog Outputs	0V –VREF-0.2	Analog Output Voltage Channels
B0-B2	Bank Select	CMOS Inputs	Selects which output is placed in tracking mode or is written to during a write operation
VREFH	Output High Level Reference	5-13.5 Volts	Sets the highest voltage for the output channels.
A _{OUT}	Analog Output	0.2V-VREFH-0.2	Outputs the current value of the selected channel of the selected bank during programming
V _{PP}	Programming Voltage	10-14Volts	Provides the programming voltage and timings needed to program the analog memory cells. Also used to enter operating modes other than read.
A0-A1	Address Inputs	TTL	Used to Select Programming Modes and Locations to be written

FIG. 4B

Pinout



AG1818

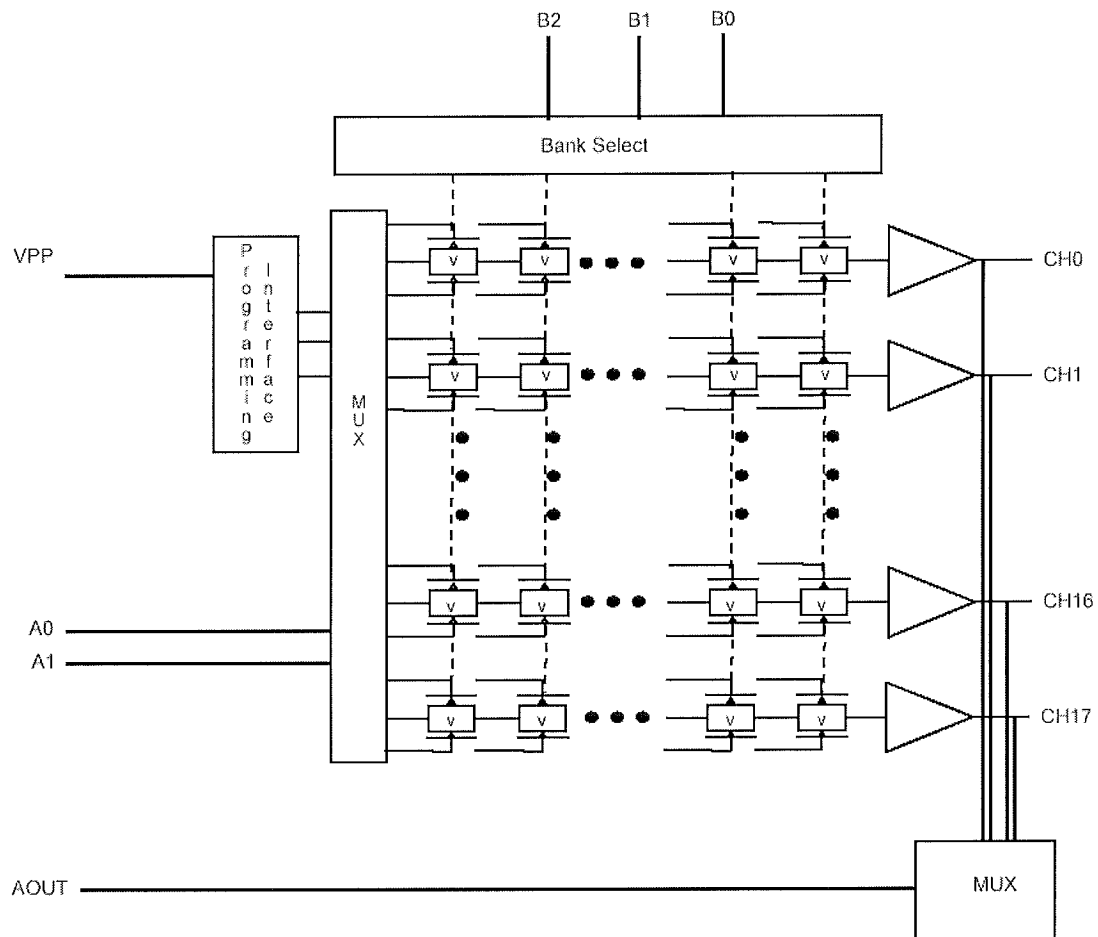
FIG. 5

ELECTRICAL PARAMETERS

Symbol	Parameter		Min	Typ	Max	Units	Condition
V_{IL}	Input Low Voltage	A0-A2			V _{DD} x 0.3	V	
V_{IH}	Input High Voltage	A0-A2	V _{DD} x 0.7			V	
V_{OLA}	Output Low Voltage	AOUT, CH0- CH17	0.2			V	I _{OL} = 10mA
V_{OHA}	Output High Voltage	AOUT, CH0- CH17			V _{REFH} - 0.2	V	I _{OH} = - 10mA
I_{IL}	Input Leakage Current				±1.0	µA	
I_{DD}	V _{DD} Current (Operating)				1.5	mA	R _{EXT} = ∞
I_{SB}	V _{DD} Current (Standby)				10	µA	
I_{VREFH}	VREF Current				190	mA	
V_{PP}	VPP Range		10		14	V	
V_{AC}	Accuracy		15			mV	
V_{drift}	Output Drift				70	µV	10 Years at 125 Deg C
PSRR	Power Supply Rejection Ratio		45	60		DB	VDD = 3.3-5.5V
T_{damp}	Bank Switch Damp Time		10			msec	

FIG. 6

BLOCK DIAGRAM (AG1818)



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**UTILITY
PATENT APPLICATION
TRANSMITTAL**

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.

ALTA-P007B

First Inventor

Richard V. Orlando

Title

Gamma Reference Voltage Generator

Express Mail Label No.

Filing on EFS Web

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☐ **Fee Transmittal Form** (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
2. ☒ **Applicant claims small entity status.**
See 37 CFR 1.27.
3. ☒ **Specification** [Total Pages 22]
Both the claims and abstract must start on a new page
(For information on the preferred arrangement, see MPEP 608.01(a))
4. ☒ **Drawing(s)** (35 U.S.C. 113) [Total Sheets 7]
5. **Oath or Declaration** [Total Sheets 3]
a. ☒ Newly executed (original or copy)
b. ☐ A copy from a prior application (37 CFR 1.63(d))
(for continuation/divisional with Box 18 completed)
i. ☐ **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s)
name in the prior application, see 37 CFR
1.63(d)(2) and 1.33(b).
6. ☒ **Application Data Sheet.** See 37 CFR 1.76
7. ☐ **CD-ROM or CD-R** in duplicate, large table or
Computer Program (Appendix)
☐ Landscape Table on CD
8. **Nucleotide and/or Amino Acid Sequence Submission**
(if applicable, items a. – c. are required)
a. ☐ Computer Readable Form (CRF)
b. ☐ Specification Sequence Listing on:
i. ☐ CD-ROM or CD-R (2 copies); or
ii. ☐ Paper
c. ☐ Statements verifying identity of above copies

ADDRESS TO:

Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450**ACCOMPANYING APPLICATION PARTS**

9. ☐ **Assignment Papers** (cover sheet & document(s))
Name of Assignee _____
10. ☐ **37 CFR 3.73(b) Statement** ☐ **Power of Attorney**
(when there is an assignee)
11. ☐ **English Translation Document** (if applicable)
12. ☐ **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)
☐ Copies of citations attached
13. ☐ **Preliminary Amendment**
14. ☐ **Return Receipt Postcard** (MPEP 503)
(Should be specifically itemized)
15. ☐ **Certified Copy of Priority Document(s)**
(if foreign priority is claimed)
16. ☒ **Nonpublication Request** under 35 U.S.C. 122(b)(2)(B)(i).
Applicant must attach form PTO/SB/35 or equivalent.
17. ☒ Other: \$425 to cover fees: \$425 (Utility Filing, _____
Search, Examination)

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title, or in an Application Data Sheet under 37 CFR 1.76:

☒ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: 10/746,333

Prior application information:

Examiner Tom V ShengArt Unit: 2629**19. CORRESPONDENCE ADDRESS**☒ The address associated with Customer Number: 22877 OR ☐ Correspondence address below

Name

Address

City

State

Zip Code

Country

Telephone

Email

Signature

/Behfar Bastani-Booshehri/

Date

05/01/2007

Name

(Print/Type)

Behfar Bastani-Booshehri

Registration No.

(Attorney/Agent)

52,599

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
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5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:				
Filing Date:				
Title of Invention:	Gamma Reference Voltage Generator			
First Named Inventor/Applicant Name:	Richard V Orlando			
Filer:	Dennis Fernandez/FENG ELIZONDO			
Attorney Docket Number:	ALTA-P007B			
Filed as Small Entity				
Utility Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	75	75
Utility Search Fee	2111	1	250	250
Utility Examination Fee	2311	1	100	100
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				425

Electronic Acknowledgement Receipt

EFS ID:	1734823
Application Number:	11743014
International Application Number:	
Confirmation Number:	5927
Title of Invention:	Gamma Reference Voltage Generator
First Named Inventor/Applicant Name:	Richard V Orlando
Customer Number:	22877
Filer:	Dennis Fernandez/FENG ELIZONDO
Filer Authorized By:	Dennis Fernandez
Attorney Docket Number:	ALTA-P007B
Receipt Date:	01-MAY-2007
Filing Date:	
Time Stamp:	18:07:41
Application Type:	Utility

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	\$425
RAM confirmation Number	880
Deposit Account	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part /.zip	Pages (if appl.)
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1	Oath or Declaration filed	ALTA-P007B_POA.pdf	254247	no	3
Warnings:					
Information:					
2	Nonpublication request from applicant.	ALTA-P007B_NonpublicationRequest.pdf	118284	no	1
Warnings:					
Information:					
3	Application Data Sheet	ALTA-P007B_ADS.pdf	138750	no	3
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
4		ALTA-P007B_Continuation_5-1-2007.pdf	1431624	yes	22
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	17	
	Claims		18	21	
	Abstract		22	22	
Warnings:					
Information:					
5	Drawings	ALTA-P007B_Drawings.pdf	345527	no	6
Warnings:					
Information:					
6	Transmittal of New Application	Application_Transmittal.pdf	646031	no	2
Warnings:					
Information:					
7	Fee Worksheet (PTO-06)	fee-info.pdf	8373	no	2
Warnings:					
Information:					

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

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5/1/07

PTO/SB/06 (12-04)

Approved for use through 7/31/2006. OMB 0651-0032

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

11/743,014**APPLICATION AS FILED – PART I**

(Column 1)

(Column 2)

SMALL ENTITY**OTHER THAN
SMALL ENTITY**

FOR	NUMBER FILED	NUMBER EXTRA
BASIC FEE (37 CFR 1.16(a), (b), or (c))		
SEARCH FEE (37 CFR 1.16(k), (l), or (m))		
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))		
TOTAL CLAIMS (37 CFR 1.16(i))	6 minus 20 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).	
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))		

RATE (\$)	FEE (\$)
	75
	250
	100
X 25=	
X 100=	
N/A	
TOTAL	425

OR

RATE (\$)	FEE (\$)
X 50=	
X 200=	
N/A	
TOTAL	

* If the difference in column 1 is less than zero, enter "0" in column 2.

APPLICATION AS AMENDED – PART II

(Column 1)

(Column 2)

(Column 3)

SMALL ENTITY**OTHER THAN
SMALL ENTITY**

AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total (37 CFR 1.16(i))	*	Minus	**	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=
	Application Size Fee (37 CFR 1.16(s))				
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					

RATE (\$)	ADDITIONAL FEE (\$)
X =	
X =	
N/A	
TOTAL ADD'T FEE	

OR

RATE (\$)	ADDITIONAL FEE (\$)
X =	
X =	
N/A	
TOTAL ADD'T FEE	

AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total (37 CFR 1.16(i))	*	Minus	**	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=
	Application Size Fee (37 CFR 1.16(s))				
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					

RATE (\$)	ADDITIONAL FEE (\$)
X =	
X =	
N/A	
TOTAL ADD'T FEE	

OR

RATE (\$)	ADDITIONAL FEE (\$)
X =	
X =	
N/A	
TOTAL ADD'T FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

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