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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/123,619	03/20/2023	Glenn Norman Sanders	ZZ0001.068	1083
39689	7590	07/30/2024	EXAMINER	
Chipperson Law Group, P.C.			FERGUSON, KEITH	
163 Madison Avenue			ART UNIT	
Suite 220-40			PAPER NUMBER	
Morristown, NJ 07960			2648	
			NOTIFICATION DATE	DELIVERY MODE
			07/30/2024	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):

jk@chippersonlaw.com
mdg@chippersonlaw.com
rcc@chippersonlaw.com

APPLICATION NO.	ISSUE DATE	PATENT NO.
18/123,619	30-Jul-2024	12051444

Chipperson Law Group, P.C.
163 Madison Avenue
Morristown, NJ 07960

EGRANT NOTIFICATION

Your electronic patent grant (eGrant) is now available, which can be accessed via Patent Center at <https://patentcenter.uspto.gov>

The electronic patent grant is the official patent grant under 35 U.S.C. 153. For more information, please visit <https://www.uspto.gov/electronicgrants>



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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/123,619	07/30/2024	12051444	ZZ0001.068	1083

39689 7590 07/10/2024
Chipperson Law Group, P.C.
163 Madison Avenue
Suite 220-40
Morristown, NJ 07960

ISSUE NOTIFICATION

The projected patent number and issue date are specified above. The patent will issue electronically. The electronically issued patent is the official patent grant pursuant to 35 U.S.C. § 153. The patent may be accessed on or after the issue date through Patent Center at <https://patentcenter.uspto.gov/>. The patent will be available in both the public and the private sides of Patent Center. Further assistance in electronically accessing the patent, or about Patent Center, is available by calling the Patent Electronic Business Center at 1-888-217-9197.

The USPTO is implementing electronic patent issuance with a transition period, during which period the USPTO will mail a ceremonial paper copy of the electronic patent grant to the correspondence address of record. Additional copies of the patent (i.e., certified and presentation copies) may be ordered for a fee from the USPTO's Certified Copy Center at <https://certifiedcopycenter.uspto.gov/index.html>. The Certified Copy Center may be reached at (800)972-6382.

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 Center (<https://patentcenter.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 Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PATENT CENTER site <https://patentcenter.uspto.gov> for additional inventors):

Mr. Glenn Norman Sanders, Franklin Lakes, NJ;

Mr. Howard Glenn Stark, Sparta, NJ;

APPLICANT(s) (Please see PATENT CENTER site <https://patentcenter.uspto.gov> for additional applicants):

Zaxcom, Inc., Pompton Plains, NJ

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

SUPPLEMENTAL DECLARATION
(Original Application)

As a below named inventor, I hereby declare that:

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

I believe I am an original, first and joint inventor of the subject matter which is claimed, as amended by any and all amendments entered during the prosecution of the patent application identified herein, and for which a patent is sought on the invention entitled

Systems and Methods for Repairing Remotely Recorded Audio Data

the specification of which was filed on **March 20, 2023**, as Application No. **18/123,619**.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any and all amendments entered during the prosecution of the application.

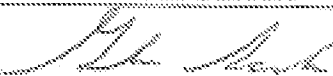
I acknowledge the duty to disclose information which is material to patentability in accordance with 37 C.F.R. §1.56.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Full name of first

inventor Glenn Norman Sanders

Inventor's Signature



Date

6/27/24

Residence

U.S. Residency

Citizenship

United States

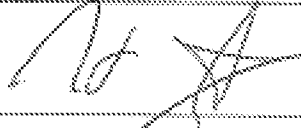
Post Office Address

235 Oldwoods Road, Franklin Lakes, New Jersey 07417

Full name of second
inventor

Howard Glenn Stark

Inventor's
Signature



Date

6/27/24

Residence

U.S. Residency

Citizenship

United States

Post Office Address

28 Rose Lane, Sparta, New Jersey, 07871

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING ELECTRONICALLY TRANSMITTED TO THE USPTO VIA EFS-WEB ON THE DATE SHOWN BELOW:

BY: /Morgan D. Golightly/

DATE: June 28, 2024

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Patent Application of:	:		
Glenn Norman Sanders, <i>et al.</i>	:		
	:		
Conf. No.: 1083	:	Group Art Unit:	2648
	:		
Appln. No.: 18/123,619	:	Examiner:	Keith Ferguson
	:		
Filing Date: March 20, 2023	:	Attorney Docket No.:	ZZ0001.068
	:		
Title:	:		
Systems and Methods for Repairing Remotely Recorded Audio Data	:		

COMMENTS ON STATEMENT OF REASONS FOR ALLOWANCE
UNDER 37 C.F.R. § 1.104 (E)

The Notice of Allowability issued on June 12, 2024, includes a Statement of Reasons for Allowance ("Statement"). Applicant agrees that the claims are allowable over the prior art. However, Applicant hereby submits that entry of the Statement into the record should not necessarily be construed as any agreement with or acquiescence by Applicant in the stated reasoning. Furthermore, Applicant specifically disagrees with at least the following aspects of the Statement.

Specifically, the Examiner states that “Regarding claim 2, the prior art of record fails to teach or suggest alone, or in combination a remote receiver, the remote receiver configured to create at least one master timecode and to receive audio data; a local audio device capable of communicating with the remote receiver and configured to receive locally generated audio; the at least one local audio device wearable by a creator of the locally generated audio, the at least one local audio device including: at least one local

memory; at least one local transmitter; at least one local receiver; and at least one local processing unit, the at least one local processing unit operatively coupled to the at least one local memory, and, optionally, the at least one local transmitter and, optionally, the at least one local receiver, wherein the at least one local memory stores instructions that, when executed by the at least one local processing unit, configures the local audio device to: receive the at least one master timecode from the remote receiver via the at least one local receiver; create time-referenced local audio data from the locally generated audio and the at least one master timecode; store the time-referenced local audio data in the at least one local memory; and wherein the audio data is transmitted to the remote receiver substantially simultaneously with the receiving of the local audio data by the local audio device, the creating of the time-referenced local audio data, or the storing of the time-referenced local audio data in the at least one local memory.

Regarding claim 15, the prior art of record fails to teach or suggest alone, or in combination a remote receiver, the remote receiver configured to create at least one master timecode and to receive audio data; a local audio device capable of communicating with the remote receiver and configured to receive locally generated audio; the at least one local audio device wearable by a creator of the locally generated audio, the at least one local audio device including: at least one local memory; at least one local transmitter; at least one local receiver; and at least one local processing unit, the at least one local processing unit operatively coupled to the at least one local memory, and, optionally, the at least one local transmitter and, optionally, the at least one local receiver, wherein the at least one local memory stores instructions that, when executed by the at least one local processing unit, configures the local audio device to: receive the at least one master timecode from the

remote receiver via the at least one local receiver; synchronize a local timecode with the at least one master timecode; create time-referenced local audio data from the at least one local timecode; store the time-referenced local audio data in the at least one local memory; and wherein the audio data is transmitted to the remote receiver substantially simultaneously with the receiving of the local audio data by the local audio device, the creating of the time-referenced local audio data, or the storing of the time-referenced local audio data in the at least one local memory.

Regarding claim 29, the prior art of record fails to teach or suggest alone, or in combination receiving locally generated audio at a local audio device; receiving at least one master timecode at the local audio device; creating time-referenced local audio data from the locally generated audio and the at least one master timecode; storing the time-referenced local audio data in at least one local memory; transmitting audio data to a remote receiver; creating time-referenced remote audio data from the audio data and one or more of the at least one master timecode; and replacing portions of the time-referenced remote audio data with at least one portion of the time-referenced local audio data.

Regarding claim 30, the prior art of record fails to teach or suggest alone, or in combination receiving locally generated audio at a local audio device; receiving at least one master timecode at the local audio device; synchronizing a local timecode generator or at least one local timecode to the at least one master timecode; creating time-referenced local audio data from the locally generated audio and the a timecode created by the local timecode generator or the at least one local timecode; storing the time-referenced local audio data in at least one local memory; transmitting audio data to a remote receiver; creating time-referenced remote audio data from the audio data and one or more of the at

least one master timecode; and replacing portions of the time-referenced remote audio data with at least one portion of the time-referenced local audio data.”

Applicant submits that the general statement of the rationale for patentability with respect to all of the allowed claims as discussed above overlooks differences as to the language and scope of the claims and Applicant further submits that each claim is independently patentable in its own right and not just for the general reason(s) suggested by the Statement. Applicant further submits that the Statement should not be viewed as suggesting any claim interpretation or estoppel with regard to any of the allowed claims, particularly to the extent, if any, that the Statement differs from the proper claim construction. It is respectfully submitted that the allowed claims should be entitled to the broadest reasonable interpretation and to the broadest range of equivalents that are appropriate in light of the language of the claims and the supporting disclosure, without reference to the Statement.

Respectfully submitted,

June 28, 2024
(Date)

By: /Rita C. Chipperson Reg. No. 54,031/

RITA C. CHIPPERSO, ESQ.

Registration No. 54 ,031

Chipperson Law Group, P.C.

5 Cold Hill Road South, Suite 21

Mendham, New Jersey 07945

Telephone: 973-845-9071 x205

E-Mail: rcc@chippersonlaw.com

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING ELECTRONICALLY
TRANSMITTED TO THE USPTO VIA EFS-WEB ON THE DATE SHOWN BELOW:

BY: /Morgan D. Golightly/

DATE: June 28, 2024

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor:	:	
Glenn Norman Sanders	:	
	:	
Conf. No.: 1083	:	Group Art Unit: 2648
	:	
Appln. No.: 18/123,619	:	Examiner: Keith Ferguson
	:	
Filing Date: March 20, 2023	:	Attorney Docket No.: ZZ0001.068
	:	
Title:	:	Systems and Methods for Repairing Remotely Recorded Audio Data

TRANSMITTAL OF PAYMENT OF ISSUE FEE

Transmitted herewith are the following for the above-identified application. Although it is Applicant's opinion that the claims filed by way of amendment are substantially embraced in the statement of invention or in the claims originally filed, applicants herewith file a Supplemental Declaration for precautionary purposes under 37 CFR §1.67.

- ☒ Issue Fee Transmittal Form PTOL-85 – 1 page
- ☒ Utility Fee: \$480.00 ☐ Design Fee: _____ ☐ Plant Fee: _____
- ☒ Small Entity status:
- ☒ has previously been claimed/established.
- ☐ is hereby claimed under 37 C.F.R. §1.27, as ☐ an Independent Inventor,
 or ☐ a Small Business Concern, or ☐ a Non-Profit Organization.
- ☐ Formal Drawings
- ☒ Supplemental Declaration - 2 pages.
- ☒ Comments on Statements of Reasons for Allowance – 4 pages.

The above fees are being paid by credit card via EFS-Web. Furthermore:

- ☐ A check in the amount of \$_____.00.
- ☒ Authorization to charge and/or credit Deposit Account No. 50-2864 (Billing No. ZZ0001.068) is provided as noted below.
- ☒ Any overpayments or deficiencies in the above-calculated fee.
- ☐ Additional claim fee in the amount of \$_____.00 as calculated above.
- ☒ Any additional fees required under 37 C.F.R. § 1.16 and/or § 1.17.

Respectfully submitted,

June 28, 2024
(Date)

By: /Rita C. Chipperson, Reg. No. 54,031/

RITA C. CHIPPERSO, ESQ.

Registration No. 54,031

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UNITED STATES
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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #
18/123,619

RECEIPT DATE / TIME
06/28/2024 02:31:50 PM Z ET

ATTORNEY DOCKET #
ZZ0001.068

Title of Invention

Systems and Methods for Repairing Remotely Recorded Audio Data

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # -

CONFIRMATION # 1083

FILED BY MORGAN GOLIGHTLY

PATENT CENTER # 66162724

FILING DATE 03/20/2023

CUSTOMER # 39689

FIRST NAMED INVENTOR Mr. Glenn Norman Sanders

CORRESPONDENCE ADDRESS -

AUTHORIZED BY Rita Chipperson

Documents

TOTAL DOCUMENTS: 4

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
finalSuppDec.pdf	2	Oath or Declaration filed	55 KB
Statementfinal.pdf	4	Miscellaneous Incoming Letter	86 KB
Transmittal.pdf	2	Transmittal Letter	103 KB
PTOLfinal.pdf	1	Issue Fee Payment (PTO-85B)	71 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
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finalSuppDec.pdf	E2EFD84F3913D25CDDC8F0B6F34848CA5E386352AC77104A8 0FEC93A6D323A350758084A561614F7B25B1C6142EF4F96D09 CC9693E443737EC82B0DA1A2C83FE
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PTOLfinal.pdf	BFC4608A6430A263414C517FD3BDF49CA71085D28EA3CA7C C836F6728F60CB4B6C7E173C59548360C53CCE2EF08C9FDE3 D9EB313B81065B12593986F9B29F0AD

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 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.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via the USPTO patent electronic filing system.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

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

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

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 transmitted to the USPTO via the USPTO patent electronic filing system or by facsimile to (571) 273-2885, on the date below.

Rita C. Chipperson	(Typed or printed name)
/Rita C. Chipperson Reg. No. 54,031/	(Signature)
June 28, 2024	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/123,619	03/20/2023	Glenn Norman Sanders	ZZ0001.068	1083

TITLE OF INVENTION: Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0.00	\$0.00	\$480	07/10/2024

EXAMINER	ART UNIT	CLASS-SUBCLASS
FERGUSON, KEITH	2648	700-094000

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/AIA/122 or PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or 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 Rita C. Chipperson, Esq.

2 Chipperson Law Group, P.C.

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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

ZAXCOM, Inc.

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

Pompton Plains, New Jersey

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

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required)

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

☒ Electronic Payment via the USPTO patent electronic filing system ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 50-2864

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

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Rita C. Chipperson Reg. No. 54,031/

Date June 28, 2024

Typed or printed name Rita C. Chipperson

Registration No. 54,031



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ELECTRONIC PAYMENT RECEIPT

APPLICATION #
18/123,619

RECEIPT DATE / TIME
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ATTORNEY DOCKET #
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Title of Invention

Systems and Methods for Repairing Remotely Recorded Audio Data

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # -

CONFIRMATION # 1083

FILED BY MORGAN GOLIGHTLY

PATENT CENTER # 66162724

AUTHORIZED BY Rita Chipperson

CUSTOMER # 39689

FILING DATE 03/20/2023

CORRESPONDENCE
ADDRESS -

FIRST NAMED
INVENTOR Mr. Glenn Norman Sanders

Payment Information

PAYMENT METHOD
CARD / 4002

PAYMENT TRANSACTION ID
E20246RE32516922

PAYMENT AUTHORIZED BY
Rita Chipperson

PRE-AUTHORIZED ACCOUNT
502864

PRE-AUTHORIZED CATEGORY

37 CFR 1.16 (National application filing, search, and examination fees); 37 CFR 1.17 (Patent application and reexamination processing fees); 37 CFR 1.19 (Document supply fees); 37 CFR 1.20 (Post issuance fees); 37 CFR 1.21 (Miscellaneous fees and charges)

FEE CODE	DESCRIPTION	ITEM PRICE(\$)	QUANTITY	ITEM TOTAL(\$)
2501	UTILITY ISSUE FEE	480.00	1	480.00
TOTAL AMOUNT:				\$480.00

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Receipt will establish the filing date of the application

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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.



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
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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The time period for reply, if any, is set in the attached communication.

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jk@chippersonlaw.com
mdg@chippersonlaw.com
rcc@chippersonlaw.com

Notice of Allowability	Application No. 18/123,619	Applicant(s) Sanders et al.	
	Examiner KEITH FERGUSON	Art Unit 2648	AIA (FITF) Status Yes

-- 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 1/11/2024.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 2-30. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

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.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ 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. ☐ Examiner's Amendment/Comment
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date ____.	6. ☒ Examiner's Statement of Reasons for Allowance
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material ____.	7. ☐ Other ____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date ____.	

/KEITH FERGUSON/ Primary Examiner, Art Unit 2648	
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DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Allowable Subject Matter

2. Claims 2-30 are allowed.
3. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 2, the prior art of record fails to teach or suggest alone, or in combination a remote receiver, the remote receiver configured to create at least one master timecode and to receive audio data; a local audio device capable of communicating with the remote receiver and configured to receive locally generated audio; the at least one local audio device wearable by a creator of the locally generated audio, the at least one local audio device including: at least one local memory; at least one local transmitter; at least one local receiver; and at least one local processing unit, the at least one local processing unit operatively coupled to the at least one local memory, and, optionally, the at least one local transmitter and, optionally, the at least one local receiver, wherein the at least one local memory stores instructions that, when executed by the at least one local processing unit, configures the local audio device to: receive the at least one master timecode from the remote receiver via the at least one local receiver; create time-referenced local audio data from the locally generated audio and the at least one master timecode; store the time-referenced local audio data in the at least one local memory; and wherein the audio data is transmitted to the remote receiver substantially simultaneously with the receiving of the local audio data by the local audio device, the creating of the time-referenced local audio data, or the storing of the time-referenced local audio data in the at least one local memory.

Regarding claim 15, the prior art of record fails to teach or suggest alone, or in combination a remote receiver, the remote receiver configured to create at least one master timecode and to receive audio data; a local audio device capable of communicating with the remote receiver and configured to receive locally generated audio; the at least one local audio device wearable by a creator of the locally generated audio, the at least one local audio device including: at least one local memory; at least one local transmitter; at least one local receiver; and at least one local processing unit, the at least one local processing unit operatively coupled to the at least one local memory, and, optionally, the at least one local transmitter and, optionally, the at least one local receiver, wherein the at least one local memory stores instructions that, when executed by the at least one local processing unit, configures the local audio device to: receive the at least one master timecode from the remote receiver via the at least one local receiver; synchronize a local timecode with the at least one master timecode; create time-referenced local audio data from the at least one local timecode; store the time-referenced local audio data in the at least one local memory; and wherein the audio data is transmitted to the remote receiver substantially simultaneously with the receiving of the local audio data by the local audio device, the creating of the time-referenced local audio data, or the storing of the time-referenced local audio data in the at least one local memory.

Regarding claim 29, the prior art of record fails to teach or suggest alone, or in combination receiving locally generated audio at a local audio device; receiving at least one master timecode at the local audio device; creating time-referenced local audio data from the locally generated audio and the at least one master timecode; storing the time-referenced local audio data in at least one local memory; transmitting audio data to a remote receiver; creating time-referenced remote audio data from the audio data and one or more of the at least one master timecode; and replacing portions of the time-referenced remote audio data with at least one portion of the time-referenced local audio data.

Regarding claim 30, the prior art of record fails to teach or suggest alone, or in combination receiving locally generated audio at a local audio device; receiving at least one master timecode at the local audio device; synchronizing a local timecode generator or at least one local timecode to the at least one master timecode; creating time-referenced local audio data from the locally generated audio and the a timecode created by the local timecode generator or the at least one local timecode; storing the time-referenced local audio data in at least one local memory; transmitting audio data to a remote receiver; creating time-referenced remote audio data from the audio data and one or more of the at least one master timecode; and replacing portions of the time-referenced remote audio data with at least one portion of the time-referenced local audio data.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEITH FERGUSON whose telephone number is (571)272-7865. The examiner can normally be reached M-F 7 am -3 pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wesley L Kim can be reached on (571) 272-7867. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: <https://patentcenter.uspto.gov>. Visit <https://www.uspto.gov/patents/apply/patent-center> for more information about Patent Center and

Art Unit: 2648

<https://www.uspto.gov/patents/docx> for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KEITH FERGUSON/
Primary Examiner, Art Unit 2648



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 NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
18/123,619	03/20/2023	2648	1256	ZZ0001.068	1	1

39689

Chipperson Law Group, P.C.
163 Madison Avenue
Suite 220-40
Morristown, NJ 07960

CONFIRMATION NO. 1083
REPLACEMENT FILING RECEIPT



0000000071083900

Date Mailed: 04/15/2024

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. 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 submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction 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 provided that the request is grantable.

Inventor(s)

Glenn Norman Sanders, Franklin Lakes, NJ;
Howard Glenn Stark, Sparta, NJ;

Applicant(s)

Zaxcom, Inc., Pompton Plains, NJ;

Assignment For Published Patent Application

Zaxcom, Inc., Pompton Plains, NJ

Power of Attorney: The patent practitioners associated with Customer Number 000039689

Domestic Priority data as claimed by applicant

This application is a CON of 17/157,436 01/25/2021 PAT 11,610,605
which is a CON of 16/397,895 04/29/2019 PAT 10,901,680
which is a CON of 15/225,056 08/01/2016 PAT 10,276,207
which is a CON of 14/808,589 07/24/2015 PAT 9,406,224
which is a CON of 13/530,040 06/21/2012 PAT 9,094,636
which is a CIP of 12/838,164 07/16/2010 PAT 8,842,854
which is a CIP of 11/404,735 04/14/2006 PAT 7,929,902
which is a CIP of 11/181,062 07/14/2005 PAT 7,711,443

Foreign Applications for which priority is claimed (You may be eligible to benefit from the Patent Prosecution Highway program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 04/21/2023

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 18/123,619**

Projected Publication Date: 08/03/2023

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

Systems and Methods for Repairing Remotely Recorded Audio Data

Preliminary Class

700

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: Yes

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 (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor

community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.



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

NOTICE OF ALLOWANCE AND FEE(S) DUE

39689 7590 04/10/2024
Chipperson Law Group, P.C.
163 Madison Avenue
Suite 220-40
Morristown, NJ 07960

EXAMINER	
FERGUSON, KEITH	
ART UNIT	PAPER NUMBER
2648	

DATE MAILED: 04/10/2024

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/123,619	03/20/2023	Glenn Norman Sanders	ZZ0001.068	1083

TITLE OF INVENTION: Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0.00	\$0.00	\$480	07/10/2024

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 ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted fees.

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. 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: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via the USPTO patent electronic filing system.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

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

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

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 transmitted to the USPTO via the USPTO patent electronic filing system or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/123,619	03/20/2023	Glenn Norman Sanders	ZZ0001.068	1083

TITLE OF INVENTION: Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0.00	\$0.00	\$480	07/10/2024

EXAMINER	ART UNIT	CLASS-SUBCLASS
FERGUSON, KEITH	2648	700-094000

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/AIA/122 or PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or 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 _____

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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). 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. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required)

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

☐ Electronic Payment via the USPTO patent electronic filing system ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

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

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

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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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/123,619	03/20/2023	Glenn Norman Sanders	ZZ0001.068	1083
39689	7590	04/10/2024	EXAMINER	
Chipperson Law Group, P.C.			FERGUSON, KEITH	
163 Madison Avenue			ART UNIT	
Suite 220-40			PAPER NUMBER	
Morristown, NJ 07960			2648	
DATE MAILED: 04/10/2024				

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

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

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.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. 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 30 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, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. 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.

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. The United States Patent and Trademark Office (USPTO) collects the information in this record under authority of 35 U.S.C. 2. The USPTO's system of records is used to manage all applicant and owner information including name, citizenship, residence, post office address, and other information with respect to inventors and their legal representatives pertaining to the applicant's/owner's activities in connection with the invention for which a patent is sought or has been granted. The applicable Privacy Act System of Records Notice for the information collected in this form is COMMERCE/PAT-TM-7 Patent Application Files, available in the Federal Register at 78 FR 19243 (March 29, 2013).

<https://www.govinfo.gov/content/pkg/FR-2013-03-29/pdf/2013-07341.pdf>

Routine uses of the information in this record may include disclosure to:

- 1) law enforcement, in the event that the system of records indicates a violation or potential violation of law;
- 2) a federal, state, local, or international agency, in response to its request;
- 3) a contractor of the USPTO having need for the information in order to perform a contract;
- 4) the Department of Justice for determination of whether the Freedom of Information Act (FOIA) requires disclosure of the record;
- 5) a Member of Congress submitting a request involving an individual to whom the record pertains, when the individual has requested the Member's assistance with respect to the subject matter of the record;
- 6) a court, magistrate, or administrative tribunal, in the course of presenting evidence, including disclosures to opposing counsel in the course of settlement negotiations;
- 7) the Administrator, General Services Administration (GSA), or their designee, during an inspection of records conducted by GSA under authority of 44 U.S.C. 2904 and 2906, in accordance with the GSA regulations and any other relevant (i.e., GSA or Commerce) directive, where such disclosure shall not be used to make determinations about individuals;
- 8) 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));
- 9) the Office of Personnel Management (OPM) for personnel research purposes; and
- 10) the Office of Management and Budget (OMB) for legislative coordination and clearance.

If you do not furnish the information requested on this form, the USPTO may not be able to process and/or examine your submission, which may result in termination of proceedings, abandonment of the application, and/or expiration of the patent.

Notice of Allowability	Application No. 18/123,619	Applicant(s) Sanders et al.	
	Examiner KEITH FERGUSON	Art Unit 2648	AIA (FITF) Status Yes

-- 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 1/11/2024.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 2-30. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

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.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ 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. ☐ Examiner's Amendment/Comment
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.	6. ☒ Examiner's Statement of Reasons for Allowance
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.	7. ☐ Other _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	

/KEITH FERGUSON/ Primary Examiner, Art Unit 2648	
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DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Allowable Subject Matter

2. Claims 2-20 are allowed.

3. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 1, the prior art of record fails to teach or suggest alone, or in combination a remote receiver, the remote receiver configured to create at least one master timecode and to receive audio data; a local audio device capable of communicating with the remote receiver and configured to receive locally generated audio; the at least one local audio device wearable by a creator of the locally generated audio, the at least one local audio device including: at least one local memory; at least one local transmitter; at least one local receiver; and at least one local processing unit, the at least one local processing unit operatively coupled to the at least one local memory, and, optionally, the at least one local transmitter and, optionally, the at least one local receiver, wherein the at least one local memory stores instructions that, when executed by the at least one local processing unit, configures the local audio device to: receive the at least one master timecode from the remote receiver via the at least one local receiver; create time-referenced local audio data from the locally generated audio and the at least one master timecode; store the time-referenced local audio data in the at least one local memory; and wherein the audio data is transmitted to the remote receiver substantially simultaneously with the receiving of the local audio data by the local audio device, the creating of the time-referenced local audio data, or the storing of the time-referenced local audio data in the at least one local memory.

Regarding claim 15, the prior art of record fails to teach or suggest alone, or in combination a remote receiver, the remote receiver configured to create at least one master timecode and to receive audio data; a local audio device capable of communicating with the remote receiver and configured to receive locally generated audio; the at least one local audio device wearable by a creator of the locally generated audio, the at least one local audio device including: at least one local memory; at least one local transmitter; at least one local receiver; and at least one local processing unit, the at least one local processing unit operatively coupled to the at least one local memory, and, optionally, the at least one local transmitter and, optionally, the at least one local receiver, wherein the at least one local memory stores instructions that, when executed by the at least one local processing unit, configures the local audio device to: receive the at least one master timecode from the remote receiver via the at least one local receiver; synchronize a local timecode with the at least one master timecode; create time-referenced local audio data from the at least one local timecode; store the time-referenced local audio data in the at least one local memory; and wherein the audio data is transmitted to the remote receiver substantially simultaneously with the receiving of the local audio data by the local audio device, the creating of the time-referenced local audio data, or the storing of the time-referenced local audio data in the at least one local memory.

Regarding claim 29, the prior art of record fails to teach or suggest alone, or in combination receiving locally generated audio at a local audio device; receiving at least one master timecode at the local audio device; creating time-referenced local audio data from the locally generated audio and the at least one master timecode; storing the time-referenced local audio data in at least one local memory; transmitting audio data to a remote receiver; creating time-referenced remote audio data from the audio data and one or more of the at least one master timecode; and replacing portions of the time-referenced remote audio data with at least one portion of the time-referenced local audio data.

Regarding claim 30, the prior art of record fails to teach or suggest alone, or in combination receiving locally generated audio at a local audio device; receiving at least one master timecode at the local audio device; synchronizing a local timecode generator or at least one local timecode to the at least one master timecode; creating time-referenced local audio data from the locally generated audio and the a timecode created by the local timecode generator or the at least one local timecode; storing the time-referenced local audio data in at least one local memory; transmitting audio data to a remote receiver; creating time-referenced remote audio data from the audio data and one or more of the at least one master timecode; and replacing portions of the time-referenced remote audio data with at least one portion of the time-referenced local audio data.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEITH FERGUSON whose telephone number is (571)272-7865. The examiner can normally be reached M-F 7 am -3 pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

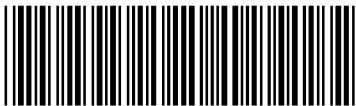
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wesley L Kim can be reached on (571) 272-7867. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: <https://patentcenter.uspto.gov>. Visit <https://www.uspto.gov/patents/apply/patent-center> for more information about Patent Center and

Art Unit: 2648

<https://www.uspto.gov/patents/docx> for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KEITH FERGUSON/
Primary Examiner, Art Unit 2648

<i>Search Notes</i> 	Application/Control No. 18/123,619	Applicant(s)/Patent Under Reexamination Sanders et al.
	Examiner KEITH FERGUSON	Art Unit 2648

CPC - Searched*		
Symbol	Date	Examiner
G06F1/26, G06F3/167, G06F3/16	08/05/2019	KF
G06F1/26, G06F3/167, G06F3/16	07/05/2023	KF
G11B20/10527, G11B2020/10537, G11B2020/10546, G11B2020/10592, G11B2020/10574, H04N21/41265, H04N21/42204, G06F1/26, G06F3/165, G08C25/02, G08C25/04, H04W52/38, H04W52/243	03/26/2024	KF

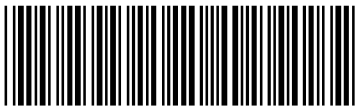
CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
east search notes included	08/05/2019	KF
same claim in application 13/530,040, examiner call applicant, it been 3 weeks, no response	08/05/2019	KF
same claim 1 that's in application 16/397,895	07/05/2023	KF
search notes included	07/05/2023	KF
update search note	03/25/2024	KF
interference search	03/25/2024	KF

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<i>Search Notes</i> 	Application/Control No. 18/123,619	Applicant(s)/Patent Under Reexamination Sanders et al.
	Examiner KEITH FERGUSON	Art Unit 2648

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
,G11B,H04N, G06F,G08C, H04W,	G11B20/10527, G11B2020/10537, G11B2020/ 10546, G11B2020/10592, G11B2020/10574, H04N21/41265, H04N21/42204, G06F1/26, G06F3/ 165, G08C25/02, G08C25/04, H04W52/38, H04W52/243,G06F1/26, G06F3/167, G06F3/16	03/26/2024	KF

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Issue Classification 	Application/Control No. 18/123,619	Applicant(s)/Patent Under Reexamination Sanders et al.
	Examiner KEITH FERGUSON	Art Unit 2648

CPC						
Symbol					Type	Version
G11B	/	20	/	10527	F	2013-01-01
G08C	/	25	/	02	I	2013-01-01
H04N	/	21	/	42204	I	2013-01-01
G06F	/	1	/	26	I	2013-01-01
G06F	/	3	/	16	I	2013-01-01
H04N	/	21	/	41265	I	2020-08-01
H04N	/	21	/	4126	I	2013-01-01
G06F	/	3	/	165	I	2013-01-01
G08C	/	25	/	04	I	2013-01-01
H04W	/	52	/	243	I	2013-01-01
H04W	/	52	/	38	I	2013-01-01
H04R	/	29	/	004	I	2013-01-01
G11B	/	2020	/	10574	A	2013-01-01
H04R	/	2420	/	07	A	2013-01-01

CPC Combination Sets				
Symbol		Type	Set	Ranking
/	/			

NONE	Total Claims Allowed:	
(Assistant Examiner)	(Date)	29
/KEITH FERGUSON/ Primary Examiner, Art Unit 2648	25 March 2024	O.G. Print Claim(s)
(Primary Examiner)	(Date)	1

Issue Classification 	Application/Control No. 18/123,619	Applicant(s)/Patent Under Reexamination Sanders et al.
	Examiner KEITH FERGUSON	Art Unit 2648

INTERNATIONAL CLASSIFICATION			
CLAIMED			
G11B	/	20	/ 10
NON-CLAIMED			
	/		/

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	29	
/KEITH FERGUSON/ Primary Examiner, Art Unit 2648 (Primary Examiner)	25 March 2024 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

Issue Classification 	Application/Control No. 18/123,619	Applicant(s)/Patent Under Reexamination Sanders et al.
	Examiner KEITH FERGUSON	Art Unit 2648

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1	9	10	18	19	27	28								
1	2	10	11	19	20	28	29								
2	3	16	12	20	21	29	30								
3	4	11	13	21	22										
4	5	12	14	22	23										
5	6	13	15	23	24										
6	7	14	16	24	25										
7	8	15	17	25	26										
8	9	17	18	26	27										

NONE	Total Claims Allowed:	
(Assistant Examiner)	(Date)	29
/KEITH FERGUSON/ Primary Examiner, Art Unit 2648	25 March 2024	O.G. Print Claim(s)
(Primary Examiner)	(Date)	1
		O.G. Print Figure
		1

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	12407	(device or terminal or unit or equipment or station) same (attach\$3 or detach\$4 or wear\$4 or worn or remov\$4) with (user or subscriber or technician or person or personel individual or client or people or child\$3) and (remot\$4 or distant or distance) near3 (dvr or vcr or record\$4)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 11:23 AM
L2	7	remode\$4 near1 (dvr or vcr or record\$4)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 11:30 AM
L3	3417	remot\$4 near1 (dvr or vcr or record\$4) and L1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 11:30 AM
L4	6836	(user or subscriber or technician or person or personel individual or client or people or child\$3) same remot\$4 near1 (dvr or vcr or record\$4)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 11:31 AM
L5	2019	L1 and L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 11:31 AM
L6	752	(device or terminal or unit or equipment or station) same (attach\$3 or detach\$4 or wear\$4 or worn or remov\$4) same remot\$4 near1 (dvr or vcr or record\$4)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 11:32 AM
L7	276	L4 and L6	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 11:34 AM
L8	1619	(wireless or radio or cellular or infrared) same remot\$4 near1 (dvr or vcr or recording or recorder)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 01:51 PM
L9	4	dar and L8	(US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	ON	ON	2020/04/01 01:53 PM

L10	921	(device or terminal or unit or equipment or station) same (attach\$3 or detach\$4 or wear\$4 or worn or remov\$4) and L8	JPO; DERWENT; IBM_TDB) (US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 01:53 PM
L11	753	(transmitter or receiver or transceiver) and L10	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 01:55 PM
L12	291	(device or terminal or unit or equipment or station) same (attach\$3 or detach\$4 or wear\$4 or worn or remov\$4) with (user or subscriber or technician or person or personel individual or client or people or child\$3) and L11	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 01:55 PM
L13	2354	(wireless or radio or cellular or infrared) same remot\$4 near1 (dvr or vcr or recording or recorder or record\$3 or answer\$3 adj machine)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 02:35 PM
L14	543	(dispatch\$4 or police or fireman or emergenc\$3 or e911 or "911") and L13	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 02:40 PM
L15	304	(dispatch\$4 or police or fireman or emergenc\$3 or e911 or "911") same remot\$4 near1 (dvr or vcr or recording or recorder or record\$3 or answer\$3 adj machine)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 02:40 PM
L16	2489	remot\$3 near1 (dvr or vcr or record\$4) same (wireless\$3 or radio or cellular or infrared or bluetooth)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:07 PM
L17	2297	remot\$3 near1 (dvr or vcr or record\$4) same (audio\$4 or music or sound or speech or talk\$3 or speak\$3)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:10 PM
L18	526	L16 and L17	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:13 PM

L19	841	remot\$3 near1 (dvr or vcr or record\$4) same (wireless\$3 or radio or cellular or user or portable or lightweight) near1 (device or terminal or unit or equipment or station)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:14 PM
L20	97	L18 and L19	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:16 PM
L21	1419	remot\$3 near1 (dvr or vcr or record\$4) and (device or terminal or unit or equipment or station) near2 (attach\$3 or detach\$4 or wear\$4 or worn or remov\$4) with (user or subscriber or technician or person or personel individual or client or people or child\$3)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:31 PM
L22	276	L16 and L21	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:35 PM
L23	17	L22 AND ((G06F1/163 OR G06F11/1446 OR G06F16/489).CPC. OR (G06F3/16 OR G06F1/26).IPCR.)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:40 PM
L24	345	(dvr or vcr or record\$4) with (audio\$4 or music or sound or speech or talk\$3 or speak\$3) and L19	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:55 PM
L25	783660	(timecode or timestamp or tim\$3 or time adj code or time adj stamp) with (audio\$4 or music or sound or speech or talk\$3 or speak\$3)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:58 PM
L26	183	L24 and L25	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 03:00 PM
L27	75	("20020049978" "20020100047" "20050197059" "20050251828" "4916532" "5420647" "5729280" "6199206" "6233734" "6591421"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2020/04/13 03:29 PM

L28	45	"6801713").PN. OR ("8145040").URPN. ("20010016491" "20020016175" "20020160751" "20030069804" "20040203927" "20050113113" "6072860" "6389398" "6401066" "6665376").PN. OR ("7227930").URPN.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2020/04/13 03:41 PM
L29	358	record\$3.ab. and L21	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 03:56 PM
L30	277	(dvr or vcr or record\$4) with (audio\$4 or music or sound or speech or talk\$3 or speak\$3) and L29	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 04:02 PM
L31	24	("4479124" "4485276" "4764962" "5315636" "5356060" "5409152" "5613236" "5644785" "5648999" "5651049" "5653336" "5730348" "5790680" "5825327" "5897042" "5915609" "5961017" "6000987" "6032337" "6082600" "6182878" "D351943").PN. OR ("6488190").URPN.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2020/04/13 04:40 PM
L32	21	("4481382" "4825456" "4930148" "5031230" "5279514" "5317624" "5390362").PN. OR ("5648999").URPN.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2020/04/13 04:41 PM
L33	9	sanders.in. and remot\$3 near recording	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 10:53 AM
L34	12	stark.in. and remot\$3 near recording	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:07 AM
L35	2	"7434154".pn.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:11 AM
L36	1	"7434154".pn. and record\$3	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:12 AM

L37	13163	remot\$3 near (recording or record or recorder)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:15 AM
L38	8451	(wireless or radio or cellular or infrared) and L37	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:16 AM
L39	6985	(recording or record or recorder) same (replac\$3 or eras\$3 or delet\$3) with previous	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:17 AM
L40	79	L38 and L39	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:17 AM
L41	1862	(recording or record or recorder) same (replac\$3 or eras\$3 or delet\$3) and L38	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:23 AM
L42	1123	(recording or recorder) same (replac\$3 or eras\$3 or delet\$3) and L41	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:23 AM
L43	377	(recording or recorder) same (replac\$3 or eras\$3 or delet\$3) with (data or audio\$7 or song or music) and L42	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:24 AM
L44	95	remot\$3 same (recording or recorder) same (replac\$3 or eras\$3 or delet\$3) with (data or audio\$7 or song or music) and L43	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:25 AM
L45	3	("6717737").PN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	OFF	OFF	2020/04/15 11:49 AM
L46	2	("20190150097").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/07/06 09:02 AM

L47	25	remot\$3 NEAR (recording OR record OR recorder) SAME (tim\$3 OR clock\$3) WITH (data OR audio\$7 OR song OR music) SAME (replac\$3 OR eras\$3 OR delet\$3) WITH (data OR audio\$7 OR song OR music)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/03/25 02:26 PM
L48	9954873	(data OR audio\$7 OR song OR music) WITH (device OR terminal OR equipment OR phone OR telephone)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/03/25 02:34 PM
L49	1108	remot\$3 NEAR (recording OR record OR recorder) SAME (tim\$3 OR clock\$3) WITH (data OR audio\$7 OR song OR music) AND I48	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/03/25 02:34 PM
L50	34685	(main OR master) WITH (tim\$3 OR clock\$3) WITH (data OR audio\$7 OR song OR music) AND (replac\$3 OR eras\$3 OR delet\$3) WITH (data OR audio\$7 OR song OR music)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/03/25 02:35 PM
L51	27	L49 AND L50	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/03/25 02:35 PM
L52	34	L49 AND (G11B20/10527 OR G11B2020/10537 OR G11B2020/10546 OR G11B2020/10592 OR G11B2020/10574 OR H04N21/41265 OR H04N21/42204 OR G06F1/26 OR G06F3/165 OR G08C25/02 OR G08C25/04 OR H04W52/38 OR H04W52/243).cpc.)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/03/26 09:27 AM
L53	5	L50 AND L52	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS,	OR	ON	ON	2024/03/26 09:32 AM

			IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
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PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	0	record\$ WITH local\$ WITH audio WITH time- referenc\$.clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/03/18 01:41 PM
N2	424	method WITH local\$ WITH audio WITH time\$.clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/03/26 09:43 AM
N3	48	method WITH local\$ WITH record\$ WITH audio WITH time\$.clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/03/26 09:43 AM
N4	47	N3 AND n2	(US-PGPUB; USPAT)	OR	ON	ON	2024/03/26 09:44 AM
N5	17794	master\$ WITH time\$.clm.	(US-PGPUB; USPAT)	OR	ON	ON	2024/03/26 09:45 AM
N6	7	N5 AND n4	(US-PGPUB; USPAT)	OR	ON	ON	2024/03/26 09:45 AM

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES PATENT AND TRADEMARK OFFICE ELECTRONICALLY VIA EFS-WEB ON THE DATE INDICATED BELOW.

BY: /Morgan D. Golightly/

Date: January 11, 2024

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor:	:	
Glenn Norman Sanders	:	
	:	
Conf. No.: 1083	:	Group Art Unit: 2648
	:	
Appln. No.: 18/123,619	:	Examiner: KEITH FERGUSON
	:	
Filing Date: 3/20/2023	:	Attorney Docket No.: ZZ0001.068
	:	
Title:	:	Systems and Methods for Repairing Remotely Recorded Audio Data

PETITION FOR EXTENSION OF TIME UNDER (37 C.F.R. § 1.136(A))

Applicants in the above-identified application hereby petition for a three-month extension of time to and including January 11, 2024, for responding to the Office Action of July 11, 2023. A response to Office Action accompanies this Petition.

☒ [X] The required fee is being paid by credit card via EFS-Web.

☒ [X] The Commissioner is hereby authorized to charge Deposit Account No. 50-2864 (Billing No. ZZ0001.068) as noted below.

☐ [] Extension fee in the amount of \$____.00

☒ [X] Any deficiencies or overpayments in the above-calculated fee.

Respectfully submitted,

January 11, 2024
(Date)

By: /Rita C. Chipperson Reg. No. 54,031/
RITA C. CHIPPERSO, ESQ.
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Mendham, New Jersey 07945
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Facsimile: 973-845-6176
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UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #
18/123,619

RECEIPT DATE / TIME
01/11/2024 07:29:10 PM Z ET

ATTORNEY DOCKET #
ZZ0001.068

Title of Invention

Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # -

CONFIRMATION # 1083

FILED BY Morgan Golightly

PATENT CENTER # 63924297

FILING DATE 03/20/2023

CUSTOMER # 39689

FIRST NAMED INVENTOR Mr. Glenn Norman Sanders

CORRESPONDENCE ADDRESS -

AUTHORIZED BY Rita Chipperson

Documents

TOTAL DOCUMENTS: 3

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
23.11.09. Petition EOT.pdf	1	Extension of Time	99 KB
23.11.09. Transmittal. OAR.pdf	2	Transmittal Letter	120 KB
OAResponseFinal.pdf	9	Amendment/Request for Reconsideration-After Non-Final Rejection	111 KB

Digest

DOCUMENT

MESSAGE DIGEST(SHA-512)

23.11.09. Petition EOT.pdf	F4C97C037C0E2E0BDBF1DFD85EFDBB2BCD16353D9523B740 A0EFF83BB2E67297A0F8845A08D2C4FA11D6F95B01175F1A6 406D8714A28AB17FC985F0191572B82
23.11.09. Transmittal OAR.pdf	C9E9DD6CAE40709F6FD377F50F69A7E8E6669BDCABA6D818 5C9C43646D2D16DF754556BC071FD191B0EE66445535B43DC B6FB4A1E10C7AE10FDA71A46899A58E
OAResponseFinal.pdf	702F8CA1CA9AD4B5CC96DCC77FA70E69EC08A251C6E30BA CAB531B08B09EC14D00D305B94FCAFA0E8DB12DAA0DF2A7 E1D8A05650C1BCD860EDB79BF68EE130E5

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 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.



UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC PAYMENT RECEIPT

APPLICATION #
18/123,619

RECEIPT DATE / TIME
01/11/2024 07:29:10 PM Z ET

ATTORNEY DOCKET #
ZZ0001.068

Title of Invention

Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # -

CONFIRMATION # 1083

FILED BY Morgan Golightly

PATENT CENTER # 63924297

AUTHORIZED BY Rita Chipperson

CUSTOMER # 39689

FILING DATE 03/20/2023

CORRESPONDENCE
ADDRESS -

FIRST NAMED
INVENTOR Mr. Glenn Norman Sanders

Payment Information

PAYMENT METHOD
CARD / 4002

PAYMENT TRANSACTION ID
E20241AJ29419721

PAYMENT AUTHORIZED BY
Rita Chipperson

PRE-AUTHORIZED ACCOUNT
502864

PRE-AUTHORIZED CATEGORY

37 CFR 1.16 (National application filing, search, and examination fees); 37 CFR 1.17 (Patent application and reexamination processing fees); 37 CFR 1.19 (Document supply fees); 37 CFR 1.20 (Post issuance fees); 37 CFR 1.21 (Miscellaneous fees and charges)

FEE CODE	DESCRIPTION	ITEM PRICE(\$)	QUANTITY	ITEM TOTAL(\$)
2202	EACH CLAIM IN EXCESS OF 20	40.00	10	400.00
2201	EACH INDEPENDENT CLAIM IN EXCESS OF THREE	192.00	1	192.00
2253	EXTENSION FOR RESPONSE WITHIN THIRD MONTH -	592.00	1	592.00
TOTAL AMOUNT:				\$1,184.00

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 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.

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES PATENT AND TRADEMARK OFFICE ELECTRONICALLY VIA EFS-WEB ON THE DATE INDICATED BELOW.

BY: /Morgan D. Golightly/ Date: January 11, 2024

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors: :
Glenn Norman Sanders, *et al.* :

Conf. No.: 1083 : Group Art Unit: 2648
: :
Appln. No.: 18/123,619 : Examiner: KEITH FERGUSON
: :
Filing Date: 03/20/2023 : Attorney Docket No.: ZZ0001.068
: :
Title: Systems and Methods for Repairing Remotely Recorded Audio Data

AMENDMENT/RESPONSE TO OFFICE ACTION TRANSMITTAL LETTER

For the above-identified application, transmitted herewith are the following:

- ☒ [X] Amendment/Response to Office Action
- ☐ [] Substitute Specification
- ☒ [X] Small entity status has been previously claimed
- ☐ [] Micro entity status has been previously claimed
- ☒ [X] Petition for Extension of Time
- ☐ [] Notice of Appeal
- ☐ [] Request for Continued Examination (RCE)

All claim fees are being paid by:

- ☒ [X] Credit card via EFS-Web.

- ☒ [X] Authorization to charge and/or credit Deposit Account No. 50-2864 (Billing No. ZZ0001.068) as noted below.
- ☒ [X] Any overpayments or deficiencies in the above-calculated fee.
- ☒ [X] Any additional fees required under 37 C.F.R. § 1.16 and/or § 1.17.
- ☒ [X] In the event that a Petition for Extension of Time is required, but not submitted, please charge any extension fee under 37 C.F.R. § 1.136(a) to our Deposit Account.

Respectfully submitted,

January 11, 2024
(Date)

By: /Rita C. Chipperson Reg. No. 54,031/
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I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED ELECTRONICALLY VIA EFS-WEB ON THE DATE INDICATED BELOW.

BY: /Janice J. Kwon/

Date: January 11, 2024

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors: Glenn Norman Sanders,
Howard Glenn Stark

:
:

Conf. No.: 1083

:

Group Art Unit: 2648

Appln. No.: 18/123,619

:

Examiner: KEITH FERGUSON

Filing Date: 03/20/2023

:

Attorney Docket No.: ZZ0001.068

:

Title: Systems and Methods for Repairing Remotely Recorded Audio Data

AMENDMENT/RESPONSE TO OFFICE ACTION

This is in response to the Office Action dated July 11, 2023. This response is being timely submitted by January 11, 2024, in view of the simultaneous submission of a three-month Petition for Extension of Time including payment of the associated fee.

Please amend the above-identified application, without prejudice, as follows:

Amendments to the Specification begin on page 2.

Amendments to the Claims begin on page 3.

Remarks begin on page 9.

Amendments to the Specification:

Please amend paragraph [0001] as follows:

Systems and Methods for ~~Remotely Controlling Local Audio Devices in a Virtual~~
~~Multitrack Recording System~~ Repairing Remotely Recorded Audio Data

Amendments to the Claims:

Applicant herein cancels Claim 1 presented in the parent application without prejudice and replaces them with new Claims 2-30. This listing of claims will replace all prior versions, and listings, of claims in the above-identified application:

Listing of the Claims:

1. (Canceled).
2. (New) A system for locally recording locally generated audio as time-referenced local audio data and for substantially simultaneously transmitting audio data to a remote device, the system comprising:

- a remote receiver, the remote receiver configured to create at least one master timecode and to receive audio data;
- a local audio device capable of communicating with the remote receiver and configured to receive locally generated audio; the at least one local audio device wearable by a creator of the locally generated audio, the at least one local audio device including:
 - at least one local memory;
 - at least one local transmitter;
 - at least one local receiver; and
 - at least one local processing unit, the at least one local processing unit operatively coupled to the at least one local memory, and, optionally, the at least one local transmitter and, optionally, the at least one local receiver, wherein the at least one local memory stores instructions that, when executed by the at least one local processing unit, configures the local audio device to:
 - receive the at least one master timecode from the remote receiver via the at least one local receiver;
 - create time-referenced local audio data from the

locally generated audio and the at least one master timecode;
store the time-referenced local audio data in the at least one local memory; and

wherein the audio data is transmitted to the remote receiver substantially simultaneously with the receiving of the local audio data by the local audio device, the creating of the time-referenced local audio data, or the storing of the time-referenced local audio data in the at least one local memory.

3. (New) A system according to claim 2, wherein the local audio device is in the form of a body pack.
4. (New) A system according to claim 2, wherein the local audio device is in the form of a body pack typically worn by news announcers and performers.
5. (New) A system according to claim 2, wherein the at least one master timecode includes hour data, minute data, second data, SMPTE timecode, or combinations thereof.
6. (New) A system according to claim 2, wherein the remote receiver is configured to communicate with a recording device.
7. (New) A system according to claim 6, wherein the recording device is a multi-track recorder, a personal computer, a cellular phone, or a camera.
8. (New) A system according to claim 2, wherein the remote receiver is a master timecode generator.
9. (New) A system according to claim 2, wherein at least one of the at least one memory is removable.
10. (New) A system according to claim 2, wherein the time-referenced local audio data is configured to facilitate synchronization of the time-referenced local audio data and the remotely recorded audio data.
11. (New) A system according to claim 2 further comprising:
a remote control unit.
12. (New) A system according to claim 17, wherein the remote control unit is a personal computer.
13. (New) A system according to claim 2, wherein the remote receiver includes at least one remote processing unit and at least one remote memory, wherein the at least one

remote memory stores instructions that, when executed by the at least one remote processing unit, configures the remote receiver to:

- create time-referenced remote audio data from the audio data received from the local audio device; and
- store the time-referenced remote audio data in the at least one remote memory.

14. (New) A system according to claim 2, the local audio device further comprising:
at least one audio input configured to receive the local audio data.

15. (New) A system for locally recording locally generated audio as time-referenced local audio data and for substantially simultaneously transmitting audio data to a remote device, the system comprising:

- a remote receiver, the remote receiver configured to create at least one master timecode and to receive audio data;
- a local audio device capable of communicating with the remote receiver and configured to receive locally generated audio; the at least one local audio device wearable by a creator of the locally generated audio, the at least one local audio device including:
 - at least one local memory;
 - at least one local transmitter;
 - at least one local receiver; and
 - at least one local processing unit, the at least one local processing unit operatively coupled to the at least one local memory, and, optionally, the at least one local transmitter and, optionally, the at least one local receiver, wherein the at least one local memory stores instructions that, when executed by the at least one local processing unit, configures the local audio device to:
 - receive the at least one master timecode from the remote receiver via the at least one local receiver;
 - synchronize a local timecode with the at least one

master timecode;
create time-referenced local audio data from the
at least one local timecode;
store the time-referenced local audio data in the at
least one local memory; and

wherein the audio data is transmitted to the remote receiver substantially simultaneously with the receiving of the local audio data by the local audio device, the creating of the time-referenced local audio data, or the storing of the time-referenced local audio data in the at least one local memory.

16. (New) A system according to claim 15, wherein the local audio device is in the form of a body pack.
17. (New) A system according to claim 15, wherein the local audio device is in the form of a body pack typically worn by news announcers and performers.
18. (New) A system according to claim 15, wherein the at least one master timecode and the at least one local timecode include hour data, minute data, second data, SMPTE timecode, or combinations thereof.
19. (New) A system according to claim 15, wherein the remote receiver is configured to communicate with a recording device.
20. (New) A system according to claim 19, wherein the recording device is a multi-track recorder, a personal computer, a cellular phone, or a camera.
21. (New) A system according to claim 15, wherein the remote receiver is a master timecode generator.
22. (New) A system according to claim 15, wherein at least one of the at least one memory is removable.
23. (New) A system according to claim 15, wherein the time-referenced local audio data is configured to facilitate synchronization of the time-referenced local audio data and the remotely recorded audio data.
24. (New) A system according to claim 15 further comprising:
a remote control unit.
25. (New) A system according to claim 24, wherein the remote control unit is a personal computer.

26. (New) A system according to claim 15, wherein the remote receiver includes at least one remote processing unit and at least one remote memory, wherein the at least one remote memory stores instructions that, when executed by the at least one remote processing unit, configures the remote receiver to:

create time-referenced remote audio data from the audio data received from the local audio device; and
store the time-referenced remote audio data in the at least one remote memory.

27. (New) A system according to claim 15, the local audio device further comprising:
at least one audio input configured to receive the local audio data.

28. (New) A system according to claim 15, wherein the synchronize a local timecode with the at least one master timecode is done by synchronizing a local timecode generator to the master timecode, or synchronizing a local timecode to the master timecode.

29. (New) A method of locally recording locally generated audio as time-referenced local audio data and for substantially simultaneously transmitting audio data to a remote device, and using the time-referenced local audio data to repair time-referenced remote audio data, the method comprising the steps of:

receiving locally generated audio at a local audio device;
receiving at least one master timecode at the local audio device;
creating time-referenced local audio data from the locally generated audio and the at least one master timecode;
storing the time-referenced local audio data in at least one local memory;
transmitting audio data to a remote receiver;
creating time-referenced remote audio data from the audio data and one or more of the at least one master timecode; and
replacing portions of the time-referenced remote audio data with at least one portion of the time-referenced local audio data.

30. (New) A method of locally recording locally generated audio as time-referenced local audio data and for substantially simultaneously transmitting audio data to a remote device, and using the time-referenced local audio data to repair time-referenced remote audio data, the method comprising the steps of:

receiving locally generated audio at a local audio device;
receiving at least one master timecode at the local audio device;
synchronizing a local timecode generator or at least one local timecode to the at
least one master timecode;
creating time-referenced local audio data from the locally generated audio and the
a timecode created by the local timecode generator or the at least one local
timecode;
storing the time-referenced local audio data in at least one local memory;
transmitting audio data to a remote receiver;
creating time-referenced remote audio data from the audio data and one or more
of the at least one master timecode; and
replacing portions of the time-referenced remote audio data with at least one
portion of the time-referenced local audio data.

REMARKS

Rejections Under 35 U.S.C. §102 and Under 35 U.S.C. §103

The Examiner has rejected Claim 1 as being anticipated by Horiuchi et al. U.S. Patent Publication No. 2004/0237115 ("Horiuchi") and as being unpatentable over Horiuchi in view of Leonard U.S. Patent No. 4,872,195 ("Leonard").

Applicant's Response

Applicant herein cancels Claim 1 and adds new Claims 2-30 without prejudice. Claims 2-30 are supported throughout the Specification. At a minimum, Claims 2-30 are supported by paragraphs [0033] through [0089] of the Specification.

Applicant submits that Claims 2-30 are patentable over the rejections raised by the Examiner in the present Office Action. Withdrawal of the rejection and a Notice of Allowance are respectfully requested. No new matter has been added. The Examiner is respectfully requested to contact the undersigned regarding any questions which might arise at the telephone number indicated below.

Any fees that may be due and owing as a result of this Amendment may be charged to the undersigned attorney's PTO Deposit Account No. 50-2864 (Billing No. ZZ0001.068).

Respectfully submitted,

January 11, 2024
(Date)

By: /Rita C. Chipperson Reg. No. 54,031/

RITA C. CHIPPERSO, ESQ.

Registration No. 54,031

CHIPPERSO LAW GROUP, P.C.

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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 18/123,619	Filing Date 03/20/2023	☐ To be Mailed
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ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE (\$)	FEE (\$)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 = *		x \$40 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 = *		x \$ 192 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 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	

APPLICATION AS AMENDED - PART II

	(Column 1)		(Column 2)	(Column 3)	RATE (\$)	ADDITIONAL FEE (\$)
AMENDMENT	01/11/2024		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	
	Total (37 CFR 1.16(i))	* 30	Minus	** 20	= 10	x \$40 = 400
	Independent (37 CFR 1.16(h))	* 4	Minus	*** 3	= 1	x \$ 192 = 192
	☐ Application Size Fee (37 CFR 1.16(s))					
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					
TOTAL ADD'L FEE						592
AMENDMENT			CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	
	Total (37 CFR 1.16(i))	*	Minus	**	=	x \$ 0 =
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x \$ 0 =
	☐ 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.						Case Resolution Specialist
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".						/CHARMISE D CARTER/
*** 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.						

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 NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
18/123,619	03/20/2023	Glenn Norman Sanders	ZZ0001.068

CONFIRMATION NO. 1083

39689
Chipperson Law Group, P.C.
163 Madison Avenue
Suite 220-40
Morristown, NJ 07960

PUBLICATION NOTICE



OC000000060161426

Date Mailed: 08/03/2023

Title: Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System

Publication No. US-2023-0245682-A1

Publication Date: 08/03/2023

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <https://portal.uspto.gov/pair/> PublicPair. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

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



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/123,619	03/20/2023	Glenn Norman Sanders	ZZ0001.068	1083
39689	7590	07/11/2023	EXAMINER	
Chipperson Law Group, P.C.			FERGUSON, KEITH	
163 Madison Avenue			ART UNIT	
Suite 220-40			PAPER NUMBER	
Morristown, NJ 07960			2648	
			NOTIFICATION DATE	
			DELIVERY MODE	
			07/11/2023	
			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):

mdg@chippersonlaw.com
rcc@chippersonlaw.com

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Rejections - 35 USC § 102

2. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis (i.e., changing from AIA to pre-AIA) for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a)(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

4. Claim(s) 1 is/are rejected under 35 U.S.C. 102 (a)(2) as being anticipated by Horiuchi et al. (U.S. Pub. No. 2004/0237115).

The claimed invention reads on Horiuchi et al. as follows:

Regarding claim 1, Horiuchi et al. discloses a method (fig. 4) of dynamically adjusting the power level of at least one server for receiving voice, cable, cable television, etc.) (local audio device) (fig. 5 number 51 and P:0016, P:0018) comprising: querying a recording medium (fig. 5 number 16) (record status) of a recorder is mounted to a remote control unit (P:0053 lines 1-6) ; generating a power command to turn on the power supply to the server based upon said record status to transmitter (fig. 5 number 9) (P:0053 lines 1-13) ; transmitting said power command to at least one local audio device (fig. 5 number 51 and

P:0053 lines 1-13); controller (processing) (fig. 5 number 53) of said power command by said at least one local audio device (P:0053 lines 7-13); turning on (adjusting) at least one local audio device content receiver (RF drive level) for executing transmission and reception of data to the recording medium (fig. 5 number 5 and P:0053 lines 3-13 and P:0056 lines 4-6).

Claim Rejections - 35 USC § 103

5. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis (i.e., changing from AIA to pre-AIA) for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

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

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim(s) 1 is/are rejected under 35 U.S.C. 103 as being unpatentable over Horiuchi et al. (U.S. Pub. No. 2004/0237115) in view of Leonard (U.S. Patent 4,872,195).

Regarding claim 1, Horiuchi et al. discloses a method (fig. 4) of dynamically adjusting the power level of at least one server for receiving voice, cable, cable television, etc.) (local audio device) (fig. 5 number 51 and P:0016, P:0018) comprising: querying a recording medium (fig. 5 number 16) (record status) of a recorder is mounted to a remote control unit (P:0053 lines 1-6) ; generating a power command to turn on the power supply to the server based upon said record status to transmitter (fig. 5 number 9) (P:0053 lines 1-13) ; transmitting said power command to at least one local audio device (fig.

Art Unit: 2648

5 number 51 and P:0053 lines 1-13); controller (processing)(fig. 5 number 53) of said power command by said at least one local audio device (P:0053 lines 7-13). Horiuchi et al. differs from claim 1 of the present invention in that it does not explicit disclose adjusting one local audio device RF transmitter source voltage. Leonard (U.S. Patent 4,872,195) teaches a method for remote control of a radio or television (abstract) for change operating conditions of a radio or television transmitter, where it uses an increase voltage to shut down the transmitter circuitry (col. 6 line 37 through col. 7 line 8). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Horiuchi et al. with adjusting one local audio device RF transmitter source voltage in order for the remote control unit to shut down the server transmitter, as taught by Leonard.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEITH FERGUSON whose telephone number is (571)272-7865. The examiner can normally be reached M-F 7 am -3 pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wesley L Kim can be reached on (571) 272-7867. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: <https://patentcenter.uspto.gov>. Visit <https://www.uspto.gov/patents/apply/patent-center> for more information about Patent Center and

Art Unit: 2648

<https://www.uspto.gov/patents/docx> for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KEITH FERGUSON/

Primary Examiner, Art Unit 2648

Notice of References Cited	Application/Control No. 18/123,619		Applicant(s)/Patent Under Reexamination Sanders et al.	
	Examiner KEITH FERGUSON		Art Unit 2648	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20040237115-A1	11-2004	Horiuchi, Koichi	H04N5/765	725/116
*	B	US-4872195-A	10-1989	Leonard; John E.	H04M11/007	379/40
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

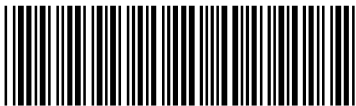
FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC 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.

Search Notes 	Application/Control No. 18/123,619	Applicant(s)/Patent Under Reexamination Sanders et al.
	Examiner KEITH FERGUSON	Art Unit 2648

CPC - Searched*		
Symbol	Date	Examiner
G06F1/26, G06F3/167, G06F3/16	08/05/2019	KF
G06F1/26, G06F3/167, G06F3/16	07/05/2023	KF

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
east search notes included	08/05/2019	KF
same claim in application 13/530,040, examiner call applicant, it been 3 weeks, no response	08/05/2019	KF
same claim 1 that's in application 16/397,895	07/05/2023	KF
search notes included	07/05/2023	KF

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	12407	(device or terminal or unit or equipment or station) same (attach\$3 or detach\$4 or wear\$4 or worn or remov\$4) with (user or subscriber or technician or person or personel individual or client or people or child\$3) and (remot\$4 or distant or distance) near3 (dvr or vcr or record\$4)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 11:23 AM
L2	7	remode\$4 near1 (dvr or vcr or record\$4)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 11:30 AM
L3	3417	remot\$4 near1 (dvr or vcr or record\$4) and L1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 11:30 AM
L4	6836	(user or subscriber or technician or person or personel individual or client or people or child\$3) same remot\$4 near1 (dvr or vcr or record\$4)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 11:31 AM
L5	2019	L1 and L4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 11:31 AM
L6	752	(device or terminal or unit or equipment or station) same (attach\$3 or detach\$4 or wear\$4 or worn or remov\$4) same remot\$4 near1 (dvr or vcr or record\$4)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 11:32 AM
L7	276	L4 and L6	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 11:34 AM
L8	1619	(wireless or radio or cellular or infrared) same remot\$4 near1 (dvr or vcr or recording or recorder)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 01:51 PM
L9	4	dar and L8	(US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	ON	ON	2020/04/01 01:53 PM

L10	921	(device or terminal or unit or equipment or station) same (attach\$3 or detach\$4 or wear\$4 or worn or remov\$4) and L8	JPO; DERWENT; IBM_TDB) (US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 01:53 PM
L11	753	(transmitter or receiver or transceiver) and L10	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 01:55 PM
L12	291	(device or terminal or unit or equipment or station) same (attach\$3 or detach\$4 or wear\$4 or worn or remov\$4) with (user or subscriber or technician or person or personel individual or client or people or child\$3) and L11	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 01:55 PM
L13	2354	(wireless or radio or cellular or infrared) same remot\$4 near1 (dvr or vcr or recording or recorder or record\$3 or answer\$3 adj machine)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 02:35 PM
L14	543	(dispatch\$4 or police or fireman or emergenc\$3 or e911 or "911") and L13	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 02:40 PM
L15	304	(dispatch\$4 or police or fireman or emergenc\$3 or e911 or "911") same remot\$4 near1 (dvr or vcr or recording or recorder or record\$3 or answer\$3 adj machine)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/01 02:40 PM
L16	2489	remot\$3 near1 (dvr or vcr or record\$4) same (wireless\$3 or radio or cellular or infrared or bluetooth)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:07 PM
L17	2297	remot\$3 near1 (dvr or vcr or record\$4) same (audio\$4 or music or sound or speech or talk\$3 or speak\$3)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:10 PM
L18	526	L16 and L17	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:13 PM
L19	841	remot\$3 near1 (dvr or	(US-PGPUB; USPAT;	OR	ON	ON	2020/04/13

		vcr or record\$4) same (wireless\$3 or radio or cellular or user or portable or lightweight) near1 (device or terminal or unit or equipment or station)	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)				02:14 PM
L20	97	L18 and L19	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:16 PM
L21	1419	remot\$3 near1 (dvr or vcr or record\$4) and (device or terminal or unit or equipment or station) near2 (attach\$3 or detach\$4 or wear\$4 or worn or remov\$4) with (user or subscriber or technician or person or personel individual or client or people or child\$3)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:31 PM
L22	276	L16 and L21	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:35 PM
L23	17	L22 AND ((G06F1/163 OR G06F11/1446 OR G06F16/489).CPC. OR (G06F3/16 OR G06F1/26).IPCR.)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:40 PM
L24	345	(dvr or vcr or record\$4) with (audio\$4 or music or sound or speech or talk\$3 or speak\$3) and L19	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:55 PM
L25	783660	(timecode or timestamp or tim\$3 or time adj code or time adj stamp) with (audio\$4 or music or sound or speech or talk\$3 or speak\$3)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 02:58 PM
L26	183	L24 and L25	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 03:00 PM
L27	75	("20020049978" "20020100047" "20050197059" "20050251828" "4916532" "5420647" "5729280" "6199206" "6233734" "6591421" "6801713").PN. OR	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2020/04/13 03:29 PM

L28	45	("8145040").URPN. ("20010016491" "20020016175" "20020160751" "20030069804" "20040203927" "20050113113" "6072860" "6389398" "6401066" "6665376").PN. OR ("7227930").URPN.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2020/04/13 03:41 PM
L29	358	record\$3.ab. and L21	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 03:56 PM
L30	277	(dvr or vcr or record\$4) with (audio\$4 or music or sound or speech or talk\$3 or speak\$3) and L29	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/13 04:02 PM
L31	24	("4479124" "4485276" "4764962" "5315636" "5356060" "5409152" "5613236" "5644785" "5648999" "5651049" "5653336" "5730348" "5790680" "5825327" "5897042" "5915609" "5961017" "6000987" "6032337" "6082600" "6182878" "D351943").PN. OR ("6488190").URPN.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2020/04/13 04:40 PM
L32	21	("4481382" "4825456" "4930148" "5031230" "5279514" "5317624" "5390362").PN. OR ("5648999").URPN.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2020/04/13 04:41 PM
L33	9	sanders.in. and remot\$3 near recording	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 10:53 AM
L34	12	stark.in. and remot\$3 near recording	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:07 AM
L35	2	"7434154".pn.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:11 AM
L36	1	"7434154".pn. and record\$3	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:12 AM
L37	13163	remot\$3 near (recording	(US-PGPUB; USPAT;	OR	ON	ON	2020/04/15

		or record or recorder)	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)				11:15 AM
L38	8451	(wireless or radio or cellular or infrared) and L37	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:16 AM
L39	6985	(recording or record or recorder) same (replac\$3 or eras\$3 or delet\$3) with previous	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:17 AM
L40	79	L38 and L39	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:17 AM
L41	1862	(recording or record or recorder) same (replac\$3 or eras\$3 or delet\$3) and L38	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:23 AM
L42	1123	(recording or recorder) same (replac\$3 or eras\$3 or delet\$3) and L41	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:23 AM
L43	377	(recording or recorder) same (replac\$3 or eras\$3 or delet\$3) with (data or audio\$7 or song or music) and L42	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:24 AM
L44	95	remot\$3 same (recording or recorder) same (replac\$3 or eras\$3 or delet\$3) with (data or audio\$7 or song or music) and L43	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/04/15 11:25 AM
L45	3	("6717737").PN.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	OFF	OFF	2020/04/15 11:49 AM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Bibliographic Data

Application No: 18/123,619

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☒ No ☐ Met After Allowance

Verified and Acknowledged: /KEITH FERGUSON/

KF

Examiner's Signature

Initials

Title:

Systems and Methods for Remotely Controlling Local Audio Devices
in a Virtual Wireless Multitrack Recording System

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
03/20/2023	700	2648	ZZ0001.068
RULE			

APPLICANTS

Zaxcom. Inc., Pompton Plains, NJ, UNITED STATES

INVENTORS

Mr. Glenn Norman Sanders, Franklin Lakes, NJ, UNITED STATES

Mr. Howard Glenn Stark, Sparta, NJ, UNITED STATES

CONTINUING DATA

This application is a CON of 17157436 01/25/2021 PAT 11610605

17157436 is a CON of 16397895 04/29/2019 PAT 10901680

16397895 is a CON of 15225056 08/01/2016 PAT 10276207

15225056 is a CON of 14808589 07/24/2015 PAT 9406224

14808589 is a CON of 13530040 06/21/2012 PAT 9094636

13530040 is a CIP of 12838164 07/16/2010 PAT 8842854

12838164 is a CIP of 11404735 04/14/2006 PAT 7929902

11404735 is a CIP of 11181062 07/14/2005 PAT 7711443

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

04/21/2023

**** SMALL ENTITY ****

STATE OR COUNTRY

UNITED STATES

ADDRESS

Chipperson Law Group, P.C.

163 Madison Avenue

Suite 220-40

Morristown, NJ 07960

UNITED STATES

FILING FEE RECEIVED

\$664



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Alexandria, Virginia 22313-1450
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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
18/123,619	03/20/2023		664	ZZ0001.068	1	1

CONFIRMATION NO. 1083

39689

Chipperson Law Group, P.C.
163 Madison Avenue
Suite 220-40
Morristown, NJ 07960

FILING RECEIPT



0000000056306084

Date Mailed: 04/25/2023

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

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Inventor(s)

Glenn Norman Sanders, Franklin Lakes, NJ;
Howard Glenn Stark, Sparta, NJ;

Applicant(s)

Zaxcom, Inc., Pompton Plains, NJ;

Assignment For Published Patent Application

Zaxcom, Inc., Pompton Plains, NJ

Power of Attorney: The patent practitioners associated with Customer Number 000039689

Domestic Priority data as claimed by applicant

This application is a CON of 17/157,436 01/25/2021 PAT 11,610,605
which is a CON of 16/397,895 04/29/2019 PAT 10,901,680
which is a CON of 15/225,056 08/01/2016 PAT 10,276,207
which is a CON of 14/808,589 07/24/2015 PAT 9,406,224
which is a CON of 13/530,040 06/21/2012 PAT 9,094,636
which is a CIP of 12/838,164 07/16/2010 PAT 8,842,854
which is a CIP of 11/404,735 04/14/2006 PAT 7,929,902
which is a CIP of 11/181,062 07/14/2005 PAT 7,711,443

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 04/21/2023

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 18/123,619**

Projected Publication Date: 08/03/2023

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System

Preliminary Class

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: Yes

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.

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LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number
18/123,619

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	64		N/A	
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	280		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	320		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	1 minus 20 =	0	x	= 0	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =		x	= 0			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 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).			0			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	664		TOTAL	

APPLICATION AS AMENDED - PART II

(Column 1)		(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
AMENDMENT A	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))						OR		
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR		
				TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

(Column 1)		(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
AMENDMENT B	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))						OR		
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR		
				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 found in the appropriate box in column 1.

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NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	TBD
Filing Date	TBD
First Named Inventor	Glenn Norman Sanders
Title	Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	ZZ0001.063

SIGNATURE of Applicant or Patent Practitioner

Signature	/Rita C. Chipperson Reg. No. 54031/	Date (Optional)	
Name	Rita C. Chipperson	Registration Number	54031
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.



*Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 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.**

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

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000039689

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☒ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

Firm or Individual Name				
Address				
City	State	Zip		
Country				
Telephone	Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Zaxcom, Inc.

- ☐ Inventor or Joint Inventor (title not required below)
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)
Name	Glenn Norman Sanders	
Title	President	

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☒ Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 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.

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

RØDE Exhibit 1061
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.

TITLE OF THE INVENTION

[0001] Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual
Wireless Multitrack Recording System

5 CROSS-REFERENCE TO RELATED APPLICATIONS

[0002] This application claims the benefit of and is a continuation of the U.S. patent
application entitled "Systems and Methods for Remotely Controlling Local Audio Devices in a
Virtual Wireless Multitrack Recording System", having serial no. 13/530,040, filed June 21,
2012 and currently pending, which is a continuation-in-part of the U.S. patent application
10 entitled "Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual
Wireless Multitrack Recording System", having serial no. 12/838,164, filed July 16, 2010, and
issued as U.S. Patent No. 8,842,854, which claims the benefit of and is a continuation-in-part of
the U.S. patent application entitled "Virtual Wireless Multitrack Recording System", having
serial no. 11/404,735, filed April 14, 2006, and issued as U.S. Patent No. 7,929,902, which
15 claims the benefit of and is a continuation-in-part of the U.S. patent application entitled "Virtual
Wireless Multitrack Recording System", having serial no. 11/181,062, filed July 14, 2005, and
issued as U.S. Patent No. 7,711,443, all of which are incorporated by reference in their entirety
as if fully set forth herein.

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[0003] A portion of the disclosure of this patent document contains material, which is
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25 whatsoever.

BACKGROUND OF THE INVENTION

[0004] Embodiments of the present invention generally relate to systems and methods for
recording and processing audio received from one or more wireless devices. More specifically,
the present invention relates to systems and methods for recording and processing audio having
30 one or more tracks received from one or more wireless devices operating in either an
asynchronous or synchronous mode.

[0005] Many systems and methods have been created to record performance audio. Some such systems include a multi-track audio recorder wired to one or more microphones.

Typically, one or more performers performing on a sound stage are recorded by one or more microphones that are directly wired to the multi-track recorder. The multi-track recorder

5 combines the single track of audio received from each microphone to create one multi-track

audio file. In many such systems, the received audio and/or the multi-track audio is

timestamped with a time reference signal such as a Society of Motion Picture and Television Engineers ("SMPTE") timecode signal containing information regarding the hour, minute,

second, frame, type of timecode (i.e., nondrop or drop frame), and user-definable information.

10 Such information allows audio to be more easily matched and/or combined with simultaneously recorded video.

[0006] Other such systems include a multi-track audio recorder and an associated audio

receiver that receive audio wirelessly from one or more wireless transmitters. Such wireless

transmitters may take the form of body packs that are worn by each performer. Typically, the

15 audio receiver receives each performer's audio from the performer's respective body pack via

an analog or digital wireless transmission and transmits it to the audio recorder. The audio

recorder then combines the wireless transmissions received from all body packs to create one multi-track audio file.

[0007] Due to the occurrence of wireless transmission errors such as dropouts, some

20 existing wireless systems include audio receivers having two or more redundant receiver

circuits. The incorporation of additional, redundant receiver circuits provides a better

opportunity to avoid missed audio transmissions. For example, the use of two receiver circuits may allow a second receiver to receive audio that may have not been received by a first receiver

circuit and vice versa. However, although such redundancy accounts may correct wireless

25 transmission errors, such redundancy does not prevent loss of data due to interference (i.e., a

distortion of the received audio signal due to receipt of multiple wireless signals). Upon the

occurrence of interfering signals, audio created during a performance (e.g., a live performance) may simply be lost due to the inability of the receiver to receive a clean audio signal.

[0008] Typically, the quality of audio recorded by an audio recording device is modified

30 within the audio recorder. That is, a user of the audio recorder listens to the received audio and

makes various adjustments to the audio recording circuitry to improve the quality thereof. One

such adjustment is gain, or amplification, of the received audio. In some such systems, the

change in gain or amplification of the audio is made by modifying one or more amplification circuits located in the audio recorder, and these adjustments may be made locally at the audio recorder via knobs, slides, and the like.

5

BRIEF SUMMARY OF THE INVENTION

[0009] Disclosed is a method of dynamically adjusting the power level of at least one local audio device including the steps of: querying a record status of a recorder; generating a power command based upon the record status; transmitting the power command to at least one local audio device; processing of the power command by the at least one local audio device; IO adjusting at least one local audio device parameter, the parameter selected from the group consisting of **RF** transmitter bias voltage, **RF** transmitter source voltage, **RF** drive levels, and combinations thereof.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

15

[0010] The foregoing summary, as well as the following detailed description of preferred embodiments of the invention, will be better understood when read in conjunction with the appended drawings. For the purpose of illustrating the invention, there are shown in the drawings embodiments that are presently preferred. It should be understood, however, that the invention is not limited to the precise arrangements and instrumentalities shown. In the 20 drawings:

[0011] FIG. 1 depicts the components of a recording system in accordance with one embodiment of the present invention including, *inter alia*, local audio devices, a remote control unit, a receiver, a recorder, and a mixer;

25

[0012] FIG. 2A depicts a block diagram of the internal components of a remote control unit in accordance with one embodiment of the present invention;

[0013] FIG. 2B depicts an external, front view of a remote control unit in accordance with one embodiment of the present invention;

[0014] FIG. 3A depicts a block diagram of the internal components of a local audio device in accordance with one embodiment of the present invention;

30

[0015] FIG. 3B depicts an external, front view of a local audio device in accordance with one embodiment of the present invention;

[0016] FIGS. 4A and 4B depict a process for operation of a recording system in a synchronous timecode generator mode in accordance with one embodiment of the present invention;

[0017] FIG. 5 depicts a process for modifying the speed of a local timecode generator as necessary to maintain its synchronization with a master timecode generator in accordance with one embodiment of the present invention;

[0018] FIG. 6 depicts a process for recording audio and for replaying and re-recording segments of missed audio in accordance with one embodiment of the present invention;

[0019] FIG. 7 depicts a process for operation of a recording system in asynchronous timecode generator mode in accordance with one embodiment of the present invention;

[0020] FIG. 8 depicts an external view of a multi-memory unit in accordance with one embodiment of the present invention;

[0021] FIG. 9 depicts a process for interpolating timestamps for unstamped audio samples based upon the timestamps of stamped audio samples, and resampling the audio samples to include the interpolated timestamps in accordance with one embodiment of the present invention;

[0022] FIG. 10 depicts a process for segmenting a single large audio file into multiple smaller files that correlate to a master directory of files in accordance with one embodiment of the present invention;

[0023] Fig. 11 depicts a process for generating commands at a recorder;

[0024] Fig. 12 depicts a process for receiving commands at one or more local audio devices;

[0025] Fig. 13A depicts a block diagram of the internal components of a recorder in accordance with one embodiment of the present invention;

[0026] FIG. 13B depicts an external, front view of an exemplary recorder in accordance with one embodiment of the present invention;

[0027] Fig. 14 depicts an exemplary format of a data packet in accordance with one embodiment of the present invention;

[0028] Fig. 15 depicts exemplary gain adjustment and preamplifier circuit diagrams;

[0029] Fig. 16 depicts a process for automatically creating and transmitting high and low power commands used to adjust the power output of one or more local audio devices;

[0030] Fig. 17 depicts a process for receiving and processing a low or high power command at a local audio device;

[0031] Fig. 18 depicts an exemplary transmitter amplification circuit for use with the processes of Figs. 16 and 17; and

- 5 [0032] Fig. 19 depicts a process for automatically creating and transmitting high and low power commands used to adjust the power output of one or more local audio devices in accordance with an alternate embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

- 10 [0033] Referring first to FIG. 1, depicted is recording system 100 in accordance with one embodiment of the present invention. Recording system 100 wirelessly records audio events, such as performances, movie takes, etc. having one or more performers. In one aspect of the present invention, all of the components of recording system 100 are synchronized to allow each component to accurately stamp its recorded audio with the time at which it occurred such
- 15 that the timestamps (i.e., information stored with an audio sample or audio file conveying the time at which the audio sample or first audio sample of the file occurred) created by each individual component of recording system 100 are highly accurate as compared to the timestamps created by all other components of recording system 100. This accuracy allows multiple individually recorded audio tracks to be combined into one or more multi-track audio
- 20 files electronically post-recording. Furthermore, this accuracy allows recording system 100 to automatically correct for any audio data lost during an original recording due to wireless transmission problems such as dropout, interference, etc. This automatic correction may be performed either electronically or via synchronized playback of the individually recorded audio tracks. In another aspect of the present invention, the audio recorded by recording system 100
- 25 may be recorded asynchronously. In this scenario, the audio is synchronized and/or mixed post-recording to automatically correct for any audio data lost due to wireless transmission problems such as dropout, interference, etc.

- [0034] In the embodiment of the present invention depicted in FIG. 1, recording system 100 includes local audio devices 102, remote control unit ("RCU") 104, receiver 106, and recorder
- 30 108. In one embodiment, RCU 104 includes an RF transmitter capable of transmitting one or more of a time reference signal, digital commands, and audio to one or more other components of recording system 100. Additionally, RCU 104 may be equipped with the capability of

remotely controlling local audio devices 102, receiver 106, and recorder 108 to perform tasks including, but not limited to, initiating audio playback of all local audio devices 102 starting at the same time reference, as well as recording thereof by receiver 106 and recorder 108.

[0035] Both live and replayed audio transmitted by local audio devices 102 may be

received at receiver 106 and recorded by audio recorder 108. Receiver 106 and recorder 108 may be virtually any commercially available receiver and recorder. Receiver 106 receives the wireless RF signals (e.g., modulated RF carrier signals) generated by all active local audio devices 102 and converts the signals to a format capable of being recorded by a commercially available recording device including, but not limited to, Zaxcom, Inc.'s DEVA® multi-track recorder. In some embodiments, such commercially available recording devices record audio with a locally generated SMPTE-compatible timecode signal.

[0036] The ability to synchronize the local timestamps at each local audio device 102 and recorder 108 using the methods of the present invention as discussed in greater detail below allows any audio that is not recorded by recorder 108 during an event due to transmission errors

to be recovered by replaying the missed audio and recording the replayed audio in the correct time sequence with respect to the other audio samples. In other words, since the audio samples are stored locally in each local audio device 102 with timestamps that are synchronized with the timestamps of recorder 108, whenever audio is not recorded at recorder 108, it may simply be replayed at local audio devices 102 starting at the timecode of the missed audio. Since the local audio device and recorder timestamps are synchronized, the replayed audio may be inserted in the proper time sequence with respect to the other recorded audio samples based upon the synchronized timestamp data. Synchronization is essential to ensure that each performer's audio is synchronized with all other performers' audio and to ensure that the newly recorded replayed audio is in the correct sequence with respect to the previously recorded live audio.

Such synchronization must maintain a high accuracy for each performer's timestamps with respect to all other performers' timestamps to prevent the occurrence of phasing artifacts when the multiple audio recordings are combined to create one single recording.

[0037] In some embodiments of the present invention, receiver 106 automatically senses an error in transmission caused by, for example, a communication loss, interference, etc. In some embodiments of the present invention, the error in transmission is sensed by comparing a calculated checksum to the transmitted checksum to determine if data was lost during transmission. An error is determined if the calculated and transmitted checksums do not match.

Upon sensing a transmission error, receiver 106 may transmit a request to RCU 104 requesting playback of the audio recorded locally on local audio devices 102 beginning at a timecode prior to the occurrence of the transmission error. In response, RCU 104 transmits a digital command to all local audio devices 102 to playback the audio stored in the respective memory 332 (FIG. 3) that occurred subsequent to the timecode requested by receiver 106 in the manner described below with respect to FIG. 6.

[0038] Alternatively, playback may be requested manually by a user of a recording system such as recording system 100. In this scenario, upon hearing that a transmission error (i.e., a loss of audio data) has occurred, the user manually prompts RCU 104 to transmit a digital command to all local audio devices 102 to playback the audio stored in memory 332 (FIG. 3) that occurred subsequent to a time reference entered at RCU 104 by the user. Such prompting may occur after the audio event ends or immediately upon hearing the transmission error. If the latter option is chosen, prompting playback of a specific segment of the audio event may index the local audio devices to store the requested data in a protected memory location until the end of the audio event to avoid disrupting the recording. In this scenario, all requested audio shall be replayed after the performance ends. In embodiments of the present invention in which data is recorded in a loop (i.e., when memory is full, new data overwrites previously recorded data), writing the data to a protected memory location removes it from the loop and protects it from being overwritten.

[0039] FIG. 2A depicts a block diagram of one embodiment of RCU 104 in accordance with the present invention. In this embodiment, RCU 104 includes, *inter alia*, RCU timecode generator 204, RCU power supply 206, RCU transmitter 208, RCU local control unit 210, RCU audio input device 212, RCU audio input device port 214, RCU preamp 216, RCU display 218, RCU keypad 220, RCU ADC 222, RCU amp 226, timecode input port 228, external interface 252, and external interface port 254.

[0040] RCU transmitter 208 allows RCU 104 to transmit a master time reference signal, digital commands, audio, and the like to other devices such as local audio devices 102, receiver 106, and recorder 108. In one aspect of the present invention, the time reference signal is a SMPTE timecode signal containing information regarding the hour, minute, second, frame, type of timecode (i.e., nondrop or drop frame), and user-definable information (e.g., the transport status of recorder 108, the name of a scene, the name of a take, a local audio device identifier that identifies the local audio device that recorded the respective audio, a track

identifier that identifies the track of audio which may include the actor or actress recording the respective audio, etc.). This master time reference signal provides a time reference for all local audio devices 102, which may use this information for a variety of purposes such as jam synchronizing their respective local timecode generators 304 (FIG. 3A), adjusting the speed of the local timecode generators 304 (FIG. 3A), timestamping locally recorded audio, etc. The master time reference signal may be generated on board remote control unit 104 via a mechanism such as RCU timecode generator 204. Or, alternatively, the master time reference signal may be generated by an independent timecode generator that transmits timecodes to remote control unit 104 wirelessly or via a cable or the like connected from the independent timecode generator to timecode input port 228. In the latter scenario, the timecodes received via timecode input port 228 are buffered and/or amplified by RCU amp 226 prior to transmission to RCU local control unit 210.

[0041] When recording system 100 is operating in a synchronous mode, transmission of the master time reference signal ensures that all of the components of recording system 100 store all locally recorded audio with timestamps that are highly accurate as compared to the timestamps of all other local audio devices 102 and/or all other components of recording system 100. The timestamps are then used during playback and recording to ensure that the replayed audio from all local audio devices 102 is synchronized with previously recorded audio and with the audio replayed by all other local audio devices 102. In contrast, when recording system 100 is operating in an asynchronous mode, transmission of the master time reference signal allows the files containing recorded audio to be timestamped with the master time reference information to allow the recorded audio to be accurately synchronized post-recording.

[0042] RCU transmitter 208 also allows audio generated locally at RCU 104 to be transmitted to the other components of recording system 100. Such audio may be received from an audio input device such as RCU audio input device 212 via audio input device port 214. RCU audio input device 212 may be any type of commercially available audio input device such as a microphone and audio input device port 214 may be any commercially available audio input device port that is compatible with RCU audio input device 212 and the internal components of RCU 104. The received audio as well as any digital signals (e.g., microphone input level, line input level, etc.) are then buffered and/or amplified by RCU preamp 216 and are converted from analog to digital by RCU analog to digital converter ("ADC") 222 such that the audio may be read in digital form by RCU local control unit 210.

This audio may then be processed and sent via RCU transmitter 208 in either analog or digital form. If the audio is to be sent in analog form, RCU local control unit 210 may be equipped with an on-board digital to analog converter ("DAC") or an independent DAC may be incorporated in RCU 104 without departing from the scope of the present invention. Or,
 5 alternatively, analog audio received from RCU audio input device 212 may be passed directly to RCU transmitter 208 for transmission in analog form to the other components of the recording system. In such embodiments, RCU transmitter 208 may be equipped with a frequency modulation ("FM") modulator or the like. Furthermore, in such embodiments, although the analog audio is passed through to RCU transmitter 208, the audio signal may be
 10 additionally converted to digital form for local recording of the received audio. In yet another alternate embodiment, audio may be transmitted and recorded in analog form thereby eliminating RCU ADC 222.

[0043] In the aforementioned embodiments in which the audio signal for a particular track of audio is converted to digital form for local recording of the received audio, identifiers such
 15 as a local audio device identifier that identifies the local audio device that recorded the respective audio, a track identifier that identifies the track of audio which may include the actor or actress recording the respective audio, etc. may be recorded with the recorded audio to allow the audio tracks to be easily and quickly identified post-recording and/or post-production. In some embodiments of the present invention, such identification information is stored in the
 20 local, nonvolatile memory of the local audio device as a text file, however, the present invention is not so limited. In another aspect of the present invention, such identification information is encoded in the audio file such that it may be decoded post-recording and/or post-production using methods known in the art. Additionally, such identification information may be integral to a timecode or completely distinct therefrom. Furthermore, such identification
 25 information may be programmed for each local audio device remotely via a remote control unit such as RCU 104.

[0044] In some embodiments of the present invention, RCU local control unit 210 may be a digital signal processor such as Texas Instruments part number TMS320C5509A. However, the present invention is not so limited. Any combination of hardware and software may be
 30 substituted for any component described herein without departing from the scope of the present invention.

[0045] RCUs 104 may be handheld units such as RCU 104 depicted in FIG. 2B. In such an embodiment, display 218 may be a small liquid crystal display ("LCD") or the like and keypad 220 may include a plurality of buttons that allow a user to perform local RCU functions including, but not limited to, those that relate to RCU transmitter frequency, group identification ("ID") code, unit ID code, and timecode generator mode. For example, the RCU transmitter frequency may be adjustable in predetermined frequency steps. In most cases, this frequency will be set to match the receiving frequency of other devices in the recording system (e.g., local audio devices). Or, when multiple local audio devices are incorporated into a group with an RCU, the RCU as well as other components of the recording system (e.g., local audio devices) may be assigned a group ID to ensure that the RCU is controlling the correct group of local audio devices. Similarly, the unit ID identifies the specific one of multiple local audio devices that a user wishes to control. Setting the unit ID ensures that the control signals transmitted by the RCU are received by the correct local audio device. Also, timecode generator mode allows the RCU to either generate its own timecodes or to receive timecodes from an external timecode generator.

[0046] In addition to allowing a user to modify local RCU settings, RCU keypad 220 and display 218 also allow the RCU to remotely control individual local audio devices. The user may perform a variety of functions for the local audio device including, but not limited to, transmitter and receiver frequencies, transmitter enable, microphone gain, high pass filter, record mode select, time code entry, playback control, audio bank storage, and status request.

[0047] For example, local audio device transmitter and receiver frequencies may be adjustable in predetermined frequency steps. Alternatively, the local audio device transmitter may be remotely enabled and disabled. Microphone gain may be adjusted, which in turn adjusts the current setting of a preamp such as local preamp 316. Adjustment of the high pass filter may be incorporated to enable and disable, or otherwise adjust, the high pass audio filter of the audio input device such as audio input device 312.

[0048] In addition, record mode select allows recording modes such as endless loop record mode or timed record mode to be remotely adjusted. Timecodes may also be set remotely for each local audio device. Playback control allows one or more local audio devices to be commanded remotely to playback audio starting at a specific timecode. Completion of playback may be automatically or manually determined. Functions such as audio bank storage allow a remote user to manually store chunks of audio data in safe locations of the local audio

device memory (i.e., in locations in which the audio data will not be overwritten). Finally, status of the local audio device may be requested. The status may be provided via display 218 or via spoken language generated by local audio device 102 and transmitted to a receiver or receiver/recorder combination for recording with the recorded audio.

5 **[0049]** The RCU may also allow a user to program data at each local audio device such as track identifiers, local audio device identifiers, and the like. In such scenarios, such identifiers are recorded with the respective audio to allow the track, local audio device, etc. of the recorded audio to be identified post-recording. That is, each segment of recorded audio may be associated with a specific take, track, or the like, as well as a specific local audio device. Such association allows each portion of recorded audio (e.g., a track of audio) to be quickly and easily identified post-production and/or post-recording without confusion.

[0050] Although many specific features and functions for the RCU have been delineated herein, other features and functions may be added or eliminated without departing from the scope of the present invention.

15 **[0051]** Additionally, handheld embodiments may include any one of a variety of commercially available batteries to function with the power supply 206 without departing from the scope of the present invention. Power supply 206 may be virtually any power component or combination thereof that is compatible with the other components of RCU 104 including, but not limited to, a Texas Instruments TPS62000DGS Power Module alone or in combination with
20 a Linear Technology LTC3402 Synchronous Boost Converter.

[0052] However, non-handheld embodiments of RCU 104 are also envisioned such as tabletop models, personal computer ("PC") models, etc. Also, RCU 104 may be optionally equipped with external interface 252 (FIG. 2A) to facilitate connection of RCU 104 to a PC, laptop PC, dumb terminal, or the like via external interface port 254. Such an interface allows a
25 user to control the components of recording system 100 via a graphical user interface or other software that may operate on a larger user interface. Such an interface may provide more features and functions than that available on a portable, handheld device such as programming and execution of complex playback scenarios, automatic initiation of complex playback scenarios based upon detected audio transmission errors, etc.

30 **[0053]** Turning next to FIG. 3A, depicted is a block diagram of one embodiment of local audio device 102 in accordance with the present invention. In one aspect of the present invention, local audio devices 102 are digital, wireless audio transceivers. Such audio devices

may be manufactured in the form of body-packs, such as those typically worn by news announcers, performers, and the like. In the depicted embodiment, local audio device 102 includes, *inter alia*, local receiver 302, local timecode generator 304, local power supply 306, local transmitter 308, local control unit 310, local audio input device 312, local audio input device port 314, local preamp 316, local display 318, local keypad 320, local ADC 322, local DAC 324, local amp 326, local audio output device port 328, local audio output device 330, memory 332, comparator 334, oscillator 336, and counter 338.

[0054] Local transmitter 308 also allows audio generated locally at local audio device 102 to be transmitted to the other components of recording system 100. Such audio may be received from an audio input device such as local audio input device 312 via local audio input device port 314. Local audio input device 312 may be any type of commercially available audio input device such as a microphone and local audio input device port 314 may be any commercially available audio input device port that is compatible with local audio input device 312 and the internal components of local audio device 102. The received audio as well as any digital signals (e.g., microphone input level, line input level, etc.) are then buffered and/or amplified by local preamp 316 and are converted from analog to digital by local ADC 322 such that the audio may be read in digital form by local control unit 310. This audio may then be processed and sent via local transmitter 308 in either analog or digital form. If the audio is to be sent in analog form, local control unit 310 may be equipped with an on-board DAC or an independent DAC may be incorporated in local audio device 102 without departing from the scope of the present invention. Or, alternatively, analog audio received from local audio input device 312 may be passed directly to local transmitter 308 for transmission in analog form to the other components of the recording system. In such embodiments, local transmitter 308 may be equipped with a frequency modulation ("FM") modulator or the like. Furthermore, in such embodiments, although the analog audio is passed through to local transmitter 308, the audio signal may be additionally converted to digital form for local recording of the received audio. In yet another alternate embodiment, audio may be transmitted and recorded in analog form thereby eliminating local ADC 322.

[0055] The gain of audio received from audio input device 312 via audio input device port 314 may be adjusted via an exemplary gain adjustment circuit such as gain adjustment circuit 1326 as depicted in Fig. 15. When local control unit 310 wirelessly receives the desired gain setting as described in greater detail below with respect to Fig. 12, it converts the received

setting to a digital command to be transmitted to gain adjustment circuit ("GAC") DAC 1510.

The digital command may be derived from a look up table or the like that equates incoming desired gain settings to corresponding GAC DAC 1510 commands. The GAC DAC 1510

receives its digital command and converts it to an analog signal that is applied to one or more

5 GAC LEDs 1512. GAC LEDs 1512 may be any commercially available LEDs such as, but not limited to, a Lumex SML-LX0603SRW LED. The light generated by GAC LEDs 1512 varies based upon the digital command received from local control unit 1310.

[0056] The light generated by GAC LEDs 1512, as well as the audio received locally from audio input device 312 is received by local preamp 316. In this embodiment of the present

10 invention, local preamp 216 is a preamplification circuit. This circuit includes, *inter alia*, one or more photocells 1514 and a plurality of amplifiers 1516. Photocells 1514 may be any commercially available photocell such as, but not limited to, cadmium sulfide ("CdS")

photocells such as Silonex NSL-6112 photoconductive cells. Each photocell 1514 varies its resistance between two terminals based upon the amount of photons it receives. This varying

15 resistance varies the analog signals applied to the input terminals of the plurality of amplifiers 1516 to vary the amplification of the audio received from audio input device 312 as desired by a user of recording system 100. The amplified audio, as output by amplifiers 1516, is then

transmitted to local ADC 322. Local ADC 322 converts the amplified audio signals to digital form for transmission to local control unit 310. It should be noted that the depicted gain

20 adjustment and preamplification circuits are merely exemplary and any other compatible hardware or software capable of adjusting gain and/or amplifying analog signals may be substituted without departing from the scope of the present invention.

[0057] In some embodiments of the present invention, local control unit 310 may be a digital signal processor such as Texas Instruments part number TMS320C5509A. However,

25 the present invention is not so limited. Any combination of hardware and software may be substituted for any component described herein without departing from the scope of the present invention.

[0058] Similarly, local receiver 302 allows audio received from other components of recording system 100 to be played locally at local audio device 102. Such audio may be

30 received in either analog or digital form at local receiver 302. However, if the audio is to be received in analog form, local control unit 310 may be equipped with an on-board ADC or an independent ADC may be incorporated in local audio device 102 without departing from the

scope of the present invention to allow local control unit 310 to receive the audio in digital form. Thereafter, the audio may be processed or relayed directly to local DAC 324, which converts the audio data back to analog form. The analog audio may then be amplified by local amp 326 prior to transmission through local audio output device port 328 to local audio output device 330. Local audio output device 330 may be any type of commercially available audio output device such as headphones, speakers, and the like, and local audio output device port 328 may be any commercially available audio output device port that is compatible with local audio output device 330 and the internal components of local audio device 102. Local receiver 302 may be virtually any receiver compatible with the other components of local audio device 102 including, but not limited to, a Micrel Semiconductor MICRF505 RadioWire® transceiver.

[0059] Memory 332 of local audio device 102 locally stores audio processed by local control unit 310 in one or more audio files. In one aspect of the present invention, local control unit 310 receives recordable audio from local audio input device 312, which may be worn by the performer and connects to local audio device 102 at local audio input device port 314.

However, in alternate embodiments, local control unit 310 may also receive audio from other components of recording system 100 via local receiver 302. The locally stored audio files may include identification data such as local audio device identifiers, track identifiers, performer identifiers, and the like as discussed in greater detail above. Furthermore, the locally stored audio files include timestamps (e.g., timestamps may be stored in the header of the audio file) that indicate when, during the audio event, each segment of audio occurred. The timestamps may be generated based upon timecodes created by local timecode generator 304 or based upon master timecodes. Such master timecodes may be received using a plurality of methods or components including, but not limited to, wirelessly from a master timecode source through local receiver 302, from a timecode source connected to local audio input device port 314, and from local audio input device 312 wherein the master timecodes are received from an ultrasonic signal. Local timecode generator 304 may be synchronized with the master timecode generator during recording of the audio event as described in further detail below with respect to FIG. 5. Or, alternatively, the timestamps may be synchronized post-recording as described in further detail below with respect to FIGS. 9 and 10. Simultaneous with the local recording of audio received from local audio input device 312, this audio may also be transmitted through local transmitter 308 to receiver 106 and/or recorder 108 to allow recording of the audio event. In this scenario, receiver 106 and/or recorder 108 may simultaneously record a multi-track

recording of all of the single tracks of audio received from local audio devices 102, which are worn by the performers of the audio event.

[0060] Memory 332 may be virtually any type of commercially available removable or non-removable memory including, but not limited to, flash memory cards, compact flash memory cards, Universal Serial Bus ("USB") thumbdisks, and the like. Use of removable memories 332 facilitates removal and insertion of these memories into a PC or the like for electronic combination or mixing of the recorded audio data. Such electronic mixing may be performed via commercially available software such as Pro Tools or the like and may be performed in addition to or in lieu of live wireless recording of the audio event.

[0061] Local audio devices 102 also receive non-audio information (e.g., time reference signals, digital commands, audio, etc.) from other components of recording system 100 via local receiver 302. During synchronous operation of recording system 100, a portion of the received data may be used to synchronize local timecode generator 304 to the master timecode generator integral to one of the components of recording system 100 (e.g., RCU 104, recorder 108, etc.) using a process such as that described below with respect to FIGS. 4A, 4B, and 5 or an equivalent thereof. Alternatively, during asynchronous operation of recording system 100, the received data may include master timecodes from the master timecode generator that may be used to timestamp individual audio samples and/or files such that the audio received at multiple local audio devices 102 may be synchronized post-recording using one of the methods discussed below with respect to FIGS. 9 and 10 or an equivalent thereof.

[0062] As described in further detail below with respect to FIG. 5, local audio devices 102 operating in the synchronous mode may require one or more of comparator 334, oscillator 336, and counter 338. In one aspect of the present invention, oscillator 336 is a 48 kilohertz ("kHz") voltage controlled oscillator. However, alternate embodiments of oscillator 336 may be substituted without departing from the scope of the present invention including but not limited to a high speed clock divided to produce 48 kHz. In the embodiment of the present invention depicted in FIG. 3A, oscillator 336 feeds the sample rate input of local ADC 322, as well as counter 338, which provides a time reference for local timecode generator 304. In this configuration, if local ADC 322 is set to operate at 48 kHz, varying the voltage applied to the clock control input of oscillator 336 will proportionately vary the output of oscillator 336 and, consequently, the sample rate of local ADC 322 and the rate at which local timecode generator 304 keeps time.

[0063] When local audio devices 102 such as those depicted in FIG. 3A are used in conjunction with recorders 108 that incorporate a single clock to both regulate the speed of the master timecode generator and control the internal recorder ADC sample rate, comparators 334 help maintain synchronization of local audio devices 102 with each other and with recorder 108 by varying the speed of the respective local timecode generators 304 and the sampling rate of the respective local ADCs 322. As per an algorithm or hardwired logic that duplicates the sequence depicted in FIG. 5, or an equivalent thereof, comparators 334 compare the timecodes generated by the master timecode generator with timecodes generated by the locally timecode generator and, if necessary, increase or decrease the speed of the respective local timecode generator 304 and the sampling rate of the respective local ADC 322 such that these speeds are synchronized with the speed of the master timecode generator and the ADC of recorder 108. That is, comparators 334 generate, through software or hardware, the voltage that is applied to the clock control input of the respective oscillator 336 that proportionately varies the sample rate of local ADC 322 and the rate at which local timecode generator 304 keeps time as necessary to maintain synchronization with the sample rate of the ADC of recorder 108 and the master timecode generator, respectively. In this manner, all local audio devices 102 and recorder 108 sample at virtually identical sample rates allowing a wireless recorder 108, or a wireless recorder/receiver combination, to accurately combine multiple independent tracks of audio, wherein each independent track of audio is received from one of the performer's local audio device 102.

[0064] Whenever playback of locally recorded audio is required (e.g., to remedy recording errors caused by transmission losses), RCU 104 transmits a digital command to all local audio devices 102 to playback the audio data stored in the respective memories 332 starting with and subsequent to a specific time reference as indicated by a specific timecode. The digital command is received by local receivers 302, which transmit or relay the command to their respective local control unit 310. Thereafter, local control units 310 access the data stored in the respective memory 332 and cause this data to be played or transmitted sequentially via local transmitter 308 starting with the data associated with the requested timecode. The use of timecodes and synchronization of local and master timecode generators, as well as local and recorder audio sampling rates, as discussed herein allows multiple local audio devices 102 to replay audio with the exact timing that occurred during the audio event.

[0065] Local audio devices 102 may be bodypacks such as the local audio device 102 depicted in FIG. 3B. In such an embodiment, display 318 may be a small liquid crystal display ("LCD") or the like and keypad 320 may include a plurality of buttons that allow a user to perform functions including, but not limited to, those that relate to transmitter frequency, receiver frequency, microphone gain, high pass filter, group ID code, unit ID code, transmitter encryption code, and transmitter operating mode. For example, transmitter and receiver frequencies may be adjustable in predetermined frequency steps. Microphone gain may be adjusted, which in turn adjusts the current setting of a preamp such as local preamp 316. Adjustment of the high pass filter may be incorporated to enable and disable, or otherwise adjust, the high pass audio filter of the audio input device such as audio input device 312.

[0066] When multiple local audio devices are incorporated in to a group, each local audio device in the group as well as other components of the recording system (e.g., an RCU) may be assigned a group ID. Similarly, the unit ID identifies each specific local audio device within the group of local audio devices.

[0067] For local audio devices transmitting encrypted audio and data, the transmitter encryption code is set to match the encryption code of all receiving devices (e.g., an RCU, recorder, or receiver). Correctly setting this code allows the receiving device to properly decrypt the received transmission, while preventing unauthorized users from recording the data.

[0068] The operating mode of each local audio device can encompass any one of a number of modes. For example, the operating modes may include USA or European modes, as well as stereo modes. Selection of a specific mode may alter settings such as transmitter bandwidth, audio sampling parameters, and the like.

[0069] Although many specific features and functions for the local audio devices have been delineated herein, other features and functions may be added or eliminated without departing from the scope of the present invention.

[0070] Additionally, handheld embodiments may include any one of a variety of commercially available batteries to function with the power supply 306 without departing from the scope of the present invention. Power supply 306 may be virtually any power component or combination thereof that is compatible with the other components of local audio device 102 including, but not limited to, a Texas Instruments TPS62000DGS Power Module alone or in combination with a Linear Technology LTC3402 Synchronous Boost Converter.

[0071] Alternate embodiments of local audio device 102 are envisioned in which local receiver 302 are eliminated. In one such embodiment, local transmitter 308 is enabled whenever an audio event requiring recording is occurring. Local timecode generator 304 may be designed to generate timecodes whenever local transmitter 308 is enabled. When local transmitter 308 is not operating, the current value of local timecode generator 304 is stored in non-volatile memory to allow local timecode generator 304 to continue counting from the last generated timecode when the local transmitter 308 is re-enabled. Such embodiments include a timecode generator capable of generating unique timecodes for several years without a repeated timecode.

[0072] During recording, each local audio device 102 transmits data to one or more receivers and/or recorders. During recording, the receivers and/or recorders automatically detect corrupted audio data received from local audio devices 102 and maintain a list of same. The list of corrupted audio data contains references to the respective local audio device 102 from which the corrupted audio data was received to allow such data to be recovered post-recording.

[0073] Post-recording, memories 332 may be removed from each local audio device 102 such that locally recorded data may be retrieved and used to repair the corruption of the audio file generated by the receiver/recorders that occurred due to the receipt of corrupted audio data. Such data recovery may be performed using the multi-memory unit of the present invention or an equivalent. In one embodiment, the multi-memory unit may connect directly to the receivers and/or recorders to allow this equipment to directly retrieve the required audio data. In another embodiment, memories 332 may be connected directly to the receivers/recorders for retrieval of the audio data, thereby eliminating the need for any extraneous equipment such as a personal computer. Identifiers such as local audio device identifiers, track identifiers, performer identifiers, and the like may be decoded from the audio data to allow the file manipulator to more quickly and easily manipulate the audio data.

[0074] Since the timecodes generated locally by each local audio device 102 may vary with respect to each other, the receivers, and/or the recorders, the present invention provides a method for ensuring that audio data retrieved from memories 332 is inserted in the proper time sequence with respect to the audio file(s) generated by the receiver/recorders. To achieve this, during recording, the receiver(s) and/or recorders generate or populate a cross-reference table, database, or the like that correlates the timecodes of the audio files generated by the

receiver/recorders, as well as the timecodes of all audio data received from all local audio devices 102. That is, the cross-reference mechanism correlates each timecode generated by a receiver or recorder to each timecode generated by each local audio device. In this manner, the timecodes of audio retrieved from memories 332 may be cross-referenced to determine the correlating timecode of the audio file generated by the receiver/recorders. Thereafter, the retrieved audio may optionally be re-stamped with the timecode of the receiver/recorder and inserted in its proper place within the receiver/recorder audio file. In this manner, audio may be wirelessly recorded with zero data loss.

[0075] Referring now to FIG. 4A, illustrated is a flow diagram of one embodiment of a process for operation of a recording system such as recording system 100 in synchronous timecode generator mode in accordance with one embodiment of the present invention. Process 400 begins at 402. For example, at 402, one or more performers may each don a local audio device, such as local audio device 102 as described with respect to FIGS. 1, 3A, and 3B. Also, a sound engineer or other personnel may be equipped with a control unit such as RCU 104. Process 402 then proceeds to 404.

[0076] At 404, initialization occurs. During initialization, the local control unit such as local control unit 310 or other form of central processing unit is reset. Thereafter, the local transmitter, local receiver, ADC, DAC, and local timecode generator clock are initialized. The process then optionally proceeds to 406, at which the sampling rate of the ADC is set.

Alternatively, the sampling rate may be set via hardware or via software executed as part of a separate algorithm. In some embodiments of the present invention, a sample rate of 48 kHz is incorporated.

[0077] Next, at 408, wireless receive channels are established between the local audio device and one or more wireless devices such as RCUs (e.g., RCU 104), receivers, and audio recorders. To establish the channel, the local receiver of the audio device receives one or more data packets from the remote wireless device and stores the packets in a designated buffer. For example, when establishing wireless communication with a RCU, the local audio device may receive one or more data packets containing information such as a master timecodes, transport status (i.e., transport mode of an audio recorder), and the like. These packet(s) are then stored in an RX buffer (i.e., a reserved segment of memory used to hold data while it is being processed). Process 400 then proceeds to 410.

[0078] At 410, the local control unit reads the master timecode contained in the RX buffer and jam synchronizes the local timecode generator with the master timecode. The jam sync synchronizes the local audio device with the RCU while allowing the local audio device to supply its own timecode. Local supply of synchronized timecodes ensures proper timing during periods in which the master timecodes cannot be read (e.g., the RCU is temporarily unstable, wireless communication dropouts, etc.). Local supply of timecodes also allows local identifiers such as local track identifiers, local audio device identifiers, and the like to be added to the respective local audio device timecode. Such identifiers allow the locally recorded audio to be distinguished from audio recorded by other local audio devices. Such ability to distinguish is particularly useful to quickly and easily identify the audio tracks post-recording.

[0079] Next, at 412, process 400 queries the transport status stored in the RX buffer. If at 412, the transport status is stop, process 400 returns to 410. However, if at 412, the transport status is record, process 400 proceeds to 414. At 414, a new audio file is created in memory (e.g., on a flash card) and the newly created file is timestamped. In one aspect of the present invention, timestamping includes storing the timecode in the file header. Process 400 then proceeds to 416.

[0080] At 416, the local control unit waits for an audio sample interrupt from the ADC. Once an audio sample interrupt occurs, process 400 proceeds to 418. At 418, the audio sample is retrieved from the ADC and stored in the local memory. In one aspect of the present invention, the audio sample is stored in the next available address of the local memory. Next, at 420, the timecode generator counter is incremented, thereby indicating that the time period for one sample of audio has elapsed.

[0081] Process 400 then proceeds to 422, at which the local control unit transmits the audio sample through the local transmitter to the other wireless devices such as RCUs, receivers, audio recorders, and the like. For example, audio from multiple local audio devices may be transmitted to a multi-track recorder for recording of the audio event while each local audio device locally records its performer's audio. At 424, process 400 queries the RF buffer of the local receiver to determine the availability of a new master timecode packet. If at 424, a new master timecode packet has not been received from the RF receiver, process 400 returns to 416. However, if at 424, a new master timecode packet has been received, process 400 proceeds to 426 as depicted in FIG. 4B.

[0082] At 426, process 400 executes a feedback loop algorithm, which modifies the speed of the local timecode generator as necessary to maintain its synchronization with the master timecode generator (e.g., a timecode generator contained within the RCU or master recorder). This algorithm may be implemented using any one of a variety of methods. In one embodiment of the present invention, a feedback loop algorithm, such as process 500 depicted in FIG. 5, modulates a low-pass filtered feedback error voltage that is supplied by the local control unit directly to the local oscillator. The local oscillator then controls the sample rate of the ADC and the speed of the local timecode generator by supplying the feedback error voltage to the ADC's sample rate input and the local timecode generator's clock control input. Alternatively, a comparator independent of the local control unit may perform the comparison of the master timecodes and the local timecodes and may vary the sample rate of the ADC and the speed of the local timecode generator by directly supplying the feedback error voltage to the oscillator. A variety of hardware and software equivalents of this function may be substituted without departing from the scope of the present invention.

[0083] Referring now to FIG. 5, the feedback loop algorithm begins at 502. At 504, the current local timecode is retrieved from the timecode generator such as local timecode generator 304 and is written to the variable TCgen. Process 500 proceeds to 506. At 506, the current master timecode is retrieved from the RX buffer of the local receiver and is written to the variable TCrx and process 500 proceeds to 508. At 508, variable TCdiff is calculated by subtracting TCrx from TCgen. Process 500 then proceeds to 510, at which process 500 compares TCdiff to zero. If, at 510, TCdiff is less than zero, process 500 proceeds to 512, at which the feedback error voltage supplied to the local oscillator's DAC by the local control unit is increased above the previously supplied feedback error voltage. The local oscillator's DAC then supplies the new feedback error voltage to the local oscillator, which, in turn, supplies a new clock input voltage to the local timecode generator and a new sample rate input to the ADC. In this manner, the speed of the local timecode generator and the sample rate of the ADC are increased to maintain synchronization with the master timecode generator. However, alternate embodiments of the present invention are envisioned in which only one of either the speed of the local timecode generator or the sample rate of the ADC is modified.

[0084] Alternatively, if at 510 TCdiff is not less than zero, process 500 proceeds to 514, at which TCdiff is analyzed to determine if it is greater than zero. If yes, process 500 proceeds to 516 and the feedback error voltage supplied to the local oscillator's DAC by the local control

unit is decreased below the previously supplied feedback error voltage. The local oscillator's DAC then supplies the new feedback error voltage to the local oscillator, which, in turn, supplies a new clock input voltage to the local timecode generator and a new sample rate input to the ADC. In this manner, the speed of the local timecode generator and the sample rate of the ADC are decreased to maintain synchronization with the master timecode generator. However, alternate embodiments of the present invention are envisioned in which only one of either the speed of the local timecode generator or the sample rate of the ADC is modified. Furthermore, alternate embodiments are envisioned in which an inverse relationship occurs (e.g., DAC voltage is increased when TCDiff is greater than zero and it is decreased when TCDiff is less than zero).

[0085] If TCdiff is neither less than zero as determined at 510 or greater than zero as determined at 514, then TCdiff is equal to zero. In this scenario, the local and master timecode generators are synchronized and, therefore, no adjustment is made to the speed of the local timecode generator. At this point, process 500 ends at 518.

[0086] Although FIG. 5 depicts one method of performing a feedback loop, many variations of this feedback loop may be substituted without departing from the scope of the present invention. For example, the feedback loop may be implemented as a digital phased locked loop that re-samples the audio in a manner that simulates a hardwired feedback loop. Also, the feedback loop may include a low pass filter.

[0087] Referring back to FIG. 4B, after execution of the feedback loop algorithm at 426, process 400 proceeds to 428. At 428, the local timecode generator is jam synchronized with the newly received master timecode read from the RX buffer. Next, process 400 optionally proceeds to 430, at which a timecode is stored as an escape sequence in the next available address of the local memory. The escape sequence stores a master timecode in addition to the locally generated timestamp. This escape sequence may be used post-processing to resample the audio based upon interpolated master timecode data. Process 400 then proceeds to 432. At 432, process 400 queries the continuous loop record mode. If at 432 the continuous loop record mode is enabled, process 400 returns to 416 to wait for an audio sample interrupt from the ADC as discussed above. However, if at 432, the continuous loop record mode has not been enabled, process 400 proceeds to 434. At 434, process 400 queries the transport status. If at 434 the transport status is record, process 400 returns to 416 to wait for an audio sample interrupt from the ADC as discussed above. However, if at 434, the transport status is stop, process 400

returns to 410, at which process 400 continuously jam synchronizes the local timecode generator with the master timecodes received in the RX buffer until the transport status changes from stop to record at 412.

[0088] Turning next to FIG. 6, illustrated is a flow diagram of one embodiment of a process for recording audio and for replaying and re-recording segments of missed audio in accordance with embodiments of the present invention. Process 600 begins at 602. For example, at 602, one or more performers may each don a local audio device, such as local audio device 102 as described with respect to FIG. 2A. Process 600 then proceeds to 604.

[0089] At 604, a master unit, such as RCU 104, receiver 106, or recorder 108 transmits master timecodes to each local audio device, and process 600 proceeds to 606. At 606, each local audio device synchronizes (e.g., jam syncs) its respective on board local timecode generator with the master timecodes received from the master unit, thereby synchronizing all local audio device timecode generators with the master timecode generator contained within the master unit. Process 600 then proceeds to 608. At 608, local audio devices begin locally recording audio received from an audio input device. This audio is stored in the memory of the respective local audio device with timestamps generated by the local timecode generator. Identifiers such as track identifiers, local audio device identifiers, and the like may also be stored in the memory of the respective local audio device to allow the locally recorded audio to be associated by track, local audio device, or the like post-recording. Each local audio device also simultaneously transmits its received audio to recorders or receiver/recorder combinations such as receivers 106 and recorders 108 in real time. Such audio may be transmitted alone or in combination with its respective timecodes. The audio received from each of the local audio devices (e.g., the local audio device of each performer) may be combined to create one or more multi-track audio files that are stored with master timestamps generated by the receiver/recorder's internal master timecode generator. In some embodiments of the present invention, local timecodes generated by the respective local audio device are stored with the multi-track audio files in addition to the master timestamps.

[0090] Process 600 then proceeds to 610. At 610, process 600 queries the initiation of audio replay. The initiation of audio replay may be manual or automatic. For example, if a user detects a loss of audio, the user may manually initiate audio replay beginning at the specific timecode reference at which the transmission error occurred. Alternatively, if a loss of audio is automatically detected by the receiving equipment, a playback request may be sent

from the receiving equipment to the controlling unit such as a remote control unit. In response, such controlling unit may command the local audio devices to replay or retransmit the missed audio to the receiving equipment beginning at the timecode at which the loss of data occurred or at a conveniently close time thereto (e.g., zero to ten seconds prior to the loss of data).

5 [0091] If, at 610, audio replay is not initiated either manually or automatically, process 600 returns to 608. However, if, at 610, audio replay is initiated, process 600 proceeds to 612. At 612, a controlling unit, such as RCU 104, sends a signal to the local audio devices requesting playback of the stored audio starting at a specific timecode.

[0092] Next, at 614, each local audio device processes the playback command and
10 synchronizes playback to the timecode contained in the playback command. In addition, at least one local audio device transmits the synchronization data to the receiving equipment (e.g., receiver 106, recorder 108, etc.) to synchronize recording of the replayed audio. Process 600 then proceeds to 616. However, in alternate embodiments of the present invention, the receiving equipment and the local audio devices may simultaneously receive the
15 synchronization and time reference data from the transmitting equipment (e.g., the controlling unit).

[0093] At 616, one or more local audio devices transmit, or replay, its respective stored audio starting with the audio that corresponds to the time specified by the timecode. The receiving equipment simultaneously records the replayed audio from each of the local audio
20 devices and stores it within the previously recorded audio according to its timecode data. That is, due to the highly accurate synchronization of all of the components of the recording system, the receiving equipment may insert the replayed audio data that was not recorded during the audio event due to wireless transmission errors into the original recording at the nearly the exact time at which the missed audio originally occurred, thereby compensating for any
25 transmission losses. Process 600 then proceeds to 618. At 618, one or more local audio devices continue to replay audio while the receiving equipment records the audio.

[0094] At 620, process 600 queries the status of audio replay. If, at 620, the audio has been fully replayed, process 600 proceeds to 608. At 608, the local audio devices may record a new audio event or may replay a different segment of recorded data. Otherwise, if, at 620, all
30 requested audio has not been replayed or re-recorded, process 600 returns to 618.

[0095] Referring now to FIG. 7, illustrated is a flow diagram of one embodiment of a process for operation of a recording system such as recording system 100 in asynchronous

timecode generator mode in accordance with one embodiment of the present invention. Process 700 begins at 702. For example, at 702, one or more performers may each don a local audio device, such as local audio device 102 as described with respect to FIGS. 1, 3A, and 3B. Also, a sound engineer or other personnel may be equipped with a control unit such as RCU 104.

5 Process 702 then proceeds to 704.

[0096] At 704, initialization occurs. During initialization, the local control unit such as local control unit 310 or other form of central processing unit is reset. Thereafter, the local transmitter, local receiver, ADC, DAC, and clock are initialized. The process then proceeds to 706, at which the sampling rate of the ADC is set. In some embodiments of the present
10 invention, a sample rate of 48 kHz is incorporated.

[0097] Next, at 708, wireless receive channels are established between the local audio device and one or more wireless devices such as RCUs (e.g., RCU 104), receivers, and audio recorders. To establish the channel, the local receiver of the audio device receives one or more data packets from the remote wireless device and stores the packets in a designated buffer. For
15 example, when establishing wireless communication with a RCU, the local audio device may receive one or more data packets containing information such as a timecode, transport status (i.e., transport mode of an audio recorder), and the like. These packet(s) are then stored in an RX buffer. Process 700 then proceeds to 710.

[0098] At 710, the local control unit reads the transport status and the master timecode
20 contained in the RX buffer. Next, at 712, process 700 queries the transport status. If at 712, the transport status is stop, process 700 returns to 710. However, if at 712, the transport status is record, process 700 proceeds to 714. At 714, a new audio file is created in memory (e.g., on a flash card) and the timecode is stored in the header of the newly created file. Such timecode may optionally include identification information such as track identifiers, local audio device,
25 identifiers, and the like. Or, alternatively, such identification information may be stored in the newly created file in a location other than the timecode. For example, such identification information may be stored in the data stream in the header of the newly created file. However, the present invention is not so limited. Process 700 then proceeds to 716.

[0099] At 716, the local control unit waits for an audio sample interrupt from the ADC.

30 Once an audio sample interrupt occurs, process 700 proceeds to 718. At 718, the audio sample is retrieved from the ADC and stored in the local memory. In one aspect of the present invention, the audio sample is stored in the next available address of the local memory. Process

700 then proceeds to 720, at which the local control unit transmits the audio sample through the local transmitter to the other wireless devices such as receivers, audio recorders, and the like.

[00100] At 722, process 700 queries the RF buffer of the local receiver to determine the availability of a new master timecode packet. If at 722, a new master timecode packet has not

5 been received from the RF receiver, process 700 returns to 716. However, if at 722, a new master timecode packet has been received, process 700 optionally proceeds to 724. At 724, the timecode is stored as an escape sequence in the next available address of the local memory.

Process 700 then proceeds to 726. At 726, process 700 queries the continuous loop record mode. If at 726 the continuous loop record mode is enabled, process 700 returns to 716 to wait

10 for an audio sample interrupt from the ADC as discussed above. However, if at 726, the continuous loop record mode has not been enabled, process 700 proceeds to 728. At 728,

process 700 queries the transport status. If at 728 the transport status is record, process 700 returns to 716 to wait for an audio sample interrupt from the ADC as discussed above.

However, if at 728, the transport status is stop, process 700 returns to 710, at which process 700

15 continuously reads the transport status and master timecodes from the RX buffer until the transport status changes from stop to record at 712.

[00101] Operation of the present invention in asynchronous mode allows one or more components of local audio devices such as local audio devices 102 (e.g., local timecode generator, comparator, counter, etc.) to be eliminated in embodiments in which the local audio

20 devices utilize master timecodes generated by the master timecode generator rather than locally generated timecodes.

[00102] Referring next to FIG. 8, depicted is multi-memory unit 800 for reading and/or reformatting audio files recorded on a plurality of local audio device memories (e.g., memories

332). In its simplest form, such as the embodiment depicted in FIG. 8, multi-memory unit 800

25 includes a plurality of individual memory ports 802a - 802/(e.g., flash memory card drives, compact flash memory card drives, USB thumbdisk ports, etc.). Also optionally included is a

plurality of memory status displays 804a - 804/to indicate to a user which memory ports 802 are in use. Similarly, power status display 806 and external connection status display 808 may

30 be optionally included to indicate the presence of power and an external connection (e.g., a personal computer), respectively. Multi-memory unit 800 may be equipped with an integral user interface or may be connected to an external interface (e.g., a personal computer) to allow the audio files contained on each memory to be manipulated and/or read.

[00103] In one aspect of the present invention, the memory of each local audio device such as local audio device 102 may be removed after completion of a performance, videotaping, etc. Each memory may then be inserted into a corresponding one of memory ports 802. Thereafter, all of the individual audio files may be combined to provide one or more comprehensive audio files. Or, alternatively, each audio file may be individually reformatted or otherwise manipulated prior to creation of one or more comprehensive audio files.

[00104] In embodiments of the present invention in which the recording system recorded the audio event in asynchronous mode, or in which long periods (e.g., 8 hours) of recording occurred, multi-memory unit 800 may be used to resample the audio samples to ensure that each audio file's timestamps are properly synchronized. One example of such a process is illustrated in the flowchart of FIG. 9.

[00105] In some embodiments of the present invention, multi-memory unit 800 may allow identification information such as track identifiers, local audio device identifiers, and the like to be added to each portion of audio stored in memory 332. In such embodiments, multi-memory unit 800 may have the ability to modify the timecode(s) associated with each portion of audio recorded on each memory 332 to add, modify, or delete the desired identification information. Or, alternatively, multi-memory unit 800 may have the ability to add such identification information to each portion of audio stored in memory 332 in a location other than the timecode (e.g., in a file header).

[00106] Referring now to FIG. 9, illustrated is a flow diagram of one embodiment of a process for interpolating timestamps for unstamped audio samples (i.e., audio samples that are not associated with a master timecode timestamp) based upon the timestamps of stamped audio samples (i.e., audio samples that are associated with a master timecode timestamp), and resampling the audio samples to include the interpolated timestamps in accordance with embodiments of the present invention. After recording of an audio event, the audio data stored in the memory of the local audio device (e.g., memory 332) will typically be stored as an audio sample stream wherein approximately one out of every one thousand to one hundred thousand samples includes a timestamp generated by a remote master timecode generator. However, the interval between timestamped audio samples may be greater than the aforementioned interval if the wireless timecode link was less reliable than a standard wireless link.

[00107] The resampling process depicted in FIG. 9, and equivalents thereof, analyze the occurrence of the relatively sparse timestamped audio samples to generate a linear interpolation

or a best fit curve. This curve is then used to interpolate timestamps for the unstamped audio samples. After the timestamp of each audio sample has been interpolated, the audio samples may then be re-sampled such that the audio samples are now synchronized with samples generated by the master timecode generator. In one aspect of the present invention, the audio samples are resampled based upon the calculated curve to simulate the condition of an ADC whose sample rate input was driven directly by the master timecode generator's source.

[00108] If all of the audio from all local audio devices is resampled in this manner, each resulting resampled audio file appears as if it was originally sampled with an accurate audio sample clock derived from the master timecode source. This resampling allows each audio file to include a single timestamp that marks the master timecode of the first audio sample of the audio file. Furthermore, since the audio files now appear as if they have been sampled by an extremely accurate audio sample clock, each audio sample's timestamp may be accurately calculated based solely on the audio sample rate and the timestamp of the first audio sample of the audio file. This condition allows the audio files to be formatted and/or stored as a standard timecoded broadcast .WAV file, thereby allowing them to be read, edited, etc. using standard, commercially-available editing systems. That is, the files may be processed in the same manner as if the audio file had been generated by a standard multi-track audio recorder. Such condition allows the present invention to be easily integrated with other industry standard recording equipment.

[00109] One such resampling process is illustrated in FIG. 9. Process 900 begins at 902. For example, at 902, one or more local audio device memories may be removed from its respective local audio device and may be inserted into a multi-memory unit 800, or an equivalent thereof. Process 902 then proceeds to 904.

[00110] At 904, process 900 determines the desired starting and ending timecodes and stores this data in the variables TimeCodeStart and TimeCodeEnd, respectively. The desired starting and ending timecodes may be input by a user or may be suggested or automatically determined by the algorithm. Process 900 then proceeds to 906. At 906, a variable, i, is initialized to a value of zero. The variable i corresponds to the position of audio samples or data points in a data array represented by the variable AudioSample[i]. Process 900 then proceeds to 908.

[00111] At 908, process 900 begins an iterative search for the audio file that matches the desired starting timecode of the output file by comparing the value of TimeCodeStart with the value of the timecode of AudioSample[i]. If, at 908, the value of TimeCodeStart is equal to the

value of the AudioSample[i] timecode, process 900 proceeds to 912. However, if at 908 the value of TimeCodeStart is not equal to the value of the AudioSample[i] timecode, process 900 proceeds to 910. At 910, the variable i is increased by a value of one thereby allowing the value located in the next position of the audio sample array to be compared to the value of

5 TimeCodeStart when process 900 returns to 908.

[00112] If the value of TimeCodeStart is equal to the value of the AudioSample[i] timecode, process 900 proceeds to 912. At 912, a variable, n, is initialized to a value of one. The variable n is added to the variable i to allow process 900 to continue to traverse the audio sample array while maintaining the location of the audio sample at the starting timecode, which is

10 represented by the variable AudioSample[i]. Process 900 then proceeds to 914. At 914, the value of the AudioSample[i+n] timecode is compared to the value of TimeCodeEnd. If at 914, the value of the AudioSample[i+n] timecode is greater than or equal to the value of TimeCodeEnd, process 900 proceeds to 916. At 916, the value of the AudioSample[i+n] timecode is again compared to the value of TimeCodeEnd. If at 914, the value of the

15 AudioSample[i+n] timecode is greater than the value of TimeCodeEnd, process 900 proceeds to 928, at which process 900 terminates. However, if at 916, the value of the AudioSample[i+n] timecode is equal to the value of TimeCodeEnd, process 900 proceeds to 922.

[00113] Conversely, if at 914, the value of the AudioSample[i+n] timecode is less than the value of TimeCodeEnd, process 900 proceeds to 918. At 918, the value of the AudioSample[i+n] timecode is compared to the value of CurrentTimeCodeEscapeSequence. If, at 918, the value of the AudioSample[i+n] timecode is not equal to the value of TimeCodeEscapeSequence, process 900 proceeds to 920 where the variable n is increased by one and process 900 returns to 914. However, if at 918, the value of the AudioSample[i+n] timecode is equal to the value of TimeCodeEscapeSequence, process 900 proceeds to 922.

[00114] At 922, the average time period "T" that elapsed between the audio samples that occurred between AudioSample[i] and AudioSample[i+n] may be calculated by subtracting the value of the timecode of AudioSample[i] from the value of the timecode of AudioSample[i+n] and dividing by n, wherein n is now equivalent to the number of audio samples that occurred between the current timestamped audio sample and the previous timestamped audio sample. Process 900 then proceeds to 924. At 924, AudioSamples[i] through AudioSamples[i+n] are re-sampled at any desired sample rate based upon the value of T as calculated in 922, or any

other desired sample rate, using an audio resampling algorithm (e.g., linear interpolation). Process 900 then proceeds to 926, at which the variable i is set to a value equal to the current value of i plus the current value of n and process 900 returns to 912. The iterative process continues until the value of the AudioSample[i+n]timecode is greater than the value of TimeCodeEnd, whereby process 900 proceeds to 928, at which process 900 terminates.

[00115] A similar interpolation algorithm, such as the algorithm depicted in FIG. 10, may be incorporated to break down single large audio files (e.g., an audio file recording the filming of multiple movie takes over a continuous eight hour period as a single eight-hour audio file) into smaller, more useful files (e.g., one audio file per take). These smaller files will allow the audio recorded locally by the local audio devices to be more easily matched or synchronized with the individual audio files recorded by a master recorder such as recorder 108.

[00116] In one use of an embodiment of the present invention, multiple local audio devices store audio samples with wirelessly-received timecode and transport status samples continuously for the entire duration of the work day (e.g., an 8 hour period). In a typical scenario, while the local audio devices are recording continuously, a technician intermittently records segments of the eight-hour audio event. For example, in a film setting, each segment would typically represent a movie 'take' and might range from one to five minutes in duration. Consequently, the master recorder generates individual audio files (i.e., at least one audio file for each recorded segment such as a movie take), whereas each local audio device generates one massive audio file. Therefore, there is a need for a method of segmenting each large local audio file into smaller audio files that correspond to the segments recorded by the master recorder.

[00117] The segmentation method (i.e., the method of segmenting the large local audio devices' files to match the multiple, smaller master recorder's audio file) requires knowledge of which portions of the single local audio device audio file are important and which portions can be discarded. This information can be inferred from the transport status of the master recorder since it is typically operated by someone with this knowledge. Therefore, when the transport status of the master recorder changes from stop to record, it can be inferred that a new master recorder audio file begins, and, subsequently, when the transport status of the master recorder changes from record to stop, it can be inferred that the same master recorder audio file has ended. In addition, when the transport status of the master recorder remains in the stop mode, it can be inferred that the audio recorded by the local audio device during this time period may be

discarded. This audio may be discarded post-processing as per algorithms such as that depicted in FIG. 10 or during live recording.

[00118] In embodiments of the present invention in which such data is discarded during live recording, the transport status and master timecode of the master recorder are wirelessly transmitted to the local audio devices. This information may be processed by the local audio devices to allow them to create a new audio file with the current master timecode of the master recorder whenever the received transport status and master timecode indicate that the transport status has changed from stop to record. Similarly, the local audio devices may end the newly created audio file when the received transport status indicates that it has changed from record to stop. In this scenario, the resulting local audio device files will automatically be segmented and will each be marked with a master timestamp at the beginning of each file.

[00119] However, in embodiments of the present invention in which unimportant audio is not discarded during live recording and, therefore, one or more large audio files are created, the large audio files may be segmented as per a process such as process 1000 as illustrated in FIG.

10. Process 1000 begins at 1002 at which one or more local audio devices have continuously recorded a lengthy quantity of audio data. Process 1000 then proceeds to 1004.

[00120] At 1004, a copy of the audio file directory containing the segmented audio files that correspond to the same time period as the local audio device's single large audio file is obtained from the master recorder. Process 1000 then proceeds to 1006. At 1006, a variable y is initialized to a value of zero. The variable y corresponds to the number of each file contained in the audio file directory copied from the master recorder. Process 1000 then proceeds to 1008, at which the variable y is increased by one and a variable x is initialized to a value of one. The variable x corresponds to the position of each audio sample within a particular file.

Process 1000 then proceeds to 1010, at which the copied audio file directory is queried to determine if a file[y] (i.e., the file named with the number that corresponds to the value of y) exists in the audio file directory. If no, process 1000 proceeds to 1028 and terminates.

[00121] If file[y] does exist, process 1000 proceeds to 1012, at which process 1000 determines the starting and ending timecodes for file[y] and stores them in the variables TimeCodeStart and TimeCodeEnd, respectively. Process 1000 then proceeds to 1014, at which process 1000 compares the value of TimeCodeStart to the value of the timecode associated with AudioSample[x] stored in the memory of the local audio device. If at 1014 the value of TimeCodeStart is not equal to the value of the timecode associated with AudioSample[x],

process 1000 proceeds to 1016. At 1016, the variable *x* is increased by one and process 1000 returns to 1014. In this manner, TimeCodeStart is compared to each consecutive AudioSample[*x*] until the AudioSample timestamped with a value equal to TimeCodeStart is found. In some embodiments of the present invention, process 1000, or an equivalent thereof, is performed after process 900, or an equivalent thereof, to ensure that each of the audio samples has a timestamp (e.g., an interpolated timestamp).

[00122] When the AudioSample[*x*] having a timecode equivalent to TimeCodeStart is found at 1014, process 1000 proceeds to 1018. At 1018, AudioSample[*x*] is extracted and process 1000 proceeds to 1020, at which the variable *x* is increased by one and process 1000 proceeds to 1022. At 1022, process 1000 compares the value of TimeCodeEnd to the value of the timecode associated with AudioSample[*x*]. If at 1022, the value of TimeCodeEnd is not equal to the value of the AudioSample[*x*] timecode, process 1000 returns to 1018, whereupon audio samples are consecutively extracted until the timecode of the current AudioSample[*x*] equals TimeCodeEnd. If, at 1022, the value of TimeCodeEnd is equal to the value of the timecode of AudioSample[*x*], process 1000 proceeds to 1024, at which the final AudioSample[*x*] of the segmented audio file is extracted and the audio file is saved at 1026.

[00123] Process 1000 then proceeds to 1008, at which the variable *y* is increased by one and process 1000 proceeds to 1010 at which the audio file directory is queried to determine the existence of file[*y*]. If file[*y*] exists, process 1000 proceeds to 1012 and it continues thereafter as described above. However, if at 1010, it is determined that file[*y*] does not exist, process 1000 proceeds to 1028, at which it terminates.

[00124] Turning now to Figs. 13A and 13B, depicted are a block diagram and a front view, respectively, of one embodiment of recorder 108 in accordance with the present invention. As best seen in Fig. 13A, the depicted embodiment of recorder 108 includes, *inter alia*, recorder power supply 1306, recorder memory 1308, recorder local control unit 1310, adjuster 1312, adjuster ADC 1314, recorder audio input device 1316, recorder audio input device port 1318, timecode port 1320, recorder preamp ADC 1322, recorder preamp 1324, and recorder DAC 1326.

[00125] Recorder power supply 1306 may be an AC electric plug compatible with an electrical receptacle as is commonly known in the art. Additionally, portable embodiments may include any one of a variety of commercially available batteries to function with power supply 1306 without departing from the scope of the present invention. Recorder power supply 1306

may be virtually any power component or combination thereof that is compatible with the other components of recorder 108 including, but not limited to, an SL Power Electronics PW174KB1203F01 AC adapter.

[00126] In some embodiments of the present invention, recorder local control unit 1310 is electrically coupled to the other components of recorder 108, and it is a digital signal processor programmed with software such as that depicted in Fig. 11 to, for example, remotely control various functions of local audio devices 102. For example, recorder local control unit 1310 may be programmed with an algorithm capable of remotely controlling the amplification of audio received at local audio devices 102. In the depicted embodiment of the present invention, recorder local control unit 1310 is a digital signal processor such as a Texas Instruments TMS320C6713GDP digital signal processor, however, the present invention is not so limited. Any combination of hardware and software capable of executing a process such as that depicted in Fig. 11 may be substituted for any component described herein without departing from the scope of the present invention.

[00127] Recorder memory 1308 is electrically connected to recorder local control unit 1310 and stores information therein as discussed in further detail below with respect to Fig. 11. In the depicted embodiment of the present invention, recorder memory 1308 is a Western Digital WD1600BEVE hard drive. However, recorder memory 1308 may be virtually any type of commercially available removable or non-removable memory including, but not limited to, flash memory cards, compact flash memory cards, Universal Serial Bus ("USB") thumbdisks, and the like.

[00128] Referring now to Figs. 13A and 13B, depicted is one embodiment of a front control surface of recorder 108 in accordance with the present invention. Recorder 108 includes a plurality of adjusters 1312a through 1312d. In the depicted embodiment, adjusters 1312 are potentiometers. That is, each adjuster 1312 includes a knob protruding from the control surface of recorder 108 that, when turned, slides a wiper terminal across a resistive material to alter the electrical resistance of adjuster 1312. A user may alter the position of adjuster 1312, for example, to adjust the gain of a microphone connected to a local audio device 102 as discussed in greater detail below with respect to Figs. 11 and 12. Adjusters 1312 may be any commercially available potentiometer such as, but not limited to, an Alps Electric Co., Ltd. RK09L1 1401A5L potentiometer.

[00129] In the depicted embodiment of the present invention, each adjuster 1312 may be set to local or remote trim mode by pressing its associated pushbutton 1313a - 1313d. Similarly, recording may be initiated by pressing pushbutton 1313e or stopped by pressing pushbutton 1313g. Or, playback may be initiated by pressing pushbutton 1313f. In the depicted
 5 embodiment of the present invention, pushbutton 1313 may be a flat illuminated pushbutton, however, the present invention is not so limited. Any combination of hardware and software capable of indexing adjuster 1312 to a local or remote trim mode, or initiating or stopping recording, or initiating playback, as described in greater detail below, may be substituted without departing from the scope of the present invention.

[00130] In remote trim mode, each adjuster 1312 modifies the gain of audio received via an audio input device (e.g., audio input device 312 of Fig. 3A) connected to audio input device port 314 (Fig. 3A) as also described in greater detail below with respect to Fig. 11. In local trim mode, each adjuster 1312 modifies the gain of audio received via an audio input device (e.g., audio input device 1316) connected to audio input device port 1318 as also described in
 15 greater detail below with respect to Fig. 11. Recorder audio input device 1316 may be any type of commercially available audio input device such as a microphone and recorder audio input device port 1318 may be any commercially available audio input device port that is compatible with recorder audio input device 1316 and the internal components of recorder 108. The received audio, as well as any digital signals (e.g., microphone input level, line input level,
 20 etc.), are then buffered and/or amplified by recorder preamp 1324 and are converted from analog to digital form by recorder preamp ADC 1322 such that the audio may be read in digital form by recorder control unit 1310.

[00131] Each adjuster 1312 is electrically coupled to a respective, dedicated adjuster analog-to-digital converter ("ADC") 1314 (See Fig. 13A). In turn, each adjuster ADC 1314 is
 25 electrically coupled to a dedicated analog input of recorder local control unit 1310. As a user rotates the knob associated with a particular adjuster 1312, the voltage across adjuster 1312 varies. Once adjuster 1312 is set to the desired position, the respective adjuster ADC 1314 measures the voltage across adjuster 1312 and converts it to a numeric value to be read by recorder local control unit 1310. This numeric value corresponds to the desired gain, or
 30 amplification, of the audio received either at recorder 108 (i.e., if adjuster 1312 is set to local trim mode) or at the respective local audio device 102 (i.e., if adjuster 1312 is set to remote trim mode) as discussed in further detail below with respect to Fig. 11. Adjuster ADC 1314 may be

any commercially available analog-to-digital converter such as, but not limited to, a Maxim Integrated Products MAX1202BCAP analog-to-digital converter.

[00132] The gain of audio received from audio input device 1316 via audio input device port 1318 may be adjusted via an exemplary gain adjustment circuit such as gain adjustment circuit 1326 as depicted in Fig. 15. When local control unit 1310 receives the desired gain setting from adjuster ADC 1314 as described above, it converts the received setting to a digital command to be transmitted to gain adjustment circuit ("GAC") DAC 1510. The digital command may be derived from a look up table or the like that equates incoming desired gain settings to corresponding GAC DAC 1510 commands. The GAC DAC 1510 receives its digital command and converts it to an analog signal that is applied to one or more GAC LEDs 1512. GAC LEDs 1512 may be any commercially available LEDs such as, but not limited to, a Lumex SML-LX0603SRW LED. The light generated by GAC LEDs 1512 varies based upon the digital command received from recorder local control unit 1310.

[00133] The light generated by GAC LEDs 1512, as well as the audio received locally from audio input device 1316 is received by recorder preamp 1324. In this embodiment of the present invention, recorder preamp 1324 is a preamplification circuit. This circuit includes, *inter alia*, one or more photocells 1514 and a plurality of amplifiers 1516. Photocells 1514 may be any commercially available photocell such as, but not limited to, cadmium sulfide ("CdS") photocells such as Silonex NSL-6112 photoconductive cells. Each photocell 1514 varies its resistance between two terminals based upon the amount of photons it receives. This varying resistance varies the analog signals applied to the input terminals of the plurality of amplifiers 1516 to vary the amplification of the audio received from audio input device 1316 as desired by a user of recording system 100. The amplified audio, as output by amplifiers 1516, is then transmitted to recorder preamp ADC 1322. Recorder preamp ADC 1322 converts the amplified audio signals to digital form for transmission to recorder control unit 1310. It should be noted that the depicted gain adjustment and preamplification circuits are merely exemplary and any other compatible hardware or software capable of adjusting gain and/or amplifying analog signals may be substituted without departing from the scope of the present invention.

[00134] In the depicted embodiment, four (4) adjusters 1312 are provided to facilitate adjustment of local or remote audio gain, or amplification. However, a greater or lesser quantity of adjusters 1312 may be provided without departing from the scope of the present invention. Additionally, in an alternate embodiment of the present invention, a single adjuster

1312 may be employed to adjust the local or remote gain, or amplification. In such an embodiment, the recorder audio input port 1318 or the audio input port 314 of the local audio device 102 to be adjusted is selected (via software or hardware) prior to use of adjuster 1312 to set the respective gain or amplification.

5 [00135] Timecode port 1320 is electrically connected to recorder local control unit 1310 and is provided to transmit timecode information from recorder 108 to another component of recording system 100 (e.g., RCU 104) as needed. For example, if recorder 108 is acting as a master timecode generator, RCU 104 may be hardwired to recorder 108 to receive timecodes from recorder 108 for synchronization purposes. Additionally, timecode port 1320 may
10 transmit data packets to RCU 104 containing commands to remotely control the functions of local audio devices 102 such as, but not limited to, the gain, or amplification, of audio recorded at local audio device 102 as discussed in greater detail below with regards to Fig. 11.

[00136] Turning now to Fig. 11, depicted is a process 1100 for remotely generating commands for one or more local audio devices 102. In our exemplary embodiment, these
15 commands are generated by a user at recorder 108, however, alternate embodiments of the present invention are envisioned in which such commands are generated by another component of recording system 100 such as, but not limited to, mixer 109 as discussed in greater detail below. In the exemplary embodiment, process 1100 is executed by recorder local control unit 1310 and begins at 1102. Process 1100 then proceeds to step 1104, at which the value of the
20 variable N is set to equal a value of zero. Each adjuster 1312 is associated with a unique value of variable N that corresponds to its position relative to other adjusters 1312. For example, since adjuster 1312a is the first adjuster in a row of adjusters 1312 (as read from left to right and as depicted in Fig. 13B), it is assigned a variable N value of one (1). Each subsequent adjuster 1312 is associated with the next higher value of variable N. That is, adjuster 1312b is
25 assigned a variable N value of two (2), adjuster 1312c is assigned a variable N value of three (3), etc.

[00137] Next, at step 1106, the value of variable N is incremented by one (1). Therefore, on the first iteration of process 1100, the process is performed for the adjuster 1312 having a variable N value of one (1) (i.e., adjuster 1312a). Each time the process returns to step 1106,
30 the value of N is incremented by one (1) to perform the same process on the next adjuster. At the point that process 1100 has been performed for all adjusters 1312 (i.e., at step 108 when the value of N exceeds the value of the variable N of the adjuster having the highest variable N

value), process 1100 returns to 1104 at which it resets the value of variable N to zero to restart the process beginning with the adjuster having the lowest variable N value. In this manner, the position of all adjusters 1312 are continually read and processed, as required, in a sequential manner and as discussed in greater detail below. This ensures that recording system 100 is constantly provided with updated information as described in greater detail below.

[00138] Next, at step 1108, the current value of N is compared to the total number of knobs. In the exemplary embodiment of the present invention depicted in Fig. 13B, four (4) adjusters 1312 are provided. Consequently, in the present embodiment, if the value of variable N is less than or equal to the value of four (4), then one or more adjusters 1312 have not yet been processed. Therefore, process 1100 proceeds to 1110 and continues to process the next adjuster (i.e., the adjuster having a variable N value equal to the current value of variable N).

Alternatively, if the value of variable N is greater than four (4), then the position of each adjuster 1312 has been read and processed, and process 1100 returns to step 1104. At 1104, the value of variable N is reset to zero (0) to allow steps 1104 through 1124 to be repeated for all adjusters 1312 beginning with the adjuster 1312 having a variable N value of one (1).

[00139] Next, at step 1110, the position of the adjuster 1312 corresponding to the current value of N is read. As discussed in greater detail above with regards to Figs. 13A and 13B, in the exemplary embodiment of the present invention depicted herein, each adjuster 1312 is a knob coupled to a dedicated adjuster ADC 1314, the latter of which is coupled to recorder local control unit 1310. As a user turns the knob of an adjuster 1312 in a clockwise or counterclockwise direction, the electrical resistance of its variable resistor changes. At step 1110, adjuster ADC 1314 measures the voltage across each adjuster 1312 and converts it to a numeric digital value. More specifically, adjuster ADC 1314 measures the voltage across a wiper of adjuster 1312 and converts it to a numeric digital value corresponding to the measured level of voltage. This digital value is then read by recorder local control unit 1310, and it corresponds to the gain desired by the user. However, alternate methods of reading a gain value desired by a user may be substituted without departing from the scope of the present invention. For example, a user may set a desired gain value via a touch screen (i.e., a display screen that is sensitive to the touch of a finger, stylus, or the like). In such an embodiment, since a touch screen is a digital device, the recorder local control unit may directly read the digital information entered by the user via the touchscreen.

[00140] In one embodiment of the present invention, the absolute gain able to be set by a particular adjuster 1312 is limited to a range of possible values to prevent an erroneous setting that might severely impact the quality of the audio received from a particular microphone. That is, the position of each adjuster 1312 is limited to a value between an absolute lowest gain and an absolute highest gain. These limits may be incorporated using a plurality of methods. For example, physical stops may be incorporated to prevent an adjuster 1312 from exceeding a predetermined allowed physical rotation. Alternatively, electrical high and low limits may be applied to adjuster ADC to prevent its output from exceeding, or falling below, predetermined limits. Or, recorder local control unit 1310 may be programmed to override a value received from 1314 when it exceeds, or falls below, a predetermined limit. In such a scenario, recorder local control unit 1310 may defer to a pre-programmed fallback value. Other methods may also be substituted without departing from the scope of the present invention.

[00141] Process 1100 then proceeds to step 1112, at which it is determined whether the current adjuster 1312 is set to local or remote trim mode. As discussed above in greater detail, in the depicted embodiment of the present invention, each adjuster 1312 is associated with a respective recorder audio input device port 1318. When an adjuster 1312 is set to local trim mode, the respective adjuster 1312 is modifying the gain of the audio received from the audio input device connected to its respective audio input device port 1318. Conversely, when an adjuster 1312 is set to remote trim mode, the respective adjuster 1312 is modifying the gain of the audio received from the audio input device 314 (Fig. 3A) connected to the local audio device 102 associated with the particular adjuster 1312.

[00142] If step 1112 determines that the current adjuster 1312 is set to remote trim mode, process 1100 proceeds to step 1114. At step 1114, the particular adjuster 1312 associated with the current value of N is correlated to a unique local audio device 102. In our exemplary embodiment of the present invention, the local audio device 102 associated with the adjuster 1312 having the current value of N is simply the local audio device 102 having a unit ID equivalent to the value of N . That is, if the current value of N is one (1), the corresponding adjuster is 1312a as discussed above and the corresponding local audio device 102 is the one that has a unit ID of one (1). Therefore, when adjuster 1312a is indexed to remote trim mode, it will remotely adjust the gain of the audio received from audio input device 312 (Fig. 3A) of the local audio device 102 assigned a unit ID of one (1). Similarly, when the value of N is two (2), the current adjuster is adjuster 1312b. And, when adjuster 1312b is indexed to remote trim

mode, it will remotely adjust the gain of the audio received from audio input device 312 (Fig. 3A) of the local audio device 102 assigned a unit ID of two (2) and so on. It should be noted that other methods of correlating an adjuster 1312 to a local audio device 102 may be substituted without departing from the scope of the present invention. Process 1100 then
 5 proceeds to 1116.

[00143] At step 1116, process 1100 combines the absolute value of the gain read from the current adjuster 1312, the unit ID for the corresponding local audio device 102, and other information to create a data packet for transmission to the corresponding local audio device 102. The other information included in the data packet is described in greater detail below with
 10 respect to Fig. 12 and the format of an exemplary data packet is depicted in Fig. 14. To create the data packet, all required data (See Fig. 14) other than the checksum value is sent to a buffer of recorder 108. Then the checksum value is calculated and appended to the data located in the buffer. The data is then transferred to a buffer of transmitter 208 of RCU 104 (See Fig. 2A).

[00144] Next, at step 1118, the data packet generated at step 1116 and contained in the
 15 buffer of transmitter 208 is transmitted to the corresponding local audio device 102 (as determined during step 1114). In our exemplary embodiment of the present invention, RCU 104 is wired to timecode port 1320 of recorder 108, and recorder 108 transmits the generated data packet through this wired connection for transmission wirelessly by RCU 104's RCU transmitter 208. The data packet is received wirelessly at the corresponding local audio device
 20 102 via its local receiver 302, and it is processed as discussed in greater detail below with respect to Fig. 12. Alternate embodiments of the present invention are envisioned in which data is transmitted via a different method including, but not limited to, wireless transmission directly from recorder 108 to the corresponding local audio device. Process 1100 then returns to step 1106, at which the value of the variable N is incremented by one (1) and steps 1108 to 1122 are
 25 repeated.

[00145] If, at step 1112, it is determined that the mode of the current adjuster 1312 is set to local trim mode, process 1100 proceeds to step 1120. On recorder 108, each adjuster 1312 has a corresponding audio input device port 1318. When a particular adjuster 1312 is indexed to local trim mode, it will locally adjust the gain of the audio received from audio input device
 30 1316 (Fig. 13A) connected to the adjuster 1312's corresponding audio input device port 1318. To do this, process 1100 first determines if the absolute value of the gain read from the current adjuster 1312 is different from the current gain value for the corresponding audio input device

port 1318 as stored in recorder memory 1308. If the gain read from the current adjuster 1312 is equal to the current gain value stored in recorder memory 1308 (i.e., no change in the gain value has occurred), then process 1100 returns to step 1106, at which the value of the variable N is incremented by one (1) and steps 1108 to 1122 are repeated.

5 **[00146]** Conversely, if at 1120, the gain read from the current adjuster 1312 is different than the current gain value stored in recorder memory 1308 (i.e., a change in the gain value has occurred), process 1100 proceeds to step 1122. At 1122, the gain value for the corresponding audio input device port 1318 is adjusted to the new value read from the current adjuster 1312. The gain is adjusted via a gain adjustment circuit such as gain adjustment circuit 1326.

10 However, alternate methods of adjusting gain may be substituted without departing from the scope of the present invention. Also, gain may be adjusted incrementally (i.e., in upward and downward steps) rather than absolutely (i.e., setting gain to a specific value) without departing from the scope of the present invention.

15 **[00147]** Process 1100 then proceeds to 1124, at which the new gain value is stored for comparison with future gain values received at a later time. Process 1200 then returns to 1106, at which the value of the variable N is incremented by one (1) and steps 1108 to 1122 are repeated.

20 **[00148]** Process 1100 is executed whenever recorder 108 is receiving power via recorder power supply 1306 as described above. In this manner, process 1100 continuously repeats steps 1104 through 1124 in order to continually adjust all incoming audio with the most up-to-date gain values to optimize the quality of the audio recorded via recording system 100.

25 **[00149]** In our exemplary embodiment, these commands are generated by a user at recorder 108, however, alternate embodiments of the present invention are envisioned in which such commands are generated by another component of recording system 100 such as, but not limited to, mixer 109 as discussed in greater detail below.

30 **[00150]** Mixer 109 may be any commercially available mixing board such as, but not limited to, Zaxcom, Inc.'s Mix-8 or Mix-12 control surfaces. Such a mixer typically would include, *inter alia*, a plurality of audio input ports (e.g., microphone input ports), such as input device port 1318, and a plurality of adjusters, such as adjuster 1312 for local adjustment of the gain, or amplification, of audio received via the audio input ports (e.g., from a microphone or the like connected thereto) generated at each local audio device 102. Such a mixer may also include sliding potentiometers for local adjustment of the received audio amplification as is commonly

known in the art. Additionally, mixer 109 may have the ability to adjust other qualities of the incoming audio (e.g., equalization, bass, treble, etc.) as is commonly known in the art and typically available with similar commercially available products. For example, mixer 109 may also control equalization of audio from each local audio device 102 to boost a certain range of frequencies (e.g., bass, treble, etc.) for improvement of audio quality.

[00151] Referring now to Fig. 12, depicted is a process 1200 for receiving and executing commands at one or more local audio devices 102. Specifically, the exemplary process depicted in Fig. 12 depicts a method for remotely controlling a specific local audio device 102.

A process such as exemplary process 1200 is executed by local control unit 310 (See Fig. 3A) of local audio device 102 whenever the device is receiving power via local power supply 306. Process 1200 is executed in sequence with the other processes performed by local control unit 310 as described in greater detail above.

[00152] Process 1200 begins at 1202 and proceeds to step 1204. At 1204, all local audio devices 102 are indexed to a unique unit ID. Indexing of a unit ID for a particular local audio device 102 may be performed locally by a user via manipulation of its respective keypad 320 or remotely via an RCU such as RCU 104 as discussed in greater detail above with respect to Figs. 3A/3B and Figs. 2A/2B, respectively. As also discussed above, the unit ID identifies the specific one of multiple local audio devices 102 that a user wishes to control. Setting the unit ID to a unique value ensures that the control signals transmitted by recorder 108 are received by the correct and intended local audio device 102. That is, since each adjuster 1312 is assigned to a particular unit ID, recorder 108 is programmed to transmit and gain adjustments performed via a particular adjuster 1312 to the local audio device 102 having the unit ID to which the particular adjuster 1312 has been assigned. Or, alternatively, multiple local audio devices 102 may be assigned an identical unit ID code in order to control several local audio devices 102 with the same commands simultaneously as a group.

[00153] Next, process 1200 proceeds to step 1206, at which a specific one of the local audio devices 102 receives a data stream via its local receiver 302 in a manner discussed in greater detail above with reference to Fig. 3B. Although steps 1206 through 1224 will be discussed with respect to a specific one of the local audio devices 102, all local audio devices simultaneously and independently perform these steps in the same manner.

[00154] In the embodiment of the present invention depicted in Figs. 1 - 15, the data stream received at the local audio device 102 includes a plurality of binary data packets that are sixteen

(16) bytes in length. In one embodiment, the data stream is sent by RCU 104's RCU transmitter 208 (as discussed in greater detail above with respect to Fig. 11) at a rate of 2000 data packets per second via 2.4 GHz RF transmission. However, alternate embodiments of the present invention are envisioned in which the data stream is sent by at a different rate of packets per second and/or a different frequency. Also, although the depicted embodiment of the present invention transmits a data stream from recorder 108, such a data stream may be alternatively created and/or transmitted from other components of recording system 100 including, but not limited to, mixer 109.

[00155] At step 1208, process 1200 begins parsing each data packet of the data stream received by local transmitter 308. The data packets are sixteen (16) bytes in length and are comprised of a plurality of 16 bit words. That is, each data packet is a string of binary digits 128 characters in length divided into eight segments that are sixteen (16) bits (i.e., sixteen digits) or two (2) bytes in length. Local control unit 310 parses each segment of sixteen (16) digits as a word. As illustrated in Fig. 14, one exemplary data packet includes eight word lengths of data and each word communicates specific information to local control unit 310 as further discussed below.

[00156] Process 1200 then proceeds to 1210, at which it determines if the data packet is a control packet by parsing the first word of the data packet (i.e., word #0). The first word serves as a control word to indicate if the data packet is a control packet or some other packet including, but not limited to, a timecode packet (i.e., a packet utilized to transmit a master timecode between components of recording system 100) or an audio packet (i.e., a packet utilized to transmit audio between components of recording system 100). If all of the bits in word #0 are zero (0), then the data packet is a timecode packet and its purpose is to transmit a master timecode to local audio device 102. If all of the bits in word #0 are one (1), then the data packet is a control packet and its purpose is to remotely control one or more functions of local audio device 102 as described in greater detail herein. Alternatively, if the bits of word #0 are some combination of zeros (0) and ones (1), then the data packet is an audio packet and it is placed in an audio first in first out ("FIFO") queue and sent to a decompression routine. At step 1210, if word #0 of the data packet does not indicate that it is a control packet, process 1200 returns to step 1206 to parse the next data packet in the received data stream and the timecode or audio packet is processed by a separate process (not shown) executed by local control unit 310.

[00157] Alternatively, if step 1210 determines that the data packet is a control packet, process 1200 proceeds to step 1212. At step 1212, process 1200 determines whether the data packet is a valid data packet. In the depicted embodiment, the validity of the data packet is verified by reading the eighth word (i.e., word #7) of the data packet. Word #7 includes a checksum value, which is a value used to ensure data within the data packet has been transmitted without error. The checksum value is created by calculating the binary values in a block of data using a predetermined algorithm and storing the result with the data. When the data is received by local audio device 102, process 1200 calculates a new checksum using the same predetermined algorithm and compares the calculated result to the checksum value. If the calculated result does not match the checksum value, an error has occurred that has affected the validity of the data packet. An invalid data packet may occur, for example, if data is lost during RF transmission or if an error occurs in assembly of the data packet by recorder 108. In such a scenario, process 1200 discards the data packet (i.e., it does not continue processing the data packet and it takes no action relative to the data packet) and returns to step 1206 to parse the next data packet in the received data stream. Alternatively, if, at 1212, the data packet is found to be valid because the calculated result matches the checksum value, process 1200 proceeds to 1214. Although the depicted embodiment of the present invention utilizes a checksum method of validating the data packet, other methods including, but not limited to, the CRC method may be substituted without departing from the scope of the present invention.

[00158] At step 1214, process 1200 determines if the data packet is a duplicate data packet that has previously been received and processed by local audio device 102. In the depicted embodiment of the present invention, all control data packets are transmitted two or more times to ensure reception by the intended local audio device 102. For instance, if a control data packet is received with an incorrect check sum as described in the previous step, it is discarded and its command is not processed by local control unit 310. Therefore, multiple transmissions of identical control data packets facilitate the likelihood that the intended local audio device 102 receives and processes all command data packets. Process 1200 incorporates a tag value to identify duplicate data packets. That is, the tag value for each new control data packet is incremented while each duplicate control data packet has an identical tag value to its original control data packet. In the depicted embodiment of the present invention, the third word (i.e., word #2) of each command data packet indicates the tag value. The first nibble of this word is always equal to F and the second nibble of this word is set equal to the tag value. The first

nibble of this word is set to Fas a placeholder. That is, the value ofF simply fills this portion of the word until it takes on a specific purpose in future upgrades of the invention. Process 1200 reads the second nibble (i.e., bits 5-8) of the third word of the control data packet and compares the tag value to the tag value of the previously received control packet. If the tag value of the current control data packet is identical to the tag value of a previously received control data packet, process 1200 discards the control data packet (i.e., it does not continue processing the data packet and it takes no action relative to the data packet) and returns to step 1206 to parse the next data packet in the received data stream. Alternatively, if, at 1214, the data packet is found to be a new control data packet having a different tag value than the previously processed data packet, process 1200 proceeds to 1216. Although the depicted embodiment of the present invention utilizes a tag value method of identifying duplicated control data packets, other methods may be substituted without departing from the scope of the present invention.

[00159] At 1218, process 1200 determines if the control data packet includes a command for the specific local audio device 102 processing the control data packet. That is, process 1200 reads the second word (i.e., word #1) of the control data packet to determine the unit ID of the local audio device 102 for which the control data packet is intended. The read unit ID is compared to the unit ID of the local audio device 102 processing the control data packet to determine if they are identical. If yes, the control data packet is intended for the processing local audio device 102 and it is processed. If no, the control data packet is intended for another local audio device 102 and it is discarded. Every data packet received by a single local audio device 102 may not be applicable to that device. For example, if a gain adjustment is made at adjuster 1312b and the local audio device 102 receiving the control data packet is assigned to adjuster 1312a, then the control data packet is not intended for that local audio device 102 and it is discarded.

[00160] If it is determined that the control data packet is intended for a different local audio device 102 than the one processing the control data packet, process 1200 discards the data packet (i.e., it does not continue processing the data packet and it takes no action relative to the data packet) and returns to step 1206 to parse the next data packet in the received data stream.

Alternatively, if, at 1218, it is determined that the received control data packet is intended for the processing local audio device 102, process 1200 proceeds to 1220. Although the depicted embodiment of the present invention utilizes a comparison method of ensuring the received

control data packet is intended for the processing local audio device 102, other methods may be substituted without departing from the scope of the present invention.

[00161] Next, at step 1220, process 1200 determines what type of command is to be performed. Process 1200 determines the type of command by reading the data string contained in the second byte of word #2 through word #6 of the data packet. The data string begins with the command to be performed. For example, if the data string begins with UBCMD_GAIN, then the command is a gain adjustment command. In this scenario, the data following UBCMD_GAIN in the data string indicates the absolute numerical value of the new gain setting, and the data string is null terminated to indicate the end of the string. Once process 1200 has read the type of command present in the data string, process 1200 proceeds to 1222 to further process the command.

[00162] At 1222, the command read in step 1220 is processed. The steps involved in processing the command will vary based upon the type of command. In our exemplary embodiment in which the command is an adjust gain command, the new gain value contained in the data string of the current data packet is compared to the existing gain value stored in memory 332 of the respective local audio device 102. If the two values are identical, no adjustment is required and process 1200 returns to step 1206 to parse the next data packet in the received data stream. Alternatively, if, at 1222, it is determined that the new gain value is different from the existing gain value stored in memory 332 of the respective local audio device 102, the gain value for the respective local audio device 102 is adjusted to the new value received wirelessly in steps 1206 through 1220. The gain is adjusted by extracting the gain change byte (i.e., the byte of data associated with word #3) from the data string and converting it to a voltage to be transmitted to gain adjustment circuit 1326 as discussed in greater detail above with respect to Fig. 3A. The voltage to which it is converted may be obtained from a look up table or the like that correlates the value in the gain change byte to a specific voltage that will effect the desired gain change. However, alternate methods of adjusting gain may be substituted without departing from the scope of the present invention. Also, gain may be adjusted incrementally (i.e., in upward and downward steps) rather than absolutely (i.e., setting gain to a specific value) without departing from the scope of the present invention.

[00163]

[00164] After the command received in the data string is processed, process 1200 proceeds to 1224 at which data associated with the processed command, if any, is stored in memory 332.

In our gain adjustment example, the new gain value is stored for comparison with new gain values received at a later time. Process 1200 then returns to 1206 to parse the next data packet in the received data stream.

[00165] In the depicted embodiment of the present invention, commands other than a

5 UBCMD_GAIN may be incorporated in a command data packet for receipt and processing by an intended local audio device 102. For example, three such commands include the UBCMD_SCENE, UBCMD_TAKE and UBCMD_REEL commands. These commands transmit the name of the scene, the take number, or the reel number from recorder 108 to the intended local audio device 102. The name of the scene is the title of the scene as determined
10 by a producer or other production personnel. The take number is the numerical designator that identifies the current take being filmed. The reel number indicates the numerical designator that identifies the medium upon which the video being filmed is recorded (e.g., a reel, CD, DVD, etc.). When this information is transmitted to the local audio devices 102, they can incorporate the data in audio packets to facilitate later identification of the audio packet and/or
15 matching of the audio packet to the appropriate video data. That is, since the video being recorded simultaneously with the audio is labeled with scene, take, and reel identifiers, labeling recorded audio with the same identifiers allows the video and audio to be more easily combined post-recording.

[00166] After process 1200 reads a UBCMD_SCENE, UBCMD_TAKE or UBCMD_REEL
20 command at step 1220, it proceeds to step 1222, at which it processes this command.

Processing of the command includes reading the data that follows the command in the data string to determine the name or number of the scene, take, or reel, respectively. Process 1200 then proceeds to 1224, at which the read data is saved to memory 332 in a predetermined location associated with the particular data to be saved thereto. Once the data is saved to the
25 predetermined location, process 1200 returns to 1206 to parse the next data packet in the received data stream. Saving of the scene, take, and/or reel data to memory 332 allows the process executed by local control unit 310 in which audio packets are created to retrieve the data during the audio packet creation process for incorporation in the audio packet.

[00167] Another exemplary command that may be incorporated in a command data packet
30 for receipt and processing by an intended local audio device 102 is UBCMD_SEGNUM. This command transmits the numerical designator that identifies the audio segment to the intended local audio device 102. In the depicted embodiment of the present invention, the segment

number is assigned in sequential order to each new audio segment, and it may be utilized, for example, for segmentation of large audio files as discussed above with respect to Figs. 9 and 10. However, other methods of assigning numerical identifiers may be substituted without departing from the scope of the present invention.

5 **[00168]** After process 1200 reads a **UBCMD_SEGNUM** command at step 1220, it proceeds to step 1222, at which it processes this command. Processing of the command includes reading the data that follows the command in the data string to determine the segment number. Process 1200 then proceeds to 1224, at which the read data is saved to memory 332 in a predetermined location associated with the current segment number. Once the data is saved to the
10 predetermined location, process 1200 returns to 1206 to parse the next data packet in the received data stream. Saving of the segment number to memory 332 allows the process executed by local control unit 310 in which audio packets are created to retrieve the data during the audio packet creation process for incorporation in the audio packet.

15 **[00169]** Yet another exemplary command that may be incorporated in a command data packet for receipt and processing by an intended local audio device 102 is
UBCMD_TRANSPORT. This command transmits the transport mode of a local audio device 102 to the intended local audio device 102. In the depicted embodiment of the present invention, the transport mode may be play, record, or stop. The transport mode is determined by a user of audio recorder 108. However, other methods of assigning a transport mode to a
20 local audio device 102 such as, but not limited to, automatically assigning such modes may be substituted without departing from the scope of the present invention.

25 **[00170]** After process 1200 reads a **UBCMD_TRANSPORT** command at step 1220, it proceeds to step 1222, at which it processes this command. Processing of the command includes reading the data that follows the command in the data string to determine the whether
the transport mode is play, record, or stop. Process 1200 then proceeds to 1224, at which the read data is saved to memory 332 in a predetermined location associated with the current transport mode. Once the data is saved to the predetermined location, process 1200 returns to 1206 to parse the next data packet in the received data stream. Saving of the segment number to memory 332 allows a process executed by local control unit 310 in which transport mode is
30 required to retrieve the data during execution of the process to allow the process to execute in accordance with the current transport mode. Examples of processes in which transport mode data is utilized include, but are not limited to, processes 400, 600 and 700 as described in

greater detail above. For instance, step 412 of process 400 determines if the transport value is record and, if so, proceeds with operation of recording system 100 in a synchronous timecode generator mode as discussed in greater detail above with respect to Fig. 4. Similarly, step 712 of process 700 determines if the transport value is record and, if so, proceeds with operation of recording system 100 in asynchronous timecode generator mode as discussed in greater detail above with respect to Fig. 7. A transport mode value of play may be utilized, for example, by process 600 in step 610 to determine if playback of audio has been requested by recorder 108 due to a loss of audio as discussed in greater detail above with respect to Fig. 6.

[00171] UBCMD_CHANNEL is another exemplary command that may be incorporated in a command data packet for receipt and processing by an intended local audio device 102. This command transmits the frequency at which the receiving local audio device 102 should operate. In the depicted embodiment of the present invention, this frequency is transmitted as a four digit value. For example, a frequency of 5555 indicates that the desired RF frequency is 555.5 MHz. The desired frequency is determined by a user of recording system 100 based upon the frequency at which the least interference will be encountered. However, other methods of assigning a frequency to a local audio device 102 such as, but not limited to, automatically assigning such frequencies may be substituted without departing from the scope of the present invention.

[00172] After process 1200 reads a UBCMD_CHANNEL command at step 1220, it proceeds to step 1222, at which it processes this command. Processing of the command includes reading the data that follows the command in the data string to determine the desired frequency. Local control unit 310 transmits a numerical value corresponding to the desired frequency to a direct digital synthesizer ("DDS"). The DDS compares the received frequency data to the existing frequency at which the local audio device 102 is operating. If they are equal, no change is made. If they vary, the DDS adjusts the frequency at which local transmitter 308 is operating via a phase-locked loop.

[00173] Process 1200 then proceeds to 1224, at which the new frequency data is saved to memory 332 in a predetermined location associated with operating frequency. Once the data is saved to the predetermined location, process 1200 returns to 1206 to parse the next data packet in the received data stream.

[00174] Yet another exemplary command that may be incorporated in a command data packet for receipt and processing by an intended local audio device 102 is UBCMD_IFBMIX.

This command transmits the ratio of amplification of remotely and locally received audio. In the depicted embodiment of the present invention, this ratio is the amplification of locally received audio (i.e., audio received via audio input device port 314 divided by the amplification of remotely received audio (i.e., audio received via local receiver 302 such as audio received from RCU 104 as described in greater detail above). This amplification ratio is adjusted by a user of recording system 100. However, other methods of adjusting the amplification ratio such as, but not limited to, automatically assigning such ratio may be substituted without departing from the scope of the present invention.

[00175] After process 1200 reads a UBCMD_IFBMIX command at step 1220, it proceeds to step 1222, at which it processes this command. Processing of the command includes reading the data that follows the command in the data string to determine the amplification ratio. Process 1200 then proceeds to 1224, at which the read data is saved to memory 332 in a predetermined location associated with the amplification ratio. Once the data is saved to the predetermined location, process 1200 returns to 1206 to parse the next data packet in the received data stream. Saving of the amplification ratio to memory 332 allows a process executed by local control unit 310 in which the level of amplification of remotely generated audio is adjusted relative to the level of amplification of locally generated audio.

[00176] Turning now to Figs. 16 - 18, depicted are processes 1600 and 1700 and circuitry 1800 for automatically adjusting the power output of one or more local audio devices such as local audio devices 102 described above. It may be advantageous to make such power output adjustments for a variety of reasons including, but not limited to: reduction in the size, weight, and/or heat produced by a local audio device; elimination or minimization of health risks to a wearer of the local audio device (such as those caused by exposure to the heat generated by the device when worn and/or constant body exposure to high power radio frequency waves); reduction in RF emissions; reduction in interference between a plurality of local audio devices (due to reducing the power output of those devices not in use, thereby eliminating or minimizing their ability to interfere with in use devices); and conservation of battery power/life due to decreased power consumption.

[00177] Fig. 16 depicts a process for automatically creating and transmitting high and low power commands used to adjust the power output of one or more local audio devices. Process 1600 begins at 1602, at which a system such as system 100 is in the process of recording as described above. In the exemplary embodiment described herein, process 1600 is executed by

a control unit such as recorder control unit 1310 as described above with respect to Figs. 13A and 13B. However, alternate embodiments of the present invention are envisioned in which process 1600 is executed by hardware, a combination of hardware and software, and/or by a component of system 100 other than recorder 108.

5 **[00178]** After 1602, process 1600 proceeds to step 1604, at which the status of the record mode is queried. In the depicted embodiment, the internal record status of a recorder such as recorder 108 is queried to determine if it is currently recording. Initiation and cessation of recording may be performed by a user in any one of a variety of ways including, but not limited to, a local control panel integral to the recorder and via a remote control unit such as, for
10 example, remote control unit 104 as described above with reference to Figs. 2A and 2B. In the depicted embodiment, recording is enabled or disabled by indexing switches (e.g., the flat illuminated pushbuttons 1313e and 1313g as discussed above with respect to Fig. 13B) to recording or non-recording mode. The status of the switch is read directly by the recorder's local control unit (e.g., recorder control unit 1310).

15 **[00179]** If process 1600 determines that the recorder is not currently recording, process 1600 proceeds to 1606, at which it generates a low power command to be transmitted to all local audio devices. The low power command may be encoded for transmission along with other commands and/or audio data via a data packet (e.g., the data packet depicted in Fig. 14 as discussed above) or it may be a dedicated command sent individually (e.g., in the form of the
20 data packet depicted in Fig. 14 as discussed above). In embodiments in which all of the local audio devices are switched to low or high power, the low power command may simply notify the local audio device that the recorder is not in record mode. Compatible local audio devices are pre-programmed to read this record status and index themselves to low power mode as discussed below. It is important to note that low power may be any power level less than the
25 current high power level including, but not limited to, zero power. Conversely, high power may be any power level higher than the current low power level.

30 **[00180]** Process 1600 then proceeds to 1608. In the depicted embodiment, the low power command(s) are transmitted to all local audio devices via an RF transmitter. The RF transmitter may be integral to the recorder or it may be integral to another device coupled to the recorder, for example, a receiver such as receiver 106. However, alternate embodiments are envisioned in which the low power command(s) are transmitted in a manner other than RF including, without limitation, via a hardwired link or via a non-RF transmitter. Also, alternate

embodiments are envisioned in which low power command(s) are sent to a predetermined subset of the local audio devices rather than all local audio devices.

[00181] Alternatively, if at 1604, it is determined that the recorder is recording, process 1600 proceeds to 1614 at which process 1600 then queries the recording status of one, all, or some subset of the local audio devices (e.g., local audio devices 102) that are a part of the recording system (e.g., system 100). In one embodiment of the present invention, this query is performed by determining status parameters within the recorder to determine which local audio devices are currently recording. For example, if an event being recorded has (4) individuals each equipped with his or her own dedicated local audio device, the final recording will have four (4) audio inputs recorded by the recorder. However, the number of individuals in any given scene or portion of the event may be less than four (4). In a scene in which, for example, only two (2) individuals are being recorded, the recorder is manually programmed to record two inputs rather than four inputs. In such a scenario, the local audio devices that are not being recorded may be indexed to low power.

[00182] In the exemplary embodiment of the present invention, the record status for each track is determined via an audio input/output routing table, wherein each input is associated with a particular local audio device. The association of inputs to local audio devices is typically a 1:1 ratio, and it is programmed by a sound engineer or the like at the recorder prior to recording. In such embodiments, whether a local audio device is in recording mode may be determined by querying the input/output routing table to determine whether the input associated with the local audio device is being routed to an output. If yes, the local audio device is determined to be in recording mode. If the input is not being routed to an output, then the local audio device associated with that input is determined to not be in recording mode. However, alternate methods of determining the recording status of each local audio device may be substituted without departing from the scope of the present invention.

[00183] At step 1614, process 1600 reads the actual tracks being recorded for the particular scene or portion of the event to identify those local audio devices in use for the particular scene/portion. This allows the high power command created in step 1616 to be sent only to those local audio devices currently utilized, which allows the local audio devices that are not in use for that scene to remain at low power. Allowing unused local audio devices to remain at low power has many advantages including, but not limited to: elimination or minimization of interference and/or intermodulation; reduction in the size, weight, and/or heat produced by a

local audio device; elimination or minimization of health risks to a wearer of the local audio device; reduction in RF emissions; reduction in interference between a plurality of local audio devices; and conservation of battery power/life. Intermodulation is the undesirable mixing of **RF** signals that is typically caused by receiver overload (or recorder overload in cases in which the receiver is integral to the recorder). Intermodulation is minimized or eliminated since the signals at low power are less likely to mix with the signals indexed to high power. Furthermore, interference is reduced by eliminating or minimizing **RF** communication between the recorder transmitter (or the transmitter of a receiver coupled to the recorder) and all local audio devices whose audio tracks are not currently being recorded.

10 [00184] In an alternate embodiment, process 1600 determines the local audio devices to be set to high power (i.e., those currently recording) by polling the devices via one or more commands sent via RF transmission or the like. Such commands may query the record status or other status of the local audio device to determine whether to index the local audio device to high or low power. Or, in more complicated embodiments, specific data relevant to power requirements of the local audio device may be stored in one or more registers of the local audio device for query by process 1600. That is, local audio device may be specifically programmed to direct the recorder as to the optimal power requirement as determined by the other operating parameters of the local audio device, which allows the recorder software to create a command specific to the local audio device to direct it to its optimum performance level.

20 [00185] In yet another simplified alternate embodiment, step 1614 may be eliminated. In such an embodiment, only the record status of the recorder is queried without regard for which audio inputs are being individually recorded and/or which local audio devices are being recorded. In this embodiment of the invention, all local audio devices are commanded to high power whenever the recorder is in record mode (i.e., any or all inputs are being recorded by the recorder as determined at step 1604). In such an embodiment, the high and low power commands broadcast the record status of the recorder (i.e., disabled or enabled), and the local audio devices are programmed to automatically read the recorder's record status and adjust their power to low (when recording is disabled) or high (when recording is enabled).

25 [00186] Once process 1600 has determined which local audio devices will receive a high power command, process 1600 proceeds to 1616 at which the high power command(s) are generated. The high power command may be encoded for transmission along with other commands and/or audio data via a data packet (e.g., the data packet depicted in Fig. 14 as

discussed above) or it may be a dedicated command sent individually via a data packet or the like (e.g., in the form of the data packet depicted in Fig. 14 as discussed above). In embodiments in which all of the local audio devices are switched to low or high power, the high power command may simply notify the local audio device that the recorder is in record mode. Compatible local audio devices are pre-programmed to read this record status and index themselves to high power mode as discussed below. Also, in embodiments of the present invention in which less than all of the local audio devices may receive a high power command, the command may be packaged with a local audio device identifier such as a unit identification number or the like. This allows each local audio device to determine whether a specific high (or low) power command is intended for that specific local audio device.

[00187] Process 1600 then proceeds to step 1608, at which the generated high power command(s) are transmitted to the local audio devices for processing by those local audio devices selected in step 1614. Step 1608 is described in greater detail above. However, alternate simpler embodiments are also envisioned in which all local audio devices are sent high power command(s) whenever the recorder is in recording mode.

[00188] After step 1608, process 1600 returns to 1604 and again queries the record status of the recorder. That is, process 1600 continually runs during the operation of a system such as system 100 to continuously and dynamically adjust the power outputs thereof for maximum efficiency. This also ensures that any local audio devices that have been indexed to low power output are immediately indexed back to high power output if the audio input associated with those local audio devices is switched to recording mode by a sound engineer or other user of the recorder.

[00189] In the exemplary embodiment discussed herein, a user may index a recorder such as recorder 108 to one of three modes: enable automatic power control feature (i.e., allow power to be dynamically adjusted between low and high as described herein with respect to Figs. 16-18); index all local audio devices to high power (i.e., all local audio devices are indexed to high power by, for example, repeating steps 1616 and 1608 as described above without regard for recording status); and index all local audio devices to low power (i.e., all local audio devices are indexed to low power by, for example, repeating steps 1606 and 1608 as described above without regard for recording status). This allows a user to either manually control the power of the local audio devices via a recorder or to allow the recorder to automatically and dynamically adjust the local audio devices to low or high power.

[00190] Process 1700 depicts a process for receiving and processing a low or high power command at a local audio device such as local audio device 102. In the exemplary embodiment described herein, process 1700 is executed by a control unit such as local control unit 310 as described above with respect to Figs. 3A and 3B. However, alternate embodiments of the present invention are envisioned in which process 1700 is executed by hardware and/or a combination of hardware and software.

[00191] Process 1700 starts at 1702, at which a low or high power command is received from an external device such as a recorder, remote control unit, or the like. Next, at 1704, the low or high power command is processed. In the exemplary embodiment, the command is received via a local receiver such as local receiver 302 as described above with respect to Figs. 3A and 3B, and it is decoded via a local control unit such as local control unit 310, as also described above with respect to Figs. 3A and 3B, to determine the necessary power level adjustments.

[00192] Next, at 1706, the power output of the local audio device is adjusted. In the depicted embodiment, this is implemented by adjusting amplifier operating parameters including, but not limited to, voltage levels (e.g., bias and source voltage levels) and/or RF drive levels. One such method of adjusting these parameters is described below with respect to Fig. 18.

Turning now to Fig. 18, depicted is an exemplary embodiment of a portion of a local transmitter circuit 1800 in accordance with one embodiment of the present invention.

Transmitter circuit 1800 includes, *inter alia*, transistor 1802, which receives analog audio from the local audio device's local control unit (e.g., local control unit 310) after it has been converted to analog form by transmitter DAC 1812. In one exemplary embodiment, transmitter DAC 1812 is a MAX1850 high speed DAC as manufactured by Maxim Integrated Products. However, other compatible digital to analog converters may be substituted without departing from the scope hereof

[00193] Transistor 1802 amplifies the audio received from transmitter DAC 1812 and outputs same at point RFout 1806. In the exemplary embodiment depicted in Fig. 18, transistor 1802 is a pseudomorphic High Electron Mobility Transistor ("phEMT"); however, other compatible transistors or RF amplifier chips may be substituted. Also, in this exemplary embodiment, capacitors 1814, 1816, 1820, 1822, 1824, 1828, 1830, 1832, and 1834 have a fixed capacitance of 0.1 uF, 100 uF, 100 pF, 100 pF, 0.01 uF, 100 pF, 0.01 uF, 100 pF, and 10 uF, respectively, and resistor 1838 has a resistance of 20 ohms. The remaining capacitors,

inductors, and resistors, namely capacitor 1826, inductor 1838, inductor 1840, and inductor 1842 are initially set during manufacture to values of 100 pF, 22 nH, 12 nH, and 82 nH, respectively. Subsequently, during calibration of transmitter circuit 1800, each of these values is modified as necessary to achieve an RF output of approximately 17+ dBm when in low power mode and approximately 21+ dBm when in high power mode. That is, the values of capacitor 1826, inductor 1838, inductor 1840, and inductor 1842 of transmitter circuit 1800 are individually adjusted for each local audio device to achieve the correct dBm output levels as further discussed below. In this exemplary embodiment, low and high power commands may index the incoming analog audio signal received from transmitter DAC 1812 to approximately 4 dBm in high power mode and approximately 0 dBm in low power mode. That is, the local audio device's local control unit adjusts the level of the audio signal created by transmitter DAC 1812 via direct control of the parameters of transmitter DAC 1812 by local control unit 310.

[00194] Additionally, in the depicted embodiment, high and low power commands may index the input voltage at V_{in} 1810 to approximately 4.5V in high power mode and to approximately 3.5V in lower power mode. Low and high power commands may also index the gate voltage applied to point V_g 1808 to approximately 0.5 V in high power mode and approximately 0.7 V in low power mode. Adjustment of the voltage output of the input voltage at V_O 1810 and the gate voltage at point V_g 1808 in combination with the factory calibrated values of capacitor 1826, inductor 1838, inductor 1840, inductor 1842, and resistor 1834 allow low and high power commands to achieve an RF output of +21 dBm in high power mode and +17 dBm in low power mode. That is, when the components of transmitter amplification circuit are properly calibrated, the resulting value of the dBm RF output at 1806 is +17 dBm for low power mode and 21+ dBm for high power mode.

[00195] These values stated above are merely exemplary and alternate values may be substituted without departing from the scope hereof

[00196] Turning now to Figure 19, depicted is an alternate embodiment of a process 1900 for automatically creating and transmitting high and low power commands used to adjust the power output of one or more local audio devices. Process 1900 begins at 1902, at which a system such as system 100 is in the process of recording as described above. In the exemplary embodiment described herein, process 1900 is executed by a control unit such as recorder control unit 1310 as described above with respect to Figs. 13A and 13B. However, alternate

embodiments of the present invention are envisioned in which process 1900 is executed by hardware, a combination of hardware and software, and/or by a component of system 100 other than recorder 108.

[00197] After 1902, process 1900 proceeds to step 1904 at which the channel variable "CH" is set to equal zero. Next, at step 1906, process 1900 increments the current value of the CH variable by one. Next, at step 1908, process 1900 determines if the value of the channel variable is greater than the total number of available channels. In the depicted embodiment, recorder 108 has the ability to record eight (8) channels or inputs. Additionally, each local audio device is assigned a channel identification number from one (1) to eight (8). Each value of the channel variable (i.e., 1, 2, 3, 4, 5, 6, 7, and 8) is associated with the recorder channel and local audio device having the same value. For example, when the value of the channel variable is 1, the process is generating low or high power commands for the local audio device that is assigned a channel identification number of 1. That is, as further discussed below, process 1900 uses the value of the channel variable to continually generate specific high or low power commands for each local audio device associated with the current channel. While the depicted embodiment includes eight (8) recording channels, alternate embodiments of the present invention are envisioned in which a greater or lesser number of recording channels may be substituted without departing from the scope thereof. Also, methods of selecting a local audio device other than a channel variable may be substituted.

[00198] As is further discussed below, as process 1900 is executed, steps 1906 through 1918 are repeated multiple times. Therefore, step 1908 is necessary to determine if the value of the channel variable has reached a value greater than the total number of available channels. In the depicted embodiment, if step 1908 of process 1900 determines that the value of the channel variable is greater than eight (8), then process 1900 returns to step 1904, at which the channel variable is set to zero.

[00199] Alternatively, if at 1908 the value of the channel variable is not greater than eight, process 1900 proceeds to step 1910 at which the recording status of the local audio device associated with the current channel variable value is queried to determine if it is enabled for recording on the master recorder. In one embodiment, this is done by querying the recorder to determine if the channel is routed to an output as discussed above with respect to Fig. 16. However, other methods of determining recording status may be substituted without departing from the scope of the present invention.

[00200] If, at 1910, the status of the current local audio device is not enabled, process 1900 proceeds to 1914, at which it generates a low power command to be transmitted to the local audio device associated with the current channel value. The low power command may be encoded for transmission along with other commands and/or audio data via a data packet (e.g., the data packet depicted in Fig. 14 as discussed above) or it may be a dedicated command sent individually (e.g., in the form of the data packet depicted in Fig. 14 as discussed above).

[00201] Process 1900 then proceeds to 1918. In the depicted embodiment, the low power command is transmitted to the current local audio device via an **RF** transmitter. The RF transmitter may be integral to the recorder or it may be integral to another device coupled to the recorder, for example, a receiver such as receiver 106. However, alternate embodiments are envisioned in which the lower power command(s) are transmitted in a manner other than RF including, without limitation, via a hardwired link or via a non-RF transmitter. Also, alternate embodiments are envisioned in which low power command(s) are sent to a predetermined subset of the local audio devices rather than to all local audio devices.

[00202] Alternatively, if step 1910 determines that the recording status of the local audio device associated with the current channel variable value is enabled as discussed above, process 1900 proceeds to step 1912, at which the status of the recorder is queried. In the depicted embodiment, the internal record status of a recorder such as recorder 108 is queried to determine if it is currently recording. Initiation and cessation of recording may be performed by a user in any one of a variety of ways including, but not limited to, a local control panel integral to the recorder and via a remote control unit such as, for example, remote control unit 104 as described above with reference to Figs. 2A and 2B. In the depicted embodiment, recording is enabled or disabled by indexing switches (e.g., the flat illuminated pushbuttons 1313e and 1313g as discussed above with respect to Fig. 13B) to recording or non-recording mode. The status of the switch is read directly by the recorder's local control unit (e.g., recorder control unit 1310).

[00203] If process 1900 determines that the recorder is not currently recording, process 1900 proceeds to 1914, at which it generates a low power command to be transmitted to the local audio device associated with the current channel value as discussed above.

[00204] Alternatively, if at 1912, it is determined that the recorder is recording, process 1900 proceeds to 1916 at which the high power command is generated. The high power command may be encoded for transmission along with other commands and/or audio data via a data

packet (e.g., the data packet depicted in Fig. 14 as discussed above) or it may be a dedicated command sent individually via a data packet or the like (e.g., in the form of the data packet depicted in Fig. 14 as discussed above).

5 [00205] Process 1900 then proceeds to step 1918, at which the generated high power command is transmitted to the current local audio device for processing. Step 1918 is described in greater detail above.

[00206] After step 1918, process 1900 returns to 1906 and again increments the channel variable by one. This allows the local audio device indexed to the next greater channel number to be indexed to high or low power mode. Process 1900 continually runs during the operation
10 of a system such as system 100 to continuously and dynamically adjust the power outputs thereof for maximum efficiency. This also ensures that any local audio devices that have been indexed to low power output are immediately indexed back to high power output if the audio input associated with those local audio devices is switched to recording mode by a sound engineer or other user of the recorder. Although several processes have been disclosed herein as
15 software, it is appreciated by one of skill in the art that the same processes, functions, etc. may be performed via hardware or a combination of hardware and software. Similarly, although the present invention has been disclosed with respect to wireless systems, these concepts may be applied to hardwired systems and hybrid hardwired and wireless systems without departing from the scope of the present invention.

20 [00207] It will be appreciated by those skilled in the art that changes could be made to the embodiments described above without departing from the broad inventive concept thereof. It is understood, therefore, that this invention is not limited to the particular embodiments disclosed, but it is intended to cover modifications within the spirit and scope of the present invention as defined by the appended claims.

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BY: /Morgan D. Golightly/

Date: March 20, 2023

**NON-PROVISIONAL
UTILITY PATENT APPLICATION
TRANSMITTAL - 37 CFR 1.53(b)**

☐ **Duplicate**
(check, if applicable)

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

Attorney Docket No.: ZZ0001.068
First Named Inventor: Glenn Norman Sanders
Total Pages of Transmittal Form: 3

Transmitted herewith for filing is the non-provisional utility patent application entitled:

**Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual
Wireless Multitrack Recording System**

which is:

an ☐ Original; or

a ☒ Continuation, ☐ Divisional, or ☐ Continuation-in-part (CIP)

☒ This Continuation Patent Application claims priority to Non-Provisional Patent Application No. 17/157,436, filed January 25, 2021, which claims priority to Non-Provisional Patent Application No. 16/397,895, filed April 29, 2019, which claims priority to Non-Provisional Patent Application No. 15/225,056, filed August 1, 2016, which claims priority to Non-Provisional Patent App. 14/808,589, filed on July 24, 2015, which claims priority to Non-Provisional Patent Application No. 13/530,040, filed on June 21, 2012, which claims priority to Non-Provisional Patent Application No. 12/838,164, filed on July 16, 2010, which claims priority to Non-Provisional Patent Application No. 11/404,735, filed on April 14, 2006, which claims priority to Non-Provisional Patent Application No. 11/181,062, filed on July 14, 2005.

Enclosed are:

☒ Original Specification (including Abstract) and claims: 60 pages.

☐ Substitute Specification: Clean Version.

☐ Substitute Specification: Marked Up Version

☒ Drawings – 22 pp.

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BY: /Morgan D. Golightly/

Date: March 20, 2023

- ☐ Replacement drawings (formal)
- ☒ Application Data Sheet.
- ☐ Original executed Declaration.
- ☒ Copy of Declaration from prior application.
- ☐ Copy of separate Power of Attorney (including 37 CFR 3.73(b) statement, if applicable).
- ☐ Microfiche computer program (Appendix).
- ☐ Nucleotide and/or Amino Acid Sequence Submission, including:
 - ☐ Computer readable copy ☐ Paper Copy ☐ Verified Statement.
- ☐ Under PTO-1595 Cover Sheet, an assignment of the invention
- ☐ Name of Assignee:
- ☐ Statement under 37 C.F.R. §3.73(b) – 2 pp.
- ☐ Copy of Assignment from prior application 0 pp.
- ☒ Copy of Power of Attorney from prior application – 2 pp.
- ☐ Certified copy(ies) of ____ Application No(s). ____ filed ____ is/are filed:
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- ☒ Small Entity Status
 - ☒ has previously been claimed/established
 - ☐ under 37 C.F.R. §1.27 as ☐ an Independent Inventor, or ☒ a Small Business Concern, or ☐ a Non-Profit Organization.
- ☐ Preliminary Amendment.
- ☐ Information Disclosure Statement Letter – 2 pp.
- ☐ Information Disclosure Statement, PTO/SB/08A or B, and cited references.
- ☐ Non-patent literature
- ☐ Request for Nonpublication of Application Under 35 U.S.C. §122(b)
- ☐ Other:

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES PATENT AND TRADEMARK OFFICE ELECTRONICALLY VIA EFS-WEB ON THE DATE INDICATED BELOW.

BY: /Morgan D. Golightly/

Date: March 20, 2023

- ☐ The Commissioner is not authorized to charge the filing fee at this time as we elect to defer payment of the entire filing fee until receipt of a Notice to File Missing Parts
- ☒ The above fees are being paid via credit card via EFS-Web.
- ☒ The Commissioner is hereby authorized to charge and/or credit **Deposit Account No. 50-2864 (Billing No. ZZ0001.068)** as noted below.
- ☒ Any overpayments or deficiencies in the above-calculated fee.
- ☐ Filing fees in the amount of \$ _____ as calculated above.
- ☒ Any additional fees required under 37 C.F.R. § 1.16 and § 1.17.
- ☒ In the event that a Petition for Extension of Time is required during the prosecution of this application, but not submitted, please charge any extension fee under 37 C.F.R. § 1.136(a) to our Deposit Account noted above.

CORRESPONDENCE ADDRESS:

March 20, 2023
(Date)

By: /Rita C. Chipperson, Reg. No. 54031/

RITA C. CHIPPERSO

Registration No. 54,031

5 Cold Hill Road South, Suite 21

Mendham, New Jersey 07945

Telephone: (973) 845-9071

Facsimile: (973) 845-6176

E-Mail: rcc@chippersonlaw.com

☒ Customer Number or Bar Code Label: **000039689**

1/22

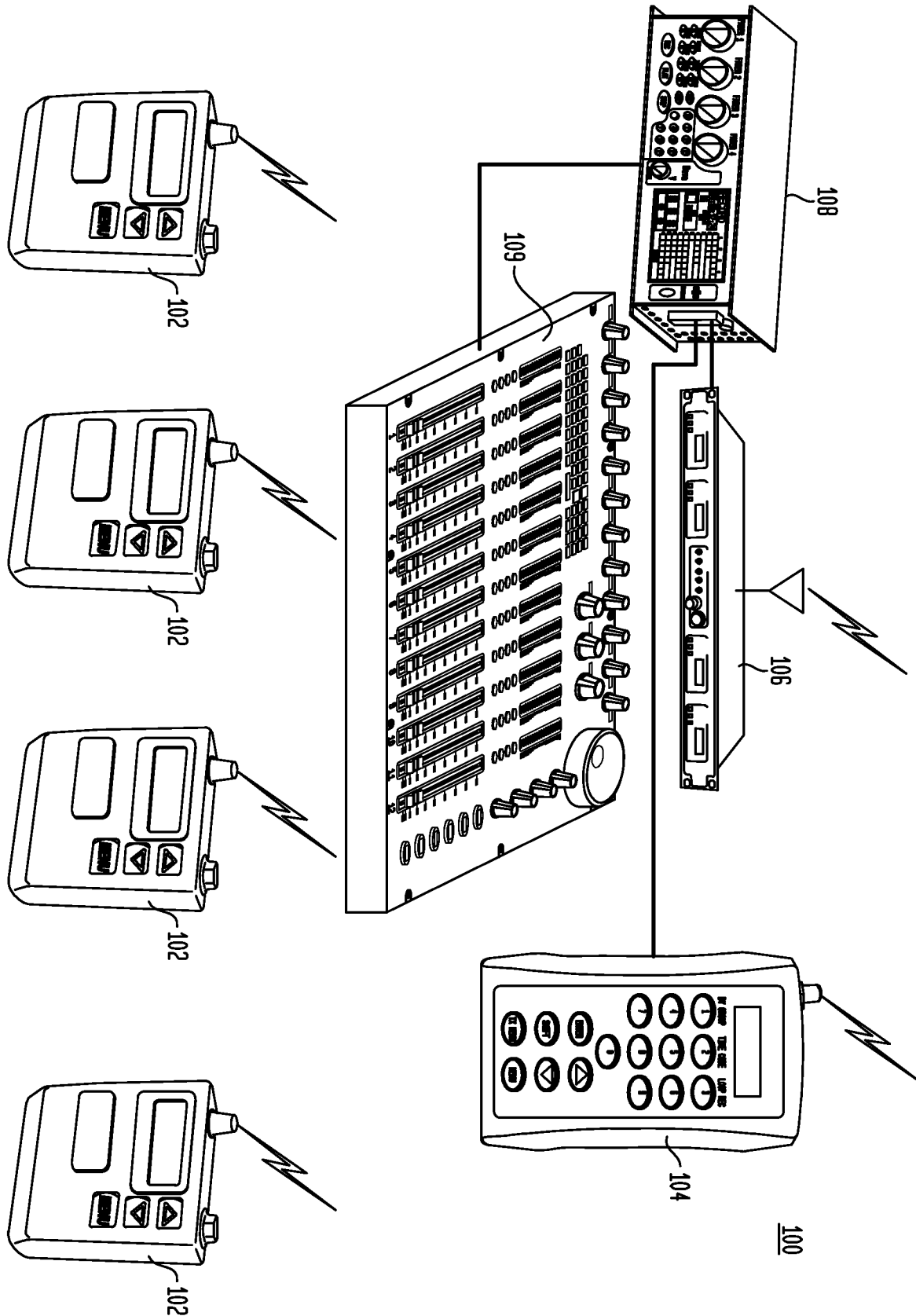
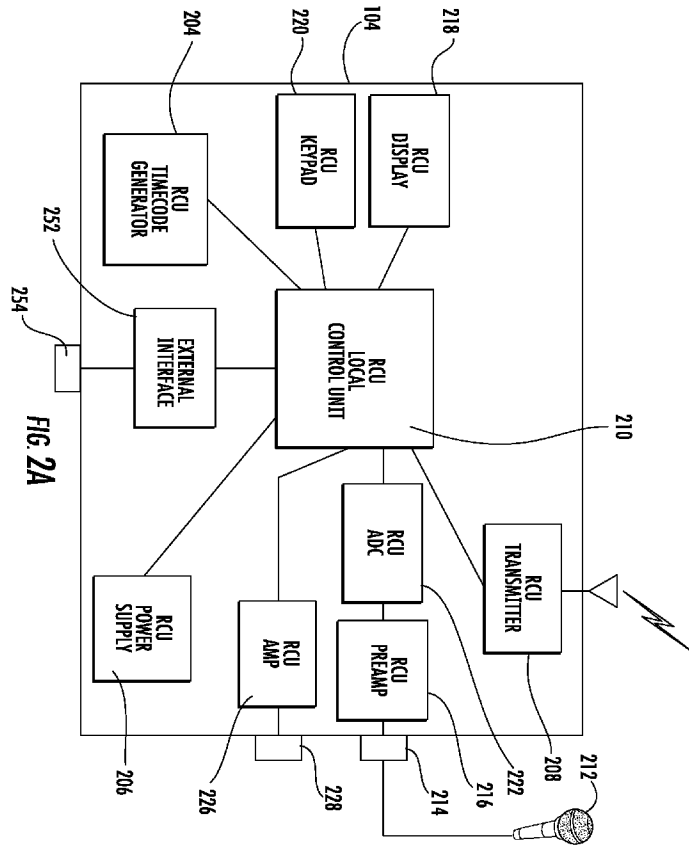


FIG. 1



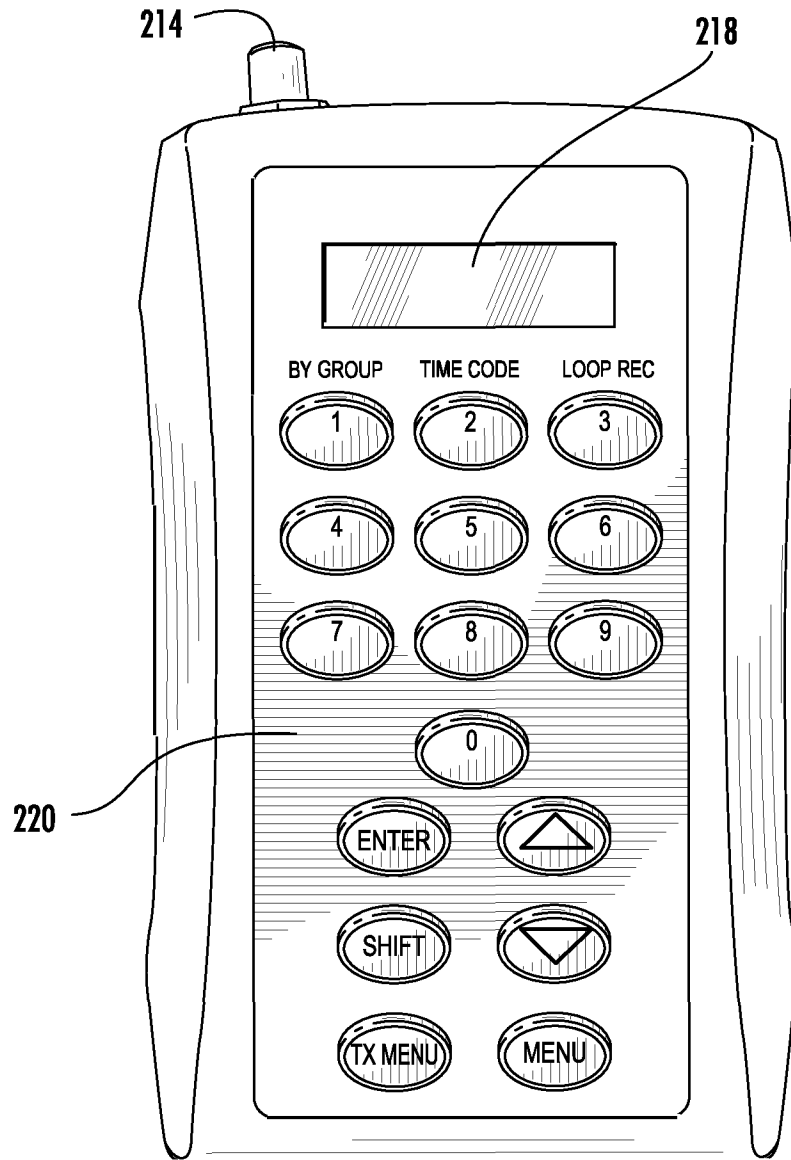


FIG. 2B

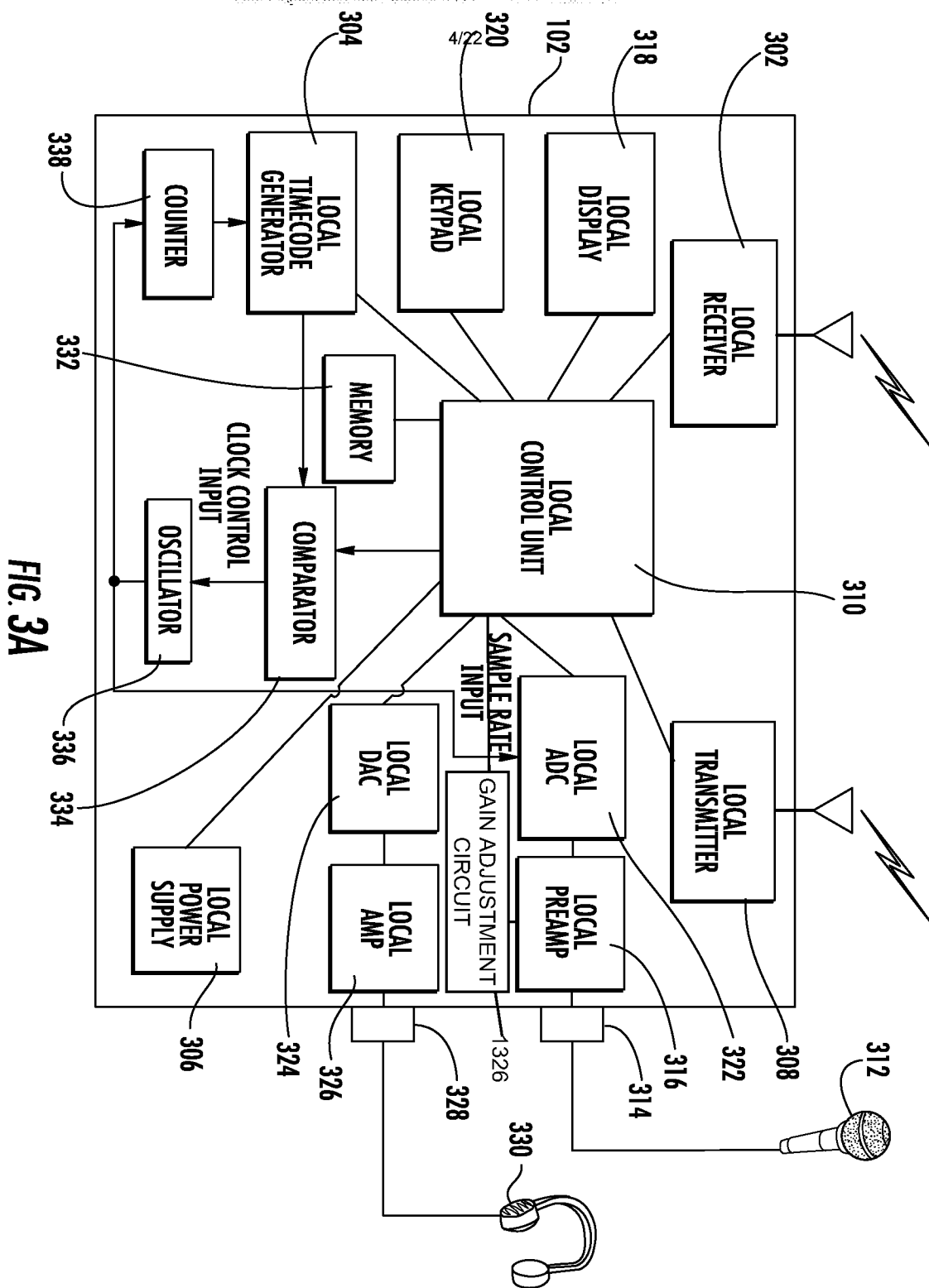


FIG. 3A

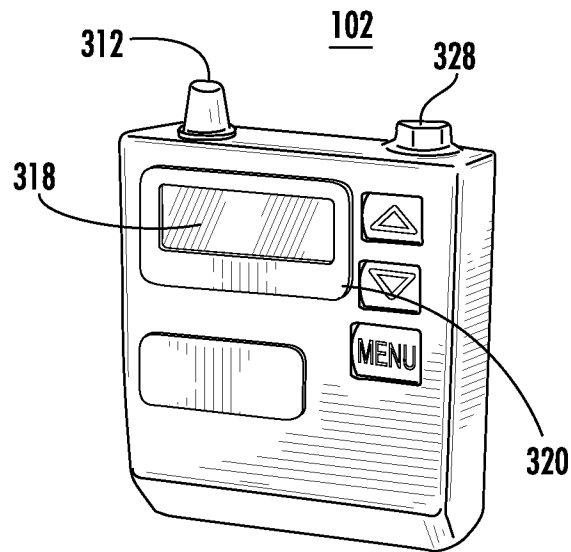


FIG. 3B

6/22

FIG. 4A

400

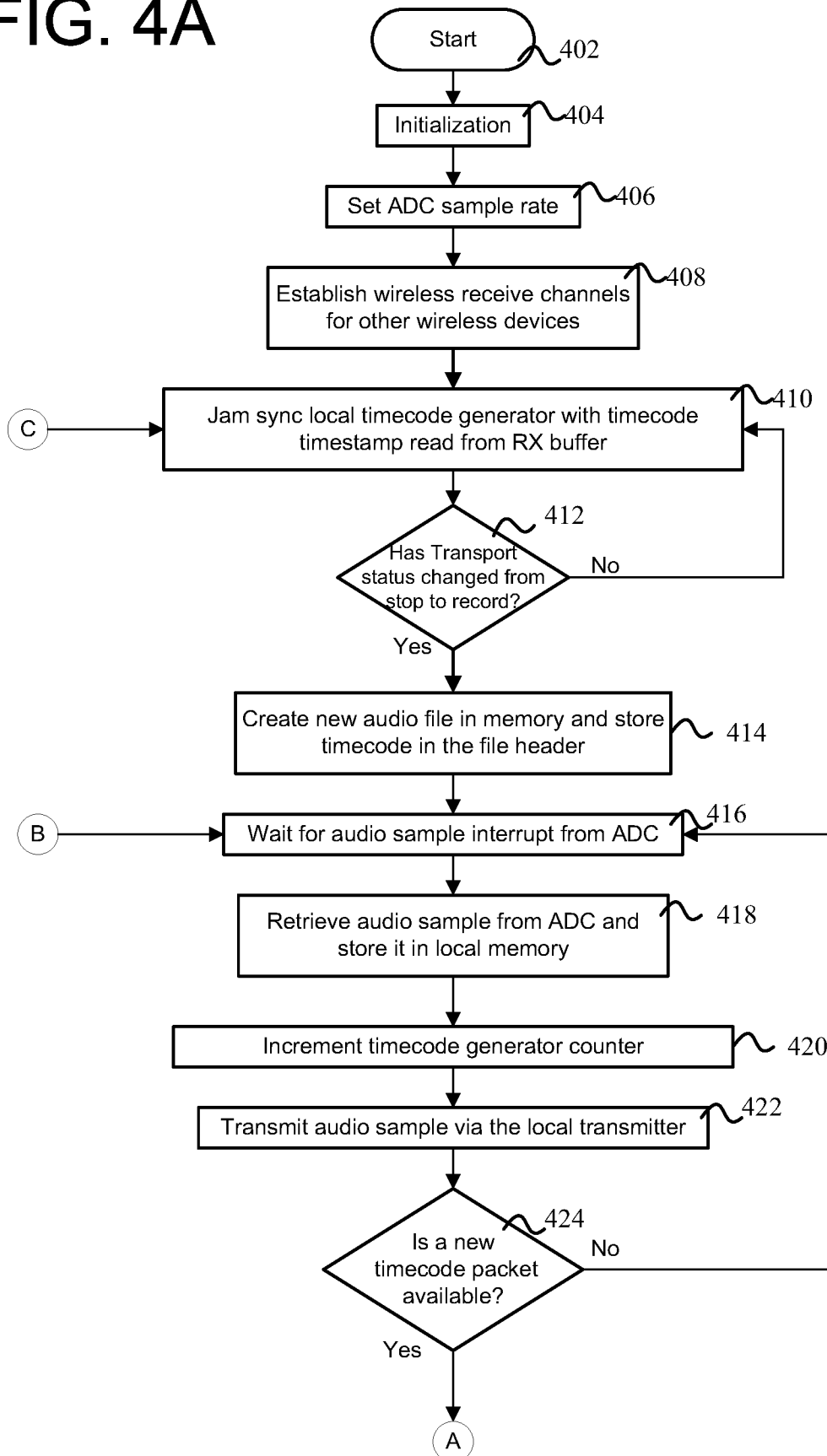
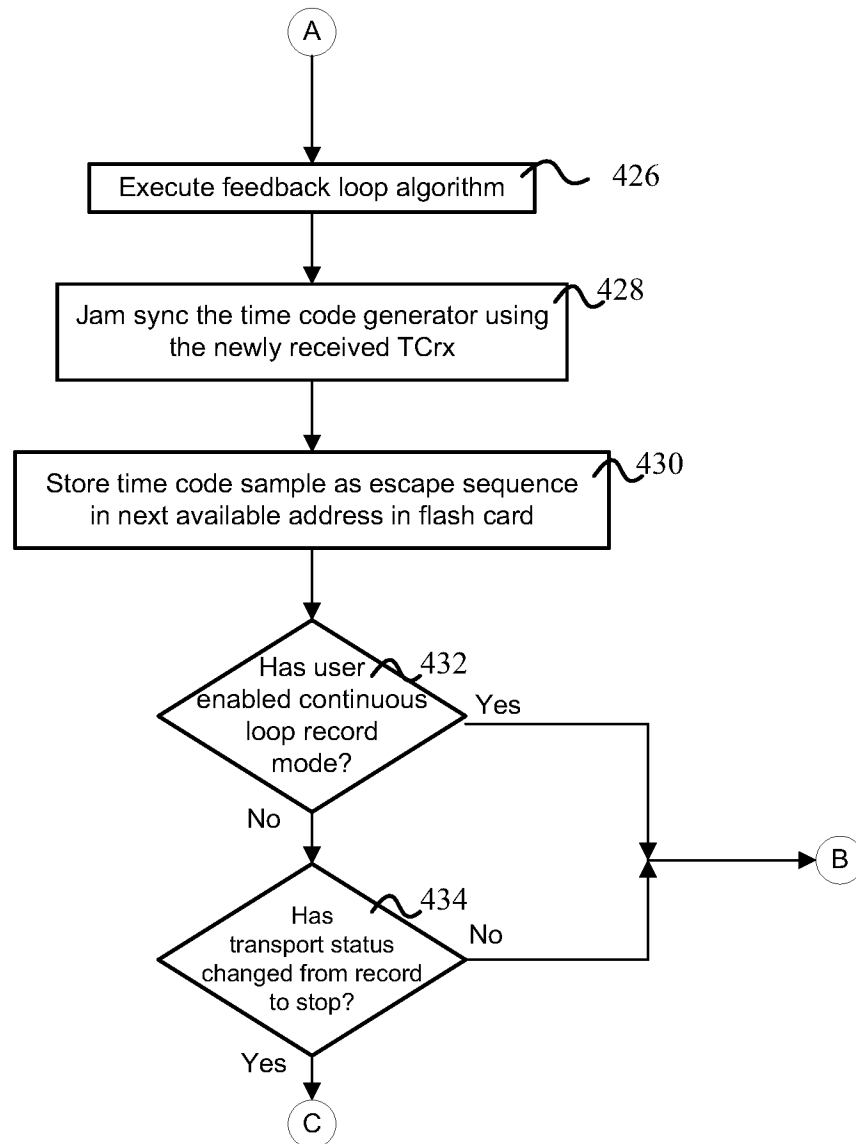


FIG. 4B

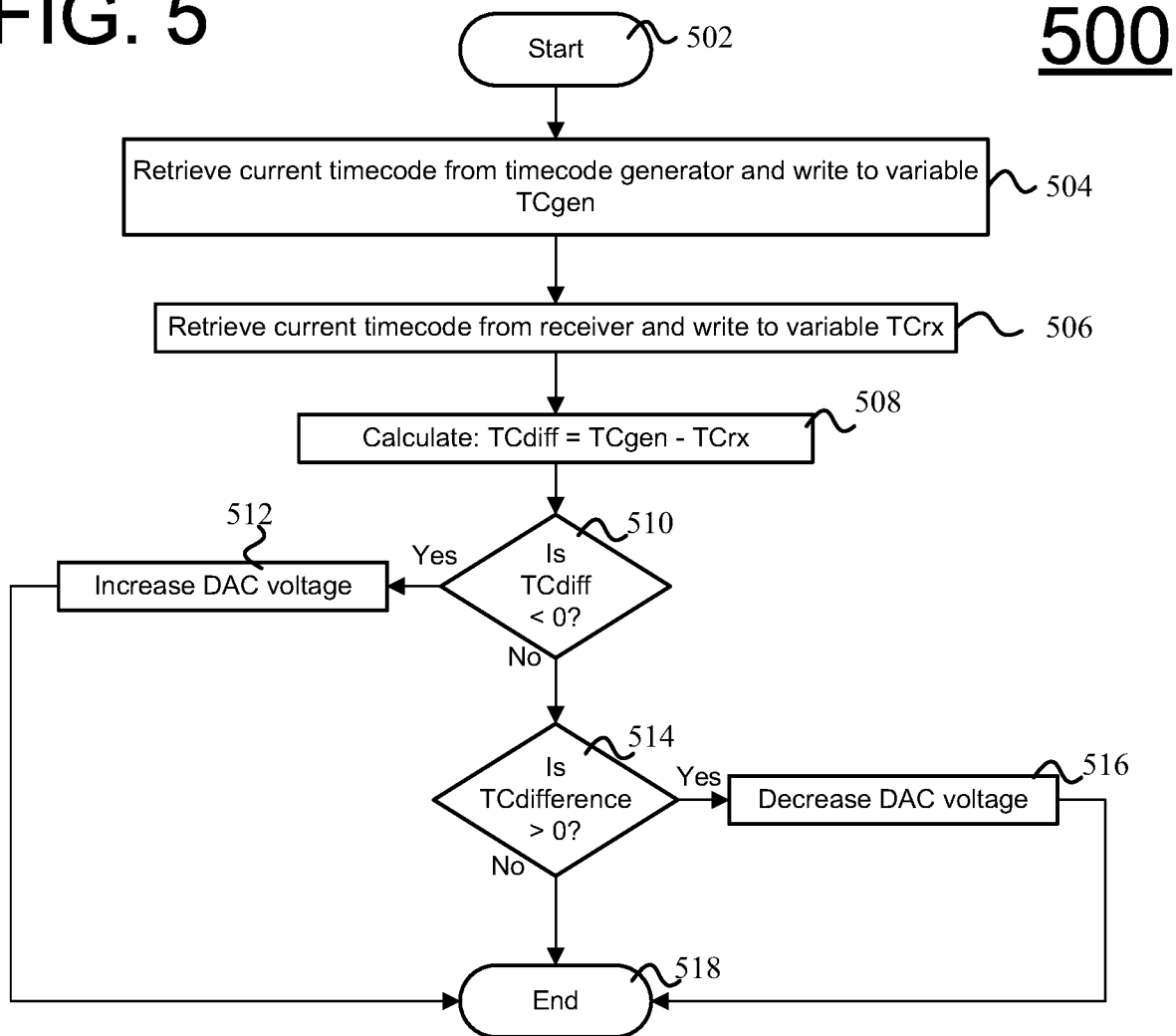
7/22

400



8/22

FIG. 5



9/22

FIG. 6

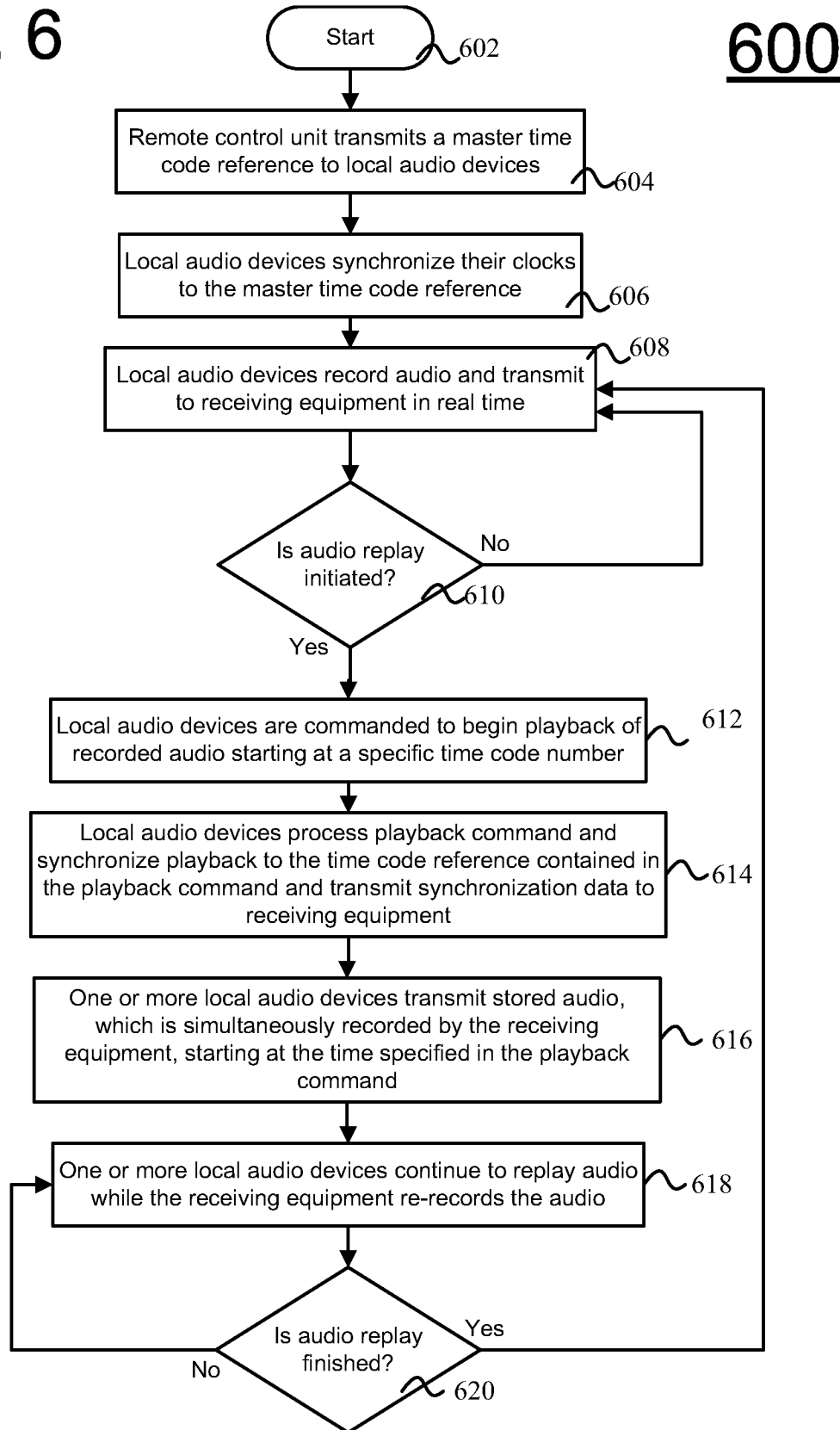
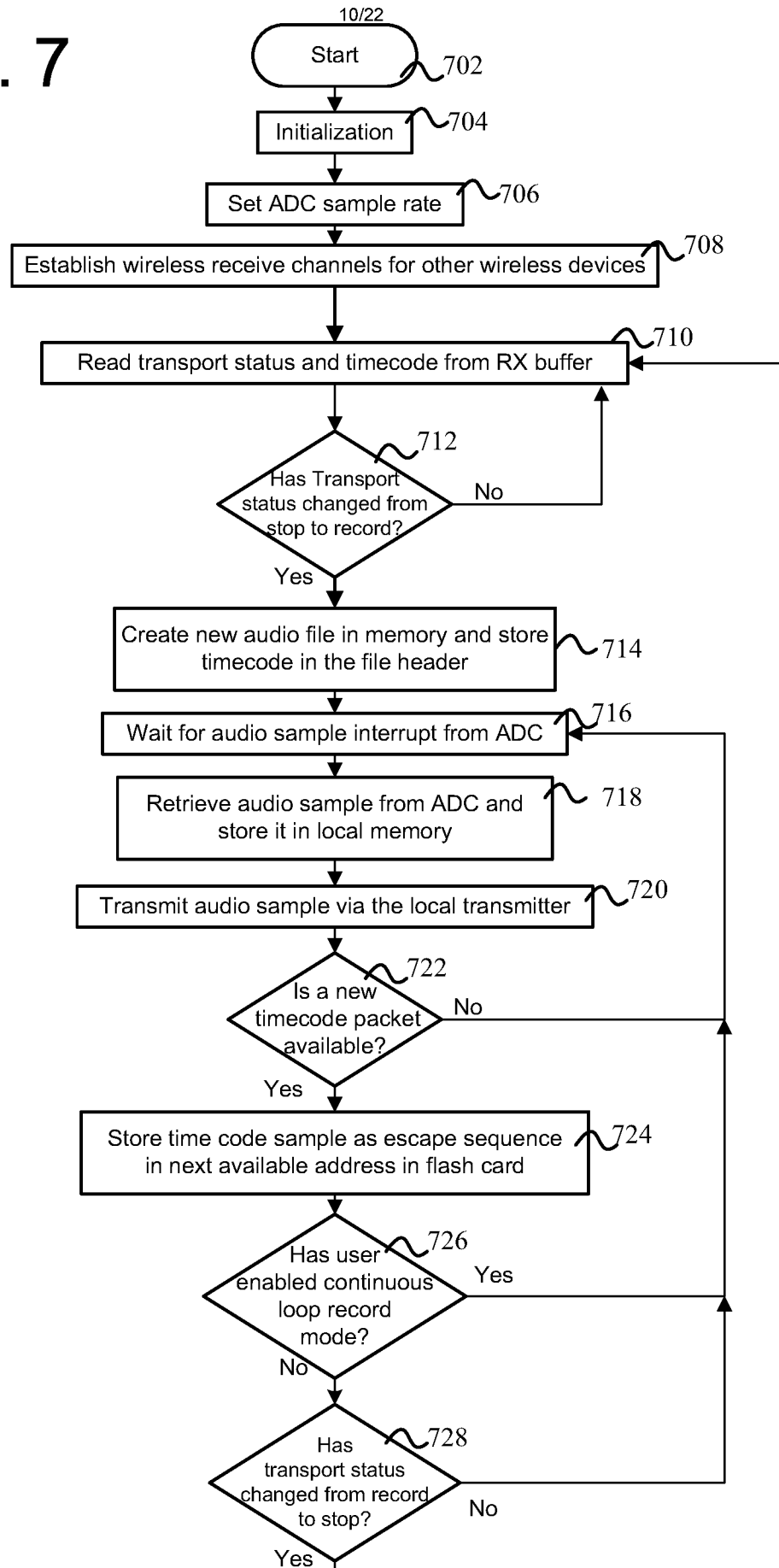


FIG. 7

700



11/22

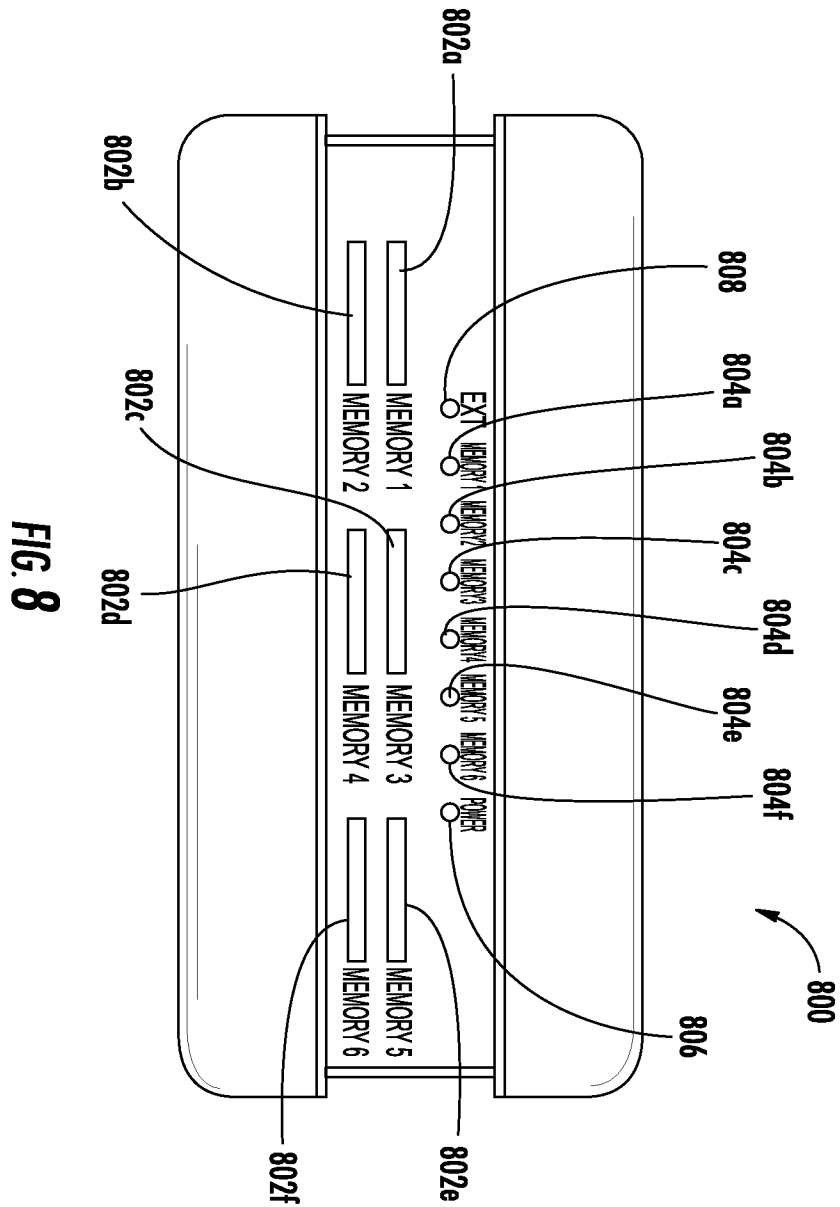
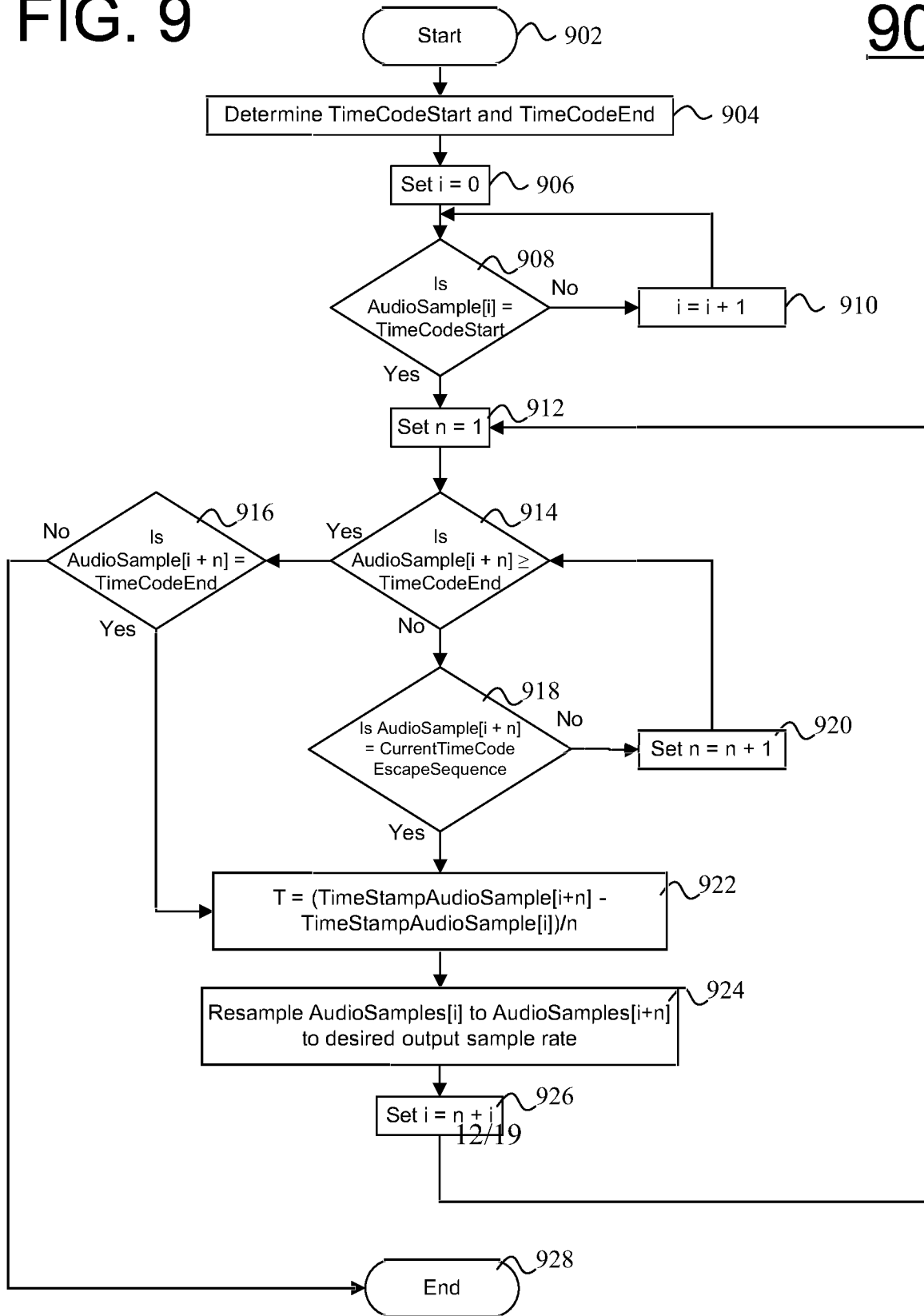


FIG. 8

12/22

FIG. 9

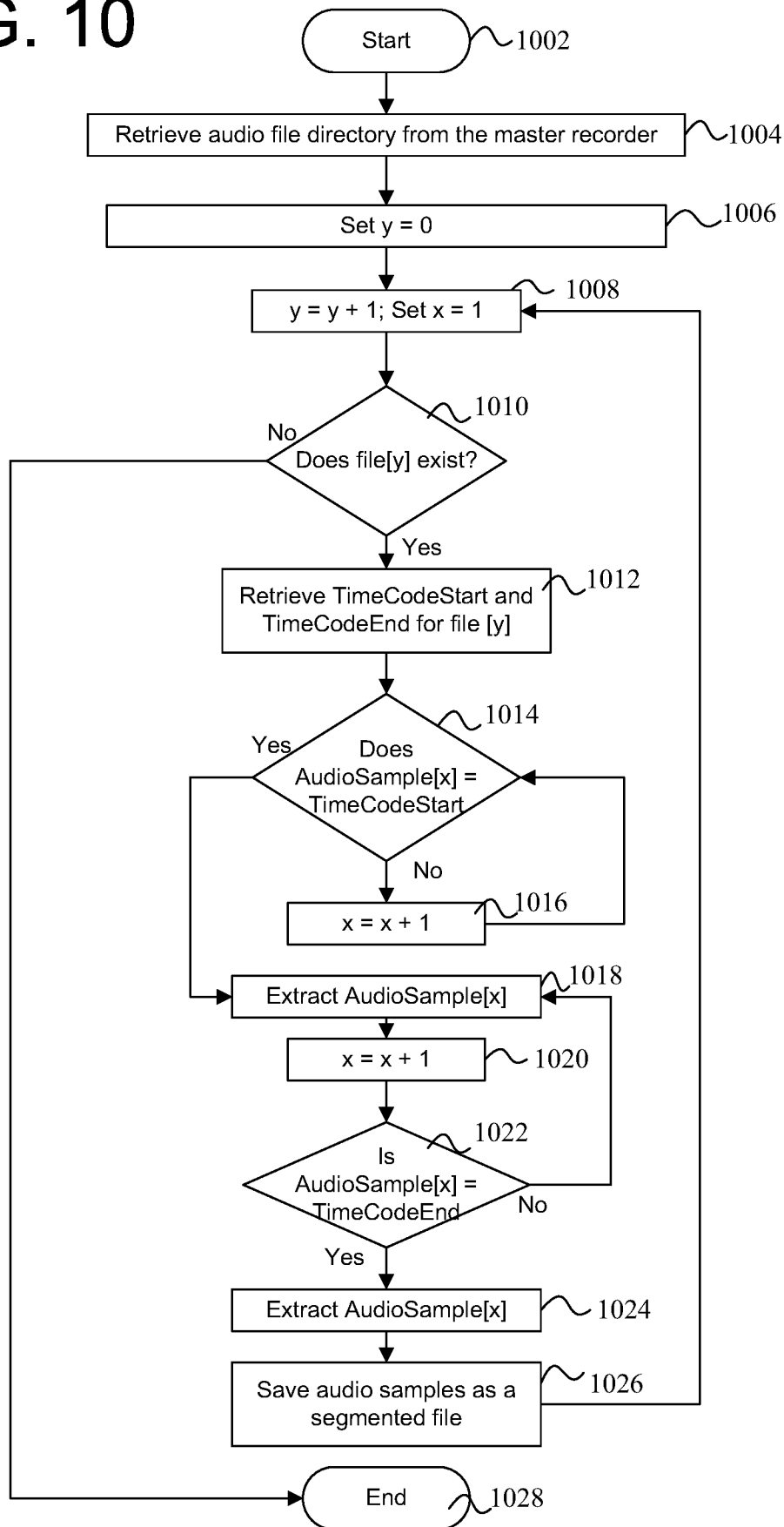
900



13/22

FIG. 10

1000



14/22

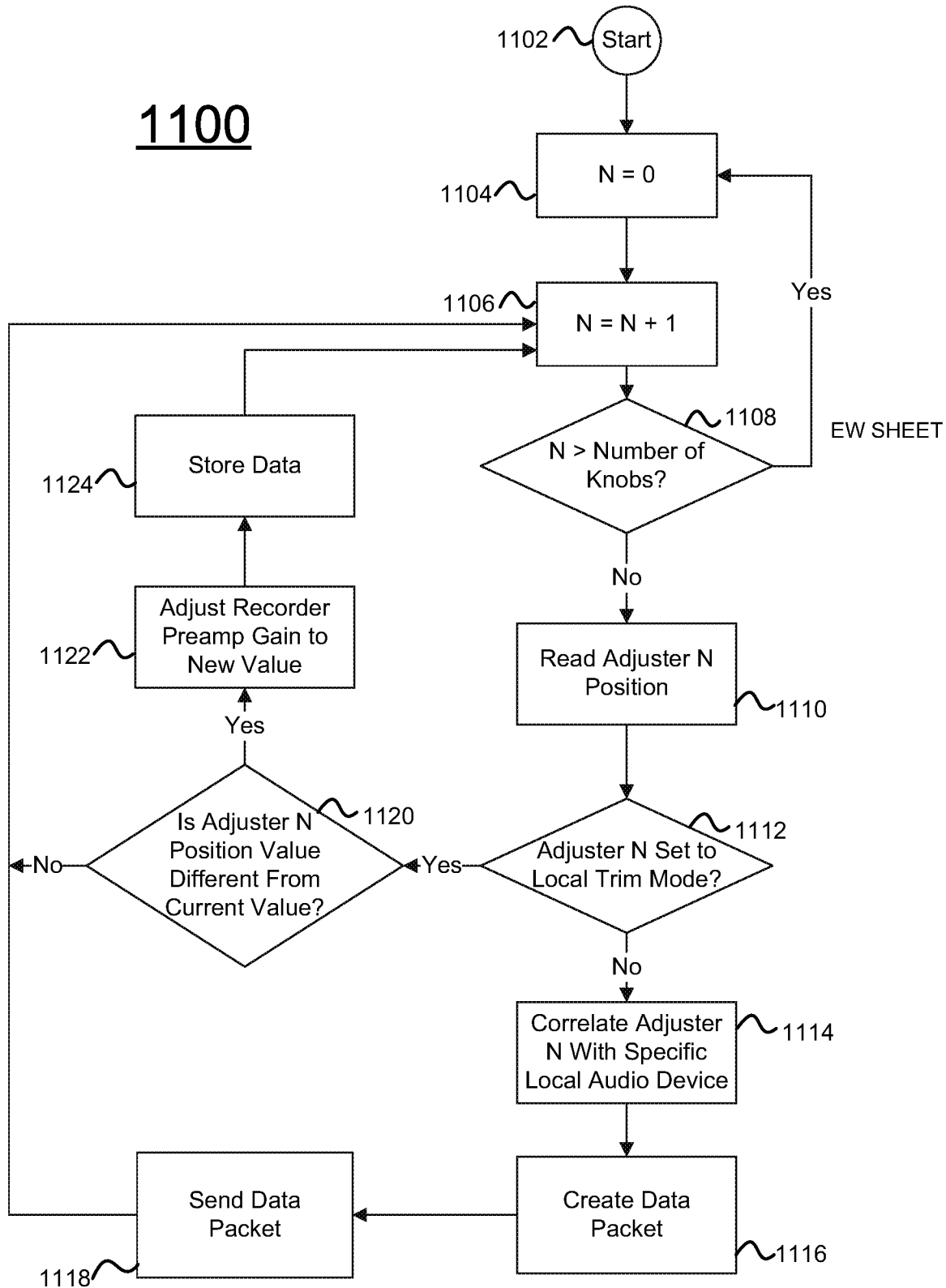
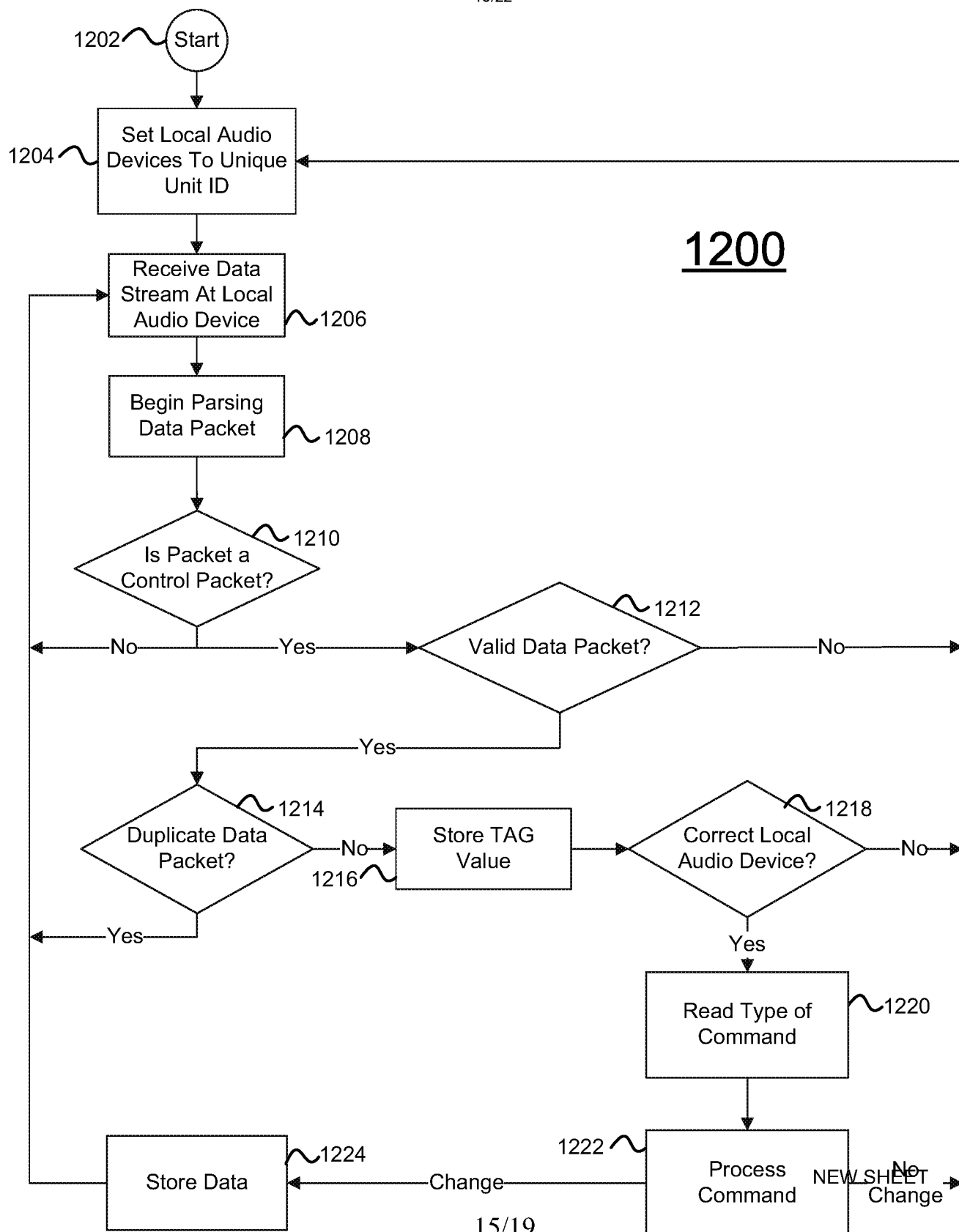


Fig. 11

15/22



15/19
Fig. 12

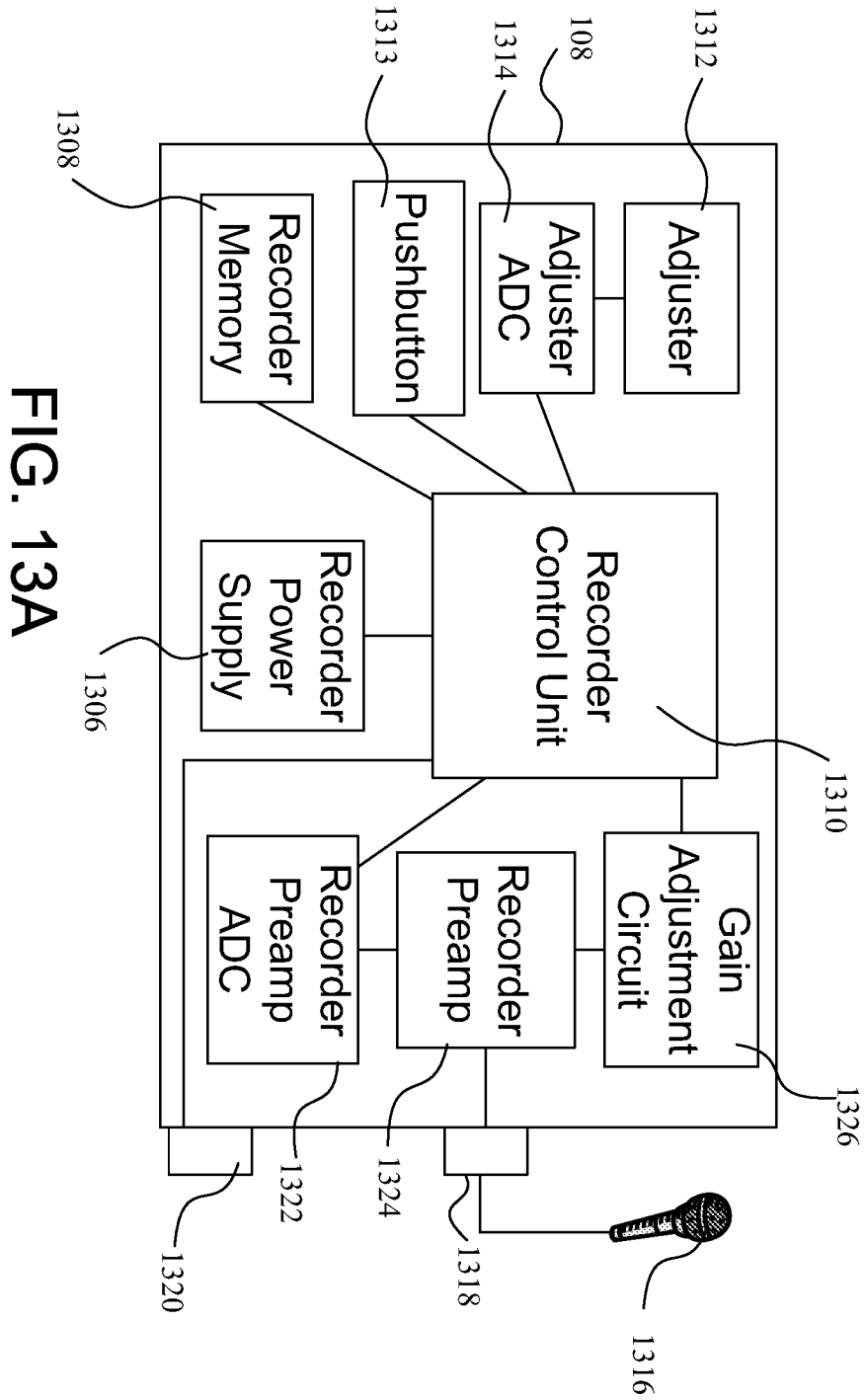
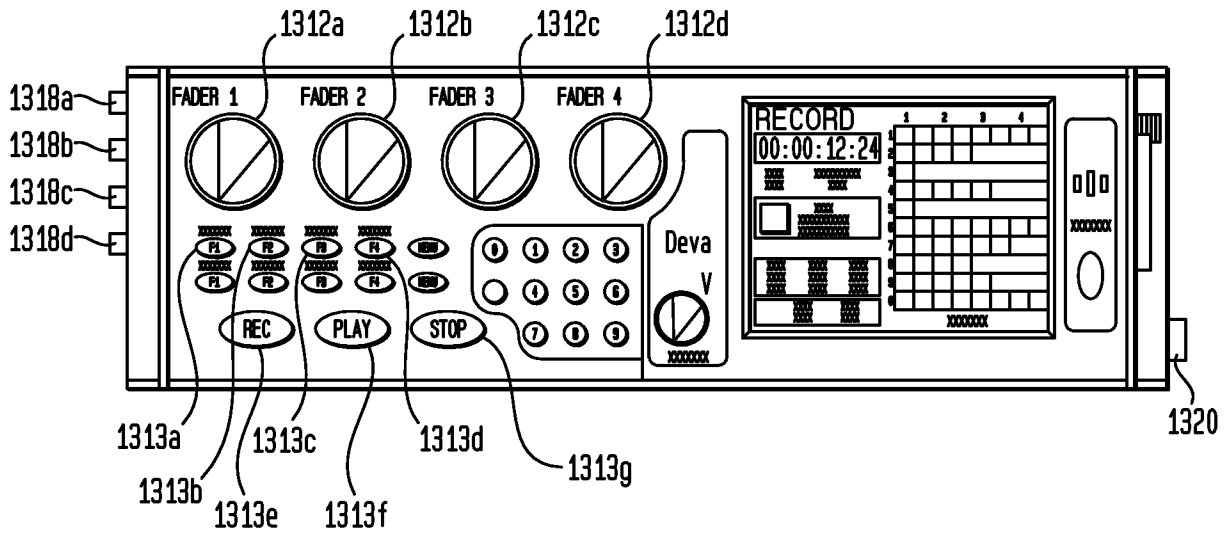


FIG. 13A

17/22

FIG. 13B



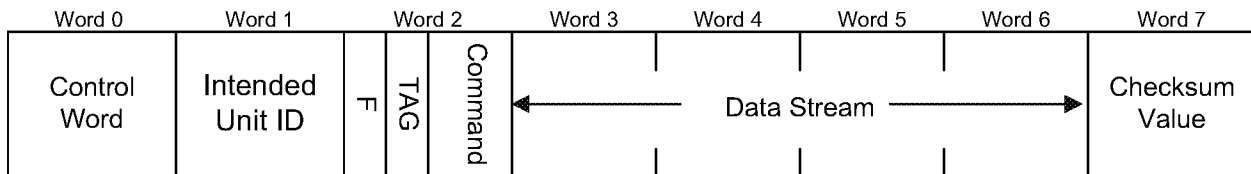
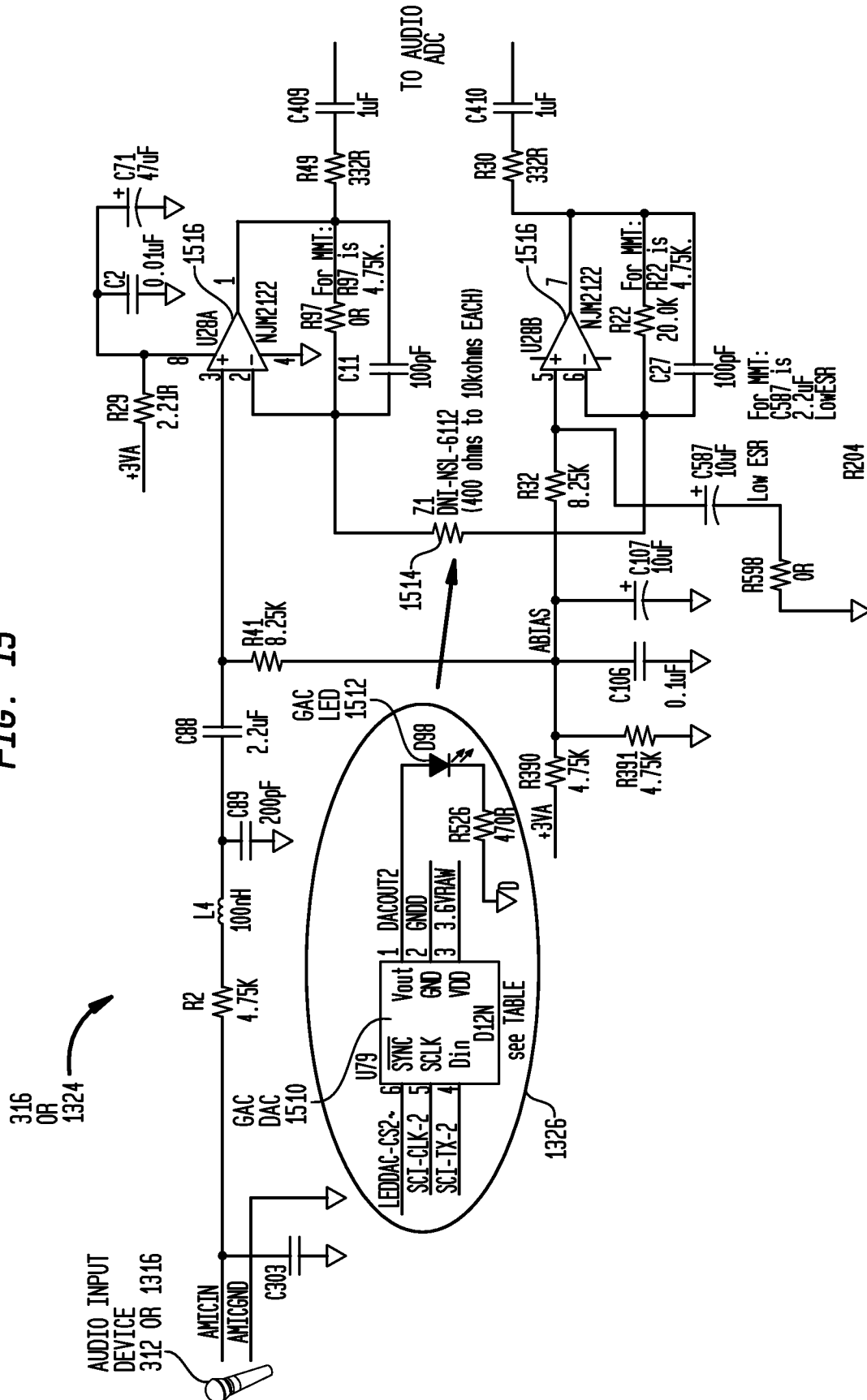


Fig. 14

19/22

FIG. 15



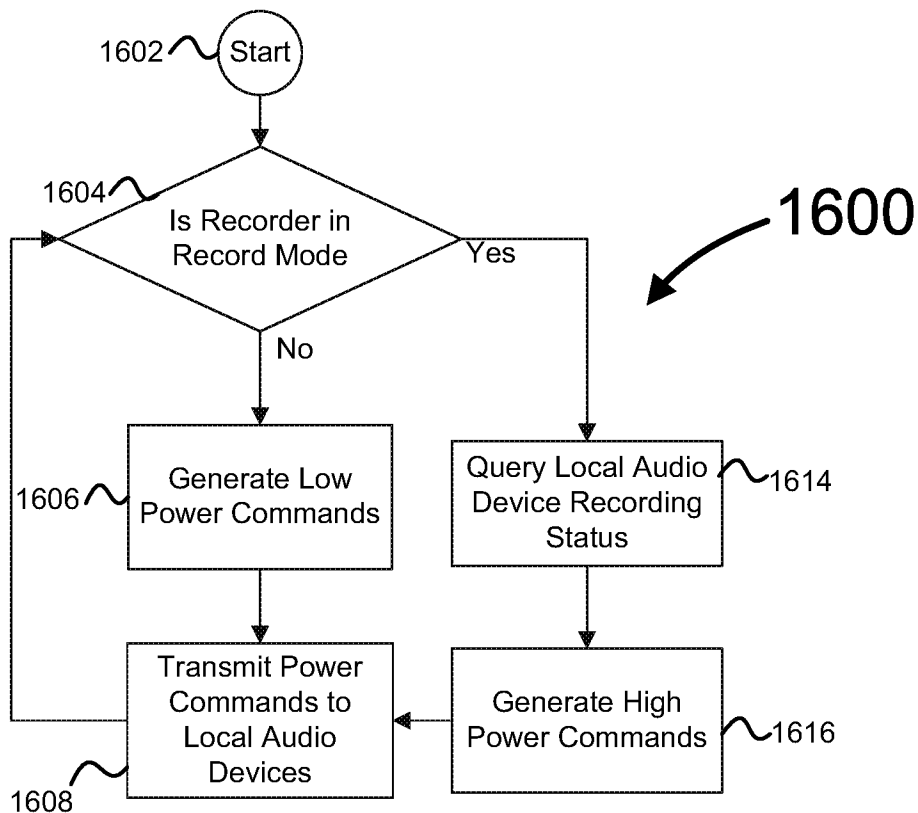


Fig. 16

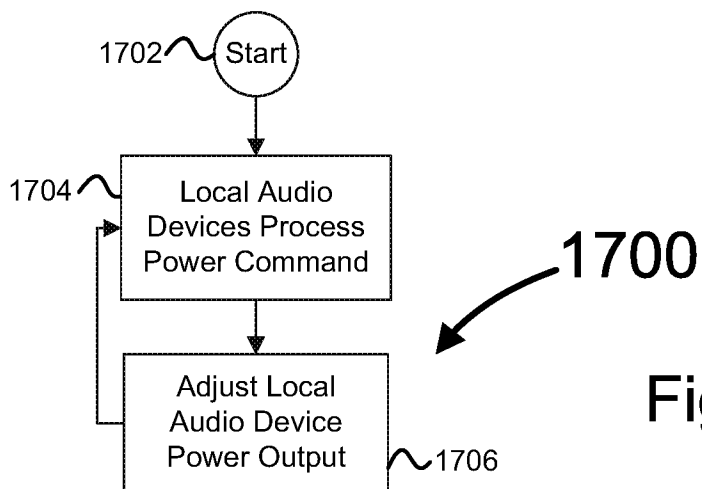
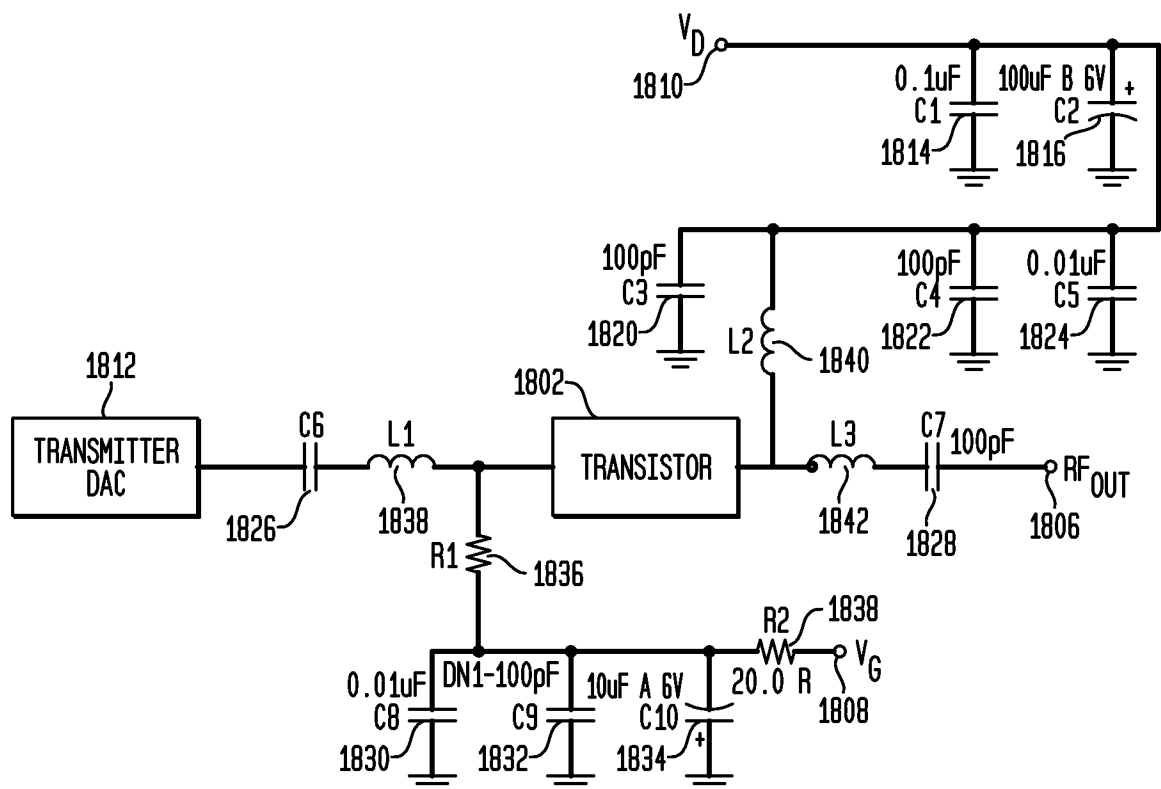


Fig. 17

21/22

FIG. 18

1800



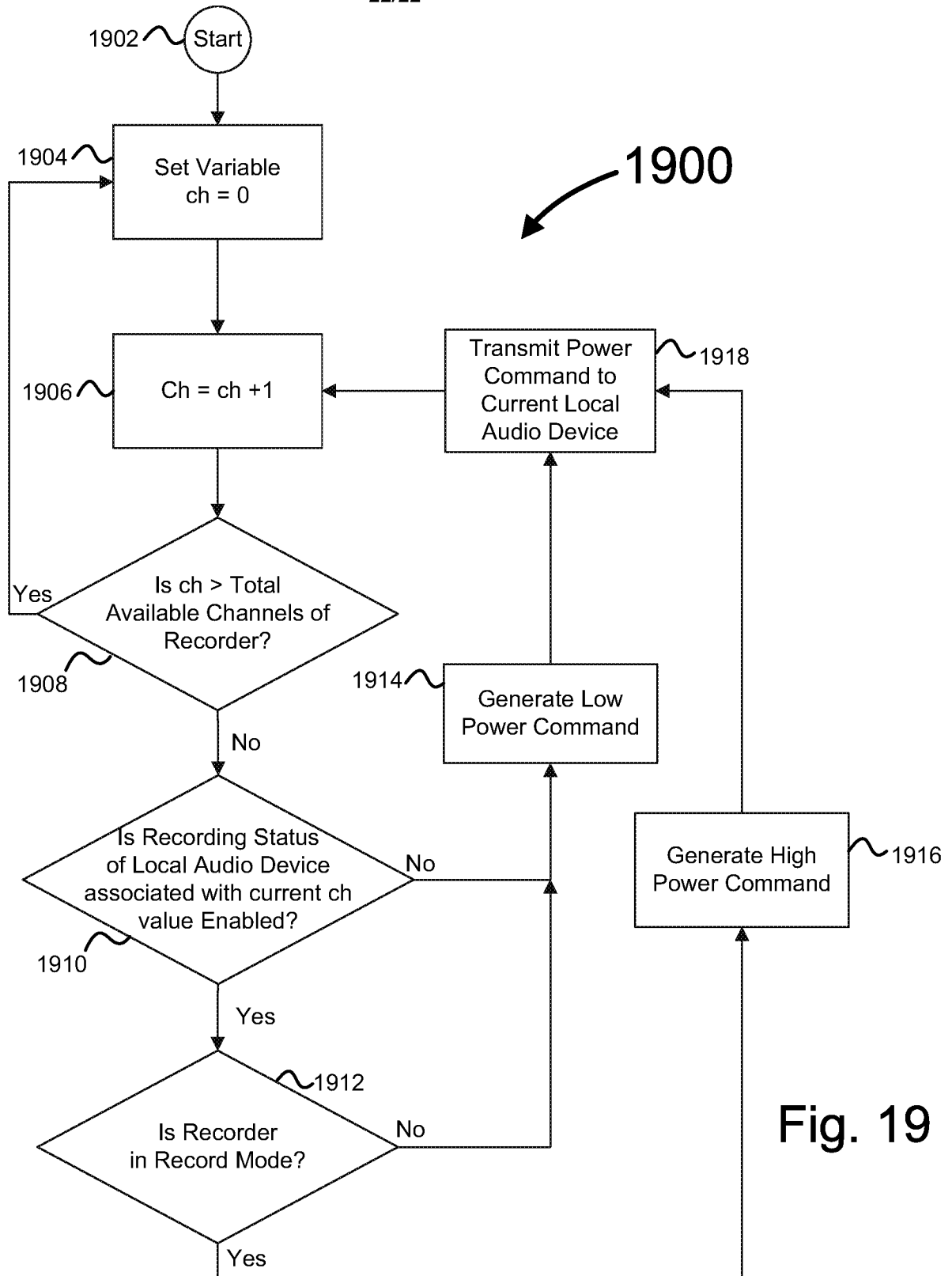


Fig. 19

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	ZZ0001.068
		Application Number	
Title of Invention	Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
--

Inventor Information:

Inventor 1					
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
Mr.	Glenn	Norman	Sanders		
Residence Information (Select One)		☒ US Residency ☐ Non US Residency ☐ Active US Military Service			
City	Franklin Lakes	State/Province	NJ	Country of Residence ⁱ	US
Mailing Address of Inventor:					
Address 1	235 Oldwoods Road				
Address 2					
City	Franklin Lakes	State/Province	NJ		
Postal Code	07417	Country ⁱ	US		
Inventor 2					
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
Mr.	Howard	Glenn	Stark		
Residence Information (Select One)		☒ US Residency ☐ Non US Residency ☐ Active US Military Service			
City	Sparta	State/Province	NJ	Country of Residence ⁱ	US
Mailing Address of Inventor:					
Address 1	28 Rose Lane				
Address 2					
City	Sparta	State/Province	NJ		
Postal Code	07871	Country ⁱ	US		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button. Add					

Correspondence Information:

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

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	ZZ0001.068
		Application Number	
Title of Invention	Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System		

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence information of this application.**

Customer Number	39689		
Email Address	rcc@chippersonlaw.com	Add Email	Remove Email

Application Information:

Title of the Invention	Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System		
Attorney Docket Number	ZZ0001.068	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	22	Suggested Figure for Publication (if any)	1

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and 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 international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	39689		

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

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	ZZ0001.068
		Application Number	
Title of Invention	Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System		

Prefix	Given Name	Middle Name	Family Name	Suffix	Remove
Registration Number					
Prefix	Given Name	Middle Name	Family Name	Suffix	Remove
Registration Number					
Additional Representative Information blocks may be generated within this form by selecting the Add button.					

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status						Remove
Application Number	Continuity Type	Prior Application Number		Filing or 371(c) Date (YYYY-MM-DD)		
	Continuation of	17157436		2021-01-25		
Prior Application Status		Patented		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)	
17157436	Continuation of	16397895	2019-04-29	10901680	2021-01-26	
Prior Application Status		Patented		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)	
16397895	Continuation of	15225056	2016-08-01	10276207	2019-04-30	
Prior Application Status		Patented		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)	
15225056	Continuation of	14808589	2015-07-24	9406224	2016-08-02	
Prior Application Status		Patented		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)	
14808589	Continuation of	13530040	2012-06-21	9094636	2015-07-28	

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

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	ZZ0001.068
		Application Number	
Title of Invention	Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System		

Prior Application Status		Patented	Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13530040	Continuation in part of	12838164	2010-07-16	8842854	2014-09-23

Prior Application Status		Patented	Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12838164	Continuation in part of	11404735	2006-04-14	7929902	2011-04-19

Prior Application Status		Patented	Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
11404735	Continuation in part of	11181062	2005-07-14	7711443	2010-05-04

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Application Number	Country ¹	Filing Date (YYYY-MM-DD)	Access Code ¹ (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.

☒ NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	ZZ0001.068
		Application Number	
Title of Invention	Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System		

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	ZZ0001.068
	Application Number	
Title of Invention	Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

- | | | |
|---|--|--------------------------------------|
| ☐ Assignee | ☐ Legal Representative under 35 U.S.C. 117 | ☐ Joint Inventor |
| ☐ Person to whom the inventor is obligated to assign. | ☐ Person who shows sufficient proprietary interest | |

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name
Zaxcom, Inc.

Mailing Address Information For Applicant:

Address 1	230 W. Parkway, Unit 9		
Address 2			
City	Pompton Plains	State/Province	NJ
Country ⁱ	US	Postal Code	07444
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

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

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	ZZ0001.068
		Application Number	
Title of Invention	Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System		

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Assignee 1						
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.						
If the Assignee or Non-Applicant Assignee is an Organization check here.			☒			
Organization Name	Zaxcom, Inc.					
Mailing Address Information For Assignee including Non-Applicant Assignee:						
Address 1		230 W. Parkway, Unit 9				
Address 2						
City	Pompton Plains	State/Province	NJ			
Country i	US	Postal Code	07444			
Phone Number		Fax Number				
Email Address						
Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.						

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

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	ZZ0001.068
		Application Number	
Title of Invention	Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System		

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Rita C. Chipperson Reg. No. 54031/			Date (YYYY-MM-DD)	
First Name	Rita	Last Name	Chipperson	Registration Number	54031
Additional Signature may be generated within this form by selecting the Add button.					

Electronic Patent Application Fee Transmittal

Application Number:

Filing Date:

Title of Invention:

Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System

First Named Inventor/Applicant Name:

Glenn Norman Sanders

Filer:

Rita Carrie Ann Chipperson/Morgan Golightly

Attorney Docket Number:

ZZ0001.068

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	64	64
UTILITY SEARCH FEE	2111	1	280	280
UTILITY EXAMINATION FEE	2311	1	320	320

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 (\$)				664

Electronic Acknowledgement Receipt

EFS ID:	47695474
Application Number:	18123619
International Application Number:	
Confirmation Number:	1083
Title of Invention:	Systems and Methods for Remotely Controlling Local Audio Devices in a Virtual Wireless Multitrack Recording System
First Named Inventor/Applicant Name:	Glenn Norman Sanders
Customer Number:	39689
Filer:	Rita Carrie Ann Chipperson
Filer Authorized By:	
Attorney Docket Number:	ZZ0001.068
Receipt Date:	20-MAR-2023
Filing Date:	
Time Stamp:	15:32:29
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$664
RAM confirmation Number	E20233JF33079410
Deposit Account	502864
Authorized User	Rita Chipperson

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

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)
37 CFR 1.20 (Post Issuance fees)
37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Abstract	Abstract.pdf	15312	no	1
			9e164f2e2f9e884d642931e9b9f91173e19df5c8		
Warnings:					
Information:					
2	Claims	Claims.pdf	13988	no	1
			de00a2d71a32e10ab8465078fba21a53d7105f6		
Warnings:					
Information:					
3	Oath or Declaration filed	Declaration.pdf	304400	no	2
			d650a80333fd865284d46d16f7d1658de6911030		
Warnings:					
Information:					
4	Power of Attorney	POA.pdf	253309	no	2
			9a1368f01aaf53c4fef22e1d7533dd9af6e6bbd1		
Warnings:					
Information:					
5	Specification	Specification.pdf	1414749	no	58
			17cbf3db0dc4d07218c80cc967ebcca93b163f30		
Warnings:					
Information:					
6	Transmittal Letter	Transmittal.pdf	81424	no	3
			c3ff75b0b71d1025c5d83f78150a7d4c8b3657e9		
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7	Drawings-only black and white line drawings	finalDrawings.pdf	493343 450935228046b6134b64048c9818e78c7928a159	no	22
Warnings:					
Information:					
8	Application Data Sheet	WebADS.pdf	218860 60679cc3034dc56e70f341a5d15c3fc7a807488e	no	8
Warnings:					
Information:					
9	Fee Worksheet (SB06)	fee-info.pdf	44297 c709f53d211a05443a67fb41577b886f975cd25c	no	2
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ABSTRACT OF THE DISCLOSURE

Systems and methods for wirelessly recording multi-track audio files. In some aspects, each performer is equipped with a local audio device capable of locally recording the respective performer's audio while also transmitting it to a master recorder. Functions of the local audio device may be adjusted remotely. The locally recorded audio may be used to repair or replace any audio lost or corrupted during transmission to the master recorder. Such repair or replacement may be performed electronically or via playback of the locally recorded audio. In other aspects, a master recorder is not required since all locally recorded audio may be combined or otherwise processed post-recording. Locally recorded audio may include identifiers to aid in post-recording identification of such audio. A multi-memory unit is provided to facilitate manipulation and processing of audio files. A method for automatically adjusting local audio device power mode based upon recorder status is also disclosed.

15

CLAIMS

We claim:

1. A method of dynamically adjusting the power level of at least one local audio device comprising:

- 5 querying a record status of a recorder;
 generating a power command based upon said record status;
 transmitting said power command to at least one local audio device;
 processing of said power command by said at least one local audio device;
 adjusting at least one local audio device parameter, said parameter selected from
10 the group consisting of RF transmitter bias voltage, RF transmitter
 source voltage, RF drive levels, and combinations thereof.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of
Invention

SYSTEMS AND METHODS FOR REMOTELY CONTROLLING LOCAL AUDIO
DEVICES IN A VIRTUAL WIRELESS MULTITRACK RECORDING SYSTEM

As the below named inventor, I hereby declare that:

This declaration
is directed to:



The attached application, or



United States application or PCT international application number _____

filed on _____

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

I acknowledge the duty to disclose information that is material to patentability in accordance with 37 C.F.R. §1.56.

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LEGAL NAME OF INVENTOR

Inventor: Glenn Norman Sanders

Date (Optional): _____

Signature: 

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. 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. 132 and 37 CFR 1.31 and 1.34. This collection is estimated to take 1 minute 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 1480, Alexandria, VA 22313-1480. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1480, Alexandria, VA 22313-1480.

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**DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN
APPLICATION DATA SHEET (37 CFR 1.76)**

Title of
Invention

**SYSTEMS AND METHODS FOR REMOTELY CONTROLLING LOCAL AUDIO
DEVICES IN A VIRTUAL WIRELESS MULTITRACK RECORDING SYSTEM**

As the below named inventor, I hereby declare that:

This declaration
is directed to:



The attached application, or



United States application or PCT international application number _____
filed on _____

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

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LEGAL NAME OF INVENTOR

Inventor: Howard Glenn Stark

Date (Optional): _____

Signature: _____

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. 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 1 minute 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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