UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 9,801,541 B2
APPLICATION NO. : 13/842679
DATED : October 31, 2017
INVENTOR(S) : Michael Robert Mensinger et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On the Title Page

In Column 1 (page 3, item (56)) at Line 16, Under Other Publications, change "Sociaty" to --Society--.

In the Specification

In Column 36 at Lines 26-27, Change "programically" to --programmatically--.

In Column 40 at Line 66, Change "programically" to --programmatically--.

In Column 41 at Line 3, Change "programically" to --programmatically--.

In Column 42 at Line 9, Change "toke" to --token--.

In the Claims

In Column 59 at Line 49, In Claim 1, change "acknowledgment" to --acknowledgment,--.

In Column 59 at Line 52, In Claim 1, after "accessing," delete "information".

Signed and Sealed this
Thirteenth Day of March, 2018



Andrei Iancu
Director of the United States Patent and Trademark Office

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 9,801,541
APPLICATION NO. : 13/842,679
ISSUE DATE : October 31, 2017
INVENTOR(S) : Michael Robert Mensinger

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 1 (page 3, item 56) at line 16, Under Other Publications, change "Sociaty" to --Society--.

In column 36 at lines 26-27, Change "programically" to --programmatically--.

In column 40 at line 66, Change "programically" to --programmatically--.

In column 41 at line 3, Change "programically" to --programmatically--.

In column 42 at line 9, Change "toke" to --token--.

In column 59 at line 49, In Claim 1, change "acknowledgment" to --acknowledgment,--.

In column 59 at line 52, In Claim 1, after "accessing," delete "information".

27556997

MAILING ADDRESS OF SENDER:

Rose M. Thiessen
KNOBBE, MARTENS, OLSON & BEAR, LLP
2040 Main Street, 14th Floor
Irvine, California 92614

DOCKET NO. DEXCOM.225A

Please Direct All Correspondence to Customer Number 68851

REQUEST FOR CERTIFICATE OF CORRECTION

First Inventor	:	Michael Robert Mensinger
App. No.	:	13/842,679
Filed	:	March 15, 2013
Patent No.	:	9,801,541
Issue Date	:	October 31, 2017
Title	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Conf. No.	:	8793

Commissioner for Patents
Office of Data Management
Attention: Certificates of Correction Branch
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

Enclosed for filing is a Certificate of Correction in connection with the above-identified patent.

Some of the errors cited in the Certificate of Correction appear to have been incurred through the fault of the PTO (see 35 USC § 254, 37 CFR § 1.322, and MPEP § 1480). However, because this may not apply to each item in the Certificate of Correction, the $150 fee under 37 CFR § 1.20(a) is submitted herewith. Please charge any additional fees to our Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: February 7, 2018

By: /Rose M. Thiessen/
Rose M. Thiessen
Registration No. 40,202
Registered Practitioner
Customer No. 68851
(858) 707-4000

27556986

Electronic Patent Application Fee Transmittal

Application Number:	13842679
Filing Date:	15-Mar-2013
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Filer:	Rose M. Thiessen/Edgar Compton
Attorney Docket Number:	DEXCOM.225A

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Certificate of correction	1811	1	150	150

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**150**

Electronic Acknowledgement Receipt

EFS ID:	31730476
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Rose M. Thiessen/Anthony Bonilla
Filer Authorized By:	Rose M. Thiessen
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	07-FEB-2018
Filing Date:	15-MAR-2013
Time Stamp:	17:38:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$150
RAM confirmation Number	020818INTEFSW17400500
Deposit Account	111410
Authorized User	Anthony Bonilla

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)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Certificate of Correction	225A_COC.pdf	15734 d5741bb421d874841d21a299977ff4a6f6ddac37	no	1
Warnings:					
Information:					
2	Transmittal Letter	225A_COC_TRANS.pdf	16838 9f07dcd07e6529212ab8bd7054d15c6fac66f841	no	1
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30427 61919be7c408339d1ddc31d20fe9bf7b22579285	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	62999		

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/842,679	10/31/2017	9801541	DEXCOM.225A	8793

68851 7590 10/11/2017

KNOBBE, MARTENS, OLSON & BEAR, LLP
DEXCOM, INC.
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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

The Patent Term Adjustment is 358 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

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

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

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

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

Michael Robert Mensinger, San Diego, CA;
Eric Cohen, San Diego, CA;
Phil Mayou, San Diego, CA;
Eli Reihman, San Diego, CA;
Katherine Yerre Koehler, San Diego, CA;
Rian Draeger, San Diego, CA;
Angela Marie Traven, San Marcos, CA;
DEXCOM, INC., San Diego, CA

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United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A	8793

68851 7590 10/05/2017

KNOBBE, MARTENS, OLSON & BEAR, LLP
DEXCOM, INC.
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER
BALSECA, FRANKLIN D

ART UNIT	PAPER NUMBER
2685	

NOTIFICATION DATE	DELIVERY MODE
10/05/2017	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):

jayna.cartee@knobbe.com
efiling@knobbe.com

Corrected Notice of Allowability	**Application No.** 13/842,679	**Applicant(s)** MENSINGER ET AL.	
	Examiner FRANKLIN BALSECA	**Art Unit** 2685	**AIA (First Inventor to File) Status** No

-- 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 *09/11/2017*.
   ☐ 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 *1,4-15,17,20,28 and 29*. 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)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/FRANKLIN BALSECA/ Examiner, Art Unit 2685	/Hai Phan/ Supervisory Patent Examiner, Art Unit 2685

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 4

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Mensinger, Michael Robert
Art Unit	2681
Examiner Name	WU, Daniel
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 5832448	11/3/1998	Brown, Stephen J.	
	2	US- 5897493	4/27/1999	Brown, Stephen J.	
	3	US- 6101478	8/8/2000	Brown, Stephen J.	
	4	US- 6168563	1/2/2001	Brown, Stephen J.	
	5	US- 6368273	4/9/2002	Brown, Stephen J.	
	6	US- 6442432	8/27/2002	Lee, Michael Thomas	
	7	~~US- 6447424~~	11/5/2002	Thompson et al. US-6477424	
	8	US- 6669631	12/30/2003	Norris et al.	
	9	US- 6735479	5/11/2004	Fabian et al.	
	10	US- 6943787	9/13/2005	Webb, James D.	
	11	US- 6957102	10/18/2005	Silver et al.	
	12	US- 7103578	9/5/2006	Beck et al.	
	13	US- 7399277	7/15/2008	Saidara et al.	
	14	US- 20080319294	12/25/2008	Taub, Marc B.	
	15	US- 7618368	11/17/2009	Brown, Stephen J.	
	16	US- 7685005	3/23/2010	Riff et al.	
	17	US- 7811231	10/12/2010	Jin et al.	
	18	US- 7981034	7/19/2011	Jennewine et al.	
	19	US- 8085151	12/27/2011	Jennewine, R. Curtis	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
	1	WO 2012/108935	2012-08-16	Abbott Diabetes Care Inc.		
	2	WO 2012/108936	2012-08-16	Abbott Diabetes Care Inc.		
	3	WO 2012/108939	2012-08-16	Abbott Diabetes Care Inc.		
	4	WO 2012/108940	2012-08-16	Abbott Diabetes Care Inc.		

Examiner Signature	/FRANKLIN D BALSECA/	Date Considered	10/02/2017

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. 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 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, 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 (1-800-786-9199) and select option 2.

PTO/SB/08a (07-09)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 2 of 4

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Mensinger, Michael Robert
Art Unit	2681
Examiner Name	WU, Daniel
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	20	US- 8086292	12/27/2011	Peyser, Thomas	
	21	US- 8409093	4/2/2013	Bugler, Jocyon R.	
	22	US- 20070253021	11/1/2007	Mehta et al.	
	23	US- 20070255116	11/1/2007	Mehta et al.	
	24	US- 20080319295	12/25/2008	Bernstein et al.	
	25	US- 20080319296	12/25/2008	Bernstein et al.	
	26	US- 20100082364	4/1/2010	Taub et al.	
	27	US- 20100265073	10/21/2010	Harper, Wesley Scott	
	28	~~US- 20100305965~~	12/2/2010	Benjamin et al. US-20100305965	
	29	US- 20100313105	12/9/2010	Nekoomaram et al.	
	30	~~US- 20110119080~~	5/19/2011	Hayter et al. US-20110119080	
	31	US- 20110149759	6/23/2011	Jollota, James	
	32	US- 20110152970	6/23/2011	Jollota et al.	
	33	US- 20110160544	6/30/2011	Hayter, Gary A.	
	34	US- 20110213225	9/1/2011	Bernstein et al.	
	35	US- 20110289497	11/24/2011	Kiaie et al.	
	36	US- 20120016305	1/19/2012	Jollota et al.	
	37	US- 20120216297	8/23/2012	Cohen et al.	
	38	US- 20130059541	3/7/2013	Sloan et al.	

FOREIGN PATENT DOCUMENTS

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Examiner Signature	/FRANKLIN D BALSECA/	Date Considered	10/02/2017

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /FDB/

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Sheet 3 of 4

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Art Unit	2681
Examiner Name	WU, Daniel
Attorney Docket Number	DEXCOM.225A

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	39	US- 20130132416	5/23/2013	Hayter et al.	
		US-			
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FOREIGN PATENT DOCUMENTS

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Examiner Signature	/FRANKLIN D BALSECA/	Date Considered	10/02/2017

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

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(Use as many sheets as necessary)

Sheet 4 of 4

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First Named Inventor	Mensinger, Michael Robert
Art Unit	2681
Examiner Name	WU, Daniel
Attorney Docket Number	DEXCOM.225A

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	1	Garg et al., Diabetes Care 29(1):44-50 (2006): Improvement in Glycemic Excursions with a Transcutaneous, Real-Time Continuous Glucose Sensor: A Randomized Controlled Trial	
	2	Hirsch and Brownlee, Journal of Diabetes and Its Complications 19:178-181 (2005): Should Minimal Blood Glucose Variability Become the Gold Standard of Glycemic Control?	
	3	Kovatchev et al., Diabetes Technology & Therapeutics 5(5):817-828 (2003): Algorithmic Evaluation of Metabolic Control and Risk of Sever Hypoglycemia in Type 1 and Type 2 Diab	
	4	Marling et al., Journal of Diabetes Science & Technology 5(4):871-878 (2011): Characterizing Blood Glucose Variability Using New Metrics with Continuous Glucose Monitoring Da	
	5	Penckofer et al., Diabetes Technology & Therapeutics 14(4):303-310 (2012): Does Glycemic Variability Impact Mood and Quality of Life?	
	6	Wiley et al., 2011 10th International Conference on Machine Learning and Applications, IEEE Computer Sociaty pp. 148-154 (2011): Automatic Detection of Excessive Glycemic Var	

Examiner Signature	/FRANKLIN D BALSECA/	Date Considered	10/02/2017

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. 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 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, 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 (1-800-786-9199) and select option 2.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /FW/

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 2 of 4

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Mensinger, Michael Robert
Art Unit	2681
Examiner Name	WU, Daniel
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	20	US- 8086292	12/27/2011	Peyser, Thomas	
	21	US- 8409093	4/2/2013	Bugler, Jocyon R.	
	22	US- 20070253021	11/1/2007	Mehta et al.	
	23	US- 20070255116	11/1/2007	Mehta et al.	
	24	US- 20080319295	12/25/2008	Bernstein et al.	
	25	US- 20080319296	12/25/2008	Bernstein et al.	
	26	US- 20100082364	4/1/2010	Taub et al.	
	27	US- 20100265073	10/21/2010	Harper, Wesley Scott	
	28	US- ~~20100030596~~	12/2/2010	Benjamin et al. 20100305965	
	29	US- 20100313105	12/9/2010	Nekoomaram et al.	
	30	US- 201101129080	5/19/2011	Hayter et al.	
	31	US- 20110149759	6/23/2011	Jollota, James	
	32	US- 20110152970	6/23/2011	Jollota et al.	
	33	US- 20110160544	6/30/2011	Hayter, Gary A.	
	34	US- 20110213225	9/1/2011	Bernstein et al.	
	35	US- 20110289497	11/24/2011	Kiaie et al.	
	36	US- 20120016305	1/19/2012	Jollota et al.	
	37	US- 20120216297	8/23/2012	Cohen et al.	
	38	US- 20130059541	3/7/2013	Sloan et al.	

Change(s) applied to document; /K.D./ 6/22/2017

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature	/Franklin Balseca/	Date Considered	03/18/2015

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. 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 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, 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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PTO/SB/08a (07-09)
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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 4

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Mensinger, Michael Robert
Art Unit	2681
Examiner Name	WU, Daniel
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 5832448	11/3/1998	Brown, Stephen J.	
	2	US- 5897493	4/27/1999	Brown, Stephen J.	
	3	US- 6101478	8/8/2000	Brown, Stephen J.	
	4	US- 6168563	1/2/2001	Brown, Stephen J.	
	5	US- 6368273	4/9/2002	Brown, Stephen J.	
	6	US- 6442432	8/27/2002	Lee, Michael Thomas	
Change(s) applied to document, /K.D./ 6/22/2017	7	US- ~~6447424~~ 6,477,424	11/5/2002	Thompson et al.	
	8	US- 6669631	12/30/2003	Norris et al.	
	9	US- 6735479	5/11/2004	Fabian et al.	
	10	US- 6943787	9/13/2005	Webb, James D.	
	11	US- 6957102	10/18/2005	Silver et al.	
	12	US- 7103578	9/5/2006	Beck et al.	
	13	US- 7399277	7/15/2008	Saidara et al.	
	14	US- 20080319294	12/25/2008	Taub, Marc B.	
	15	US- 7618368	11/17/2009	Brown, Stephen J.	
	16	US- 7685005	3/23/2010	Riff et al.	
	17	US- 7811231	10/12/2010	Jin et al.	
	18	US- 7981034	7/19/2011	Jennewine et al.	
	19	US- 8085151	12/27/2011	Jennewine, R. Curtis	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
	1	WO 2012/108935	2012-08-16	Abbott Diabetes Care Inc.		
	2	WO 2012/108936	2012-08-16	Abbott Diabetes Care Inc.		
	3	WO 2012/108939	2012-08-16	Abbott Diabetes Care Inc.		
	4	WO 2012/108940	2012-08-16	Abbott Diabetes Care Inc.		

Examiner Signature	/Franklin Balseca/	Date Considered	03/18/2015

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

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PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (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 including the Patent, advance orders and notification of maintenance fees 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.

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

68851 7590 06/14/2017
KNOBBE, MARTENS, OLSON & BEAR, LLP
DEXCOM, INC.
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

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 facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A	8793

TITLE OF INVENTION: REMOTE MONITORING OF ANALYTE MEASUREMENTS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	09/14/2017

EXAMINER	ART UNIT	CLASS-SUBCLASS
BALSECA, FRANKLIN D	2685	340-870020

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Knobbe Martens
2 Olson & Bear, LLP
3

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

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

(A) NAME OF ASSIGNEE: DexCom, Inc.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): San Diego, California

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

4a. The following fee(s) are submitted:
☒ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☒ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 11-1410 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
☐ Applicant certifying micro entity status. See 37 CFR 1.29
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.
☐ Applicant asserting small entity status. See 37 CFR 1.27
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.
☐ Applicant changing to regular undiscounted fee status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

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Authorized Signature _____ Date September 11, 2017

Typed or printed name Rose M. Thiessen Registration No. 40,202

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Abbott Ex. 1002 - 17/834

Electronic Patent Application Fee Transmittal

Application Number:	13842679
Filing Date:	15-Mar-2013
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Filer:	Rose M. Thiessen/Edgar Compton
Attorney Docket Number:	DEXCOM.225A

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	1501	1	960	960

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**960**

Electronic Acknowledgement Receipt

EFS ID:	30326268
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Rose M. Thiessen/Heather OBrien
Filer Authorized By:	Rose M. Thiessen
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	11-SEP-2017
Filing Date:	15-MAR-2013
Time Stamp:	16:39:54
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$960
RAM confirmation Number	091217INTEFSW16402001
Deposit Account	111410
Authorized User	Heather OBrien

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)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	20170911_123043.pdf	22399 2720882ebde4d07805f4b42b9f5a1b49db8bb712	no	1
Warnings:					
Information:					
2	Issue Fee Payment (PTO-85B)	20170911_123046.pdf	92763 f8c9e45716e036256a6e448e5c9106cc464b9ff9	no	1
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30681 78a7a14fa65dbaaba646b6a905b7e09a0e65fb72	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	145843		

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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

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Please Direct All Correspondence to Customer Number **68851**

ISSUE FEE TRANSMITTAL LETTER

Inventor	:	Michael Robert Mensinger
App. No.	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	Balseca, Franklin D.
Art Unit	:	2685
Conf. No.	:	8793

MAIL STOP ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Enclosed for filing is the Issue Fee for the above-identified application:

(X) Form PTOL-85 - $960

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment, to Account No. 11-1410.

Rose M. Thiessen
Registration No. 40,202
Attorney of Record
Customer No. 68851
(808) 707-4000

26662230
091117

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13842679	MENSINGER ET AL.
	Examiner	**Art Unit**
	FRANKLIN BALSECA	2685

CPC								
Symbol							**Type**	**Version**
A61B	/	5	/	0002			F	2013-01-01
A61B	/	5	/	0015			A	2013-01-01
G06F	/	19	/	32			A	2013-01-01
G06F	/	19	/	30			A	2013-01-01
A61B	/	5	/	7465			A	2013-01-01
G06F	/	19	/	3487			A	2013-01-01
G06F	/	19	/	3406			A	2013-01-01
G06F	/	19	/	34			A	2013-01-01
A61B	/	5	/	7435			A	2013-01-01
A61B	/	5	/	02			A	2013-01-01
A61B	/	5	/	0024			A	2013-01-01
A61B	/	5	/	0004			I	2013-01-01
A61B	/	5	/	0022			I	2013-01-01
A61B	/	5	/	14532			I	2013-01-01
A61B	/	5	/	743			I	2013-01-01
G06F	/	19	/	3418			I	2013-01-01
H04L	/	67	/	12			I	2013-01-01
A61B	/	5	/	7282			I	2013-01-01
A61B	/	5	/	746			I	2013-01-01
A61B	/	5	/	145			I	2013-01-01
A61B	/	5	/	7264			I	2013-01-01
A61B	/	5	/	742			I	2013-01-01

CPC Combination Sets								
Symbol							**Type**	**Set**	**Ranking**	**Version**
	/		/							

/FRANKLIN BALSECA/ Examiner.Art Unit 2685	06/07/2017	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	17	
/HAI PHAN/ Supervisory Patent Examiner.Art Unit 2685	06/09/2017	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2A

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13842679	MENSINGER ET AL.
	Examiner	**Art Unit**
	FRANKLIN BALSECA	2685

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

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

INTERNATIONAL CLASSIFICATION														
CLAIMED						NON-CLAIMED								
A	6	1	B	5 / 00										
A	6	1	B	5 / 02										
A	6	1	B	5 / 145										
G	0	6	F	19 / 00										
H	0	4	L	29 / 08										

/FRANKLIN BALSECA/ Examiner.Art Unit 2685	06/07/2017	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	17	
/HAI PHAN/ Supervisory Patent Examiner.Art Unit 2685	06/09/2017	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2A

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13842679	MENSINGER ET AL.
	Examiner	**Art Unit**
	FRANKLIN BALSECA	2685

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

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		17												
	2		18												
	3		19												
	4		20												
	5		21												
	6		22												
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	11		27												
	12		28												
	13		29												
	14														
	15														
	16														

/FRANKLIN BALSECA/ Examiner.Art Unit 2685	06/07/2017	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	17	
/HAI PHAN/ Supervisory Patent Examiner.Art Unit 2685	06/09/2017	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2A

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13842679	MENSINGER ET AL.
	Examiner	Art Unit
	FRANKLIN BALSECA	2685

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

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

CLAIM		DATE								
Final	Original	12/03/2015	06/24/2016	12/29/2016	06/07/2017	08/07/2017				
	1	✓	✓	✓	=	=				
	2	✓	✓	-	-	-				
	3	✓	-	-	-	-				
	4	✓	✓	✓	=	=				
	5	✓	✓	✓	=	=				
	6	✓	✓	✓	=	=				
	7	✓	✓	✓	=	=				
	8	✓	✓	✓	=	=				
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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13842679	MENSINGER ET AL.
	Examiner	Art Unit
	FRANKLIN BALSECA	2685

CPC- SEARCHED		
Symbol	Date	Examiner
G06F19/30,32,34,3406,3418,3487	03/18/2015	FB
A61B5/0002,0004,0015,0022,0024,02,742,743,7435,746,7465,14532	03/18/2015	FB
Updated Search	12/02/2015	FB
Updated Search	06/24/2016	FB
H04Q2209/00,10,40,70	06/24/2016	FB
Updated Search	12/29/2016	FB
Updated Search	06/07/2017	FB
A61B5/145,7264,7282	06/07/2017	FB
G06F19/32	06/07/2017	FB
H04L67/12	06/07/2017	FB

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
340	870.01,870.02,870.07	03/18/2015	FB
705	2, 3	03/18/2015	FB
600	300,301,316,365,421,522	03/18/2015	FB
607	28, 30	03/18/2015	FB
Updated Search	Updated Search	12/02/2015	FB
Updated Search	Updated Search	06/24/2016	FB
Updated Search	Updated Search	12/29/2016	FB
Updated Search	Updated Search	06/07/2017	FB

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

/FRANKLIN BALSECA/ Examiner.Art Unit 2685	

SEARCH NOTES		
Search Notes	**Date**	**Examiner**
Inventor Search	03/16/2015	FB
East Search	03/18/2015	FB
Updated East Search	12/02/2015	FB
Updated East Search	06/24/2016	FB
Updated East Search	12/29/2016	FB
G06F19/30,32,34,3406,3418,3487 and text limited. See search history printout.	12/29/2016	FB
A61B5/0002,0004,0015,0022,0024,02,742,743,7435,746,7465,14532 and text limited. See search history printout.	12/29/2016	FB
H04Q2209/00,10,40,70 and text limited. See search history printout.	12/29/2016	FB
A61B5/145,7264,7282 and text limited. See search history printout.	06/07/2017	FB
G06F19/32 and text limited. See search history printout.	06/07/2017	FB
H04L67/12 and text limited. See search history printout.	06/07/2017	FB
Updated East and text limited class search	06/07/2017	FB

INTERFERENCE SEARCH			
US Class/ CPC Symbol	**US Subclass / CPC Group**	**Date**	**Examiner**
A61B5	0002,0004,0015,0022,0024,02,145,7264,7282,742,743 ,7435,746,7465,14532	06/07/2017	FB
G06F19	30,32,34,3406,3418,3487	06/07/2017	FB
H04L67	12	06/07/2017	FB

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A	8793

68851 7590 08/11/2017

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IRVINE, CA 92614

EXAMINER
BALSECA, FRANKLIN D

ART UNIT	PAPER NUMBER
2685	

NOTIFICATION DATE	DELIVERY MODE
08/11/2017	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):

jayna.cartee@knobbe.com
efiling@knobbe.com

Corrected Notice of Allowability	**Application No.** 13/842,679	**Applicant(s)** MENSINGER ET AL.	
	Examiner FRANKLIN BALSECA	**Art Unit** 2685	**AIA (First Inventor to File) Status** No

-- 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 *08/03/2017*.
   ☐ 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 *1,4-15,17,20,28 and 29*. 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)).

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

/FRANKLIN BALSECA/ Examiner, Art Unit 2685	/Hai Phan/ Supervisory Patent Examiner, Art Unit 2685

PTO/SB/08a (07-09)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Mensinger, Michael Robert
Art Unit	2685
Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 2002-0169587	11-14-2002	Emek et al.	
	2	US- 2012-0108934	05-03-2012	Valdes et al.	
	3	US- 2013-0116526	05-09-2013	Javitt et al.	
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
	1	WO 2010-040092	04-08-2010	Calamera, Pablo M.		

Examiner Signature	/FRANKLIN D BALSECA/	Date Considered	08/07/2017

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

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(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13/842679
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Art Unit	2685
Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	225A

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	1	US- 2002-0169587	11-14-2002	Emek et al.	
	2	US- 2012-0108934	05-03-2012	Valdes et al.	
	3	US- 2013-0116526	05-09-2013	Javitt et al.	
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
	1	WO 2010-040092	04-08-2010	Calamera, Pablo M.		

Examiner Signature		Date Considered	

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This collection of information is required by 37 CFR 1.97 and 1.98. 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 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, 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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2 October 2009 (02.10.2009)

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(71) Applicant *(for all designated States except US)*: **APPLE INC.** [US/US]; 1 Infinite Loop, Cupertino, California 95014 (US).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **CALAMERA, Pablo M.** [US/US]; 1284 Glenwood Avenue, San Jose, California 95125 (US).

(74) Agents: **VACAR, Dan** et al.; Fish & Richardson P.C., P.O. Box 1022, Minneapolis, Minnesota 55440-1022 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

[Continued on next page]

(54) Title: EMAIL NOTIFICATION PROXY

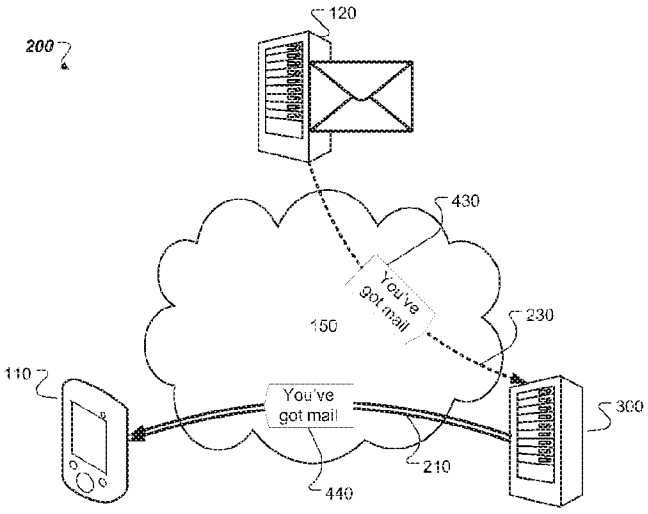


FIG. 2(b)

(57) Abstract: Among other things, techniques and systems are disclosed for exchanging notifications and data between a client device and a server. A system includes a server configured to maintain a first persistent connection to a mobile electronic device. The first persistent connection is configured to push at least service specific data to the mobile electronic device. The server is further configured to maintain a second persistent connection to a third party server. The second persistent connection is configured to monitor for availability, at the third party server, of new data associated with the mobile electronic device. The server is also configured to notify the mobile electronic device via the first persistent connection when new data becomes available at the third party server.

WO 2010/040092 A1

Published:

---- *with international search report (Art. 21(3))*

EMAIL NOTIFICATION PROXY

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of priority from U.S. Application Serial No. 12/245,551, filed on October 3, 2008, and entitled "Email Notification Proxy". The entire disclosure of the above patent application is incorporated by reference as part of the specification of this application.

TECHNICAL FIELD

[0002] This application relates to an email notification proxy that can be used, e.g., to deliver email messages from email servers to mobile electronic devices.

BACKGROUND

[0003] Electronic mail, or email, is relied upon heavily for communications among people, both for business and personal purposes. Readily available access to new email messages has temporal and spatial aspects. From a temporal standpoint, readily available access refers to immediate, or nearly so, retrieval of new email messages by a recipient that retrieves correspondence using a computerized electronic device connected to the internet via the network infrastructure of an office or a home. From a location standpoint, readily available access refers to retrieval of new email messages when the recipient is remote from home or office and the recipient retrieves new email messages via a mobile electronic device. Furthermore, in order for access to be readily available according to the combination of temporal and spatial aspects, the recipient can immediately retrieve new email messages to remotely located mobile electronic devices.

SUMMARY

[0004] Among other things, techniques and systems are disclosed for retrieving email

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messages between a mail client on a mobile electronic device and a mail server.

[0005] In one aspect, a system includes a main server configured to maintain a first persistent connection to a mobile electronic device. The first persistent connection is configured to push at least service specific data from the main server to the mobile electronic device. The main server is further configured to maintain a second persistent connection to a third party server. The second persistent connection is configured to monitor for availability, at the third party server, of new data associated with (e.g., for delivery to) the mobile electronic device. The main server also is configured to notify the mobile electronic device via the first persistent connection when new data becomes available at the third party server. In response, the mobile electronic device can then establish a temporary connection with the third party server to retrieve the associated data (e.g., an email message). The temporary connection is maintained only as long as needed to retrieve the data and then is terminated. In an implementation, the main server can be regarded as an "in-service" server and the third party server can be regarded as an "outside-service" server.

[0006] In another aspect, a method implemented as an internet-based service, includes maintaining a first persistent connection from a main server to a mobile electronic device. The first persistent connection is configured to push at least service specific data to the mobile electronic device. The method further contains maintaining a second persistent connection from the main server to a third party server. The second persistent connection is configured to monitor for availability, at the third party server, of new data associated with the mobile electronic device. Another aspect of the method includes notifying the mobile electronic device via the first persistent connection when new data becomes available at the third party server.

[0007] In yet another aspect, a system includes an internet-based server. The internet-based server is communicatively coupled with one or more portable electronic devices via a

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notification push channel, configured to push notifications related to a service account associated with the one or more portable electronic devices. The internet-based server is further communicatively coupled with an IMAP email provider via a communication channel based on IMAP idle, configured to monitor an email account associated with the one or more portable electronic devices, for new email notifications. The internet-based server is also configured to relay the new email notifications to the one or more portable electronic device via the notification push channel upon receipt of a new-email notification from the internet-based server. The new-email notification triggers any of the one or more portable electronic devices to connect to the IMAP email provider via the communication channel based on IMAP idle to retrieve new email messages.

[0008] In another aspect, a method implemented at an internet-based server, includes monitoring, via a communication channel based on IMAP idle, new email notifications from an IMAP email provider. The email messages are associated with one or more portable electronic devices. The method also includes broadcasting to the one or more portable electronic devices, via a notification push channel, a new email notification received from the IMAP email provider. The broadcasting prompts any one of the plurality of portable electronic devices to connect to the IMAP email provider and retrieve new email messages.

[0009] In another aspect, a computer implemented method includes providing a proxy service to a mail server. The method also includes receiving a connection from a mail client to the proxy service, then releasing the connection from the mail client. The method further includes continuingly retrieving information from the mail server via the proxy service for the mail client. The method includes pushing the information via the proxy service to the mail client.

[0010] The subject matter described in this specification can be implemented as a method or as a system or using computer program products, tangibly embodied in information

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carriers, such as a CD-ROM, a DVD-ROM, a HD-DVD-ROM, a Blue-Ray drive, a semiconductor memory, and a hard disk. Such computer program products may cause a data processing apparatus to conduct one or more operations described in this specification.

[0011] In addition, the subject matter described in this specification can also be implemented as a system including a processor and a memory coupled to the processor. The memory may encode one or more programs that cause the processor to perform one or more of the method acts described in this specification. Further the subject matter described in this specification can be implemented using various data processing machines.

[0012] Certain implementations may provide various advantages. For example, battery lifetime and network efficiency are particularly important to mobile electronic devices, for example, cell phones. The email notification proxy described in this specification enables users of mobile electronic devices to offload the task of monitoring for availability of new-email messages at email servers, thus minimizing battery and communication bandwidth consumption of mobile electronic devices. The email notification proxy also facilitates persistent connections effectively between a mobile electronic device and one or more third party email services. Other features, objects, and potential advantages of the subject matter of this specification will be apparent from the description and drawings, and from the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. 1 is a block diagram showing a portable electronic device in communication with a main server and with an email server.

[0014] FIGs. 2(a)-(b) are block diagrams showing a main server in communication with a portable electronic device and with an email server.

[0015] FIG. 2(c) is a block diagram showing a service server, a portable electronic device and an email server in communication with each other.

[0016] FIG. 3 is a block diagram of a main server in communication with a portable

Abbott Ex. 1002 - 38/834

electronic device and with an email server.

[0017] FIG. 4 shows a swim-lane diagram of a system including a service server, a portable electronic device and an email server in communication with each other.

[0018] FIGs. 5-6 represent aspects of a method implemented at a main server to notify a portable electronic device of new email messages at an email server.

[0019] FIG. 7 is a schematic of a computerized electronic device.

[0020] Like reference symbols and designations in the various drawings indicate like elements.

DETAILED DESCRIPTION

[0021] Techniques and systems are disclosed for enabling offloading of persistent wireless connections from a mail client to a mail server, specifically when the mail client is a mobile electronic device.

[0022] A communication system 100 as depicted in FIG. 1 refers to a mobile electronic device in communication with an internet-based service provider and an internet-based email provider. A mobile electronic device 110 may be connected to the internet 150 via a mobile communication network. Throughout this document, the mobile communication network is assumed to be wireless. Furthermore, the mobile communication network can allow for voice and data communications. Voice communications, for example using the GSM protocol, can include SMS messaging. The data communication bandwidth can be, for example, 2.5 G or 3 G, WiMax and Wi-Fi . Thus, a multitude of information can be exchanged over the data channel, such as text, pictures, music, video, live TV, and multimedia.

[0023] The mobile electronic device 110 can be a smart phone, such as the Iphone, or any other mobile phone, a digital music player, for example Ipod, a personal digital assistant (PDA), a laptop or any other computerized electronic device that can be connected to a mobile network. The mobile electronic device can connect to the internet-based service

Abbott Ex. 1002 - 39/834

provider 300 via a communication channel 210, and one or more internet-based email providers 120 via communication channels 220. The communication channels 210 and 220 can transmit voice or data, as described above.

[0024] The internet-based service provider includes a main server 300. Throughout this document, the main server 300 is also referred to as the in-service server or the internet based service. The internet-based service, also known as cloud-service, can be, for example, Apple's Mobile Me. The internet-based service allows subscribers to associate one or more mobile electronic devices 110 with a service account. The internet-based service is configured, among other things, to synchronize the multiple mobile electronic devices 110 (associated with the service account) with respect to changes of calendar or contacts information related to the service account. Other aspects of the service account are described later, with respect to FIG. 3. The main server 300 pushes to the mobile electronic device 110, through the communication channel 210, notifications of calendar and contacts changes associated with the service account.

[0025] Returning to FIG. 1, the internet-based email provider includes an email server 120. Throughout this document, the email server 120 is also referred to as the third party server, or simply the email provider. The email provider can be, for example, GMAIL, Yahoo! Mail, AOL, Cyrus MAIL, or many other commercial or open source internet-based email providers. The third party server 120 can also be part of a corporate mail system. Subscribers have email accounts with the internet-based email provider. An email account is accessible from a browser-based interface on a computerized electronic device, such as a mobile electronic device 110. The mobile electronic device 110 associated with the email account connects to the email server 120 through the communication channel 220.

[0026] In one implementation, the internet-based email provider is configured according to the Internet Message Access Protocol (IMAP4), based on standards developed by the

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Internet Engineering Task Force (IETF). In the IMAP implementation, the email server 120 is also referred to, interchangeably, as the IMAP server. If the email server 120 is configured according to IMAP4, the IDLE extension (or command) is applicable to the communication channel 220. IMAP4 IDLE allows the mobile electronic device 110 to maintain a connection with the IMAP server 120 without having to poll for availability of new email messages at the IMAP server 120. In fact, once a new email message arrives at the IMAP server 120, it is the IMAP server 120 which transmits a new-email notification 410 to the mobile electronic device 110 through the IMAP4 IDLE enabled connection 220. Then, the mobile electronic device 110 can issue a FETCH command to retrieve the newly available email message 460. In another implementation, the email server may be configured according to the post office protocol (POP3).

[0027] Maintaining an active IMAP IDLE connection 220 with one or more IMAP servers 120 can be burdensome on the operational resources available to the mobile electronic device 110. Specifically, the power consumption to actively maintain such connections 220 can be significant, and can lead to rapid battery drain. At the same time, the bandwidth necessary to actively maintain the connections 220 can hinder bandwidth utilization for other active connections of the mobile electronic device 110, for example the communication channel 210 to the internet-based service 300. The techniques and systems disclosed in this document offload the task of maintaining active connections 220 from the mobile electronic device 110 to the main server 300.

[0028] The communication system 200 as depicted in FIGs. 2(a-c) refers to a main server 300 in communication with a mobile electronic device 110 and a third party server 120. The main server 300 communicates with the mobile electronic device 110 via the communication channel 210 as described above. From the perspective of the internet-based service provider, the communication channel 210 is also referred to as the first persistent connection 210.

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[0029] The third party server 120 is part of an internet-based email provider and is configured with IMAP4, including the IDLE extension. As shown in FIG. 2(a), the main server 300 maintains an active connection 230 with the IMAP server 120. Based on previously transferred email account credentials associated with the mobile electronic device 110, the main server 300 monitors the IMAP4 IDLE enabled communication channel 230 for new-email notifications. Extrapolating the first persistent connection terminology introduced above to describe connection 210 between the main server 300 and the mobile electronic device 110, the communication channel 230 between the main server 300 and the third-party server 120 is referred to as the second persistent connection 230.

[0030] Note that because the main server 300 acts as a proxy for the mobile electronic device 110, the direct connection 220 from the mobile electronic device 110 to the IMAP server 120 can be dropped. By not having to maintain direct connections to one or more email servers 120, the mobile electronic device 110 benefits from longer battery life and communication bandwidth efficiency.

[0031] FIG. 2(b) shows an instance when the main server 300 receives a new-email notification 430 from the IMAP server 120 through the IMAP4 IDLE enabled communication channel 230. Upon receipt of the new-email notification 430, the main server 300 multiplexes, alongside with other data types exchanged via the data pipe 210, a new-email notification 440 for transmission to the mobile electronic device 110. Once the mobile electronic device 110 receives the new-email notification 440 transmitted through the active connection 210 from the main server 300, the mobile electronic device 110 can connect directly to the mail server 120 to retrieve the newly received email. Note that the mobile electronic device 110 has received notification of newly received email without maintaining an active connection 220 directly with the IMAP server 120.

[0032] FIG. 2(c) depicts an instance when the mobile electronic device 110 is connected

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to the IMAP server 120 via the direct communication link 220. The newly arrived email 460 is fetched from the IMAP server 120 by the mobile electronic device 110. Once the email 460 has been retrieved by the mobile electronic device 110, the direct connection 220 is dropped in order to preserve power and network resources at the mobile electronic device 110. Meanwhile, the main server 300 maintains active both the first persistent connection 210 with the mobile electronic device 110 and the second persistent connection 230 with the IMAP server 120.

[0033] The components and subsystems that enable the main server 300 to handle the tasks of (1) maintaining in-service and outside-service connectivity, and (2) manage service specific data are illustrated diagrammatically in FIG. 3.

[0034] The main server 300 includes, among other things, a data repository 340 to store service specific data 355. The service specific data 355 includes contacts 356, calendar 357 and other service data 358. The other service data 358 may include, in one implementation, a picture gallery, backup data, etc.

[0035] A multiplexer 330 combines different types of service specific data 355 for transmittal to at least one portable electronic device 110 associated with a service account. The multiplexed data is sent to the communication pipe 210 which connects the main server to the mobile electronic device 110 via the port 310. At the same time, data uploaded from the mobile electronic device 110 via the communication channel 210 enters the main server 300 through port 310. Data incoming from the mobile electronic device 110 is de-multiplexed into the appropriate service specific data 355 category 356-358 by the multiplexer 330.

[0036] Data uploaded from the mobile electronic device 110 includes email server credentials 350 for the email account at the IMAP server 120 associated with the mobile electronic device 110. The email server credentials 350 include an account name, password, etc. Data referring to the email server credentials can be stored in the data repository 340 or

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in another dedicated storage element at the main server 300.

[0037] The email server credentials 350 associated with the mobile electronic device 110 are used by the main server 300 to connect to the IMAP server 120. Specifically, the email server credentials are sent via the port 320 to the IMAP server 120 to establish the IMAP4 IDLE enabled second persistent connection 230 between the main server 300 and the IMAP server 120.

[0038] When a new-email notification 430 arrives from the IMAP server 120 to the main server 300 via the port 320, a listener element 530 routes the new-email notification 430 to the multiplexer 330. The multiplexer 330 combines the new-email notification 430 with other service specific data 355 or notifications for transmittal to the mobile electronic device 110. Thus, a new-email notification 440 can be submitted to the mobile electronic device 110 through the active first persistent connection 210.

[0039] The swim-lane diagram 400 in FIG. 4 illustrates the IMAP proxy technique as a time sequence from time 1 (at the top of diagram 400) to time 8 (at the bottom of diagram 400). The first or left-most (vertical) lane signifies the time sequence corresponding to the mobile electronic device 110. The second lane corresponds to the time sequence of the main server 300. The third lane depicts the time sequence of the IMAP server 120. Finally, the fourth (right-most) lane corresponds to the internet 150 (as a whole). The fourth lane represents an input for diagram 400, i.e., email messages arrive into diagram 400 from the internet 150.

[0040] At time 1, a subscriber of the internet-based email provider connects to the IMAP server 120 using a mobile electronic device 110, via a direct connection 220. The index "-j", hyphenated to any label denotes a time instance of that element. In FIG. 4, for example, connection label 220-1, stands for connection 220 at time 1, and so on. As indicated earlier, connection 220 between the mobile electronic device 110 and the IMAP server 120 is IMAP4

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IDLE enabled.

[0041] At time 2, a new email 460-2 addressed to the mobile electronic device 110 arrives at the IMAP server 120. The IMAP server 120 receives the newly arrived email 460-2 through an internet connection 151. The IMAP server 120 first submits a new-email notification 410 to the mobile electronic device 110 through the direct connection 220-2. Shortly after that, upon a FETCH command (not illustrated) from the mobile electronic device 110, the IMAP server 120 transmits the newly arrived email 460-2 to the mobile electronic device 110. Time instance 2 of the swim-lane diagram 400 corresponds to the system configuration and state illustrated in FIG. 1.

[0042] At time 3, the mobile electronic device 110 submits a DISCONNECT command through connection 220-3 and disconnects from the IMAP server 120. By doing so, the mobile electronic device 110 cannot receive future new-email notifications from the IMAP server, until at a later time when the two entities re-establish connection 220.

[0043] During the "off-line state" (with respect to the email provider) of the mobile electronic device 110, the main server 300 can act as a proxy to monitor new-email notifications at the IMAP server 120 on behalf of the mobile electronic device 110. As explained earlier, the first persistent connection 210-4 associated with the service account of the mobile electronic device 110 is assumed to be active all the time. Therefore, at time 4, the mobile electronic device 110 uploads the email server credentials 350-4 to the main server 300.

[0044] Using the newly uploaded email server credentials 350-4, the main server 300 establishes an out-of service connection 230-4 with the IMAP server 120. As discussed earlier, the second persistent connection 230-4 is IMAP4 IDLE enabled. From time 4 on, the main server 300 serves as an IMAP-proxy on behalf of the mobile electronic device 110. Note, that the mobile electronic device 110 has been and remained disconnected from the

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direct connection 220 to the IMAP server 120 since time 3. Time instance 4 of the swim-lane diagram 400 corresponds to the system configuration and state illustrated in FIG. 2(a).

[0045] Returning to FIG. 4, at time 5, another email 461-5 addressed to the mobile electronic device 110 arrives at the IMAP server 120. The IMAP server 120 receives the newly arrived email 461-5 through another internet connection 152. The IMAP server 120 submits a new-email notification 430 to the main server 300 through the active second persistent connection 230-5. Upon receipt of the new-email notification 430, the main server 300 multiplexes a new-email notification 440 alongside other service specific data 355 for transmission through the first persistent connection 210-5. Therefore, the mobile electronic device 110 can find out substantially immediately about the arrival of new email 461-5, without being directly connected to the IMAP server 120. Time instance 5 of the swim-lane diagram 400 corresponds to the system configuration and state illustrated in FIG. 2(b).

[0046] Returning to FIG. 4, at time 6, the mobile electronic device 110 may decide to directly connect to the IMAP server 120, by reestablishing the connection 220-6, in order to retrieve the newly arrived email 461. Once the second persistent connection 230 was established at time 4 between the main server 300 and the IMAP server 120, the newly reestablished connection 220 is referred to as the temporary connection 220.

[0047] Upon establishing the temporary connection 220-6, the mobile electronic device 110 issues a FETCH command (not illustrated) to the IMAP server 120. At time 7, the IMAP server transmits the email 461-6 to the mobile electronic device 110. Time instance 7 of the swim-lane diagram 400 corresponds to the system configuration and state illustrated in FIG. 2(c).

[0048] Returning to FIG. 4, at time 8, once the latest email 461 has been retrieved, the mobile electronic device 110 submits a DISCONNECT command through the temporary connection 220-8 and disconnects from the IMAP server 120. Again, the mobile electronic

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device 110 cannot receive future new-email notifications from the IMAP server 120, until at a later time the two entities re-establish a temporary connection 220. On the other hand, the mobile electronic device 110 has again offloaded to the main server 300 the burdensome task of maintaining additional direct connections with the mail server 120. The proxy technique can be accomplished as shown in diagram 400 because the first persistent connection 210 and the second persistent connection, both associated with the service account of the mobile electronic device 110, are kept active all the time by the main server 300.

[0049] The method 500 disclosed in this document is summarized in the flow chart diagram of FIG. 5. The method 500 can be implemented at a service server. At step 510, the main server maintains a first persistent connection to a mobile electronic device. This first persistent connection can be stateless, i.e. the first persistent connection is always active. The vertex A represents a looping point for method 500 as shown below.

[0050] At step 520 the main server also maintains a second persistent connection to an email server. The second persistent connection can also be stateless, i.e. the second persistent connection remains active once established.

[0051] At step conditional step 530, the main server monitors the second persistent connection for a new-email notification associated with the mobile electronic device from the email server. While no new-email notification is received at the service server, the monitoring state corresponding to step 520 continues, and method 500 loops back to vertex A.

[0052] At step 540, upon receipt of a new-email notification from the email server, the main server submits a notification to the mobile electronic device via the active first persistent connection. Then, method 500 loops back to vertex A and steps 530 and 540 are executed for as long as necessary.

[0053] FIG. 6 illustrates a portion 600 of method 500. Portion 600, between vertex A'

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and vertex A, relates to establishing, by the service server, the second persistent connection with the email server. At step 610, the main server receives from the mobile electronic device the email server credentials associated with the mobile electronic device. At this step, the main server also stores locally the email server credentials.

[0054] At step 620, the main server connects to the email server using the received email server credentials. By doing so, the main server establishes the second persistent connection with the email server.

[0055] In another aspect, the technique 500 can be implemented at the main server to broadcast the new-email notification from the IMAP email server to one or more mobile electronic devices associated with the service account. For example, step 510 can be modified to indicate that the main server maintains one or more first persistent connections to respectively one or more mobile electronic devices. Then, step 540 can be modified to indicate that, upon receipt of a new email notification from the email server, the main server broadcasts a notification to one or more mobile electronic device via the respectively one or more active first persistent connections.

[0056] In yet another aspect, the technique 500 can be implemented at the main server to monitor one or more IMAP email servers. For example, step 520 can be modified to indicate that the main server maintains one or more second persistent connections to respectively one or more IMAP email servers. Then, step 530 can be modified to indicate that the main server monitors the one or more second persistent connections for a new-email notification associated with the mobile electronic device from the respectively one or more email servers.

[0057] Additionally, the technique 500 can be implemented at the main server to monitor one or more IMAP email servers and to broadcast a new-email message notification to at least one mobile electronic device. For example, step 520 can be modified to indicate that the main server maintains one or more second persistent connections to respectively one or more

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IMAP email servers. Then, step 530 can be modified to indicate that the main server monitors the one or more second persistent connections for a new-email notification associated with the at least one mobile electronic device from the respectively one or more email servers. Next, step 540 can be modified to indicate that, upon receipt of a new email notification from any of the one or more email servers, the main server broadcasts a notification to the at least one mobile electronic device via the respectively one or more active first persistent connections.

[0058] FIG. 7 is a schematic diagram of a computer system 700 representing the main server 300. Also the computer system 700 can represent the email server 120. Further, the computer system 700 can represent the portable electronic device 110. The system 700 can be used for the operations described in association with any of the computer-implement methods described previously, according to one implementation. The system 700 is intended to include various forms of digital computers, such as laptops, desktops, workstations, servers, blade servers, mainframes, and other appropriate computers. The system 700 can also include mobile devices, such as personal digital assistants, cellular telephones, smartphones, and other similar computing devices. Additionally the system can include portable storage media, such as, Universal Serial Bus (USB) flash drives. For example, the USB flash drives may store operating systems and other applications. The USB flash drives can include input/output components, such as a wireless transmitter or USB connector that may be inserted into a USB port of another computing device.

[0059] The system 700 includes a processor 710, a memory 720, a storage device 730, and an input/output device 740. Each of the components 710, 720, 730, and 740 are interconnected using a system bus 750. The processor 710 is capable of processing instructions for execution within the system 700. In one implementation, the processor 710 is a single-threaded processor. In another implementation, the processor 710 is a multi-threaded

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processor. The processor 710 is capable of processing instructions stored in the memory 720 or on the storage device 730 to display graphical information for a user interface on the input/output device 740.

[0060] The memory 720 stores information within the system 700. In one implementation, the memory 720 is a computer-readable medium. In one implementation, the memory 720 is a volatile memory unit. In another implementation, the memory 720 is a non-volatile memory unit.

[0061] The storage device 730 is capable of providing mass storage for the system 700. In one implementation, the storage device 730 is a computer-readable medium. In various different implementations, the storage device 730 may be a floppy disk device, a hard disk device, an optical disk device, or a tape device.

[0062] The input/output device 740 provides input/output operations for the system 700. In one implementation, the input/output device 740 includes a keyboard and/or pointing device. In another implementation, the input/output device 740 includes a display unit for displaying graphical user interfaces.

[0063] Aspects of the subject matter and the functional operations described in this specification can be implemented in digital electronic circuitry, or in computer software, firmware, or hardware, including the structures disclosed in this specification and their structural equivalents, or in combinations of one or more of them. Aspects of the subject matter described in this specification can be implemented as one or more computer program products, i.e., one or more modules of computer program instructions encoded on a tangible program carrier for execution by, or to control the operation of, data processing apparatus. The tangible program carrier can be a propagated signal or a computer readable medium. The propagated signal is an artificially generated signal, e.g., a machine-generated electrical, optical, or electromagnetic signal, that is generated to encode information for transmission to

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suitable receiver apparatus for execution by a computer. The computer readable medium can be a machine-readable storage device, a machine-readable storage substrate, a memory device, a composition of matter effecting a machine-readable propagated signal, or a combination of one or more of them.

[0064] The term "data processing apparatus" encompasses all apparatus, devices, and machines for processing data, including by way of example a programmable processor, a computer, a portable electronic device, a server, or multiple processors, portable electronic devices and servers. The apparatus can include, in addition to hardware, code that creates an execution environment for the computer program in question, e.g., code that constitutes processor firmware, a protocol stack, a database management system, an operating system, or a combination of one or more of them.

[0065] A computer program (also known as a program, software, software application, script, or code) can be written in any form of programming language, including compiled or interpreted languages, or declarative or procedural languages, and it can be deployed in any form, including as a stand alone program or as a module, component, subroutine, or other unit suitable for use in a computing environment. A computer program does not necessarily correspond to a file in a file system. A program can be stored in a portion of a file that holds other programs or data (e.g., one or more scripts stored in a markup language document), in a single file dedicated to the program in question, or in multiple coordinated files (e.g., files that store one or more modules, sub programs, or portions of code). A computer program can be deployed to be executed on one computer or on multiple computers that are located at one site or distributed across multiple sites and interconnected by a communication network.

[0066] The processes and logic flows described in this specification can be performed by one or more programmable processors executing one or more computer programs to perform functions by operating on input data and generating output. The processes and logic flows

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can also be performed by, and apparatus can also be implemented as, special purpose logic circuitry, e.g., an FPGA (field programmable gate array) or an ASIC (application specific integrated circuit).

[0067] Processors suitable for the execution of a computer program include, by way of example, both general and special purpose microprocessors, and any one or more processors of any kind of digital computer. Generally, a processor will receive instructions and data from a read only memory or a random access memory or both. The essential elements of a computer are a processor for performing instructions and one or more memory devices for storing instructions and data. Generally, a computer will also include, or be operatively coupled to receive data from or transfer data to, or both, one or more mass storage devices for storing data, e.g., magnetic, magneto optical disks, or optical disks. However, a computer need not have such devices. Moreover, a computer can be embedded in another device.

[0068] Computer readable media suitable for storing computer program instructions and data include all forms of non volatile memory, media and memory devices, including by way of example semiconductor memory devices, e.g., EPROM, EEPROM, and flash memory devices; magnetic disks, e.g., internal hard disks or removable disks; magneto optical disks; and CD ROM and DVD-ROM disks. The processor and the memory can be supplemented by, or incorporated in, special purpose logic circuitry.

[0069] To provide for interaction with a user, aspects of the subject matter described in this specification can be implemented on a computer having a display device, e.g., a CRT (cathode ray tube) or LCD (liquid crystal display) monitor, for displaying information to the user and a keyboard and a pointing device, e.g., a mouse or a trackball, by which the user can provide input to the computer. Other kinds of devices can be used to provide for interaction with a user as well; for example, input from the user can be received in any form, including acoustic, speech, or tactile input.

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[0070] Aspects of the subject matter described in this specification can be implemented in a computing system that includes a back end component, e.g., as a data server, or that includes a middleware component, e.g., an application server, or that includes a front end component, e.g., a client computer having a graphical user interface or a Web browser through which a user can interact with an implementation of the subject matter described is this specification, or any combination of one or more such back end, middleware, or front end components. The components of the system can be interconnected by any form or medium of digital data communication, e.g., a communication network. Examples of communication networks include a local area network ("LAN") and a wide area network ("WAN"), e.g., the Internet.

[0071] The computing system can include clients and servers. A client and server are generally remote from each other and typically interact through a communication network. The relationship of client and server arises by virtue of computer programs running on the respective computers and having a client-server relationship to each other.

[0072] While this specification contains many specifics, these should not be construed as limitations on the scope of any invention or of what may be claimed, but rather as descriptions of features that may be specific to particular implementations of particular aspects. Certain features that are described in this specification in the context of separate aspects can also be implemented in combination in a single aspect. Conversely, various features that are described in the context of a single aspect can also be implemented in multiple aspects separately or in any suitable subcombination. Moreover, although features may be described above as acting in certain combinations and even initially claimed as such, one or more features from a claimed combination can in some cases be excised from the combination, and the claimed combination may be directed to a subcombination or variation of a subcombination.

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[0073] Similarly, while operations are depicted in the drawings in a particular order, this should not be understood as requiring that such operations be performed in the particular order shown or in sequential order, or that all illustrated operations be performed, to achieve desirable results. In certain circumstances, multitasking and parallel processing may be advantageous. Moreover, the separation of various system components in the implementations described above should not be understood as requiring such separation in all implementations, and it should be understood that the described program components and systems can generally be integrated together in a single software product or packaged into multiple software products.

[0074] Only a few implementations and examples are described and other implementations, enhancements and variations can be made based on what is described and illustrated in this application.

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CLAIMS

What is claimed is:

1. A system comprising:

a server configured to:

maintain a first persistent connection to a mobile electronic device, wherein the first persistent connection is configured to push at least service specific data to the mobile electronic device;

maintain a second persistent connection to a third party server, wherein the second persistent connection is configured to monitor for availability, at the third party server, of new data associated with the mobile electronic device; and

notify the mobile electronic device via the first persistent connection when new data associated with the mobile electronic device becomes available at the third party server.

2. The system of claim 1, wherein the server is further configured to cause the mobile electronic device to establish a temporary connection directly to the third party service, the temporary connection being maintained sufficiently long to retrieve the new data associated with the mobile electronic device.

3. The system of claim 1, wherein the first persistent connection comprises a data channel or a voice channel.

4. The system of claim 3, wherein the data channel comprises Apple's Notification Service.

5. The system of claim 3, wherein a notification through the voice channel comprises an SMS message.

6. The system of claim 1, wherein the service specific data comprises contacts and calendar information.

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7. The system of claim 1, wherein the portable electronic device comprises one or more of a smart phone, a cellular phone, a personal digital assistant and a laptop.

8. The system of claim 1, wherein an association between the server and the mobile electronic device comprises a service account.

9. The system of claim 8, wherein the service account comprises Apple's Mobile Me.

10. The system of claim 8, wherein the third party server comprises an email service provider including personal mail or corporate mail.

11. The system of claim 10, wherein the second persistent connection includes IMAP and the IMAP idle extension.

12. The system of claim 10, wherein the new data comprises new email messages.

13. The system of claim 10, wherein the service account includes authentication information for an email account at the email service provider, the email account associated with the portable electronic device.

14. A method implemented as an internet-based service, the method comprising:

maintaining a first persistent connection from a main server to a mobile electronic device, wherein the first persistent connection is configured to push at least service specific data to the mobile electronic device;

maintaining a second persistent connection from the main server to a third party server, wherein the second persistent connection is configured to monitor for availability, at the third party server, of new data associated with the mobile electronic device; and

notifying the mobile electronic device via the first persistent connection when new data becomes available at the third party server.

15. The method of claim 14, wherein notifying the mobile electronic device comprises causing the mobile electronic device to establish a temporary connection directly

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to the third party service, the temporary connection being maintained sufficient long to retrieve the new data associated with the mobile electronic device.

16. The method of claim 15, wherein the third party server comprises an email service provider including personal mail or corporate mail.

17. The method of claim 15, wherein an association between the internet-based service and the mobile electronic device comprises a service account.

18. The method of claim 17, wherein the service account includes authentication information for an email account at the email service provider, the email account being associated with the portable electronic device.

19. The method of claim 16, wherein the second persistent connection includes IMAP and the IMAP idle extension.

20. A system comprising:

an internet-based server:

communicatively coupled with one or more portable electronic devices via a notification push channel, configured to push notifications related to a service account associated with the one or more portable electronic devices;

communicatively coupled with an IMAP email provider via a communication channel based on IMAP idle, configured to monitor an email account associated with the one or more portable electronic devices, for new email notifications; and

configured to relay the new email notifications to the one or more portable electronic device via the notification push channel upon receipt of a new email notification from the internet-based server, to trigger any of the one or more portable electronic devices to connect to the IMAP email provider via the communication channel based on IMAP idle to retrieve new email messages.

21. The system of claim 20, wherein the plurality of portable electronic devices comprises a smart phone, a cellular phone, a personal digital assistant and a laptop.

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22. The system of claim 20, wherein the IMAP email provider comprises any IMAP compliant server that supports IMAP idle.

23. The system of claim 22, wherein the IMAP email provider comprises GMAIL, Yahoo! mail, AOL, and Cyrus mail.

24. The system of claim 20, wherein the notifications related to the service account associated with the plurality of portable electronic devices comprise contacts and calendar notifications.

25. The system of claim 20, wherein authentication information for the email account associated with the plurality of portable electronic devices and based at the IMAP email provider is stored on each one of the plurality of portable electronic devices and on the internet-based server.

26. A method implemented at an internet-based server, the method comprising:

monitoring, via a communication channel based on IMAP idle, new email notifications from an IMAP email provider, wherein email messages are associated with one or more portable electronic devices; and

broadcasting to the one or more portable electronic devices, via a notification push channel, a new email notification received from the IMAP email provider to prompt any one of the plurality of portable electronic devices to connect to the IMAP email provider and retrieve new email messages.

27. A computer implemented method comprising:

providing a proxy service to a mail server;

receiving a connection from a mail client to the proxy service;

releasing the connection from the mail client;

continuingly retrieving information from the mail server via the proxy service for the mail client; and

pushing the information via the proxy service to the mail client.

28. The method of claim 27, wherein the mail server comprises an IMAP server.

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29. The method of claim 27, wherein the proxy service is implemented on a server distinct from the mail client or the mail server.

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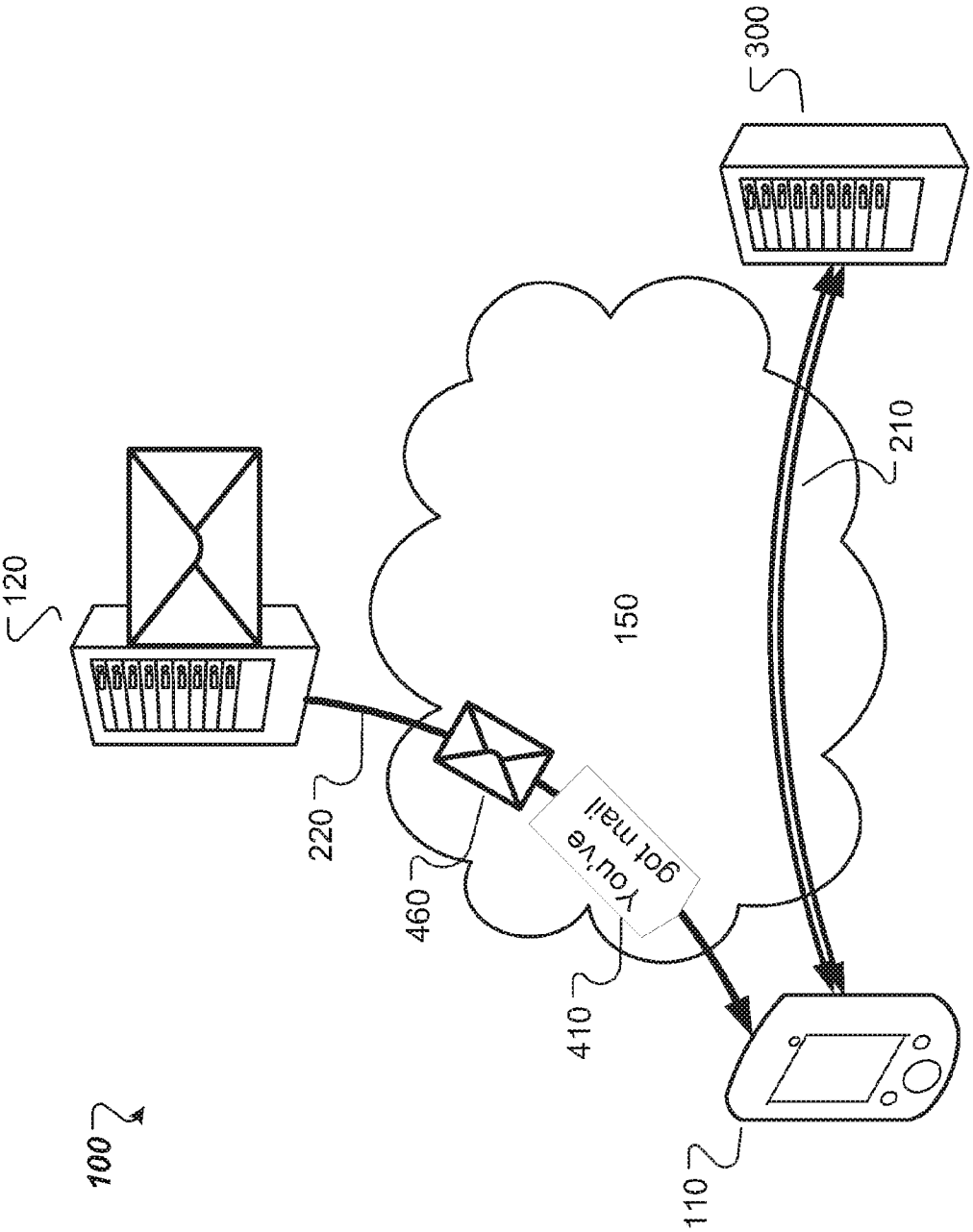


FIG. 1

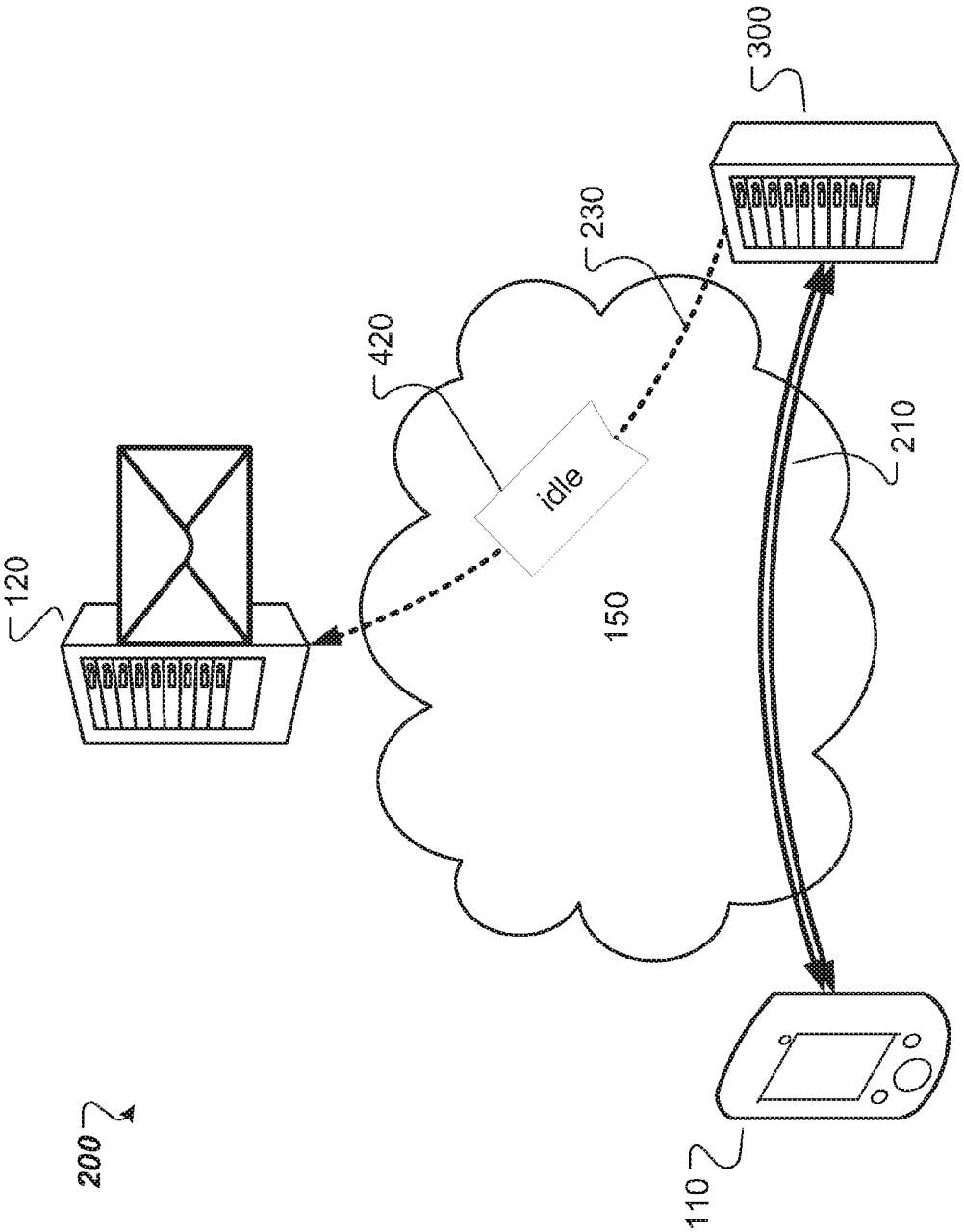


FIG. 2(a)

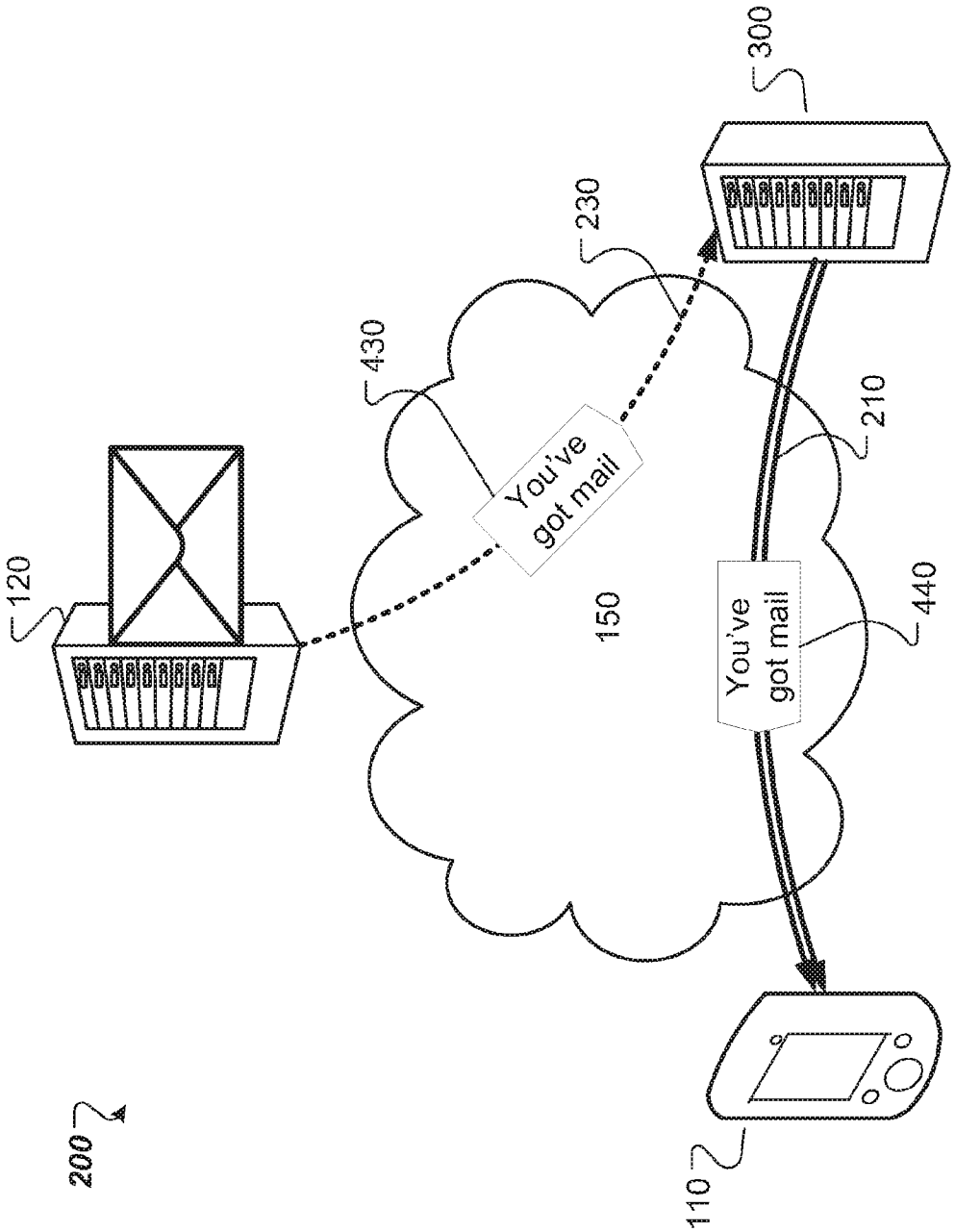

200
120
You've got mail
430
230
300
210
150
You've got mail
440
110

FIG. 2(b)

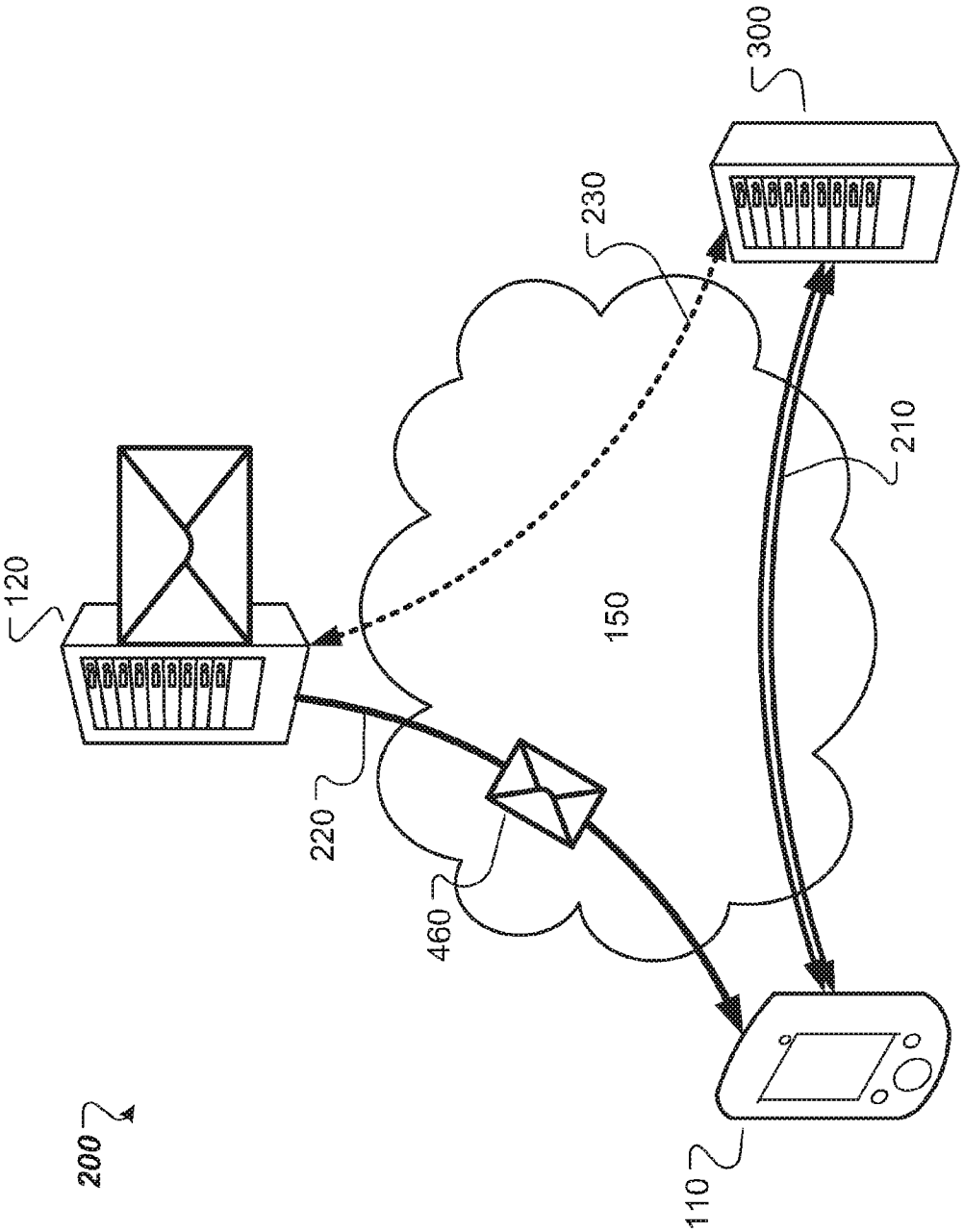


FIG. 2(c)

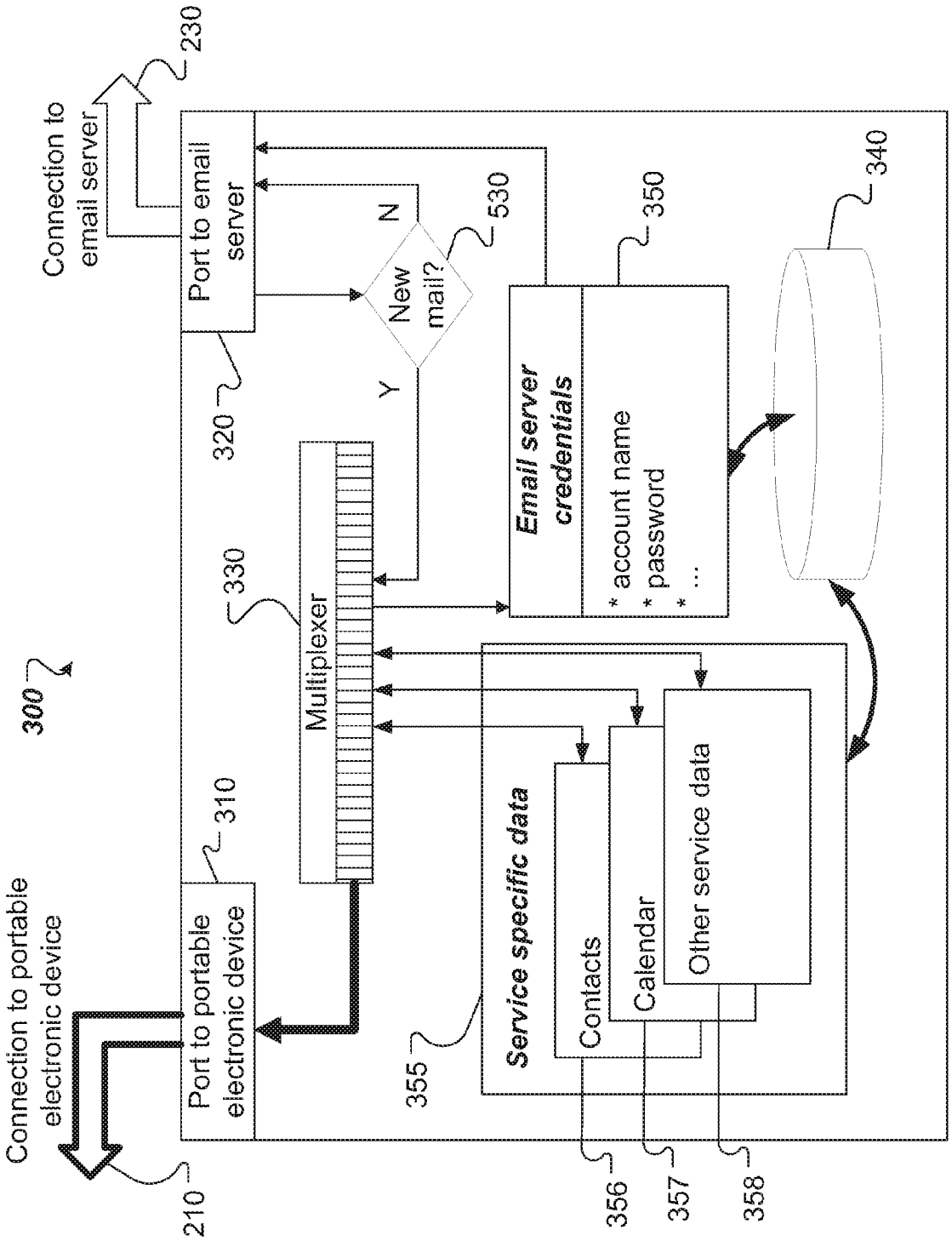

Connection to email server
230
Port to email server
320
New mail?
N
Y
530
350
340
Email server credentials
* account name
* password
* ...
330
Multiplexer
300
310
Port to portable electronic device
Connection to portable electronic device
210
Service specific data
355
Contacts
Calendar
Other service data
356
357
358

FIG. 3

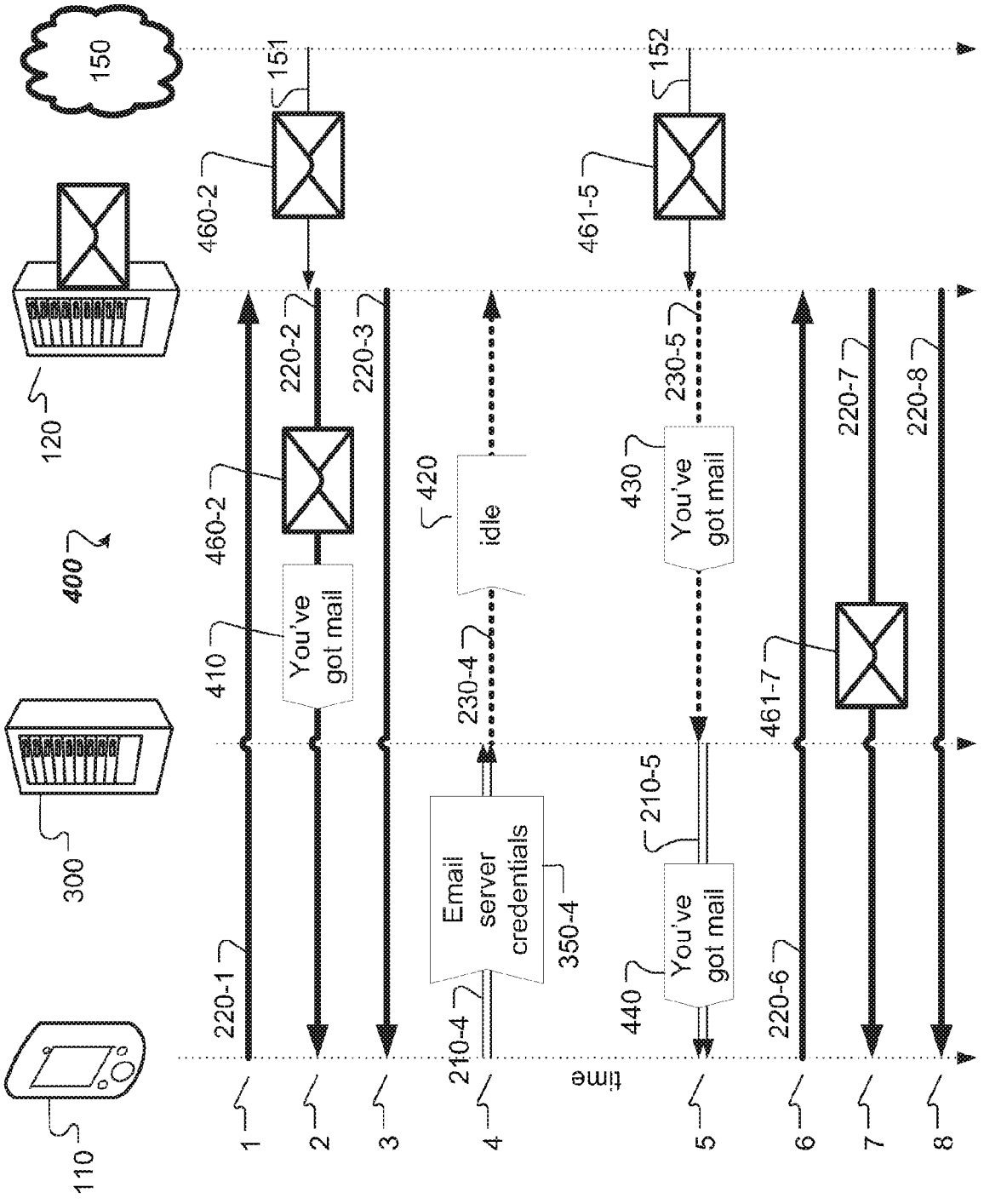

110
300
400
120
150
151
152
460-2
460-2
461-5
220-1
220-2
220-3
220-4
220-5
220-6
220-7
220-8
230-4
230-5
461-7
410
You've got mail
420
idle
430
You've got mail
440
You've got mail
210-4
210-5
Email server credentials
350-4
time
1
2
3
4
5
6
7
8

FIG. 4

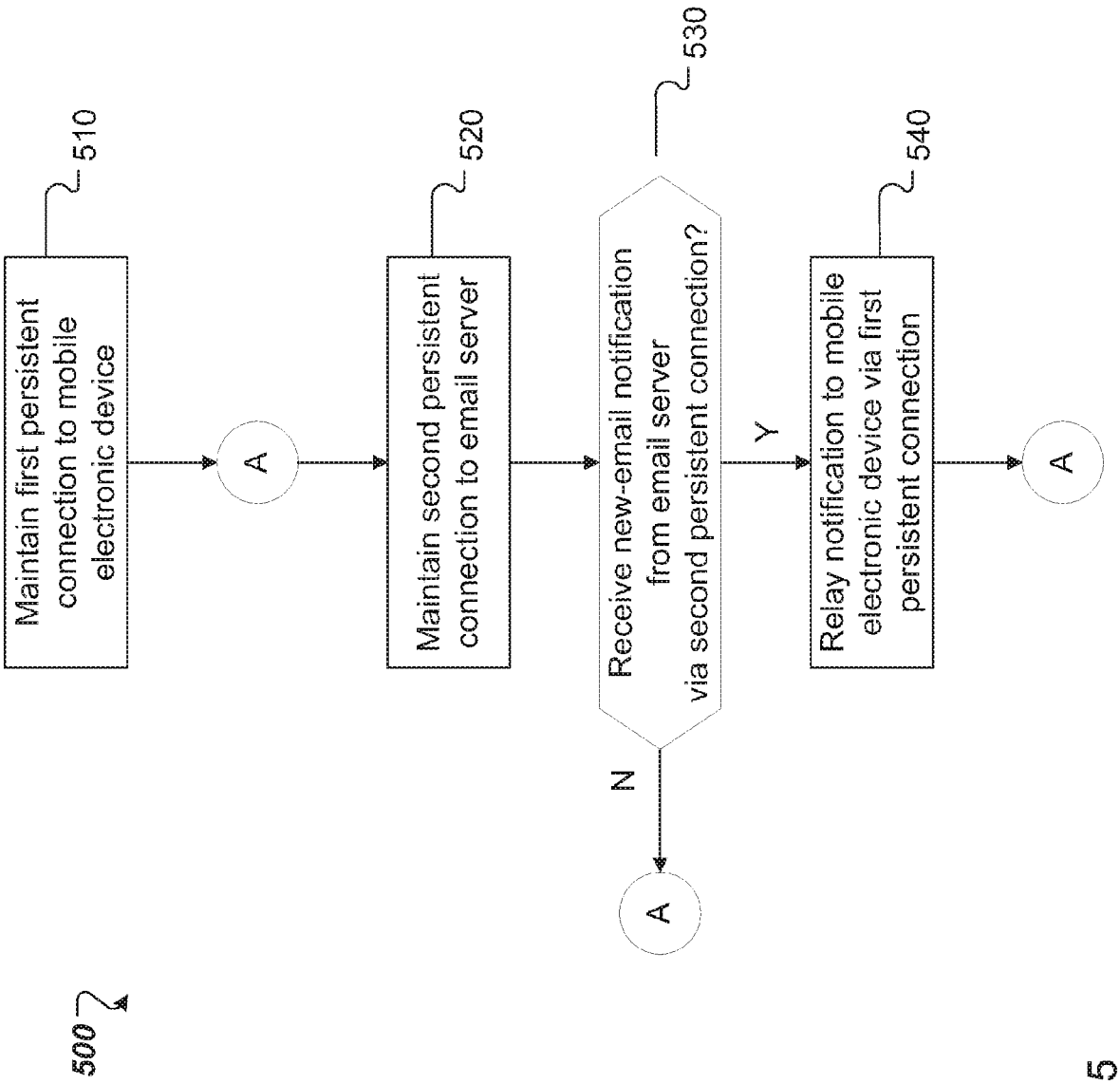

500
Maintain first persistent connection to mobile electronic device
510
A
Maintain second persistent connection to email server
520
Receive new-email notification from email server via second persistent connection?
530
N
Y
A
Relay notification to mobile electronic device via first persistent connection
540
A

FIG. 5

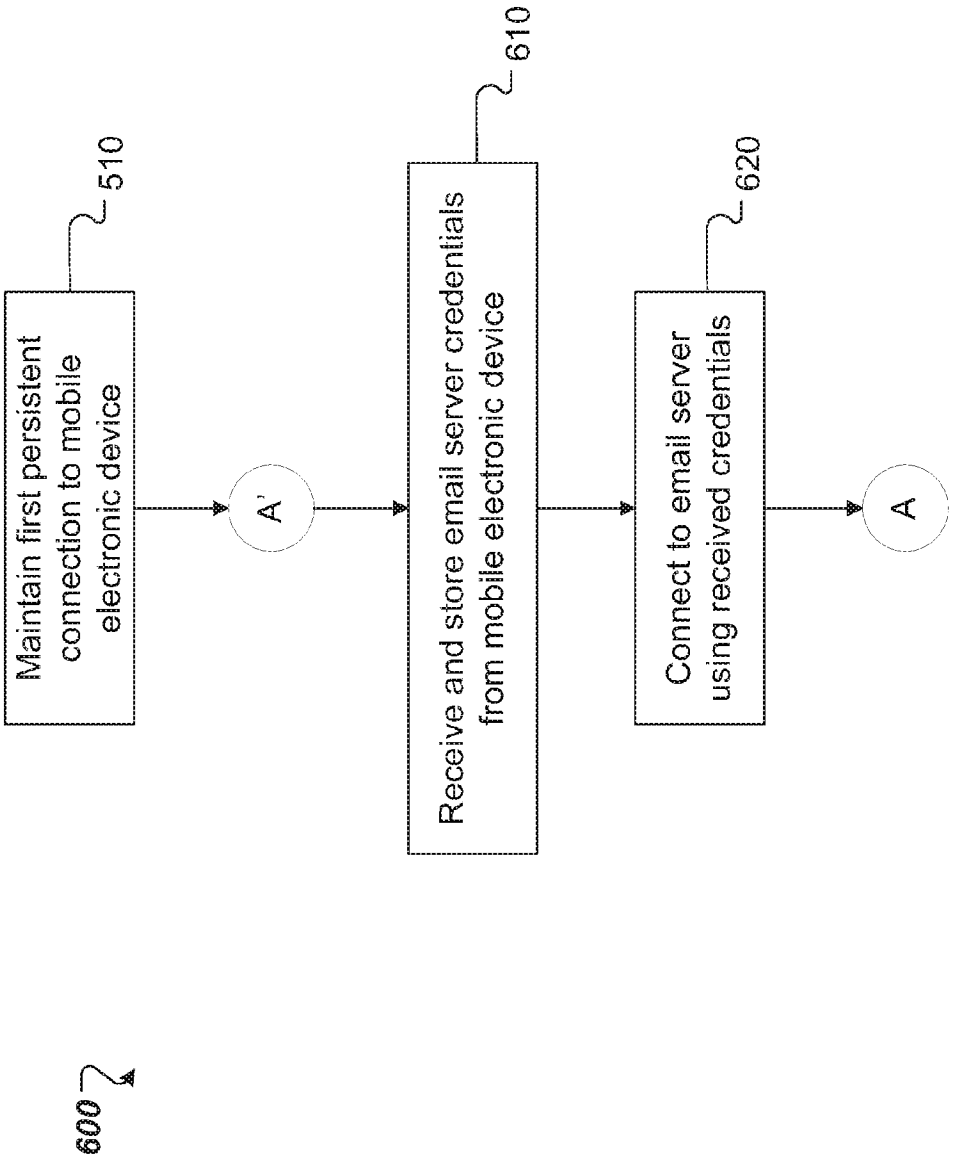

600
Maintain first persistent connection to mobile electronic device
510
A'
Receive and store email server credentials from mobile electronic device
610
Connect to email server using received credentials
620
A

FIG. 6

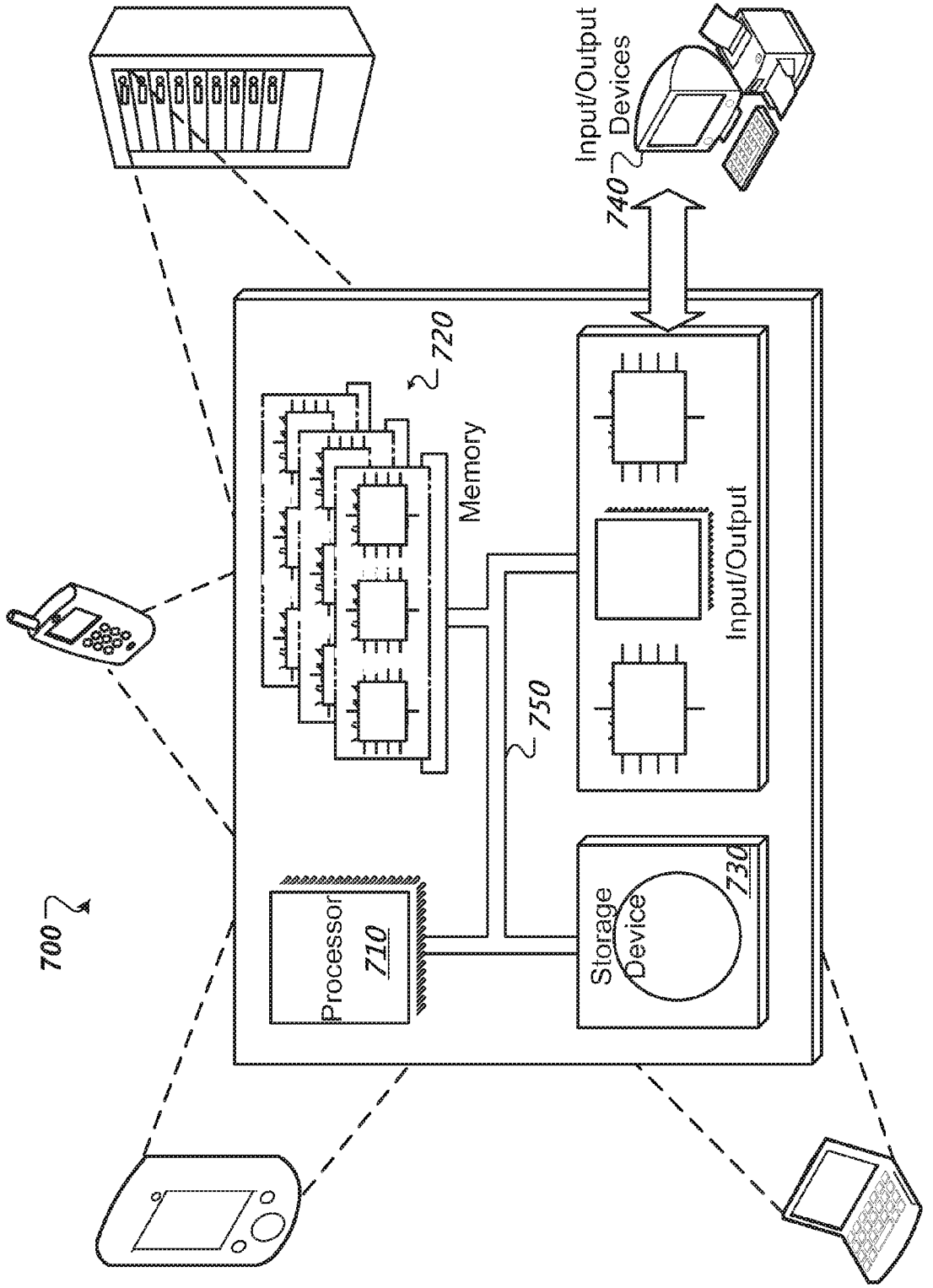

Input/Output Devices
740
720
Memory
750
Input/Output
Processor
710
Storage Device
730
700

FIG. 7

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/059433

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04L12/58

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2008/029133 A (BLUE WHALE SYSTEMS LTD [GB]; MAGUIRE MICHAEL ANDREW [GB]) 13 March 2008 (2008-03-13) page 3, line 28 - page 6, line 30 page 17, line 1 - page 19, line 24 claims 1-4	1-29
Y	US 2007/299918 A1 (ROBERTS AARON [US]) 27 December 2007 (2007-12-27) page 1, right-hand column, paragraph 15 - page 9, right-hand column, paragraph 106 claim 1; figures 1,2	1-29

--/---

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
20 November 2009	27/11/2009

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax. (+31-70) 340-3016	Oteo Mayayo, Carlota

Form PCT/ISA/210 (second sheet) (April 2005)

Abbott Ex. 1002 - 69/834

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/059433

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2004/017583 A (RES IN MOTION LTD [CA]; GILHULY BARRY J [CA]; VAN NGOC ANH [CA]) 26 February 2004 (2004-02-26) page 1, line 11 - page 5, line 2 page 5, line 14 - page 8, line 20 figure 1A	11, 19-26,28
A	LEIBA IBM T J WATSON RESEARCH CENTER B: "IMAP4 IDLE command; draft-leiba-imap-2177bis-00.txt" IETF STANDARD-WORKING-DRAFT, INTERNET ENGINEERING TASK FORCE, IETF, CH, 7 December 2005 (2005-12-07), XP015042856 ISSN: 0000-0004 the whole document	11, 19-26,28
A	CRIDLAND D ET AL: "The Lemonade Profile; draft-ietf-lemonade-profile-bis-11.txt" THE LEMONADE PROFILE; DRAFT-IETF-LEMONADE-PROFILE-BIS-11.TXT, INTERNET ENGINEERING TASK FORCE, IETF; STANDARDWORKINGDRAFT, INTERNET SOCIETY (ISOC) 4, RUE DES FALAISES CH- 1205 GENEVA, SWITZERLAND, vol. lemonade, no. 11, 30 September 2008 (2008-09-30), XP015058423 page 11, paragraph 5.4 - page 15, paragraph 6	11, 19-26,28

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

Abbott Ex. 1002 - 70/834

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2009/059433

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2008029133 A	13-03-2008	EP 2059864 A1	20-05-2009
US 2007299918 A1	27-12-2007	NONE	
WO 2004017583 A	26-02-2004	AU 2002322897 A1	03-03-2004
		CA 2496283 A1	26-02-2004
		CN 1650586 A	03-08-2005
		DE 60213292 T2	12-07-2007
		HK 1077141 A1	26-01-2007
		JP 3973660 B2	12-09-2007
		JP 2005536127 T	24-11-2005

Electronic Patent Application Fee Transmittal

Application Number:	13842679
Filing Date:	15-Mar-2013
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Filer:	Mark D. Wieczorek/Renee Zavala
Attorney Docket Number:	DEXCOM.225A

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**180**

Electronic Acknowledgement Receipt

EFS ID:	29981502
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Mark D. Wieczorek/Renee Zavala
Filer Authorized By:	Mark D. Wieczorek
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	03-AUG-2017
Filing Date:	15-MAR-2013
Time Stamp:	19:53:28
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$180
RAM confirmation Number	080417INTEFSW00005924506176
Deposit Account	506176
Authorized User	Renee Zavala

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 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2017-0803-SuppIDS-225A.pdf	177905 f69607a1df4a01254dd77184400ca11eded83022	yes	2

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Transmittal Letter	1	1
Information Disclosure Statement (IDS) Form (SB08)	2	2

Warnings:					
Information:					
2	Foreign Reference	WO-2010-040092-A1.pdf	3668528 72d7ff808e61d3040a9bd3c6e5fdf2b937c57a1f	no	39
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30858 e2bc5d1a185bf6d68e493f13f36f380bc92c2415	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	3877291		

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

Docket No. DEXCOM.225A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Michael Robert Mensinger, et al.
App. No	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	BALSECA, Franklin D.
Art Unit	:	2685
Conf #	:	8793

CERTIFICATE OF TRANSMITTAL UNDER 37 C.F.R. 1.8

I hereby certify that this paper (along with anything referred to as being attached or enclosed) is being filed electronically via EFS-Web at the United States Patent and Trademark Office on the 03 August 2017.

By: Renee Zavala
Renee Zavala

INFORMATION DISCLOSURE STATEMENT

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

Dear Sir:

Submitted herewith in the above-identified application is an Information Disclosure Statement listing references for consideration. In accordance with 37 C.F.R. §1.98(a)(2)(ii), Applicant submits herewith copies of all cited references, other than copies of U.S. patents or U.S. patent publications. It is respectfully requested that the Examiner initial and return a copy of the enclosed Form PTO/SB/08, and indicate in the official file wrapper of this patent application that the documents listed therein have been considered.

I hereby state that each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. §1.97(e)(1).

Applicant believes a fee of $180.00 is due under 37 C.F.R. §1.17(p), and the Commissioner is hereby authorized to charge that amount to Deposit Account No. 506176, referencing Applicant Docket No. 225A. Further, the Commissioner is hereby authorized to charge all fees and credit all overpayments to Deposit Account No. 506176 during the pendency of this application.

Respectfully submitted,
DEXCOM, INC.

Dated: Aug 3, 2017

By: _____
Mark D. Wieczorek, Reg. No. 37,966

Customer Number 68851
DEXCOM, INC.
6340 Sequence Drive
San Diego, CA 92121
Telephone: 858.875.9786

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

68851 7590 06/14/2017

KNOBBE, MARTENS, OLSON & BEAR, LLP
DEXCOM, INC.
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER
BALSECA, FRANKLIN D

ART UNIT	PAPER NUMBER
2685	

DATE MAILED: 06/14/2017

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A	8793

TITLE OF INVENTION: REMOTE MONITORING OF ANALYTE MEASUREMENTS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	09/14/2017

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 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity 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 and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

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

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

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (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 including the Patent, advance orders and notification of maintenance fees 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.

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

68851 7590 06/14/2017
KNOBBE, MARTENS, OLSON & BEAR, LLP
DEXCOM, INC.
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

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 facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A	8793

TITLE OF INVENTION: REMOTE MONITORING OF ANALYTE MEASUREMENTS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	09/14/2017

EXAMINER	ART UNIT	CLASS-SUBCLASS
BALSECA, FRANKLIN D	2685	340-870020

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

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

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

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

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

4a. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29 — 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.
- ❑ Applicant asserting small entity status. See 37 CFR 1.27 — 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.
- ❑ Applicant changing to regular undiscounted fee 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. _____

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Abbott Ex. 1002 - 79/834

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A	8793

68851 7590 06/14/2017

KNOBBE, MARTENS, OLSON & BEAR, LLP
DEXCOM, INC.
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER	
BALSECA, FRANKLIN D	

ART UNIT	PAPER NUMBER
2685	

DATE MAILED: 06/14/2017

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

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

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

Notice of Allowability	Application No. 13/842,679	Applicant(s) MENSINGER ET AL.	
	Examiner FRANKLIN BALSECA	Art Unit 2685	AIA (First Inventor to File) Status No

-- 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 *04/11/2017*.
   ☐ 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 *1,4-15,17,20,28 and 29*. 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)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☒ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/FRANKLIN BALSECA/ Examiner, Art Unit 2685	/Hai Phan/ Supervisory Patent Examiner, Art Unit 2685

Notice of Allowance

Response to Arguments

1. Applicant's arguments filed on April 11, 2017, with respect to claim(s) 1, 20, 28 and 29 have been fully considered.

Examiner's Amendment

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in an interview with Rose Thiessen on June 6, 2017.

Claim 1 (Currently Amended): A method comprising:

receiving, at a wireless mobile remote monitor, an alert notification message from a server system, the alert notification message representative of a detected event, the event being based on analyte concentration sensor data obtained from a receiver monitoring an analyte state of a host, the analyte concentration sensor data indicating a

concentration of an analyte of the host, the wireless mobile remote monitor being remote to the host and the server system;

presenting, at the wireless mobile remote monitor, the alert notification message, wherein the wireless mobile remote monitor or a user of the wireless mobile remote monitor is specifically authorized by the host to receive the alert notification message to augment the receiver monitoring of the analyte state of the host, wherein the wireless mobile remote monitor or the user of the wireless mobile remote monitor is authenticated by the server system;

receiving, at the wireless mobile remote monitor, user input indicative of acknowledgment of the presented alert notification message;

sending an acknowledgment message from the wireless mobile remote monitor to the server system indicating acknowledgement of the presented alert notification message to enable the server system to confirm that the alert notification message has been received;

after sending the acknowledgment accessing, by the wireless mobile remote monitor, at least some of the analyte concentration sensor data from the server system[[,]]; and

receiving, in response to the accessing, information the at least some of the analyte concentration sensor data including historical data, the at least some of the analyte concentration sensor data being generated by the receiver monitoring the analyte state of the host;

wherein the event is detected by the server system based on one or more sets of recommended alert rules settings configured by the host using the receiver, at least one of the sets of recommended alert rules settings being modifiable by the user of the wireless mobile remote monitor using the wireless mobile remote monitor.

Claim 20 (Currently Amended): A method comprising:

providing, by a wireless mobile remote monitor to a server system, [[a]] one or more sets of alert rules including at least one analyte concentration level threshold, the one or more sets of rules being specifically associated with the wireless mobile remote monitor and a host, wherein the wireless mobile remote monitor or a user of the wireless mobile remote monitor is specifically authorized by the host to receive an alert notification message, wherein the wireless mobile remote monitor or the user of the wireless mobile remote monitor is authenticated by the server system;

receiving, at the wireless mobile remote monitor, an alert notification message from the server system, the alert notification message indicating that analyte concentration sensor data associated with the host has exceeded or fallen below the at least one analyte concentration level threshold, the analyte concentration sensor data being received by the server system from a receiver monitoring an analyte concentration state of the host, the wireless mobile remote monitor being remote to the host and the server system[[,]];

presenting, at the wireless mobile remote monitor, the alert notification message;

receiving, at the wireless mobile remote monitor, user input indicative of acknowledgment of the presented alert notification message;

sending an acknowledgment message from the wireless mobile remote monitor to the server system indicating acknowledgement of the presented alert notification message to enable the server system to confirm that the alert notification message has been received;

accessing, by the wireless mobile remote monitor, the server system using a remote monitoring software application running on the wireless mobile remote monitor; and

receiving from the server system, at the wireless mobile remote monitor, information including at least some of the analyte concentration sensor data;

wherein at least one of the sets of alert rules is configured by the host using the receiver, said at least one set configured by the host being modifiable by the user of the wireless mobile remote monitor using the wireless mobile remote monitor.

Claims 22-27: Cancelled

Claim 28 (Currently Amended): A wireless mobile remote system comprising:

at least one processor; and

memory, the memory including instructions to configure the processor to:

receive an alert notification message from a server system, the alert notification message representative of a detected event, the event being based on analyte

concentration sensor data obtained from a receiver monitoring an analyte state of a host, the analyte concentration sensor data indicating a concentration of an analyte of the host;

present the alert notification message, wherein the wireless mobile remote system or a user of the wireless mobile remote system is specifically authorized by the host to receive the alert notification message to augment the receiver monitoring of the analyte state of the host, wherein the wireless mobile remote system or the user of the wireless mobile remote system is authenticated by the server system;

receive user input indicative of acknowledgment of the presented alert notification message;

send an acknowledgment message to the server system indicating acknowledgement of the presented alert notification message to enable the server system to confirm that the alert notification message has been received;

after sending the acknowledgment, access at least some of the analyte concentration sensor data from the server system; and

receive the at least some of the analyte concentration sensor data including historical data from the receiver monitoring the analyte state of the host;

wherein the event is detected by the server system based on one or more sets of recommended alert rules settings configured by the host using the receiver, at least one of the sets of recommended alert rules settings being modifiable by the user of the wireless mobile remote system using the wireless mobile remote system.

Claim 29 (Currently Amended): A non-transitory computer readable medium comprising executable instructions, the executable instructions being executable by a processor to perform a method, the method comprising:

receiving an alert notification message from a server system, the alert notification message representative of a detected event, the event being based on analyte concentration sensor data obtained from a receiver monitoring an analyte state of a host, the analyte concentration sensor data indicating a concentration of an analyte of the host;

presenting the alert notification message, wherein a digital device executing the instructions or a user associated with the digital device is specifically authorized by the host to receive the alert notification message to augment the receiver monitoring of the analyte state of the host, wherein the ~~wireless mobile remote system~~ digital device or the user of the ~~wireless mobile remote system~~ digital device is authenticated by the server system;

receiving user input indicative of acknowledgment of the presented alert notification message;

sending an acknowledgment message to the server system indicating acknowledgement of the presented alert notification message to enable the server system to confirm that the alert notification message has been received;

after sending the acknowledgment, accessing at least some of the analyte concentration sensor data from the server system; and

receiving the at least some of the analyte concentration sensor data including historical data, the at least some of the analyte concentration sensor data being generated by the receiver monitoring the analyte state of the host;

wherein the event is detected by the server system based on one or more sets of recommended alert rules settings configured by the host using the receiver, at least one of the sets of recommended alert rules settings being modifiable by the user of the digital device using the digital device.

Reasons for Allowance

3. The following is an examiner's statement of reasons for allowance:

The Prior art found for this application does not teach all the elements taught by the applicant.

In regards to claims 1, 28 and 29, Lin (US-2010/0249625) teaches a method comprising receiving, at a remote monitor, a message representative of an event detected by a server, from an analyte sensor data obtained from a receiver monitoring an analyte state of a host [fig. 1 element 140 (receiver), 170 (server) and 190 (remote monitor), par. 0024 L. 1-4, par. 0025 L. 17-22, par. 0031 L. 19-26]. Lin further teaches presenting, at the remote monitor, the message [par. 0025 L. 17-22]. Lin further teaches

receiving, in response to the accessing, information including at least the analyte sensor data [par. 0026 L. 17-27].

Hastings (US-2005/0148890) teaches a method to transmit alert notification messages to a remote monitoring device [par. 0015]. Hastings teaches receiving, at a remote monitor, an alert notification message representative of an event detected, by a server, from physiological sensor data [fig. 1 element 52 (server) and 60 (remote monitoring device), par. 0178 L. 1-4, par. 0182 L. 1-8]. Hastings further teaches presenting, at the remote monitor the alert notification message [par. 0178 L. 4-9, par. 0179 L. 1-3]. Hastings teaches accessing, by the remote monitor, the server in response to the acknowledgement of the presented alert notification message [fig. 4 steps 320 and 322, fig. 5 steps 410, 414 and 412, par. 0192, par. 0193].

However, the prior art does not teach by either anticipation or combination the following limitation: the event being based on analyte concentration sensor data obtained from a receiver monitoring an analyte state of a host, the analyte concentration sensor data indicating a concentration of an analyte of the host; wherein the event is detected by the server system based on one or more sets of recommended alert rules settings configured by the host using the receiver, at least one of the set of recommended alert rules settings being modifiable by the user of the wireless mobile remote monitor/digital device using the wireless mobile remote monitor/digital device.

In regards to claims 20, Lin (US-2010/0249625) teaches a method comprising receiving, at a remote monitor, a message representative of an event detected by a

server, from an analyte sensor data obtained from a receiver monitoring an analyte state of a host [fig. 1 element 140 (receiver), 170 (server) and 190 (remote monitor), par. 0024 L. 1-4, par. 0025 L. 17-22, par. 0031 L. 19-26]. Lin further teaches presenting, at the remote monitor, the message [par. 0025 L. 17-22]. Lin further teaches receiving, in response to the accessing, information including at least the analyte sensor data [par. 0026 L. 17-27].

Hastings (US-2005/0148890) teaches a method to transmit alert notification messages to a remote monitoring device [par. 0015]. Hastings teaches receiving, at a remote monitor, an alert notification message representative of an event detected, by a server, from physiological sensor data [fig. 1 element 52 (server) and 60 (remote monitoring device), par. 0178 L. 1-4, par. 0182 L. 1-8]. Hastings further teaches presenting, at the remote monitor the alert notification message [par. 0178 L. 4-9, par. 0179 L. 1-3]. Hastings teaches accessing, by the remote monitor, the server in response to the acknowledgement of the presented alert notification message [fig. 4 steps 320 and 322, fig. 5 steps 410, 414 and 412, par. 0192, par. 0193].

However, the prior art does not teach by either anticipation or combination the following limitation: one or more sets of alert rules including at least one analyte concentration level threshold, the one or more sets of rules being specifically associated with the wireless mobile remote monitor and a host; wherein at least one of the set of alert rules is configured by the host using the receiver, said at least one set configured by the host being modifiable by the user of the wireless mobile remote monitor using the wireless mobile remote monitor.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRANKLIN BALSECA whose telephone number is (571)270-5966. The examiner can normally be reached on Monday through Thursday, from 6:30am to 4:00pm.

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, Hai Phan can be reached on (571) 272-6338.

Information regarding the status of an application may be obtained from the Patent Application Retrieval (PAIR) system. Status information for published applications may be obtained from either PAIR or Public PAIR. Status information for unpublished applications is available through Private Pair only. For more information about the PAIR system, see http://pair-direct.uspto.gov. If you have questions on how to

access to Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN US OR CANADA) or (571)272-1000.

/FRANKLIN BALSECA/

Examiner, Art Unit 2685

/Hai Phan/

Supervisory Patent Examiner, Art Unit 2685

Examiner-Initiated Interview Summary	Application No.	Applicant(s)	
	13/842,679	MENSINGER ET AL.	
	Examiner	Art Unit	
	FRANKLIN BALSECA	2685	

All participants (applicant, applicant's representative, PTO personnel):

(1) *FRANKLIN BALSECA*. (3)_____.

(2) *ROSE THIESSEN*. (4)_____.

Date of Interview: *06 June 2017*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☐103 ☒Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1,20,28 and 29*.

Identification of prior art discussed: *None*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

The examiner called the applicant to propose some amendments that would place the application in condition for allowance. The examiner propose to amend the claims to include a limitation that recited in part that the event was detected by the server based on one or more set of rules configured by the host using the receiver, and at least one of the set being modifiable by the user of the remote monitor using the remote monitor. The examiner also propose to amend claim 29 by including the words "non-transitory". The applicant accepted the proposed amendment. The examiner informed the applicant that the amendments will be entered via examiner's amendment and that a notice of allowance will be mailed. No further agreements were reached..

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/FRANKLIN BALSECA/ Examiner, Art Unit 2685	

Notice of References Cited	Application/Control No. 13/842,679	Applicant(s)/Patent Under Reexamination MENSINGER ET AL.	
	Examiner FRANKLIN BALSECA	Art Unit 2685	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-2010/0249625 A1	09-2010	Lin; Dongping	A61B5/0002	600/515
*	B	US-2005/0148890 A1	07-2005	Hastings, David C.	A61B5/0006	600/509
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

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

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	14	"13842679"	US-PGPUB; USPAT	OR	ON	2017/06/07 09:17
L2	0	"13842679".pn.	US-PGPUB; USPAT	OR	ON	2017/06/07 09:19
L3	1	"20140184422".pn.	US-PGPUB; USPAT	OR	ON	2017/06/07 09:20
L4	7674	A61B5/145,7264,7282.cpc.	US-PGPUB; USPAT	OR	ON	2017/06/07 09:21
L5	241	G06F19/32.cpc.	US-PGPUB; USPAT	OR	ON	2017/06/07 09:22
L6	11759	H04L67/12.cpc.	US-PGPUB; USPAT	OR	ON	2017/06/07 09:22
L7	19492	L4 or L5 or L6	US-PGPUB; USPAT	OR	ON	2017/06/07 09:23
L8	3086	L7 and (analyte or glucose)	US-PGPUB; USPAT	OR	ON	2017/06/07 09:23
L9	833	L8 and ((modif$4 or chang$4 or adjust$4) near5 (alert or alarm or rule or threhold))	US-PGPUB; USPAT	OR	ON	2017/06/07 09:25
L10	382	L9 and @ay<="2012"	US-PGPUB; USPAT	OR	ON	2017/06/07 09:25
L11	45	L8 and ((modif$4 or chang$4 or adjust$4) near5 (alert or alarm or rule or threhold) near5 (caregiver or nurse or doctor or remot$4))	US-PGPUB; USPAT	OR	ON	2017/06/07 09:26
L12	18323	G06F19/30,34,3406,3418,3487.cpc.	US-PGPUB; USPAT	OR	ON	2017/06/07 09:27
L13	27115	A61B5/0002,0004,0015,0022,0024,02,742,743,7435,746,7465,14532.cpc.	US-PGPUB; USPAT	OR	ON	2017/06/07 09:27
L14	0	H04Q229/00,10,40,70.cpc.	US-PGPUB; USPAT	OR	ON	2017/06/07 09:27
L15	40216	L12 or L13 or L14	US-PGPUB; USPAT	OR	ON	2017/06/07 09:27
L16	319	L15 and ((modif$4 or chang$4 or adjust$4) near5 (alert or alarm or rule or threhold) near5 (caregiver or nurse or doctor or remot$4))	US-PGPUB; USPAT	OR	ON	2017/06/07 09:27
L17	177	L16 and @ay<="2012"	US-PGPUB; USPAT	OR	ON	2017/06/07 09:28
L18	45	L17 and (analyte or glucose)	US-PGPUB; USPAT	OR	ON	2017/06/07 09:28
L23	1	L3 and memory	US-PGPUB; USPAT	OR	ON	2017/06/07 09:55
L24	193	((modif$4 or chang$4 or adjust$4) near5 (alert or alarm or rule or threhold) near5 (caregiver or nurse or doctor or remot$4)).clm.	US-PGPUB;	OR	ON	2017/06/07 10:20

			USPAT			
S1	361	(US-20140187889-$ or US-20110201944-$ or US-20140310243-$ or US-20130078912-$ or US-20060015586-$ or US-20060193262-$ or US-20090322518-$ or US-20100177708-$ or US-20110080281-$ or US-20100013625-$ or US-20110316716-$ or US-20080212690-$ or US-20110131645-$ or US-20060077940-$ or US-20090088605-$ or US-20050207379-$ or US-20140050122-$ or US-20120177031-$ or US-20130211265-$ or US-20080319787-$ or US-20130297771-$ or US-20130159539-$ or US-20120151291-$ or US-20110149025-$ or US-20090182580-$).did. or (US-7873343-$ or US-8839396-$ or US-7532568-$ or US-8359288-$ or US-6259944-$).did. or (US-20110213225-$ or US-20110161111-$ or US-20100249625-$ or US-20110320130-$ or US-20020169584-$ or US-20140187889-$ or US-20130297771-$ or US-20130078912-$ or US-20090322518-$ or US-20090182580-$ or US-20030105725-$ or US-20080098038-$ or US-20110289577-$ or US-20020131370-$ or US-20030142696-$ or US-20040059978-$ or US-20090034479-$ or US-20110268018-$).did. or (US-6259944-$ or US-8458312-$ or US-8761101-$ or US-7869794-$ or US-9100244-$ or US-9220118-$).did. or (US-20070294360-$ or US-20100265863-$ or US-20100272076-$ or US-20130276144-$ or US-20140187889-$ or US-20050272019-$ or US-20030115258-$ or US-20080147845-$ or US-20090016509-$ or US-20100205323-$ or US-20130285835-$ or US-20110152629-$).did. or (US-9035568-$ or US-6416471-$ or US-6751573-$ or US-6510236-$ or US-8949949-$).did. or (US-20140188398-$ or US-20120245447-$ or US-20110320130-$ or US-20090069642-$ or US-20050148890-$ or US-20120149996-$ or US-20010027384-$ or US-20030023178-$ or US-20080294024-$ or US-20120108984-$ or US-20080269625-$ or US-20120046606-$ or US-20120112903-$ or US-20130109944-$ or US-20130337976-$ or US-20140019139-$ or US-20140118104-$ or US-20080312842-$ or US-20070173710-$ or US-20090131776-$ or US-20090054735-$ or US-20090203973-$ or US-20100131294-$).did. or (US-6366871-$ or US-8876850-$ or US-5748103-$ or US-4981139-$ or US-5786584-$ or US-6443890-$ or US-9053583-$).did. or (US-20030154085-$ or US-20140188398-$ or US-20030033151-$ or US-20030036683-$ or US-20050143671-$ or US-20090046096-$ or US-20130191513-$ or US-20140058742-$ or US-20110191044-$ or US-20120095779-$ or US-20100082363-$ or US-20130145272-$ or US-20130198685-$ or US-20090131861-$ or US-20110124996-$).did. or (US-7685026-$ or US-5335313-$).did. or (US-20120136221-$ or US-20140188398-$ or US-20120245447-$ or US-20120149996-$ or US-20110124996-$ or US-20110068935-$ or US-20140207486-$ or US-20140187887-$ or US-20140088392-$ or US-20130013331-$ or US-20110166628-$ or US-20090292178-$ or US-20080126132-$ or US-20110077967-$ or US-20100321204-$ or US-20010037222-$ or US-20080107121-$ or US-20080294462-$ or US-20090054743-$ or US-20050165627-$ or US-20060196928-$).did. or (US-9185202-$ or US-8868616-$ or US-6398727-$ or US-7448996-$ or US-8005546-$ or US-6522925-$).did. or (US-20140187890-$ or US-20110320130-$ or US-20100249625-$ or US-20050148890-$ or US-20020169584-$ or US-20140207486-$ or US-20040122488-$ or US-20080004904-$ or US-20070294360-$ or US-20090069642-$ or US-20060193278-$ or US-20090058635-$ or US-20130030494-$ or US-20130345664-$).did. or (US-8392561-$ or US-7103578-$).did. or (US-20140187890-$ or US-20010037056-$ or US-20080097550-$ or US-20050071190-$ or US-20080208026-$ or US-20130338543-$ or US-20130265327-$ or US-20090221884-$ or US-20090164251-$ or US-20090164239-$ or US-20070159321-$ or US-20110319725-$ or US-20100265073-$ or US-20050148890-$ or US-20110117878-$ or US-20120265867-$ or US-20120149353-$ or US-20150205930-$ or US-20140350349-$ or US-20140207486-$ or US-20130159456-$ or US-20130117696-$ or US-20100249625-$ or US-20120163520-$ or US-20070173710-$).did. or (US-8229535-$ or US-7448996-$).did. or (US-20140188398-$ or US-20140187890-$ or US-20130015966-$ or US-20060161662-$ or US-20060101139-$ or US-20040081310-$ or US-20140029434-$ or US-20130159456-$ or US-20090058635-$ or US-20080097550-$ or US-20080004904-$ or US-20080015549-$ or US-20030011646-$ or US-20100114232-$ or US-20080250482-$ or US-20130117696-$ or US-20110059727-$).did. or (US-8355320-$).did. or (US-20140187890-$ or US-20080015549-$ or US-20060202816-$ or US-20100016745-$ or US-20120182939-$ or US-20060154642-$ or US-20090156364-$ or US-20100235782-$ or US-20110215933-$ or US-20030229900-$ or US-20140325892-$ or US-20110286586-$ or US-20120317237-$ or US-20020061092-$).did. or (US-9147117-$).did. or (US-20130268283-$ or US-20130172691-$ or US-20130027205-$ or US-20120026119-$ or US-20060272652-$ or US-20060253300-$ or US-20030117296-$ or US-20020022973-$ or US-20050085875-$ or US-20050240434-$ or US-20070185390-$ or US-20130159456-$ or US-20120245447-$ or US-20120136221-$ or US-20100131294-$ or US-20090203973-$ or US-	US-PGPUB; USPAT	OR	ON	2017/06/01 11:07

		20030167336-$ or US-20050261062-$ or US-20070081649-$ or US-20030105849-$ or US-20050044565-$ or US-20080263100-$ or US-20100031324-$ or US-20030154044-$ or US-20110295887-$ or US-20120112906-$).did. or (US-20160073880-$ or US-20030208465-$ or US-20040006492-$ or US-20050038332-$ or US-20060200009-$ or US-20070208245-$ or US-20090005703-$ or US-20100100037-$ or US-20070239488-$).did. or (US-6334124-$ or US-7761334-$ or US-9514323-$ or US-5860918-$ or US-7026929-$).did. or (US-20140188398-$ or US-20140187890-$ or US-20110320130-$ or US-20070255116-$ or US-20140176342-$ or US-20140139342-$ or US-20090083364-$ or US-20090055369-$ or US-20050097200-$ or US-20130151708-$ or US-20130067544-$ or US-20120163520-$ or US-20100249625-$ or US-20120245447-$).did. or (US-8229535-$ or US-8390474-$ or US-7038588-$ or US-8138930-$ or US-8862393-$ or US-8126479-$ or US-8107947-$ or US-8467779-$).did. or (US-20140188398-$ or US-20140187890-$ or US-20120245447-$ or US-20040002635-$ or US-20090310503-$ or US-20140133374-$ or US-20130052977-$ or US-20090069642-$ or US-20130215850-$ or US-20100322188-$ or US-20040170182-$ or US-20080007431-$ or US-20050148890-$ or US-20140350349-$ or US-20130191140-$ or US-20130159456-$).did. or (US-7769149-$ or US-5802314-$ or US-5608643-$ or US-3781573-$ or US-5369591-$ or US-6049698-$).did. or (US-20140188398-$ or US-20140187890-$ or US-20100249625-$ or US-20050148890-$ or US-20020024443-$ or US-20060026164-$ or US-20090262661-$ or US-20100330952-$ or US-20150195286-$ or US-20130078149-$ or US-20130078733-$ or US-20130226624-$ or US-20120245447-$).did. or (US-5416725-$ or US-7942844-$ or US-8350694-$ or US-6264614-$).did. or (US-20130159456-$ or US-20140350349-$ or US-20140207486-$ or US-20130191140-$ or US-20130117696-$ or US-20090083364-$ or US-20140176342-$ or US-20110040572-$ or US-20120218111-$ or US-20130044111-$ or US-20070246642-$ or US-20110320130-$ or US-20120109238-$ or US-20070140150-$ or US-20090192366-$ or US-20080275618-$ or US-20140282829-$ or US-20140036643-$ or US-20050148890-$ or US-20140022081-$ or US-20090058635-$ or US-20090113335-$ or US-20100315236-$ or US-20060010199-$).did. or (US-8390474-$ or US-7448996-$).did. or (US-20090265753-$ or US-20130017807-$ or US-20150205930-$ or US-20090083742-$ or US-20130173742-$ or US-20110320130-$ or US-20120136221-$ or US-20050165627-$ or US-20140088392-$).did. or (US-6608636-$).did. or (US-20140188398-$ or US-20140187890-$ or US-20110320130-$ or US-20100249625-$ or US-20090069642-$ or US-20050148890-$ or US-20130015966-$ or US-20060161662-$ or US-20060101139-$ or US-20040081310-$ or US-20020169584-$ or US-20060020494-$ or US-20060106646-$ or US-20100191073-$).did. or (US-7257386-$ or US-8355320-$).did. or (US-20130102853-$ or US-20120054841-$ or US-20150317437-$ or US-20130282400-$ or US-20110246235-$ or US-20080004904-$ or US-20130110264-$ or US-20130088452-$ or US-20100274515-$ or US-20110320166-$ or US-20070088223-$).did. or (US-7798961-$).did. or (US-20140184422-$ or US-20130080513-$ or US-20050206518-$ or US-20050148890-$ or US-20110032097-$ or US-20120096123-$ or US-20080250482-$ or US-20060202816-$ or US-20120075103-$ or US-20140006045-$ or US-20140019901-$ or US-20080161700-$ or US-20090146822-$ or US-20120053424-$ or US-20120136221-$).did. or (US-8355320-$ or US-6057758-$ or US-4280217-$).did. or (US-20140184422-$ or US-20090192366-$ or US-20110004085-$ or US-20110320130-$ or US-20010044588-$ or US-20140162563-$ or US-20130172691-$ or US-20060047538-$ or US-20100268157-$ or US-20100142692-$ or US-20100217615-$ or US-20130159456-$ or US-20120136221-$ or US-20100249625-$ or US-20050148890-$ or US-20080263100-$ or US-20030149526-$ or US-20020169584-$ or US-20060282293-$ or US-20140350349-$ or US-20130117696-$ or US-20080250482-$ or US-20050193191-$ or US-20060184997-$ or US-20060239235-$ or US-20110234406-$).did. or (US-20120197662-$ or US-20120245948-$ or US-20140088392-$ or US-20120218111-$ or US-20110068935-$ or US-20110105854-$ or US-20100121167-$ or US-20090275807-$ or US-20030153836-$ or US-20090183236-$ or US-20120036558-$ or US-20040243941-$).did. or (US-7831287-$ or US-6931327-$ or US-9241631-$ or US-7407484-$ or US-8589495-$ or US-7448996-$ or US-7660849-$ or US-7870288-$ or US-8719904-$ or US-5865736-$ or US-7899545-$ or US-8515513-$ or US-7946995-$ or US-7261691-$ or US-4162488-$ or US-8786425-$ or US-8957757-$ or US-7925525-$ or US-6366871-$ or US-8381268-$).did. or (US-20110163881-$ or US-20100235439-$ or US-20060173260-$).did. or (US-20090228566-$ or US-20130132573-$ or US-20130190032-$ or US-20100325194-$ or US-20080046286-$ or US-20120075103-$ or US-20100088387-$).did. or (US-8589495-$ or US-8850216-$ or US-9058635-$).did.				
S2	139	(("MENSINGER") near3 ("Michael")).INV.	US-PGPUB;	OR	ON	2017/06/01 11:39	

			USPAT; USOCR			
S3	48733	(analyte or glucose) near5 (monitor$4 or sensor)	US-PGPUB; USPAT	OR	ON	2017/06/01 12:42
S4	4558	S3 and ((send$4 or transmit$4 or sent) near5 (alert or alarm or notification))	US-PGPUB; USPAT	OR	ON	2017/06/01 12:43
S5	97	S4 and ((send$4 or receiv$4 or transmit$4 or sent) near5 (acknowledment or ack))	US-PGPUB; USPAT	OR	ON	2017/06/01 12:44
S6	7	S3 and (((send$4 or receiv$4 or transmit$4 or sent) near5 (acknowledment or ack)) same ((alert or alarm or notification) near5 (read$4 or receiv$4)))	US-PGPUB; USPAT	OR	ON	2017/06/01 13:10
S7	79532	(analyte or glucose or physiological) near5 (monitor$4 or sensor)	US-PGPUB; USPAT	OR	ON	2017/06/01 13:14
S8	11	S7 and (((send$4 or receiv$4 or transmit$4 or sent) near5 (acknowledment or ack)) same ((alert or alarm or notification) near5 (read$4 or receiv$4)))	US-PGPUB; USPAT	OR	ON	2017/06/01 13:14
S9	18307	G06F19/30,34,3406,3418,3487.cpc.	US-PGPUB; USPAT	OR	ON	2017/06/01 13:46
S10	27066	A61B5/0002,0004,0015,0022,0024,02,742,743,7435,746,7465,14532.cpc.	US-PGPUB; USPAT	OR	ON	2017/06/01 13:46
S11	0	H04Q229/00,10,40,70.cpc.	US-PGPUB; USPAT	OR	ON	2017/06/01 13:48
S12	40159	S9 or S10 or S11	US-PGPUB; USPAT	OR	ON	2017/06/01 13:48
S13	7	S12 and (((send$4 or receiv$4 or transmit$4 or sent) near5 (acknowledment or ack)) same ((alert or alarm or notification) near5 (read$4 or receiv$4)))	US-PGPUB; USPAT	OR	ON	2017/06/01 13:49
S14	0	340/870.01,870.02,870.07.cpc.	US-PGPUB; USPAT	OR	ON	2017/06/01 14:00
S15	0	S14 and (((send$4 or receiv$4 or transmit$4 or sent) near5 (acknowledment or ack)) same ((alert or alarm or notification) near5 (read$4 or receiv$4)))	US-PGPUB; USPAT	OR	ON	2017/06/01 14:01
S16	3463	340/870.01,870.02,870.07.ccls.	US-PGPUB; USPAT	OR	ON	2017/06/01 14:01
S17	1	S16 and (((send$4 or receiv$4 or transmit$4 or sent) near5 (acknowledment or ack)) same ((alert or alarm or notification) near5 (read$4 or receiv$4)))	US-PGPUB; USPAT	OR	ON	2017/06/01 14:01
S18	15945	705/2,3.ccls.	US-PGPUB; USPAT	OR	ON	2017/06/01 14:17
S19	0	600/300,301,316,365,421,522.cpc.	US-PGPUB; USPAT	OR	ON	2017/06/01 14:17
S20	13661	600/300,301,316,365,421,522.ccls.	US-PGPUB; USPAT	OR	ON	2017/06/01 14:17
S21	1690	607/28,30.ccls.	US-PGPUB; USPAT	OR	ON	2017/06/01 14:18
S22	29969	S18 or S20 or S21	US-PGPUB; USPAT	OR	ON	2017/06/01 14:18
S23	2	S22 and (((send$4 or receiv$4 or transmit$4 or sent) near5 (acknowledment or ack)) same ((alert or alarm or notification) near5 (read$4 or receiv$4)))	US-PGPUB; USPAT	OR	ON	2017/06/01 14:18
S24	218912	(notification or message) near5 (event or alarm or alert)	US-PGPUB; USPAT	OR	ON	2017/06/01 14:33
S25	1038	S24 same2 (((send$4 or receiv$4 or transmit$4 or sent) near5 (acknowledment or ack)) same ((alert or alarm or notification or message)	US-PGPUB;	OR	ON	2017/06/01 14:33

		near5 (read$4 or receiv$4)))	USPAT			
S26	53	S12 and S25	US-PGPUB; USPAT	OR	ON	2017/06/01 14:35
S27	4	S16 and S25	US-PGPUB; USPAT	OR	ON	2017/06/01 14:46
S28	16	("6366871" | "7026929" | "7946995" | "8381268" | "8786425" | "20030149526" | "20030208465" | "20050038332" | "200501931941" | "20050261062" | "20070185390" | "20080263100" | "20090005703" | "20110105854" | "20110234406" | "20130117696" | "20140184423").pn.	US-PGPUB; USPAT	OR	ON	2017/06/01 15:03
S29	17	("6366871" | "7026929" | "7946995" | "8381268" | "8786425" | "20030149526" | "20030208465" | "20050038332" | "20050193191" | "20050261062" | "20070185390" | "20080263100" | "20090005703" | "20110105854" | "20110234406" | "20130117696" | "20140184423").pn.	US-PGPUB; USPAT	OR	ON	2017/06/01 15:04
S30	0	S29 same2 (((send$4 or receiv$4 or transmit$4 or sent) near5 (acknowledment or ack)) same ((alert or alarm or notification or message) near5 (read$4 or receiv$4)))	US-PGPUB; USPAT	OR	ON	2017/06/01 15:05
S31	0	S29 and (((send$4 or receiv$4 or transmit$4 or sent) near5 (acknowledment or ack)) same ((alert or alarm or notification or message) near5 (read$4 or receiv$4)))	US-PGPUB; USPAT	OR	ON	2017/06/01 15:05
S32	2	S29 and (((send$4 or receiv$4 or transmit$4 or sent) near5 (acknowledgment or ack)) same ((alert or alarm or notification or message) near5 (read$4 or receiv$4)))	US-PGPUB; USPAT	OR	ON	2017/06/01 15:06
S33	63	S3 and (((send$4 or receiv$4 or transmit$4 or sent) near5 (acknowledgment or ack)) same ((alert or alarm or notification) near5 (read$4 or receiv$4)))	US-PGPUB; USPAT	OR	ON	2017/06/01 15:07
S34	104	S12 and (((send$4 or receiv$4 or transmit$4 or sent) near5 (acknowledgment or ack)) same ((alert or alarm or notification) near5 (read$4 or receiv$4)))	US-PGPUB; USPAT	OR	ON	2017/06/01 15:13
S35	48733	(analyte or glucose) near5 (monitor$4 or sensor)	US-PGPUB; USPAT	OR	ON	2017/06/01 15:27
S36	50	S35 and ((confirm$5 or acknowledg$5) near5 (notification or message or alert or alarm) near5 (read$4))	US-PGPUB; USPAT	OR	ON	2017/06/01 15:29

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L19	31114	A61B5/0002,0004,0015,0022,0024,02,145,7264,7282,742,743,7435,746,7465,14532.cpc.	US-PGPUB; USPAT	OR	ON	2017/06/07 09:29
L20	18458	G06F19/30,32,34,3406,3418,3487.cpc.	US-PGPUB; USPAT	OR	ON	2017/06/07 09:30
L21	11759	H04L67/12.cpc.	US-PGPUB; USPAT	OR	ON	2017/06/07 09:30
L22	55007	L19 or L20 or L21	US-PGPUB; USPAT	OR	ON	2017/06/07 09:30
L25	193	((modif$4 or chang$4 or adjust$4) near5 (alert or alarm or rule or threhold) near5 (caregiver or nurse or doctor or remot$4)).clm.	US-PGPUB; USPAT	OR	ON	2017/06/07 10:20
L26	5	L25 and (anlyte or glucose).clm.	US-PGPUB; USPAT	OR	ON	2017/06/07 10:21
L27	375	((modif$4 or chang$4 or adjust$4) near5 (alert or alarm or rule or threhold) near5 (caregiver or nurse or doctor or remot$4)) and L22	US-PGPUB; USPAT	OR	ON	2017/06/07 10:24
L28	106	L27 and (anlyte or glucose)	US-PGPUB; USPAT	OR	ON	2017/06/07 10:28
L29	1083	((configur$4 or establich$4) near5 (alert or alarm or rule or threhold) near5 (patient or host)) and L22	US-PGPUB; USPAT	OR	ON	2017/06/07 10:30
L30	81	((modif$4 or chang$4 or adjust$4) near5 (alert or alarm or rule or threhold) near5 (caregiver or nurse or doctor or remot$4)) and L29	US-PGPUB;	OR	ON	2017/06/07 10:31

			USPAT			
L31	1885	"L24" and (anlyte or glucose)	US-PGPUB; USPAT	OR	ON	2017/06/07 10:32
L32	40	L30 and (anlyte or glucose)	US-PGPUB; USPAT	OR	ON	2017/06/07 10:32

6/7/2017 11:35:05 AM
C:\Users\fbalseca\Documents\EAST\Workspaces\13842679 (RCE2).wsp

PTO/SB/08a (07-09)
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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Mensinger, Michael Robert
Art Unit	2685
Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	225A

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 6366871	04-02-2002	Geva et al.	
	2	US- 7026929	04-11-2006	Wallace, Thomas E.	
	3	US- 7946995	05-24-2011	Koh et al.	
	4	US- 8381268	02-19-2013	Wingel et al.	
	5	US- 8786425	07-22-2014	Hutz et al.	
	6	US- 2003-0149526	08-07-2003	Zhou et al.	
	7	US- 2003-0208465	11-06-2003	Yurko et al.	
	8	US- 2005-0038332	02-17-2005	Saidara et al.	
	9	US- 2005-0193191	09-01-2005	Sturgis et al.	
	10	US- 2005-0261062	11-24-2005	Lewin et al.	
	11	US- 2007-0185390	08-09-2007	Perkins et al.	
	12	US- 2008-0263100	10-23-2008	Van Engelshoven et al.	
	13	US- 2009-0005703	01-01-2009	Fasciano, Robert W.	
	14	US- 2011-0105854	05-05-2011	Kiani et al.	
	15	US- 2011-0234406	09-29-2011	Young, Valerie J.	
	16	US- 2013-0117696	05-09-2013	Robertson et al.	
	17	US- 2014-0184423	07-03-2014	Mensinger et al.	
		US-			
		US-			

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature	/FRANKLIN D BALSECA/	Date Considered	06/05/2017

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. 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 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, 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 (1-800-786-9199) and select option 2.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /F.D.B./

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13842679	MENSINGER ET AL.
	Examiner	**Art Unit**
	FRANKLIN BALSECA	2685

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

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

CLAIM		DATE								
Final	Original	12/03/2015	06/24/2016	12/29/2016	06/07/2017					
	1	✓	✓	✓	=					
	2	✓	✓	-	-					
	3	✓	-	-	-					
	4	✓	✓	✓	=					
	5	✓	✓	✓	=					
	6	✓	✓	✓	=					
	7	✓	✓	✓	=					
	8	✓	✓	✓	=					
	9	✓	✓	✓	=					
	10	✓	✓	✓	=					
	11	✓	✓	✓	=					
	12	✓	✓	✓	=					
	13	✓	✓	✓	=					
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	15	✓	✓	✓	=					
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	17	✓	✓	✓	=					
	18	✓	✓	✓	-					
	19	✓	✓	✓	-					
	20		✓	✓	=					
	21		✓	-	-					
	22			N	-					
	23			N	-					
	24			N	-					
	25			N	-					
	26			N	-					
	27			N	-					
	28				=					
	29				=					

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13842679	MENSINGER ET AL.
	Examiner	Art Unit
	FRANKLIN BALSECA	2685

CPC- SEARCHED

Symbol	Date	Examiner
G06F19/30,32,34,3406,3418,3487	03/18/2015	FB
A61B5/0002,0004,0015,0022,0024,02,742,743,7435,746,7465,14532	03/18/2015	FB
Updated Search	12/02/2015	FB
Updated Search	06/24/2016	FB
H04Q2209/00,10,40,70	06/24/2016	FB
Updated Search	12/29/2016	FB
Updated Search	06/07/2017	FB
A61B5/145,7264,7282	06/07/2017	FB
G06F19/32	06/07/2017	FB
H04L67/12	06/07/2017	FB

CPC COMBINATION SETS - SEARCHED

Symbol	Date	Examiner

US CLASSIFICATION SEARCHED

Class	Subclass	Date	Examiner
340	870.01,870.02,870.07	03/18/2015	FB
705	2, 3	03/18/2015	FB
600	300,301,316,365,421,522	03/18/2015	FB
607	28, 30	03/18/2015	FB
Updated Search	Updated Search	12/02/2015	FB
Updated Search	Updated Search	06/24/2016	FB
Updated Search	Updated Search	12/29/2016	FB
Updated Search	Updated Search	06/07/2017	FB

SEARCH NOTES

/FRANKLIN BALSECA/ Examiner.Art Unit 2685	

Search Notes	Date	Examiner
Inventor Search	03/16/2015	FB
East Search	03/18/2015	FB
Updated East Search	12/02/2015	FB
Updated East Search	06/24/2016	FB
Updated East Search	12/29/2016	FB
G06F19/30,32,34,3406,3418,3487 and text limited. See search history printout.	12/29/2016	FB
A61B5/0002,0004,0015,0022,0024,02,742,743,7435,746,7465,14532 and text limited. See search history printout.	12/29/2016	FB
H04Q2209/00,10,40,70 and text limited. See search history printout.	12/29/2016	FB
A61B5/145,7264,7282 and text limited. See search history printout.	06/07/2017	FB
G06F19/32 and text limited. See search history printout.	06/07/2017	FB
H04L67/12 and text limited. See search history printout.	06/07/2017	FB
Updated East and text limited class search	06/07/2017	FB

INTERFERENCE SEARCH			
US Class/ CPC Symbol	**US Subclass / CPC Group**	**Date**	**Examiner**
A61B5	0002,0004,0015,0022,0024,02,145,7264,7282,742,743, 7435,746,7465,14532	06/07/2017	FB
G06F19	30,32,34,3406,3418,3487	06/07/2017	FB
H04L67	12	06/07/2017	FB

/FRANKLIN BALSECA/ Examiner.Art Unit 2685	

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13842679	MENSINGER ET AL.
	Examiner	**Art Unit**
	FRANKLIN BALSECA	2685

CPC							
Symbol						**Type**	**Version**
A61B		5	/	0002		F	2013-01-01
A61B		5	/	0015		A	2013-01-01
G06F		19	/	32		A	2013-01-01
G06F		19	/	30		A	2013-01-01
A61B		5	/	7465		A	2013-01-01
G06F		19	/	3487		A	2013-01-01
G06F		19	/	3406		A	2013-01-01
G06F		19	/	34		A	2013-01-01
A61B		5	/	7435		A	2013-01-01
A61B		5	/	02		A	2013-01-01
A61B		5	/	0024		A	2013-01-01
A61B		5	/	0004		I	2013-01-01
A61B		5	/	0022		I	2013-01-01
A61B		5	/	14532		I	2013-01-01
A61B		5	/	743		I	2013-01-01
G06F		19	/	3418		I	2013-01-01
H04L		67	/	12		I	2013-01-01
A61B		5	/	7282		I	2013-01-01
A61B		5	/	746		I	2013-01-01
A61B		5	/	145		I	2013-01-01
A61B		5	/	7264		I	2013-01-01
A61B		5	/	742		I	2013-01-01

CPC Combination Sets								
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

/FRANKLIN BALSECA/ Examiner.Art Unit 2685	06/07/2017	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	17	
/HAI PHAN/ Supervisory Patent Examiner.Art Unit 2685	06/09/2017	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2A

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13842679	MENSINGER ET AL.
	Examiner	**Art Unit**
	FRANKLIN BALSECA	2685

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION												
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED							
		A	6	1	B	5 / 00 (2006.01.01)								
CROSS REFERENCE(S)		A	6	1	B	5 / 02 (2006.01.01)								
		A	6	1	B	5 / 145 (2006.01.01)								
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)	G	0	6	F	19 / 00 (2011.01.01)								
		H	0	4	L	29 / 08 (2006.01.01)								

/FRANKLIN BALSECA/ Examiner.Art Unit 2685	06/07/2017	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	17	
/HAI PHAN/ Supervisory Patent Examiner.Art Unit 2685	06/09/2017	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2A

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13842679	MENSINGER ET AL.
	Examiner	**Art Unit**
	FRANKLIN BALSECA	2685

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

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		17												
	2		18												
	3		19												
	4		20												
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	12		28												
	13		29												
	14														
	15														
	16														

/FRANKLIN BALSECA/ Examiner.Art Unit 2685	06/07/2017	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	17	
/HAI PHAN/ Supervisory Patent Examiner.Art Unit 2685	06/09/2017	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2A

PTO/SB/08a (07-09)
Approved for use through 07/31/2016. OMB 0651-0031
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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Mensinger, Michael Robert
Art Unit	2685
Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	225A

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 6366871	04-02-2002	Geva et al.	
	2	US- 7026929	04-11-2006	Wallace, Thomas E.	
	3	US- 7946995	05-24-2011	Koh et al.	
	4	US- 8381268	02-19-2013	Wingel et al.	
	5	US- 8786425	07-22-2014	Hutz et al.	
	6	US- 2003-0149526	08-07-2003	Zhou et al.	
	7	US- 2003-0208465	11-06-2003	Yurko et al.	
	8	US- 2005-0038332	02-17-2005	Saidara et al.	
	9	US- 2005-0193191	09-01-2005	Sturgis et al.	
	10	US- 2005-0261062	11-24-2005	Lewin et al.	
	11	US- 2007-0185390	08-09-2007	Perkins et al.	
	12	US- 2008-0263100	10-23-2008	Van Engelshoven et al.	
	13	US- 2009-0005703	01-01-2009	Fasciano, Robert W.	
	14	US- 2011-0105854	05-05-2011	Kiani et al.	
	15	US- 2011-0234406	09-29-2011	Young, Valerie J.	
	16	US- 2013-0117696	05-09-2013	Robertson et al.	
	17	US- 2014-0184423	07-03-2014	Mensinger et al.	
		US-			
		US-			

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

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Electronic Acknowledgement Receipt

EFS ID:	28973388
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Kaare Douglas Larson/Renee Zavala
Filer Authorized By:	Kaare Douglas Larson
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	19-APR-2017
Filing Date:	15-MAR-2013
Time Stamp:	18:34:43
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2017-0419-SupplDS-225A.pdf	208591 cfac5741e132576dee6a61f306fcd32a166c84f0	yes	2

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Transmittal Letter	1	1
	Information Disclosure Statement (IDS) Form (SB08)	2	2
Warnings:			
Information:			
	Total Files Size (in bytes):	208591	

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

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

Docket No. DEXCOM.225A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Michael Robert Mensinger, et al.
App. No	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	BALSECA, Franklin D.
Art Unit	:	2685
Conf #	:	8793

CERTIFICATE OF TRANSMITTAL UNDER 37 C.F.R. 1.8

I hereby certify that this paper (along with anything referred to as being attached or enclosed) is being filed electronically via EFS-Web at the United States Patent and Trademark Office on the 19 April 2017.

By: Renee Zavala

INFORMATION DISCLOSURE STATEMENT

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

Dear Sir:

Submitted herewith in the above-identified application is an Information Disclosure Statement listing references for consideration. In accordance with 37 C.F.R. §1.98(a)(2)(ii), Applicant submits herewith copies of all cited references, other than copies of U.S. patents or U.S. patent publications. It is respectfully requested that the Examiner initial and return a copy of the enclosed Form PTO/SB/08, and indicate in the official file wrapper of this patent application that the documents listed therein have been considered.

This Information Disclosure Statement is being filed within three months of the U.S. filing date or the date of national phase entry, before the first mailing date of a first Office Action on the merits, with an RCE, or before the first Office Action on the merits after an RCE has been filed, and Applicants believe that no statement under 37 C.F.R. §1.97(e) or fee is required. If this is incorrect and a fee is due, the Commissioner is hereby authorized to charge that amount to Deposit Account No. 506176, referencing Applicant Docket No. DEXCOM. 225A. Further, the Commissioner is hereby authorized to charge all fees and credit all overpayments to Deposit Account No. 506176 during the pendency of this application.

Respectfully submitted,
DEXCOM, INC.

Dated: 4/14/17

By: _____
Kaare D. Larson, PTO Reg. No. 51,920

Customer Number 68851
DEXCOM, INC.
6340 Sequence Drive
San Diego, CA 92121
Telephone: 858.875.9786

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	13842679	Filing Date	2013-03-15	Docket Number (if applicable)	DEXCOM.225A	Art Unit	2685
First Named Inventor	Michael Robert Mensinger			Examiner Name	Balseca, Franklin D.		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 111410

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

Signature of Registered U.S. Patent Practitioner			
Signature	/Rose M. Thiessen/	Date (YYYY-MM-DD)	2017-04-11
Name	Rose M. Thiessen	Registration Number	40202

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

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

Privacy Act Statement

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

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

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor	:	Michael Robert Mensinger
App. No.	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	Balseca, Franklin D.
Art Unit	:	2685
Conf. No.	:	8793

AMENDMENT AFTER FINAL

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

Dear Sir:

In response to the Office Action Made Final dated January 12, 2017, Applicant respectfully requests that the Office enter the following amendments and consider the following remarks.

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

Remarks/Arguments begin on page 10 of this paper.

Abbott Ex. 1002 - 116/834

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method comprising:

receiving, at a wireless mobile remote monitor, an alert notification message from a server system, the alert notification message representative of ~~an event~~ a detected[[,]] event ~~by a server~~, the event being based on ~~from~~ analyte concentration sensor data obtained from a receiver monitoring an analyte state of a host, the analyte concentration sensor data indicating a concentration of an analyte of the host, the wireless mobile remote monitor being remote to the host and the server system;

presenting, at the wireless mobile remote monitor, the alert notification message, wherein the wireless mobile remote monitor or a user of the wireless mobile remote monitor is ~~configured~~ specifically authorized by the host ~~server~~ to receive the alert notification message to augment the receiver monitoring of the analyte state of the host, wherein the wireless mobile remote monitor or the user of the wireless mobile remote monitor is authenticated by the server system;

receiving, at the wireless mobile remote monitor, user input indicative of acknowledgment of the presented alert notification message;

sending an acknowledgment message from the wireless mobile remote monitor to the server system indicating acknowledgement of the presented alert notification message to enable the server system to confirm that the alert notification message has been received;

after sending the acknowledgment, accessing, by the wireless mobile remote monitor, at least some of the analyte concentration sensor data from the server system, ~~in response to the acknowledgement of the presented alert notification message~~; and

receiving, in response to the accessing, ~~information~~ the at least some of the analyte concentration sensor data including historical data, the at least some of the analyte concentration sensor data being generated by the receiver monitoring the analyte state of the host ~~including at least the analyte sensor data~~,

~~wherein the alert notification message includes a short message and the receiving the alert notification message is over at least a first wireless connection between the remote monitor and a notification service in communication with the server , the first~~

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~~wireless connection comprising a persistent, encrypted connection configured to carry the short message pushed by the notification service to a notification message center at the remote monitor,~~

~~wherein the short message is structured by the notification service to be received by the remote monitor over the first wireless connection, and wherein the information is received over at least a second, different wireless connection between the remote monitor and the server, the second wireless connection comprising a momentary, encrypted connection established, in response the accessing, to provide the information~~.

2. (Canceled)

3. (Canceled)

4. (Currently Amended) The method of Claim 1, wherein the presenting further comprises inhibiting access to one or more applications at the wireless mobile remote monitor until an action at the wireless mobile remote monitor is detected to indicate ~~receipt of~~ an interaction by the user with the alert notification message~~, wherein the remote monitor further comprises a monitoring application~~.

5. (Currently Amended) The method of Claim 1, wherein the presenting further comprises presenting the alert notification message as a momentary message on a display at the wireless mobile remote monitor~~, without the inhibiting access~~.

6. (Currently Amended) The method of Claim 1, wherein at least one of the wireless mobile remote monitor and the receiver comprise one or more of a mobile station, a wireless terminal, a tablet, a smart phone, a multi-mode wireless device, and a computer.

7. (Currently Amended) The method of Claim 1, wherein the server system comprises at least one processor configured to receive analyte sensor data from the receiver, process the analyte sensor data to detect the event, and forward, when the event is detected, the alert notification message to the wireless mobile remote monitor based on one or more rules mapping the event to the wireless mobile remote monitor designated to receive ~~the notification message for~~ alert messages related to the detected event.

8. (Currently Amended) The method of Claim 1, further comprising detecting, based on a first set of rules at the server system, the event, wherein the first set of rules used to generate the alert notification message are different from a second set of rules used to ~~detect~~ generate alerts to be sent to the receiver coupled to a sensor system at the host.

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9. (Currently Amended) The method of Claim 1, wherein the receiver includes, or couples to, a gateway interfacing a wireless connection to a public land mobile network and the server system.

10. (Previously Presented) The method of Claim 1 further comprising configuring a plurality of remote monitors, wherein at least one of the plurality of remote monitors is designated as a primary monitor that is assigned a higher alert priority status, and at least one of the plurality of remote monitors is designated as a secondary monitor that is assigned a lower alert priority status than the primary monitor.

11. (Currently Amended) The method of Claim 1, further comprising configuring, by the wireless mobile remote monitor, at least one rule ~~representative of~~ including a trigger ~~causing~~ that when triggered causes an alert to be sent by the server system to the receiver.

12. (Currently Amended) The method of Claim 1, further comprising configuring, by the wireless mobile remote monitor, one or more invitations sent to one or more devices to invite the one or more devices to ~~monitor~~ receive future alerts of the host based on at least some of the analyte concentration sensor data from the receiver.

13. (Currently Amended) The method of Claim 1, further comprising sending, to the server system, a message acknowledging a receipt of the alert notification message.

14. (Currently Amended) The method of Claim 1, wherein the alert notification message includes at least one of an indication to [[a]] the user of a need to calibrate a sensor coupled to the receiver and an acknowledgement message indicating at least one of an action or an acknowledgement sent by the receiver in response to an alarm sent to the receiver.

15. (Currently Amended) The method of Claim 1, wherein the presenting the alert notification message comprises opening a monitoring application ~~running~~ on the wireless mobile remote monitor, and the monitoring application initiating the accessing the at least some of the analyte concentration sensor data from the server system.

16. (Canceled)

17. (Currently Amended) The method of Claim 1, further comprising registering, at the server system, at least one of the wireless mobile remote monitor, the receiver, and an analyte sensor coupled to the receiver, wherein the registration includes a code provided by a health care provider.

18. (Canceled)

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19. (Canceled)

20. (Currently Amended) A method comprising:

providing, by a wireless mobile remote monitor to a server system, a set of alert rules including at least one analyte concentration level threshold, the set of rules being specifically associated with the wireless mobile remote monitor and a host, wherein the wireless mobile remote monitor or a user of the wireless mobile remote monitor is specifically authorized by the host to receive an alert notification message, wherein the wireless mobile remote monitor or the user of the wireless mobile remote monitor is authenticated by the server system

receiving, at [[a]] the wireless mobile remote monitor, an alert notification message from the server system, the alert notification message indicating that analyte concentration sensor data associated with the host has ~~representative of an~~ exceeded or fallen below the at least one analyte concentration level threshold, ~~detected, by a server, from~~ the analyte concentration sensor data being received by the server system ~~obtained~~ from a receiver monitoring an analyte concentration state of [[a]] the host, the wireless mobile remote monitor being remote to the host and the server system, ~~wherein the exceeded threshold corresponds to a set of alert rules including analyte level thresholds established on the server, by the remote monitor, in which the set of alert rules are specifically associated with the remote monitor to remotely monitor the analyte state of a host~~;

presenting, at the wireless mobile remote monitor, the alert notification message;

receiving, at the wireless mobile remote monitor, user input indicative of acknowledgment of the presented alert notification message;

sending an acknowledgment message from the wireless mobile remote monitor to the server system indicating acknowledgement of the presented alert notification message to enable the server system to confirm that the alert notification message has been received;

~~operating, at the remote monitor, a remote monitoring software application running on the remote monitor in response to the receiving the user input;~~

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accessing, by the wireless mobile remote monitor, the server system using a ~~in response to the operating the~~ remote monitoring software application running on the wireless mobile remote monitor; and

receiving from the server system, at the wireless mobile remote monitor, information including at least some of the analyte concentration sensor data[[,]]

~~wherein the receiving the alert notification message is received via a first wireless communication pathway between the remote monitor and a notification service in communication with the server, wherein the alert notification message is produced by the notification service based on an instruction message provided by the server indicative of the detected event, and~~

~~wherein the receiving the information is received via a second, different wireless communication pathway between the remote monitor and the server, wherein the second wireless communication pathway is established, in response to the accessing the server by the remote monitor, to provide the information~~.

21. (Canceled)

22. (Withdrawn) A method comprising:

determining, at a remote monitor or a server, whether a momentary wireless communication pathway is established between the remote monitor and the server;

upon determining establishment of the momentary wireless communication pathway:

receiving, at the remote monitor, an alert notification message from the server over the momentary wireless communication pathway, wherein the alert notification message is representative of an event detected, by the server, from analyte sensor data obtained from a receiver monitoring an analyte state of a host,

presenting, at the remote monitor, the received alert notification message on a display of the remote monitor, and

receiving, at the remote monitor, at least some of the analyte sensor data from the server over the momentary wireless communication pathway; and

upon determining no establishment of the momentary wireless communication pathway:

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receiving, at the remote monitor, the alert notification message from a notification service over a persistent communication pathway, wherein the alert notification message is transmitted to the remote monitor by the notification service based on an instruction message provided by the server to the notification service indicative of the detected event; and

presenting, at the remote monitor, the received alert notification message on the display of the remote monitor,

receiving, at the remote monitor, user input indicative of acknowledgment of the presented alert notification,

accessing, by the remote monitor, the server over the momentary wireless communication pathway in response to the acknowledgement of the presented alert notification message, and

receiving, in response to the accessing, the at least some of the analyte sensor data from the server over the momentary wireless communication pathway.

23. (Withdrawn) The method of Claim 24, wherein the determining includes identifying a monitoring application is actively operating on the remote monitor.

24. (Withdrawn) The method of Claim 25, wherein the monitoring application is actively operating on the remote monitor when the monitoring application is in a foreground mode on the remote monitor.

25. (Withdrawn) The method of Claim 24, further comprising presenting, at the remote monitor, the received analyte sensor data using a monitoring application on the remote monitor.

26. (Withdrawn) The method of Claim 24, wherein, when determining no establishment of the momentary wireless communication pathway, the presenting the alert notification message comprises opening a monitoring application operable on the remote monitor, and the monitoring application causing the accessing of the server by the remote monitor.

27. (Withdrawn) The method of Claim 24, wherein the detected event includes the analyte sensor data exceeding a threshold, and wherein the exceeded threshold corresponds to a set of alert rules including analyte level thresholds established on the server, by the remote

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monitor, in which the set of alert rules are specifically associated with the remote monitor to remotely monitor the analyte state of a host.

28. (New) A wireless mobile remote system comprising:

at least one processor; and

memory, the memory including instructions to configure the processor to:

receive an alert notification message from a server system, the alert notification message representative of a detected event, the event being based on analyte concentration sensor data obtained from a receiver monitoring an analyte state of a host, the analyte concentration sensor data indicating a concentration of an analyte of the host;

present the alert notification message, wherein the wireless mobile remote system or a user of the wireless mobile remote system is specifically authorized by the host to receive the alert notification message to augment the receiver monitoring of the analyte state of the host, wherein the wireless mobile remote system or the user of the wireless mobile remote system is authenticated by the server system;

receive user input indicative of acknowledgment of the presented alert notification message;

send an acknowledgment message to the server system indicating acknowledgement of the presented alert notification message to enable the server system to confirm that the alert notification message has been received;

after sending the acknowledgment, access at least some of the analyte concentration sensor data from the server system; and

receive the at least some of the analyte concentration sensor data including historical data from the receiver monitoring the analyte state of the host.

29. (New) A computer readable medium comprising executable instructions, the executable instructions being executable by a processor to perform a method, the method comprising:

receiving an alert notification message from a server system, the alert notification message representative of a detected event, the event being based on analyte

concentration sensor data obtained from a receiver monitoring an analyte state of a host, the analyte concentration sensor data indicating a concentration of an analyte of the host;

presenting the alert notification message, wherein a digital device executing the instructions or a user associated with the digital device is specifically authorized by the host to receive the alert notification message to augment the receiver monitoring of the analyte state of the host, wherein the wireless mobile remote system or the user of the wireless mobile remote system is authenticated by the server system;

receiving user input indicative of acknowledgment of the presented alert notification message;

sending an acknowledgment message to the server system indicating acknowledgement of the presented alert notification message to enable the server system to confirm that the alert notification message has been received;

after sending the acknowledgment, accessing at least some of the analyte concentration sensor data from the server system; and

receiving the at least some of the analyte concentration sensor data including historical data, the at least some of the analyte concentration sensor data being generated by the receiver monitoring the analyte state of the host.

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REMARKS

Claims 1, 4-15, 17-20 and 22-27 were pending in this application as of the Final Office Action, with Claims 22-27 withdrawn. In order to accelerate prosecution and without waiving any arguments, Applicant is amending claims 1, 4-9, 11-15, 17, and 20, as well as cancelling claims 18 and 19. Applicant is adding new claims 28 and 29. No new matter was added by way of the amendments or new claims. By these proposed claim amendments and the following remarks, Applicant does not acquiesce to the propriety of any of the Examiner's objections or rejections and does not disclaim any subject matter to which Applicant is entitled. *Cf. Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 41 U.S.P.Q. 2d 1865 (U.S. 1997).

Cancellation and/or amendment of certain claims in this response or any other response is not to be construed as a dedication to the public of any of the subject matter of the claims as previously presented, and Applicant reserves the ability to pursue the amended claims as filed, the canceled claims or similar claims in one or more continuing applications, e.g., continuation, divisional, or continuation-in-part applications.

Objections

Claim 1 has been objected to for informalities. The Office states that the claim recites, in part "the second wireless connection comprising a momentary, encrypted connection established, in response the accessing, to provide information." The Office stated that "The word 'to' is missing after the words 'in response'." *Id.* Applicant is removing the phrase "the second wireless connection comprising a momentary, encrypted connection established, in response the accessing, to provide the information." Applicant requests that the objection to the claim be withdrawn.

Claim Rejections – 35 U.S.C. §103

The Examiner rejected claims 1, 4-7, 9, 10, 12, 13, 15, and 17-19 under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over: U.S. Pat. Pub. No. 2010/0249625 to Lin (hereinafter referred to as *Lin*) in view of U.S. Pat. Pub. No. 2005/0148890 to Hastings (hereinafter referred to as *Hastings*), U.S. Pat. Pub. No. 2012/0075103 to Powell et al. (hereinafter referred to as *Powell*), and U.S. Pat. Pub. No. 2010/0088387 to Calamera (hereinafter referred to as *Calamera*).

To maintain a proper rejection under 35 U.S.C. §103, the Examiner must meet four conditions to establish a *prima facie* case of obviousness. First, the Examiner must show that the

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prior art suggested to those of ordinary skill in the art that they should make the claimed composition or device or carry out the claimed process. Second, the Examiner must show that the prior art would have provided one of ordinary skill in the art with a reasonable expectation of success. Both the suggestion and the reasonable expectation of success must be adequately founded in the prior art and not in an applicant's disclosure. Third, the prior art must teach or suggest all the claim limitations. *In re Vaeck,* 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991). Fourth, if an obviousness rejection is based on some combination of prior art references, the Examiner must show a suggestion, teaching, or motivation to combine the prior art references ("the TSM test"). *In re Dembiczak,* 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). Following *KSR Int'l Co. v. Teleflex, Inc.*, this fourth prong of the *prima facie* obviousness analysis must not be applied in a rigid or formulaic way such that it becomes inconsistent with the more flexible approach of *Graham v. John Deere*, 383 U.S. 1, 17-18 (1966). 127 S. Ct. 1727 (2007). It must still be applied, however, as the TSM test captures the important insight that "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *Id.* (citing *United States v. Adams*, 383 U.S. 39, 50-52 (1966)).

Regarding claim 1: Without waiving any arguments, Applicant is amending Claim 1 to add clarity to the claim. Applicant respectfully submits that the cited art, either alone or in combination, does not teach or suggest the elements of Claim 1 as amended.

The cited art does not appear to teach or suggest many elements of Claim 1 as amended. For example, the cited art does not appear to teach or suggest separately or in combination:

1) "receiving, at a wireless mobile remote monitor, an alert notification message from a server system, the alert notification message representative of a detected event, the event being based on analyte concentration sensor data obtained from a receiver monitoring an analyte state of a host, the analyte concentration sensor data indicating a concentration of an analyte of the host";
2) "the wireless mobile remote monitor [as discussed in the claim] or user of the wireless mobile remote monitor is specifically authorized by the host to receive alerts";
3) "sending an acknowledgment message from the wireless mobile remote monitor to the server system indicating acknowledgement of the presented alert notification

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message to enable the server system to confirm that the alert notification message has been received;

after sending the acknowledgment, accessing, by the wireless mobile remote monitor, at least some of the analyte concentration sensor data from the server system"; and/or

4) "receiving, in response to the accessing, the at least some of the analyte concentration sensor data including historical data, the at least some of the analyte concentration sensor data being generated by the receiver monitoring the analyte state of the host."

A. *Lin*

The Office rejected Claim 1 stating that *Lin* discloses "a method comprising receiving, at a remote monitor, a message representative of an event detected by a server, from an analyte sensor data obtained from a receiver monitoring an analyte state of a host [fig. 1 element 140 (receiver), 170 (server) and 190 (remote monitor), par. 0024 L. 1-4, par. 0025 L. 17-22, par. 0031 L. 19-26]. Lin further teaches presenting, at the remote monitor, the message [par. 0025 L. 17-22]. Lin further teaches receiving, in response to the accessing, information including at least the analyte sensor data [par. 0026 L. 17- 27]." *Office Action*, p. 4.

The Office admits that *Lin* does not teach: 1) that the remote monitor is configured by the server to receive the message; 2) the message is an alert notification message; 3) receiving an acknowledgement of the presented alert notification; or 4) accessing the server in response to the acknowledgment. *Id.*

Applicant respectfully disagrees with the Office that *Lin* discloses "analyte sensor data." Applicant respectfully submits that *Lin* discloses a method for obtaining physiological signal data and not analyte sensor data (or analyte concentration sensor data "indicating a concentration of an analyte of the host" as required by the claim as amended). Physiological data is not analyte concentration data.

The Abstract of *Lin* is as follows:

> [a] machine-implemented method including obtaining physiological signal data for a living being and performing a first analysis of the physiological signal data at a processing device local to the living being ... The method further includes transmitting from the processing device data associated with the

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> analysis to the central processing device and performing at the central processing device a second analysis of the data associated with the first analysis.

Analysis of the physiological data is provided to "[o]ne or more health care professionals, e.g., at 190 or 195, such as a cardiovascular technician (CVT) can use a monitoring station, e.g., 180 or 185." *Id.*, ¶ [0026]. "Physiological activity of various organs, such as the heart or brain, can be monitored, and this physiological activity can be analyzed… For example, the electrical activity of the heart can be monitored to track various aspects of the functioning of the heart. Cardiac monitoring devices sense the cardiac electrical activity of a living being." *Id.*, Background.

In other words, *Lin* is directed to monitoring physiological signals, and in particular, cardiac signals. For example, paragraphs [0008] and [0009] of *Lin* disclose in part: "…The system 111 can monitor, for example, a cardiac signal for occurrence of events such as arrhythmia events including arterial fibrillation (AF) events…A monitoring apparatus can include, for example… an implantable cardiac defibrillator and an associated transceiver or a pacemaker and an associated transceiver..." *Lin* also describes that the monitoring apparatus can analyze other physiological signals such as "ECG signals, pulse oximetry, SpO2 signal, respiratory signal, etc… [in] real time." *Id.* ¶ [0023]. Physiological signals, such as signals measuring "physiological activity of various organs" do not measure an analyte state of a host or indicate a concentration of an analyte of the host.

Since *Lin* does not appear to teach or suggest "analyte concentration sensor data indicating a concentration of an analyte state of a host," *Lin* does not appear to teach or suggest an alert notification message representative of an "event … based on analyte concentration sensor data obtained from a receiver monitoring an analyte state of a host" as required by the claim as amended. As follows, *Lin* does not appear to teach or suggest "receiving, at a wireless mobile remote monitor, an alert notification message from a server system, the alert notification message representative of a detected event [the event being based on the analyte concentration sensor data described herein]" as required by the claim as amended.

Further, *Lin* does not appear to teach or suggest "the wireless mobile remote monitor [as discussed in the claim] or user of the wireless mobile remote monitor is specifically authorized by the host to receive alerts" as required by the claim as amended. *Lin* discloses transmitting

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physiological signal data from a patient to a central processing system for further analysis by a group of health care professionals. For example, *Lin* discloses "obtaining first physiological signal data for a living being, performing a first analysis of the first physiological signal data a first processing device…[and] transmitting data to the central processing device." *Lin*, ¶ [0002]. "One or more health care professionals, e.g. at 190 or 195, such as a cardiovascular technician (CVT) can use a monitoring station…to evaluate the analysis…" *Id.*, ¶ [0026]. *Lin* does not appear to teach or suggest the patient specifically authorizing any device to receive data (or alerts) much less "the wireless mobile remote monitor" as discussed in the claim as amended or "a user of the wireless mobile remote monitor."

The Office also agrees that "Lin does not teach that the remote monitor is configured by the server to receive the message. Lin does not teach that the message is an alert notification message." *Office Action*, p. 4. As such, *Lin* does not appear to teach or suggest "the wireless mobile remote monitor [as discussed in the claim] or user of the wireless mobile remote monitor is specifically authorized by the host to receive alerts" as required by the claim as amended.

Applicant further submits that *Lin* does not appear to teach or suggest:

> sending an acknowledgment message from the wireless mobile remote monitor to the server system indicating acknowledgement of the presented alert notification message to enable the server system to confirm that the alert notification message has been received;
>
> after sending the acknowledgment, accessing, by the wireless mobile remote monitor, at least some of the analyte concentration sensor data from the server system

As discussed herein, the Office agrees that "Lin does not teach that the remote monitor is configured by the server to receive the message. Lin does not teach that the message is an alert notification message. Also, Lin does not teach receiving an acknowledgement of the presented alert notification, and accessing the server in response to the acknowledgement …." *Office Action*, p. 4.

As such, *Lin* does not appear to teach or suggest "receiving, in response to the accessing [after the acknowledgement], the at least some of the analyte concentration sensor data including historical data, the at least some of the analyte concentration sensor data being generated by the receiver monitoring the analyte state of the host" as required by the claim as amended.

B. *Hastings*

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Hastings does not cure the deficiencies of *Lin*. On pages 4 and 5 of the *Office Action*, the Office states:

> Hastings teaches a method to transmit alert notification messages to a remote monitoring device [par. 0015]. Hastings teaches receiving, at a remote monitor, an alert notification message representative of an event detected, by a server, from analyte sensor data [fig. 1 element 52 (server) and 60 (remote monitoring device), par. 0178 L. 1-4, par. 0182 L. 1-8]. Hastings further teaches presenting, at the remote monitor the alert notification message [par. 0178 L. 4-9, par. 0179 L. 1-3].
> Hastings teaches that the remote monitor is configured by the server to receive the notification message [par. 0080, par. 0240, par. 0250]. Hastings also teaches receiving, at the remote monitor, user input indicative of acknowledgement of the presented alert notification [fig. 4 step 320, fig. 5 step 410, par. 0184]. Hastings teaches accessing, by the remote monitor, the server in response to the acknowledgement of the presented alert notification message [fig. 4 steps 320 and 322, fig. 5 steps 410, 414 and 412, par. 0192, par. 0193]. Hastings further teaches receiving in response to accessing, information including at least the analyte sensor data [fig. 5 step 412, par. 0195].

Applicant respectfully disagrees that *Hastings* teaches "receiving…an alert notification message representative of an event detected, by a server, from analyte sensor data." Like *Lin*, Applicant respectfully submits that *Hastings* does not disclose an event "based on analyte concentration sensor data" much less such data "obtained from a receiver monitoring an analyte state of a host, the analyte concentration sensor data indicating a concentration of an analyte of the host" as required by the claim as amended.

Hastings appears to disclose a sensor for monitoring live waveform physiologic data. Physiological data is not analyte concentration data. For example, paragraphs [0095] and [0096] of *Hastings* disclose:

> Caregiver receivers **58-62** are configured to receive information from notification server **52**. Information to be received may include notification messages which provide notification of a possible condition of a patient that may require attention. ECG waveform data or other physiological data and interpretations of the data may be transferred as part of the notification message.
> Information received from notification server **52** may also include live physiologic data from a patient such that a clinician may

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> evaluate a condition of a patient as if the clinician were viewing a patient monitor **14-19**.

Further, Paragraph [0194] discloses:

> Types of live data that may be requested include ECG waveforms and values, results of data analysis (such as HRT, arrhythmia, HRV, sensor disconnection, and other analysis of data), SpO2 data waveforms or values, cardiac output data, blood pressure data, CO2 data, respiration data, temperature data, and/or other data.

Like *Lin*, *Hastings* appears to disclose physiological signals. Physiological signals, such as signals measuring "physiological activity of various organs" do not measure an analyte state of a host or indicate a concentration of an analyte of the host.

Since *Hastings* does not appear to teach or suggest "analyte concentration sensor data indicating a concentration of an analyte state of a host," *Hastings* does not appear to teach or suggest an alert notification message representative of an "event … based on analyte concentration sensor data obtained from a receiver monitoring an analyte state of a host" as required by the claim as amended. As follows, *Hastings* does not appear to teach or suggest "receiving, at a wireless mobile remote monitor, an alert notification message from a server system, the alert notification message representative of a detected event [the event being based on the analyte concentration sensor data described herein]" as required by the claim as amended.

Further, *Hastings* does not appear to teach or suggest "the wireless mobile remote monitor [as discussed in the claim] or user of the wireless mobile remote monitor is specifically authorized by the host to receive alerts" as required by the claim as amended. *Hastings* discloses an interface "with other hospital systems may be for alarm notification purposes, such as by providing the ability to send an ECG waveform over a cellular network to a doctor for analysis" (*Hastings*, ¶ [0076]) and that "[d]ata from monitoring devices **12-24** is typically sent to central station **46**, which is typically monitored by a clinician" (*Id.*, ¶ [0087]). *Hastings* does not appear to teach or suggest that the patient specifically authorizes "the wireless mobile remote monitor" or a user of such a wireless mobile remote monitor" as required by the claim.

Applicant further submits that *Hastings* does not appear to teach or suggest:

> sending an acknowledgment message from the wireless mobile remote monitor to the server system indicating acknowledgement of the presented alert notification message to

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> enable the server system to confirm that the alert notification message has been received;
>
> after sending the acknowledgment, accessing, by the wireless mobile remote monitor, at least some of the analyte concentration sensor data from the server system

As discussed herein, *Hastings* does not appear to teach or suggest "analyte concentration sensor data" and, as such, does not appear to teach or suggest "sending an acknowledgement message…indicating acknowledgement of the presented alert notification message [regarding the analyte concentration of an analyte of the host]" as required by the claim.

As follows, since *Hastings* does not appear to teach or suggest "analyte concentration data," *Hastings* does not appear to teach or suggest "accessing the "analyte concentration sensor data including historical data" as required by the claim as amended.

C. *Powell*

The Office rejected Claim 1 stating that *Powell* discloses portions of the claim that have been removed by the current amendment. In particular, on page 5 of the *Office Action*, the Office stated:

> The combination of Lin and Hastings does not teach that the notification is sent using a notification service over a persistent encrypted connection and that the information is received over a momentary encrypted connection between the remote monitor and the server.
>
> On the other hand, Powell teaches that a notification service can send push notifications indicating medical events to a remote monitor when a server in communication with the notification service determines that a notification needs to be sent [par. 0094 L. 9-14]. The above teaching means that the method includes the steps of receiving the alert notification message over at least a first wireless connection between the remote monitor and a notification service in communication with the server.

Powell does not cure the deficiencies of *Lin* or *Hastings*. *Powell* is directed to a "system and method for collecting, uploading, transmitting, receiving, downloading, manipulating, and displaying medical patient data and/or information to a remote device operable by a health care provider." *Powell*, ¶ [0001].

As similarly discussed regarding *Lin* and *Hastings*, Applicant respectfully submits that *Powell* discloses a monitoring device that monitors physiological data and not analyte sensor

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data (or analyte concentration sensor data "indicating a concentration of an analyte of the host" as required by the claim as amended).

Paragraph [0050] of *Powell* discloses:

> Each patient monitoring device **46** monitors physiological characteristics of a particular patient **50**, and generates data signals based thereon. Exemplar patient monitoring devices include, but are not limited to, maternal/fetal heart rate monitors, blood pressure monitors, respiratory monitors, vital signs monitors, electrocardiogram monitors, oximetry and/or anesthesia monitors. Exemplar patient monitoring devices can include, but are not limited to the Corometric Series Monitors, DINAMAP Series Monitors, DASH Series Monitors, and/or Solar Series monitors provided by GE Healthcare, IntelliVue and/or SureSigns Series patient monitors, and/or Avalon Series Fetal Monitors provided by Royal Philips Electronics, and/or Infinity Series patient monitors provided by Draeger Medical

Physiological data is not analyte concentration data. Physiological signals, such as signals measuring "physiological activity of various organs," do not measure an analyte state of a host or indicate a concentration of an analyte of the host.

Since *Powell* does not appear to teach or suggest "analyte concentration sensor data indicating a concentration of an analyte state of a host," *Powell* does not appear to teach or suggest an alert notification message representative of an "event … based on analyte concentration sensor data obtained from a receiver monitoring an analyte state of a host" as required by the claim as amended. As follows, *Powell* does not appear to teach or suggest "receiving, at a wireless mobile remote monitor, an alert notification message from a server system, the alert notification message representative of a detected event [the event being based on the analyte concentration sensor data described herein]" as required by the claim as amended.

Further, *Powell* does not appear to teach or suggest "the wireless mobile remote monitor [as discussed in the claim] or user of the wireless mobile remote monitor is specifically authorized by the host to receive alerts" as required by the claim as amended. *Powell* discloses alerts may be generated based on information analyzed and reviewed at a document management service (DMS). For example, paragraph [0094] of *Powell* states:

> … routines can be executed at the DMS **60**, **60′** to analyze and review patient data as it is received from the information system(s) **42**, and alerts can be generated based on this analysis and review.

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> In some cases, the information system **42** can analyze and review patient data, and generate alerts based on this analysis and review. These alerts can be pushed to the device **12** using a push-notification infrastructure. More specifically, the alerts resident at the DMS **60**, **60′** (regardless of whether the alerts were generated at the DMS **60**, **60′**, or the information system **42**) can be forwarded to a third-party push notification service, which pushes the alerts to the device **12**. In this manner, the underlying application does not have to be running on the device in order to receive such alerts. 94

Paragraph [0065] of *Powell* discloses that a device must be authorized to access the DMS, however, *Powell* is silent as to authorization to receive alerts. Moreover, while *Powell* discloses that the device must be authorized to access the DMS, *Powell* does not appear to teach or suggest that the patient "specifically" authorizing the "wireless mobile remote monitor or a user of the wireless mobile remote monitor….to receive the alert notification message."

This is consistent with *Powell* in that *Powell* appears to disclose a patient in a medical facility. For example, *Powell* discloses an ADT module that "enables the use of existing ADT interfaces within the facility system **18**, **20** and/or facility **40** to obtain patient admission, discharge and transfer information in order to always know which patient is associated to which bed and/or unit." *Powell*, ¶ [0066]. A patient at a medical facility such as a hospital with beds or units does not specifically authorize devices to receive alerts or specifically authorize some users and not others. As such, *Powell* teaches away from the patient "specifically" authorizing the "wireless mobile remote monitor or a user of the wireless mobile remote monitor….to receive the alert notification message" as required by the claim as amended.

Applicant further submits that *Powell* does not appear to teach or suggest:

> sending an acknowledgment message from the wireless mobile remote monitor to the server system indicating acknowledgement of the presented alert notification message to enable the server system to confirm that the alert notification message has been received;
>
> after sending the acknowledgment, accessing, by the wireless mobile remote monitor, at least some of the analyte concentration sensor data from the server system

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Applicant respectfully submits that *Powell* discloses that an alert can be sent but does not appear to teach or suggest acknowledgment of the alert at all. FIG. 10 of *Powell* regarding alerts is as follows:

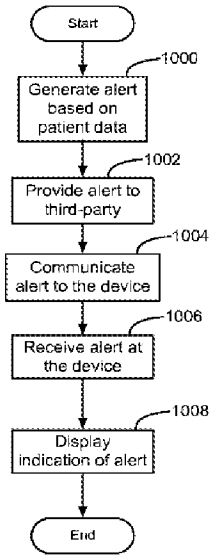


FIG. 10

FIG. 10 of *Powell* ends after display of indication and is silent, like the specification of *Powell*, as to any acknowledgement.

As such, *Powell* does not appear to teach or suggest "sending an acknowledgment message from the wireless mobile remote monitor" or "after sending the acknowledgment, accessing, by the wireless mobile remote monitor, at least some of the analyte concentration sensor data from the server system" as required by the claim as amended.

Since *Powell* does not appear to teach or suggest "analyte concentration sensor data" or "sending an acknowledgement message" in response to an alert based on the "analyte concentration sensor data," it follows that *Powell* does not appear to teach or suggest "receiving, in response to the accessing, the at least some of the analyte concentration sensor data including historical data, the at least some of the analyte concentration sensor data being generated by the receiver monitoring the analyte state of the host" as required by the claim as amended.

D. *Calamera*

The Office rejected Claim 1 stating that *Calamera* discloses portions of the claim that have been removed by the current amendment. In particular, on pages 6 and 7 of the *Office Action*, the Office stated:

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> The combination of Lin, Hastings and Powell does not teach that the information is sent over a second wireless connection comprising a momentary encrypted connection.
> On the other hand, Calamera teaches a method to transmit data to a remote device from a server [abstract]. Calamera teaches that a server can transmit notifications to a remote device using a proxy server (notification service) that is in communication with the server [fig. 2b element 120 (server), element 110 (remote device), element 300 (notification service), par. 0030 1-7]. Furthermore, Calamera teaches that the notification message is structured by the notification service and is sent to the remote device using a first persistent connection [par. 0027 L. 4-8, par. 0030 L. 4- 12]. Also, Calamera teaches that information regarding the received notification can be received from the server using a second wireless connection between the remote device and the server, wherein the second wireless connection comprises a momentary connection established in response to the accessing to provide the information [par. 0030 L. 8-15, par. 0031 L. 1-8, par. 0045, par. 0046, par. 0047 L. 1-4].

Calamera does not cure the deficiencies of *Lin, Hastings,* or *Powell*. *Calamera*, titled "email notification proxy," is directed to a "[a]mong other things, techniques and systems are disclosed for exchanging notifications and data between a client device and a server. A system includes a server configured to maintain a first persistent connection to a mobile electronic device. The first persistent connection is configured to push at least service specific data to the mobile electronic device." *Calamera*, Abstract.

Since *Calamera* discusses "enabling offloading of persistent wireless connections from a mail client to a mail server, specifically when the mail client is a mobile electronic device" (*Id.*, ¶ [0020]), *Calamera* does not disclose any medical information, much less "analyte concentration sensor data indicating a concentration of an analyte of the host" or sending alert notification messages based on the analyte concentration sensor data.

For at least these reasons, *Calamera* does not appear to teach or suggest "receiving, at a wireless mobile remote monitor, an alert notification message from a server system, the alert notification message representative of a detected event, the event being based on analyte concentration sensor data obtained from a receiver monitoring an analyte state of a host, the analyte concentration sensor data indicating a concentration of an analyte of the host" as required by the claim as amended.

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As follows, *Calamera* does not disclose the host as described in the claim specifically authorizing "the wireless mobile remote monitor [as discussed in the claim] or user of the wireless mobile remote monitor … to receive alert [based on the analyte concentration sensor data associated with the host]" as required by the claim.

Similarly, for these reasons, Applicant respectfully submits that *Calamera* does not appear to teach or suggest:

> sending an acknowledgment message from the wireless mobile remote monitor to the server system indicating acknowledgement of the presented alert notification message to enable the server system to confirm that the alert notification message has been received;
> after sending the acknowledgment, accessing, by the wireless mobile remote monitor, at least some of the analyte concentration sensor data from the server system; and/or
> receiving, in response to the accessing, the at least some of the analyte concentration sensor data including historical data, the at least some of the analyte concentration sensor data being generated by the receiver monitoring the analyte state of the host.

For at least these reasons, Applicant respectfully requests that the rejection to the claim, as well as the rejections to the claims that depend upon Claim 1, be withdrawn.

Regarding Claims 4-7, 9, and 10, the claims depend upon Claim 1 as amended. For at least the reasons discussed regarding Claim 1, Applicant respectfully requests that the rejections to the claims be withdrawn.

Regarding Claim 12, the claim depends upon Claim 1 as amended. The Office rejected the claim stating that Hastings at FIG. 5, steps 416 and 418, as well as paragraph [0196] discloses "that the remote monitor can request the server to forward data to one or more devices." *Office Action*, p. 10.

Applicant respectfully submits that the cited art does not appear to teach or suggest "configuring, by the wireless mobile remote monitor, one or more invitations sent to one or more devices to invite the one or more devices to receive future alerts of the host based on at least some of the analyte concentration sensor data from the receiver" as required by the claim as amended. In fact, *Hastings* teaches away from the claim.

Hastings discloses transmitting information to a group if another does not respond to an alert. FIG. 4 is as follows:

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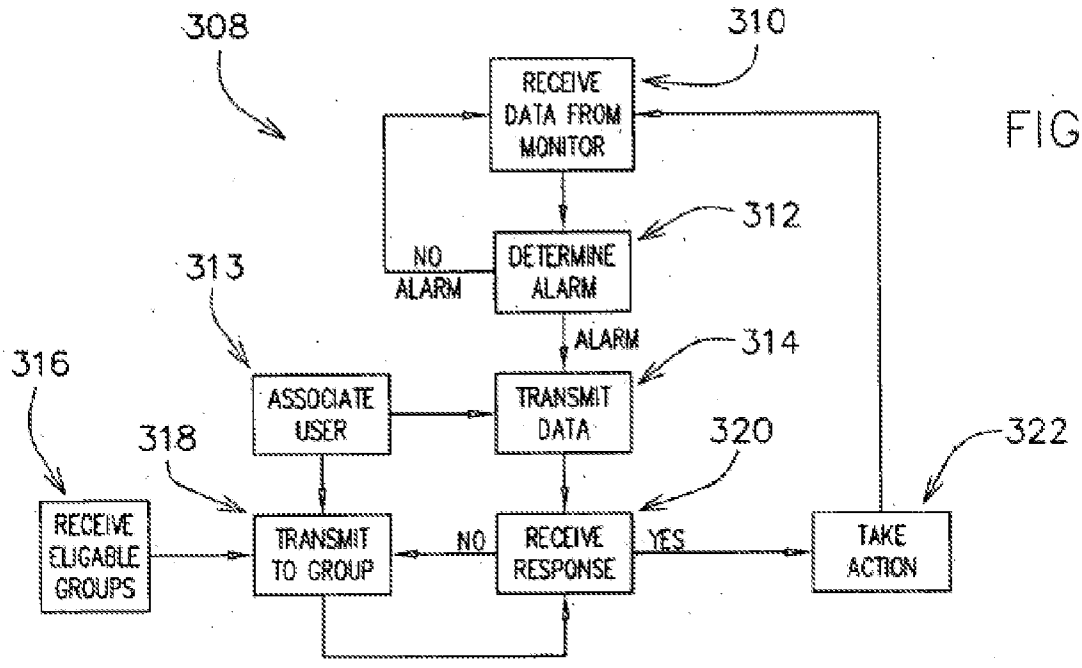


FIG. 4

Hastings does not appear to teach or suggest that the "wireless mobile remote monitor" that receives alerts from a host sends "one or more invitations" to members of the group. In fact, *Hastings* teaches away from the host sending "one or more invitations" because, as shown in FIG. 4 above, *Hastings* discloses a method when the device receiving the alert fails to respond at all. Further, the group has not previously received the alert (otherwise, the step of "transmit to group" would be unnecessary) and so has not been invited by any device (much less the initial device configured to receive the alert as required by the claim) to receive alerts.

For at least these reasons as well as the reasons discussed regarding Claim 1, Applicant respectfully requests that the rejection to the claim be withdrawn.

Regarding Claims 13, 15, and 17 the claims depend upon Claim 1 as amended. For at least the reasons discussed regarding Claim 1, Applicant respectfully requests that the rejections to the claims be withdrawn.

Regarding Claims 18 and 19, in order to accelerate prosecution, without waiving any arguments, Applicant is cancelling Claims 18 and 19. Applicant respectfully requests that the rejections to the claims be withdrawn as moot. Applicant respectfully submits that Claim 28 contains similar subject matter with Claim 18 and Claim 1 as amended. Applicant also submits that Claim 29 contains similar subject matter of Claim 19 and Claim 1 as amended. Applicant

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believes that Claims 28 and 29 are allowable for at least the reasons discussed regarding Claim 1.

IV. The Office rejected Claim 8 under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over *Lin*, in view of *Hastings*, *Powell, Calamera,* and further in view of U.S. Pat. Pub. No. 2002/0169584 to Fu (hereinafter referred to as *Fu*).

Regarding Claim 8, the claim recites "further comprising detecting, based on a first set of rules at the server system, the event, wherein the first set of rules used to generate the alert notification message are different from a second set of rules used to generate alerts to be sent to the receiver coupled to a sensor system at the host."

On pages 12 and 13 of the *Office Action*, the Office rejected the claim stating that:

> The combination does not teach that rules used to send a notification to the remote monitor are different from a set of rules used to send a notification to the receiver.
> On the other hand, Fu teaches a method to send notifications to patients and doctors based on information received by a server from a receiver [fig. 3]. Fu teaches that depending of the analysis of the data, the server decides if the sever needs to send a notification to a doctor or to a patient [par. 0029 L. 17-25, par. 0030]. This means that the server has one set of rules to generate a notification to the remote monitor and a second set of rules to generate a notification to the receiver.

Applicant respectfully submits that the cited portion of *Fu* discloses making a determination to send a notification emergency services or family doctor but not the patient, much less "the receiver [the receiver monitoring the analyte state of a host as required by Claim 1]" of the patient as required by the claim.

Paragraphs [0029] and [0030] of *Fu* disclose:

> Health monitor server 40 analyzes the data gathered by medical monitor 20 in conjunction with a patient profile of patent 10, which is stored in database 50. Health monitor server 40 determines if patient 10 has certain specified conditions, including but not limited to a heart attack or dangerous blood pressure levels. If health monitor server 40 determines that the monitoring data indicates that patient 10 requires immediate medical attention, then health monitor server 40 contacts appropriate emergency medical personnel 60 by, for example, calling 911 and informing 911 of the location of patient 10 using a pre-recorded message, voice synthesis, e-mail, and/or an SMS message. In addition, the

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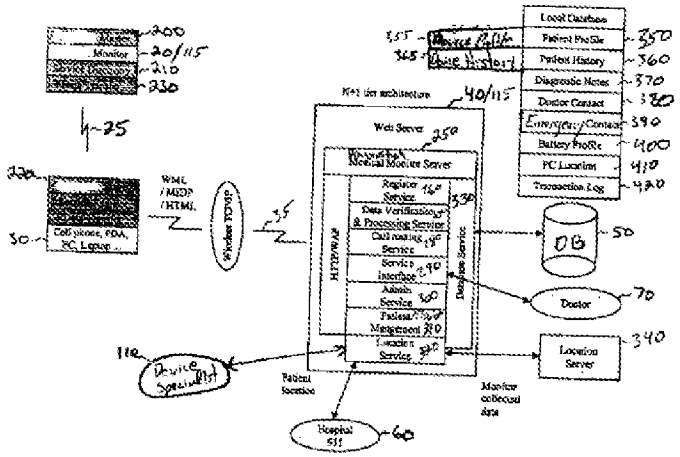
> collected data from patient 10 and/or an initial diagnostic decision made by health monitor server 40 may also be conveyed to 911 through voice synthesis, fax, e-mail, or by any other electronic means, so that emergency service personnel 60 may be better prepared to treat patient 10. If, on the other hand, health monitor server 40 determines that the monitoring data does not indicate an emergency, but instead determines that the medical doctor or family doctor of patient 10 should be contacted for any reason, then health monitor server 40 contacts doctor 70 and informs doctor 70 about the current condition of patient 10 using, for example, text to speech voice synthesis, e-mail, and/or an SMS message. Moreover, the doctor may request and receive additional patient information from health monitor server 40. Health monitor server 40 may receive the doctor's request by utilizing voice-recognition technology, or it may, for example, parse an e-mail or SMS message sent in by the doctor. Doctor 70 and emergency medical personnel 60 may also request and retrieve information from health monitor server 40 via the Internet.
> Alternatively, in the event of a non-emergency, health monitor server 40 may send recommendations, such as a proposed diet, to patient 10 based upon an analysis of the medical monitoring data via communication link 35 and communication device 30.

These paragraphs refer to a decision to convey information to 911 emergency services or a "medical doctor or family doctor of the patient…should be contacted." Since *Fu* does not appear to teach or suggest sending alerts to the host (e.g., patient) at all, *Fu* does not appear to teach or suggest using a "set of rules used to generate alerts to be sent to the receiver coupled to a sensor system at the host" as required by the claim.

Further, Applicant respectfully submits that since *Fu* does not recite a set of rules for sending alerts to any receiver at the host, it follows that *Fu* does not disclose a "set of rules used to generate alerts to be sent to the receiver [the receiver monitoring the analyte state of a host as required by Claim 1]."

FIG. 3 of *Fu*, cited by the Office, is as follows:

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The "cell phone, PDA, PC, Laptop" is clearly not a receiver monitoring the analyte state of a host as required by the claim.

"Medical monitor **20**, wearable by patient **10**, is used to monitor the vital signs of patient **10**. Medical monitor **20** is capable of monitoring a multitude of medical parameters, including but not limited to heart rate, temperature, and blood pressure." 27

For at least these reasons as well as the reasons discussed regarding Claim 1, Applicant respectfully requests that the rejection to the claim be withdrawn.

V. The Office rejected Claim 11 under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over *Lin*, in view of *Hastings*, *Powell, Calamera,* and further in view of *Fu and* U.S. Pat. Pub. No. 2011/0320130 to Valdes et al. (hereinafter referred to as *Valdes*).

Claim 11 requires "configuring, by the wireless mobile remote monitor, at least one rule including a trigger that when triggered causes an alert to be sent by the server system to the receiver [the receiver monitoring the analyte state of a host as required by Claim 1]."

The Office rejected the claim admitting that "[t]he combination [of *Lin*, *Hastings*, *Powell* and *Calamera*] does not teach that notifications are sent to the receiver." However, the Office repeated the language of the rejection regarding Claim 8 stating "Fu teaches that the server sends notifications to the patient (receiver) if the server decides that the alarm does not require medical attention [par. 0029 L. 17-25, par. 0030]."

As discussed herein, *Fu* does not disclose sending a notification to a patient at all, only determining whether to send notifications to 911 or a family doctor. Further, *Fu* does not disclose sending notifications to the receiver as required in the claim (i.e., the receiver monitoring the analyte state of a host as required by Claim 1).

Valdes does not cure the deficiencies of *Lin*, *Hastings*, *Powell*, *Calamera*, and *Fu*. *Valdes* discloses devices that can include "a receiver unit and one or more secondary display devices. The receiver unit can be configured to be a stand-alone device or physically connect to a secondary display device." *Valdes*, ¶ [0002]. Valdes does not appear to disclose sending an alert from a server system to the receiver, much less rules to trigger such an alert.

For at least these reasons as well as the reasons discussed regarding Claim 1, Applicant respectfully requests that the rejection to the claim be withdrawn.

VI. The Office rejected Claim 14 under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over *Lin*, in view of *Hastings*, *Powell,* and *Calamera,* and further in view of U.S. Pat. Pub. No. 2007/0088223 to Mann et al. (hereinafter referred to as *Mann*).

Claim 11 requires "wherein the alert notification message includes at least one of an indication to *the* user of a need to calibrate a sensor coupled to the receiver [the receiver monitoring the analyte state of a host as required by Claim 1] and an acknowledgement message indicating at least one of an action or an acknowledgement sent by the receiver in response to an alarm sent to the receiver."

The Office rejected the claim admitting that "Lin, Hastings, Powell and Calamera as applied in Claim 1 above does not teach that the alert notification message includes an indication to a user of a need to calibrate a sensor." *Office Action*, p. 15. The Office further stated, however, that "[o]n the other hand, Mann teaches that a notification can be sent to a user of a remote monitor of a need to calibrate the sensor [par. 0058 L. 9-10]." *Id.* The cited portion of *Mann* states "[i]n another embodiment, the patient and/or the doctor are notified that a re-calibration is required."

Applicant respectfully submits that the fact that mere notification of a re-calibration exists does not teach or suggest an "alert notification message" as required by Claim 1 as amended (i.e., the alert notification message representative of a detected event, the event being based on analyte concentration sensor data obtained from a receiver monitoring an analyte state of a host, the analyte concentration sensor data indicating a concentration of an analyte of the host).

Mann only discloses that "a re-calibration is required" not recalibration of a sensor of the receiver [the receiver monitoring the analyte state of a host as required by Claim 1] as required by the claim as amended.

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For at least these reasons as well as the reasons discussed regarding Claim 1, Applicant respectfully requests that the rejection to the claim be withdrawn.

VII. The Office rejected Claim 20 under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Lin, in view of Hastings and U.S. Pat. Pub. No. 2007/00882012/0136221 to Killen et al. (hereinafter referred to as *Killen*).

Claim 20, as amended, recites a method comprising:

> providing, by a wireless mobile remote monitor to a server system, a set of alert rules including at least one analyte concentration level threshold, the set of rules being specifically associated with the wireless mobile remote monitor and a host, wherein the wireless mobile remote monitor or a user of the wireless mobile remote monitor is specifically authorized by the host to receive an alert notification message, wherein the wireless mobile remote monitor or the user of the wireless mobile remote monitor is authenticated by the server system
>
> receiving, at the wireless mobile remote monitor, an alert notification message from the server system, the alert notification message indicating that analyte concentration sensor data associated with the host has exceeded or fallen below the at least one analyte concentration level threshold, the analyte concentration sensor data being received by the server system from a receiver monitoring an analyte concentration state of the host, the wireless mobile remote monitor being remote to the host and the server system;
>
> presenting, at the wireless mobile remote monitor, the alert notification message;
>
> receiving, at the wireless mobile remote monitor, user input indicative of acknowledgment of the presented alert notification message;
>
> sending an acknowledgment message from the wireless mobile remote monitor to the server system indicating acknowledgement of the presented alert notification message to enable the server system to confirm that the alert notification message has been received;
>
> accessing, by the wireless mobile remote monitor, the server system using a remote monitoring software application running on the wireless mobile remote monitor; and
>
> receiving from the server system, at the wireless mobile remote monitor, information including at least some of the analyte concentration sensor data.

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Applicant respectfully submits that the cited art does not appear to teach or suggest the elements of the claim as amended.

A. *Lin*

As discussed herein, *Lin* does not appear to teach or suggest "analyte sensor data." Applicant respectfully submits that *Lin* discloses a method for obtaining physiological signal data and not analyte sensor data (or analyte concentration sensor data "indicating a concentration of an analyte of the host" as required by the claim as amended). Physiological data is not analyte concentration data. The Abstract of *Lin* is as follows:

> [a] machine-implemented method including obtaining physiological signal data for a living being and performing a first analysis of the physiological signal data at a processing device local to the living being ... The method further includes transmitting from the processing device data associated with the analysis to the central processing device and performing at the central processing device a second analysis of the data associated with the first analysis.

Analysis of the physiological data is provided to "[o]ne or more health care professionals, e.g., at 190 or 195, such as a cardiovascular technician (CVT) can use a monitoring station, e.g., 180 or 185." *Id.*, ¶ [0026]. "Physiological activity of various organs, such as the heart or brain, can be monitored, and this physiological activity can be analyzed... For example, the electrical activity of the heart can be monitored to track various aspects of the functioning of the heart. Cardiac monitoring devices sense the cardiac electrical activity of a living being." *Id.*, Background.

In other words, *Lin* is directed to monitoring physiological signals, and in particular cardiac signals. For example, paragraphs [0008] and [0009] disclose in part: "...The system 111 can monitor, for example, a cardiac signal for occurrence of events such as arrhythmia events including arterial fibrillation (AF) events...A monitoring apparatus can include, for example... an implantable cardiac defibrillator and an associated transceiver or a pacemaker and an associated transceiver..." *Lin* also describes that the monitoring apparatus can analyze other physiological signals such as "ECG signals, pulse oximetry, SpO2 signal, respiratory signal, etc... [in] real time." *Id.* ¶ [0023]. Physiological signals, such as signals measuring "physiological activity of various organs," do not measure an analyte state of a host or indicate a concentration of an analyte of the host.

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Since *Lin* does not appear to teach or suggest "analyte concentration sensor data indicating a concentration of an analyte state of a host," *Lin* does not appear to teach or suggest "one analyte concentration level threshold," as required by the claim as amended or a set of rules including at least one "analyte concentration level threshold." As further follows, *Lin* does not appear to teach or suggest receiving an "alert notification message indicating that analyte concentration sensor data associated with the host has exceeded or fallen below the at least one analyte concentration level threshold."

Moreover, the Office admits on page 17 of the *Office Action* that *Lin* "does not teach that the thresholds corresponding to the set of rules including analyte level thresholds are established at the server by the remote monitor."

Lin does not appear to teach or suggest "the wireless mobile remote monitor [as discussed in the claim] or user of the wireless mobile remote monitor is specifically authorized by the host to receive alerts" as required by the claim as amended. *Lin* discloses transmitting physiological signal data from a patient to a central processing system for further analysis by a group of health care professionals. For example, *Lin* discloses "obtaining first physiological signal data for a living being, performing a first analysis of the first physiological signal data at a first processing device…[and] transmitting data to the central processing device." *Lin*, ¶ [0002]. "One or more health care professionals, e.g. at 190 or 195, such as a cardiovascular technician (CVT) can use a monitoring station…to evaluate the analysis…" *Id.*, ¶ [0026]. *Lin* does not appear to the patient specifically authorizing any device to receive data (or alerts) much less "the wireless mobile remote monitor" as discussed in the claim as amended or "a user of the wireless mobile remote monitor."

The Office agrees that "Lin does not teach that the remote monitor is configured by the server to receive the message. Lin does not teach that the message is an alert notification message." *Office Action*, p. 4. As such, *Lin* does not appear to teach or suggest "the wireless mobile remote monitor [as discussed in the claim] or user of the wireless mobile remote monitor is specifically authorized by the host to receive an alert notification message" as required by the claim as amended.

Since *Lin* does not appear to teach or suggest an alert notification message indicating the analyte concentration sensor data, *Lin* does not appear to teach or suggest "presenting, at the wireless mobile remote monitor, the alert notification message; receiving, at the wireless mobile

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remote monitor, user input indicative of acknowledgment of the presented alert notification message; sending an acknowledgment message from the wireless mobile remote monitor to the server system indicating acknowledgement of the presented alert notification message to enable the server system to confirm that the alert notification message has been received; accessing, by the wireless mobile remote monitor, the server system using a remote monitoring software application running on the wireless mobile remote monitor; [or] "receiving from the server system, at the wireless mobile remote monitor, information including at least some of the analyte concentration sensor data."

B. *Hastings*

Hastings does not cure the deficiencies of *Lin*. As discussed herein, Applicant respectfully submits that *Hastings* does not disclose an event "based on analyte concentration sensor data" much less such data "obtained from a receiver monitoring an analyte state of a host, the analyte concentration sensor data indicating a concentration of an analyte of the host" as required by the claim as amended.

Hastings appears to disclose a sensor for monitoring live waveform physiologic data. Physiological data is not analyte concentration data. For example, paragraphs [0095] and [0096] of *Hastings* disclose:

> Caregiver receivers **58-62** are configured to receive information from notification server **52**. Information to be received may include notification messages which provide notification of a possible condition of a patient that may require attention. ECG waveform data or other physiological data and interpretations of the data may be transferred as part of the notification message.
> Information received from notification server **52** may also include live physiologic data from a patient such that a clinician may evaluate a condition of a patient as if the clinician were viewing a patient monitor **14-19**.

Further, paragraph [0194] discloses:

> Types of live data that may be requested include ECG waveforms and values, results of data analysis (such as HRT, arrhythmia, HRV, sensor disconnection, and other analysis of data), SpO2 data waveforms or values, cardiac output data, blood pressure data, CO2 data, respiration data, temperature data, and/or other data.

Since *Hastings* does not appear to teach or suggest "analyte concentration sensor data indicating a concentration of an analyte state of a host," *Hastings* does not appear to teach or

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suggest "one analyte concentration level threshold," as required by the claim as amended or a set of rules including at least one "analyte concentration level threshold." As further follows, *Hastings* does not appear to teach or suggest receiving an alert notification message indicating that analyte concentration sensor data associated with the host has exceeded or fallen below the at least one analyte concentration level threshold."

Moreover, the Office admits on page 17 of the *Office Action* that *Hastings* "does not teach that the thresholds corresponding to the set of rules including analyte level thresholds are established at the server by the remote monitor."

Further, as discussed herein, *Hastings* does not appear to teach or suggest "the wireless mobile remote monitor [as discussed in the claim] or user of the wireless mobile remote monitor is specifically authorized by the host to receive alerts" as required by the claim as amended. *Hastings* discloses an interface "with other hospital systems may be for alarm notification purposes, such as by providing the ability to send an ECG waveform over a cellular network to a doctor for analysis" (*Hastings*, ¶ [0076]) and that "[d]ata from monitoring devices **12-24** is typically sent to central station **46**, which is typically monitored by a clinician" (*Id.*, ¶ [0087]). *Hastings* does not appear to teach or suggest that the patient specifically authorizes "the wireless mobile remote monitor" or a user of such a wireless mobile remote monitor" as required by the claim.

Since *Hastings* does not appear to teach or suggest an alert notification message indicating the analyte concentration sensor data, *Hastings* does not appear to teach or suggest "presenting, at the wireless mobile remote monitor, the alert notification message [the alert notification message indicating that analyte concentration sensor data associated with the host has exceeded or fallen below the at least one analyte concentration level threshold]; receiving, at the wireless mobile remote monitor, user input indicative of acknowledgment of the presented alert notification message; sending an acknowledgment message from the wireless mobile remote monitor to the server system indicating acknowledgement of the presented alert notification message to enable the server system to confirm that the alert notification message has been received; accessing, by the wireless mobile remote monitor, the server system using a remote monitoring software application running on the wireless mobile remote monitor; [or] "receiving from the server system, at the wireless mobile remote monitor, information including at least some of the analyte concentration sensor data."

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C. *Killen*

On page 17 of the *Office Action*, the Office cites *Killen* as disclosing:

> Killen teaches that the server can send alerts to remote monitoring devices based on analyte thresholds that can be established on the server by the remote monitor [par. 00143 L. 1-10]. Killen further teaches that the alert rules are specifically associated with the remote monitor to remotely monitor the analyte state of the host [par. 0153 L. 5-7].

Killen does not cure the deficiencies of *Lin* or *Hastings*. Like *Lin* and *Hastings*, *Killen* does not appear to teach or suggest "analyte concentration sensor data" much less such data "obtained from a receiver monitoring an analyte state of a host, the analyte concentration sensor data indicating a concentration of an analyte of the host" and does not appear to describe a device for "monitoring an analyte concentration state of the host."

Killen describes "[a] system for monitoring the health of a hospital patient." *Killen*, Abstract, See also ¶ [0001]. In particular, *Killen* discloses "[t]he measuring device 6 is used by a hospital employee, such as a nurse, to periodically record a set of vital signs for one or more patients" and subsequently provides the recorded vital signs received from the nurse to a server. *Killen*, ¶ [0112]. "The set of vital signs may include: pulse, respiratory rate, blood pressure and temperature." *Id.*, ¶ [0004]. It is important to note that the measuring device 6 does not actually measure vital signs, but rather "the measuring device instructs the nurse to record a set of different vital signs." *Id.*, ¶ [0004] and See FIG. 3. Subsequently, "the measuring device 6 identifies whether or not the nurse has entered a complete set of vital signs." *Id.*, ¶ [0126]. If not all vital signs have been recorded by the nurse, "the measuring device instructs the nurse to measure the next vital sign in the set." *Id.* "[T]he server 10 sends each received set of vital signs to the score engine 14…[which] calculates a score or indicator." *Id.*, ¶ [0112]. "Depending on the calculated score or indicator, the score engine 14 sends a message to one or more medical practitioners in respect of the patient." *Id.*, ¶ [0114].

Killen does not appear to teach or suggest a device monitoring an analyte state of a host. Applicant respectfully submits that the "the measuring device 6" of *Killen* does not monitor any information of a host but rather is configured to instruct medical personnel at a hospital to take vital signs of a patient and input the vital signs into the mobile receiver. As shown in FIG. 3 and discussed regarding FIG. 3 in ¶ ¶ [0124]-[0127] of *Killen*:

> At step 102, the measuring device 6 instructs the nurse to record, or confirm, the location of the patient… At step 104, the measuring device instructs the nurse to measure and record the first vital sign of the patient... At step 106, the measuring device 6 identifies whether or not the nurse has entered a complete set of vital signs. At step 108 [assuming that a complete set of vital signs has not been entered], the measuring device instructs the nurse to measure the next vital sign in the set…Processing continues to flow in a loop…until step 106 is reached when a complete set of vital signs has been recorded.

As described in ¶ [0129] of *Killen*, "[a]n advantage of the above-described method of data capture is that it is faster and more accurate than pen and paper recordal. For example, errors are not introduced by poor handwriting or lost paper." Clearly the device described in *Killen* merely receives input from a nurse who performs tests of vital signs and is not "a receiver monitoring an analyte concentration state of a host" as required by the claim as amended.

Vital signs as described in *Killen* are not an "analyte concentration" as required by the claim as amended. As discussed herein, "[t]he set of vital signs may include: pulse, respiratory rate, blood pressure and temperature." *Id.*, ¶ [0004]. Pulse, respiratory rate, blood pressure, and temperature are not concentrations much less "analyte concentrations."

Since *Killen* does not appear to describe analyte concentration data, thresholds regarding such data, or "a receiver monitoring an analyte concentration state of the host, it follows that *Killen* does not appear to teach or suggest a mobile remote monitoring apparatus receives "a alert notification message indicating that analyte concentration sensor data associated with the host has exceeded or fallen below the at least one analyte concentration level threshold, the analyte concentration sensor data being received by the server system from a receiver monitoring an analyte concentration state of the host" as required by the claim.

Further, *Killen* does not appear to teach or suggest "the wireless mobile remote monitor [as discussed in the claim] or user of the wireless mobile remote monitor is specifically authorized by the host to receive alerts" as required by the claim as amended. *Killen* appears to disclose a patient in a hospital. There is no indication that the patient specifically authorizes "the wireless mobile remote monitor [as discussed in the claim] or user of the wireless mobile remote monitor" as required by the claim as amended. *Killen* discloses a system to avoid clerical error by enabling nurses to record vital signs of patients in hospitals. *Killen* does not appear to

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describe a system whereby doctors receive specific authorizations to access ongoing vital sign results and medical alert messages regarding patients undergoing treatment in the hospital. The Technical Field of *Killen* in ¶ [0002] states that "[t]he present invention relates to hospital patient monitoring." *Killen* repeatedly indicates that the patient is a hospital patient monitored by a nurse, the nurse taking vital signs of the patient and inputting the vital signs into a device that shares the information with a score engine to determine when messages should be sent to a doctor. It would make little sense that a doctor was prevented from being aware of an urgent condition of a patient in their own hospital because the doctor was not provided an invitation by a patient or the doctor did not accept such an invitation provided by the patient to access secure server data and to receive a message regarding a health condition.

Since *Killen* does not appear to teach or suggest an alert notification message indicating the analyte concentration sensor data, *Killen* does not appear to teach or suggest "presenting, at the wireless mobile remote monitor, the alert notification message [the alert notification message indicating that analyte concentration sensor data associated with the host has exceeded or fallen below the at least one analyte concentration level threshold]; receiving, at the wireless mobile remote monitor, user input indicative of acknowledgment of the presented alert notification message; sending an acknowledgment message from the wireless mobile remote monitor to the server system indicating acknowledgement of the presented alert notification message to enable the server system to confirm that the alert notification message has been received; accessing, by the wireless mobile remote monitor, the server system using a remote monitoring software application running on the wireless mobile remote monitor; [or] "receiving from the server system, at the wireless mobile remote monitor, information including at least some of the analyte concentration sensor data."

For at least these reasons, Applicant respectfully requests that the rejection to the claim be withdrawn.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other

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broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

Conclusion

Should the Examiner have any concerns that might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: April 11, 2017

By: /Rose M. Thiessen/
Registration No. 40,202
Attorney of Record
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(858) 707-4000

25688111
041117

Abbott Ex. 1002 - 151/834

Electronic Patent Application Fee Transmittal

Application Number:	13842679
Filing Date:	15-Mar-2013
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Filer:	Rose M. Thiessen/Edgar Compton
Attorney Docket Number:	DEXCOM.225A

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
INDEPENDENT CLAIMS IN EXCESS OF 3	1201	2	420	840
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
RCE- 2ND AND SUBSEQUENT REQUEST	1820	1	1700	1700
		Total in USD ($)		**2540**

Electronic Acknowledgement Receipt

EFS ID:	28898627
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Rose M. Thiessen/Jennifer Neat
Filer Authorized By:	Rose M. Thiessen
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	11-APR-2017
Filing Date:	15-MAR-2013
Time Stamp:	20:34:16
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$2540
RAM confirmation Number	041217INTEFSW20352700
Deposit Account	111410
Authorized User	Jennifer Neat

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)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	RCE.pdf	697623 dbdb5afa5348ca9cc029280410157aff3467d04b	no	3
Warnings:					
Information:					
2		225A_AmendAF.pdf	264156 997aabd50f75b7a22ef2d9b18d9840520ce5e2df	yes	36

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment Submitted/Entered with Filing of CPA/RCE	1	1
	Claims	2	9
	Applicant Arguments/Remarks Made in an Amendment	10	36

Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	32411 f0608fc8d57f566634d59761b7f7752f5847c1d1	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	994190		

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/842,679	Filing Date 03/15/2013	☐ To be Mailed

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 $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $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

AMENDMENT **04/11/2017**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 23	Minus	** 23	= 0	X $80 =	0
Independent (37 CFR 1.16(h))	* 5	Minus	***5	= 0	X $420 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
ALLYSON PURNELL

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A	8793

68851 7590 01/12/2017

KNOBBE, MARTENS, OLSON & BEAR, LLP
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2040 MAIN STREET
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EXAMINER
BALSECA, FRANKLIN D

ART UNIT	PAPER NUMBER
2685	

NOTIFICATION DATE	DELIVERY MODE
01/12/2017	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):

jayna.cartee@knobbe.com
efiling@knobbe.com

Office Action Summary	Application No. 13/842,679	Applicant(s) MENSINGER ET AL.	
	Examiner FRANKLIN BALSECA	Art Unit 2685	AIA (First Inventor to File) Status No

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

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

Status

1)☒ Responsive to communication(s) filed on *10/06/2016*.

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

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ 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.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1,4-15 and 17-20* is/are pending in the application.

5a) Of the above claim(s) *22-27* is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1,4-15 and 17-20* is/are rejected.

8)☒ Claim(s) *1* is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, 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.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

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

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)).

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

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

Detailed Action

Response to Arguments

1. Applicant's arguments with respect to claim 1 and 20 have been considered but are moot in view of new ground(s) of rejection necessitated by the amendments.

Election/Restriction

2. Newly submitted claims 22-27 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

Previously presented claims 1 and 20 are directed to a method to receive notifications indicating events using a persistent encrypted connection and to receive data regarding the events using a momentary encrypted connection. On the other hand, new independent claim 22 is directed to a method to receive notifications and data regarding an event using a momentary connection, when it is determined that a momentary connection has been established, and to receive the notifications and data using persistent connection when it is determined that a momentary connection cannot be established. Claim 22, as shown above, is directed to a different invention than claims 1 and 20.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 22-27 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Objections

3. Claim 1 is objected to because of the following informalities:

In regards to claim 1, the claim claims in part "the second wireless connection comprising a momentary, encrypted connection established, in response the accessing, to provide in formation". The word "to" is missing after the words "in response". The limitation should say "the second wireless connection comprising a momentary, encrypted connection established, in response **to** the accessing, to provide in formation"

Appropriate correction is required.

Claim Rejections - 35 USC § 103

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

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

4. Claims 1, 4-7, 9, 10, 12, 13 and 15, 17-19 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Lin (US-2010/0249625) in view of Hastings (US-2005/0148890), Powell et al. (US-2012/0075103) and Calamera (US-2010/0088387).

In regards to claim 1, Lin teaches a method comprising receiving, at a remote monitor, a message representative of an event detected by a server, from an analyte sensor data obtained from a receiver monitoring an analyte state of a host [fig. 1 element 140 (receiver), 170 (server) and 190 (remote monitor), par. 0024 L. 1-4, par. 0025 L. 17-22, par. 0031 L. 19-26]. Lin further teaches presenting, at the remote monitor, the message [par. 0025 L. 17-22]. Lin further teaches receiving, in response to the accessing, information including at least the analyte sensor data [par. 0026 L. 17-27].

Lin does not teach that the remote monitor is configured by the server to receive the message. Lin does not teach that the message is an alert notification message. Also, Lin does not teach receiving an acknowledgement of the presented alert notification, and accessing the server in response to the acknowledgment.

On the other hand, Hastings teaches a method to transmit alert notification messages to a remote monitoring device [par. 0015]. Hastings teaches receiving, at a remote monitor, an alert notification message representative of an event detected, by a server, from analyte sensor data [fig. 1 element 52 (server) and 60 (remote monitoring device), par. 0178 L. 1-4, par. 0182 L. 1-8]. Hastings further teaches presenting, at the remote monitor the alert notification message [par. 0178 L. 4-9, par. 0179 L. 1-3].

Hastings teaches that the remote monitor is configured by the server to receive the notification message [par. 0080, par. 0240, par. 0250]. Hastings also teaches receiving, at the remote monitor, user input indicative of acknowledgement of the presented alert notification [fig. 4 step 320, fig. 5 step 410, par. 0184]. Hastings teaches accessing, by the remote monitor, the server in response to the acknowledgement of the presented alert notification message [fig. 4 steps 320 and 322, fig. 5 steps 410, 414 and 412, par. 0192, par. 0193]. Hastings further teaches receiving in response to accessing, information including at least the analyte sensor data [fig. 5 step 412, par. 0195].

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize Hastings teachings in the method taught by Lin because it will help a caregiver to receive alerts when a patient has a condition, and access the patient data at any time.

The combination of Lin and Hastings does not teach that the notification is sent using a notification service over a persistent encrypted connection and that the information is received over a momentary encrypted connection between the remote monitor and the server.

On the other hand, Powell teaches that a notification service can send push notifications indicating medical events to a remote monitor when a server in communication with the notification service determines that a notification needs to be sent [par. 0094 L. 9-14]. The above teaching means that the method includes the steps of receiving the alert notification message over at least a first wireless connection between the remote monitor and a notification service in communication with the server.

The fact that the notifications are sent using push notifications using the notification service means that the first wireless connection comprises a persistent connection configured to carry the message pushed by the notification service. Furthermore, Powell teaches that the notification sent to the remote monitor comprises a short message sent by the notification service, and that the message is received at a notification message center at the remote monitor [fig. 9, par. 0095 L. 9-26]. The above teaching means that also means that the short message is structured by the notification service to be received by the remote monitor over the first wireless connection.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use Powell's teachings in the method taught by the combination because it will permit the remote monitor to receive the notifications even when the application is not running [see Powell par. 0094 L. 13-14, par. 0095 L. 23-26].

The combination of Lin, Hastings and Powell does not teach that the information is sent over a second wireless connection comprising a momentary encrypted connection.

On the other hand, Calamera teaches a method to transmit data to a remote device from a server [abstract]. Calamera teaches that a server can transmit notifications to a remote device using a proxy server (notification service) that is in communication with the server [fig. 2b element 120 (server), element 110 (remote device), element 300 (notification service), par. 0030 1-7]. Furthermore, Calamera teaches that the notification message is structured by the notification service and is sent to the remote device using a first persistent connection [par. 0027 L. 4-8, par. 0030 L. 4-

12]. Also, Calamera teaches that information regarding the received notification can be received from the server using a second wireless connection between the remote device and the server, wherein the second wireless connection comprises a momentary connection established in response to the accessing to provide the information [par. 0030 L. 8-15, par. 0031 L. 1-8, par. 0045, par. 0046, par. 0047 L. 1-4].

It would have been obvious to one of ordinary skill in the art at the time of the invention to use Calamera's teachings in the method taught by the combination because the remote monitor will benefit from longer battery life and communication bandwidth efficiency [see Calamera par. 0029 L. 4-7].

The combination of Lin, Hastings, Powell and Calamera teaches that the connections must be secure connections [see Powell par. 0069 L. 3-6]. However, the combination does not explicitly teach that the wireless connections are encrypted. However, the examiner takes official notice that encryption is a well-known in the art technique to transmit data securely using wireless connections. It would have been obvious to one of ordinary skill in the art at the time of the invention to encrypt all communications to transit the short message and the information because it will make the system more secure and protect the patients' data from unauthorized access.

In regards to claim 4, the combination of Lin, Hastings, Powell and Calamera as applied in claim 1 above further teaches inhibiting access to one or more applications at the remote monitor until an action at the remote monitor is detected to indicate the

receipt of the alert notification message, wherein the remote monitor further comprises a monitoring application [see Hastings par. 0147, par 0148].

In regards to claim 5, the combination of Lin, Hastings, Powell and Calamera as applied in claim 1 above further teaches presenting the alert notification to the user in order let the user know that a notification has been received [see Hastings par. 0147-0148, see Powell fig. 9, par. 0095 L. 20-23].

The combination does not explicitly teach that the displayed notification is a momentary message on a display without inhibiting access. However, the combination clearly teaches that a notification is displayed in order to let the user know that a notification has been received [see Hastings par. 0147, see Powell fig. 9, par. 0095 L. 20-23]. One of ordinary skill in the art at the time of the invention would have replaced the notification taught by the combination with the claimed notification or other kind of notification because the way that the alert notification is displayed does not affect the function of the alert notification which is to notify the user of an alert. Furthermore, one of ordinary skill in the art would have replaced the notification taught by the combination with the claimed notification because it will permit the caregiver to receive alerts and continue using the remote monitoring device at the same time without interruptions.

In regards to claim 6, the combination of Lin, Hastings, Powell and Calamera as applied in claim 1 above further teaches wherein at least one of the remote monitor and the receiver comprises one or more of a mobile station, smart phone and a computer

[see Lin fig. 1 elements 140 and 180, par. 0027 L. 4-11, see Hastings fig. 2, par. 0149, see Powell fig. 5A].

In regards to claim 7, the combination of Lin, Hastings, Powell and Calamera as applied in claim 1 above further teaches that the server comprises at least one processor configured to receive analyte sensor data from the receiver, process the analyte sensor data to detect the event and forward, when the event is detected, the notification message to the remote monitor based on one or more rules mapping the event to the remote monitor designated to receive the notification message for the detected event [see Lin par. 0025 L. 6-8 and L. 17-22, par. 0029, see Hastings par. 0089, par. 0177-0178, see Powell par. 0094 L. 1-8].

In regards to claim 9, the combination of Lin, Hastings, Powell and Calamera as applied in claim 1 above further teaches that the receiver can communicate with the server using any known network [see Lin par. 0023 L. 9-20]. This means that the receiver is coupled or includes a gateway interfacing a wireless connection to any well-known network in order to communicate with the server. Even though the combination does not explicitly states that the network is a public land mobile network, the examiner takes official notice that public land mobile networks are well known in the art. One of ordinary skill in the art would have used the claimed network because the combination clearly teaches that suitable networks that provides two way communications can be

used to implement the method [see Lin par. 0023 L. 12-15], and a public land mobile network provides those characteristics.

In regards to claim 10, the combination of Lin, Hastings, Powell and Calamera as applied in claim 1 above further teaches that the method comprises configuring a plurality of remote monitors wherein at least one of the plurality of the remote monitors is designated as primary monitor that is assigned a higher alert priority status and at least one of the plurality of remote monitors is designated as secondary monitor that is assigned a lower alert priority status [see Hastings fig. 4 steps 318 and 320, par. 0188, par. 0202, par. 0260].

In regards to claim 12, the combination of Lin, Hastings, Powell and Calamera as applied in claim 1 above further teaches that the remote monitor can request the server to forward data to one or more devices [see Hastings fig. 5 steps 416 and 418, par. 0196]. This is equivalent to sending an invitation from the remote monitor to another remote monitor to monitor a patient because the remote monitor can be used to forward notifications and data to another user so that another user can take any desired action based on the notifications or data received.

In regards to claim 13, the combination of Lin, Hastings, Powell and Calamera as applied in claim 1 above further teaches sending an acknowledgment to the server indicating that the notification was received [see Hastings par. 0246].

In regards to claim 15, the combination of Lin, Hastings, Powell and Calamera further teaches that once a notification is received by the remote monitor, the remote monitor opens a monitoring application [see Hastings par. 0147]. Furthermore, the combination teaches that additional data can be sent to the remote monitor after an acknowledgment from the caregiver is received [see Hastings fig. 5 steps 410, 414, 412]. This means that the remote monitor access the server after the caregiver sends an acknowledgment manually. Also, the combination teaches that remote monitor can send the acknowledgement automatically using the monitoring application [see Hastings par. 0029, par. 0186 L. 1-5].

Even though the combination does not explicitly teach that the remote monitor accesses the server when automatic acknowledgement is used, one of ordinary skill in the art at the time of the invention would have modified the combination's system and access the server when using automatic acknowledgements because it will permit the server to send the additional data only after the server is sure that the notification has been received. Furthermore, the MPEP 2144.04 III clearly states that providing automatic means to replace a manual activity is not a novel step. For this reason, accessing automatically the server after a notification has been received instead of accessing the server after a caregiver sends the acknowledgement manually is not a novel step.

In regards to claim 17, the combination of Lin, Hastings, Powell and Calamera as applied in claim 1 above further teaches that the server provides a code to identify

the remote monitor [see Hastings par. 0080, par. 0256]. This means that the server registers the remote monitor which includes a code provided by the health care provider.

In regards to claims 18 and 19, the combination of Lin, Hastings, Powell and Calamera as applied in claim 1 above further teaches the method is implemented on an apparatus comprising a processor and at least one memory including code, which when executed by the processor causes the apparatus to provide the method [see Lin par. 0046, see Hastings par. 0203].

5. Claim 8 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Lin (US-2010/0249625) in view of Hastings (US-2005/0148890), Powell et al. (US-2012/0075103) and Calamera (US-2010/0088387) as applied to claim 1 above and in further view of Fu et al (US-2002/0169584).

In regards to claim 8, the combination Lin, Hastings, Powell and Calamera as applied in claim 1 above teaches that the server can communicate with a patient device (receiver) that is coupled to a sensor system at the host, and with a doctor's remote monitoring device [see Lin fig. 1 element 140 and 198].

The combination does not teach that rules used to send a notification to the remote monitor are different from a set of rules used to send a notification to the receiver.

On the other hand, Fu teaches a method to send notifications to patients and doctors based on information received by a server from a receiver [fig. 3]. Fu teaches that depending of the analysis of the data, the server decides if the sever needs to send a notification to a doctor or to a patient [par. 0029 L. 17-25, par. 0030]. This means that the server has one set of rules to generate a notification to the remote monitor and a second set of rules to generate a notification to the receiver.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use Fu's teachings and create different types of notifications for patients and doctors in the method taught by the combination because it will help to send alerts to the doctor only when medical attention is required.

6. Claim 11 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Lin (US-2010/0249625) in view of Hastings (US-2005/0148890), Powell et al. (US-2012/0075103) and Calamera (US-2010/0088387) as applied to claim 1 above and in further view of Fu et al (US-2002/0169584) and Valdes et al. (US-2011/0320130).

In regards to claim 11, the combination of Lin, Hastings, Powell and Calamera as applied in claim 1 above further teaches that rules used to trigger an alert can be modified based on the severity of the alert [see Hastings 0265]. The combination also teaches that the patient has a receiver that communicates with the server [see Lin fig. 1 element 140].

The combination does not teach that notifications are sent to the receiver.

On the other hand, Fu teaches that the server sends notifications to the patient (receiver) if the server decides that the alarm does not require medical attention [par. 0029 L. 17-25, par. 0030].

It would have been obvious to one of ordinary skill in the art at the time of the invention to use Fu's teachings and send non-emergency alerts to the patient because it will help the patient to be aware of an ongoing event and take any action without calling the doctor.

The combination of Lin, Hastings, Powell, Calamera and Fu does not teach that the rules are modified using the remote monitor.

On the other hand, Valdes teaches the concept that a remote monitor can be used to modify rules used to trigger notifications sent to a receiver [par. 0032].

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize Valdes's teachings in the system taught by the combination because it will permit a doctor to customize the alerts that a patient receives.

7. Claim 14 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Lin (US-2010/0249625) in view of Hastings (US-2005/0148890), Powell et al. (US-2012/0075103) and Calamera (US-2010/0088387) as applied to claim 1 above and in further view of Mann et al. (US-2007/0088223).

In regards to claim 14, the combination of Lin, Hastings, Powell and Calamera as applied in claim 1 above does not teach that the alert notification message includes an indication to a user of a need to calibrate a sensor.

On the other hand, Mann teaches that a notification can be sent to a user of a remote monitor of a need to calibrate the sensor [par. 0058 L. 9-10].

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize Mann's teachings in the method taught by the combination because it would help a caregiver to know when the sensor is not working properly and needs recalibration.

8. Claim 20 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Lin (US-2010/0249625) in view of Hastings (US-2005/0148890) and Killen et al. (US-2012/0136221).

In regards to claim 20, Lin teaches a method comprising receiving, at a remote monitor, a message representative of an exceeded threshold detected by a server, from an analyte sensor data obtained from a receiver monitoring an analyte state of a host [fig. 1 element 140 (receiver), 170 (server) and 190 (remote monitor), par. 0024 L. 1-4, par. 0025 L. 17-22, par. 0031 L. 19-26]. This also means that the exceeded threshold corresponds to set of alert rules. Lin further teaches presenting, at the remote monitor, the alert message [par. 0025 L. 17-22]. Lin further teaches receiving, in response to the accessing, information including at least the analyte sensor data [par. 0026 L. 17-27].

Lin does not teach that the remote monitor is configured by the server to receive the message. Lin does not teach that the message is an alert notification message. Also, Lin does not teach receiving an acknowledgement of the presented alert notification, and accessing the server in response to the acknowledgment.

On the other hand, Hastings teaches a method to transmit alert notification messages to a remote monitoring device [par. 0015]. Hastings teaches receiving, at a remote monitor, an alert notification message representative of an event detected, by a server, from analyte sensor data [fig. 1 element 52 (server) and 60 (remote monitoring device), par. 0177, par. 0178 L. 1-4, par. 0182 L. 1-8]. It is inherent that the server must have a set of alert rules (analyte thresholds) that will be used in order to determine if a notification message must be sent. Hastings further teaches presenting, at the remote monitor the alert notification message [par. 0178 L. 4-9, par. 0179 L. 1-3]. Hastings also teaches receiving, at the remote monitor, user input indicative of acknowledgement of the presented alert notification message [fig. 4 step 320, fig. 5 step 410, par. 0184]. Hastings also teaches operating, at the remote monitor, a remote monitoring software application running on the remote monitor in response to the receiving the user input [fig. 5 element 414, par. 0147 L. 1-13, par. 0184]. Hastings teaches accessing, by the remote monitor, the server in response to the operating the remote monitoring software application [fig. 4 steps 320 and 322, fig. 5 steps 410, 414 and 412, par. 0192, par. 0193]. Hastings further teaches receiving in response to accessing, information including at least the analyte sensor data [fig. 5 step 412, par. 0195].

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize Hastings teachings in the method taught by Lin because it will help a caregiver to receive alerts when a patient has a condition, and access the patient data at any time.

The combination of Lin and Hastings does not teach that the thresholds corresponding to the set of rules including analyte level thresholds are established at the server by the remote monitor.

On the other hand, Killen teaches that the server can send alerts to remote monitoring devices based on analyte thresholds that can be established on the server by the remote monitor [par. 00143 L. 1-10]. Killen further teaches that the alert rules are specifically associated with the remote monitor to remotely monitor the analyte state of the host [par. 0153 L. 5-7].

It would have been obvious to one of ordinary skill in the art at the time of the invention to use Killen's teachings in the method taught by then combination because it will permit the user of the remote monitoring device to configure the alerts that he or she wants to receive.

The combination of Lin, Hastings and Killen teaches receiving a notification indicative of a detected event and receiving the information via a wireless communication pathway [see Hastings, fig. 4 step 314, fig. 5 step 414]. However, the combination does not teach that the notifications are produced by a notification service that is in communication with the server and sent via a first wireless connection. The

combination also does not teach that the information is sent via a second different wireless connection

On the other hand, Calamera teaches a method to transmit data to a remote device from a server [abstract]. Calamera teaches that a server can transmit notifications to a remote device using a proxy server (notification service) that is in communication with the server [fig. 2b element 120 (server), element 110 (remote device), element 300 (notification service), par. 0030 1-7]. Furthermore, Calamera teaches that a new notification message is produced by the notification service based on the notification message (instruction) received from the server [par. 0030 L. 4-12]. Also, Calamera teaches that the remote device receives the notification message produced by the notification service via a first wireless communication pathway between the remote monitor and the notification service [par. 0027 L. 4-8, par. 0030 L. 8-12]. Calamera further teaches that information regarding the received notification can be received from the server using a second different wireless communication pathway between the remote device and the server, wherein the second wireless communication pathway is established in response to the accessing the server by the remote monitor to provide the information [par. 0030 L. 8-15, par. 0031 L. 1-8, par. 0045, par. 0046, par. 0047 L. 1-4].

It would have been obvious to one of ordinary skill in the art at the time of the invention to use Calamera's teachings in the method taught by the combination because the remote monitor will benefit from longer battery life and communication bandwidth efficiency [see Calamera par. 0029 L. 4-7].

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Franklin Balseca whose telephone number is (571) 270-5966. The examiner can normally be reached on Monday-Friday 7:30AM – 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hai Phan can be reached on (571) 272-6338.

Information regarding the status of an application may be obtained from the Patent Application Retrieval (PAIR) system. Status information for published applications may be obtained from either PAIR or Public PAIR. Status information for

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/FRANKLIN BALSECA/

Examiner, Art Unit 2685

/Hai Phan/

Supervisory Patent Examiner, Art Unit 2685

Notice of References Cited	Application/Control No. 13/842,679	Applicant(s)/Patent Under Reexamination MENSINGER ET AL.	
	Examiner FRANKLIN BALSECA	Art Unit 2685	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-2012/0075103 A1	03-2012	Powell; William Cameron	G06F19/3418	340/573.1
*	B	US-2010/0088387 A1	04-2010	Calamera; Pablo M.	H04L12/587	709/207
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
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FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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*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.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13842679	MENSINGER ET AL.
	Examiner	Art Unit
	FRANKLIN BALSECA	2685

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

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

CLAIM		DATE								
Final	Original	12/03/2015	06/24/2016	12/29/2016						
	1	✓	✓	✓						
	2	✓	✓	-						
	3	✓	-	-						
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Mensinger, Michael Robert
Art Unit	2685
Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 2013-0173742	7/4/2013	Thomas et al.	
		US-			
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature	/FRANKLIN D BALSECA/	Date Considered	12/29/2016

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This collection of information is required by 37 CFR 1.97 and 1.98. 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 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, 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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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /F.B./

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	353	(US-20140187889-$ or US-20110201944-$ or US-20140310243-$ or US-20130078912-$ or US-20060015586-$ or US-20060193262-$ or US-20090322518-$ or US-20100177708-$ or US-20110080281-$ or US-20100013625-$ or US-20110316716-$ or US-20080212690-$ or US-20110131645-$ or US-20060077940-$ or US-20090088605-$ or US-20050207379-$ or US-20140050122-$ or US-20120177031-$ or US-20130211265-$ or US-20080319787-$ or US-20130297771-$ or US-20130159539-$ or US-20120151291-$ or US-20110149025-$ or US-20090182580-$).did. or (US-7873343-$ or US-8839396-$ or US-7532568-$ or US-8359288-$ or US-6259944-$).did. or (US-20110213225-$ or US-20110161111-$ or US-20100249625-$ or US-20110320130-$ or US-20020169584-$ or US-20140187889-$ or US-20130297771-$ or US-20130078912-$ or US-20090322518-$ or US-20090182580-$ or US-20030105725-$ or US-20080098038-$ or US-20110289577-$ or US-20020131370-$ or US-20030142696-$ or US-20040059978-$ or US-20090034479-$ or US-20110268018-$).did. or (US-6259944-$ or US-8458312-$ or US-8761101-$ or US-7869794-$ or US-9100244-$ or US-9220118-$).did. or (US-20070294360-$ or US-20100265863-$ or US-20100272076-$ or US-20130276144-$ or US-20140187889-$ or US-20050272019-$ or US-20030115258-$ or US-20080147845-$ or US-20090016509-$ or US-20100205323-$ or US-20130285835-$ or US-20110152629-$).did. or (US-9035568-$ or US-6416471-$ or US-6751573-$ or US-6510236-$ or US-8949949-$).did. or (US-20140188398-$ or US-20120245447-$ or US-20110320130-$ or US-20090069642-$ or US-20050148890-$ or US-20120149996-$ or US-20010027384-$ or US-20030023178-$ or US-20080294024-$ or US-20120108984-$ or US-20080269625-$ or US-20120046606-$ or US-20120112903-$ or US-20130109944-$ or US-20130337976-$ or US-20140019139-$ or US-20140118104-$ or US-20080312842-$ or US-20070173710-$ or US-20090131776-$ or US-20090054735-$ or US-20090203973-$ or US-20100131294-$).did. or (US-6366871-$ or US-8876850-$ or US-5748103-$ or US-4981139-$ or US-5786584-$ or US-6443890-$ or US-9053583-$).did. or (US-20030154085-$ or US-20140188398-$ or US-20030033151-$ or US-20030036683-$ or US-20050143671-$ or US-20090046096-$ or US-20130191513-$ or US-20140058742-$ or US-20110191044-$ or US-20120095779-$ or US-20100082363-$ or US-20130145272-$ or US-20130198685-$ or US-20090131861-$ or US-20110124996-$).did. or (US-7685026-$ or US-5335313-$).did. or (US-20120136221-$ or US-20140188398-$ or US-20120245447-$ or US-20120149996-$ or US-20110124996-$ or US-20110068935-$ or US-20140207486-$ or US-20140187887-$ or US-20140088392-$ or US-20130013331-$ or US-20110166628-$ or US-20090292178-$ or US-20080126132-$ or US-20110077967-$ or US-20100321204-$ or US-20010037222-$ or US-20080107121-$ or US-20080294462-$ or US-20090054743-$ or US-20050165627-$ or US-20060196928-$).did. or (US-9185202-$ or US-8868616-$ or US-6398727-$ or US-7448996-$ or US-8005546-$ or US-6522925-$).did. or (US-20140187890-$ or US-20110320130-$ or US-20100249625-$ or US-20050148890-$ or US-20020169584-$ or US-20140207486-$ or US-20040122488-$ or US-20080004904-$ or US-20070294360-$ or US-20090069642-$ or US-20060193278-$ or US-20090058635-$ or US-20130030494-$ or US-20130345664-$).did. or (US-8392561-$ or US-7103578-$).did. or (US-20140187890-$ or US-20010037056-$ or US-20080097550-$ or US-20050071190-$ or US-20080208026-$ or US-20130338543-$ or US-20130265327-$ or US-20090221884-$ or US-20090164251-$ or US-20090164239-$ or US-20070159321-$ or US-20110319725-$ or US-20100265073-$ or US-20050148890-$ or US-20110117878-$ or US-20120265867-$ or US-20120149353-$ or US-20150205930-$ or US-20140350349-$ or US-20140207486-$ or US-20130159456-$ or US-20130117696-$ or US-	US-PGPUB; USPAT	OR	ON	2016/12/27 07:11

20100249625-$ or US-20120163520-$ or US-20070173710-$).did. or (US-8229535-$ or US-7448996-$).did. or (US-20140188398-$ or US-20140187890-$ or US-20130015966-$ or US-20060161662-$ or US-20060101139-$ or US-20040081310-$ or US-20140029434-$ or US-20130159456-$ or US-20090058635-$ or US-20080097550-$ or US-20080004904-$ or US-20080015549-$ or US-20030011646-$ or US-20100114232-$ or US-20080250482-$ or US-20130117696-$ or US-20110059727-$).did. or (US-8355320-$).did. or (US-20140187890-$ or US-20080015549-$ or US-20060202816-$ or US-20100016745-$ or US-20120182939-$ or US-20060154642-$ or US-20090156364-$ or US-20100235782-$ or US-20110215933-$ or US-20030229900-$ or US-20140325892-$ or US-20110286586-$ or US-20120317237-$ or US-20020061092-$).did. or (US-9147117-$).did. or (US-20130268283-$ or US-20130172691-$ or US-20130027205-$ or US-20120026119-$ or US-20060272652-$ or US-20060253300-$ or US-20030117296-$ or US-20020022973-$ or US-20050085875-$ or US-20050240434-$ or US-20070185390-$ or US-20130159456-$ or US-20120245447-$ or US-20120136221-$ or US-20100131294-$ or US-20090203973-$ or US-20030167336-$ or US-20050261062-$ or US-20070081649-$ or US-20030105849-$ or US-20050044565-$ or US-20080263100-$ or US-20100031324-$ or US-20030154044-$ or US-20110295887-$ or US-20120112906-$).did. or (US-20160073880-$ or US-20030208465-$ or US-20040006492-$ or US-20050038332-$ or US-20060200009-$ or US-20070208245-$ or US-20090005703-$ or US-20100100037-$ or US-20070239488-$).did. or (US-6334124-$ or US-7761334-$ or US-9514323-$ or US-5860918-$ or US-7026929-$).did. or (US-20140188398-$ or US-20140187890-$ or US-20110320130-$ or US-20070255116-$ or US-20140176342-$ or US-20140139342-$ or US-20090083364-$ or US-20090055369-$ or US-20050097200-$ or US-20130151708-$ or US-20130067544-$ or US-20120163520-$ or US-20100249625-$ or US-20120245447-$).did. or (US-8229535-$ or US-8390474-$ or US-7038588-$ or US-8138930-$ or US-8862393-$ or US-8126479-$ or US-8107947-$ or US-8467779-$).did. or (US-20140188398-$ or US-20140187890-$ or US-20120245447-$ or US-20040002635-$ or US-20090310503-$ or US-20140133374-$ or US-20130052977-$ or US-20090069642-$ or US-20130215850-$ or US-20100322188-$ or US-20040170182-$ or US-20080007431-$ or US-20050148890-$ or US-20140350349-$ or US-20130191140-$ or US-20130159456-$).did. or (US-7769149-$ or US-5802314-$ or US-5608643-$ or US-3781573-$ or US-5369591-$ or US-6049698-$).did. or (US-20140188398-$ or US-20140187890-$ or US-20100249625-$ or US-20050148890-$ or US-20020024443-$ or US-20060026164-$ or US-20090262661-$ or US-20100330952-$ or US-20150195286-$ or US-20130078149-$ or US-20130078733-$ or US-20130226624-$ or US-20120245447-$).did. or (US-5416725-$ or US-7942844-$ or US-8350694-$ or US-6264614-$).did. or (US-20130159456-$ or US-20140350349-$ or US-20140207486-$ or US-20130191140-$ or US-20130117696-$ or US-20090083364-$ or US-20140176342-$ or US-20110040572-$ or US-20120218111-$ or US-20130044111-$ or US-20070246642-$ or US-20110320130-$ or US-20120109238-$ or US-20070140150-$ or US-20090192366-$ or US-20080275618-$ or US-20140282829-$ or US-20140036643-$ or US-20050148890-$ or US-20140022081-$ or US-20090058635-$ or US-20090113335-$ or US-20100315236-$ or US-20060010199-$).did. or (US-8390474-$ or US-7448996-$).did. or (US-20090265753-$ or US-20130017807-$ or US-20150205930-$ or US-20090083742-$ or US-20130173742-$ or US-20110320130-$ or US-20120136221-$ or US-20050165627-$ or US-20140088392-$).did. or (US-6608636-$).did. or (US-20140188398-$ or US-20140187890-$ or US-20110320130-$ or US-20100249625-$ or US-20090069642-$ or US-20050148890-$ or US-20130015966-$ or US-20060161662-$ or US-20060101139-$ or US-20040081310-$ or US-20020169584-$ or US-20060020494-$ or US-20060106646-$ or US-20100191073-$).did. or (US-7257386-$ or US-8355320-$).did. or (US-20130102853-$ or US-20120054841-$ or US-20150317437-$ or US-20130282400-$ or US-20110246235-$ or US-20080004904-$ or US-20130110264-$ or US-20130088452-$ or US-20100274515-$ or US-20110320166-$ or US-20070088223-$).did. or (US-7798961-$).did. or (US-20140184422-$ or US-20130080513-$ or US-20050206518-$ or US-20050148890-$ or US-20110032097-$ or US-20120096123-$ or US-20080250482-$ or US-20060202816-$ or US-20120075103-$ or US-20140006045-$ or US-20140019901-$ or US-20080161700-$ or US-20090146822-$ or US-20120053424-$ or US-20120136221-$).did. or (US-

		8355320-$ or US-6057758-$ or US-4280217-$).did. or (US-20140184422-$ or US-20090192366-$ or US-20110004085-$ or US-20110320130-$ or US-20010044588-$ or US-20140162563-$ or US-20130172691-$ or US-20060047538-$ or US-20100268157-$ or US-20100142692-$ or US-20100217615-$ or US-20130159456-$ or US-20120136221-$ or US-20100249625-$ or US-20050148890-$ or US-20080263100-$ or US-20030149526-$ or US-20020169584-$ or US-20060282293-$ or US-20140350349-$ or US-20130117696-$ or US-20080250482-$ or US-20050193191-$ or US-20060184997-$ or US-20060239235-$ or US-20110234406-$).did. or (US-20120197662-$ or US-20120245948-$ or US-20140088392-$ or US-20120218111-$ or US-20110068935-$ or US-20110105854-$ or US-20100121167-$ or US-20090275807-$ or US-20030153836-$ or US-20090183236-$ or US-20120036558-$ or US-20040243941-$).did. or (US-7831287-$ or US-6931327-$ or US-9241631-$ or US-7407484-$ or US-8589495-$ or US-7448996-$ or US-7660849-$ or US-7870288-$ or US-8719904-$ or US-5865736-$ or US-7899545-$ or US-8515513-$ or US-7946995-$ or US-7261691-$ or US-4162488-$ or US-8786425-$ or US-8957757-$ or US-7925525-$ or US-6366871-$ or US-8381268-$).did. or (US-20110163881-$ or US-20100235439-$ or US-20060173260-$).did.				
S2	0	S1 and ((notifiaction near5 service) same (pesistent))	US-PGPUB; USPAT	OR	ON	2016/12/27 08:05
S3	0	S1 and ((notification near5 service) same (pesistent))	US-PGPUB; USPAT	OR	ON	2016/12/27 08:05
S4	8	S1 and ((notification near5 service) same (persistent))	US-PGPUB; USPAT	OR	ON	2016/12/27 08:05
S5	312	(notification near5 (transmit$4 or send$4 or sent or receiv$4) near5 (persistent))	US-PGPUB; USPAT	OR	ON	2016/12/27 08:10
S6	60	S5 and (server same (notification near2 service))	US-PGPUB; USPAT	OR	ON	2016/12/27 08:10
S7	17338	G06F19/30,32,34,3406,3418,3487.cpc.	US-PGPUB; USPAT	OR	ON	2016/12/27 08:39
S8	25040	A61B5/0002,0004,0015,0022,0024,02,742,743,7435,746,7465,14532.cpc.	US-PGPUB; USPAT	OR	ON	2016/12/27 08:40
S9	37591	S7 or S8	US-PGPUB; USPAT	OR	ON	2016/12/27 08:40
S10	256	S9 and (push near2 notification)	US-PGPUB; USPAT	OR	ON	2016/12/27 08:40
S11	36	S10 and @ay<="2012"	US-PGPUB; USPAT	OR	ON	2016/12/27 08:40
S12	10	S9 and (persistent near2 connection) and ((temporary or momentary) near5 connection)	US-PGPUB; USPAT	OR	ON	2016/12/27 10:31
S13	21	((persistent near2 connection) same notification) and ((temporary or momentary) near5 connection)	US-PGPUB; USPAT	OR	ON	2016/12/27 10:32
S14	69	(push near5 notification) and ((temporary or momentary) near5 connection)	US-PGPUB; USPAT	OR	ON	2016/12/27 11:24
S15	3462	340/870.01,870.02,870.07.ccls.	US-PGPUB; USPAT	OR	ON	2016/12/29 06:43
S16	15940	705/2,3.ccls.	US-PGPUB; USPAT	OR	ON	2016/12/29 06:43

S17	13660	600/300,301,316,365,421,522.ccls.	US-PGPUB; USPAT	OR	ON	2016/12/29 06:43
S18	1689	607/28,30.ccls.	US-PGPUB; USPAT	OR	ON	2016/12/29 06:43
S19	33354	S15 or S16 or S17 or S18	US-PGPUB; USPAT	OR	ON	2016/12/29 06:44
S20	0	S19 and (persistnet near2 connection) and ((temporary or temporal or momentary) near2 connection)	US-PGPUB; USPAT	OR	ON	2016/12/29 06:45
S21	5	S19 and (persistent near2 connection) and ((temporary or temporal or momentary) near2 connection)	US-PGPUB; USPAT	OR	ON	2016/12/29 06:45
S22	3	("20050165627" | "20140088392" | "20130173742").pn.	US-PGPUB; USPAT	OR	ON	2016/12/29 10:54
S23	353	(US-20140187889-$ or US-20110201944-$ or US-20140310243-$ or US-20130078912-$ or US-20060015586-$ or US-20060193262-$ or US-20090322518-$ or US-20100177708-$ or US-20110080281-$ or US-20100013625-$ or US-20110316716-$ or US-20080212690-$ or US-20110131645-$ or US-20060077940-$ or US-20090088605-$ or US-20050207379-$ or US-20140050122-$ or US-20120177031-$ or US-20130211265-$ or US-20080319787-$ or US-20130297771-$ or US-20130159539-$ or US-20120151291-$ or US-20110149025-$ or US-20090182580-$).did. or (US-7873343-$ or US-8839396-$ or US-7532568-$ or US-8359288-$ or US-6259944-$).did. or (US-20110213225-$ or US-20110161111-$ or US-20100249625-$ or US-20110320130-$ or US-20020169584-$ or US-20140187889-$ or US-20130297771-$ or US-20130078912-$ or US-20090322518-$ or US-20090182580-$ or US-20030105725-$ or US-20080098038-$ or US-20110289577-$ or US-20020131370-$ or US-20030142696-$ or US-20040059978-$ or US-20090034479-$ or US-20110268018-$).did. or (US-6259944-$ or US-8458312-$ or US-8761101-$ or US-7869794-$ or US-9100244-$ or US-9220118-$).did. or (US-20070294360-$ or US-20100265863-$ or US-20100272076-$ or US-20130276144-$ or US-20140187889-$ or US-20050272019-$ or US-20030115258-$ or US-20080147845-$ or US-20090016509-$ or US-20100205323-$ or US-20130285835-$ or US-20110152629-$).did. or (US-9035568-$ or US-6416471-$ or US-6751573-$ or US-6510236-$ or US-8949949-$).did. or (US-20140188398-$ or US-20120245447-$ or US-20110320130-$ or US-20090069642-$ or US-20050148890-$ or US-20120149996-$ or US-20010027384-$ or US-20030023178-$ or US-20080294024-$ or US-20120108984-$ or US-20080269625-$ or US-20120046606-$ or US-20120112903-$ or US-20130109944-$ or US-20130337976-$ or US-20140019139-$ or US-20140118104-$ or US-20080312842-$ or US-20070173710-$ or US-20090131776-$ or US-20090054735-$ or US-20090203973-$ or US-20100131294-$).did. or (US-6366871-$ or US-8876850-$ or US-5748103-$ or US-4981139-$ or US-5786584-$ or US-6443890-$ or US-9053583-$).did. or (US-20030154085-$ or US-20140188398-$ or US-20030033151-$ or US-20030036683-$ or US-20050143671-$ or US-20090046096-$ or US-20130191513-$ or US-20140058742-$ or US-20110191044-$ or US-20120095779-$ or US-20100082363-$ or US-20130145272-$ or US-20130198685-$ or US-20090131861-$ or US-20110124996-$).did. or (US-7685026-$ or US-5335313-$).did. or (US-20120136221-$ or US-20140188398-$ or US-20120245447-$ or US-20120149996-$ or US-20110124996-$ or US-20110068935-$ or US-20140207486-$ or US-20140187887-$ or US-20140088392-$ or US-20130013331-$ or US-20110166628-$ or US-20090292178-$ or US-20080126132-$ or US-20110077967-$ or US-20100321204-$ or US-20010037222-$ or US-20080107121-$ or US-20080294462-$ or US-20090054743-$ or US-20050165627-$ or US-20060196928-$).did. or (US-9185202-$ or US-8868616-$ or US-6398727-$ or US-7448996-$ or US-8005546-$ or US-6522925-$).did. or (US-20140187890-$ or US-20110320130-$ or US-20100249625-$ or US-20050148890-$ or US-20020169584-$ or US-20140207486-$ or US-20040122488-$ or US-20080004904-$ or US-20070294360-$ or US-20090069642-$ or US-20060193278-$ or US-	US-PGPUB; USPAT	OR	ON	2016/12/29 10:58

20090058635-$ or US-20130030494-$ or US-20130345664-$).did. or (US-8392561-$ or US-7103578-$).did. or (US-20140187890-$ or US-20010037056-$ or US-20080097550-$ or US-20050071190-$ or US-20080208026-$ or US-20130338543-$ or US-20130265327-$ or US-20090221884-$ or US-20090164251-$ or US-20090164239-$ or US-20070159321-$ or US-20110319725-$ or US-20100265073-$ or US-20050148890-$ or US-20110117878-$ or US-20120265867-$ or US-20120149353-$ or US-20150205930-$ or US-20140350349-$ or US-20140207486-$ or US-20130159456-$ or US-20130117696-$ or US-20100249625-$ or US-20120163520-$ or US-20070173710-$).did. or (US-8229535-$ or US-7448996-$).did. or (US-20140188398-$ or US-20140187890-$ or US-20130015966-$ or US-20060161662-$ or US-20060101139-$ or US-20040081310-$ or US-20140029434-$ or US-20130159456-$ or US-20090058635-$ or US-20080097550-$ or US-20080004904-$ or US-20080015549-$ or US-20030011646-$ or US-20100114232-$ or US-20080250482-$ or US-20130117696-$ or US-20110059727-$).did. or (US-8355320-$).did. or (US-20140187890-$ or US-20080015549-$ or US-20060202816-$ or US-20100016745-$ or US-20120182939-$ or US-20060154642-$ or US-20090156364-$ or US-20100235782-$ or US-20110215933-$ or US-20030229900-$ or US-20140325892-$ or US-20110286586-$ or US-20120317237-$ or US-20020061092-$).did. or (US-9147117-$).did. or (US-20130268283-$ or US-20130172691-$ or US-20130027205-$ or US-20120026119-$ or US-20060272652-$ or US-20060253300-$ or US-20030117296-$ or US-20020022973-$ or US-20050085875-$ or US-20050240434-$ or US-20070185390-$ or US-20130159456-$ or US-20120245447-$ or US-20120136221-$ or US-20100131294-$ or US-20090203973-$ or US-20030167336-$ or US-20050261062-$ or US-20070081649-$ or US-20030105849-$ or US-20050044565-$ or US-20080263100-$ or US-20100031324-$ or US-20030154044-$ or US-20110295887-$ or US-20120112906-$).did. or (US-20160073880-$ or US-20030208465-$ or US-20040006492-$ or US-20050038332-$ or US-20060200009-$ or US-20070208245-$ or US-20090005703-$ or US-20100100037-$ or US-20070239488-$).did. or (US-6334124-$ or US-7761334-$ or US-9514323-$ or US-5860918-$ or US-7026929-$).did. or (US-20140188398-$ or US-20140187890-$ or US-20110320130-$ or US-20070255116-$ or US-20140176342-$ or US-20140139342-$ or US-20090083364-$ or US-20090055369-$ or US-20050097200-$ or US-20130151708-$ or US-20130067544-$ or US-20120163520-$ or US-20100249625-$ or US-20120245447-$).did. or (US-8229535-$ or US-8390474-$ or US-7038588-$ or US-8138930-$ or US-8862393-$ or US-8126479-$ or US-8107947-$ or US-8467779-$).did. or (US-20140188398-$ or US-20140187890-$ or US-20120245447-$ or US-20040002635-$ or US-20090310503-$ or US-20140133374-$ or US-20130052977-$ or US-20090069642-$ or US-20130215850-$ or US-20100322188-$ or US-20040170182-$ or US-20080007431-$ or US-20050148890-$ or US-20140350349-$ or US-20130191140-$ or US-20130159456-$).did. or (US-7769149-$ or US-5802314-$ or US-5608643-$ or US-3781573-$ or US-5369591-$ or US-6049698-$).did. or (US-20140188398-$ or US-20140187890-$ or US-20100249625-$ or US-20050148890-$ or US-20020024443-$ or US-20060026164-$ or US-20090262661-$ or US-20100330952-$ or US-20150195286-$ or US-20130078149-$ or US-20130078733-$ or US-20130226624-$ or US-20120245447-$).did. or (US-5416725-$ or US-7942844-$ or US-8350694-$ or US-6264614-$).did. or (US-20130159456-$ or US-20140350349-$ or US-20140207486-$ or US-20130191140-$ or US-20130117696-$ or US-20090083364-$ or US-20140176342-$ or US-20110040572-$ or US-20120218111-$ or US-20130044111-$ or US-20070246642-$ or US-20110320130-$ or US-20120109238-$ or US-20070140150-$ or US-20090192366-$ or US-20080275618-$ or US-20140282829-$ or US-20140036643-$ or US-20050148890-$ or US-20140022081-$ or US-20090058635-$ or US-20090113335-$ or US-20100315236-$ or US-20060010199-$).did. or (US-8390474-$ or US-7448996-$).did. or (US-20090265753-$ or US-20130017807-$ or US-20150205930-$ or US-20090083742-$ or US-20130173742-$ or US-20110320130-$ or US-20120136221-$ or US-20050165627-$ or US-20140088392-$).did. or (US-6608636-$).did. or (US-20140188398-$ or US-20140187890-$ or US-20110320130-$ or US-20100249625-$ or US-20090069642-$ or US-20050148890-$ or US-20130015966-$ or US-20060161662-$ or US-20060101139-$ or US-20040081310-$ or US-20020169584-$ or US-20060020494-$ or US-20060106646-$ or US-20100191073-$).did. or (US-7257386-$ or US-8355320-$).did. or (US-

		20130102853-$ or US-20120054841-$ or US-20150317437-$ or US-20130282400-$ or US-20110246235-$ or US-20080004904-$ or US-20130110264-$ or US-20130088452-$ or US-20100274515-$ or US-20110320166-$ or US-20070088223-$).did. or (US-7798961-$).did. or (US-20140184422-$ or US-20130080513-$ or US-20050206518-$ or US-20050148890-$ or US-20110032097-$ or US-20120096123-$ or US-20080250482-$ or US-20060202816-$ or US-20120075103-$ or US-20140006045-$ or US-20140019901-$ or US-20080161700-$ or US-20090146822-$ or US-20120053424-$ or US-20120136221-$).did. or (US-8355320-$ or US-6057758-$ or US-4280217-$).did. or (US-20140184422-$ or US-20090192366-$ or US-20110004085-$ or US-20110320130-$ or US-20010044588-$ or US-20140162563-$ or US-20130172691-$ or US-20060047538-$ or US-20100268157-$ or US-20100142692-$ or US-20100217615-$ or US-20130159456-$ or US-20120136221-$ or US-20100249625-$ or US-20050148890-$ or US-20080263100-$ or US-20030149526-$ or US-20020169584-$ or US-20060282293-$ or US-20140350349-$ or US-20130117696-$ or US-20080250482-$ or US-20050193191-$ or US-20060184997-$ or US-20060239235-$ or US-20110234406-$).did. or (US-20120197662-$ or US-20120245948-$ or US-20140088392-$ or US-20120218111-$ or US-20110068935-$ or US-20110105854-$ or US-20100121167-$ or US-20090275807-$ or US-20030153836-$ or US-20090183236-$ or US-20120036558-$ or US-20040243941-$).did. or (US-7831287-$ or US-6931327-$ or US-9241631-$ or US-7407484-$ or US-8589495-$ or US-7448996-$ or US-7660849-$ or US-7870288-$ or US-8719904-$ or US-5865736-$ or US-7899545-$ or US-8515513-$ or US-7946995-$ or US-7261691-$ or US-4162488-$ or US-8786425-$ or US-8957757-$ or US-7925525-$ or US-6366871-$ or US-8381268-$).did. or (US-20110163881-$ or US-20100235439-$ or US-20060173260-$).did.				
S24	26	S23 and (send$4 near5 (notification or alert o alarm) near5 (patient))	US-PGPUB; USPAT	OR	ON	2016/12/29 10:59
S25	43	S23 and ((send$4 or transmit$4 or sent) near5 (notification or alert o alarm) near5 (patient))	US-PGPUB; USPAT	OR	ON	2016/12/29 10:59
S26	34	S25 and (threshold or ((notification or alert or alarm) near2 rule))	US-PGPUB; USPAT	OR	ON	2016/12/29 11:01
S27	18	S25 and ((doctor or nurse or caregiver or phycisian) same (threshold or ((notification or alert or alarm) near2 rule)))	US-PGPUB; USPAT	OR	ON	2016/12/29 11:02
S28	668	(doctor or nurse or caregiver or phycisian) same ((threshold or ((notification or alert or alarm) near2 (rule or instruction))) near5 (modif$4 or add$4 or chang$4))	US-PGPUB; USPAT	OR	ON	2016/12/29 11:07
S29	60	S28 and ((send$4 or transmit$4 or sent) near5 (notification or alert o alarm) near5 (patient))	US-PGPUB; USPAT	OR	ON	2016/12/29 11:08
S30	66	S28 and ((send$4 or transmit$4 or sent) near5 (notification or alert o alarm) near5 (user or host))	US-PGPUB; USPAT	OR	ON	2016/12/29 11:13

EAST Search History (Interference)

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12/ 29/ 2016 11:30:22 AM
C:\ Users\ fbalseca\ Documents\ EAST\ Workspaces\ 13842679 (RCE Amendment).wsp

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Mensinger, Michael Robert
Art Unit	2685
Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 2005-0165627	7/28/2005	Fotsch et al.	
	2	US- 2014-0088392	3/27/2014	Bernstein et al.	
		US-			
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature	/FRANKLIN D BALSECA/	Date Considered	12/29/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. 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 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, 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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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /F.D.B./

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13842679	MENSINGER ET AL.
	Examiner	Art Unit
	FRANKLIN BALSECA	2685

CPC- SEARCHED

Symbol	Date	Examiner
G06F19/30,32,34,3406,3418,3487	03/18/2015	FB
A61B5/0002,0004,0015,0022,0024,02,742,743,7435,746,7465,14532	03/18/2015	FB
Updated Search	12/02/2015	FB
Updated Search	06/24/2016	FB
H04Q2209/00,10,40,70	06/24/2016	FB
Updated Search	12/29/2016	FB

CPC COMBINATION SETS - SEARCHED

Symbol	Date	Examiner

US CLASSIFICATION SEARCHED

Class	Subclass	Date	Examiner
340	870.01,870.02,870.07	03/18/2015	FB
705	2, 3	03/18/2015	FB
600	300,301,316,365,421,522	03/18/2015	FB
607	28, 30	03/18/2015	FB
Updated Search	Updated Search	12/02/2015	FB
Updated Search	Updated Search	06/24/2016	FB
Updated Search	Updated Search	12/29/2016	FB

SEARCH NOTES

Search Notes	Date	Examiner
Inventor Search	03/16/2015	FB
East Search	03/18/2015	FB
Updated East Search	12/02/2015	FB
Updated East Search	06/24/2016	FB
Updated East Search	12/29/2016	FB

/FRANKLIN BALSECA/ Examiner.Art Unit 2685	

SEARCH NOTES		
Search Notes	**Date**	**Examiner**
G06F19/30,32,34,3406,3418,3487 and text limited. See search history printout.	12/29/2016	FB
A61B5/0002,0004,0015,0022,0024,02,742,743,7435,746,7465,14532 and text limited. See search history printout.	12/29/2016	FB
H04Q2209/00,10,40,70 and text limited. See search history printout.	12/29/2016	FB

INTERFERENCE SEARCH			
US Class/ CPC Symbol	**US Subclass / CPC Group**	**Date**	**Examiner**

/FRANKLIN BALSECA/ Examiner.Art Unit 2685	

PTO/SB/08a (07-09)
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(Use as many sheets as necessary)

Sheet 1 of 1

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Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Mensinger, Michael Robert
Art Unit	2685
Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 2013-0173742	7/4/2013	Thomas et al.	
		US-			
		US-			
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

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Electronic Patent Application Fee Transmittal

Application Number:	13842679
Filing Date:	15-Mar-2013
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Filer:	Rose M. Thiessen/Edgar Compton
Attorney Docket Number:	DEXCOM.225A

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	1202	3	80	240
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Extension - 1 month with $0 paid	1251	1	200	200
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**620**

Electronic Acknowledgement Receipt

EFS ID:	27144690
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Rose M. Thiessen/Heather OBrien
Filer Authorized By:	Rose M. Thiessen
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	06-OCT-2016
Filing Date:	15-MAR-2013
Time Stamp:	18:38:34
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$620
RAM confirmation Number	100716INTEFSW18392800
Deposit Account	111410
Authorized User	Heather OBrien

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)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		225A_AmendAF.pdf	314492 1d4c73bff38a313a14d6e576551c7e8b2695930f	yes	14

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Response After Final Action	1	1
	Claims	2	7
	Applicant summary of interview with examiner	8	8
	Applicant Arguments/Remarks Made in an Amendment	9	14

Warnings:

Information:

2		225A_IDS.pdf	296569 c3c40996 5f258116708b0a308d424782e742d2f9	yes	3

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Transmittal Letter	1	2
	Information Disclosure Statement (IDS) Form (SB08)	3	3

Warnings:

Information:

3	Fee Worksheet (SB06)	fee-info.pdf	34134 22016ac8f0e1ae73200779d563398625856f3bc4	no	2

Warnings:

Information:

Total Files Size (in bytes):	645195

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New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor	:	Michael Robert Mensinger
App. No.	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	Balseca, Franklin D.
Art Unit	:	2685
Conf. No.	:	8793

RESPONSE TO NON-FINAL OFFICE ACTION

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

Dear Sir:

In response to the Non-Final Office Action dated June 29, 2016, Applicant respectfully requests that the Office enter the following amendments and consider the following remarks.

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

Summary of Interview begins on page 8 of this paper.

Remarks/Arguments begin on page 9 of this paper.

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AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method comprising:

receiving, at a remote monitor, an alert notification message representative of an event detected, by a server, from analyte sensor data obtained from a receiver monitoring an analyte state of a host;

presenting, at the remote monitor, the alert notification message, wherein the remote monitor is configured by the server to receive the alert notification message to augment the receiver monitoring of the analyte state of the host;

receiving, at the remote monitor, user input indicative of acknowledgment of the presented alert notification;

accessing, by the remote monitor, the server, in response to the acknowledgement of the presented alert notification message; and

receiving, in response to the accessing, information including at least the analyte sensor data,

wherein the alert notification message includes a short message and the receiving the alert notification message is over at least a first wireless connection between the remote monitor and a notification service in communication with the server, the first wireless connection comprising a persistent, encrypted connection configured to carry the short message pushed by the notification service to a notification message center at the remote monitor, wherein the short message is structured by the notification service to be received by the remote monitor over the first wireless connection, and

wherein the information is received over at least a second, different wireless connection between the remote monitor and the server, the second wireless connection comprising a momentary, encrypted connection established, in response the accessing, to provide the information.

2. (Canceled)

3. (Canceled)

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4. (Previously Presented) The method of Claim 1, wherein the presenting further comprises inhibiting access to one or more applications at the remote monitor until an action at the remote monitor is detected to indicate receipt of the alert notification message, wherein the remote monitor further comprises a monitoring application.

5. (Previously Presented) The method of Claim 1, wherein the presenting further comprises presenting the alert notification message as a momentary message on a display at the remote monitor, without the inhibiting access.

6. (Original) The method of Claim 1, wherein at least one of the remote monitor and the receiver comprise one or more of a mobile station, a wireless terminal, a tablet, a smart phone, a multi-mode wireless device, and a computer.

7. (Original) The method of Claim 1, wherein the server comprises at least one processor configured to receive analyte sensor data from the receiver, process the analyte sensor data to detect the event, and forward, when the event is detected, the notification message to the remote monitor based on one or more rules mapping the event to the remote monitor designated to receive the notification message for the detected event.

8. (Original) The method of Claim 1 further comprising detecting, based on a first set of rules at the server, the event, wherein the first set of rules used to generate the notification message are different from a second set of rules used to detect alerts sent to the receiver coupled to a sensor system at the host.

9. (Original) The method of Claim 1, wherein the receiver includes, or couples to, a gateway interfacing a wireless connection to a public land mobile network and the server.

10. (Previously Presented) The method of Claim 1 further comprising configuring a plurality of remote monitors, wherein at least one of the plurality of remote monitors is designated as a primary monitor that is assigned a higher alert priority status, and at least one of the plurality of remote monitors is designated as a secondary monitor that is assigned a lower alert priority status than the primary monitor.

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11. (Original) The method of Claim 1 further comprising configuring, by the remote monitor, at least one rule representative of a trigger causing an alert to be sent by the server to the receiver.

12. (Original) The method of Claim 1 further comprising configuring, by the remote monitor, one or more invitations sent to one or more devices to invite the one or more devices to monitor the receiver.

13. (Original) The method of Claim 1 further comprising sending, to the server, a message acknowledging a receipt of the notification message.

14. (Previously Presented) The method of Claim 1, wherein the alert notification message includes at least one of an indication to a user of a need to calibrate a sensor and an acknowledgement message indicating at least one of an action or an acknowledgement sent by the receiver in response to an alarm sent to the receiver.

15. (Previously Presented) The method of Claim 1, wherein the presenting the alert notification message comprises opening a monitoring application running on the remote monitor, and the monitoring application initiating the accessing.

16. (Canceled)

17. (Original) The method of Claim 1 further comprising registering, at the server, at least one of the remote monitor, the receiver, and an analyte sensor coupled to the receiver, wherein the registration includes a code provided by a health care provider.

18. (Original) The method of Claim 1, wherein the method is implemented on an apparatus comprising at least one processor and at least one memory including code, which when executed by the at least one processor causes the apparatus to provide the method.

19. (Original) The method of Claim 1, wherein a computer-readable storage medium includes code which when executed by at least one processor causes the method.

20. (Currently Amended) A method comprising:

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receiving, at a remote monitor, an alert notification message representative of an exceeded threshold detected, by a server, from analyte sensor data obtained from a receiver monitoring an analyte state of a host, wherein the exceeded threshold corresponds to a set of alert rules including analyte level thresholds established on the server, by the remote monitor, in which the set of alert rules are specifically associated with the remote monitor to remotely monitor the analyte state of a host;

presenting, at the remote monitor, the alert notification message;

receiving, at the remote monitor, user input indicative of acknowledgment of the presented alert notification message;

operating, at the remote monitor, a remote monitoring software application running on the remote monitor in response to the receiving the user input;

accessing, by the remote monitor, the server in response to the operating the remote monitoring software application; and

receiving from the server, at the remote monitor, information including at least the analyte sensor data,

wherein the receiving the alert notification message is received via a first wireless communication pathway between the remote monitor and a notification service in communication with the server, wherein the alert notification message is produced by the notification service based on an instruction message provided by the server indicative of the detected event, and

wherein the receiving the information is received via a second, different wireless communication pathway between the remote monitor and the server, wherein the second wireless communication pathway is established, in response to the accessing the server by the remote monitor, to provide the information.

21. (Canceled)

22. (New) A method comprising:

determining, at a remote monitor or a server, whether a momentary wireless communication pathway is established between the remote monitor and the server;

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upon determining establishment of the momentary wireless communication pathway:

receiving, at the remote monitor, an alert notification message from the server over the momentary wireless communication pathway, wherein the alert notification message is representative of an event detected, by the server, from analyte sensor data obtained from a receiver monitoring an analyte state of a host,

presenting, at the remote monitor, the received alert notification message on a display of the remote monitor, and

receiving, at the remote monitor, at least some of the analyte sensor data from the server over the momentary wireless communication pathway; and

upon determining no establishment of the momentary wireless communication pathway:

receiving, at the remote monitor, the alert notification message from a notification service over a persistent communication pathway, wherein the alert notification message is transmitted to the remote monitor by the notification service based on an instruction message provided by the server to the notification service indicative of the detected event; and

presenting, at the remote monitor, the received alert notification message on the display of the remote monitor,

receiving, at the remote monitor, user input indicative of acknowledgment of the presented alert notification,

accessing, by the remote monitor, the server over the momentary wireless communication pathway in response to the acknowledgement of the presented alert notification message, and

receiving, in response to the accessing, the at least some of the analyte sensor data from the server over the momentary wireless communication pathway.

23. (New) The method of Claim 24, wherein the determining includes identifying a monitoring application is actively operating on the remote monitor.

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24. (New) The method of Claim 25, wherein the monitoring application is actively operating on the remote monitor when the monitoring application is in a foreground mode on the remote monitor.

25. (New) The method of Claim 24, further comprising presenting, at the remote monitor, the received analyte sensor data using a monitoring application on the remote monitor.

26. (New) The method of Claim 24, wherein, when determining no establishment of the momentary wireless communication pathway, the presenting the alert notification message comprises opening a monitoring application operable on the remote monitor, and the monitoring application causing the accessing of the server by the remote monitor.

27. (New) The method of Claim 24, wherein the detected event includes the analyte sensor data exceeding a threshold, and wherein the exceeded threshold corresponds to a set of alert rules including analyte level thresholds established on the server, by the remote monitor, in which the set of alert rules are specifically associated with the remote monitor to remotely monitor the analyte state of a host.

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SUMMARY OF INTERVIEW

Attendees, Date and Type of Interview

A personal interview was conducted on July 14, 2016 and attended by Examiner Franklin Balseca and Supervising Examiner Hai Phan and Applicant's representative Fareid Asphahani.

Exhibits and/or Demonstrations

Applicant's representative showed slides and a short video about Dexcom's remote monitoring system (Dexcom Share®).

Identification of Claims Discussed

Claims 1 and 2.

Identification of Cited References Discussed

U.S. Patent Application Publication 2010/0249625 ("Lin"), U.S. Patent Application Publication 2005/0148890 ("Hastings"), and U.S. Patent No. 8,355,320 B1 ("Dhiman").

Proposed Amendments, Principal Arguments and Other Matters

Applicant would like to thank Examiner Phan and Examiner Balseca for participating in a productive interview with representative Asphahani. The context of the problems associated with remote monitoring of health information and the concepts of the invention were discussed. Applicant's representative discussed the subject matter of Claim 2 and highlighted the distinctions with the teachings of Lin, Hastings and Dhiman, particularly regarding the Office's interpretation of Dhiman's teachings on sending alerts on a persistent communication pathway to that in Claim 2 pertaining to the claimed notification service feature, which is different. An understanding was reached on this distinction. The Examiners acknowledged the Applicant's arguments, and stated that they will be reconsidered if filed in a formal response. No further agreements were reached.

Results of Interview

No final agreement was reached.

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REMARKS

Claims 1, 2 and 4-21 were pending in this application as of the Non-Final Office Action. In this response, Claims 1 and 20 have been amended. All amendments to the claims are fully supported by the original specification. Claims 2, 16 and 21 have been canceled. New Claims 22-27 have been added. Support for the new claims is found in the original specification and claims as filed. No new matter has been added. Upon entry, Claims 1, 4-15, 17-20 and 22-27 will be pending and under consideration.

Cancellation and/or amendment of certain claims in this response or any other response is not to be construed as a dedication to the public of any of the subject matter of the claims as previously presented, and Applicant reserves the ability to pursue the amended claims as filed, the canceled claims or similar claims in one or more continuing applications, e.g., continuation, divisional, or continuation-in-part applications.

Claim Rejections - 35 U.S.C. §103(a)

Claims 1, 4-7, 9, 10, 12, 13, and 15-19 have been rejected under pre-AIA 35 U.S.C. § 103(a) as allegedly obvious over US 2010/0249625 ("Lin") in view of US 2005/0148890 ("Hastings"). Claim 2 has been rejected under 35 U.S.C. §103(a) as allegedly obvious over Lin and Hastings in view of US 8,355,320 ("Dhiman"). Claim 8 has been rejected under 35 U.S.C. §103(a) as allegedly obvious over Lin and Hastings in view of US 2002/0169584 ("Fu"). Claim 11 has been rejected under 35 U.S.C. §103(a) as allegedly obvious over Lin and Hastings in view of Fu and US 2011/0320130 ("Valdes"). Claim 14 has been rejected under 35 U.S.C. §103(a) as allegedly obvious over Lin and Hastings in view of US 2007/0088223 ("Mann"). Claim 20 has been rejected under 35 U.S.C. §103(a) as allegedly obvious over Lin and Hastings in view of US 2012/0136221 ("Killen"). Claim 21 has been rejected under 35 U.S.C. §103(a) as allegedly obvious over Lin, Hastings and Killen in view of Dhiman.

It is well settled that the Examiner "bears the initial burden of presenting a *prima facie* case of unpatentability…" *In re Sullivan*, 498 F.3d 1345 (Fed. Cir. 2007). Until the Examiner has established a *prima facie* case of obviousness, the Applicant need not present arguments or evidence of non-obviousness. To establish a *prima facie* case of obviousness, the Examiner must establish at least three elements. First, the prior art reference (or references when combined) must teach or suggest all of the claim limitations: "All words in a claim must be considered in

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judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 165 U.S.P.Q. 494, 496 (CCPA 1970); *see also M.P.E.P. § 2143.03*. Second, there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091 (Fed. Cir. 1986); *see also M.P.E.P. § 2143.02*. And finally, the Examiner must articulate some reason to modify or combine the cited references that renders the claim obvious. Merely establishing that the claimed elements can be found in the prior art is not sufficient to establish a *prima facie* case of obviousness:

> As is clear from cases such as *Adams*, a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007) (emphasis added).

Instead, the Court has made clear that the Examiner must establish a reason one of skill in the art would have combined the elements of the prior art, and that such reason must be more than a conclusory statement that it would have been obvious.

> Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit. *See In re Kahn*, 441 F.3d 977, 988 (C.A.Fed.2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness"). *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-1741 (2007).

Applicant respectfully submits that the pending claims as amended are not obvious under 35 U.S.C. § 103 for the reasons detailed below.

Claim 1

While not agreeing with the propriety of the rejections, Claim 1 has been amended to include the subject matter previously recited in Claim 2 (now canceled) with some modifications clarifying claim language. For instance, Claim 1 recites, in part, "*wherein the alert notification message includes a short message and the receiving the alert notification message is over at least a first wireless connection between the remote monitor and a notification service in communication with the server, the first wireless connection comprising a persistent, encrypted*

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connection configured to carry the short message pushed by the notification service to a notification message center at the remote monitor, wherein the short message is structured by the notification service to be received by the remote monitor over the first wireless connection, and wherein the information is received over at least a second, different wireless connection between the remote monitor and the server, the second wireless connection comprising a momentary, encrypted connection established, in response the accessing, to provide the information." Applicant contends that Claim 1 as amended is patentable over the combination of Lin, Hastings and Dhiman.

Applicant disagrees with the Office's characterization of Dhiman's teaching on page 5 of June 29, 2016 Non-Final Office Action, particularly pertaining the description of the ALERT message and Presence Information transmissions at [2:57-3:4] with respect to Fig. 4 of Dhiman. Dhiman teaches that, in the system of Dhiman, the ALERT message sent from the presence server 130 to the proxy device 125 is the same message as the ALERT message sent from the proxy device 125 to the remote device (e.g., communication station A in Fig. 4). Applicant notes the Examiner's comments in the Examiner Interview Summary of July 21, 2016, which remarked "*The examiners informed the applicant that the applicant's interpretation of Dhiman appears to be correct.*"

In contrast with the teachings in the Lin-Hastings-Dhiman combination, Claim 1 recites that "*the alert notification message includes a short message [that] is structured by the notification service to be received by the remote monitor over the first wireless connection.*" The alert notification message that is received by the remote monitor transmitted by the notification service is not the same communication as that between the server and the notification service. Consequently, the combination of Lin, Hastings and Dhiman fails to teach or suggest each feature of Claim 1.

Furthermore, Applicant contends that the Office's interpretation of the claimed "*notification service*" is misunderstood. On pages 12-13 of the June 29, 2016 Non-Final Office Action, the Office states "…the short message is pushed by the notification program (notification service) to an application (notification message center) running in the remote monitor [see Hastings par. 0147 L. 1-5, par. 0177 L. 1-5]" and "… the combination clearly teaches that when an event is detected by the server, a notification message is transmitted using a notification

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program (notification service) [see Hastings fig. 4, par. 0177 L. 1-5]." It appears the Office is reading the claimed "*notification service*" as a functionality of Hastings' notification server 52, i.e., Hastings' notification program. However, Claim 1 (as previously presented and as currently amended) recites the "*notification service*" feature in clear context that it is not a program or functionality of the claimed "*server*." Therefore, the present rejections fail to demonstrate Claim 1 as obvious with respect to the combined teachings of Lin, Hastings and Dhiman.

Additionally, Applicant reiterates all of the remarks and arguments with respect to Claims 1 and 2 as presented in the Response filed on May 16, 2016 to the rejections asserted in the Final Office Action mailed February 16, 2016.

In light of the above, Applicant respectfully submits the obviousness rejection of Claim 1 be withdrawn.

Dependent Claims 4-15 and 17-19

Claims 4-15 and 17-19 depend upon Claim 1, in which the Applicant has contended that independent Claim 1 is patentable for at least the reasons stated above. Nothing in Fu, Valdes, and Mann cure the deficiencies of Lin, Hastings and Dhiman as discussed above. Therefore, dependent Claims 4-15 and 17-19 are patentable for at least the same reasons, and on their own merits.

Applicant respectfully requests that rejections to dependent Claims 4-15 and 17-19 under pre-AIA 35 U.S.C. § 103(a) be withdrawn for at least the reasons above.

Claim 20

While not agreeing with the propriety of the rejections, Claim 20 has been amended to include the subject matter previously recited in Claim 21 (now canceled) with some modifications clarifying claim language. For instance, Claim 20 recites, in part, "*wherein the receiving the alert notification message is received via a first wireless communication pathway between the remote monitor and a notification service in communication with the server, wherein the alert notification message is produced by the notification service based on an instruction message provided by the server indicative of the detected event, and wherein the receiving the information is received via a second, different wireless communication pathway between the remote monitor and the server, wherein the second wireless communication pathway is established, in response to the accessing the server by the remote monitor, to provide the*

information." Applicant contends that Claim 20 as amended is patentable over the combination of Lin, Hastings and Killen and/or Dhiman.

The combination of Lin, Hastings and Killen and/or Dhiman do not teach or suggest, for example, *inter alia*, that an alert notification message is produced by a notification service based on an instruction message from the server indicative of the detected event, in which the alert notification message is received at the remote monitor via a first wireless connection between the remote monitor and the notification service, and the information is received via a second, different wireless communication pathway between the remote monitor and the server.

In light of the above, Applicant respectfully submits the obviousness rejection of Claim 1 be withdrawn.

New Claims

New Claims 22-27 are fully supported by the original specification, with no new matter added. New Claims 22-27 are patentable over the teachings of Lin, Hastings, Killen and/or Dhiman, as well as any other referenced on record, whether considered alone or in various combinations for at least the reasons that nothing in these references teaches or suggests, for example, *inter alia*, that an alert notification message is produced by a notification service based on an instruction message from the server indicative of the detected event, and in which the alert notification message is received at the remote monitor via a first wireless connection between the remote monitor and the notification service, and the information is received via a second, different wireless communication pathway between the remote monitor and the server.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not

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reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

Conclusion

Should the Examiner have any concerns that might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: October 6, 2016

By: /Rose M. Thiessen/
Registration No. 40,202
Attorney of Record
Customer No. 68851
(858) 707-4000

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Abbott Ex. 1002 - 210/834

INFORMATION DISCLOSURE STATEMENT

First Inventor	:	Michael Robert Mensinger
App. No.	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	Balseca, Franklin D.
Art Unit	:	2685
Conf. No.	:	8793

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

References and Listing

Pursuant to 37 CFR 1.56, an Information Disclosure Statement listing references is provided herewith. Copies of any listed foreign and non-patent literature references are being submitted.

No Disclaimers

To the extent that anything in the Information Disclosure Statement or the listed references could be construed as a disclaimer of any subject matter supported by the present application, Applicant hereby rescinds and retracts such disclaimer.

Timing of Disclosure

This Information Disclosure Statement is being filed after receipt of a First Office Action, but before the mailing date of a Final Action and before the mailing date of a Notice of Allowance. This Statement is accompanied by the fees set forth in 37 CFR 1.17(p).

The Commissioner is hereby authorized to charge any additional fees which may be required or to credit any overpayment to Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: October 6, 2016

By: /Rose M. Thiessen/
Rose M. Thiessen
Registration No. 40,202
Attorney of Record
Customer No. 68851
(858) 707-4000

IDS

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PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
13/842,679	03/15/2013	

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 $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $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

AMENDMENT **10/06/2016**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 23	Minus	** 20	= 3	X $80 =	240
Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $420 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	**240**

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

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

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

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

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
KIMBERLY PANNELL

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.

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Mensinger, Michael Robert
Art Unit	2685
Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 2005-0165627	7/28/2005	Fotsch et al.	
	2	US- 2014-0088392	3/27/2014	Bernstein et al.	
		US-			
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. 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 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, 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 (1-800-786-9199) and select option 2.

Electronic Patent Application Fee Transmittal

Application Number:	13842679
Filing Date:	15-Mar-2013
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Filer:	Fareid A. Asphahani/Renee Zavala
Attorney Docket Number:	DEXCOM.225A

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**180**

Electronic Acknowledgement Receipt

EFS ID:	26639437
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Fareid A. Asphahani/Renee Zavala
Filer Authorized By:	Fareid A. Asphahani
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	15-AUG-2016
Filing Date:	15-MAR-2013
Time Stamp:	13:15:37
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$180
RAM confirmation Number	9918
Deposit Account	506176
Authorized User	ZAVALA, RENEE

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

Charge any Additional Fees required under 37 CFR 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 CFR 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 CFR 1.19 (Document supply fees)

Charge any Additional Fees required under 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		2016-0815-SupplDS-225A.pdf	174703 b14e57ea7e7923441719 2a9468ee4a6b882 7f3a8	yes	3

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Transmittal Letter	1	2
	Information Disclosure Statement (IDS) Form (SB08)	3	3

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	30742 145384ee5d86b8a0b08d706c3ff6bdade6e be4ee	no	2

Warnings:

Information:

Total Files Size (in bytes):	205445

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

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

Docket No. DEXCOM.225A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	DexCom, Inc.
Inventors	:	Mensinger, Michael Robert et. al
App. No	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	BALSECA, Franklin D.
Art Unit	:	2685
Conf #	:	8793

CERTIFICATE OF TRANSMITTAL UNDER 37 C.F.R. 1.8

I hereby certify that this paper (along with anything referred to as being attached or enclosed) is being filed electronically via EFS-Web at the United States Patent and Trademark Office on the date indicated.

By: Renee Zavala
Renee Zavala

Date: 15-MAR-2016

INFORMATION DISCLOSURE STATEMENT

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

Dear Sir:

Submitted herewith in the above-identified application is an Information Disclosure Statement listing references for consideration. In accordance with 37 C.F.R. §1.98(a)(2)(ii), Applicant submits herewith copies of all cited references, other than copies of U.S. patents or U.S. patent publications.

It is respectfully requested that the Examiner initial and return a copy of the enclosed Form PTO/SB/08, and indicate in the official file wrapper of this patent application that the documents listed therein have been considered.

This Information Disclosure Statement is being filed more than three months after the U.S. filing date AND after the mailing date of the first Office Action on the merits, but before the mailing date of a Final Rejection or Notice of Allowance.

Applicant believes a fee of $180.00 is due under 37 C.F.R. §1.17(p), and the Commissioner is hereby authorized to charge that amount to Deposit Account No. 506176, referencing Applicant Docket No. DEXCOM. 225A. Further, the Commissioner is hereby

authorized to charge all fees and credit all overpayments to Deposit Account No. 506176 during the pendency of this application.

Respectfully submitted,
DEXCOM, INC.

Dated: August 12, 2016

By: _____
Fareid A. Asphahani, PTO Reg. No. 72,217

Customer Number 68851
DEXCOM, INC.
6340 Sequence Drive
San Diego, CA 92121
Telephone: 858.875.9786

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A	8793

68851 7590 07/21/2016

KNOBBE, MARTENS, OLSEN & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER	
BALSECA, FRANKLIN D	

ART UNIT	PAPER NUMBER
2685	

NOTIFICATION DATE	DELIVERY MODE
07/21/2016	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):

jayna.cartee@knobbe.com
efiling@knobbe.com

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	13/842,679	MENSINGER ET AL.	
	Examiner	Art Unit	
	FRANKLIN BALSECA	2685	

All participants (applicant, applicant's representative, PTO personnel):

(1) *FRANKLIN BALSECA*.

(3) *FAREID ASPHAHANI*.

(2) *HAI PHAN*.

(4)_____.

Date of Interview: *14 July 2016*.

Type: ☐ Telephonic ☐ Video Conference
☒ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☒ Yes ☐ No.
If Yes, brief description: *The applicant showed some slides and a short video explaining the overall glucose monitoring system and how the glucose data is transmitted to a remote user*.

Issues Discussed ☐101 ☐112 ☐102 ☒103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *2*.

Identification of prior art discussed: *Dhiman et al. (US-8,355,320)*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

The applicant and the examiners discussed about claim 2. The applicant argued that the alert message sent from the server to the proxy and the alert message sent from the proxy to the remote device is the same message in the system taught by Dhiman. The applicant argued that claim 2 is different than the system taught by Dhiman because claim 2 describes that the message sent from the server to the notification service is different than the message that is sent from the notification service to the remote device.

The examiners informed the applicant that the applicant's interpretation of Dhiman appear to be correct; however no agreement was reached on regard the interpretation of claim 2. The examiners informed to the applicant that his arguments will be reconsidered once a formal response is filed. No agreements were reached.

The examiners would like to thank Mr. Asphahani for the time taken to explain the invention and the willingness to work with the examiners in order to expedite prosecution.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/FRANKLIN BALSECA/ Examiner, Art Unit 2685	/Hai Phan/ Supervisory Patent Examiner, Art Unit 2685

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A	8793

68851 7590 06/29/2016

KNOBBE, MARTENS, OLSEN & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER
BALSECA, FRANKLIN D

ART UNIT	PAPER NUMBER
2685	

NOTIFICATION DATE	DELIVERY MODE
06/29/2016	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):

jayna.cartee@knobbe.com
efiling@knobbe.com

Office Action Summary	Application No. 13/842,679	Applicant(s) MENSINGER ET AL.	
	Examiner FRANKLIN BALSECA	Art Unit 2685	AIA (First Inventor to File) Status No

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

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

Status

1)☒ Responsive to communication(s) filed on *05/16/2016*.

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

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ 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.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1,2 and 4-21* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1,2 and 4-21* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, 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.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

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

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)).

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

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

Detailed Action

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 16, 2016 has been entered.

Response to Arguments

2. Applicant's arguments filed May 16, 2016 have been fully considered but they are not persuasive.

In regards to claim 1, the applicant argues that the prior art specially Hastings (US-2005/0148890), hereinafter Hastings, does not teach the limitation of “receiving at the remote monitor, user input indicative of acknowledgment of the presented alert notification; accessing by the remote monitor, the server in response to the acknowledgement of the presented alert notification message; and receiving in response to the accessing, information including at least the analyte sensor data” [see

applicant's arguments pg. 9 last paragraph]. The applicant argues that Hasting's method to receive a notification message and analyte data requires an extra step that the applicant's invention does not require [see applicant's arguments pg. 10 L. 11-14]. The applicant argues that the applicant's invention does not require Hasting's extra step of requesting data after a response to the alarm notification has been already received by the server [see applicant's arguments pg. 10 L. 17-26]. Furthermore, the applicant argues that Hastings's notification also includes data which the applicant's alert notification does not include [see applicant's arguments L. 17-26].

The examiner respectfully disagrees with the applicant. It seems that the applicant is looking at figure 5 of Hastings, and is interpreting step 410 and step 414 as two different steps that will send an acknowledgment and request for data respectively to the server. The examiner disagrees with the applicant's interpretation of figure 5. Hastings clearly teaches that step 410 of figure 5 can comprise an automatic acknowledgment, a response from the user or determination that the user is too far away [par. 0186 L. 1-10]. Steps 410 and 414 in figure 5 of Hastings are not two different steps that will contact the server separately. Everything shown in figure 5 is a single step performed by the system to determine whether the notification was received or not by the remote user. The applicant's interpretation is not proper because if step 410 in figure 5 is a separate step that makes the remote monitor contact the server as argued by the applicant, there would be no need to have step 423 in figure 5 because according to the applicant's interpretation, the server already determined at step 410 that a response has been received or not. For this reason, step 414 in figure 5 of

Hastings is interpreted as the claimed acknowledgment because the user using a remote monitor lets the server know that the notification was received (acknowledgment) by requesting the data which later the server transmits to the remote monitor by accessing the data at the server. Furthermore, the examiner disagrees with the applicant's argument regarding that Hastings' teachings is different from the applicant's invention because the Hastings' notification includes data. First of all, the claim as written only claims that a notification message is received at the remote monitor. The claim as written does not specify whether the notification message includes data or not. Furthermore, Hastings clearly teaches that the notification message can also be a simple warning [par. 0182 L. 1-8]. This clearly shows that analyte data is not included in the notification message. For all the reasons above, the applicant's arguments are not persuasive.

In regards to claim 2, the applicant argues that the combination of Lin (US-2010/0249625) with Hastings and Dhiman et al (US-8,355,320), hereinafter Dhiman, is improper because the examiner fails to show how Lin's and Hasting's teachings can be combined with Dhiman's proxy server [see applicant's arguments pg. 12 L. 3-7]. Furthermore, the applicant argues that the proxy server only opens a persistent connection with the device to allow the same alert message pass through the proxy server [see applicant's arguments L. 8-11].

The examiner respectfully disagrees with the applicant. The examiner did not used Dhiman to show how a proxy server works and how it will be used in combination

with Lin and Hastings. The examiner used Dhiman only to show the teachings that a notification message can be sent to a device using a persistent connection, and the teachings that a temporary connection will be established between a server and the device after a notification message was received by the device in order to receive data from the server. Dhiman clearly teaches that an alert message is sent to a device from a proxy device (notification service) that is communication with the server using a persistent connection [see Dhiman col. 2 L. 57-62]. Furthermore, Dhiman teaches that the device that received the alert message establishes a temporary connection with the server so the device can access the server [col. 2 L. 62-67, col. 3 L. 1]. This is equivalent to establishing the connection in response to the accessing because it provides the same functionality which is permitting the device to establish communication with the server so the device can access the server. Furthermore, Dhiman does not teach that the alert notification sent by the proxy device is the same message sent by the server when the device access the server as argued by the applicant. Dhiman clearly teaches that an alert notification is sent to the device using a persistent connection and a SIP notify message (the information) is sent to device after the device accessed the server using a temporary connection [see Dhiman col. 2 L. 57-60, col. 3 L. 1-4]. Dhiman never mentions that the alert message is the same as the SIP notify message. For the reasons presented above, the applicant's arguments are not persuasive.

Claim Rejections - 35 USC § 103

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

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

3. Claims 1, 4-7, 9, 10, 12, 13 and 15-19 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Lin (US-2010/0249625) in view of Hastings (US-2005/0148890).

In regards to claim 1, Lin teaches a method comprising receiving, at a remote monitor, a message representative of an event detected by a server, from an analyte sensor data obtained from a receiver monitoring an analyte state of a host [fig. 1 element 140 (receiver), 170 (server) and 190 (remote monitor), par. 0024 L. 1-4, par. 0025 L. 17-22, par. 0031 L. 19-26]. Lin further teaches presenting, at the remote monitor, the message [par. 0025 L. 17-22]. Lin further teaches receiving, in response to the accessing, information including at least the analyte sensor data [par. 0026 L. 17-27].

Lin does not teach that the remote monitor is configured by the server to receive the message. Lin does not teach that the message is an alert notification message. Also, Lin does not teach receiving an acknowledgement of the presented alert notification, and accessing the server in response to the acknowledgment.

On the other hand, Hastings teaches a method to transmit alert notification messages to a remote monitoring device [par. 0015]. Hastings teaches receiving, at a remote monitor, an alert notification message representative of an event detected, by a server, from analyte sensor data [fig. 1 element 52 (server) and 60 (remote monitoring device), par. 0178 L. 1-4, par. 0182 L. 1-8]. Hastings further teaches presenting, at the remote monitor the alert notification message [par. 0178 L. 4-9, par. 0179 L. 1-3]. Hastings teaches that the remote monitor is configured by the server to receive the notification message [par. 0080, par. 0240, par. 0250]. Hastings also teaches receiving, at the remote monitor, user input indicative of acknowledgement of the presented alert notification [fig. 4 step 320, fig. 5 step 410, par. 0184]. Hastings teaches accessing, by the remote monitor, the server in response to the acknowledgement of the presented alert notification message [fig. 4 steps 320 and 322, fig. 5 steps 410, 414 and 412, par. 0192, par. 0193]. Hastings further teaches receiving in response to accessing, information including at least the analyte sensor data [fig. 5 step 412, par. 0195].

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize Hastings teachings in the method taught by Lin because it will help a caregiver to receive alerts when a patient has a condition, and access the patient data at any time.

In regards to claim 4, the combination of Lin and Hastings as applied in claim 1 above further teaches inhibiting access to one or more applications at the remote monitor until an action at the remote monitor is detected to indicate the receipt of the

alert notification message, wherein the remote monitor further comprises a monitoring application [see Hastings par. 0147, par 0148].

In regards to claim 5, the combination of Lin and Hastings as applied in claim 1 above further teaches presenting the alert notification to the user in order let the user know that a notification has been received [see Hastings par. 0147-0148].

The combination does not explicitly teach that the displayed notification is a momentary message on a display without inhibiting access. However, the combination clearly teaches that a notification is displayed in order to let the user know that a notification has been received [see Hastings par. 0147]. One of ordinary skill in the art at the time of the invention would have replaced the notification taught by the combination with the claimed notification or other kind of notification because the way that the alert notification is displayed does not affect the function of the alert notification which is to notify the user of an alert. Furthermore, one of ordinary skill in the art would have replaced the notification taught by the combination with the claimed notification because it will permit the caregiver to receive alerts and continue using the remote monitoring device at the same time without interruptions.

In regards to claim 6, the combination of Lin and Hastings as applied in claim 1 above further teaches wherein at least one of the remote monitor and the receiver comprises one or more of a mobile station, smart phone and a computer [see Lin fig. 1 elements 140 and 180, par. 0027 L. 4-11, see Hastings fig. 2, par. 0149].

In regards to claim 7, the combination of Lin and Hastings as applied in claim 1 above further teaches that the server comprises at least one processor configured to receive analyte sensor data from the receiver, process the analyte sensor data to detect the event and forward, when the event is detected, the notification message to the remote monitor based on one or more rules mapping the event to the remote monitor designated to receive the notification message for the detected event [see Lin par. 0025 L. 6-8 and L. 17-22, par. 0029, see Hastings par. 0089, par. 0177-0178].

In regards to claim 9, the combination of Lin and Hastings as applied in claim 1 above further teaches that the receiver can communicate with the server using any known network [see Lin par. 0023 L. 9-20]. This means that the receiver is coupled or includes a gateway interfacing a wireless connection to any well-known network in order to communicate with the server. Even though the combination does not explicitly states that the network is a public land mobile network, the examiner takes official notice that public land mobile networks are well known in the art. One of ordinary skill in the art would have used the claimed network because the combination clearly teaches that suitable networks that provides two way communications can be used to implement the method [see Lin par. 0023 L. 12-15], and a public land mobile network provides those characteristics.

In regards to claim 10, the combination of Lin and Hastings as applied in claim 1 above further teaches that the method comprises configuring a plurality of remote

monitors wherein at least one of the plurality of the remote monitors is designated as primary monitor that is assigned a higher alert priority status and at least one of the plurality of remote monitors is designated as secondary monitor that is assigned a lower alert priority status [see Hastings fig. 4 steps 318 and 320, par. 0188, par. 0202, par. 0260].

In regards to claim 12, the combination of Lin and Hastings as applied in claim 1 above further teaches that the remote monitor can request the server to forward data to one or more devices [see Hastings fig. 5 steps 416 and 418, par. 0196]. This is equivalent to sending an invitation from the remote monitor to another remote monitor to monitor a patient because the remote monitor can be used to forward notifications and data to another user so that another user can take any desired action based on the notifications or data received.

In regards to claim 13, the combination of Lin and Hastings as applied in claim 1 above further teaches sending an acknowledgment to the server indicating that the notification was received [see Hastings par. 0246].

In regards to claim 15, the combination of Lin and Hastings further teaches that once a notification is received by the remote monitor, the remote monitor opens a monitoring application [see Hastings par. 0147]. Furthermore, the combination teaches that additional data can be sent to the remote monitor after an acknowledgment from

the caregiver is received [see Hastings fig. 5 steps 410, 414, 412]. This means that the remote monitor access the server after the caregiver sends an acknowledgment manually. Also, the combination teaches that remote monitor can send the acknowledgement automatically using the monitoring application [see Hastings par. 0029, par. 0186 L. 1-5].

Even though the combination does not explicitly teach that the remote monitor accesses the server when automatic acknowledgement is used, one of ordinary skill in the art at the time of the invention would have modified the combination's system and access the server when using automatic acknowledgements because it will permit the server to send the additional data only after the server is sure that the notification has been received. Furthermore, the MPEP 2144.04 III clearly states that providing automatic means to replace a manual activity is not a novel step. For this reason, accessing automatically the server after a notification has been received instead of accessing the server after a caregiver sends the acknowledgement manually is not a novel step.

In regards to claim 16, the combination of Lin and Hastings as applied in claim 1 above further teaches that data can be retrieved by the remote monitor from the server after receiving the notification [see Lin par. 0026 L. 17-27, see Hastings fig. 5 step 414, par. 0101 L. 2-5, par. 0180, par. 0193]. This is equivalent to establishing a connection because it performs the same functionality which is to permit communications with the server after a notification has been received.

In regards to claim 17, the combination of Lin and Hastings as applied in claim 1 above further teaches that the server provides a code to identify the remote monitor [see Hastings par. 0080, par. 0256]. This means that the server registers the remote monitor which includes a code provided by the health care provider.

In regards to claims 18 and 19, the combination of Lin and Hastings as applied in claim 1 above further teaches the method is implemented on an apparatus comprising a processor and at least one memory including code, which when executed by the processor causes the apparatus to provide the method [see Lin par. 0046, see Hastings par. 0203].

4. Claim 2 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Lin (US-2010/0249625) in view of Hastings (US-2005/0148890) as applied to claim 1 above and in further view of Dhiman et al. (US-8,355,320).

In regards to claims 2, the combination of Lin and Hastings as applied in claim 1 above teaches that the notification can be a short message sent using a wireless connection, and that the information is received at the remote monitor also using a wireless connection between the remote monitor and the server [see Lin fig. 1, see Hastings fig. 1, fig. 4 step 314, fig. 5 step 414]. Furthermore, the combination teaches that the short message is pushed by the notification program (notification service) to an

application (notification message center) running in the remote monitor [see Hastings par. 0147 L. 1-5, par. 0177 L. 1-5].

The combination does not explicitly teach that a notification service generates the short message based on an alert instruction from the server indicative of the detected event. However, the combination clearly teaches that when an event is detected by the server, a notification message is transmitted using a notification program (notification service) [see Hastings fig. 4, par. 0177 L. 1-5]. Even though the combination does not explicitly teach that the server sends an instruction to the notification service to generate the notification based on the detected event, it is inherent that the notification server taught by the combination after detecting an event will instruct itself to generate the notification message based on the detected event. This is equivalent to the notification service coupled to the server that will generate the notification message based on the alert notification received from the server because the notification program at the notification server taught by the combination provides the same functionality as the claimed server coupled to the notification service which is to generate a notification message when an event has been detected by the server.

The combination does not teach that the wireless connection used to send the short message is a persistent connection, and that the wireless connection used to send the information is a temporary connection established in response to the accessing.

On the other hand, Dhiman teaches the concept of using a persistent connection to transmit an alert message (short message) from a proxy device (notification service) to a selected device (remote monitor), and the concept of using a momentary

connection established between the device and the server to transmit the information that generated the alert [col. 2 L. 57-67 (transmitting alert via a persistent connection), col. 2 L. 66-67 and col. 3 L. 1-4 (transmitting and receiving additional data via momentary connection)]. Furthermore, Dhiman teaches that the temporary connection between the device receiving the alert and the server is established so the device can request (access) the information to the server [col. 2 L. 62-67, col. 3 L. 1]. This is equivalent to establishing the connection in response to the accessing because it provides the same functionality which is permitting the device to establish communication with the server so the device can access the server.

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Dhiman's teachings in the wireless connections between the server and the monitoring device taught by the combination because a different type of connection to transmit notifications will permit the system to make sure that notifications messages will be transmitted without errors or get lost during transmission.

The combination of Lin, Hastings and Dhiman does not explicitly teach that the wireless connections are encrypted. However, the examiner takes official notice that encryption is well known in the art to transmit data securely using wireless connections. It would have been obvious to one of ordinary skill in the art at the time of the invention to encrypt all communications to transit the short message and the information because it will make the system more secure and protect the patients' data from unauthorized access.

5. Claim 8 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Lin (US-2010/0249625) in view of Hastings (US-2005/0148890) as applied to claim 1 above and in further view of Fu et al (US-2002/0169584).

In regards to claim 8, the combination of Lin and Hastings as applied in claim 1 above teaches that the server can communicate with a patient device (receiver) that is coupled to a sensor system at the host, and with a doctor's remote monitoring device [see Lin fig. 1 element 140 and 198].

The combination does not teach that rules used to send a notification to the remote monitor are different from a set of rules used to send a notification to the receiver.

On the other hand, Fu teaches a method to send notifications to patients and doctors based on information received by a server from a receiver [fig. 3]. Fu teaches that depending of the analysis of the data, the server decides if the sever needs to send a notification to a doctor or to a patient [par. 0029 L. 17-25, par. 0030]. This means that the server has one set of rules to generate a notification to the remote monitor and a second set of rules to generate a notification to the receiver.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use Fu's teachings and create different types of notifications for patients and doctors in the method taught by the combination because it will help to send alerts to the doctor only when medical attention is required.

6. Claim 11 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Lin (US-2010/0249625) in view of Hastings (US-2005/0148890) as applied to claim 1 above and in further view of Fu et al (US-2002/0169584) and Valdes et al. (US-2011/0320130).

In regards to claim 11, the combination of Lin and Hastings as applied in claim 1 above further teaches that rules used to trigger an alert can be modified based on the severity of the alert [see Hastings 0265]. The combination also teaches that the patient has a receiver that communicates with the server [see Lin fig. 1 element 140].

The combination does not teach that notifications are sent to the receiver.

On the other hand, Fu teaches that the server sends notifications to the patient (receiver) if the server decides that the alarm does not require medical attention [par. 0029 L. 17-25, par. 0030].

It would have been obvious to one of ordinary skill in the art at the time of the invention to use Fu's teachings and send non-emergency alerts to the patient because it will help the patient to be aware of an ongoing event and take any action without calling the doctor.

The combination of Lin, Hastings and Fu does not teach that the rules are modified using the remote monitor.

On the other hand, Valdes teaches the concept that a remote monitor can be used to modify rules used to trigger notifications sent to a receiver [par. 0032].

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize Valdes's teachings in the system taught by the combination because it will permit a doctor to customize the alerts that a patient receives.

7. Claim 14 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Lin (US-2010/0249625) in view of Hastings (US-2005/0148890) as applied to claim 1 above and in further view of Mann et al. (US-2007/0088223).

In regards to claim 14, the combination does not teach that the alert notification message includes an indication to a user of a need to calibrate a sensor.

On the other hand, Mann teaches that a notification can be sent to a user of a remote monitor of a need to calibrate the sensor [par. 0058 L. 9-10].

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize Mann's teachings in the method taught by the combination because it would help a caregiver to know when the sensor is not working properly and needs recalibration.

8. Claim 20 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Lin (US-2010/0249625) in view of Hastings (US-2005/0148890) and Killen et al. (US-2012/0136221).

In regards to claim 20, Lin teaches a method comprising receiving, at a remote monitor, a message representative of an exceeded threshold detected by a server, from

an analyte sensor data obtained from a receiver monitoring an analyte state of a host [fig. 1 element 140 (receiver), 170 (server) and 190 (remote monitor), par. 0024 L. 1-4, par. 0025 L. 17-22, par. 0031 L. 19-26]. This also means that the exceeded threshold corresponds to set of alert rules. Lin further teaches presenting, at the remote monitor, the alert message [par. 0025 L. 17-22]. Lin further teaches receiving, in response to the accessing, information including at least the analyte sensor data [par. 0026 L. 17-27].

Lin does not teach that the remote monitor is configured by the server to receive the message. Lin does not teach that the message is an alert notification message. Also, Lin does not teach receiving an acknowledgement of the presented alert notification, and accessing the server in response to the acknowledgment.

On the other hand, Hastings teaches a method to transmit alert notification messages to a remote monitoring device [par. 0015]. Hastings teaches receiving, at a remote monitor, an alert notification message representative of an event detected, by a server, from analyte sensor data [fig. 1 element 52 (server) and 60 (remote monitoring device), par. 0177, par. 0178 L. 1-4, par. 0182 L. 1-8]. It is inherent that the server must have a set of alert rules (analyte thresholds) that will be used in order to determine if a notification message must be sent. Hastings further teaches presenting, at the remote monitor the alert notification message [par. 0178 L. 4-9, par. 0179 L. 1-3]. Hastings also teaches receiving, at the remote monitor, user input indicative of acknowledgement of the presented alert notification message [fig. 4 step 320, fig. 5 step 410, par. 0184]. Hastings also teaches operating, at the remote monitor, a remote monitoring software application running on the remote monitor in response to the receiving the user input

[fig. 5 element 414, par. 0147 L. 1-13, par. 0184]. Hastings teaches accessing, by the remote monitor, the server in response to the operating the remote monitoring software application [fig. 4 steps 320 and 322, fig. 5 steps 410, 414 and 412, par. 0192, par. 0193]. Hastings further teaches receiving in response to accessing, information including at least the analyte sensor data [fig. 5 step 412, par. 0195].

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize Hastings teachings in the method taught by Lin because it will help a caregiver to receive alerts when a patient has a condition, and access the patient data at any time.

The combination of Lina and Hastings does not teach that the thresholds corresponding to the set of rules including analyte level thresholds are established at the server by the remote monitor.

On the other hand, Killen teaches that the server can send alerts to remote monitoring devices based on analyte thresholds that can be established on the server by the remote monitor [par. 00143 L. 1-10]. Killen further teaches that the alert rules are specifically associated with the remote monitor to remotely monitor the analyte state of the host [par. 0153 L. 5-7].

It would have been obvious to one of ordinary skill in the art at the time of the invention to use Killen's teachings in the method taught by then combination because it will permit the user of the remote monitoring device to configure the alerts that he or she wants to receive.

9. Claim 21 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Lin (US-2010/0249625) in view of Hastings (US-2005/0148890) and Killen et al. (US-2012/0136221) as applied to claim 20 above and in further view of Dhiman et al. (US-8,355,320).

In regards to claims 21, the combination of Lin, Hastings and Killen as applied in claim 1 above teaches that the notification message is sent using a wireless connection, and that the information is received at the remote monitor also using a wireless connection between the remote monitor and the server [see Lin fig. 1, see Hastings fig. 1, fig. 4 step 314, fig. 5 step 414].

The combination does not explicitly teach that a notification service generates the short message based on an alert instruction from the server indicative of the detected event. However, the combination clearly teaches that when an event is detected by the server, a notification message is transmitted using a notification program (notification service) [see Hastings fig. 4, par. 0177 L. 1-5]. Even though the combination does not explicitly teach that the server sends an instruction to the notification service to generate the notification based on the detected event, it is inherent that the notification server taught by the combination after detecting an event will instruct itself to generate the notification message based on the detected event. This is equivalent to the notification service coupled to the server that will generate the notification message based on the alert notification received from the server because the notification program at the notification server taught by the combination provides the same functionality as the

claimed server coupled to the notification service which is to generate a notification message when an event has been detected by the server.

The combination does not teach that a first wireless connection is used to send the notification message, and that a second different wireless connection is used to send the information wherein the second wireless connection is established in response to the accessing the server.

On the other hand, Dhiman teaches the concept of using a persistent connection to transmit an alert message (short message) from a proxy device (notification service) to a selected device (remote monitor), and the concept of using a momentary connection established between the device and the server to transmit the information that generated the alert [col. 2 L. 57-67 (transmitting alert via a persistent connection), col. 2 L. 66-67 and col. 3 L. 1-4 (transmitting and receiving additional data via momentary connection)]. Furthermore, Dhiman teaches that the temporary connection between the device receiving the alert and the server is established so the device can request (access) the information to the server [col. 2 L. 62-67, col. 3 L. 1]. This is equivalent to establishing the connection in response to the accessing because it provides the same functionality which is permitting the device to establish communication with the server so the device can access the server.

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Dhiman's teachings in the wireless connections between the server and the monitoring device taught by the combination because a different type of

connection to transmit notifications will permit the system to make sure that notifications messages will be transmitted without errors or get lost during transmission.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Franklin Balseca whose telephone number is (571) 270-5966. The examiner can normally be reached on Monday-Friday 7:30AM – 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hai Phan can be reached on (571) 272-6338.

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

/FRANKLIN BALSECA/

Examiner, Art Unit 2685

/Hai Phan/

Supervisory Patent Examiner, Art Unit 2685

Notice of References Cited	Application/Control No. 13/842,679	Applicant(s)/Patent Under Reexamination MENSINGER ET AL.	
	Examiner FRANKLIN BALSECA	Art Unit 2685	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-2012/0136221 A1	05-2012	KILLEN; Roger	G06F19/3418	600/300
	B	US-				
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
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	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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	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.

PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	13/842679
	Filing Date	March 15, 2013
	First Named Inventor	Michael Robert Mensinger
	Art Unit	2685
(Multiple sheets used when necessary)	Examiner	Balseca, Franklin D.
SHEET 1 OF 1	Attorney Docket No.	DEXCOM.225A

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	6416471	07-2002	Kumar	
	2	2005/0207379	09-2005	Shen	
	3	2008/0098038	04-2008	Motoyama	
	4	2013/0285835	10-2013	Kim	
	5				
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FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No.	Foreign Patent Document *Country Code-Number-Kind Code* Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T[1]

NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[1]

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Examiner Signature	/FRANKLIN D BALSECA/	Date Considered	06/23/2016

***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T[1] - Place a check mark in this area when an English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /F.D.B/

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13842679	MENSINGER ET AL.
	Examiner	Art Unit
	FRANKLIN BALSECA	2685

CPC- SEARCHED

Symbol	Date	Examiner
G06F19/30,32,34,3406,3418,3487	03/18/2015	FB
A61B5/0002,0004,0015,0022,0024,02,742,743,7435,746,7465,14532	03/18/2015	FB
Updated Search	12/02/2015	FB
Updated Search	06/24/2016	FB
H04Q2209/00,10,40,70	06/24/2016	FB

CPC COMBINATION SETS - SEARCHED

Symbol	Date	Examiner

US CLASSIFICATION SEARCHED

Class	Subclass	Date	Examiner
340	870.01,870.02,870.07	03/18/2015	FB
705	2, 3	03/18/2015	FB
600	300,301,316,365,421,522	03/18/2015	FB
607	28, 30	03/18/2015	FB
Updated Search	Updated Search	12/02/2015	FB
Updated Search	Updated Search	06/24/2016	FB

SEARCH NOTES

Search Notes	Date	Examiner
Inventor Search	03/16/2015	FB
East Search	03/18/2015	FB
Updated East Search	12/02/2015	FB
Updated East Search	06/24/2016	FB

/FRANKLIN BALSECA/ Examiner.Art Unit 2685	

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

/FRANKLIN BALSECA/ Examiner.Art Unit 2685	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13842679	MENSINGER ET AL.
	Examiner	Art Unit
	FRANKLIN BALSECA	2685

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

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

CLAIM		DATE								
Final	Original	12/03/2015	06/24/2016							
	1	✓	✓							
	2	✓	✓							
	3	✓	-							
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PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Rack-Gomer, Anna Leigh
Art Unit	2685
Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 2008-0250482	10/9/2008	Ahtisaari et al.	
		US-			
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature	/FRANKLIN D BALSECA/	Date Considered	06/23/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. 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 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, 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 (1-800-786-9199) and select option 2.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /F. D. B./

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	13/842679
	Filing Date	March 15, 2013
	First Named Inventor	Michael Robert Mensinger
	Art Unit	2685
(Multiple sheets used when necessary)	Examiner	Balseca, Franklin D.
SHEET 1 OF 1	Attorney Docket No.	DEXCOM.225A

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	6416471	07-2002	Kumar	
	2	2005/0207379	09-2005	Shen	
	3	2008/0098038	04-2008	Motoyama	
	4	2013/0285835	10-2013	Kim	
	5				
	6				
	7				
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FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Foreign Patent Document *Country Code-Number-Kind Code* Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T^1

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T^1

23586292
062116

Examiner Signature	Date Considered

***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T^1 - Place a check mark in this area when an English language Translation is attached.

Electronic Acknowledgement Receipt

EFS ID:	26132343
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Ian W. Gillies/Edgar Compton
Filer Authorized By:	Ian W. Gillies
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	21-JUN-2016
Filing Date:	15-MAR-2013
Time Stamp:	17:29:26
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		225A_IDS.pdf	68240 c9a4a6d012721b9aa984d8d6e8959494719e75c8	yes	3

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Transmittal Letter	1	2
	Information Disclosure Statement (IDS) Form (SB08)	3	3
Warnings:			
Information:			
	Total Files Size (in bytes):	68240	

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

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

INFORMATION DISCLOSURE STATEMENT

First Inventor	:	Michael Robert Mensinger
App. No.	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	Balseca, Franklin D.
Art Unit	:	2685
Conf. No.	:	8793

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

References and Listing

Pursuant to 37 CFR 1.56, an Information Disclosure Statement listing references is provided herewith. Copies of any listed foreign and non-patent literature references are being submitted.

No Disclaimers

To the extent that anything in the Information Disclosure Statement or the listed references could be construed as a disclaimer of any subject matter supported by the present application, Applicant hereby rescinds and retracts such disclaimer.

Timing of Disclosure

This Information Disclosure Statement is being filed before receipt of a First Office Action after an RCE, and no fee is believed to be required.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment, to Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: June 21, 2016

By:/Ian W. Gillies/
Ian W. Gillies
Registration No. 62,280
Attorney of Record
Customer No. 68851
(858) 707-4000

23582158
062016

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
13/842,679	03/15/2013	2685	1390	DEXCOM.225A	19	1

CONFIRMATION NO. 8793

UPDATED FILING RECEIPT

68851
KNOBBE, MARTENS, OLSEN & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614



Date Mailed: 06/07/2016

Receipt is acknowledged of this non-provisional 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 APPLICANT, 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 Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Michael Robert Mensinger, San Diego, CA;
Eric Cohen, San Diego, CA;
Phil Mayou, San Diego, CA;
Eli Reihman, San Diego, CA;
Katherine Yerre Koehler, San Diego, CA;
Rian Draeger, San Diego, CA;
Angela Marie Traven, San Marcos, CA;

Applicant(s)

DEXCOM, INC., San Diego, CA

Assignment For Published Patent Application

DexCom, Inc., San Diego, CA

Power of Attorney: The patent practitioners associated with Customer Number 68851

Domestic Priority data as claimed by applicant

This appln claims benefit of 61/747,717 12/31/2012

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: No

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:

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/842,679**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No

Title

REMOTE MONITORING OF ANALYTE MEASUREMENTS

Preliminary Class

340

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

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

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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).

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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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 AssetsControl, 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).

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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	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A

CONFIRMATION NO. 8793

68851
KNOBBE, MARTENS, OLSEN & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

37 CFR 1.48(f)
ACKNOWLEDGEMENT LETTER

OC000000083448856

Date Mailed: 06/07/2016

NOTICE OF ACCEPTANCE OF REQUEST UNDER 37 CFR 1.48(f)

This is in response to the applicant's request under 37 CFR 1.48(f) submitted on 05/27/2016.

The request under 37 CFR 1.48(f) to correct the inventorship, to correct or update the name of an inventor, or to correct the order of names of joint inventors is accepted.

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

/sstephanos/

Please Direct All Correspondence to Customer Number 68851

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor	:	Michael Robert Mensinger
App. No	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	Balseca, Franklin D.
Art Unit	:	2685
Conf. No.	:	8793

REQUEST UNDER 37 CFR 1.48(f) TO CORRECT OR UPDATE INVENTOR'S NAME

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

Dear Sir:

Pursuant to 37 CFR 1.48(f), this Request is being made to correct or update the name of an inventor in the above-referenced application. The request is made to reflect the married name of Katherine Yerre Koehler (filed as Katherine Yerre Grubstein).

This Request is accompanied by:

1. An Application Data Sheet outlining changes being made to inventorship
2. Fee as directed under 37 CFR 1.17(i) for large entity

The legal names of the inventors are;

Michael Robert Mensinger

Eric Cohen

Phil Mayou

Eli Reihman

Please Direct All Correspondence to Customer Number 68851

Katherine Yerre Koehler

Rian Draeger

Angela Marie Traven

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE MARTENS OLSON & BEAR LLP

Dated: May 27, 2016

By: /Rose M. Thiessen/
Rose M. Thiessen
Registration No. 40,202
Attorney of Record
Customer No. 68851
(858) 707-4000

23395918
052416

Electronic Patent Application Fee Transmittal

Application Number:	13842679
Filing Date:	15-Mar-2013
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Filer:	Rose M. Thiessen/Edgar Compton
Attorney Docket Number:	DEXCOM.225A

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
PROCESSING FEE, EXCEPT PROV. APPLS.	1830	1	140	140
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**140**

Electronic Acknowledgement Receipt

EFS ID:	25912604
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Rose M. Thiessen/ThuyQuyen Nguyen
Filer Authorized By:	Rose M. Thiessen
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	27-MAY-2016
Filing Date:	15-MAR-2013
Time Stamp:	18:05:17
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$140
RAM confirmation Number	7303
Deposit Account	111410
Authorized User	KNOBBE MARTENS OLSON AND BEAR

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

Charge any Additional Fees required under 37 CFR 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 CFR 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	225A_CORRADS.pdf	143939 5f704789aa2426a67f729a4211d38a8bcb7b906f	no	4
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
2	Request under Rule 48 correcting inventorship	225A_CORRINVENT.pdf	185602 baca855093ae8b20c0843c384b43c0a6e9e20ec7	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30610 3477e230f249055c4714073ec1198670b3636403	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	360151		

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<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

APPLICATION DATA SHEET

Application Information

Application Number:	13/842679
Filing Date:	March 15, 2013
Application Type:	Regular
Subject Matter:	Utility
Title:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Attorney Docket Number:	DEXCOM.225A

Inventor Information

1

Status:	Full capacity
Given Name:	Michael
Middle Name:	Robert
Family Name:	Mensinger
City of Residence:	San Diego
State or Prov. of Residence:	CA
Country of Residence:	US
Street:	c/o DexCom, Inc., 6340 Sequence Drive
City:	San Diego
State or Province:	CA
Country:	US
Postal or Zip Code:	92121

2

Status:	Full capacity
Given Name:	Eric
Family Name:	Cohen
City of Residence:	San Diego
State or Prov. of Residence:	CA

Country of Residence:	US
Street:	c/o DexCom, Inc., 6340 Sequence Drive
City:	San Diego
State or Province:	CA
Country:	US
Postal or Zip Code:	92121

3

Status:	Full capacity
Given Name:	Phil
Family Name:	Mayou
City of Residence:	San Diego
State or Prov. of Residence:	CA
Country of Residence:	US
Street:	c/o DexCom, Inc., 6340 Sequence Drive
City:	San Diego
State or Province:	CA
Country:	US
Postal or Zip Code:	92121

4

Status:	Full capacity
Given Name:	Eli
Family Name:	Reihman
City of Residence:	San Diego
State or Prov. of Residence:	CA
Country of Residence:	US
Street:	c/o DexCom, Inc., 6340 Sequence Drive
City:	San Diego
State or Province:	CA
Country:	US
Postal or Zip Code:	92121

5

Status:	Full capacity
Given Name:	Katherine
Middle Name:	Yerre
Family Name:	~~Grubstein~~ Koehler
City of Residence:	San Diego
State or Prov. of Residence:	CA
Country of Residence:	US
Street:	c/o DexCom, Inc., 6340 Sequence Drive
City:	San Diego
State or Province:	CA
Country:	US
Postal or Zip Code:	92121

6

Status:	Full capacity
Given Name:	Rian
Family Name:	Draeger
City of Residence:	San Diego
State or Prov. of Residence:	CA
Country of Residence:	US
Street:	c/o DexCom, Inc., 6340 Sequence Drive
City:	San Diego
State or Province:	CA
Country:	US
Postal or Zip Code:	92121

7

Status:	Full capacity
Given Name:	Angela
Middle Name:	Marie
Family Name:	Traven
City of Residence:	San Marcos
State or Prov. of Residence:	CA

Country of Residence:	US
Street:	c/o DexCom, Inc., 6340 Sequence Drive
City:	San Diego
State or Province:	CA
Country:	US
Postal or Zip Code:	92121

Correspondence Information

Correspondence Customer Number:	68851
Phone Number:	(949) 760-0404
Fax Number:	(949) 760-9502
E-Mail Address:	efiling@knobbe.com

Representative Information

Representative Customer Number: 68851

Dated: May 27, 2016

By: /Rose M. Thiessen/
Rose M. Thiessen
Registration No. 40,202
Attorney of Record
Customer No. 68851
(858) 707-4000

23419708
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PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Rack-Gomer, Anna Leigh
Art Unit	2685
Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 2008-0250482	10/9/2008	Ahtisaari et al.	
		US-			
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. 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 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, 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 (1-800-786-9199) and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor	:	Michael Robert Mensinger
App. No.	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	Balseca, Franklin D.
Art Unit	:	2685
Conf. No.	:	8793

AMENDMENT AFTER FINAL

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

Dear Sir:

In response to the Office Action Made Final dated December 16, 2015, and supplemental to the Amendment After Final dated February 16, 2016, Applicant respectfully requests that the Examiner enter the following amendments and consider the following remarks.

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

Summary of Interview begins on page 6 of this paper.

Remarks/Arguments begin on page 8 of this paper.

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AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A method comprising:

receiving, at a remote monitor, an alert notification message representative of an event detected, by a server, from analyte sensor data obtained from a receiver monitoring an analyte state of a host;

presenting, at the remote monitor, the alert notification message, wherein the remote monitor is configured by the server to receive the alert notification message to augment the receiver monitoring of the analyte state of the host;

receiving, at the remote monitor, user input indicative of acknowledgment of the presented alert notification;

accessing, by the remote monitor, the server, in response to the acknowledgement of the presented alert notification message; and

receiving, in response to the accessing, information including at least the analyte sensor data.

2. (Currently amended) The method of claim 1, wherein the alert notification message includes a short message and the receiving ~~further comprises receiving~~ the alert notification message is from at least a first wireless connection between the remote monitor and a notification service coupled to the server, the first wireless connection comprising a persistent, encrypted connection configured to carry the short message pushed by the notification service to a notification message center at the remote monitor, wherein the short message is generated by the notification service based on an alert instruction from the server indicative of the detected event, and

wherein the ~~additional~~ information is received from at least a second, different wireless connection between the remote monitor and the server, the second wireless connection comprising a momentary, encrypted connection established, in response the accessing, to provide the information.

3. (Canceled)

4. (Previously Presented) The method of Claim 1, wherein the presenting further comprises inhibiting access to one or more applications at the remote monitor until an action at

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the remote monitor is detected to indicate receipt of the alert notification message, wherein the remote monitor further comprises a monitoring application.

5. (Previously Presented) The method of Claim 1, wherein the presenting further comprises presenting the alert notification message as a momentary message on a display at the remote monitor, without the inhibiting access.

6. (Original) The method of Claim 1, wherein at least one of the remote monitor and the receiver comprise one or more of a mobile station, a wireless terminal, a tablet, a smart phone, a multi-mode wireless device, and a computer.

7. (Original) The method of Claim 1, wherein the server comprises at least one processor configured to receive analyte sensor data from the receiver, process the analyte sensor data to detect the event, and forward, when the event is detected, the notification message to the remote monitor based on one or more rules mapping the event to the remote monitor designated to receive the notification message for the detected event.

8. (Original) The method of Claim 1 further comprising detecting, based on a first set of rules at the server, the event, wherein the first set of rules used to generate the notification message are different from a second set of rules used to detect alerts sent to the receiver coupled to a sensor system at the host.

9. (Original) The method of Claim 1, wherein the receiver includes, or couples to, a gateway interfacing a wireless connection to a public land mobile network and the server.

10. (Previously Presented) The method of Claim 1 further comprising configuring a plurality of remote monitors, wherein at least one of the plurality of remote monitors is designated as a primary monitor that is assigned a higher alert priority status, and at least one of the plurality of remote monitors is designated as a secondary monitor that is assigned a lower alert priority status than the primary monitor.

11. (Original) The method of Claim 1 further comprising configuring, by the remote monitor, at least one rule representative of a trigger causing an alert to be sent by the server to the receiver.

12. (Original) The method of Claim 1 further comprising configuring, by the remote monitor, one or more invitations sent to one or more devices to invite the one or more devices to monitor the receiver.

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13. (Original) The method of Claim 1 further comprising sending, to the server, a message acknowledging a receipt of the notification message.

14. (Previously Presented) The method of Claim 1, wherein the alert notification message includes at least one of an indication to a user of a need to calibrate a sensor and an acknowledgement message indicating at least one of an action or an acknowledgement sent by the receiver in response to an alarm sent to the receiver.

15. (Previously Presented) The method of Claim 1, wherein the presenting the alert notification message comprises opening a monitoring application running on the remote monitor, and the monitoring application initiating the accessing.

16. (Original) The method of Claim 1, wherein the accessing further comprises establishing a connection between the remote monitor and the server to enable the receiving of the information including the analyte sensor data.

17. (Original) The method of Claim 1 further comprising registering, at the server, at least one of the remote monitor, the receiver, and an analyte sensor coupled to the receiver, wherein the registration includes a code provided by a health care provider.

18. (Original) The method of Claim 1, wherein the method is implemented on an apparatus comprising at least one processor and at least one memory including code, which when executed by the at least one processor causes the apparatus to provide the method.

19. (Original) The method of Claim 1, wherein a computer-readable storage medium includes code which when executed by at least one processor causes the method.

20. (New) A method comprising:

receiving, at a remote monitor, an alert notification message representative of an exceeded threshold detected, by a server, from analyte sensor data obtained from a receiver monitoring an analyte state of a host, wherein the exceeded threshold corresponds to a set of alert rules including analyte level thresholds established on the server, by the remote monitor, in which the set of alert rules are specifically associated with the remote monitor to remotely monitor the analyte state of a host;

presenting, at the remote monitor, the alert notification message;

receiving, at the remote monitor, user input indicative of acknowledgment of the presented alert notification message;

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operating, at the remote monitor, a remote monitoring software application running on the remote monitor in response to the receiving the user input;

accessing, by the remote monitor, the server in response to the operating the remote monitoring software application; and

receiving from the server, at the remote monitor, information including at least the analyte sensor data.

21. (New) The method of Claim 20, wherein the receiving the alert notification message is received via a first wireless communication pathway between the remote monitor and a notification service in communication with the server, wherein the alert notification message is generated by the notification service based on an alert instruction provided by the server indicative of the detected event, and

wherein the receiving the information is received via a second, different wireless communication pathway between the remote monitor and the server, wherein the second wireless communication pathway is established, in response to the accessing the server by the remote monitor, to provide the information.

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SUMMARY OF INTERVIEW

Attendees, Date and Type of Interview

A personal interview was conducted on April 7, 2016 and attended by Examiner Franklin Balseca and Applicants' representatives Kaare Larson and Fareid Asphahani.

Exhibits and/or Demonstrations

Applicants' representatives showed two short videos and a live demonstration of Dexcom's remote monitoring system using the host's and remote monitor's respective apps showing how a remote monitor's alert rules can be established, and how a remote monitor can be invited to remotely monitor the host.

Identification of Claims Discussed

Claims 1-3.

Identification of Cited/Disclosed Art Discussed

U.S. Patent Publication 2010/0249625 to Lin et al. ("Lin"), U.S. Patent Publication 2005/0148890 to Hastings ("Hastings"), and U.S. Patent No. 8,355,320 to Dhiman et al. ("Dhiman").

Proposed Amendments, Principal Arguments and Other Matters

Applicant would like to thank Examiner Balseca for participating in a productive Examiner Interview with representatives Kaare Larson and Fareid Asphahani at the USPTO to discuss the application. First, the subject matter of Claim 1 was discussed with respect to the obviousness rejection based on the combination of Lin and Hastings. Applicants' representatives described distinctions between the claimed features and the teachings of Hastings, particularly that Hastings teaches a different process for alerting that provides data with the alert, thereby Hastings lacking acknowledgment of the alert to initially provide the data. Moreover, Applicants' representatives argued that Hastings requires an extra step to be performed by the user of Hastings' monitoring device for requesting more data, which is different than what is recited in Claim 1 because the remote monitor automatically receives the data upon acknowledgement of the alert notification, without further user requesting of the data. No agreements were reached pertaining to Claim 1.

Next, the subject matter of Claims 2 and 3 were discussed with respect to the obviousness rejections based on the combination of Lin, Hastings and Dhiman. Applicants' representatives

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described distinctions between the claimed features and the teachings of Dhiman, particularly that a system modified using features from Lin, Hastings and Dhiman as proposed in the Office Action would not operate in the manner recited in Claims 2 and 3. For example, Applicants' representatives pointed to proxy device 125 of Dhiman operating differently from the claimed notification service or any other feature in the claims. Applicants' representatives argued that the Office Action and Advisory Action were deficient in clearly explaining how the combined features of Lin, Hastings and Dhiman would operate to meet each and every feature claimed. No agreements were reached pertaining to Claims 2 and 3.

Results of Interview

Agreement was not reached.

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REMARKS

Claims 1-19 are currently pending in this application. By this amendment, Claim 2 has been amended, Claim 3 has been canceled and new Claims 20 and 21 have been added. Support for the amendments and new claims is found in the specification and claims as filed. Upon entry of the amendment, Claims 1, 2, and 4-21 will be pending and under consideration. Cancellation and/or amendment of certain claims in this response or any other response is not to be construed as a dedication to the public of any of the subject matter of the claims as previously presented, and Applicant reserves the ability to pursue the amended claims as filed, the canceled claims or similar claims in one or more continuing applications, e.g., continuation, divisional, or continuation-in-part applications.

Claim Rejection - 35 U.S.C. §112, Second Paragraph

With respect to this rejection, Applicant reiterates arguments presented in the Amendment After Final dated February 16, 2016.

Claim Rejections - 35 U.S.C. §103(a)

Claims 1, 4-7, 9, 10, 12, 13, and 15-19 have been rejected under 35 U.S.C. §103(a) as obvious over US 2010/0249625 ("Lin") in view of US 2005/0148890 ("Hastings"). Claims 2 and 3 have been rejected under 35 U.S.C. §103(a) as obvious over Lin and Hastings in view of US 8,355,320 ("Dhiman"). Claim 8 has been rejected under 35 U.S.C. §103(a) as obvious over Lin and Hastings in view of US 2002/0169584 ("Fu"). Claim 11 has been rejected under 35 U.S.C. §103(a) as obvious over Lin and Hastings in view of Fu and US 2011/0320130 ("Valdes"). Claim 14 has been rejected under 35 U.S.C. §103(a) as obvious over Lin and Hastings in view of US 2007/0088223 ("Mann").

It is well settled that the Examiner "bears the initial burden of presenting a *prima facie* case of unpatentability…" *In re Sullivan*, 498 F.3d 1345 (Fed. Cir. 2007). Until the Examiner has established a *prima facie* case of obviousness, the Applicant need not present arguments or evidence of non-obviousness. To establish a *prima facie* case of obviousness, the Examiner must establish at least three elements. First, the prior art reference (or references when combined) must teach or suggest all of the claim limitations: "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 165 U.S.P.Q. 494, 496 (CCPA 1970); *see also M.P.E.P. § 2143.03*. Second, there must be a reasonable

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expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091 (Fed. Cir. 1986); *see also M.P.E.P. § 2143.02*. And finally, the Examiner must articulate some reason to modify or combine the cited references that renders the claim obvious. Merely establishing that the claimed elements can be found in the prior art is not sufficient to establish a *prima facie* case of obviousness:

> As is clear from cases such as *Adams,* a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007) (emphasis added).

Instead, the Court has made clear that the Examiner must establish a reason one of skill in the art would have combined the elements of the prior art, and that such reason must be more than a conclusory statement that it would have been obvious.

> Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit. *See In re Kahn,* 441 F.3d 977, 988 (C.A.Fed.2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness"). *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-1741 (2007).

Applicant respectfully submits that the pending claims as amended are not obvious under 35 U.S.C. § 103(a) for the reasons detailed below.

Claim 1

Applicant traverses the rejection of Claim 1 as obvious over the combination of Lin and Hastings for at least the reason that the combination does not teach or suggest each feature of the claim as a whole. Particularly, in one example, the combination fails to teach or suggest the claimed features of "*receiving, at the remote monitor, user input indicative of acknowledgment of the presented alert notification; accessing, by the remote monitor, the server, in response to the acknowledgement of the presented alert notification message; and receiving, in response to the accessing, information including at least the analyte sensor data*."

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The Office points to Hastings as allegedly teaching these features of Claim 1. Applicant respectfully disagrees with the Office's characterization of the teachings of Hastings in the Office Action and Advisory Action. Specifically, Hastings teaches that sensor data is sent with an alarm notification to the caregiver receiver in order to alert the user of the caregiver receiver of the patient's condition with information about the condition. See Hastings at, e.g., ¶¶[0088]-[0090] discussing alarm notification subsystem 64, and ¶¶[0177]-[0184] discussing the notification method with reference to Fig. 4. For example, Hastings teaches in ¶[0184] that after the alarm notification ***with data*** has been received by the caregiver receiver 60, then the monitoring system 10 waits to receive a response from the user of the caregiver receiver 60 for taking action, e.g., such as block 322, or for transmitting the alarm to a group, e.g., such as block 318.

Moreover, Hastings requires an extra step that is to be performed by the user of Hastings' monitoring device after the monitoring system 10 is notified that the alarm ***with data*** was received, i.e., "YES" path from block 320 to block 322 in FIG. 4 and at ¶[0184]. Block 322 is represented in FIG. 5 of Hastings and discussed at ¶¶[0192]-[0193]. Here, Hastings describes that the user of caregiver receiver 60 can request more data, which is determined by the monitoring system 10 at block 414 to cause "live data" to be sent at block 412 when the user requests, otherwise no further data is sent to the caregiver receiver 60 (see FIG. 5). This process is different than what is recited in Claim 1 for at least the reason that the remote monitor automatically receives the data upon acknowledgement of the alert notification, without further user requesting of the data. Claim 1 recites the remote monitor receives user input indicative of acknowledgment of the presented alert notification, and that the remote monitor accesses the server (in response to the acknowledgement of the presented alert notification message) and thereby receives, in response to the accessing, the analyte sensor data.

Again, Hastings provides data with the alarm notification, and Hastings requires the user to additionally request more data (live data) after a response to the alarm notification has been already received by the server. Both of these features in Hastings are different than Claim 1

For at least the reasons above, Applicant respectfully submits the obviousness rejection of Claim 2 be withdrawn for at least the reason the combination fails to teach or suggest the aforementioned features of the claims.

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Claim 2

While not agreeing with the rejections, Claim 2 has been amended in a manner that obviates the rejections. Claim 2 has been amended to include the subject matter of Claim 3 with additional amendments to clarify claim language. Claim 2, as amended, recites that "*the alert notification message includes a short message and the receiving the alert notification message is received from at least a first wireless connection between the remote monitor and a notification service coupled to the server, the first wireless connection comprising a persistent, encrypted connection configured to carry the short message pushed by the notification service to a notification message center at the remote monitor, wherein the short message is generated by the notification service based on an alert instruction from the server indicative of the detected event, and wherein the information is received from at least a second, different wireless connection between the remote monitor and the server, the second wireless connection comprising a momentary, encrypted connection established, in response the accessing, to provide the information*."

Applicant believes that Claim 2 as amended is patentable over the combination of Lin, Hastings and Dhiman. For example, none of Lin, Hastings and Dhiman teaches that an alert notification message is generated by a notification service based on an alert instruction from the server indicative of the detected event that is received at the remote monitor from at least a first wireless connection between the remote monitor and the notification service. Applicant notes the Examiner's comments in the Examiner Interview Summary of April 15, 2016 that remarked "*if the applicants amend the claims with limitations describing in more detail how the communication is performed between the server and the notification service, it will overcome the prior art on record*."

Applicant also contends that the teachings of Dhiman are not combinable with Lin and Hastings in a manner that would satisfy the features of Claim 2. The Office has not articulated how it proposes to modify the teachings of Lin and Hastings with the teachings of Dhiman to satisfy all of the features of Claim 2. Firstly, Hastings teaches, e.g., at ¶¶[0088], [0177]-[0182] and FIGS. 1, 4 and 5, that sensor data is sent with an alarm notification to the caregiver receiver in order to alert the user of the caregiver receiver of the patient's condition with information about the condition, such as a window of data "*represent[ing] the state of the patient at about*

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the tie of the alarm." As noted above, Hastings teaches away from the method recited in Claim 1, which is further in contention with the additional features of the method recited in Claim 2. Dhiman's teachings not only fail to remedy the disparities between the claims and the combination, it further complicates the combination. For example, the Office's mapping of the combined features from Lin, Hastings and Dhiman fail to show how the alert notification message (allegedly taught by Hastings) combines with the proxy server 125 of Dhiman within the context of Claim 2. Notably, the proxy server 125 is not operating in a manner consistent with Claim 2, for at least the reason that proxy server 125 is used only to establish a "persistent connection" between a server (e.g., server 130 of Dhiman) and a device (e.g., comm station A in Fig. 4 of Dhiman) to allow the same alert message (i.e., "ALERT") to ***pass through*** the proxy server 125 via the connection.

In light of the above, Applicant respectfully submits the obviousness rejection of Claim 2 be withdrawn for at least the reason the combination fails to teach or suggest the aforementioned features of the claims.

Dependent Claims 4-19

Claims 4-19 depend upon Claim 1, in which the Applicant has contended that independent Claim 1 is patentable for at least the reasons stated above. Nothing in Dhiman, Fu, Valdes, and Mann cure the deficiencies of Lin and Hastings as discussed above. Therefore, dependent Claims 4-19 are patentable for at least the same reasons, and on their own merits.

Applicant respectfully requests that rejections to dependent Claims 4-19 under pre-AIA 35 U.S.C. § 103(a) be withdrawn for at least the reasons above.

New Claims

New Claims 20 and 21 are fully supported by the original specification, with no new matter added. New Claims 20 and 21 are patentable over the teachings of Lin, Hastings, Dhiman, Fu, Valdes, and Mann whether considered alone or in combinations for at least the reasons that nothing in these references teaches or suggests, for example, operating, at the remote monitor, a remote monitoring software application running on the remote monitor in response to the receiving the user input indicative of acknowledgment of the presented alert notification message, as well as other features recited in the claims.

No Disclaimers or Disavowals

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Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

Conclusion

Should the Examiner have any concerns that might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: May 16, 2016

By: /Rose M. Thiessen/
Registration No. 40,202
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Electronic Patent Application Fee Transmittal

Application Number:	13842679
Filing Date:	15-Mar-2013
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Filer:	Rose M. Thiessen/Edgar Compton
Attorney Docket Number:	DEXCOM.225A

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 3 months with $0 paid	1253	1	1400	1400
Miscellaneous:				
Request for Continued Examination	1801	1	1200	1200
		Total in USD ($)		**2600**

Electronic Acknowledgement Receipt

EFS ID:	25792555
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Rose M. Thiessen/Tony Do
Filer Authorized By:	Rose M. Thiessen
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	16-MAY-2016
Filing Date:	15-MAR-2013
Time Stamp:	18:58:28
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$2600
RAM confirmation Number	5947
Deposit Account	111410
Authorized User	KNOBBE MARTENS OLSON AND BEAR

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

Charge any Additional Fees required under 37 CFR 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 CFR 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	225A_RCE.pdf	65176 c7838f2639c3e76a7a7a93daee27c47709c1dc5e	no	2
Warnings:					
This is not a USPTO supplied RCE SB30 form.					
Information:					
2		225A_IDS.pdf	84249 486aaea99f8d926556225779ce07df344b1ab065	yes	3

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Transmittal Letter	1	2
	Information Disclosure Statement (IDS) Form (SB08)	3	3

Warnings:					
Information:					
3		225A_AMEND_v2.pdf	355570 7cb50c73ce950d334edae3cadd15a2047b96ae30	yes	13

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment Submitted/Entered with Filing of CPA/RCE	1	1
	Claims	2	5
	Applicant summary of interview with examiner	6	7
	Applicant Arguments/Remarks Made in an Amendment	8	13

Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	32709 725c1dcfd2972b360c2148c7448d1341ff1f9946	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	537704

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New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

PTO/SB/30EFS (07-09)
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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	13842679	Filing Date	2013-03-15	Docket Number (if applicable)	DEXCOM.225A	Art Unit	2685
First Named Inventor	Michael Robert Mensinger			Examiner Name	Balseca, Franklin D.		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☒ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 111410

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

☐ Applicant Signature

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

Signature of Registered U.S. Patent Practitioner			
Signature	/Rose M. Thiessen/	Date (YYYY-MM-DD)	2016-05-16
Name	Rose M. Thiessen	Registration Number	40202

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

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

INFORMATION DISCLOSURE STATEMENT

First Inventor	:	Michael Robert Mensinger
App. No.	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	Balseca, Franklin D.
Art Unit	:	2685
Conf. No.	:	8793

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

References and Listing

Pursuant to 37 CFR 1.56, an Information Disclosure Statement listing references is provided herewith. Copies of any listed foreign and non-patent literature references are being submitted.

No Disclaimers

To the extent that anything in the Information Disclosure Statement or the listed references could be construed as a disclaimer of any subject matter supported by the present application, Applicant hereby rescinds and retracts such disclaimer.

Timing of Disclosure

This Information Disclosure Statement is being filed with an RCE and no fee is believed to be required.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment, to Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: May 16, 2016

By: /Rose M. Thiessen/
Rose M. Thiessen
Registration No. 40,202
Attorney of Record
Customer No. 68851
(858) 707-4000

23341984
051616

Abbott Ex. 1002 - 296/834

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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	Filing Date	☐ To be Mailed
13/842,679	03/15/2013	

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 $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $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

AMENDMENT **05/16/2016**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X $80 =	0
Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $420 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

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

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

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

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/TRINA RIDDICK/

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A	8793

68851 7590 04/15/2016

KNOBBE, MARTENS, OLSEN & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER
BALSECA, FRANKLIN D

ART UNIT	PAPER NUMBER
2685	

NOTIFICATION DATE	DELIVERY MODE
04/15/2016	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):

jayna.cartee@knobbe.com
efiling@knobbe.com

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	13/842,679	MENSINGER ET AL.	
	Examiner	Art Unit	
	FRANKLIN BALSECA	2685	

All participants (applicant, applicant's representative, PTO personnel):

(1) *FRANKLIN BALSECA*.

(2) *FAREID ASPHAHANI*.

(3) *KAREE LARSON*.

(4)_____.

Date of Interview: *07 April 2016*.

Type: ☐ Telephonic ☐ Video Conference
☒ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☒ Yes ☐ No.
If Yes, brief description: *The applicants showed two short videos that explained how an smartphone having an app can be used to invite people to receive glucose data, and how an invitee using an app in his smartphone can see the glucose data from the person that invited him to receive the data*.

Issues Discussed ☐101 ☐112 ☐102 ☒103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1-3*.

Identification of prior art discussed: *Lin (US-2010/0249625), Hastings (US-2005/0148890) and Dhiman et al. (US-8,355,320)*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

In regards to claim 1, the examiner and the applicants discussed about the limitation that describes in part receiving user input indicative of acknowledgement of the presented alert notification. The examiner explained to the applicants that Hastings clearly teaches that after receiving the notification, the user can request data to the server. The examiner explained to the applicants that the step of requesting data after the notification was received was interpreted as an acknowledment. The applicants argued that the method taught by Hastings requires an extra step that the applicant's invention does not require because the applicant's invention does not need for the user to request the data. The examiner did not agree with the applicant's arguments, however the examiner informed to the applicants that the arguments will be reconsidered if filed in a formal response. No further agreements were reached.

In regards to claims 2 and 3, the applicants argued that the combination of the prior art with Dhiman is not proper because Dhiman's teachings are not in the field of a medical device and one of ordinary skill in the art would not have applied Dhiman's teachings in the field of a medical device. The examiner explained to the applicants that even though Dhiman's teachings are not in the medical field, they clearly teach a communication protocol to transmit data between two devices, and that one of ordinary skill in the art would have applied Dhiman's communication protocol in any communication network including a communication network that is used to transmit physilogical data. No agreement was reached on this regard. Furthermore, the applicants argued that the signal sent from the server to the notification service is not the same as the signal sent from the notification service to the remote monitor in order to indicate an alert. The examiner informed the applincants that the limitation was not claimed in claims 2 and 3, but if the applicants amend the claims with limitations describing in more detail how the communication is performed between the server and the notification service, it will overcome the prior art on record. No further agreements were reached.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/FRANKLIN BALSECA/ Examiner, Art Unit 2685	/Hai Phan/ Supervisory Patent Examiner, Art Unit 2685

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A	8793

68851 7590 03/02/2016

KNOBBE, MARTENS, OLSEN & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER	
BALSECA, FRANKLIN D	

ART UNIT	PAPER NUMBER
2685	

NOTIFICATION DATE	DELIVERY MODE
03/02/2016	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):

jayna.cartee@knobbe.com
efiling@knobbe.com

Advisory Action Before the Filing of an Appeal Brief	**Application No.** 13/842,679	**Applicant(s)** MENSINGER ET AL.	
	Examiner FRANKLIN BALSECA	**Art Unit** 2685	**AIA (First Inventor to File) Status** No

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

THE REPLY FILED 16 February 2016 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☒ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance;

   (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:

   a) ☐ The period for reply expires _____months from the mailing date of the final rejection.

   b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

   c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection. The current period for reply expires months from the mailing date of *the prior Advisory Action* or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.

   Examiner Note: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANT'S FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☐ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
   b) ☐ They raise the issue of new matter (see NOTE below);
   c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).

5. ☐ Applicant's reply has overcome the following rejection(s): _____.

6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

7. ☒ For purposes of appeal, the proposed amendment(s): (a) ☐ will not be entered, or (b) ☒ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

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

9. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).

10. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).

11. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

12. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: See Continuation Sheet.

13. ☒ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____

14. ☐ Other: _____.

STATUS OF CLAIMS

15. The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: .
Claim(s) objected to: .
Claim(s) rejected: 1-19.
Claim(s) withdrawn from consideration: .

/Hai Phan/ Supervisory Patent Examiner, Art Unit 2685	/FRANKLIN BALSECA/ Examiner, Art Unit 2685

Continuation of 12. does NOT place the application in condition for allowance because: The applicant argues in regards to claim 1 that Hastings (US-2005/0148890), hereinafter Hastings, does not teach receiving, at the remote monitor, user input indicative of acknowledgement of the presented alert notification, accessing, by the remote monitor, the server, in response to the acknowledgement of the presented alert notification message and receiving, in response to the accessing, information including at least the analyte sensor data [see applicant's arguments pg. 6]. Specifically, the applicant argues that Hastings on paragraphs 0178 and 0184 teaches that the sensor data is included in the notification message and not sent in response to an acknowledgement indicating the receipt of the notification.
The examiner respectfully disagrees with the applicant. It appears that the applicant is reading only certain paragraphs of the Hastings' application that show a different invention than the claimed invention without reading the paragraphs of the Hastings' application that show the applicant's claimed invention. The examiner would like to remind the applicant that the prior art teaching's need to be read as a whole and that the applicant can not pick only a few paragraphs that show only part of the disclosed invention. The examiner agrees that Hastings shows in one embodiment that data is included in the notification message; however, Hastings in paragraphs 0179 and 0182 clearly teaches that the data sent at step 314 can include only part of the sensor data or just a simple warning message [see Hastings par. 0179 L. 1-7, par. 0182 L. 1-8]. Furthermore, Hastings clearly teaches that after receiving an acknowledgement the complete sensor data is sent from the server [see Hastings fig. 5 step 412]. Also, claim 1 as written does not specify what the alert notification message includes. Claim 1 only describes that a notification message is sent and that the sensor data is sent after the acknowledgement is received. Claim 1 does not specify that the notification message does not include anlyte data. For the reasons above, the applicant's arguments are not persuasive.

In regards to claim 2, the applicant argues that the combination of the prior art is improper because the examiner has not shown how Dhiman et al. (US-8,355,320), hereinafter Dhiman, teaches the the features of claim 2 and that the reason to combine used by the examiner is not described by Dhiman [see applicant' arguments pg. 8 fourth paragraph and paragraph beginning in pg. 8 and ending on pg. 9].
The examiner respectfully disagrees with the applicant. As shown above in regards to claim 1, Hastings clearly teaches the transmission of a notification message from the server to the remote monitor and later the transmission of data. Dhinan's clearly teaches that notification messages sent from a server to a remote device can be sent using a persistent connection and that a momentary connection is used to transmit additional data to the remote device which in this case will be sensor data as taught by Hastings [see Dihnan col. 2 L.57-62 and 66-67 and col. 3 L. 1-4]. The combination clearly teaches the claimed limitations of sending a notification message from the server using a first wireless connection and sending the additional data (sensor data) using a second wireless connection that is different than the first wireless connection. For this reason, the applicant's arguments regarding the prior art not teaching the limitations of claim 2 are not persuasive. Furthermore, the examiner does not aggree that the combination is improper because all the prior art is in the same field of endeavor which is the communication of data between a server and a remote device. Furthermore, the examiner would like to remind the applicant that the reason to combine used in the rejection does not have to be disclosed by the prior art as argued by the applicant. For the reasons above, the applicant's arguments reagarding an improper combination of the prior art are not persuasive.

In regards to claim 15, the amendments have been entered since the amendment was only presented to overcome the 112 rejection and did not change the scope of the claim. For this reason, claim 15 is still rejected the same way as it was rejected in the last office action.

Abbott Ex. 1002 - 304/834

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor	:	Michael Robert Mensinger
App. No.	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	Balseca, Franklin D.
Art Unit	:	2685
Conf. No.	:	8793

AMENDMENT AFTER FINAL

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

Dear Sir:

In response to the First Action Interview Office Action Summary dated December 16, 2015, Applicants respectfully request that the Examiner enter the following amendments and consider the following remarks.

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

Remarks/Arguments begin on page 5 of this paper.

Abbott Ex. 1002 - 305/834

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Michael Robert Mensinger
Art Unit	2685
Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 7448996	11/11/2008	Khanuja, Sukhwant Singh	
	2	US- 2005-0143671	6/30/2005	Hastings, David C.	
	3	US- 2011-0124996	5/26/2011	Rineke, Robert E.	
	4	US- 2014-0207486	7/24/2014	Carty, Martin	
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature	/Franklin Balseca/	Date Considered	02/26/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. 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 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, 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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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /F.B./

PTO/SB/08a (07-09)
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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Michael Robert Mensinger
Art Unit	2685
Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. 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 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Electronic Acknowledgement Receipt

EFS ID:	24942437
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Rose M. Thiessen/Edgar Compton
Filer Authorized By:	Rose M. Thiessen
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	17-FEB-2016
Filing Date:	15-MAR-2013
Time Stamp:	18:27:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		225A_IDS.pdf	289464 396b0171f05f3cb0a06efb9e24da3238ef3b9a42	yes	2

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Transmittal Letter	1	1
	Information Disclosure Statement (IDS) Form (SB08)	2	2
Warnings:			
Information:			
	Total Files Size (in bytes):	289464	

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

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

INFORMATION DISCLOSURE STATEMENT

Inventor	:	Michael Robert Mensinger
App. No.	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	Balseca, Franklin D.
Art Unit	:	2685
Conf. No.	:	8793

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

References and Listing

Pursuant to 37 CFR 1.56, an Information Disclosure Statement listing references is provided herewith. Copies of any listed foreign and non-patent literature references are being submitted.

No Disclaimers

To the extent that anything in the Information Disclosure Statement or the listed references could be construed as a disclaimer of any subject matter supported by the present application, Applicant hereby rescinds and retracts such disclaimer.

Timing of Disclosure

This Information Disclosure Statement is being filed after the mailing date of a final action or after the mailing date of a Notice of Allowance. Please place these references in the file in accordance with 37 CFR 1.97(i).

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: February 17, 2016

By: /Rose M. Thiessen/
Rose M. Thiessen
Registration No. 40,202
Attorney of Record
Customer No. 68851
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor	:	Michael Robert Mensinger
App. No.	:	13/842679
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Examiner	:	Balseca, Franklin D.
Art Unit	:	2685
Conf. No.	:	8793

AMENDMENT AFTER FINAL

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

Dear Sir:

In response to the First Action Interview Office Action Summary dated December 16, 2015, Applicants respectfully request that the Examiner enter the following amendments and consider the following remarks.

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

Remarks/Arguments begin on page 5 of this paper.

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AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A method comprising:

receiving, at a remote monitor, an alert notification message representative of an event detected, by a server, from analyte sensor data obtained from a receiver monitoring an analyte state of a host;

presenting, at the remote monitor, the alert notification message, wherein the remote monitor is configured by the server to receive the alert notification message to augment the receiver monitoring of the analyte state of the host;

receiving, at the remote monitor, user input indicative of acknowledgment of the presented alert notification;

accessing, by the remote monitor, the server, in response to the acknowledgement of the presented alert notification message; and

receiving, in response to the accessing, information including at least the analyte sensor data.

2. (Previously Presented) The method of claim 1, wherein the receiving further comprises receiving the alert notification message from at least a first wireless connection between the remote monitor and a notification service coupled to the server, wherein the additional information is received from at least a second, different wireless connection between the remote monitor and the server.

3. (Previously Presented) The method of Claim 2, wherein the first wireless connection comprises a persistent, encrypted connection configured to carry a short message pushed by the notification service to a notification message center at the remote monitor, and wherein the second wireless connection comprises a momentary, encrypted connection established, in response the accessing, to provide the additional information comprising at least additional analyte sensor data.

4. (Previously Presented) The method of Claim 1, wherein the presenting further comprises inhibiting access to one or more applications at the remote monitor until an action at the remote monitor is detected to indicate receipt of the alert notification message, wherein the remote monitor further comprises a monitoring application.

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5. (Previously Presented) The method of Claim 1, wherein the presenting further comprises presenting the alert notification message as a momentary message on a display at the remote monitor, without the inhibiting access.

6. (Original) The method of Claim 1, wherein at least one of the remote monitor and the receiver comprise one or more of a mobile station, a wireless terminal, a tablet, a smart phone, a multi-mode wireless device, and a computer.

7. (Original) The method of Claim 1, wherein the server comprises at least one processor configured to receive analyte sensor data from the receiver, process the analyte sensor data to detect the event, and forward, when the event is detected, the notification message to the remote monitor based on one or more rules mapping the event to the remote monitor designated to receive the notification message for the detected event.

8. (Original) The method of Claim 1 further comprising detecting, based on a first set of rules at the server, the event, wherein the first set of rules used to generate the notification message are different from a second set of rules used to detect alerts sent to the receiver coupled to a sensor system at the host.

9. (Original) The method of Claim 1, wherein the receiver includes, or couples to, a gateway interfacing a wireless connection to a public land mobile network and the server.

10. (Previously Presented) The method of Claim 1 further comprising configuring a plurality of remote monitors, wherein at least one of the plurality of remote monitors is designated as a primary monitor that is assigned a higher alert priority status, and at least one of the plurality of remote monitors is designated as a secondary monitor that is assigned a lower alert priority status than the primary monitor.

11. (Original) The method of Claim 1 further comprising configuring, by the remote monitor, at least one rule representative of a trigger causing an alert to be sent by the server to the receiver.

12. (Original) The method of Claim 1 further comprising configuring, by the remote monitor, one or more invitations sent to one or more devices to invite the one or more devices to monitor the receiver.

13. (Original) The method of Claim 1 further comprising sending, to the server, a message acknowledging a receipt of the notification message.

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14. (Previously Presented) The method of Claim 1, wherein the alert notification message includes at least one of an indication to a user of a need to calibrate a sensor and an acknowledgement message indicating at least one of an action or an acknowledgement sent by the receiver in response to an alarm sent to the receiver.

15. (Currently Amended) The method of Claim 1, wherein the ~~activation of the remote monitor~~ presenting the alert notification message comprises opening a monitoring application running on the remote monitor, and the monitoring application initiating the accessing.

16. (Original) The method of Claim 1, wherein the accessing further comprises establishing a connection between the remote monitor and the server to enable the receiving of the information including the analyte sensor data.

17. (Original) The method of Claim 1 further comprising registering, at the server, at least one of the remote monitor, the receiver, and an analyte sensor coupled to the receiver, wherein the registration includes a code provided by a health care provider.

18. (Original) The method of Claim 1, wherein the method is implemented on an apparatus comprising at least one processor and at least one memory including code, which when executed by the at least one processor causes the apparatus to provide the method.

19. (Original) The method of Claim 1, wherein a computer-readable storage medium includes code which when executed by at least one processor causes the method.

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REMARKS

Claims 1-19 are currently pending in this application. By this amendment, Claim 15 has been amended. Support for the amendments and new claims is found in the specification and claims as filed. Upon entry of the amendment, Claims 1-19 will be pending and under consideration. Cancellation and/or amendment of certain claims in this response or any other response is not to be construed as a dedication to the public of any of the subject matter of the claims as previously presented, and Applicants reserve the ability to pursue the amended claims as filed, the canceled claims or similar claims in one or more continuing applications, e.g., continuation, divisional, or continuation-in-part applications.

Claim Rejection - 35 U.S.C. §112, Second Paragraph

Claim 15 has been rejected as indefinite. Applicants have amended Claim 15 to provide antecedent basis for all limitations. In view of the foregoing, Applicants respectfully request withdrawal of the rejection.

Claim Rejections - 35 U.S.C. §103(a) – Lin, Hastings

Claims 1, 4-7, 9, 10, 12, 13, and 15-19 have been rejected under 35 U.S.C. §103(a) as obvious over US 2010/0249625 ("Lin") in view of US 2005/0148890 ("Hastings"). It is well settled that the Examiner "bears the initial burden of presenting a *prima facie* case of unpatentability…" *In re Sullivan*, 498 F.3d 1345 (Fed. Cir. 2007). Until the Examiner has established a *prima facie* case of obviousness, the Applicant need not present arguments or evidence of non-obviousness. To establish a *prima facie* case of obviousness, the Examiner must establish at least three elements. First, the prior art reference (or references when combined) must teach or suggest all of the claim limitations: "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 165 U.S.P.Q. 494, 496 (CCPA 1970); *see also M.P.E.P. § 2143.03*. Second, there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091 (Fed. Cir. 1986); *see also M.P.E.P. § 2143.02*. And finally, the Examiner must articulate some reason to modify or combine the cited references that renders the claim obvious. Merely establishing that the claimed elements can be found in the prior art is not sufficient to establish a *prima facie* case of obviousness:

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> As is clear from cases such as *Adams,* a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007) (emphasis added).

Instead, the Court has made clear that the Examiner must establish a reason one of skill in the art would have combined the elements of the prior art, and that such reason must be more than a conclusory statement that it would have been obvious.

> Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit. *See In re Kahn,* 441 F.3d 977, 988 (C.A.Fed.2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness"). *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-1741 (2007).

Applicant respectfully submits that the pending claims as amended are not obvious under 35 U.S.C. § 103(a) for the reasons detailed below.

Applicant traverses the rejection of Claim 1 as obvious over the combination of Lin and Hastings for at least the reason that the combination does not teach or suggest each feature of the claim as a whole. Particularly, in one example, the combination fails to teach or suggest the claimed features of "*receiving, at the remote monitor, user input indicative of acknowledgment of the presented alert notification; accessing, by the remote monitor, the server, in response to the acknowledgement of the presented alert notification message; and receiving, in response to the accessing, information including at least the analyte sensor data.*"

On page 4 of the present Office Action, the Office admits to several deficiencies in Lin with respect to Claim 1, including that "Lin does not teach receiving an acknowledgement of the presented alert notification, and accessing the server in response to the acknowledgement." To compensate for these deficiencies in Lin, the Office turns to Hastings and alleges that Hastings teaches "receiving, at the remote monitor, user input indicative of acknowledgement of the presented alert notification[,] accessing, by the remote monitor, the server in response to the

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acknowledgement of the presented alert notification message[, and] receiving in response to accessing, information including at least the analyte sensor data."

Applicant respectfully disagrees with the Office's characterization of the teachings of Hastings. Specifically, Hastings teaches in ¶¶[0177]-[0178] and FIG. 4 (*reproduced below*) that the patient's data is sent to the caregiver receiver 60 as a notification message in order to alert the user of caregiver receiver 60 of the condition of the patient that may require attention. Subsequently, Hastings teaches in ¶[0184] (*reproduced below*) that after data has been received by the caregiver receiver 60, then the monitoring system 10 waits to receive a response from the user of the caregiver receiver 60 to action to take, e.g., such as block 322, or if the alarm is to be transmitted to a group, e.g., such as block 318. Hastings teaches that the data is sent in the notification message to be received by the caregiver receiver 60. In contrast, Claim 1 recites receiving the information including at least the analyte sensor data ***in response*** to the accessing, by the remote monitor, the server in response to the acknowledgement of the presented alert notification message.

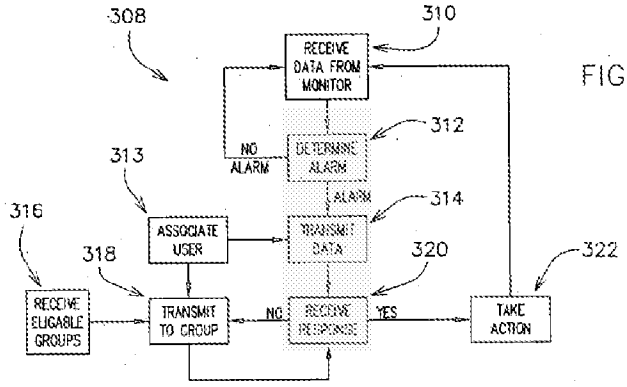


FIG. 4

[0178] If a patient has a condition that may require attention at block **312**, then data may be sent at block **314** to caregiver receiver **60** as a notification message in order to alert a user of caregiver receiver **60** of the condition. A notification message can specifically point out that a patient has a condition or the message may be conveyed to a user based on the fact that the user is receiving data relating to a patient. The noti number of mann

[0184] After data has been sent at block **314**, the monitoring system **10** may be configured to wait at block **320** for a response from the user (which may occur, for instance, by actuating a control of caregiver receiver **60**, monitors **14-19**, central station **46**, or some other device). If a response is received at block **320**, an action may be taken at block **322**, and the system may continue to receive data from monitoring devices **14-24** at block **310**.

In light of the above, Applicant respectfully submits the obviousness rejection of Claim 1 be withdrawn for at least the reason that the combination of references fails to teach or suggest the aforementioned features of the claims. The rejected dependent claims are also patentable for at least the same reasons as is Claim 1, as well as for the unique combination of features that each dependent claim recites.

Claim Rejection - 35 U.S.C. §103(a) – Lin, Hastings, Dhiman

Claims 2 and 3 have been rejected under 35 U.S.C. §103(a) as obvious over Lin and Hastings in view of US 8,355,320 ("Dhiman"). The requirements for establishing a *prima facie*

case of obviousness are set forth above, as are the limitations of Claim 1, from which the rejected claims depend, and certain deficiencies in the teachings of Lin and Hastings.

As discussed above, Lin and Hastings fail to teach or suggest each limitation of the pending claims. Dhiman includes no teaching overcoming the deficiencies of Lin and Hastings.

Claim 2 recites, in part, that "*the receiving further comprises receiving the alert notification message from at least a first wireless connection between the remote monitor and a notification service coupled to the server, wherein the additional information is received from at least a second, different wireless connection between the remote monitor and the server.*" The combination of Lin, Hastings, and Dhiman does not teach or suggest the features of Claim 2 considering the claim as a whole, and the Office has failed to make a proper showing to establish a prima facie case of obviousness.

On page 11 of the present Office Action, the Office admits to several deficiencies in the combination of Lin and Hastings with respect to Claim 2, stating "[t]he combination does not teach using a first type of connection to receive the notification and a second type of connection to receive the additional data." To compensate for these deficiencies in Lin and Hastings, the Office turns to Dhiman and alleges "Dhiman teaches the concept of using a persistent connection to transmit alerts and a momentary connection to transmit additional data [col. 2 L. 57-62 (transmitting alert via a persistent connection), col. 2 L. 66-67 and col. 3 L. 1-4 (transmitting and receiving additional data via momentary connection)]."

However, the teachings of Dhiman are not combinable with Lin and Hastings in a manner that would be read upon by Claim 2; and therefore the Office has failed to establish a *prima facie* case of obviousness. Specifically, the Office has not provided a mapping or explained the relationship of the features taught in Dhiman to features recited in the claim. The insufficient showing of how the features of Dhiman's system supposedly compensate for the admitted deficiencies of Lin and Hastings, i.e., teach a first type of connection to receive the notification and a second type of connection to receive the additional data, itself illustrates how the combination of Lin, Hastings, and Dhiman fails to teach or suggest the features of Claim 2.

Moreover, the Office proposed motivation to apply Dhiman's teachings to the combination of Lin and Hastings is not supported by the disclosure of Dhiman. Specifically, the Office states on page 11 of the Office Action that "It would have been obvious to one of ordinary

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skill in the art at the time of the invention to apply Dhiman's teachings in the wireless connections between the server and the monitoring device taught by the combination because a different type of connection to transmit notifications will permit the system to make sure that notifications messages will be transmitted without errors or get lost during transmission." There is no such reasoning expressed or implied by the disclosure of Dhiman, and notably, the Office does not identify from where in Dhiman this conclusion is drawn. Rather, Dhiman purports Dhiman's invention overcomes other deficiencies in the current state of the art, e.g., stating "Forming the connections between communication stations and a presence server independent of an edge proxy reduces the load on the edge proxy, and the need for increasing capacity of the edge proxy." See Dhiman at [1:44-48]. Notably, Dhiman makes no statement nor infers any purpose or advantage of transmitting messages "without errors" or reducing chances such would "get lost during transmission."

Because Lin, Hastings, and Dhiman in combination do not teach or suggest all limitations as recited in the rejected claims, a *prima facie* case of obviousness cannot be established. Accordingly, and for at least this reason, Applicants respectfully request that the rejection be withdrawn.

Claim Rejection - 35 U.S.C. §103(a) – Lin, Hastings, Fu

Claim 8 has been rejected under 35 U.S.C. §103(a) as obvious over Lin and Hastings in view of US 2002/0169584 ("Fu"). The requirements for establishing a *prima facie* case of obviousness are set forth above, as are the limitations of Claim 1, from which the rejected claim depends, and certain deficiencies in the teachings of Lin and Hastings.

As discussed above, Lin and Hastings fail to teach or suggest each limitation of the pending claims. Fu includes no teaching overcoming the deficiencies of Lin and Hastings.

Because Lin, Hastings, and Fu in combination do not teach or suggest all limitations as recited in the rejected claims, a *prima facie* case of obviousness cannot be established. Accordingly, and for at least this reason, Applicants respectfully request that the rejection be withdrawn.

Claim Rejection - 35 U.S.C. §103(a) – Lin, Hastings, Fu, Valdes

Claim 11 has been rejected under 35 U.S.C. §103(a) as obvious over Lin and Hastings in view of Fu and US 2011/0320130 ("Valdes"). The requirements for establishing a *prima facie*

Abbott Ex. 1002 - 319/834

case of obviousness are set forth above, as are the limitations of Claim 1, from which the rejected claim depends, and certain deficiencies in the teachings of Lin and Hastings.

As discussed above, Lin and Hastings fail to teach or suggest each limitation of the pending claims. Fu and Valdes include no teaching overcoming the deficiencies of Lin and Hastings.

Because Lin, Hastings, Fu, and Valdes in combination do not teach or suggest all limitations as recited in the rejected claims, a *prima facie* case of obviousness cannot be established. Accordingly, and for at least this reason, Applicants respectfully request that the rejection be withdrawn.

Claim Rejection - 35 U.S.C. §103(a) – Lin, Hastings, Mann

Claim 14 has been rejected under 35 U.S.C. §103(a) as obvious over Lin and Hastings in view of US 2007/0088223 ("Mann"). The requirements for establishing a *prima facie* case of obviousness are set forth above, as are the limitations of Claim 1, from which the rejected claim depends, and certain deficiencies in the teachings of Lin and Hastings.

As discussed above, Lin and Hastings fail to teach or suggest each limitation of the pending claims. Fu and Valdes include no teaching overcoming the deficiencies of Lin and Hastings.

Because Lin, Hastings, Fu, and Valdes in combination do not teach or suggest all limitations as recited in the rejected claims, a *prima facie* case of obviousness cannot be established. Accordingly, and for at least this reason, Applicants respectfully request that the rejection be withdrawn.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not

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reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

Conclusion

Should the Examiner have any concerns that might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: February 16, 2016

By: /Rose M. Thiessen/
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Electronic Acknowledgement Receipt

EFS ID:	24920042
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Rose M. Thiessen/Heather OBrien
Filer Authorized By:	Rose M. Thiessen
Attorney Docket Number:	DEXCOM.225A
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		225A_ResponseAF.pdf	396045 d4af4d4a81b29d07ca89a38de05d201312546711	yes	11

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Response After Final Action	1	1
	Claims	2	4
	Applicant Arguments/Remarks Made in an Amendment	5	11
Warnings:			
Information:			
	Total Files Size (in bytes):	396045	

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
13/842,679	03/15/2013	

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 $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $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

AMENDMENT **02/16/2016**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 19	Minus	** 20	= 0	X $80 =	0
Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X $420 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

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

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

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

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/MARQUITA JONES/

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.**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A	8793

68851 7590 12/16/2015

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EXAMINER
BALSECA, FRANKLIN D

ART UNIT	PAPER NUMBER
2685	

NOTIFICATION DATE	DELIVERY MODE
12/16/2015	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):

jayna.cartee@knobbe.com
efiling@knobbe.com

Office Action Summary	Application No. 13/842,679	Applicant(s) MENSINGER ET AL.	
	Examiner FRANKLIN BALSECA	Art Unit 2685	AIA (First Inventor to File) Status No

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

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

Status

1)☒ Responsive to communication(s) filed on *10/02/2015*.

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

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ 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.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-19* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-19* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, 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.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

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

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)).

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

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

Detailed Action

Response to Arguments

1. Applicant's arguments filed on September 25, 2015 have been fully considered but they are not persuasive.

In regards to claim 1, the applicant argues that Lin (US-2010/0249625), hereinafter Lin, does not teach an alert notification message [see applicant's arguments pg. 8 L. 27-32].

The applicant respectfully disagrees with the applicant. Even though Lin may not teach an alert notification as argued by the applicant, Hastings (2005/0148890), hereinafter Hastings and which was part of the rejection, clearly teaches the claimed alert notification [see Hastings fig. 4 steps 312 and 314, par. 0178]. Furthermore, Hastings teaches the newly added limitations of receiving at the remote monitor, user input indicative of acknowledgment of the presented alert notification [see Hastings fig. 4 steps 320 and 322], and accessing, by the remote monitor, the server, in response to the acknowledgement of the presented alert notification message [see Hastings fig. 4 steps 322, fig. 5 steps 410, 414 and 412]. For the reasons presented above, the applicant's arguments are not persuasive.

2. **In regards to claims 14 and 15,** the claims are rejected on new ground(s) of rejection necessitated by the amendments.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):

> (b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 15 is rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

In regards to claim 15, the claim recites the limitation "wherein **the** activation of the remote monitor comprises" in line 1. The word “the” in front of the word “activation” means that the activation was previously claimed. However, the limitation of activating was removed from claim 1 when it was amended. For this reason, there is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

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

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

4. Claims 1, 4-7, 9, 10, 12, 13 and 15-19 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Lin (US-2010/0249625) in view of Hastings (US-2005/0148890).

In regards to claim 1, Lin teaches a method comprising receiving, at a remote monitor, a message representative of an event detected by a server, from an analyte sensor data obtained from a receiver monitoring an analyte state of a host [fig. 1 element 140 (receiver), 170 (server) and 190 (remote monitor), par. 0024 L. 1-4, par. 0025 L. 17-22, par. 0031 L. 19-26]. Lin further teaches presenting, at the remote monitor, the message [par. 0025 L. 17-22]. Lin further teaches receiving, in response to the accessing, information including at least the analyte sensor data [par. 0026 L. 17-27].

Lin does not teach remote monitor is configured by the server to receive the message. Lin does not teach that the message is an alert notification message. Also, Lin does not teach receiving an acknowledgement of the presented alert notification, and accessing the server in response to the acknowledgment.

On the other hand, Hastings teaches a method to transmit alert notification messages to a remote monitoring device [par. 0015]. Hastings teaches receiving, at a remote monitor, an alert notification message representative of an event detected, by a server, from analyte sensor data [fig. 1 element 52 (server) and 60 (remote monitoring device), par. 0178 L. 1-4]. Hastings further teaches presenting, at the remote monitor the alert notification message [par. 0178 L. 4-9, par. 0179 L. 1-3]. Hastings teaches that the remote monitor is configured by the server to receive the notification message [par. 0080, par. 0240, par. 0250]. Hastings also teaches receiving, at the remote monitor, user input indicative of acknowledgement of the presented alert notification [fig. 4 step 320, fig. 5 step 410, par. 0184]. Hastings teaches accessing, by the remote monitor, the server in response to the acknowledgement of the presented alert notification message [fig. 4 steps 320 and 322, fig. 5 steps 410, 414 and 412, par. 0192, par. 0193]. Hastings further teaches receiving in response to accessing, information including at least the analyte sensor data [fig. 5 step 412, par. 0195].

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize Hastings teachings in the method taught by Lin because it will help a caregiver to receive alerts when a patient has a condition, and access the patient data at any time.

In regards to claim 4, the combination of Lin and Hastings as applied in claim 1 above further teaches inhibiting access to one or more applications at the remote monitor until an action at the remote monitor is detected to indicate the receipt of the

alert notification message, wherein the remote monitor further comprises a monitoring application [see Hastings par. 0147, par 0148].

In regards to claim 5, the combination of Lin and Hastings as applied in claim 1 above further teaches presenting the alert notification to the user in order let the user know that a notification has been received [see Hastings par. 0147-0148].

The combination does not explicitly teach that the displayed notification is a momentary message on a display without inhibiting access. However, the combination clearly teaches that a notification is displayed in order to let the user know that a notification has been received [see Hastings par. 0147]. One of ordinary skill in the art at the time of the invention would have replaced the notification taught by the combination with the claimed notification or other kind of notification because the way that the alert notification is displayed does not affect the function of the alert notification which is to notify the user of an alert. Furthermore, one of ordinary skill in the art would have replaced the notification taught by the combination with the claimed notification because it will permit the caregiver to receive alerts and continue using the remote monitoring device at the same time without interruptions.

In regards to claim 6, the combination of Lin and Hastings as applied in claim 1 above further teaches wherein at least one of the remote monitor and the receiver comprises one or more of a mobile station, smart phone and a computer [see Lin fig. 1 elements 140 and 180, par. 0027 L. 4-11, see Hastings fig. 2, par. 0149].

In regards to claim 7, the combination of Lin and Hastings as applied in claim 1 above further teaches that the server comprises at least one processor configured to receive analyte sensor data from the receiver, process the analyte sensor data to detect the event and forward, when the event is detected, the notification message to the remote monitor based on one or more rules mapping the event to the remote monitor designated to receive the notification message for the detected event [see Lin par. 0025 L. 6-8 and L. 17-22, par. 0029, see Hastings par. 0089, par. 0177-0178].

In regards to claim 9, the combination of Lin and Hastings as applied in claim 1 above further teaches that the receiver can communicate with the server using any known network [see Lin par. 0023 L. 9-20]. This means that the receiver is coupled or includes a gateway interfacing a wireless connection to any well-known network in order to communicate with the server. Even though the combination does not explicitly states that the network is a public land mobile network, the examiner takes official notice that public land mobile networks are well known in the art. One of ordinary skill in the art would have used the claimed network because the combination clearly teaches that suitable networks that provides two way communications can be used to implement the method [see Lin par. 0023 L. 12-15], and a public land mobile network provides those characteristics.

In regards to claim 10, the combination of Lin and Hastings as applied in claim 1 above further teaches that the method comprises configuring a plurality of remote

monitors wherein at least one of the plurality of the remote monitors is designated as primary monitor that is assigned a higher alert priority status and at least one of the plurality of remote monitors is designated as secondary monitor that is assigned a lower alert priority status [see Hastings fig. 4 steps 318 and 320, par. 0188, par. 0202, par. 0260].

In regards to claim 12, the combination of Lin and Hastings as applied in claim 1 above further teaches that the remote monitor can request the server to forward data to one or more devices [see Hastings fig. 5 steps 416 and 418, par. 0196]. This is equivalent to sending an invitation from the remote monitor to another remote monitor to monitor a patient because the remote monitor can be used to forward notifications and data to another user so that another user can take any desired action based on the notifications or data received.

In regards to claim 13, the combination of Lin and Hastings as applied in claim 1 above further teaches sending an acknowledgment to the server indicating that the notification was received [see Hastings par. 0246].

In regards to claim 15, the combination of Lin and Hastings further teaches that once a notification is received by the remote monitor, the remote monitor starts a monitoring application [see Hastings par. 0147]. This means that the notification message activates the remote monitor an opens a monitoring application running on the

remote monitor. Furthermore, the combination teaches that additional data can be sent to the remote monitor after an acknowledgment from the caregiver is received [see Hastings fig. 5 steps 410, 414, 412]. This means that the remote monitor access the server after the caregiver sends an acknowledgment manually. Also, the combination teaches that remote monitor can send the acknowledgement automatically using the monitoring application [see Hastings par. 0029, par. 0186 L. 1-5].

Even though the combination does not explicitly teach that the remote monitor accesses the server when automatic acknowledgement is used, one of ordinary skill in the art at the time of the invention would have modified the combination's system and access the server when using automatic acknowledgements because it will permit the server to send the additional data only after the server is sure that the notification has been received. Furthermore, the MPEP 2144.04 III clearly states that providing automatic means to replace a manual activity is not a novel step. For this reason, accessing automatically the server after a notification has been received instead of accessing the server after a caregiver sends the acknowledgement manually is not a novel step.

In regards to claim 16, the combination of Lin and Hastings as applied in claim 1 above further teaches that data can be retrieved by the remote monitor from the server after receiving the notification [see Lin par. 0026 L. 17-27, see Hastings fig. 5 step 414, par. 0101 L. 2-5, par. 0180, par. 0193]. This is equivalent to establishing a

connection because it performs the same functionality which is to permit communications with the server after a notification has been received.

In regards to claim 17, the combination of Lin and Hastings as applied in claim 1 above further teaches that the server provides a code to identify the remote monitor [see Hastings par. 0080, par. 0256]. This means that the server registers the remote monitor which includes a code provided by the health care provider.

In regards to claims 18 and 19, the combination of Lin and Hastings as applied in claim 1 above further teaches the method is implemented on an apparatus comprising a processor and at least one memory including code, which when executed by the processor causes the apparatus to provide the method [see Lin par. 0046, see Hastings par. 0203].

5. Claims 2 and 3 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Lin (US-2010/0249625) in view of Hastings (US-2005/0148890) as applied to claim 1 above and in further view of Dhiman et al. (US-8,355,320).

In regards to claims 2 and 3, the combination of Lin and Hastings as applied in claim 1 above teaches that the notification can be a short message, and that the user can access additional data after receiving the notification [see Hastings fig. 4 step 314,

fig. 5 step 414]. The combination further teaches that the connections to send the notifications and data are wireless [see Lin fig. 1, see Hastings fig. 1].

The combination does not teach using a first type of connection to receive the notification and a second type of connection to receive the additional data.

On the other hand, Dhiman teaches the concept of using a persistent connection to transmit alerts and a momentary connection to transmit additional data [col. 2 L. 57-62 (transmitting alert via a persistent connection), col. 2 L. 66-67 and col. 3 L. 1-4 (transmitting and receiving additional data via momentary connection)].

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Dhiman's teachings in the wireless connections between the server and the monitoring device taught by the combination because a different type of connection to transmit notifications will permit the system to make sure that notifications messages will be transmitted without errors or get lost during transmission.

The combination of Lin, Hastings and Dhiman does not explicitly teach that the wireless connections are encrypted. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to encrypt all communications between the remote monitoring device and the server because it will make the system more secure and protect the data of the patients.

6. Claim 8 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Lin (US-2010/0249625) in view of Hastings (US-2005/0148890) as applied to claim 1 above and in further view of Fu et al (US-2002/0169584).

In regards to claim 8, the combination of Lin and Hastings as applied in claim 1 above teaches that the server can communicate with a patient device (receiver) that is coupled to a sensor system at the host, and with a doctor's remote monitoring device [see Lin fig. 1 element 140 and 198].

The combination does not teach that rules used to send a notification to the remote monitor are different from a set of rules used to send a notification to the receiver.

On the other hand, Fu teaches a method to send notifications to patients and doctors based on information received by a server from a receiver [fig. 3]. Fu teaches that depending of the analysis of the data, the server decides if the sever needs to send a notification to a doctor or to a patient [par. 0029 L. 17-25, par. 0030]. This means that the server has one set of rules to generate a notification to the remote monitor and a second set of rules to generate a notification to the receiver.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use Fu's teachings and create different types of notifications for patients and doctors in the method taught by the combination because it will help to send alerts to the doctor only when medical attention is required.

7. Claim 11 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Lin (US-2010/0249625) in view of Hastings (US-2005/0148890) as applied to claim 1 above and in further view of Fu et al (US-2002/0169584) and Valdes et al. (US-2011/0320130).

In regards to claim 11, the combination of Lin and Hastings as applied in claim 1 above further teaches that rules used to trigger an alert can be modified based on the severity of the alert [see Hastings 0265]. The combination also teaches that the patient has a receiver that communicates with the server [see Lin fig. 1 element 140].

The combination does not teach that notifications are sent to the receiver.

On the other hand, Fu teaches that the server sends notifications to the patient (receiver) if the server decides that the alarm does not require medical attention [par. 0029 L. 17-25, par. 0030].

It would have been obvious to one of ordinary skill in the art at the time of the invention to use Fu's teachings and send non-emergency alerts to the patient because it will help the patient to be aware of an ongoing event and take any action without calling the doctor.

The combination of Lin, Hastings and Fu does not teach that the rules are modified using the remote monitor.

On the other hand, Valdes teaches the concept that a remote monitor can be used to modify rules used to trigger notifications sent to a receiver [par. 0032].

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize Valdes's teachings in the system taught by the combination because it will permit a doctor to customize the alerts that a patient receives.

8. Claim 14 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Lin (US-2010/0249625) in view of Hastings (US-2005/0148890) as applied to claim 1 above and in further view of Mann et al. (US-2007/0088223).

In regards to claim 14, the combination does not teach that the alert notification message includes an indication to a user of a need to calibrate a sensor.

On the other hand, Mann teaches that a notification can be sent to a user of a remote monitor of a need to calibrate the sensor [par. 0058 L. 9-10].

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize Mann's teachings in the method taught by the combination because it would help a caregiver to know when the sensor is not working properly and needs recalibration.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Franklin Balseca whose telephone number is (571) 270-5966. The examiner can normally be reached on Monday-Friday 7:30AM – 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hai Phan can be reached on (571) 272-6338.

Information regarding the status of an application may be obtained from the Patent Application Retrieval (PAIR) system. Status information for published applications may be obtained from either PAIR or Public PAIR. Status information for unpublished applications is available through Private Pair only. For more information about the PAIR system, see http://pair-direct.uspto.gov. If you have questions on how to access to Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service

Representative or access to the automated information system, call 800-786-9199 (IN US OR CANADA) or (571) 272-1000.

/FRANKLIN BALSECA/

Examiner, Art Unit 2685

/AMINE BENLAGSIR/
Primary Examiner, Art Unit 2685

Notice of References Cited	Application/Control No. 13/842,679	Applicant(s)/Patent Under Reexamination MENSINGER ET AL.	
	Examiner FRANKLIN BALSECA	Art Unit 2685	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-2010/0249625 A1	09-2010	Lin; Dongping	A61B5/0002	600/515
*	B	US-2005/0148890 A1	07-2005	Hastings, David C.	A61B5/0006	600/509
*	C	US-8,355,320 B1	01-2013	Dhiman; Aaron Kumar	H04L67/24	370/229
*	D	US-2002/0169584 A1	11-2002	Fu, Zhongsu	A61B5/0022	702/188
*	E	US-2011/0320130 A1	12-2011	Valdes; Jorge	G06F19/3418	702/19
*	F	US-2007/0088223 A1	04-2007	Mann; Brian	A61B5/0215	600/485
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

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

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13842679	MENSINGER ET AL.
	Examiner	**Art Unit**
	FRANKLIN BALSECA	2685

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

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

CLAIM		DATE								
Final	Original	12/03/2015								
	1	✓								
	2	✓								
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	19	✓								

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	172395	(monitor$4 or sens$4) near5 (patient or physiological or glucose)	US-PGPUB; USPAT	OR	ON	2015/12/01 08:07
S2	20181	S1 and ((register$4 or activa$4) near5 (device or receiver))	US-PGPUB; USPAT	OR	ON	2015/12/01 08:08
S3	110	S1 and (((register$4 or activat$4) near5 (device or receiver)) same ((initiat$4 or start$4) near5 (app or application)))	US-PGPUB; USPAT	OR	ON	2015/12/01 08:10
S4	6	("20070173710" | "20090203973" | "20100131294" | "20120195286" | "20120245447" | "20140118104").PN.	US-PGPUB; USPAT	OR	ON	2015/12/02 06:46
S5	0	S4 and (register$4 near5 (monitor or device or receiver))	US-PGPUB; USPAT	OR	ON	2015/12/02 06:47
S6	172395	(monitor$4 or sens$4) near5 (patient or physiological or glucose)	US-PGPUB; USPAT	OR	ON	2015/12/02 06:47
S7	0	S4 and ((register$4 with (device or receiver) with (application or app)))	US-PGPUB; USPAT	OR	ON	2015/12/02 06:48
S8	450	S6 and ((register$4 with (device or receiver) with (application or app)))	US-PGPUB; USPAT	OR	ON	2015/12/02 06:49
S9	3321	340/870.01,870.02,870.07.ccls.	US-PGPUB; USPAT	OR	ON	2015/12/02 06:49
S10	15046	705/2,3.ccls.	US-PGPUB; USPAT	OR	ON	2015/12/02 06:50
S11	13064	600/300,301,316,365,421,522.ccls.	US-PGPUB; USPAT	OR	ON	2015/12/02 06:50
S12	1676	607/28,30.ccls.	US-PGPUB; USPAT	OR	ON	2015/12/02 06:50
S13	75	(S9 or S10 or S11 or S12) and S8	US-PGPUB; USPAT	OR	ON	2015/12/02 06:50
S14	55	(US-20150317437-$ or US-20150310173-$ or US-20150302179-$ or US-20150248536-$ or US-20150216413-$ or US-20130173287-$ or US-20150187038-$ or US-20150154370-$ or US-20150081327-$ or US-20150058033-$ or US-20150012288-$ or US-20140371556-$ or US-20140343450-$ or US-20140330579-$ or US-20140278496-$ or US-20140278475-$ or US-20140257852-$ or US-20140207476-$ or US-20140180711-$ or US-20140152467-$ or US-20140142963-$ or US-20140100877-$ or US-20130151268-$ or US-20130346108-$ or US-20130282400-$ or US-20130159021-$).did. or (US-20130150686-$ or US-20130144129-$ or US-20130102853-$ or US-20130023763-$ or US-20110246235-$ or US-20110137680-$ or US-20110119075-$ or US-20090319298-$ or US-20090261987-$ or US-20090125332-$ or US-20090070266-$ or US-20080215627-$ or US-20080208015-$ or US-20080004904-$ or US-20050273365-$ or US-20050108057-$ or US-20050102165-$ or US-20030055321-$ or US-20020143580-$).did. or (US-8423378-$ or US-8694600-$ or US-8806473-$ or US-8447626-$ or US-	US-PGPUB; USPAT	OR	ON	2015/12/02 06:52

		7798961-$ or US-7324949-$ or US-6558321-$ or US-6482154-$ or US-6401138-$ or US-5372607-$).did.				
S15	55	S14 and ((register$4 with (device or receiver) with (application or app)))	US-PGPUB; USPAT	OR	ON	2015/12/02 06:52
S16	14638	G06F19/30,32,34,3406,3418,3487.cpc.	US-PGPUB; USPAT	OR	ON	2015/12/02 07:14
S17	20298	A61B5/0002,0004,0015,0022,0024,02,742,743,7435,746,7465,14532.cpc.	US-PGPUB; USPAT	OR	ON	2015/12/02 07:15
S18	183	(S16 or S17) and ((register$4 with (device or receiver) with (application or app)))	US-PGPUB; USPAT	OR	ON	2015/12/02 07:16
S19	83	S18 and @ay<="2012"	US-PGPUB; USPAT	OR	ON	2015/12/02 07:16
S20	1	"20050148890"	US-PGPUB; USPAT	OR	ON	2015/12/02 08:03
S21	0	S20 and ack	US-PGPUB; USPAT	OR	ON	2015/12/02 08:03
S22	1	S20 and acknowledg$6	US-PGPUB; USPAT	OR	ON	2015/12/02 08:03
S23	14638	G06F19/30,32,34,3406,3418,3487.cpc.	US-PGPUB; USPAT	OR	ON	2015/12/02 09:18
S24	20298	A61B5/0002,0004,0015,0022,0024,02,742,743,7435,746,7465,14532.cpc.	US-PGPUB; USPAT	OR	ON	2015/12/02 09:18
S25	142	(S23 or S24) and ((alert$4 or notif$8) near5 (sensor) near5 calibrat$5)	US-PGPUB; USPAT	OR	ON	2015/12/02 09:18
S26	0	((alert$4 or notif$8) near5 (caregiver or doctor) near5 (sensor) near5 calibrat$5)	US-PGPUB; USPAT	OR	ON	2015/12/02 09:31
S27	31	(transmit$4 or send$4) near5 ((alert$4 or notif$8 or alarm) near5 (sensor) near5 calibrat$5)	US-PGPUB; USPAT	OR	ON	2015/12/02 09:31
S28	10	((alert$4 or notif$8) near5 (caregiver or doctor or nurse) near5 calibrat$5)	US-PGPUB; USPAT	OR	ON	2015/12/02 09:50
S29	12	((alert$4 or notif$8 or alarm) near5 (caregiver or doctor or nurse) near5 calibrat$5)	US-PGPUB; USPAT	OR	ON	2015/12/02 09:50
S30	3846	((alert$4 or notif$8 or alarm) near5 calibrat$5)	US-PGPUB; USPAT	OR	ON	2015/12/02 09:52
S31	310	(S23 or S24) and S30 and server	US-PGPUB; USPAT	OR	ON	2015/12/02 09:53
S32	214	S31 and @ay<="2012"	US-PGPUB; USPAT	OR	ON	2015/12/02 09:53

EAST Search History (Interference)

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12/3/2015 7:21:02 AM
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PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Rack-Gomer, Anna Leigh
Art Unit	2685
Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 2007-0173710	7/26/2007	Petisce et al.	
	2	US- 2009-0203973	8/13/2009	Donoghue et al.	
	3	US- 2010-0131294	5/27/2010	Venon et al.	
	4	US- 2012-0245447	9/27/2012	Karan et al.	
	5	US- 2014-0118104	5/1/2014	Sicurello et al.	
	6	US- 2015-0195286	7/9/2015	Doppler et al.	
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature	/Franklin Balseca/	Date Considered	12/03/2015

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. 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 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, 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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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /F.B./

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13842679	MENSINGER ET AL.
	Examiner	Art Unit
	FRANKLIN BALSECA	2685

CPC- SEARCHED

Symbol	Date	Examiner
G06F19/30,32,34,3406,3418,3487	03/18/2015	FB
A61B5/0002,0004,0015,0022,0024,02,742,743,7435,746,7465,14532	03/18/2015	FB
Updated Search	12/02/2015	FB

CPC COMBINATION SETS - SEARCHED

Symbol	Date	Examiner

US CLASSIFICATION SEARCHED

Class	Subclass	Date	Examiner
340	870.01,870.02,870.07	03/18/2015	FB
705	2, 3	03/18/2015	FB
600	300,301,316,365,421,522	03/18/2015	FB
607	28, 30	03/18/2015	FB
Updated Search	Updated Search	12/02/2015	FB

SEARCH NOTES

Search Notes	Date	Examiner
Inventor Search	03/16/2015	FB
East Search	03/18/2015	FB
Updated East Search	12/02/2015	FB

INTERFERENCE SEARCH

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

/FRANKLIN BALSECA/ Examiner.Art Unit 2685	

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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(Use as many sheets as necessary)

Sheet 1 of 1

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Attorney Docket Number	DEXCOM.225A

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	5	US- 2014-0118104	5/1/2014	Sicurello et al.	
	6	US- 2015-0195286	7/9/2015	Doppler et al.	
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. 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 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, 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 (1-800-786-9199) and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	23675639
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Kaare Douglas Larson/Renee Zavala
Filer Authorized By:	Kaare Douglas Larson
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	02-OCT-2015
Filing Date:	15-MAR-2013
Time Stamp:	13:18:35
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2015-1002-SupplDS-225A.pdf	166362 9b2ba0adb0e331192131c2eddeff25b6d7adec6f	yes	2

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Transmittal Letter	1	1
	Information Disclosure Statement (IDS) Form (SB08)	2	2
Warnings:			
Information:			
	Total Files Size (in bytes):	166362	

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

Docket No. DEXCOM.225A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Michael Robert Mensinger, et al.
App. No	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	BALSECA, Franklin D.
Art Unit	:	2685
Conf #	:	8793

CERTIFICATE OF TRANSMITTAL UNDER 37 C.F.R. 1.8

I hereby certify that this paper (along with anything referred to as being attached or enclosed) is being filed electronically via EFS-Web at the United States Patent and Trademark Office on the date indicated below.

By: Renee Zavala
Renee Zavala

Date: October 02, 2015

INFORMATION DISCLOSURE STATEMENT

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

Dear Sir:

Submitted herewith in the above-identified application is an Information Disclosure Statement listing references for consideration. Copies of the listed references, other than United States patent publications, are provided with this submission.

This Information Disclosure Statement is being filed within three months of the filing date or date of national phase entry, before the receipt of a First Office Action on the merits, with an RCE or before receipt of a First Office Action after an RCE, and no fee is required. If a fee is due, the Commissioner is hereby authorized to charge any fees due, or credit any overpayments, to Deposit Account No. 506176, referencing Docket No. DEXCOM.225A.

Respectfully submitted,
DEXCOM, INC.

Dated: 9/30/15

By: _____
Kaare D. Larson, PTO Reg. No. 51,920

Customer Number 68851
DEXCOM, INC.
6340 Sequence Drive
San Diego, CA 92121
Telephone: 858.875.9786

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor	:	Michael Robert Mensinger
App. No.	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	Balseca, Franklin D.
Art Unit	:	2685
Conf. No.	:	8793

AMENDMENT

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

Dear Sir:

In response to the First Action Interview Office Action Summary dated May 28, 2015, Applicants respectfully request that the Examiner enter the following amendments and consider the following remarks.

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

Summary of Interview begins on page 5 of this paper.

Remarks/Arguments begin on page 7 of this paper.

Abbott Ex. 1002 - 353/834

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method comprising:

receiving, at a remote monitor, [[a]] an alert notification message representative of an event detected, by a server, from analyte sensor data obtained from a receiver monitoring an analyte state of a host;

presenting, at the remote monitor, the alert notification message ~~to activating the remote monitor~~, wherein the remote monitor is configured by the server to receive the alert notification message to augment the receiver monitoring of the analyte state of the host;

receiving, at the remote monitor, user input indicative of acknowledgment of the presented alert notification;

accessing, by the remote monitor, the server, in response to the ~~presenting of the~~ acknowledgement of the presented alert notification message; and

receiving, in response to the accessing, information including at least the analyte sensor data.

2. (Currently Amended) The method of claim 1, wherein the receiving further comprises receiving the alert notification message from at least a first wireless connection between the remote monitor and a notification service coupled to the server, wherein the additional information is received from at least a second, different wireless connection between the remote monitor and the server.

3. (Currently Amended) The method of Claim [[1]] 2, wherein the first wireless connection comprises a persistent, encrypted connection configured to carry a short message pushed by the notification service to a notification message center at the remote monitor, and wherein the second wireless connection comprises a momentary, encrypted connection established, in response the accessing, to provide the additional information comprising at least additional analyte sensor data.

4. (Currently Amended) The method of Claim 1, wherein the presenting further comprises inhibiting access to one or more applications at the remote monitor until an action at the remote monitor is detected to indicate receipt of the alert notification message, wherein the remote monitor further comprises a monitoring application.

Abbott Ex. 1002 - 354/834

5. (Currently Amended) The method of Claim 1, wherein the presenting further comprises presenting the alert notification message as a momentary message on a display at the remote monitor, without the inhibiting access.

6. (Original) The method of Claim 1, wherein at least one of the remote monitor and the receiver comprise one or more of a mobile station, a wireless terminal, a tablet, a smart phone, a multi-mode wireless device, and a computer.

7. (Original) The method of Claim 1, wherein the server comprises at least one processor configured to receive analyte sensor data from the receiver, process the analyte sensor data to detect the event, and forward, when the event is detected, the notification message to the remote monitor based on one or more rules mapping the event to the remote monitor designated to receive the notification message for the detected event.

8. (Original) The method of Claim 1 further comprising detecting, based on a first set of rules at the server, the event, wherein the first set of rules used to generate the notification message are different from a second set of rules used to detect alerts sent to the receiver coupled to a sensor system at the host.

9. (Original) The method of Claim 1, wherein the receiver includes, or couples to, a gateway interfacing a wireless connection to a public land mobile network and the server.

10. (Currently Amended) The method of Claim 1 further comprising configuring a plurality of remote monitors, wherein at least one of the plurality of remote monitors is designated as a primary monitor that is assigned a higher alert priority status, and at least one of the plurality of remote monitors is designated as a secondary monitor that is assigned a lower alert priority status than the primary monitor.

11. (Original) The method of Claim 1 further comprising configuring, by the remote monitor, at least one rule representative of a trigger causing an alert to be sent by the server to the receiver.

12. (Original) The method of Claim 1 further comprising configuring, by the remote monitor, one or more invitations sent to one or more devices to invite the one or more devices to monitor the receiver.

13. (Original) The method of Claim 1 further comprising sending, to the server, a message acknowledging a receipt of the notification message.

Abbott Ex. 1002 - 355/834

14. (Currently Amended) The method of Claim 1, wherein the alert notification message includes at least one of an indication to a user of a need to calibrate a sensor and an acknowledgement message indicating at least one of an action or an acknowledgement sent by the receiver in response to an alarm sent to the receiver.

15. (Currently Amended) The method of Claim 1, wherein the activation of the remote monitor comprises opening ~~the~~ a monitoring application running on the remote monitor and the monitoring application initiating the accessing.

16. (Original) The method of Claim 1, wherein the accessing further comprises establishing a connection between the remote monitor and the server to enable the receiving of the information including the analyte sensor data.

17. (Original) The method of Claim 1 further comprising registering, at the server, at least one of the remote monitor, the receiver, and an analyte sensor coupled to the receiver, wherein the registration includes a code provided by a health care provider.

18. (Original) The method of Claim 1, wherein the method is implemented on an apparatus comprising at least one processor and at least one memory including code, which when executed by the at least one processor causes the apparatus to provide the method.

19. (Original) The method of Claim 1, wherein a computer-readable storage medium includes code which when executed by at least one processor causes the method.

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SUMMARY OF INTERVIEW

Attendees, Date and Type of Interview

The telephonic interview was conducted on May 19, 2015 and attended by Examiner Franklin Balseca, Examiner Amine Benlagsir, and Applicants' representative Kaare Larson.

Exhibits and/or Demonstrations

None.

Identification of Claims Discussed

Claim 1.

Identification of Cited/Disclosed Art Discussed

US 2010/0249625 ("Lin").

Proposed Amendments, Principal Arguments and Other Matters

The Examiners and Applicants' representative discussed the limitations of claim 1. The applicant explained how the claimed invention works. Applicants' representative explained that notification messages are sent in order to save energy because by sending notification messages, a remote monitoring device such as a phone does not have to be in constant communication with the server, and that after the notification is received, the remote monitoring device automatically accesses the server in response to the received notification. Applicants' representative argued that Lin does not teach accessing, by the remote monitor, the server in response to the presenting of the notification message.

Examiners asserted that Lin in paragraph [0025] teaches that data is received at the remote monitor from the serve, and that this covers the limitation of presenting, at the remote monitor a notification message because a notification message is a broad term that can be interpreted as any type of data presented at the remote monitor. Examiners further asserted that Lin in paragraph [0026] teaches that the doctor can access data from the server after receiving the notification, and that this teaching covers the limitation of accessing data from the server in response to the notification message.

Applicants' representative explained that the access of data in response to the notification as recited in the claims does not require the doctor to do anything. Examiners asserted that the

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request made by the doctor after the notification is received can be interpreted as an acknowledgement.

Examiners suggested amending the claims with the features that were presented by Applicants' representative when explaining how his invention works, such as saving energy, using a phone, etc. Applicants' representative agreed to consider amending the claims to clarify the claimed subject matter, e.g., including limitations of Claim 3 in Claim 1, but Examiners indicated further consideration would be required.

Results of Interview

Agreement was not reached.

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REMARKS

Claims 1-19 are currently pending in this application. By this amendment, Claims 1-5, 10, 14, and 15 have been amended. Support for the amendments and new claims is found in the specification and claims as filed. Upon entry of the amendment, Claims 1-19 will be pending and under consideration. Cancellation and/or amendment of certain claims in this response or any other response is not to be construed as a dedication to the public of any of the subject matter of the claims as previously presented, and Applicants reserve the ability to pursue the amended claims as filed, the canceled claims or similar claims in one or more continuing applications, e.g., continuation, divisional, or continuation-in-part applications.

Claim Rejection - 35 U.S.C. §103(a) – Lin, Hastings

Claims 1, 4-7, 9, 10, and 12-19 have been rejected under 35 U.S.C. §103(a) as obvious over US 2010/0249625 ("Lin") in view of US 2005/0148890 ("Hastings"). It is well settled that the Examiner "bears the initial burden of presenting a *prima facie* case of unpatentability..." *In re Sullivan*, 498 F.3d 1345 (Fed. Cir. 2007). Until the Examiner has established a *prima facie* case of obviousness, the Applicant need not present arguments or evidence of non-obviousness. To establish a *prima facie* case of obviousness, the Examiner must establish at least three elements. First, the prior art reference (or references when combined) must teach or suggest all of the claim limitations: "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 165 U.S.P.Q. 494, 496 (CCPA 1970); *see also M.P.E.P. § 2143.03*. Second, there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091 (Fed. Cir. 1986); *see also M.P.E.P. § 2143.02*. And finally, the Examiner must articulate some reason to modify or combine the cited references that renders the claim obvious. Merely establishing that the claimed elements can be found in the prior art is not sufficient to establish a *prima facie* case of obviousness:

> As is clear from cases such as *Adams*, a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007) (emphasis added).

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Instead, the Court has made clear that the Examiner must establish a reason one of skill in the art would have combined the elements of the prior art, and that such reason must be more than a conclusory statement that it would have been obvious.

> Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit. *See In re Kahn,* 441 F.3d 977, 988 (C.A.Fed.2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness"). *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-1741 (2007).

Applicants respectfully submit that the pending claims as amended are not obvious under 35 U.S.C. § 103(a) for the reasons detailed below.

Claim 1 as amended, from which the remaining rejected claims depend, recites "[a] method comprising: receiving, at a remote monitor, an alert notification message representative of an event detected, by a server, from analyte sensor data obtained from a receiver monitoring an analyte state of a host; presenting, at the remote monitor, the alert notification message, wherein the remote monitor is configured by the server to receive the alert notification message to augment the receiver monitoring of the analyte state of the host; receiving, at the remote monitor, user input indicative of user acknowledgment of the presented alert notification; automatically accessing, by the remote monitor, the server, in response to the user acknowledgement of the presented alert notification message; and receiving, in response to the accessing, information including at least the analyte sensor data.

The Substance of the Interview remarks attached to the Office Action allege that the term "notification message is a broad term that can be interpreted as any type of data presented at the remote monitor." While Applicants do not necessarily agree with the Office's interpretation, Applicants have amended the claim to recite "alert notification message." An alert notification message is clearly different in both purpose and meaning from the data described in paragraph [0025] Lin that allegedly satisfied the "notification message" feature of Claim 1. Indeed, there is

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no "alerting" need for the monitoring stations of Lin. Hastings includes no teachings overcoming the deficiencies of Lin. Thus, the cited references fail to teach or suggest this feature.

Additionally, Applicants have amended Claim 1 to clarify that the remote monitor "automatically access[es] … the server, in response to the user acknowledgement of the presented alert notification message." Nowhere is such a feature taught or suggested in any of the references cited in the Office Action.

For the above reasons, Applicants submit that the rejection must be withdrawn because the cited references fail to teach or suggest every feature of Claim 1.

Claim Rejection - 35 U.S.C. §103(a) – Lin, Hastings, Dhiman

Claims 2 and 3 have been rejected under 35 U.S.C. §103(a) as obvious over Lin and Hastings in view of US 8,355,320 ("Dhiman"). The requirements for establishing a *prima facie* case of obviousness are set forth above, as are the limitations of Claim 1, from which the rejected claims depend, and certain deficiencies in the teachings of Lin and Hastings.

As discussed above, Lin and Hastings fail to teach or suggest each limitation of the pending claims. Dhiman includes no teaching overcoming the deficiencies of Lin and Hastings.

Because Lin, Hastings, and Dhiman in combination do not teach or suggest all limitations as recited in the rejected claims, a *prima facie* case of obviousness cannot be established. Accordingly, and for at least this reason, Applicants respectfully request that the rejection be withdrawn.

Claim Rejection - 35 U.S.C. §103(a) – Lin, Hastings, Fu

Claim 8 has been rejected under 35 U.S.C. §103(a) as obvious over Lin and Hastings in view of US 2002/0169584 ("Fu"). The requirements for establishing a *prima facie* case of obviousness are set forth above, as are the limitations of Claim 1, from which the rejected claim depends, and certain deficiencies in the teachings of Lin and Hastings.

As discussed above, Lin and Hastings fail to teach or suggest each limitation of the pending claims. Fu includes no teaching overcoming the deficiencies of Lin and Hastings.

Because Lin, Hastings, and Fu in combination do not teach or suggest all limitations as recited in the rejected claims, a *prima facie* case of obviousness cannot be established. Accordingly, and for at least this reason, Applicants respectfully request that the rejection be withdrawn.

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Claim Rejection - 35 U.S.C. §103(a) – Lin, Hastings, Fu, Valdes

Claim 11 has been rejected under 35 U.S.C. §103(a) as obvious over Lin and Hastings in view of Fu and US 2011/0320130 ("Valdes"). The requirements for establishing a *prima facie* case of obviousness are set forth above, as are the limitations of Claim 1, from which the rejected claim depends, and certain deficiencies in the teachings of Lin and Hastings.

As discussed above, Lin and Hastings fail to teach or suggest each limitation of the pending claims. Fu and Valdes include no teaching overcoming the deficiencies of Lin and Hastings.

Because Lin, Hastings, Fu, and Valdes in combination do not teach or suggest all limitations as recited in the rejected claims, a *prima facie* case of obviousness cannot be established. Accordingly, and for at least this reason, Applicants respectfully request that the rejection be withdrawn.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

Conclusion

Should the Examiner have any concerns that might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number below.

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Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: September 25, 2015

By: /Rose M. Thiessen/
Registration No. 40,202
Attorney of Record
Customer No. 68851
(858) 707-4000

AMEND

21685948
092515

Abbott Ex. 1002 - 363/834

Electronic Patent Application Fee Transmittal

Application Number:	13842679
Filing Date:	15-Mar-2013
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Filer:	Rose M. Thiessen/Edgar Compton
Attorney Docket Number:	DEXCOM.225A

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 2 months with $0 paid	1252	1	600	600
Miscellaneous:				
			Total in USD ($)	**600**

Electronic Acknowledgement Receipt

EFS ID:	23612740
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Rose M. Thiessen/Jennifer Neat
Filer Authorized By:	Rose M. Thiessen
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	25-SEP-2015
Filing Date:	15-MAR-2013
Time Stamp:	20:34:01
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$600
RAM confirmation Number	7160
Deposit Account	111410
Authorized User	KNOBBE MARTENS OLSON AND BEAR

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

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		225A_Amend_v2.pdf	304443 70b99f54c97d0738a0dcd96b5ac5fc81d9f4c91c	yes	11

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	4
	Applicant summary of interview with examiner	5	6
	Applicant Arguments/Remarks Made in an Amendment	7	11

Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30843 29d2d3a4fee0467bbe8f3f824c8a05aadc7992be	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	335286		

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

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/842,679	Filing Date 03/15/2013	☐ To be Mailed

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 $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $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

AMENDMENT **09/25/2015**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 19	Minus	** 20	= 0	X $80 =	0
Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X $420 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/JACQUELYN WILLIAMS/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A	8793

68851 7590 05/28/2015

KNOBBE, MARTENS, OLSEN & BEAR, LLP
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FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER
BALSECA, FRANKLIN D

ART UNIT	PAPER NUMBER
2685	

NOTIFICATION DATE	DELIVERY MODE
05/28/2015	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):

jayna.cartee@knobbe.com
efiling@knobbe.com

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	13/842,679	MENSINGER ET AL.	
	Examiner	Art Unit	
	FRANKLIN BALSECA	2685	

All participants (applicant, applicant's representative, PTO personnel):

(1) *FRANKLIN BALSECA*.

(2) *AMINE BENLAGSIR*.

(3) *KAREE LARSON*.

(4) _____.

Date of Interview: *19 May 2015*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☒103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1*.

Identification of prior art discussed: *Lin (2010/0249625)*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

See Continuation Sheet.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/FRANKLIN BALSECA/ Examiner, Art Unit 2685	/Hai Phan/ Supervisory Patent Examiner, Art Unit 2685

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: The examiners and the attorney for the applicant discussed the limitations of claim 1. The applicant explained how the claimed invention works. The applicant explained that notification messages are sent in order to save energy because by sending notification messages, a remote monitoring device such as a phone does not have to be in constant communication with the server. The applicant explained that after the notification is received, the remote monitoring device automatically accesses the server in response to the received notification.

The applicant argued that Lin does not teach accessing, by the remote monitor, the server in response to the presenting of the notification message. The examiners explained to the applicant that Lin in par. 0025 teaches that data is received at the remote monitor from the server. The examiners explained that this covers the limitation of presenting, at the remote monitor a notification message because a notification message is a broad term that can be interpreted as any type of data presented at the remote monitor, The examiners further explained that Lin in par 0026 teaches that the doctor can access data from the server after receiving the notification. The examiners explained that this teaching covers the argued limitation of accessing data from the server in response to the notification message. Later, the applicant explained that in the claimed invention the access of data in response to the notification does not require the doctor to do anything, but it requires the remote monitor to send an acknowledgement. The examiners explained that the request made by the doctor after the notification is received can be interpreted as an acknowledgement. No aggrements were reached.

The examiners sugested to amend the claims with the features that were presented by the applicant when explaining how his invention works such as saving energy, using a phone to name a few in order to better describe his invention. The applicant appeared to be willing to amend the claim to better describe the invention.

Furthermore, the applicant suggested to amend claim 1 with limitations described in the dependent claims such as the limitations of claim 3 which the applicant argues that the cited prior art does not teach. The examiner explained to the applicant that interview agenda did not include discussing claim 3, and it will require more time to take into consideration his argument regarding claim3. The examiner told to the applicant that his arguments will be taken into consideration when a formal response is filed for the next office action.

No further agreements were reached.

First Action Interview Office Action Summary	Application No. 13/842,679	Applicant(s) MENSINGER ET AL.	
	Examiner FRANKLIN BALSECA	Art Unit 2685	AIA (First Inventor to File) Status No

The MAILING OR NOTIFICATION DATE of this communication appears on the cover sheet with the correspondence address.

THE SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE **TWO MONTHS** FROM THE MAILING OR NOTIFICATION DATE OF THIS COMMUNICATION.

This time period for reply is extendable under 37 CFR 1.136(a) for only TWO additional MONTHS.

☐ Applicant's request to not have a first-action interview is acknowledged (or the time period for reply set forth in the Pre-Interview Communication has expired and the Office did not receive any reply).

Status

1) ☒ Responsive to communication(s) filed on *04/27/2015* and interview conducted on *05/19/2015*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
2) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

3) ☒ Claim(s) *1-19* is/are pending in the application.
   3a) Of the above claim(s) _____ is/are withdrawn from consideration.
4) ☐ Claim(s) _____ is/are allowed.
5) ☒ Claim(s) *1-19* is/are rejected.
6) ☐ Claim(s) _____ is/are objected to.
7) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

8) ☐ The specification is objected to by the Examiner.
9) ☒ The drawing(s) filed on *03/15/2015* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

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

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

Contact Information

Examiner's Telephone Number: (571)270-5966

Examiner's Typical Work Schedule: Monday through Thursday, from 6:30am to 4:00pm

Supervisor's Name: Hai Phan

Supervisor's Telephone Number: (571)272-6338

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.
3) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
4) ☐ Other: _____.

First Action Interview Office Action Summary	Application No. 13/842,679	Applicant(s) MENSINGER ET AL.	
	Examiner FRANKLIN BALSECA	Art Unit 2685	AIA (First Inventor to File) Status No

Notification of Rejection(s) and/or Objection(s)

#	Claim(s)	Reference(s) (if applicable)	Rejection Statutory Basis	Brief Explanation of Rejection
1	1	A and B	pre-AIA 103 (a)	A teaches all the limitations except the remote monitor is configured by the server [see A fig. 1, par. 0024, 0025, 0026 and 0031]. B teaches that the remote monitor is configured by the server [see B par. 0080 and 0240].
2	4-7, 9-10 and 12-19	A and B	pre-AIA 103 (a)	In regards to claims 4 and 5, the combination of A and B teaches that notification inhibit access [see B par. 00147 and 0148].
3	2 and 3	A, B and C	pre-AIA 103(a) pre-AIA 112 SP	C teaches the concept of using a persistent connection to send notifications and a momentary connection to send data [see C col. 2 L. 51-65]. C teachings in the method taught by the combination will help to transmit notifications faster and without errors.
4	8	A, B and D	pre-AIA103(a) pre-AIA 112 SP	D teaches having different rules for notifications sent to a remote monitor and a receiver [see D par. 0029-0030]. One of ordinary skill in the art woud have used D in the combination because it only sends emergency alerts to the doctor.
5	11	A, B, D and E	pre-AIA 103 (b)	The combination A and B teaches modifying rules based on severity [see B par. 0265]. D teaches sending low severity alerts to the receiver [see D par. 0030]. E teaches modifying the rules using the remote monitor [see D par. 0032].

Expanded Discussion/Commentary

1		One of ordinary skill in the art would have used B's teachings in A because it will help the system to make sure that the remote monitor will receive only the notifications and data assigned to it.
2		One of ordinary skill in the art would have replaced the notification taught by the combination with the notification claimed in claim 5 because it performs the same functionality which is to notify a user that an alert has been received. In regards to claims 6, 7, 9, 10 and 12-19, all the claimed limitations are taught by the combination of A and B [see A fig. 1, par. 0023, 0025-0027, 0029 and 0046, see B par. 0089, 0092, 0096, 0101, 0147, 0149, 0180, 0188, 0193, 0202, 0211 and 0246].
3		In regards to claim 3, the claim lacks of antecedent basis. The claim should be dependent on claim 2 not claim 1.
5		One of ordinary skill in the art would have combined D with the combination because it will help the system to send alert notifications to the doctor only when medical assistance is needed. One of ordinary skill in the art would have combined E with the combination because it will help the doctor to modify rules from a remote location.

DATE:		
19 May, 2015	/FRANKLIN BALSECA/ Examiner, Art Unit 2685	/Hai Phan/ Supervisory Patent Examiner, Art Unit 2685

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	13/842,679	MENSINGER ET AL.	
	Examiner	Art Unit	
	FRANKLIN BALSECA	2685	

All participants (applicant, applicant's representative, PTO personnel):

(1) *FRANKLIN BALSECA*.

(2) *AMINE BENLAGSIR*.

(3) *KAREE LARSON*.

(4) _____.

Date of Interview: *19 May 2015*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☒103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1*.

Identification of prior art discussed: *Lin (2010/0249625)*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

See Continuation Sheet.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/FRANKLIN BALSECA/ Examiner, Art Unit 2685	/Hai Phan/ Supervisory Patent Examiner, Art Unit 2685

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: The examiners and the attorney for the applicant discussed the limitations of claim 1. The applicant explained how the claimed invention works. The applicant explained that notification messages are sent in order to save energy because by sending notification messages, a remote monitoring device such as a phone does not have to be in constant communication with the server. The applicant explained that after the notification is received, the remote monitoring device automatically accesses the server in response to the received notification.

The applicant argued that Lin does not teach accessing, by the remote monitor, the server in response to the presenting of the notification message. The examiners explained to the applicant that Lin in par. 0025 teaches that data is received at the remote monitor from the server. The examiners explained that this covers the limitation of presenting, at the remote monitor a notification message because a notification message is a broad term that can be interpreted as any type of data presented at the remote monitor, The examiners further explained that Lin in par 0026 teaches that the doctor can access data from the server after receiving the notification. The examiners explained that this teaching covers the argued limitation of accessing data from the server in response to the notification message. Later, the applicant explained that in the claimed invention the access of data in response to the notification does not require the doctor to do anything, but it requires the remote monitor to send an acknowledgement. The examiners explained that the request made by the doctor after the notification is received can be interpreted as an acknowledgement. No aggrements were reached.

The examiners sugested to amend the claims with the features that were presented by the applicant when explaining how his invention works such as saving energy, using a phone to name a few in order to better describe his invention. The applicant appeared to be willing to amend the claim to better describe the invention.

Furthermore, the applicant suggested to amend claim 1 with limitations described in the dependent claims such as the limitations of claim 3 which the applicant argues that the cited prior art does not teach. The examiner explained to the applicant that interview agenda did not include discussing claim 3, and it will require more time to take into consideration his argument regarding claim3. The examiner told to the applicant that his arguments will be taken into consideration when a formal response is filed for the next office action.

No further agreements were reached.

Notice of References Cited	Application/Control No. 13/842,679	Applicant(s)/Patent Under Reexamination MENSINGER ET AL.	
	Examiner FRANKLIN BALSECA	Art Unit 2685	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2010/0249625	09-2010	Lin, Dongping	600/515
*	B	US-2005/0148890	07-2005	Hastings, David C.	600/509
*	C	US-8,355,320	01-2013	Dhiman et al.	370/229
*	D	US-2002/0169584	11-2002	Fu et al.	702/188
*	E	US-2011/0320130	12-2011	Valdes et al.	702/19
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

PTOL-413A (08-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Applicant Initiated Interview Request Form

Application No.: 13/842679 First Named Applicant: Michael Robert Mensinger
Examiner: Balseca, Franklin D. Art Unit: 2685 Status of Application: First Action Interview Pilot Program Pre-Interview Comm

Tentative Participants:
(1) Kaare Larson (2) _____
(3) _____ (4) _____

Proposed Date of Interview: May 13, 2015 **Proposed Time:** PM **(AM/PM)**

Type of Interview Requested:
(1) [✓] Telephonic (2) [ ] Personal (3) [ ] Video Conference

Exhibit To Be Shown or Demonstrated: [ ] YES [✓] NO
If yes, provide brief description: _____

Issues To Be Discussed

Issues (Rej., Obj., etc)	Claims/ Fig. #s	Prior Art	Discussed	Agreed	Not Agreed
(1) 103(a)	1,4-7,9,10,12-19	A, B	[ ]	[ ]	[ ]
(2) 103(a); 112	2,3	A, B, C	[ ]	[ ]	[ ]
(3) 103(a); 112	8	A, B, D	[ ]	[ ]	[ ]
(4) 103(a)	11	A, B, D, E	[ ]	[ ]	[ ]

[ ] Continuation Sheet Attached [ ] Proposed Amendment or Arguments Attached

Brief Description of Arguments to be Presented: Applicants traverse the obviousness rejections, arguing that the cited references fail to teach or suggest "applying, by the server, a plurality of rule sets to the glucose concentration data, each rule set associated with a different remote monitoring device."

An interview was conducted on the above-identified application on _____

NOTE: This form should be completed and filed by applicant in advance of the interview (see MPEP § 713.01). If this form is signed by a registered practitioner not of record, the Office will accept this as an indication that he or she is authorized to conduct an interview on behalf of the principal (37 CFR 1.32(a)(3)) pursuant to 37 CFR 1.34. This is not a power of attorney to any above named practitioner. See the Instruction Sheet for this form, which is incorporated by reference. By signing this form, applicant or practitioner is certifying that he or she has read the Instruction Sheet. After the interview is conducted, applicant is advised to file a statement of the substance of this interview (37 CFR 1.133(b)) as soon as possible. This application will not be delayed from issue because of applicant's failure to submit a written record of this interview.

/Rose M. Thiessen/
Applicant/Applicant's Representative Signature

_____
Examiner/SPE Signature

Rose M. Thiessen
Typed/Printed Name of Applicant or Representative

40202
Registration Number, if applicable

This collection of information is required by 37 CFR 1.133. 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 24 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.

PTOL-413A (08-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
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.

Instruction Sheet for:
APPLICANT INITIATED INTERVIEW REQUEST FORM

(Not to be Submitted to the USPTO)

1. If this form is signed by a registered practitioner not of record, the authority to submit the Applicant Initiated Interview Request Form is pursuant to limited authority to act in a representative capacity under 37 CFR 1.34 and further proof of authority to act in a representative capacity may be required. *See* 37 CFR 1.34.

   The Office will accept the signed form as an indication that the registered practitioner not of record is authorized to conduct an interview on behalf of the principal in pursuant to 37 CFR 1.34.

   For more information, see the "Conducting an Interview with a Registered Practitioner Acting in a Representative Capacity" notice which is available on the USPTO Web site at: http://www.uspto.gov/patents/law/notices/2010.jsp.

2. This is not a power of attorney to any named practitioner. Accordingly, any registered practitioner not of record named on the form does not have authority to sign a request to change the correspondence address, a request for express abandonment, a disclaimer, a power of attorney, or other document requiring the signature of the applicant, assignee of the entire interest or an attorney of record. If appropriate, a separate power of attorney to the named practitioner should be executed and filed in the US Patent and Trademark Office.

3. Any interview concerning an unpublished application under 35 U.S.C. § 122(b) with a registered practitioner not of record, pursuant to 37 CFR 1.34, will be conducted based on the information and files supplied by the practitioner in view of the confidentiality requirements of 35 U.S.C. § 122(a).

DEXCOM.225A PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor	:	Michael Robert Mensinger
App. No.	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	Balseca, Franklin D.
Art Unit	:	2685
Conf. No.	:	8793

RESPONSE TO FIRST ACTION INTERVIEW PILOT PROGRAM PRE-INTERVIEW COMMUNICATION

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

Dear Sir:

In response to First Action Interview Pilot Program Pre-Interview Communication dated March 25, 2015, Applicants herewith submit an Applicant Initiated Interview Request Form (PTOL-413A) electronically via EFS-Web. Applicants do not submit any proposed amendments at this time, but instead argue that the §103(a) rejections in the Communication are improper in that the cited references fail to teach or suggest features of accessing the in response to the presenting of the notification message and receiving information in response to the accessing.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: April 27, 2015

By: /Rose M. Thiessen/
Rose M. Thiessen
Registration No. 40,202
Attorney of Record
Customer No. 68851
(858) 707-4000

20533344 042715

Abbott Ex. 1002 - 381/834

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Rack-Gomer, Anna Leigh
Art Unit	2685
Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 2013-0030494	1/31/2013	Meredith et al.	
		US-			
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature	/Franklin Balseca/	Date Considered	05/19/2015

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. 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 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, 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 (1-800-786-9199) and select option 2.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /F.B./

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor	:	Michael Robert Mensinger
App. No.	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	Balseca, Franklin D.
Art Unit	:	2685
Conf. No.	:	8793

RESPONSE TO FIRST ACTION INTERVIEW PILOT PROGRAM PRE-INTERVIEW COMMUNICATION

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

Dear Sir:

In response to First Action Interview Pilot Program Pre-Interview Communication dated March 25, 2015, Applicants herewith submit an Applicant Initiated Interview Request Form (PTOL-413A) electronically via EFS-Web. Applicants do not submit any proposed amendments at this time, but instead argue that the §103(a) rejections in the Communication are improper in that the cited references fail to teach or suggest features of accessing the in response to the presenting of the notification message and receiving information in response to the accessing.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: April 27, 2015

By: /Rose M. Thiessen/
Rose M. Thiessen
Registration No. 40,202
Attorney of Record
Customer No. 68851
(858) 707-4000

20533344 042715

Abbott Ex. 1002 - 383/834

Doc Code: M865 or FAI.REQ.INTV

PTOL-413A (08-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Applicant Initiated Interview Request Form

Application No.: 13/842679 First Named Applicant: Michael Robert Mensinger
Examiner: Balseca, Franklin D. Art Unit: 2685 Status of Application: First Action Interview Pilot Program Pre-Interview Comm

Tentative Participants:
(1) Kaare Larson (2) _____
(3) _____ (4) _____

Proposed Date of Interview: May 13, 2015 **Proposed Time:** PM **(AM/PM)**

Type of Interview Requested:
(1) [✓] Telephonic (2) [ ] Personal (3) [ ] Video Conference

Exhibit To Be Shown or Demonstrated: [ ] YES [✓] NO
If yes, provide brief description: _____

Issues To Be Discussed

Issues (Rej., Obj., etc)	Claims/ Fig. #s	Prior Art	Discussed	Agreed	Not Agreed
(1) 103(a)	1,4-7,9,10,12-19	A, B	[ ]	[ ]	[ ]
(2) 103(a); 112	2,3	A, B, C	[ ]	[ ]	[ ]
(3) 103(a); 112	8	A, B, D	[ ]	[ ]	[ ]
(4) 103(a)	11	A, B, D, E	[ ]	[ ]	[ ]

[ ] Continuation Sheet Attached [ ] Proposed Amendment or Arguments Attached

Brief Description of Arguments to be Presented: Applicants traverse the obviousness rejections, arguing that the cited references fail to teach or suggest "applying, by the server, a plurality of rule sets to the glucose concentration data, each rule set associated with a different remote monitoring device."

An interview was conducted on the above-identified application on _____

NOTE: This form should be completed and filed by applicant in advance of the interview (see MPEP § 713.01). If this form is signed by a registered practitioner not of record, the Office will accept this as an indication that he or she is authorized to conduct an interview on behalf of the principal (37 CFR 1.32(a)(3)) pursuant to 37 CFR 1.34. This is not a power of attorney to any above named practitioner. See the Instruction Sheet for this form, which is incorporated by reference. By signing this form, applicant or practitioner is certifying that he or she has read the Instruction Sheet. After the interview is conducted, applicant is advised to file a statement of the substance of this interview (37 CFR 1.133(b)) as soon as possible. This application will not be delayed from issue because of applicant's failure to submit a written record of this interview.

/Rose M. Thiessen/
Applicant/Applicant's Representative Signature

_____
Examiner/SPE Signature

Rose M. Thiessen
Typed/Printed Name of Applicant or Representative

40202
Registration Number, if applicable

This collection of information is required by 37 CFR 1.133. 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 24 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.

PTOL-413A (08-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
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.

Instruction Sheet for:
APPLICANT INITIATED INTERVIEW REQUEST FORM

(Not to be Submitted to the USPTO)

1. If this form is signed by a registered practitioner not of record, the authority to submit the Applicant Initiated Interview Request Form is pursuant to limited authority to act in a representative capacity under 37 CFR 1.34 and further proof of authority to act in a representative capacity may be required. *See* 37 CFR 1.34.

   The Office will accept the signed form as an indication that the registered practitioner not of record is authorized to conduct an interview on behalf of the principal in pursuant to 37 CFR 1.34.

   For more information, see the "Conducting an Interview with a Registered Practitioner Acting in a Representative Capacity" notice which is available on the USPTO Web site at: http://www.uspto.gov/patents/law/notices/2010.jsp.

2. This is not a power of attorney to any named practitioner. Accordingly, any registered practitioner not of record named on the form does not have authority to sign a request to change the correspondence address, a request for express abandonment, a disclaimer, a power of attorney, or other document requiring the signature of the applicant, assignee of the entire interest or an attorney of record. If appropriate, a separate power of attorney to the named practitioner should be executed and filed in the US Patent and Trademark Office.

3. Any interview concerning an unpublished application under 35 U.S.C. § 122(b) with a registered practitioner not of record, pursuant to 37 CFR 1.34, will be conducted based on the information and files supplied by the practitioner in view of the confidentiality requirements of 35 U.S.C. § 122(a).

Electronic Acknowledgement Receipt

EFS ID:	22180139
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Rose M. Thiessen/Kevin Kraus
Filer Authorized By:	Rose M. Thiessen
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	27-APR-2015
Filing Date:	15-MAR-2013
Time Stamp:	17:47:25
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Reply under 1.111 to Pre-Interview Communication	DEXCOM_225A_FAI_Response.pdf	31788 38b5c06206efbfc0433c7dc04f1d4855b07fcaf5	no	1

Warnings:	
Information:	

2	Letter Requesting Interview with Examiner	DEXCOM_225A_FAI_Request.pdf	106109 dcdbb6a66c80dd73170f7b1cc92d531aa4ee51af	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	137897

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

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Rack-Gomer, Anna Leigh
Art Unit	2685
Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 2013-0030494	1/31/2013	Meredith et al.	
		US-			
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		US-			
		US-			

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. 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 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, 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 (1-800-786-9199) and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	22085281
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Kaare Douglas Larson/Renee Zavala
Filer Authorized By:	Kaare Douglas Larson
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	16-APR-2015
Filing Date:	15-MAR-2013
Time Stamp:	16:20:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2015-0416-SupplDS-225A.pdf	206481 dd0b956b2d13cd3442138325a9acdb2cc176d177	yes	2

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Transmittal Letter	1	1
	Information Disclosure Statement (IDS) Form (SB08)	2	2
Warnings:			
Information:			
	Total Files Size (in bytes):	206481	

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

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

Docket No. DEXCOM.225A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Michael Robert Mensinger, et al.
App. No	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	BALSECA, Franklin D.
Art Unit	:	2685
Conf #	:	8793

CERTIFICATE OF TRANSMITTAL UNDER 37 C.F.R. 1.8

I hereby certify that this paper (along with anything referred to as being attached or enclosed) is being filed electronically via EFS-Web at the United States Patent and Trademark Office on the date indicated below.

By: Renee Zavala

Date: April 16 2015

INFORMATION DISCLOSURE STATEMENT

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

Dear Sir:

Submitted herewith in the above-identified application is an Information Disclosure Statement listing references for consideration. Copies of the listed references, other than United States patent publications, are provided with this submission. It is respectfully requested that the Examiner initial and return a copy of the enclosed Form PTO/SB/08, and indicate in the official file wrapper of this patent application that the documents listed therein have been considered.

This Information Disclosure Statement is being filed within three months of the filing date or date of national phase entry, before the receipt of a First Office Action on the merits, with an RCE or before receipt of a First Office Action after an RCE, and no fee is required. If a fee is due, the Commissioner is hereby authorized to charge any fees due, or credit any overpayments, to Deposit Account No. 506176, referencing Docket No. DEXCOM.225A.

Respectfully submitted,
DEXCOM, INC.

Dated: 4/15/15

By: _____
Kaare D. Larson, PTO Reg. No. 51,920

Customer Number 68851
DEXCOM, INC.
6340 Sequence Drive
San Diego, CA 92121
Telephone: 858.875.9786

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A	8793

68851 7590 03/25/2015

KNOBBE, MARTENS, OLSEN & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER
BALSECA, FRANKLIN D

ART UNIT	PAPER NUMBER
2685	

NOTIFICATION DATE	DELIVERY MODE
03/25/2015	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):

jayna.cartee@knobbe.com
efiling@knobbe.com

Notice of References Cited	Application/Control No. 13/842,679	Applicant(s)/Patent Under Reexamination MENSINGER ET AL.	
	Examiner FRANKLIN BALSECA	Art Unit 2685	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2010/0249625	09-2010	Lin, Dongping	600/515
*	B	US-2005/0148890	07-2005	Hastings, David C.	600/509
*	C	US-8,355,320	01-2013	Dhiman et al.	370/229
*	D	US-2002/0169584	11-2002	Fu et al.	702/188
*	E	US-2011/0320130	12-2011	Valdes et al.	702/19
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

First Action Interview Pilot Program Pre-Interview Communication	Application No. 13/842,679	Applicant(s) MENSINGER ET AL.	
	Examiner FRANKLIN BALSECA	Art Unit 2685	AIA (First Inventor to File) Status No

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

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

This time period for reply is extendable under 37 CFR 1.136(a) for only ONE additional MONTH.

This communication constitutes notice under 37 CFR 1.136(a)(1)(i).

Applicant must, within the time period for reply, file: (1) A letter requesting not to have a first action interview; (2) A reply under 37 CFR 1.111 waiving the first action interview and First Action Interview Office Action; or (3) An Applicant Initiated Interview Request Form (PTOL-413A) electronically via EFS-Web, accompanied by a proposed amendment or arguments, and schedule the interview within 2 months from the filing of the request. A failure to respond to this communication will be treated as a request not to have an interview. If applicant waives the First Action Interview Office Action, the instant Pre-Interview Communication is deemed the first Office Action on the Merits. The next subsequent Office action may be made final if appropriate. See MPEP 706.07(a).

Status

1)☒ Responsive to communication(s) filed on *03/15/2013*.

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

Disposition of Claims

2)☒ Claim(s) *1-19* is/are pending in the application.

2a) Of the above claim(s) _____ is/are withdrawn from consideration.

3)☐ Claim(s) _____ is/are allowed.

4)☒ Claim(s) ***1-19*** is/are rejected.

5)☐ Claim(s) _____ is/are objected to.

6)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

7)☐ The specification is objected to by the Examiner.

8)☒ The drawing(s) filed on *03/15/2015* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

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

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

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

Contact Information

Examiner's Telephone Number: (571)270-5966

Examiner's Typical Work Schedule: Monday through Thursday, from 6:30am to 4:00pm

Supervisor's Name: Hai Phan

Supervisor's Telephone Number:

Attachment(s)	
1) ☒ Notice of References Cited (PTO-892)	3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
2) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.	4) ☐ Other: _____.

First Action Interview Pilot Program Pre-Interview Communication	Application No. 13/842,679	Applicant(s) MENSINGER ET AL.	
	Examiner FRANKLIN BALSECA	Art Unit 2685	AIA (First Inventor to File) Status No

Notification of Rejection(s) and/or Objection(s)

#	Claim(s)	Reference(s) (if applicable)	Rejection Statutory Basis	Brief Explanation of Rejection
1	1	A and B	pre-AIA 103 (a)	A teaches all the limitations except the remote monitor is configured by the server [see A fig. 1, par. 0024, 0025, 0026 and 0031]. B teaches that the remote monitor is configured by the server [see B par. 0080 and 0240].
2	4-7, 9-10 and 12-19	A and B	pre-AIA 103 (a)	In regards to claims 4 and 5, the combination of A and B teaches that notification inhibit access [see B par. 00147 and 0148].
3	2 and 3	A, B and C	pre-AIA 103(a) pre-AIA 112 SP	C teaches the concept of using a persistent connection to send notifications and a momentary connection to send data [see C col. 2 L. 51-65]. C teachings in the method taught by the combination will help to transmit notifications faster and without errors.
4	8	A, B and D	pre-AIA103(a) pre-AIA 112 SP	D teaches having different rules for notifications sent to a remote monitor and a receiver [see D par. 0029-0030]. One of ordinary skill in the art woud have used D in the combination because it only sends emergency alerts to the doctor.
5	11	A, B, D and E	pre-AIA 103 (b)	The combination A and B teaches modifying rules based on severity [see B par. 0265]. D teaches sending low severity alerts to the receiver [see D par. 0030]. E teaches modifying the rules using the remote monitor [see D par. 0032].

Expanded Discussion/Commentary

1		One of ordinary skill in the art would have used B's teachings in A because it will help the system to make sure that the remote monitor will receive only the notifications and data assigned to it.
2		One of ordinary skill in the art would have replaced the notification taught by the combination with the notification claimed in claim 5 because it performs the same functionality which is to notify a user that an alert has been received. In regards to claims 6, 7, 9, 10 and 12-19, all the claimed limitations are taught by the combination of A and B [see A fig. 1, par. 0023, 0025-0027, 0029 and 0046, see B par. 0089, 0092, 0096, 0101, 0147, 0149, 0180, 0188, 0193, 0202, 0211 and 0246].
3		In regards to claim 3, the claim lacks of antecedent basis. The claim should be dependent on claim 2 not claim 1.
5		One of ordinary skill in the art would have combined D with the combination because it will help the system to send alert notifications to the doctor only when medical assistance is needed. One of ordinary skill in the art would have combined E with the combination because it will help the doctor to modify rules from a remote location.

DATE:		
18 March, 2015	/FRANKLIN BALSECA/ Examiner, Art Unit 2685	/Hai Phan/ Supervisory Patent Examiner, Art Unit 2685

Notice of References Cited	Application/Control No. 13/842,679	Applicant(s)/Patent Under Reexamination MENSINGER ET AL.	
	Examiner FRANKLIN BALSECA	Art Unit 2685	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2010/0249625	09-2010	Lin, Dongping	600/515
*	B	US-2005/0148890	07-2005	Hastings, David C.	600/509
*	C	US-8,355,320	01-2013	Dhiman et al.	370/229
*	D	US-2002/0169584	11-2002	Fu et al.	702/188
*	E	US-2011/0320130	12-2011	Valdes et al.	702/19
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Mensinger, Michael Robert
Art Unit	2685
Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 7933781	4/26/2011	Bjorlin et al.	
	2	US- 2004-0236189	11/25/2004	Hawthorne et al.	
	3	US- 2006-0047538	3/2/2006	Condurso et al.	
	4	US- 2006-0089542	4/27/2006	Sands, Alan	
	5	US- 2011-0161111	6/30/2011	Dicks et al.	
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FOREIGN PATENT DOCUMENTS

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Examiner Signature	/Franklin Balseca/	Date Considered	03/18/2015

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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13842679	MENSINGER ET AL.
	Examiner	Art Unit
	FRANKLIN BALSECA	2685

CPC- SEARCHED		
Symbol	Date	Examiner
G06F19/30,32,34,3406,3418,3487	03/18/2015	FB
A61B5/0002,0004,0015,0022,0024,02,742,743,7435,746,7465,14532	03/18/2015	FB

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
340	870.01,870.02,870.07	03/18/2015	FB
705	2, 3	03/18/2015	FB
600	300,301,316,365,421,522	03/18/2015	FB
607	28, 30	03/18/2015	FB

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor Search	03/16/2015	FB
East Search	03/18/2015	FB

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

/FRANKLIN BALSECA/ Examiner.Art Unit 2685	

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BIB DATA SHEET

CONFIRMATION NO. 8793

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
13/842,679	03/15/2013	340	2685	DEXCOM.225A

APPLICANTS

DEXCOM, INC., San Diego, CA

INVENTORS

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Phil Mayou, San Diego, CA;
Eli Reihman, San Diego, CA;
Katherine Yerre Grubstein, San Diego, CA;
Rian Draeger, San Diego, CA;
Angela Marie Traven, San Marcos, CA;

**** CONTINUING DATA ***************************

This appln claims benefit of 61/747,717 12/31/2012

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

05/01/2013

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☐ No Verified and Acknowledged /FRANKLIN D BALSECA/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		CA	23	19	1

ADDRESS

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2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614
UNITED STATES

TITLE

REMOTE MONITORING OF ANALYTE MEASUREMENTS

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Sheet 1 of 1

Complete if Known	
Application Number	13842679
Filing Date	2013-03-15
First Named Inventor	Mensinger, Michael Robert
Art Unit	2681
Examiner Name	WU, Daniel
Attorney Docket Number	DEXCOM.225A

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	1	American Diabetes Association (2009), Diabetes Care 32(Suppl 1):S13-S61. Standards of Medical Care in Diabetes - 2009	
	2	Dassau et al. (2009), Journal of Diabetes 3(6):1501-1506. Enhanced 911/Global Position System Wizard: A Telemedicine Application for the Prevention of Sever Hypoglycemia - M	

Examiner Signature	/Franklin Balseca/	Date Considered	03/18/2015

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Examiner Name	WU, Daniel
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

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	1	US- 5832448	11/3/1998	Brown, Stephen J.	
	2	US- 5897493	4/27/1999	Brown, Stephen J.	
	3	US- 6101478	8/8/2000	Brown, Stephen J.	
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	6	US- 6442432	8/27/2002	Lee, Michael Thomas	
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	1	WO 2012/108935	2012-08-16	Abbott Diabetes Care Inc.		
	2	WO 2012/108936	2012-08-16	Abbott Diabetes Care Inc.		
	3	WO 2012/108939	2012-08-16	Abbott Diabetes Care Inc.		
	4	WO 2012/108940	2012-08-16	Abbott Diabetes Care Inc.		

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Sheet 2 of 4

Complete if Known	
Application Number	13/842679
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First Named Inventor	Mensinger, Michael Robert
Art Unit	2681
Examiner Name	WU, Daniel
Attorney Docket Number	DEXCOM.225A

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	20	US- 8086292	12/27/2011	Peyser, Thomas	
	21	US- 8409093	4/2/2013	Bugler, Jocyon R.	
	22	US- 20070253021	11/1/2007	Mehta et al.	
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	39	US- 20130132416	5/23/2013	Hayter et al.	
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Sheet 4 of 4

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Examiner Name	WU, Daniel
Attorney Docket Number	DEXCOM.225A

NON PATENT LITERATURE DOCUMENTS

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	1	Garg et al., Diabetes Care 29(1):44-50 (2006): Improvement in Glycemic Excursions with a Transcutaneous, Real-Time Continuous Glucose Sensor: A Randomized Controlled Trial	
	2	Hirsch and Brownlee, Journal of Diabetes and Its Complications 19:178-181 (2005): Should Minimal Blood Glucose Variability Become the Gold Standard of Glycemic Control?	
	3	Kovatchev et al., Diabetes Technology & Therapeutics 5(5):817-828 (2003): Algorithmic Evaluation of Metabolic Control and Risk of Sever Hypoglycemia in Type 1 and Type 2 Diab	
	4	Marling et al., Journal of Diabetes Science & Technology 5(4):871-878 (2011): Characterizing Blood Glucose Variability Using New Metrics with Continuous Glucose Monitoring Da	
	5	Penckofer et al., Diabetes Technology & Therapeutics 14(4):303-310 (2012): Does Glycemic Variability Impact Mood and Quality of Life?	
	6	Wiley et al., 2011 10th International Conference on Machine Learning and Applications, IEEE Computer Sociaty pp. 148-154 (2011): Automatic Detection of Excessive Glycemic Var	

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Sheet 1 of 1

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First Named Inventor	Mensinger, Michael Robert
Art Unit	2685
Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	DEXCOM.225A

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	1	US- 2005-0097200	5/5/2005	Denning et al.	
	2	US- 2005-0148890	7/7/2005	Hastings, David C.	
	3	US- 2007-0231846	10/4/2007	Cosentino	
	4	US- 2008-0015422	1/17/2008	Wessel, Paul	
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Examiner Signature	/Franklin Balseca/	Date Considered	03/19/2015

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If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /F.B./

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	5	(send$4 or transmit$4 or sent or receiv$4) near5 (alert or alarm) near5 (persistent) near5 connection	US-PGPUB; USPAT	OR	ON	2015/03/18 06:50
L2	12	(US-20140188398-$ or US-20140187890-$ or US-20110320130-$ or US-20100249625-$ or US-20090069642-$ or US-20050148890-$ or US-20130015966-$ or US-20060161662-$ or US-20060101139-$ or US-20040081310-$).did. or (US-7257386-$ or US-8355320-$).did.	US-PGPUB; USPAT	OR	ON	2015/03/18 06:52
L3	7	"L12" and ((persistent) near5 connection)	US-PGPUB; USPAT	OR	ON	2015/03/18 06:52
L4	15	(US-20140188398-$ or US-20140187889-$ or US-20140187890-$ or US-20140184422-$ or US-20140184423-$ or US-20110320130-$ or US-20100249625-$ or US-20090069642-$ or US-20050148890-$ or US-20130015966-$ or US-20060161662-$ or US-20060101139-$ or US-20040081310-$).did. or (US-7257386-$ or US-8355320-$).did.	US-PGPUB; USPAT	OR	ON	2015/03/18 07:02
L5	9	L4 and ((persistent) near5 connection)	US-PGPUB; USPAT	OR	ON	2015/03/18 07:02
L6	9	L4 and (((persistent) near5 connection) same (alert or alarm or notificcation))	US-PGPUB; USPAT	OR	ON	2015/03/18 07:03
L7	9	L4 and (((persistent) near5 connection) same (alert or alarm or notification))	US-PGPUB; USPAT	OR	ON	2015/03/18 07:03
L8	6	L7 and ((momentary or tempor$5) near5 connection)	US-PGPUB; USPAT	OR	ON	2015/03/18 07:19
L9	38	((send$4 or transmit$4 or sent or receiv$4) near5 (alert or alarm)) same ((persistent) near5 connection)	US-PGPUB; USPAT	OR	ON	2015/03/18 07:19
L10	7	L9 and ((momentary or tempor$5) near5 connection)	US-PGPUB; USPAT	OR	ON	2015/03/18 07:20
L11	116	((alert or alarm or notificcation)) same ((persistent) near5 connection)	US-PGPUB; USPAT	OR	ON	2015/03/18 07:22
L12	9	L11 and ((momentary or tempor$5) near5 connection)	US-PGPUB; USPAT	OR	ON	2015/03/18 07:22
L15	12983	G06F19/30,32,34,3406,3418,3487.cpc.	US-PGPUB; USPAT	OR	ON	2015/03/18 08:13
L16	17595	A61B5/0002,0004,0015,0022,0024,02,742,743,7435,746,7465,14532.cpc.	US-PGPUB; USPAT	OR	ON	2015/03/18 08:13
L17	3128	340/870.01,870.02,870.07.ccls.	US-PGPUB; USPAT	OR	ON	2015/03/18 08:14
L18	14114	705/2,3.ccls.	US-PGPUB; USPAT	OR	ON	2015/03/18 08:14
L20	12392	600/300,301,316,365,421,522.ccls.	US-PGPUB;	OR	ON	2015/03/18 08:14

			USPAT			
L21	1625	607/28,30.ccls.	US-PGPUB; USPAT	OR	ON	2015/03/18 08:15
L22	27283	L15 or L16	US-PGPUB; USPAT	OR	ON	2015/03/18 08:15
L23	29891	L17 or L18 or L20 or L21	US-PGPUB; USPAT	OR	ON	2015/03/18 08:15
L24	95	L22 and (persistent near5 (connection or link or channel))	US-PGPUB; USPAT	OR	ON	2015/03/18 08:17
L25	6	L24 and ((momentary or tempor$6) near5 (connection or link or channel))	US-PGPUB; USPAT	OR	ON	2015/03/18 08:18
L26	101	L23 and (persistent near5 (connection or link or channel))	US-PGPUB; USPAT	OR	ON	2015/03/18 08:19
L27	5	L26 and ((momentary or tempor$6) near5 (connection or link or channel))	US-PGPUB; USPAT	OR	ON	2015/03/18 08:19
L28	43	(server) near5 (transmit$4 or send$4) near5 (alert or alarm) near5 patient	US-PGPUB; USPAT	OR	ON	2015/03/18 08:54
L29	24	L22 and L28	US-PGPUB; USPAT	OR	ON	2015/03/18 08:55
L30	16	(US-20140188398-$ or US-20140187890-$ or US-20110320130-$ or US-20100249625-$ or US-20090069642-$ or US-20050148890-$ or US-20130015966-$ or US-20060161662-$ or US-20060101139-$ or US-20040081310-$ or US-20020169584-$ or US-20060020494-$ or US-20060106646-$ or US-20100191073-$).did. or (US-7257386-$ or US-8355320-$).did.	US-PGPUB; USPAT	OR	ON	2015/03/18 09:51
L31	0	L30 and ((doctor or nurse or caregiver) near5 (modif$4 or chang$4 or configur$4) near5 (alarm or alert or threshold))	US-PGPUB; USPAT	OR	ON	2015/03/18 09:54
L32	9	L30 and ((modif$4 or chang$4 or configur$4) near5 (alarm or alert or threshold))	US-PGPUB; USPAT	OR	ON	2015/03/18 09:54
L33	22	L28 and ((modif$4 or chang$4 or configur$4) near5 (alarm or alert or threshold))	US-PGPUB; USPAT	OR	ON	2015/03/18 09:56
L34	43	("20070255116" | "20100082364" | "20100265073" | "20100313105" | "20110160544" | "20130059541" | "8086292" | "20080319294" | "20080319296" | "6447424" | "20060047538" | "20080319295" | "20110152970" | "20110289497" | "20130132416" | "6101478" | "6368273" | "6957102" | "7981034" | "8409093" | "20040236189" | "20110161111" | "20110149759" | "20110213225" | "5897493" | "7103578" | "7399277" | "8085151" | "20060089542" | "6735479" | "7933781" | "20070253021" | "5832448" | "7618368" | "7685005" | "7811231" | "20100030596" | "6669631" | "20120016305" | "20120216297" | "6168563" | "6442432" | "6943787").PN.	US-PGPUB; USPAT	OR	ON	2015/03/18 10:41
L35	0	L34 and (persistent near5 (connection or link or channel))	US-PGPUB; USPAT	OR	ON	2015/03/18 10:41
S1	22	(US-20140188398-$ or US-20140187890-$ or US-20120245447-$ or US-20040002635-$ or US-20090310503-$ or US-20140133374-$ or US-20130052977-$ or US-20090069642-$ or US-20130215850-$ or US-20100322188-$ or US-20040170182-$ or US-20080007431-$ or US-20050148890-$ or US-20140350349-$ or US-20130191140-$ or US-20130159456-$).did. or (US-7769149-$ or US-5802314-$ or US-5608643-$ or US-3781573-$ or US-5369591-$ or US-6049698-$).did.	US-PGPUB; USPAT	OR	ON	2015/03/16 10:39
S2	22	(US-20140188398-$ or US-20140187890-$ or US-20110320130-$ or US-	US-	OR	ON	2015/03/16

		20070255116-$ or US-20140176342-$ or US-20140139342-$ or US-20090083364-$ or US-20090055369-$ or US-20050097200-$ or US-20130151708-$ or US-20130067544-$ or US-20120163520-$ or US-20100249625-$ or US-20120245447-$).did. or (US-8229535-$ or US-8390474-$ or US-7038588-$ or US-8138930-$ or US-8862393-$ or US-8126479-$ or US-8107947-$ or US-8467779-$).did.	PGPUB; USPAT			10:39
S3	41	S1 or S2	US-PGPUB; USPAT	OR	ON	2015/03/16 10:52
S4	23	((transmit$4 or send$4 or sent or receiv$4) near5 (alarm or notification or alert)) and S3	US-PGPUB; USPAT	OR	ON	2015/03/16 10:53
S5	20	S4 and (server or (central near5 (station or computer)))	US-PGPUB; USPAT	OR	ON	2015/03/16 10:53
S6	6	"13842679"	US-PGPUB; USPAT	OR	ON	2015/03/16 10:58
S7	0	S5 and (inhibit$4 near5 acess)	US-PGPUB; USPAT	OR	ON	2015/03/16 11:06
S8	2	S5 and (inhibit$4 near5 access)	US-PGPUB; USPAT	OR	ON	2015/03/16 11:06
S9	22	(US-20140188398-$ or US-20140187890-$ or US-20110320130-$ or US-20070255116-$ or US-20140176342-$ or US-20140139342-$ or US-20090083364-$ or US-20090055369-$ or US-20050097200-$ or US-20130151708-$ or US-20130067544-$ or US-20120163520-$ or US-20100249625-$ or US-20120245447-$).did. or (US-8229535-$ or US-8390474-$ or US-7038588-$ or US-8138930-$ or US-8862393-$ or US-8126479-$ or US-8107947-$ or US-8467779-$).did.	US-PGPUB; USPAT	OR	ON	2015/03/16 14:08
S10	22	(US-20140188398-$ or US-20140187890-$ or US-20120245447-$ or US-20040002635-$ or US-20090310503-$ or US-20140133374-$ or US-20130052977-$ or US-20090069642-$ or US-20130215850-$ or US-20100322188-$ or US-20040170182-$ or US-20080007431-$ or US-20050148890-$ or US-20140350349-$ or US-20130191140-$ or US-20130159456-$).did. or (US-7769149-$ or US-5802314-$ or US-5608643-$ or US-3781573-$ or US-5369591-$ or US-6049698-$).did.	US-PGPUB; USPAT	OR	ON	2015/03/16 14:08
S11	41	S10 or S9	US-PGPUB; USPAT	OR	ON	2015/03/16 14:08
S12	3	"13843382"	US-PGPUB; USPAT	OR	ON	2015/03/17 13:57
S13	22	(US-20140188398-$ or US-20140187890-$ or US-20120245447-$ or US-20040002635-$ or US-20090310503-$ or US-20140133374-$ or US-20130052977-$ or US-20090069642-$ or US-20130215850-$ or US-20100322188-$ or US-20040170182-$ or US-20080007431-$ or US-20050148890-$ or US-20140350349-$ or US-20130191140-$ or US-20130159456-$).did. or (US-7769149-$ or US-5802314-$ or US-5608643-$ or US-3781573-$ or US-5369591-$ or US-6049698-$).did.	US-PGPUB; USPAT	OR	ON	2015/03/17 15:19
S14	22	(US-20140188398-$ or US-20140187890-$ or US-20110320130-$ or US-20070255116-$ or US-20140176342-$ or US-20140139342-$ or US-20090083364-$ or US-20090055369-$ or US-20050097200-$ or US-20130151708-$ or US-20130067544-$ or US-20120163520-$ or US-20100249625-$ or US-20120245447-$).did. or (US-8229535-$ or US-8390474-$ or US-7038588-$ or US-8138930-$ or US-8862393-$ or US-8126479-$ or US-8107947-$ or US-8467779-$).did.	US-PGPUB; USPAT	OR	ON	2015/03/17 15:19
S15	41	S13 or S14	US-PGPUB; USPAT	OR	ON	2015/03/17 15:19
S16	6	(US-20140188398-$ or US-20140187890-$ or US-20110320130-$ or US-20100249625-$ or US-20090069642-$ or US-20050148890-$).did.	US-PGPUB	OR	ON	2015/03/17 15:19
S17	41	S15 or S16	US-PGPUB;	OR	ON	2015/03/17 15:19

			USPAT			
S18	677	(send$4 or transmit$4 or sent or receiv$4) near5 (alert or alarm or notification) near5 (fisrt or second) near5 (channel or link)	US-PGPUB; USPAT	OR	ON	2015/03/17 15:21
S19	194	(send$4 or transmit$4 or sent or receiv$4) near5 (alert or alarm) near5 (fisrt or second) near5 (channel or link)	US-PGPUB; USPAT	OR	ON	2015/03/17 15:22
S20	0	S17 and S19	US-PGPUB; USPAT	OR	ON	2015/03/17 15:22
S21	69	S19 and sensor	US-PGPUB; USPAT	OR	ON	2015/03/17 15:22

EAST Search History (Interference)

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3/18/2015 10:43:14 AM
C:\Users\fbalseca\Documents\EAST\Workspaces\13842679.wsp

PTO/SB/08a (07-09)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Mensinger, Michael Robert
Art Unit	2685
Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 2005-0097200	5/5/2005	Denning et al.	
	2	US- 2005-0148890	7/7/2005	Hastings, David C.	
	3	US- 2007-0231846	10/4/2007	Cosentino	
	4	US- 2008-0015422	1/17/2008	Wessel, Paul	
	5	US- 2010-0191075	7/29/2010	Angelides	
	6	US- 2011-0320130	12/29/2011	Valdes et al.	
	7	US- 2013-0151708	6/13/2013	Shelby et al.	
	8	US- 2013-0159456	6/20/2013	Daoud et al.	
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Examiner Signature		Date Considered	

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Electronic Acknowledgement Receipt

EFS ID:	21804657
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Kaare Douglas Larson/Renee Zavala
Filer Authorized By:	Kaare Douglas Larson
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	18-MAR-2015
Filing Date:	15-MAR-2013
Time Stamp:	12:36:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2015-0318-SupplDS-225A.pdf	172844 cc169394b278dd8b33c3f9bc3afd2924d3405c6f	yes	2

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Transmittal Letter	1	1
	Information Disclosure Statement (IDS) Form (SB08)	2	2
Warnings:			
Information:			
	Total Files Size (in bytes):	172844	

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

Docket No. DEXCOM.225A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Michael Robert Mensinger, et al.
App. No	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	BALSECA, Franklin D.
Art Unit	:	2685
Conf #	:	8793

CERTIFICATE OF TRANSMITTAL UNDER 37 C.F.R. 1.8

I hereby certify that this paper (along with anything referred to as being attached or enclosed) is being filed electronically via EFS-Web at the United States Patent and Trademark Office on the date indicated below.

By: Renee Zavala
Renee Zavala

Date: March 18, 2015

INFORMATION DISCLOSURE STATEMENT

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

Dear Sir:

Submitted herewith in the above-identified application is an Information Disclosure Statement listing references for consideration. Copies of the listed references, other than United States patent publications, are provided with this submission.

This Information Disclosure Statement is being filed within three months of the filing date or date of national phase entry, before the receipt of a First Office Action on the merits, with an RCE or before receipt of a First Office Action after an RCE, and no fee is required. If a fee is due, the Commissioner is hereby authorized to charge any fees due, or credit any overpayments, to Deposit Account No. 506176, referencing Docket No. DEXCOM.225A.

Respectfully submitted,

DEXCOM, INC.

Dated: 3/17/15

By: _____
Kaare D. Larson, PTO Reg. No. 51,920

Customer Number 68851
DEXCOM, INC.
6340 Sequence Drive
San Diego, CA 92121
Telephone: 858.875.9786

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
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(Use as many sheets as necessary)

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Examiner Name	BALSECA, Franklin D.
Attorney Docket Number	DEXCOM.225A

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	1	US- 7933781	4/26/2011	Bjorlin et al.	
	2	US- 2004-0236189	11/25/2004	Hawthorne et al.	
	3	US- 2006-0047538	3/2/2006	Condurso et al.	
	4	US- 2006-0089542	4/27/2006	Sands, Alan	
	5	US- 2011-0161111	6/30/2011	Dicks et al.	
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FOREIGN PATENT DOCUMENTS

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Examiner Signature		Date Considered	

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EFS ID:	20752667
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Kaare Douglas Larson/Renee Zavala
Filer Authorized By:	Kaare Douglas Larson
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	20-NOV-2014
Filing Date:	15-MAR-2013
Time Stamp:	13:22:55
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2014-1120-SupplDS-225A.pdf	176819 56af15f60f2753eae3d7977855381b7af3ec2cc5	yes	2

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Transmittal Letter	1	1
	Information Disclosure Statement (IDS) Form (SB08)	2	2
Warnings:			
Information:			
	Total Files Size (in bytes):	176819	

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

New International Application Filed with the USPTO as a Receiving Office
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Docket No. DEXCOM.225A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Michael Robert Mensinger, et al.
App. No	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	BALSECA, Franklin D.
Art Unit	:	2685
Conf #	:	8793

CERTIFICATE OF TRANSMITTAL UNDER 37 C.F.R. 1.8

I hereby certify that this paper (along with anything referred to as being attached or enclosed) is being filed electronically via EFS-Web at the United States Patent and Trademark Office on the date indicated below.

By: Ranee Zavala

Date: November 20, 2014

INFORMATION DISCLOSURE STATEMENT

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

Dear Sir:

Submitted herewith in the above-identified application is an Information Disclosure Statement listing references for consideration. Copies of the listed references, other than United States patent publications, are provided with this submission.

This Information Disclosure Statement is being filed within three months of the filing date or date of national phase entry, before the receipt of a First Office Action on the merits, with an RCE or before receipt of a First Office Action after an RCE, and no fee is required. If a fee is due, the Commissioner is hereby authorized to charge any fees due, or credit any overpayments, to Deposit Account No. 506176, referencing Docket No. DEXCOM.225A.

Respectfully submitted,
DEXCOM, INC.

Dated: 11/19/14

By: _____
Kaare D. Larson, PTO Reg. No. 51,920

Customer Number 68851
DEXCOM, INC.
6340 Sequence Drive
San Diego, CA 92121
Telephone: 858.875.9786

PTO/SB/413C (05-11)
Approved for use through 01/31/2013. OMB 0651-0031
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REQUEST FOR FIRST ACTION INTERVIEW (FULL PILOT PROGRAM)

Attorney Docket Number: DEXCOM.225A	Application Number (if known): 13/842679	Filing date: March 15, 2013
First Named Inventor: Michael Robert Mensinger, et al.	Title: REMOTE MONITORING OF ANALYTE MEASUREMENTS	

APPLICANT HEREBY REQUESTS A FIRST ACTION INTERVIEW IN THE ABOVE-IDENTIFIED APPLICATION. **See Instruction Sheet on page 2.**

1. The application must contain three (3) or fewer independent claims and twenty (20) or fewer total claims.

2. The application must not contain any multiple dependent claims.

3. By filing this request:

   Applicant is agreeing to make an election without traverse if the Office determines that the claims are not obviously directed to a single invention; and

   Applicant is agreeing not to request for a refund of the search fee and any excess claims fee paid in the application after the mailing or notification of the pre-interview communication prepared by the examiner.

4. Other attachments: _____

Signature /Rose M. Thiessen/	Date November 10, 2014
Name (Print/Typed) Rose M. Thiessen	Registration Number 40202

Note: *This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.*

■ *Total of 1 forms are submitted.

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

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

Doc Code: FAI.REQ
Document Description: Request First Action Interview

PTO/SB/413C (05-11)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE
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Attorney Docket Number: DEXCOM.225A	Application Number (if known): 13/842679	Filing date: March 15, 2013
First Named Inventor: Michael Robert Mensinger, et al.	Title: REMOTE MONITORING OF ANALYTE MEASUREMENTS	

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

Electronic Acknowledgement Receipt

EFS ID:	20650206
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Rose M. Thiessen/Daniela Lopez
Filer Authorized By:	Rose M. Thiessen
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	10-NOV-2014
Filing Date:	15-MAR-2013
Time Stamp:	14:42:23
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	First Action Interview - Enrollment Request	DEXCOM225A_FAI.pdf	216464 bf52ed211ccd75bc49adafeba6233353a879c616	no	1

Warnings:	
Information:	

Total Files Size (in bytes):	216464

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New Applications Under 35 U.S.C. 111
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UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A

CONFIRMATION NO. 8793

68851
KNOBBE, MARTENS, OLSEN & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

PUBLICATION NOTICE

OC00000069399316

Title:REMOTE MONITORING OF ANALYTE MEASUREMENTS

Publication No.US-2014-0184422-A1
Publication Date:07/03/2014

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 Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, 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 http://pair.uspto.gov/. 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 Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	13842679
Filing Date	2013-03-15
First Named Inventor	Mensinger, Michael Robert
Art Unit	2681
Examiner Name	WU, Daniel
Attorney Docket Number	DEXCOM.225A

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	1	American Diabetes Association (2009), Diabetes Care 32(Suppl 1):S13-S61. Standards of Medical Care in Diabetes - 2009	
	2	Dassau et al. (2009), Journal of Diabetes 3(6):1501-1506. Enhanced 911/Global Position System Wizard: A Telemedicine Application for the Prevention of Sever Hypoglycemia - M	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. 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 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Electronic Acknowledgement Receipt

EFS ID:	18159424
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Kaare Douglas Larson/Renee Zavala
Filer Authorized By:	Kaare Douglas Larson
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	10-FEB-2014
Filing Date:	15-MAR-2013
Time Stamp:	13:58:23
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2014-0210-SupplDS-225A.pdf	139306 eb3f4be3221264fc9a7d617980ff4a3ef3e675d8	yes	2

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Transmittal Letter	1	1
	Information Disclosure Statement (IDS) Form (SB08)	2	2

Warnings:					
Information:					
2	Non Patent Literature	X-ADA-DiabCare-2009-S13-S61.pdf	513033 12432b1c68e077792f1fd206862a9e984ea09bb8	no	49
Warnings:					
Information:					
3	Non Patent Literature	X-Dassau-2009-JDiab.pdf	1199272 9a81296317341bcf68b5c80cae59da89810dcc76	no	6
Warnings:					
Information:					
		Total Files Size (in bytes):	1851611		

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Docket No. DEXCOM.225A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Michael Robert Mensinger, et al.
App. No	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	WU, Daniel
Art Unit	:	2681
Conf #	:	8793

CERTIFICATE OF TRANSMITTAL UNDER 37 C.F.R. 1.8

I hereby certify that this paper (along with anything referred to as being attached or enclosed) is being filed electronically via EFS-Web at the United States Patent and Trademark Office on the date indicated below.

By: Renee Zavala

Date: February 10, 2014

INFORMATION DISCLOSURE STATEMENT

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

Dear Sir:

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Respectfully submitted,

DEXCOM, INC.

Dated: 2-7-14

By: _____

Kaare D. Larson, PTO Reg. No. 51,920

Customer Number 68851
DEXCOM, INC.
6340 Sequence Drive
San Diego, CA 92121
Telephone: 858.875.9786

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 1 of 4

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Mensinger, Michael Robert
Art Unit	2681
Examiner Name	WU, Daniel
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 5832448	11/3/1998	Brown, Stephen J.	
	2	US- 5897493	4/27/1999	Brown, Stephen J.	
	3	US- 6101478	8/8/2000	Brown, Stephen J.	
	4	US- 6168563	1/2/2001	Brown, Stephen J.	
	5	US- 6368273	4/9/2002	Brown, Stephen J.	
	6	US- 6442432	8/27/2002	Lee, Michael Thomas	
	7	US- 6447424	11/5/2002	Thompson et al.	
	8	US- 6669631	12/30/2003	Norris et al.	
	9	US- 6735479	5/11/2004	Fabian et al.	
	10	US- 6943787	9/13/2005	Webb, James D.	
	11	US- 6957102	10/18/2005	Silver et al.	
	12	US- 7103578	9/5/2006	Beck et al.	
	13	US- 7399277	7/15/2008	Saidara et al.	
	14	US- 20080319294	12/25/2008	Taub, Marc B.	
	15	US- 7618368	11/17/2009	Brown, Stephen J.	
	16	US- 7685005	3/23/2010	Riff et al.	
	17	US- 7811231	10/12/2010	Jin et al.	
	18	US- 7981034	7/19/2011	Jennewine et al.	
	19	US- 8085151	12/27/2011	Jennewine, R. Curtis	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
	1	WO 2012/108935	2012-08-16	Abbott Diabetes Care Inc.		
	2	WO 2012/108936	2012-08-16	Abbott Diabetes Care Inc.		
	3	WO 2012/108939	2012-08-16	Abbott Diabetes Care Inc.		
	4	WO 2012/108940	2012-08-16	Abbott Diabetes Care Inc.		

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 2 of 4

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Mensinger, Michael Robert
Art Unit	2681
Examiner Name	WU, Daniel
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	20	US- 8086292	12/27/2011	Peyser, Thomas	
	21	US- 8409093	4/2/2013	Bugler, Jocyon R.	
	22	US- 20070253021	11/1/2007	Mehta et al.	
	23	US- 20070255116	11/1/2007	Mehta et al.	
	24	US- 20080319295	12/25/2008	Bernstein et al.	
	25	US- 20080319296	12/25/2008	Bernstein et al.	
	26	US- 20100082364	4/1/2010	Taub et al.	
	27	US- 20100265073	10/21/2010	Harper, Wesley Scott	
	28	US- 2010030596	12/2/2010	Benjamin et al.	
	29	US- 20100313105	12/9/2010	Nekoomaram et al.	
	30	US- 201101129080	5/19/2011	Hayter et al.	
	31	US- 20110149759	6/23/2011	Jollota, James	
	32	US- 20110152970	6/23/2011	Jollota et al.	
	33	US- 20110160544	6/30/2011	Hayter, Gary A.	
	34	US- 20110213225	9/1/2011	Bernstein et al.	
	35	US- 20110289497	11/24/2011	Kiaie et al.	
	36	US- 20120016305	1/19/2012	Jollota et al.	
	37	US- 20120216297	8/23/2012	Cohen et al.	
	38	US- 20130059541	3/7/2013	Sloan et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 3 of 4

Complete if Known	
Application Number	13/842679
Filing Date	03/15/2013
First Named Inventor	Mensinger, Michael Robert
Art Unit	2681
Examiner Name	WU, Daniel
Attorney Docket Number	DEXCOM.225A

U. S. PATENT DOCUMENTS

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	39	US- 20130132416	5/23/2013	Hayter et al.	
		US-			
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FOREIGN PATENT DOCUMENTS

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Sheet 4 of 4

Complete if Known	
Application Number	13842679
Filing Date	2013-03-15
First Named Inventor	Mensinger, Michael Robert
Art Unit	2681
Examiner Name	WU, Daniel
Attorney Docket Number	DEXCOM.225A

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	1	Garg et al., Diabetes Care 29(1):44-50 (2006): Improvement in Glycemic Excursions with a Transcutaneous, Real-Time Continuous Glucose Sensor: A Randomized Controlled Trial	
	2	Hirsch and Brownlee, Journal of Diabetes and Its Complications 19:178-181 (2005): Should Minimal Blood Glucose Variability Become the Gold Standard of Glycemic Control?	
	3	Kovatchev et al., Diabetes Technology & Therapeutics 5(5):817-828 (2003): Algorithmic Evaluation of Metabolic Control and Risk of Sever Hypoglycemia in Type 1 and Type 2 Diab	
	4	Marling et al., Journal of Diabetes Science & Technology 5(4):871-878 (2011): Characterizing Blood Glucose Variability Using New Metrics with Continuous Glucose Monitoring Da	
	5	Penckofer et al., Diabetes Technology & Therapeutics 14(4):303-310 (2012): Does Glycemic Variability Impact Mood and Quality of Life?	
	6	Wiley et al., 2011 10th International Conference on Machine Learning and Applications, IEEE Computer Sociaty pp. 148-154 (2011): Automatic Detection of Excessive Glycemic Var	

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[Continued on next page]

(54) **Title**: SENSOR-BASED INFORMATICS TELEMEDICINE DISEASE MANAGEMENT SOLUTION

(57) **Abstract**: Provided herein are systems and associated devices configured to capture biometric patient data; e.g., blood glucose data; transmit such data to a location-independent "cloud", the Internet, or other shared server system, hereinafter referred to as "the Cloud"; and provide automated data-based algorithms to analyze data and deliver therapy recommendations, related output, and/or therapy recommendation decision support to one or more authorized stakeholders.

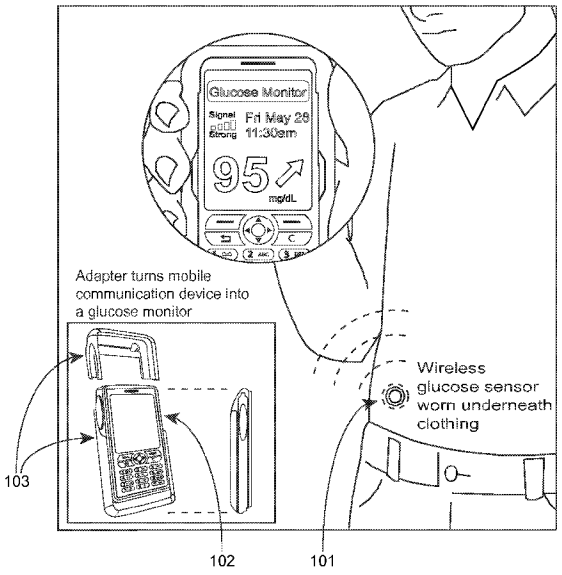


FIG. 6

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SENSOR-BASED INFORMATICS TELEMEDICINE DISEASE MANAGEMENT SOLUTION

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] Pursuant to 35 U.S.C. § 119(e), this application claims priority to U.S. Provisional Application No. 61/442,093 filed on February 11, 2011, the disclosure of which is herein incorporated by reference in its entirety.

[0002] This application is related to U.S. Provisional Application No. 61/442,085 filed on February 11, 2011; U.S. Provisional Application No. 61/486,117 filed on May 13, 2011; U.S. Provisional Patent Application No. 61/442,063 filed on February 11, 2011; U.S. Provisional Application No. 61/442,092 filed on February 11, 2011; U.S. Provisional Application No. 61/485,840 filed on May 13, 2011; and U.S. Provisional Application No. 61/442,097 filed on February 11, 2011, the disclosures of which are all incorporated herein by reference in their entirety and for all purposes.

BACKGROUND OF THE INVENTION

The Field of the Invention

[0003] The present disclosure relates to the field of informatics-based telemedicine disease management solutions.

Background

[0004] Current approaches to disease management include systems designed to provide greater connectivity between patients and health care providers (HCPs) or other stakeholders. These systems may analyze biometric patient data and provide feedback to the patient, HCP or other stakeholder. However such systems may be limited by the quantity and/or quality of the biometric patient data provided as input and/or the ability of one or more system components to provide meaningful therapy recommendations in response to such data. The present disclosure addresses these issues and provides related advantages.

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BRIEF SUMMARY

[0005] The present disclosure provides systems and associated devices configured to capture biometric patient data; e.g., blood glucose data; transmit such data to a location-independent "cloud", the Internet, or other shared server system, hereinafter referred to as "the Cloud"; and provide automated data-based algorithms to analyze data and deliver therapy recommendations, related output, and/or therapy recommendation decision support to one or more authorized stakeholders.

[0006] It should be noted that two or more of the embodiments described herein may be combined to produce one or more additional embodiments which include the combined features of the individual embodiments.

BRIEF DESCRIPTION OF THE FIGURES

[0007] The accompanying drawings, which are incorporated herein, form part of the specification. Together with this written description, the drawings further serve to explain the principles of, and to enable a person skilled in the relevant art(s), to make and use the present invention.

[0008] **FIG. 1** provides a diagram of a first embodiment of a health management system according to the present disclosure. The arrows depict information and/or data flow between system components.

[0009] **FIG. 2** provides a diagram of a second embodiment of a health management system according to the present disclosure. The arrows depict information and/or data flow between system components.

[0010] **FIG. 3** provides a diagram of a third embodiment of a health management system according to the present disclosure. The arrows depict information and/or data flow between system components.

[0011] **FIG. 4** provides a diagram of a fourth embodiment of a health management system according to the present disclosure. The arrows depict information and/or data flow between system components.

[0012] **FIG. 5** provides a diagram of a fifth embodiment of a health management system according to the present disclosure. The arrows depict information and/or data flow between system components.

[0013] **FIG. 6** provides a depiction of a system in which a mobile communication device is fitted with an adapter to allow for wireless communication of sensor data from a biometric sensor to the mobile communication device.

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[0014] **FIG. 7** provides a depiction of a system in which a mobile communication device is fitted with an adapter to allow for wireless communication of sensor data from a biometric sensor to the mobile communication device. The mobile communication device can then communicate the sensor data or associated information to one or more authorized stakeholders, e.g., an HCP, family member, etc., via the Cloud or one or more wireless networks.

DETAILED DESCRIPTION OF THE INVENTION

[0015] Before the embodiments of the present disclosure are described, it is to be understood that this invention is not limited to particular embodiments described, as such may, of course, vary. It is also to be understood that the terminology used herein is for the purpose of describing particular embodiments only, and is not intended to be limiting, since the scope of the embodiments of the invention will be limited only by the appended claims.

[0016] Several system embodiments are now described with reference to the figures. One embodiment of a system according to the present disclosure may be described generally with reference to FIG. 1, which depicts a system **100** including system components **101**-**107**. The flow of information and/or data between the system components may be as indicated by the arrows. It should be noted that the flow of information and/or data between any two system components described herein may be unidirectional or bidirectional as appropriate. System **100** includes one or more biometric sensors **101** which are used to acquire biometric information and/or data from a patient. Biometric information and/or data which may be acquired by the biometric sensors **101** includes, e.g., glucose levels (e.g., blood glucose levels), cholesterol levels, basal metabolic rate and/or calorie output. Suitable sensors which may be utilized as the biometric sensors **101** include, e.g., continuous and on-demand glucose sensors. These glucose sensors are described in greater detail below as well as in various documents incorporated by reference herein. In some embodiments, the biometric sensors **101** are wireless sensors capable of wirelessly transferring information and/or data collected by the sensor to one or more remote devices.

[0017] Mobile communication device **102** is a remote device which may be configured to wirelessly receive biometric information and/or data from the one or more biometric sensors **101**. In one embodiment, mobile communication device **102** is configured to receive biometric information and/or data directly from the one or more biometric

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sensors **101**. Such an embodiment is depicted, e.g., in the form of system **200** of FIG. 2. In another embodiment, the system **100** includes an adapter **103** for the mobile communication device **102**, which adapter is configured to receive the biometric information and/or data from the biometric sensor **101** and transfer the biometric information and/or data from the adapter **103** to the mobile communication device **102**. See, e.g., FIG. 1. It should be noted that while FIG. 1 depicts both the direct transfer of information and/or data from the biometric sensor **101** to the mobile communication device **102** and the indirect transfer of information and/or data through adapter **103**, these may be alternative embodiments. Accordingly, in some embodiments, adapter **103** will not be included in the system as depicted in system **200** of FIG. 2.

[0018] In one embodiment, e.g., as depicted in system **300** of FIG. 3, adapter **103** is not configured to communicate with a biometric sensor **101** but is instead configured as a biometric monitoring device, for example, the adapter **103** may be configured as a discrete analyte monitoring device which includes a test strip port for receiving an analyte test strip, e.g. a glucose test strip. A more detailed description of adapter **103** is provided below.

[0019] In another embodiment, e.g., as depicted system **400** of FIG. 4, the mobile communication device **102** is configured to receive biometric information and/or data solely from the one or more additional biometric data sources **104** as described herein.

[0020] A variety of mobile communication devices may be suitable for use as mobile communication device **102**. For example, suitable devices may include mobile phones, laptop computers; mobile devices, such as personal digital assistants (PDA)s, iPhone® devices, iPad® devices, Blackberry® devices, tablet computers, etc.; communication-enabled analyte meters; and other such devices known in the art.

[0021] Where biometric information and/or data is communicated by the one or more biometric sensors **101** to the mobile communication device **102**, either directly or via adapter **103**, such information and/or data may be communicated to a patient, e.g., visually via an integrated display of the mobile communication device **102**, audibly via an integrated speaker of the mobile communication device **102** or via an external speaker in communication with the mobile communication device **102**, and/or via a vibratory output of the communication device **102**.

[0022] In addition to receiving biometric sensor information and/or data from one or more biometric sensors **101**, mobile communication device **102** may be configured to receive biometric information and/or data from additional biometric data sources **104**. In

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this manner, mobile communication device **102** may operate as a "hub" for a variety of other devices and/or sensors. Additional sources **104** may include, e.g., discreet glucose monitoring devices, insulin pumps, insulin pen devices, blood pressure cuffs, scales, respirometers, pedometers, pulse oximeters, medical imaging devices (e.g., retinal scanners), and additional patient monitoring devices known in the art. This additional biometric information and/or data may be transmitted directly from one of the above devices, e.g., via wired or wireless communication means, in the event such devices are configured for wired and/or wireless communication. Alternatively, or in addition, such information and/or data may be entered manually using one or more inputs devices of the mobile communication device **102**, e.g. a key pad or touch screen of mobile communication device **102**. Additional information related to a disease and/or health condition of the patient may be communicated directly from one or more additional biometric data sources **104** or entered manually into the mobile communication device **102**, such information may include, e.g., carbohydrate intake information; information relating to the frequency, type, or intensity of exercise by the patient; insulin information resulting from a bolus calculation, and any other suitable information related to the health of the patient.

[0023] Mobile communication device **102** may be configured to communicate information and/or data to the Cloud **105**. This information and/or data may include biometric sensor information and/or data received from one or more biometric sensors **101**, biometric information and/or data received from adapter **103**, biometric information and/or data received from one or more additional biometric data sources **104**, biometric information and/or data generated by mobile communication device **102** (e.g., where the mobile communication device **102** is a communication-enabled analyte meter) and/or any additional health related information received by mobile communication device **102**.

[0024] Cloud **105** may be configured to run one or more automated or semi-automated data-based algorithms in response to the inputs provided by mobile communication device **102**, processing device **502**, electronic medical record (EMR) **107** and/or one or more authorized stakeholders **106**. These automated or semi-automated data-based algorithms may in turn provide outputs which facilitate management of a disease and/or health condition of the patient. These outputs may be communicated to one or more components of systems **100-500**, e.g., to the patient via mobile communication device **102**, to one or more authorized stakeholders **106** (e.g., an HCP, health plan administrator, disease management case manager, government entity, payor, family member, etc.), to a

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processing device **106**, and/or to the patient's EMR **107**. Suitable outputs of the automated of semi-automated data-based algorithms may include, e.g.: reminders to the patient to take various medications/drugs (adherence program); communication to authorized stakeholder, e.g., HCP, that a hypoglycemic state is imminent; recommendation for an HCP to consider prescribing a new drug for the patient; medication recommendations and/or considerations, including, e.g., titration and/or change in amount, timing or type, e.g., recommendation for an HCP to consider changing the dose of a patient's medication/drug or time of day when the medication/drug is administered; indication to an HCP that a new medication has been ineffective for the patient; recommendation and/or consideration with respect to a change in diet; patient coaching/encouragement with respect to various goals (e.g., lose weight, start exercising, reduce cholesterol); reminders to the patient to refill a prescription, obtain additional testing materials; a prediction of the patient's HbA1c level; a forecast of a patient's future blood glucose level; patient stratification, e.g., risk stratification based on predictive biometric patient data; real-time or retrospective analysis for clinical trials; real-time data updates; etc.

[0025] As indicated above, some data-based algorithms may be semi-automated. For example, some algorithms may require certain information in addition to biometric information and/or data received, e.g., from a biometric sensor **101**, in order to provide a desired algorithm output. Such information may include inputs provide by one or more authorized stakeholders, for example. This may be important where, e.g., a patient's biometric information and/or data falls outside a normal or expected range for a particular condition.

[0026] The Cloud-based systems described herein may, in some embodiments, facilitate structured testing protocols. For example, an HCP may perform a patient-specific drug trial by utilizing biometric data and/or information obtained from the Cloud to determine how the patient reacts to a new medication and/or change in dosage. In some embodiments, the Cloud may provide automated or semi-automated therapy recommendations and/or considerations based on an analysis of the results of such a structured testing protocol.

[0027] In one embodiment, as depicted in system **500** of FIG. 5, biometric information and/or data is communicated from a biometric monitoring device **501** to a processing device **502**. Biometric monitoring device **501**, may be an analyte monitor, e.g., a discrete analyte monitor such as a blood glucose monitor configured to receive a glucose test

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strip. Alternatively, or in addition, biometric monitoring device **501** may be a portable hand-held component of a continuous or on demand analyte monitoring system, which systems are described in greater detail in the documents incorporated by reference herein. For example, biometric monitoring device **501** may be configured to communicate with an on-body portion of an analyte measurement system, e.g., an implanted or partially implanted analyte sensor or an RF-powered measurement circuit coupled to an implanted or partially implanted analyte sensor.

[0028] In some embodiments, biometric monitoring device **501** may be configured to receive biometric information and/or data from additional biometric data sources **104**, such as those described previously herein. Thus, biometric monitoring device **501** may operate as a "hub" for a variety of other devices and/or sensors.

[0029] Processing device **502** may be relatively non-mobile as compared with mobile communication device **102** discussed previously herein and may be, for example, a desktop computer such as a personal computer (PC) or Macintosh® computer.

[0030] In system **500**, biometric monitoring device **501** is configured to communicate biometric information and/or data to processing device **502**, e.g., via any suitable wired (e.g., USB) or wireless (e.g., Bluetooth) connection described herein or known in the art. Processing device **502** is in turn configured to communicate with Cloud **105** utilizing one or more wired and/or wireless communication means. Communication between the Cloud **105**, EMR **107**, and authorized stakeholders **106** may be as described herein for systems **100-400**. In addition, authorized stakeholders **106** may communicate with a patient by sending one or more messages, e.g., one or more treatment recommendations, to the patient either through the Cloud **105** to the processing device **502** and/or the biometric monitoring device **501**; directly to the patient's biometric monitoring device **501**, where the biometric monitoring device **501** is suitably enabled; or directly to the patient via any other suitable form of communication, e.g., telephone communication. In addition, in some embodiments, real-time feedback may be provided to the patient by the Cloud **105** or one or more authorized stakeholders **106**, e.g., by sending a text message to a patient's mobile phone (not shown in system **500**).

[0031] The automated or semi-automated data-based algorithms discussed herein may be configured to analyze the patient's data in view of standard protocols endorsed by authorities, such as the American Diabetes Association (ADA), European Association for the Study of Diabetes (EASD), International Diabetes Center (IDC), Joslin Diabetes Center, etc.

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[0032] In some embodiments, as described previously herein, a system according to the present disclosure includes an optional component in the form of the patient's EMR **107**. In these embodiments, outputs of the automated or semi-automated data-based algorithms and/or therapy decisions made based on such outputs by one or more authorized stakeholders may be communicated to the patient's EMR. In addition, patient information stored in the EMR **107** may be communicated from the EMR **107** to the Cloud **105**, e.g., for use in one or more automated data-based algorithms, and/or by one or more authorized stakeholders **106**.

[0033] Authorized stakeholders **106** may in some embodiments include endocrinologists or other HCPs with specialized training. The Cloud automated data-based algorithms may be designed to communicate selected patient records to these specialized HCPs. This would allow the specialized HCPs to confirm selected therapy recommendations made by the algorithm or analyze abnormal data patterns. A health plan may apply a variety of filtering parameters to identify patients or patient groups to be evaluated by the specialized HCPs. In some embodiments, the specialized HCPs may provide feedback (e.g., general coaching and/or drug therapy recommendations) directly to the patient, e.g., via mobile communication device **102** or processing device **502**. In other embodiments, the specialized HCPs may provide feedback to the patient's primary care physician (PCP) or to a health plan's diabetes management case manager.

[0034] In one embodiment, the automated or semi-automated data-based algorithms may be designed to communicate certain patient records to a health plan's disease management department. The Cloud may analyze inbound patient data using the automated or semi-automated data-based algorithms in order to segment patients based on certain recommended disease management actions and/or to stratify patients based on priority of action.

[0035] Additional benefits of the Cloud-based system structure disclosed herein include the ability of authorized stakeholders to use data captured on the Cloud for real-time clinical trials or health outcomes research. In addition, historic data captured in the Cloud may be analyzed retrospectively on a patient de-identified basis to enable retrospective health outcomes studies.

[0036] Additional disclosure related to cloud-based systems and associated algorithms can be found in the U.S. Provisional Application entitled "*FEEDBACK FROM CLOUD OR HCP TO PAYER OR PATIENT VIA METER OR CELL PHONE*", Attorney Docket No. ADCI-240PRV, filed on the same day as the instant application, and U.S.

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Provisional Application entitled "*ANALYTICS AND DATA MINING IN CLOUD FOLLOWING UPLOAD OF ANALYTE DATA VIA GSM OR CDM*", Attorney Docket No. ADCI-244PRV, filed on the same day as the instant application, which applications are incorporated by reference herein in their entirety and for all purposes.

Mobile Communication Devices

[0037] As discussed previously herein, a variety of mobile communication devices may be suitable for use as mobile communication device **102**. For example, suitable devices may include mobile phones, laptop computers; mobile devices, such as personal digital assistants (PDA)s, iPhone® devices, iPad® devices, Blackberry® devices, tablet computers, etc.; communication-enabled analyte meters; and other such devices known in the art. Additional information related to communication-enabled analyte meters can be found, e.g., in U.S. Application Publication No. 2010/0198142, the disclosure of which is incorporated herein by reference in its entirety and for all purposes.

[0038] In some embodiments, where the mobile communication device **102** is a communication-enabled analyte meter, the mobile communication device **102** may be configured as one or more of a discrete analyte measurement device (e.g., a glucose meter configured to receive a glucose test strip), a component of an analyte measurement system which system includes an implanted or partially implanted analyte sensor (e.g., a component of a continuous glucose measurement system), a component of an on-demand analyte measurement system, or a component of a medication delivery system (e.g., an insulin delivery system including an insulin pump or insulin pen device).

[0039] In some embodiments, where the mobile communication device **102** is configured as a discrete analyte measurement device, it may include a test strip port, e.g., a test strip port as described herein.

[0040] In some embodiments, where the mobile communication device **102** is configured as a component of an analyte measurement system, which system includes an implanted or partially implanted analyte sensor (e.g., a continuous analyte sensor), the mobile communication device **102** provides a portable hand-held component of the measurement system. In such embodiments, the mobile communication device **102** may be configured to include a communication unit which provides for wireless, e.g., RF, communication with an on-body portion of the analyte measurement system, e.g., an implanted or partially implanted analyte sensor or an RF-powered measurement circuit coupled to an implanted or partially implanted analyte sensor. In one embodiment,

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analyte readings (e.g., glucose readings) are performed automatically every minute, and the real time results are wirelessly transferred to the mobile communication device **102**.

[0041] In some embodiments, a user interface of mobile communication device **102** may be utilized by a user to request a display of the current analyte measurement data or provide analyte measurement trending information.

[0042] In some embodiments, where the mobile communication device **102** is configured as a component of an on-demand analyte measurement system, the mobile communication device **102** provides a portable hand-held component of the measurement system. In such embodiments, mobile communication device **102** may be configured to include a communication interface which provides for wireless, e.g., RF, communication with an on-body portion of the on-demand analyte measurement system when the portable hand-held component is positioned in proximity to the on-body portion of the on-demand analyte measurement system. In this manner, periodic or intermittent analyte readings may be obtained and communicated to a user. In some embodiments, a user interface of the mobile communication device **102** may be utilized by a user to initiate the on-demand acquisition of measurement data.

[0043] In some embodiments, where the mobile communication device **102** is configured as a component of a medication delivery system, e.g., an insulin delivery system, the mobile communication device **102** provides a portable hand-held component of the medication delivery system. In such embodiments, the mobile communication device **102** may be configured to include a communication interface which provides for wireless, e.g., RF, communication with a medication delivery device, e.g., an insulin pump.

[0044] As discussed above, in embodiments of the present disclosure, a strip port for receiving an analyte test strip, e.g., a glucose test strip, may be integrated with the housing of the mobile communication device **102**. Additional information is provided in US Patent No. 7,041,468 and in US Patent Application Publication No. 20040245534, the disclosures of which are incorporated herein by reference in their entirety and for all purposes.

Mobile Communication Device Applications

[0045] Mobile communication device **102** may be configured to run one or more software and/or firmware applications ("app.")s to provide functionalities which facilitate the functioning of system **100**. For example, mobile communication device

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102, may include and be configured to run an app. which is programmed to capture patient-supplied information, such as a summary of recent exercise, diet, and/or exception events (e.g., stress, flu, trouble sleeping).

[0046] In one embodiment, mobile communication device **102**, includes and is configured to determine an analyte level, e.g., a blood glucose level, based on signals received from an integrated test strip port or from an adapter **103** including an integrated test strip port. In such embodiments, e.g., as depicted in FIGS. 3 and 4, the system may not include a biometric sensor **101**.

[0047] In one embodiment, mobile communication device **102**, includes and is configured to run an app. which is configured to provide one or more feedback outputs to the patient, e.g., feedback on recent glucose control. Such feedback may be communicated to the patient, e.g., via text or audio communication and may include one or messages, e.g., "good job, your average fasting glucose has improved since last month. Additional feedback outputs include, e.g., forecasted HbA1c, recommended mealtime insulin (e.g., based on patient-supplied carbs and data from insulin pen), reminder to take other drugs, reminder of upcoming doctor's visit, and broadcasting of patient-specific educational content.

[0048] In one embodiment, mobile communication device **102**, includes and is configured to run an app. which is configured to relay messages from other stakeholders; such as secure message or questions from a PCP, e.g., ("I'm proud of you for staying on the exercise plan we agreed to."); and secure messages or questions from a diabetes management case manager or health plan, e.g., ("Have you had a foot exam this year?").

[0049] In one embodiment, apps. are licensed, acquired, or otherwise built by third-parties to be incorporated into mobile communication device **102**.

[0050] Mobile communication device **102** may include one or more of the software applications described in U.S. Patent Application No. 7,766,829; and U.S. Provisional Patent Application Nos. 61/015,185; 61/262,849; 61/290,841; 61/254,156; and 61/325,155; the disclosures of which are incorporated herein by reference in their entirety and for all purposes. Additional software applications suitable for use in connection with mobile communication device **102** are described in the U.S. Provisional Application entitled "*SOFTWARE APPLICATIONS RESIDING ON HANDHELD ANALYTE DETERMINING DEVICES*", Attorney Docket No. ADCI-242PRV, filed on the same day as the instant application, and incorporated by reference herein in its entirety and for all purposes.

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[0051] In some embodiments, the mobile communication device **102** is an uncontrolled data processing device (UDPD). In such embodiments, when a safety critical application (SCA) is to be run on the device, a system according to the present disclosure will include methods and/or articles of manufacture for hosting the SCA on the UDPD. Description of such methods and/or articles of manufacture can be found, e.g., in U.S. Patent Application No. 12/876,840, entitled "Methods and Articles of Manufacture for Hosting a Safety Critical Application on an Uncontrolled Data Processing Device", filed September 7, 2010, the disclosure of which is incorporated by reference herein its entirety and for all purposes.

[0052] While the above applications are described in the context of a mobile communication device **102**, it should be noted that any of the above applications may be run by a biometric monitoring device **501**.

Communication

[0053] Mobile communication device **102** may be configured for wired or wireless communication with one or more of the components of system **100**, e.g., one or more biometric sensors **101**, the Cloud **105**, additional biometric data sources **104**, or one or more authorized stakeholders **106**. For example, the mobile communication unit **102** may be configured for wireless communication, including, but not limited to, radio frequency (RF) communication (e.g., Radio-Frequency Identification (RFID), Zigbee communication protocols, WiFi, infrared, wireless Universal Serial Bus (USB), Ultra Wide Band (UWB), Bluetooth® communication protocols, and cellular communication, such as code division multiple access (CDMA) or Global System for Mobile communications (GSM).

[0054] In one embodiment, the mobile communication device **102** is configured for infrared communication, Bluetooth® communication, or any other suitable wireless communication protocol to enable communication with other devices such as computer terminals and/or networks, communication-enabled mobile telephones, PDAs, or any other communication-enabled devices which the patient or user may use in connection with managing the treatment of a health condition, such as diabetes.

[0055] In one embodiment, the mobile communication device **102** is configured to provide a connection for data transfer utilizing Internet Protocol (IP) through a cellular telephone network, Short Message Service (SMS), wireless connection to a personal

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computer (PC) on a Local Area Network (LAN) which is connected to the internet, or WiFi connection to the internet at a WiFi hotspot.

[0056] In one embodiment, the mobile communication device **102** is configured to wirelessly communicate with a server device, e.g., using a common standard such as 802.11 or Bluetooth® RF protocol, or an IrDA infrared protocol.

[0057] The mobile communication device **102** may be configured to automatically or semi-automatically communicate data stored in the mobile communication device **102** to one or more of the components of system **100** using one or more of the communication protocols and/or mechanisms described above.

[0058] As discussed previously herein and as depicted in FIGS. 1, 2, 6 and 7, mobile communication device **102** may be configured to communicate with one or more biometric sensors **101**, either directly or via adapter **103**. This communication may be wired or wireless. Suitable wireless communication protocols and/or mechanisms may include one or more of those described above. In one embodiment, a mobile communication unit **102** is configured for wireless communication, e.g., RF, communication with an on-body portion of a biometric sensor **101**, e.g., an implanted or partially implanted analyte sensor or an RF-powered measurement circuit coupled to an implanted or partially implanted analyte sensor. In one embodiment, analyte readings (e.g., glucose readings) are performed automatically every minute, and the real time results are wirelessly transferred to the mobile communication device **102**, either directly or via adapter **103**.

Adapter

[0059] As depicted in FIGS. 1, 3, 6 and 7 mobile communication device **102** may optionally include an adapter **103** configured to be coupled therewith. In some embodiments, adapter **103** is configured to acquire biometric information and/or data (e.g., where the adapter **103** includes an integrated test strip port) or receive biometric information and/or data communicated from one or more biometric sensors **101** and transfer such information and/or data to mobile communication device **102**.

[0060] The adapter **103** may be in the form of a protective "skin" or case designed to fit a mobile communication device **102**. In some embodiments, the adapter may provide structural support for the integrated device combination. As shown in FIGS. 6 and 7, in some embodiments, the adapter may include two or more pieces which engage to form a complete adapter. In other embodiments the adapter may be a single unit.

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[0061] As used herein the term "skin" refers to a flexible material, e.g., a flexible polymer material, configured to cover at least a portion of a mobile communication device **102**. In some embodiments, the skin is sized and shaped to fit one or more external dimensions of a mobile communication device **102**, while providing access to one or more features of the mobile communication device **102**, e.g., one or more input units, displays, speakers, microphones, headphone jacks, cameras, communication ports, etc. The skin may be configured to cover greater than 40%, e.g., greater than 50%, greater than 60%, greater than 70%, greater than 80% or greater than 90% of the exposed surface of a portable electronic device.

[0062] As used herein with reference to a portable electronic processing device, use of the term "case" as opposed to the term skin refers to a relatively rigid covering for a mobile communication device **102**. As with the skin, in some embodiments, a case is sized and shaped to fit one or more external dimensions of a mobile communication device **102**, while providing access to one or more features of the mobile communication device **102**, e.g., one or more input units, displays, speakers, microphones, headphone jacks, cameras, communication ports, etc. For example, a case may be configured to cover greater than 40%, e.g., greater than 50%, greater than 60%, greater than 70%, greater than 80% or greater than 90% of the exposed surface of a mobile communication device **102**.

[0063] Communication between the mobile communication device **102** and the optional adapter **103** may be accomplished using a wired connection between the adapter **103** and a hard-wired communication port positioned on the mobile communication device **102** (e.g., a USB port or a proprietary serial interface such as that found in the iPhone®). For example, the adapter **103** may include a male USB connector while mobile communication device **102** includes a corresponding female USB connector. Connection of the two connectors provides a physical and electrical connection between the adapter **103** and the mobile communication device **102**. Alternatively, communication between adapter **103** and mobile communication device **102** may be via one or more of the wireless communication protocols and/or mechanisms described herein.

[0064] The adapter **103** may be configured as one or more of a discrete analyte measurement device (e.g., a glucose meter configured to receive a glucose test strip), a component of an analyte measurement system which system includes an implanted or partially implanted analyte sensor (e.g., a component of a continuous glucose measurement system), a component of an on-demand analyte measurement system, or a

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component of a medication delivery system (e.g., an insulin delivery system including an insulin pump).

[0065] In some embodiments, where the adapter **103** is configured as a discrete analyte measurement device, it may include a test strip port, e.g., a test strip port as described herein. In such embodiments, the discrete analyte measurement device may or may not include a display unit which is separated from a display unit of the mobile communication device **102**. Where the discrete analyte measurement device does not include a separate display unit, analyte measurement results obtained using the discrete analyte measurement device may be displayed on a display unit of the mobile communication device **102**.

[0066] In some embodiments, e.g., as depicted in FIGS. 1, 6 and 7, where the adapter **103** is configured as a component of an analyte measurement system, which system includes an implanted or partially implanted analyte sensor (e.g., a continuous analyte sensor), the adapter **103** in combination with the mobile communication device **102** coupled thereto provides a portable hand-held component of the measurement system. In such embodiments, the adapter **103** may be configured to include a communication unit which provides for wireless, e.g., RF, communication with an on-body portion of the analyte measurement system, e.g., an implanted or partially implanted analyte sensor or an RF-powered measurement circuit coupled to an implanted or partially implanted analyte sensor. In one embodiment, analyte readings (e.g., glucose readings) are performed automatically every minute, and the real time results are wirelessly transferred to the adapter **103**.

[0067] In some embodiments, a button or other input device on the adapter **103** may be utilized by a user to request a display of the current analyte measurement data or provide analyte measurement trending information. Alternatively, or in addition, the request for current measurement data may be made using a user interface of the mobile communication device **102**. The adapter **103** may be configured such that when it operates in combination with a mobile communication device **102** the normal functioning of the mobile communication device **102** is not impaired. For example, in some embodiments, where the adapter includes a test strip port integrated therein, a user may make or receive a call, text message, etc., using a mobile phone fitted to the adapter even when a test strip is inserted into the test strip port.

[0068] In some embodiments, where the adapter **103** is configured as a component of an on-demand analyte measurement system, the adapter **103** in combination with the mobile

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communication device **102** coupled thereto provides a portable hand-held component of the measurement system. In such embodiments, the adapter **103** may be configured to include a communication interface which provides for wireless, e.g., RF, communication with an on-body portion of the on-demand analyte measurement system when the portable hand-held component is positioned in proximity to the on-body portion of the on-demand analyte measurement system. In this manner, periodic or intermittent analyte readings may be obtained and communicated to a user. In some embodiments, a button or other input device on the adapter **103** may be utilized by a user to initiate the on-demand acquisition of measurement data. Alternatively, or in addition, the acquisition of measurement data may be initiated using a user interface of the mobile communication device **102**. The adapter **103** may be configured such that when it operates in combination with a mobile communication device **102** the normal functioning of the mobile communication device **102** is not impaired.

[0069] In some embodiments, where the adapter **103** is configured as a component of a medication delivery system, e.g., an insulin delivery system, the adapter **103** in combination with the mobile communication device **102** coupled thereto provides a portable hand-held component of the medication delivery system. In such embodiments, the adapter **103** may be configured to include a communication interface which provides for wireless, e.g., RF, communication with a medication delivery device, e.g., an insulin pump.

[0070] In some embodiments, the adapter **103** is configured to be powered by the mobile communication device **102** to which the adapter **103** is coupled, e.g. via a USB connection. Alternatively, or in addition, the adapter **103** may include a separate power source, e.g., a disposable or rechargeable battery. Additional information related to the powering of an adapter coupled to a mobile communication device is provided in U.S. Patent No. 7,041,468, the disclosure of which is incorporated herein by reference in its entirety and for all purposes.

[0071] The adapter **103** may include a memory for storing one or more software applications designed to be uploaded and/or run by a processor of the mobile communication device **102** to which the adapter **103** is coupled.

[0072] As discussed above, in embodiments of the present disclosure, a strip port for receiving an analyte test strip, e.g., a glucose test strip, may be integrated with the housing of the adapter **103**. Additional information is provided in US Patent No.

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7,041,468 and in US Patent Application Publication No. 20040245534, the disclosures of which are incorporated herein by reference in their entirety and for all purposes.

[0073] Additional information related to the use and structure of an adapter as disclosed herein can be found in Provisional Application No. 61/325,021, filed on April 16, 2010, and titled "Mobile Phone Display for Continuous Analyte Monitoring," the disclosure of which is incorporated by reference herein and for all purposes.

Sensors

[0074] The systems of the present disclosure may include one or more biometric sensors. The biometric sensors according to the present disclosure may be configured to be relatively small in size. For example, in some embodiments, the biometric sensors are approximately the size of a quarter or smaller. Such sensors may be attached to the body of a user, e.g., via an adhesive patch. In some embodiments, the sensor includes electrodes which are positioned below the surface of the skin, e.g., a few millimeters below the surface of the skin. Sensors of this type may be worn on the body for extended periods of time, e.g., periods of up to 10 days or more.

[0075] In some embodiments, a system according to the present disclosure may include a biometric sensor **101** which may be an on-body patch device with a thin profile that may be comfortably worn on the arm or other locations on the body (e.g., under clothing worn by the user or the patient). The on-body patch device may include a biometric sensor and circuitry and components for operating the sensor and processing and storing signals received from the sensor as well as for communication with the adapter **103** and/or the mobile communication device **102**. For example, in one embodiment the on-body patch device may include electronics configured to sample a voltage signal received from a biometric sensor in fluid contact with a body fluid, and to process the sampled voltage signals into corresponding analyte, e.g., glucose, values and/or store the sampled voltage signal as raw data.

[0076] The on-body patch device in one embodiment may include an antenna such as a loop antenna to receive RF power from an external device such as the adapter **103**, the mobile communication device **102** or the biometric monitoring device **501** described above; electronics to convert the RF power received via the antenna into DC (direct current) power for the on-body patch device circuitry; communication module or electronics to detect commands received from the adapter **103**, the mobile communication device **102** or the biometric monitoring device **501**; a communication

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component such as an RF transmitter to transmit data to the adapter **103**, the mobile communication device **102** or the biometric monitoring device **501**; a low capacity battery for providing power to sensor sampling circuitry (for example, the analog front end circuitry of the on-body patch device in signal communication with the analyte sensor); and/or one or more non-volatile memory or storage devices to store data including raw signals from the sensor or processed data based on the raw sensor signals.

[0077] In some embodiments, a biometric sensor as described herein may be an implanted or partially implanted analyte sensor, e.g., an implanted or partially implanted glucose sensor. An adapter or mobile communication device as described herein may be configured to receive analyte data from the implanted or partially implanted glucose sensor either directly or through an intermediate device, e.g., an RF-powered measurement circuit coupled to an implanted or partially implanted analyte sensor. In some embodiments, where a system according to the present disclosure includes an implanted sensor, the system does not include a strip port for receiving an analyte test strip. In some embodiments, the analyte measurement system may be configured to communicate with the implanted or partially implanted analyte sensor via Radio Frequency Identification (RFID) and provide for intermittent or periodic interrogation of the implanted analyte sensor.

[0078] In some embodiments, the biometric sensor is a self-powered analyte sensor. Additional information related to self-powered analyte sensors and methods of communicating therewith are provided in U.S. Patent Application Publication No. 2010/0213057, the disclosure of which is incorporated by reference herein in its entirety and for all purposes.

[0079] Additional disclosure related to the structure and function of biometric sensors can be found, e.g., in the following patents, applications and/or publications which are incorporated herein by reference in their entirety and for all purposes: U.S. Patent Nos. 4,545,382; 4,711,245; 5,262,035; 5,262,305; 5,264,104; 5,320,715; 5,356,786; 5,509,410; 5,543,326; 5,593,852; 5,601,435; 5,628,890; 5,820,551; 5,822,715; 5,899,855; 5,918,603; 6,071,391; 6,103,033; 6,120,676; 6,121,009; 6,134,461; 6,143,164; 6,144,837; 6,161,095; 6,175,752; 6,270,455; 6,284,478; 6,299,757; 6,338,790; 6,377,894; 6,461,496; 6,503,381; 6,514,460; 6,514,718; 6,540,891; 6,560,471; 6,579,690; 6,591,125; 6,592,745; 6,600,997; 6,605,200; 6,605,201; 6,616,819; 6,618,934; 6,650,471; 6,654,625; 6,676,816; 6,730,200; 6,736,957; 6,746,582; . 6,749,740; 6,764,581; 6,773,671; 6,881,551; 6,893,545; 6,932,892;

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6,932,894; 6,942,518; 7,041,468; 7,167,818; 7,299,082; and 7,866,026; U.S. Published Application Nos. 2004/0186365; 2005/0182306; 2006/0025662; 2006/0091006; 2007/0056858; 2007/0068807; 2007/0095661; 2007/0108048; 2007/0199818; 2007/0227911; 2007/0233013; 2008/0066305; 2008/0081977; 2008/0102441; 2008/0148873; 2008/0161666;2008/0267823; 2009/0054748; 2009/0247857; 2009/0294277; 2010/0081909; 2010/0198034;2010/0213057; 2010/0230285; 2010/0313105; 2010/0326842; and 2010/0324392; U.S. Patent Application Serial Nos. 12/807,278; 12/842,013; and 12/871,901; and U.S. Provisional Application Nos. 61/238,646; 61/246,825; 61/247,516; 61/249,535; 61/317,243; 61/345,562; 61/361,374; and 61/415,174.

Integration with Medication Delivery Devices and/or Systems

[0080] In some embodiments, the systems disclosed herein may be integrated with a medication delivery device and/or system, e.g., an insulin pump module, such as an insulin pump or controller module thereof, or insulin injection pen. Additional information regarding medication delivery devices and/or systems, such as, for example, integrated systems, is provided in U.S. Patent Application Publication No. 20060224141, published on October 5, 2006, entitled "Method and System for Providing Integrated Medication Infusion and Analyte Monitoring System", and U.S. Patent Application Publication No. 20040254434, published on December 16, 2004, entitled "Glucose Measuring Module and Insulin Pump Combination," the disclosures of which are incorporated by reference herein in their entirety and for all purposes. Medication delivery devices which may be integrated with systems as described herein include, e.g., a needle, syringe, pump, catheter, inhaler, transdermal patch, or combination thereof. In some embodiments, the medication delivery device or system may be in the form of a drug delivery injection pen such as a pen-type injection device incorporated within the housing of an analyte measurement device. Additional information is provided in U.S. Patent Nos. 5,536,249 and 5,925,021, the disclosures of each of which are incorporated by reference herein in their entirety and for all purposes.

Analyte Test Strips

[0081] Analyte test strips for use in the disclosed devices and systems can be of any kind, size, or shape known to those skilled in the art; for example, FREESTYLE® and FREESTYLE LITE ™ test strips, as well as PRECISION™ test strips sold by ABBOTT

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DIABETES CARE Inc. In addition to the embodiments specifically disclosed herein, devices of the present disclosure may be configured to work with a wide variety of analyte test strips, e.g., those disclosed in U.S. Patent Application Publication No. 20070095661; U.S. Patent Application Publication No. 20060091006; U.S. Patent Application Publication No. 20060025662; U.S. Patent Application Publication No. 20080267823; U.S. Patent Application Publication No. 20070108048; U.S. Patent Application Publication No. 20080102441; U.S. Patent Application Publication No. 20080066305; U.S. Patent Application Publication No. 20070199818; U.S. Patent Application Publication No. 20080148873; U.S. Patent Application Publication No. 20070068807; U.S. Patent Application No. 20090255811, and U.S. Patent Application Publication No. 20090095625; U.S. Patent No. 7,866,026; U.S. Patent No. 6,616,819; U.S. Patent No. 6,143,164; U.S. Patent No. 6,592,745; U.S. Patent No. 6,071,391 and U.S. Patent No. 6,893,545; the disclosures of each of which are incorporated by reference herein in their entirety and for all purposes.

Calculation of Medication Dosage

[0082] In one embodiment, one or more of the system components described herein may be configured to measure the blood glucose concentration of a patient and include instructions for a long-acting insulin dosage calculation function. Periodic injection or administration of long-acting insulin may be used to maintain a baseline blood glucose concentration in a patient with Type-1 or Type-2 diabetes. In one embodiment, the long-acting medication dosage calculation function may include an algorithm or routine based on the current blood glucose concentration of a diabetic patient, to compare the current measured blood glucose concentration value to a predetermined threshold or an individually tailored threshold as determined by a doctor or other treating professional to determine the appropriate dosage level for maintaining the baseline glucose level. In one embodiment, the long-acting insulin dosage calculation function may be based upon LANTUS® insulin, available from Sanofi-Aventis, also known as insulin glargine. LANTUS® is a long-acting insulin that has up to a 24 hour duration of action. Further information on LANTUS® insulin is available at the website located by placing "www" immediately in front of ".lantus.com". Other types of long-acting insulin include Levemir® insulin available from NovoNordisk (further information is available at the website located by placing "www" immediately in front of ".levemir-us.com". Examples of such embodiments are described in in US Published Patent Application No.

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201001981142, the disclosure of which is incorporated by reference herein in its entirety and for all purposes.

Strip Port Configured to Receive Test Strips for Different Analytes

[0083] In one embodiment, the test strip ports described herein are capable of performing a multiplicity of testing functionalities. In such embodiments, the test ports may be adapted for use in combination with a multiplicity of different types of test strips and include a sensor capable of specifically interacting with the indicator(s) on the test strips, thereby selecting at least one of the multiplicity of testing functionalities corresponding to the type of test strip. For example, such a strip port may be used to read a test strip for glucose and a test strip for ketone bodies. Examples of such strip ports are provided in U.S. Patent No. 6,773,671, the disclosure of which is incorporated by reference herein in its entirety and for all purposes.

Strip Port Configured to Receive Test Strips Having Different Dimensions and/or Electrode Configurations

[0084] In some embodiments, the test strip ports discussed herein may be configured to receive test strips having different dimensions and/or electrode configurations, e.g., as described in the U.S. Patent Application No. 12/695,947 filed on January 28, 2010, and entitled "Universal Test Strip Port", the disclosure of which is incorporated by reference herein in its entirety and for all purposes.

Input Unit

[0085] An adapter, mobile communication device or biometric monitoring device as described herein can be configured to include an input unit and/or input buttons coupled to the housing of the adapter and/or a mobile communication device and in communication with a controller unit and/or processor of the adapter and/or mobile communication device. In some embodiments, the input unit includes one or more input buttons and/or keys, wherein each input button and/or key is designated for a specific task. Alternatively, or in addition, the input unit may include one or more input buttons and/or keys that can be 'soft buttons' or 'soft keys'. In the case where one or more of the input buttons and/or keys are 'soft buttons' or 'soft keys', these buttons and/or keys may be used for a variety of functions. The variety of functions may be determined based on the current mode of the adapter and/or a mobile communication device, and may be

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distinguishable to a user by the use of button instructions shown on an optional display unit of the adapter and/or a mobile communication device. Yet another input method may be a touch-sensitive display unit, as described in greater detail below.

[0086] In addition, in some embodiments, the input unit is configured such that a user can operate the input unit to adjust time and/or date information, as well as other features or settings associated with the operation of the adapter and/or a mobile communication device.

Display Unit

[0087] As discussed previously herein, in some embodiments, an adapter, a mobile communication device or a biometric monitoring device according to the present disclosure includes an optional display unit or a port for coupling an optional display unit to the adapter and/or a mobile communication device. The display unit is in communication with a control unit and/or processor of the adapter and/or a mobile communication device. In some embodiments, the display unit is configured to display biometric sensor signals and/or results determined from biometric sensor signals including, for example, analyte concentration, rate of change of analyte concentration, and/or the exceeding of a threshold analyte concentration (indicating, for example, hypo- or hyperglycemia).

[0088] The display unit can be a dot-matrix display, e.g., a dot-matrix LCD display. In some embodiments, the display unit includes a liquid-crystal display (LCD), thin film transistor liquid crystal display (TFT-LCD), plasma display, light-emitting diode (LED) display, seven-segment display, E-ink (electronic paper) display or combination of two or more of the above. The display unit can be configured to provide, an alphanumeric display, a graphical display, a video display, an audio display, a vibratory output, or combinations thereof. The display can be a color display. In some embodiments, the display is a backlit display.

[0089] The display unit can also be configured to provide, for example, information related to a patient's current analyte concentration as well as predictive analyte concentrations, such as trending information.

[0090] In some embodiments an input unit and a display unit are integrated into a single unit, for example, the display unit can be configured as a touch sensitive display, e.g., a touch-screen display, where the user may enter information or commands via the display area using, for example, the user's finger, a stylus or any other suitable implement, and

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where, the touch sensitive display is configured as the user interface in an icon driven environment, for example.

[0091] In some embodiments, the display unit does not include a screen designed to display results visually. Instead, in some embodiments the optional display unit is configured to communicate results audibly to a user of the analyte measurement system, e.g., via an integrated speaker, or via separate speakers through a headphone jack or Bluetooth® headset.

Analytes

[0092] A variety of analytes can be detected and quantified using the disclosed system. Analytes that may be determined include, for example, acetyl choline, amylase, bilirubin, cholesterol, chorionic gonadotropin, creatine kinase (e.g., CK-MB), creatine, DNA, fructosamine, glucose, glutamine, growth hormones, hormones, ketones (e.g., ketone bodies), lactate, oxygen, peroxide, prostate-specific antigen, prothrombin, RNA, thyroid stimulating hormone, and troponin. The concentration of drugs, such as, for example, antibiotics (e.g., gentamicin, vancomycin, and the like), digitoxin, digoxin, drugs of abuse, theophylline, and warfarin, may also be determined. Assays suitable for determining the concentration of DNA and/or RNA are disclosed in U.S. Patent No. 6,281,006 and U.S. Patent No. 6,638,716, the disclosures of each of which are incorporated by reference herein in their entirety.

Conclusion

[0093] The foregoing description of the invention has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed. Other modifications and variations may be possible in light of the above teachings. The embodiments were chosen and described in order to best explain the principles of the invention and its practical application, and to thereby enable others skilled in the art to best utilize the invention in various embodiments and various modifications as are suited to the particular use contemplated. It is intended that the appended claims be construed to include other alternative embodiments of the invention; including equivalent structures, components, methods, and means.

[0094] It is to be appreciated that the Detailed Description section, and not the Summary and Abstract sections, is intended to be used to interpret the claims. The Summary and Abstract sections may set forth one or more, but not all exemplary embodiments of the

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present invention as contemplated by the inventor(s), and thus, are not intended to limit the present invention and the appended claims in any way.

[0095] Where a range of values is provided, it is understood that each intervening value, to the tenth of the unit of the lower limit unless the context clearly dictates otherwise, between the upper and lower limits of that range is also specifically disclosed. Each smaller range between any stated value or intervening value in a stated range and any other stated or intervening value in that stated range is encompassed within the invention. The upper and lower limits of these smaller ranges may independently be included or excluded in the range, and each range where either, neither or both limits are included in the smaller ranges is also encompassed within the invention, subject to any specifically excluded limit in the stated range. Where the stated range includes one or both of the limits, ranges excluding either or both of those included limits are also included in the invention.

[0096] In the description of the invention herein, it will be understood that a word appearing in the singular encompasses its plural counterpart, and a word appearing in the plural encompasses its singular counterpart, unless implicitly or explicitly understood or stated otherwise. Merely by way of example, reference to "an" or "the" "analyte" encompasses a single analyte, as well as a combination and/or mixture of two or more different analytes, reference to "a" or "the" "biometric sensor" encompasses a single biometric sensor, as well as two or more biometric sensors, and the like, unless implicitly or explicitly understood or stated otherwise. Further, it will be understood that for any given component described herein, any of the possible candidates or alternatives listed for that component, may generally be used individually or in combination with one another, unless implicitly or explicitly understood or stated otherwise. Additionally, it will be understood that any list of such candidates or alternatives, is merely illustrative, not limiting, unless implicitly or explicitly understood or stated otherwise.

[0097] Various terms are described to facilitate an understanding of the invention. It will be understood that a corresponding description of these various terms applies to corresponding linguistic or grammatical variations or forms of these various terms. It will also be understood that the invention is not limited to the terminology used herein, or the descriptions thereof, for the description of particular embodiments. Merely by way of example, the invention is not limited to particular analytes, bodily or tissue fluids, blood or capillary blood, or sensor constructs or usages, unless implicitly or explicitly understood or stated otherwise, as such may vary.

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[0098] The publications discussed herein are provided solely for their disclosure prior to the filing date of the application. Nothing herein is to be construed as an admission that the embodiments of the invention are not entitled to antedate such publication by virtue of prior invention. Further, the dates of publication provided may be different from the actual publication dates which may need to be independently confirmed.

[0099] The detailed description of the figures refers to the accompanying drawings that illustrate an exemplary embodiment of an analyte measurement system. Other embodiments are possible. Modifications may be made to the embodiment described herein without departing from the spirit and scope of the present invention. Therefore, the following detailed description is not meant to be limiting.

[00100] Certain embodiments presented herein relate to electrical interfaces in measurement devices. Measurement devices often have electrical interfaces that allow them to electrically connect with another device or apparatus and perform an analysis of an analyte. A device that measures blood glucose levels, for example, includes electrical interfaces that allow the device to measure the blood glucose level from a small blood sample.

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CLAIMS

What is claimed is:

1. A health management system, comprising:

a mobile communication device;

a biometric, on-body sensor, wherein the biometric, on-body sensor is configured to communicate biometric sensor data or associated biometric sensor data information to the mobile communication device;

a location-independent, shared server system,

wherein the mobile communication device is configured to communicate the biometric sensor data or associated biometric sensor data information to the location-independent, shared server system,

wherein the location-independent, shared server system is configured to run one or more automated or semi-automated data-based algorithms using the biometric sensor data or associated biometric sensor data information as input, and

wherein the location-independent, shared server system is configured to provide one or more outputs of the automated data-based algorithms to one or more authorized stakeholders.

2. The health management system of claim 1, wherein the biometric, on-body sensor is an implanted or partially implanted analyte sensor.

3. The health management system of claim 2, wherein the implanted or partially implanted analyte sensor is a glucose sensor.

4. The health management system of any of the preceding claims, wherein the on-body sensor is configured to wirelessly communicate the biometric sensor data or associated biometric data information to the mobile communication device.

5. The health management system of any of the preceding claims, wherein the mobile communication device is configured to wirelessly communicate the biometric sensor data or associated biometric data information to the location-independent, shared server system.

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6. The health management system of any of the preceding claims, wherein the one or more authorized stakeholders are selected from the group consisting of: a patient, health care provider (HCP), health plan administrator, disease management case manager, government entity, payor, and a family member of the patient.

7. The health management system of any of the preceding claims, wherein the location-independent, shared server system is configured to automatically provide the one or more outputs of the automated data-based algorithms to a patient's electronic medical record (EMR).

8. The health management system of any of the preceding claims, further comprising an adapter configured to couple to the mobile communication device, wherein the on-body sensor, the adapter and the mobile communication device are configured such that the biometric sensor data or associated biometric sensor data information is communicated from the biometric, on-body sensor to the adapter and from the adapter to the mobile communication device.

9. The health management system of claim 8, wherein the information communication from the adapter to the mobile communication device is by way of a wired connection.

10. The health management system of claim 8, wherein adapter comprises a two-part housing configured to engage the mobile communication device.

11. The health management system of claim 8, wherein adapter comprises a test-strip port.

12. The health management system of any of the preceding claims, further comprising one or more additional biometric data sources, wherein the mobile communication device is configured to receive biometric data from the one or more additional biometric data sources.

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13. The health management system of any of the preceding claims, wherein the one or more outputs of the automated data-based algorithms comprise one or more therapy recommendations.

14. A health management system, comprising:

a mobile communication device;

an adapter configured to couple to the mobile communication device, wherein the adapter comprises an analyte monitor and is configured to communicate analyte data or associated analyte data information to the mobile communication device;

a location-independent, shared server system,

wherein the mobile communication device is configured to communicate the analyte data or associated analyte data information to the location-independent, shared server system,

wherein the location-independent, shared server system is configured to run one or more automated or semi-automated data-based algorithms using the analyte data or associated analyte data information as input, and

wherein the location-independent, shared server system is configured to provide one or more outputs of the automated data-based algorithms to one or more authorized stakeholders.

15. A health management system, comprising:

a communication-enabled analyte meter;

a location-independent, shared server system,

wherein the communication-enabled analyte meter is configured to communicate analyte data or associated analyte data information from the communication-enabled analyte meter to the location-independent, shared server system,

wherein the location-independent, shared server system is configured to run one or more automated or semi-automated data-based algorithms using the analyte data or associated analyte data information as input, and

wherein the location-independent, shared server system is configured to provide one or more outputs of the automated data-based algorithms to one or more authorized stakeholders.

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16. A health management system, comprising:

a biometric monitoring device;

a processing device;

a location-independent, shared server system,

wherein the biometric monitoring device is configured to communicate biometric data or associated biometric data information from the biometric monitoring device to the location-independent, shared server system via the processing device,

wherein the location-independent, shared server system is configured to run one or more automated or semi-automated data-based algorithms using the biometric data or associated biometric data information as input, and

wherein the location-independent, shared server system is configured to provide one or more outputs of the automated or semi-automated data-based algorithms to one or more authorized stakeholders.

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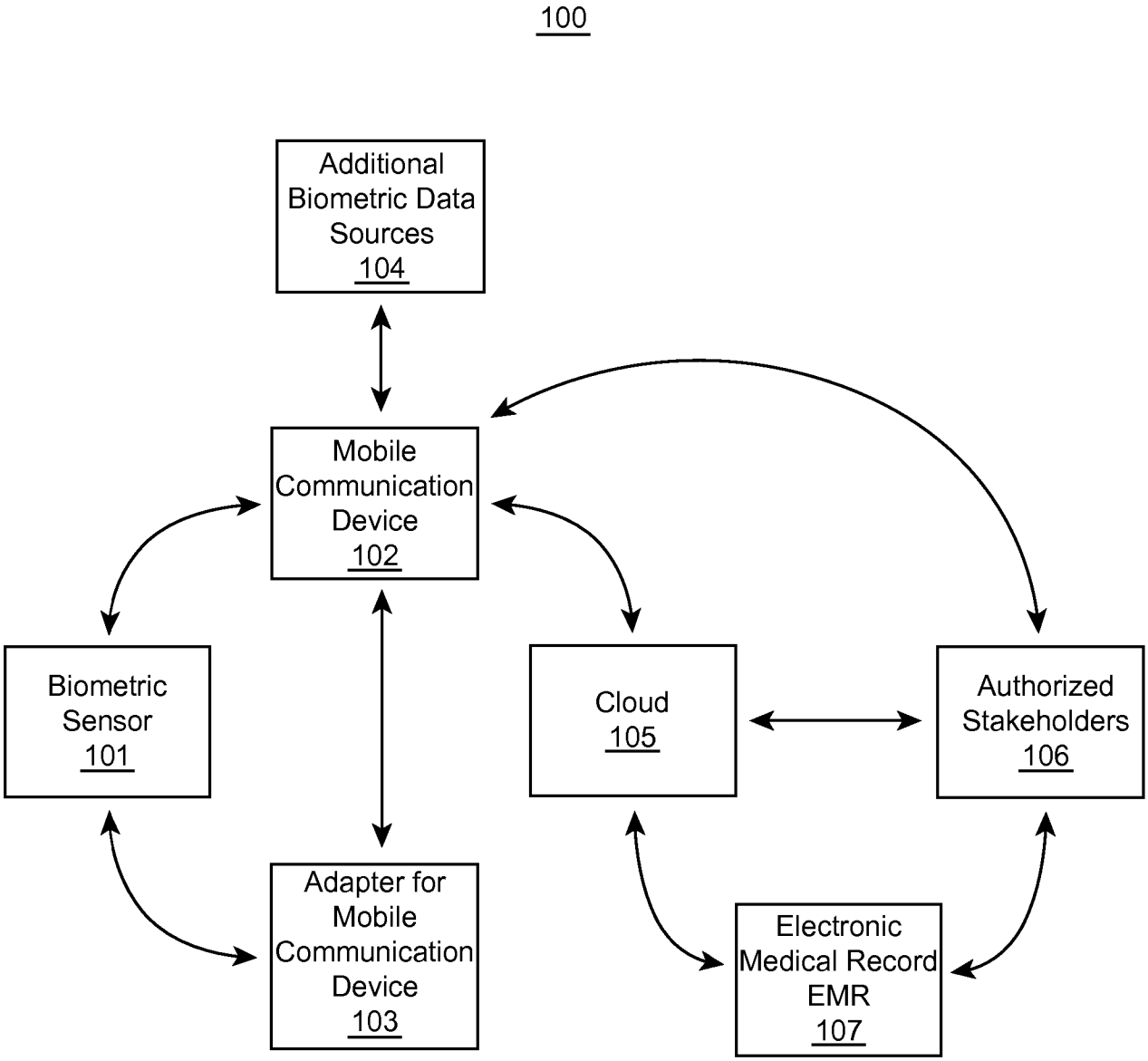

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Mobile Communication Device 102
Biometric Sensor 101
Cloud 105
Authorized Stakeholders 106
Adapter for Mobile Communication Device 103
Electronic Medical Record EMR 107

FIG. 1

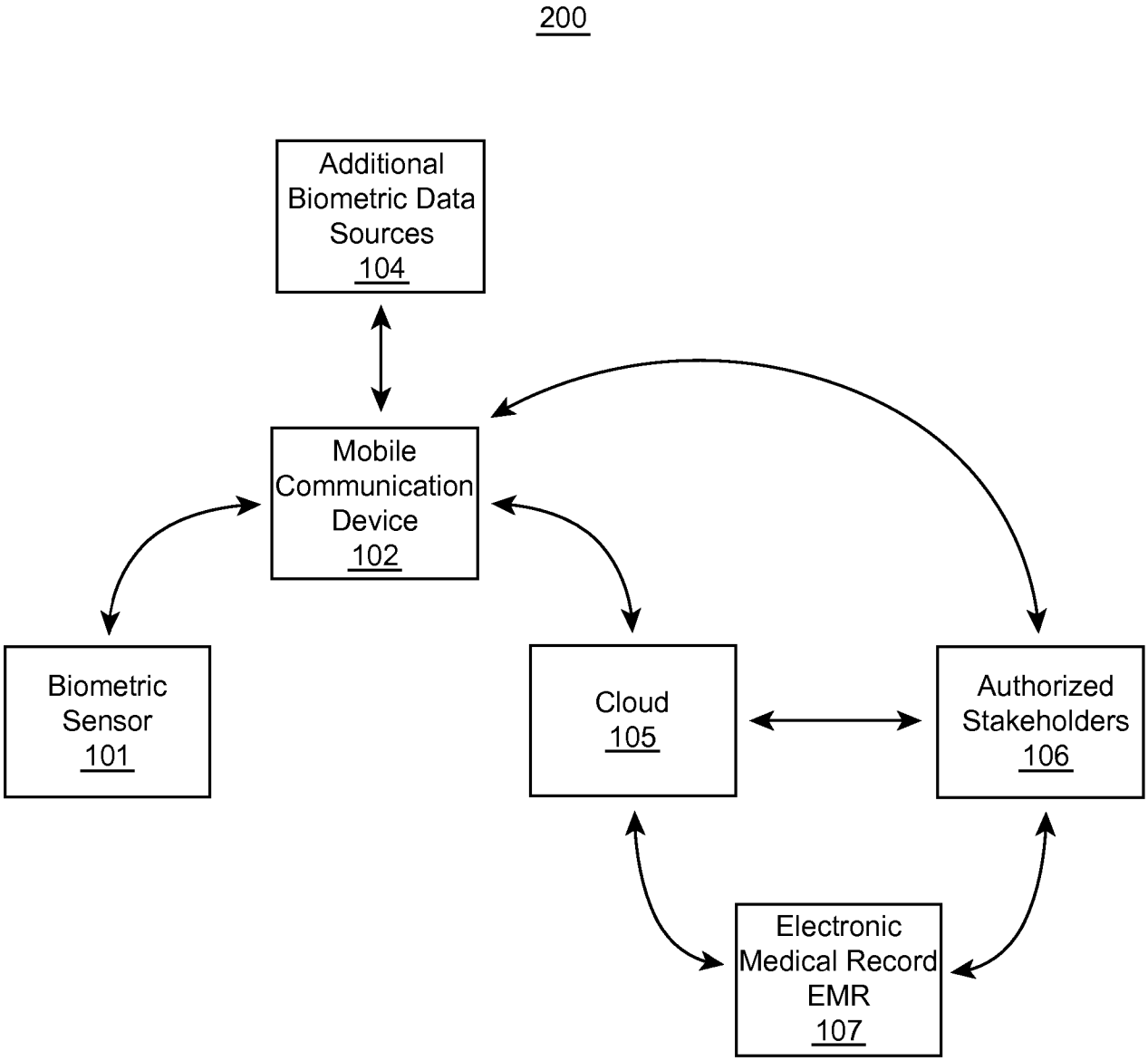

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Biometric Sensor 101
Cloud 105
Authorized Stakeholders 106
Electronic Medical Record EMR 107

FIG. 2

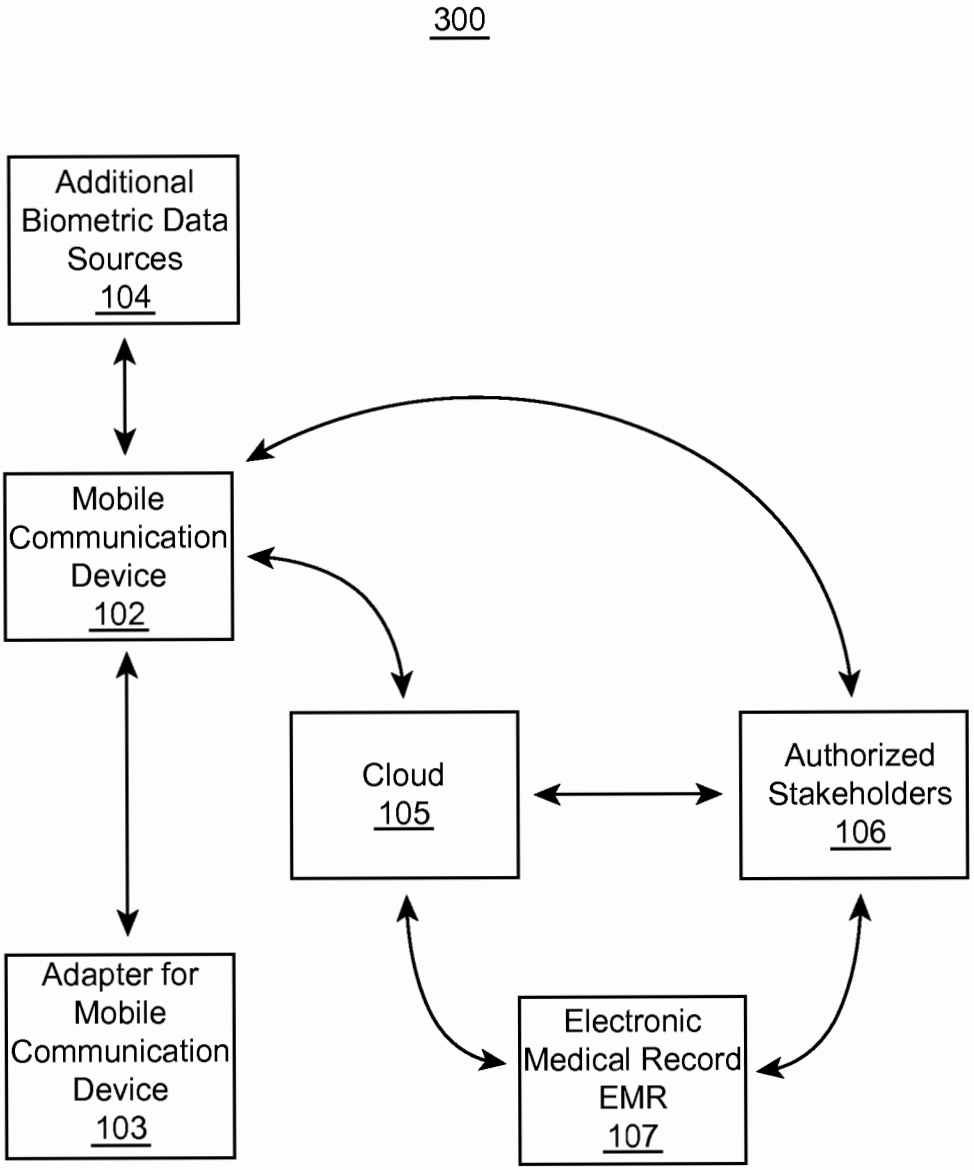

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Mobile Communication Device 102
Cloud 105
Authorized Stakeholders 106
Adapter for Mobile Communication Device 103
Electronic Medical Record EMR 107

FIG. 3

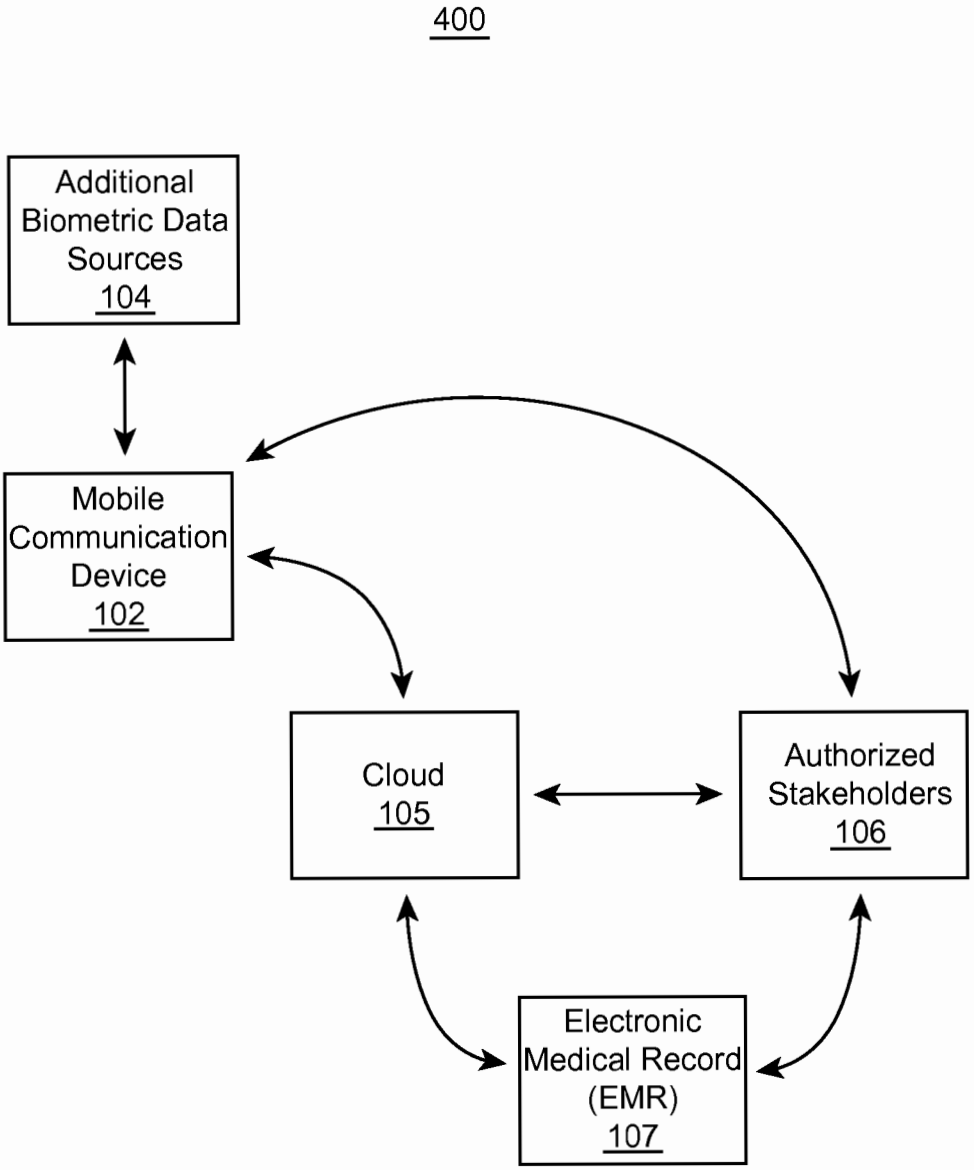

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Mobile Communication Device 102
Cloud 105
Authorized Stakeholders 106
Electronic Medical Record (EMR) 107

FIG. 4

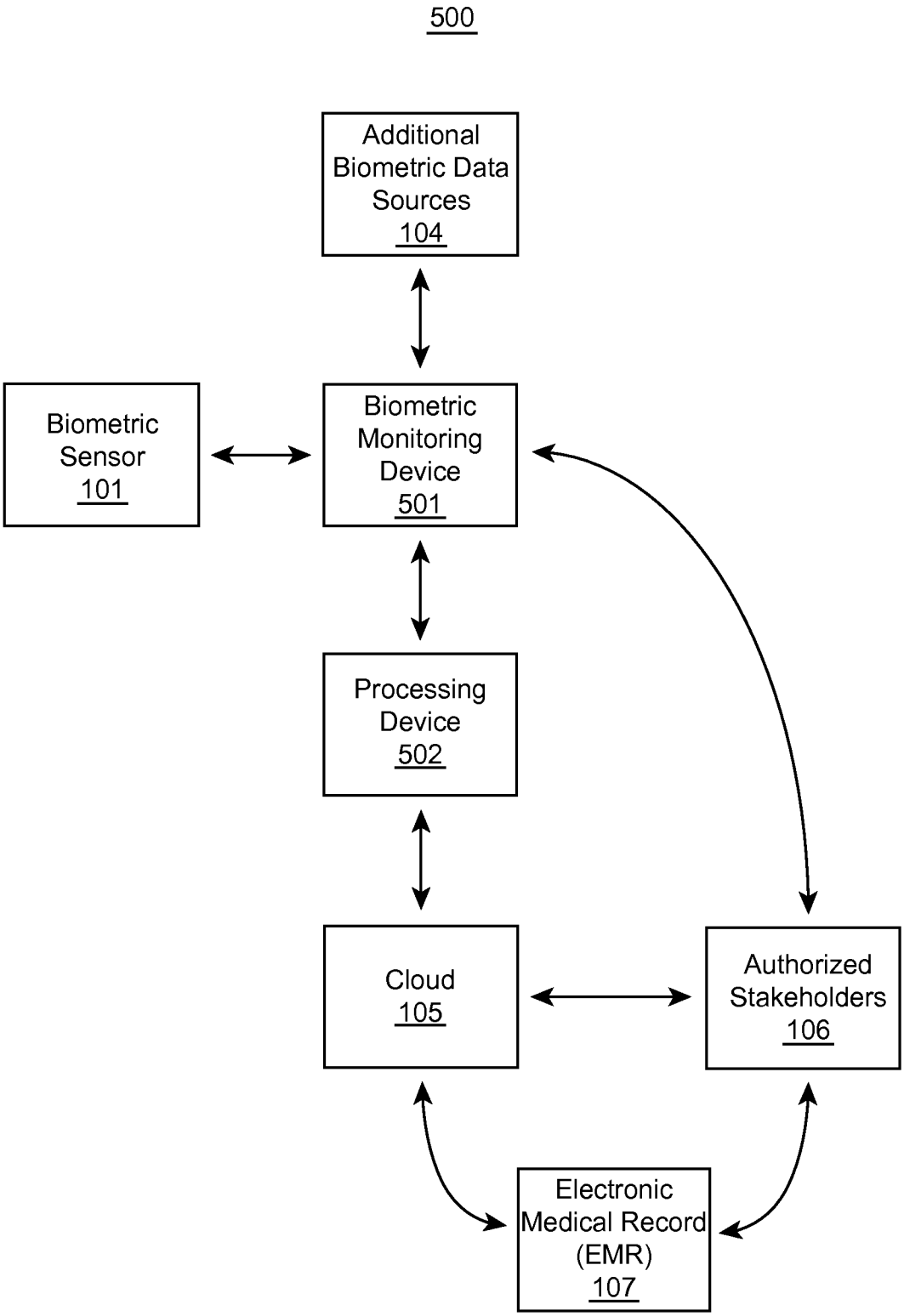

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Biometric Sensor 101
Biometric Monitoring Device 501
Processing Device 502
Cloud 105
Authorized Stakeholders 106
Electronic Medical Record (EMR) 107

FIG. 5

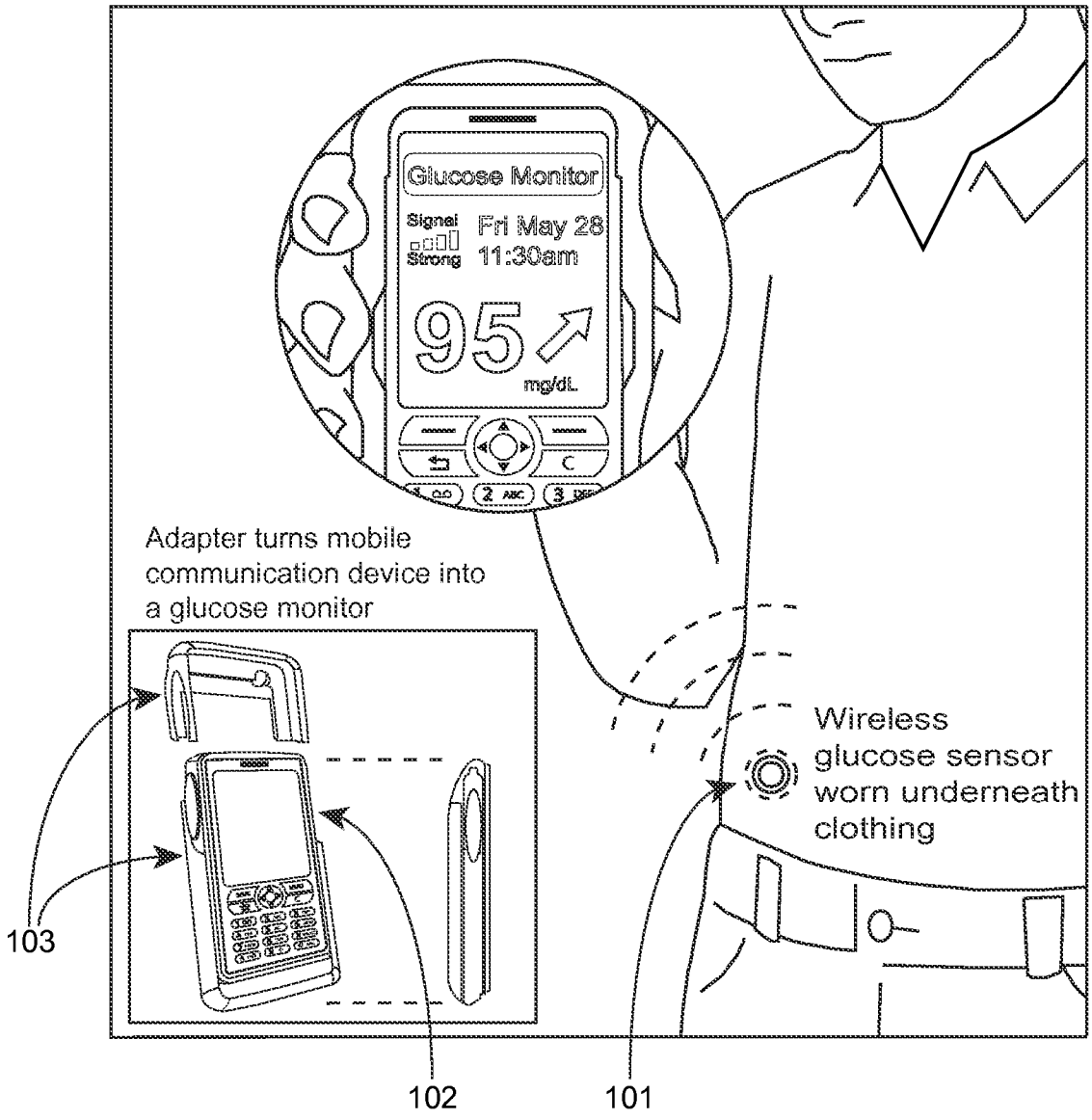

Glucose Monitor
Signal
Strong
Fri May 28
11:30am
95
mg/dL
Adapter turns mobile communication device into a glucose monitor
Wireless glucose sensor worn underneath clothing
103
102
101

FIG. 6

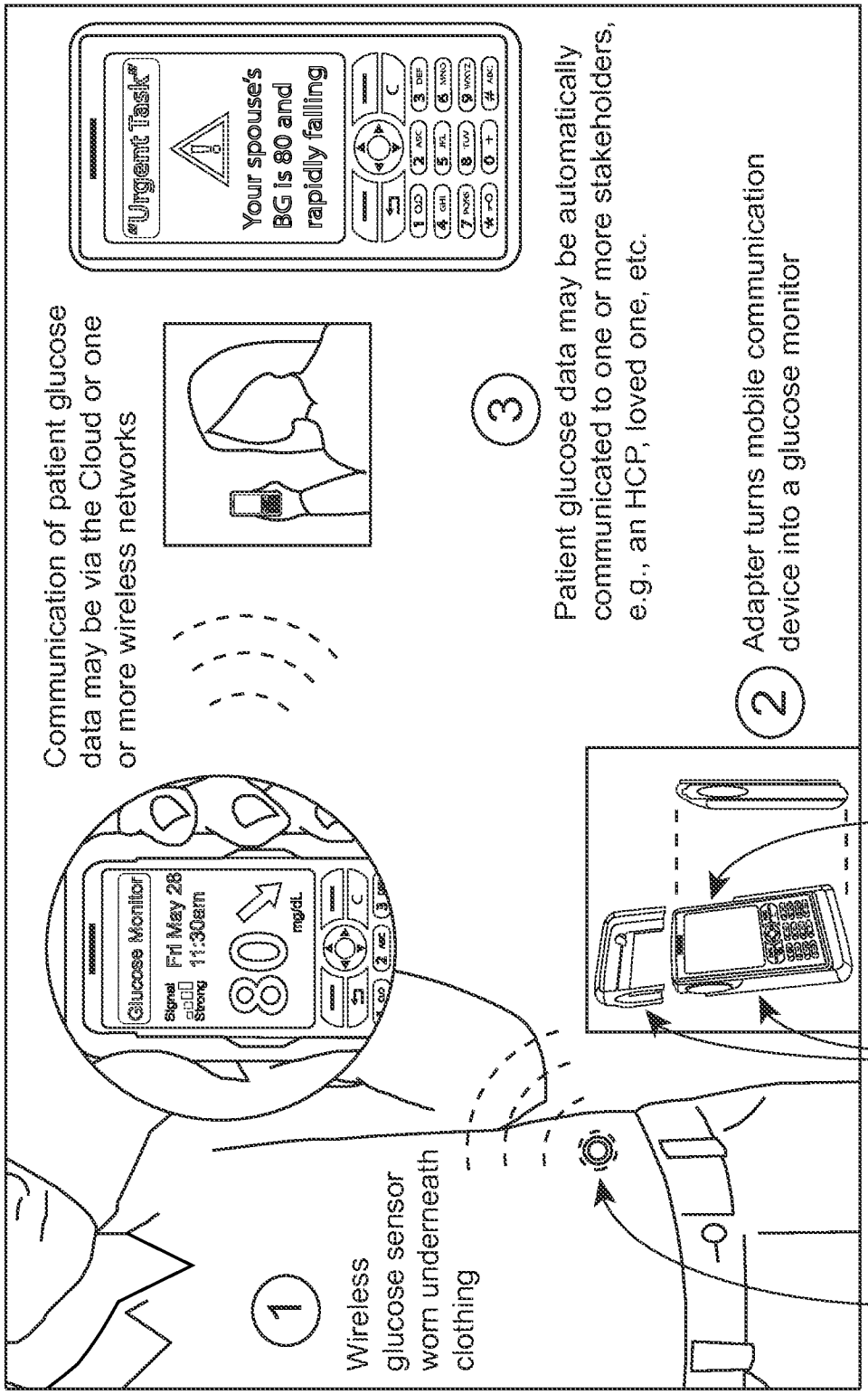

Communication of patient glucose data may be via the Cloud or one or more wireless networks
"Urgent Task"
Your spouse's BG is 80 and rapidly falling
3
Patient glucose data may be automatically communicated to one or more stakeholders, e.g., an HCP, loved one, etc.
2
Adapter turns mobile communication device into a glucose monitor
1
Wireless glucose sensor worn underneath clothing
Glucose Monitor
Fri May 28
11:30am
80
mg/dL
101
102
103

FIG. 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 11/66418

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A61B 5/00 (2012.01)
USPC - 600/301
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8): A61B 5/00 (2012.01)
USPC: 600/301

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 600/300; 604/19; 702/1, 19, 22; 705/1.1, 2 (keyword limited; terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST; Google Scholar; Google Patents; FreePatentsOnline. Search terms used: patient, sensor body-sensor attached-sensor implant-sensor embed-sensor, biometric glucose-level blood-glucose-level cholesterol-level basal-metabolism basal-metabolic-rate caloric-output analyte analyte-sensor analyte-meter, mobile wireless portable wifi ...

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005/0101841 A9 (KAYLOR et al.) 12 May 2005 (12.05.2005) entire document, especially Abstract; para [0003], [0030], [0041], [0058], [0060], [0061], [0066], [0076], [0077], [0097], [0118], [0202], [0246], [0262]	1-4, 14-16
X	US 20100198142 A1 (SLOAN et al.) 05 August 2010 (05.08.2010) entire document, especially Abstract; para [0066], [0176], [0177], [0214], [0295], [0327], [0331], [0373]	1, 14-16
A	US 2009/0240128 A1 (MENSINGER et al.) 24 September 2009 (24.09.2009) entire document	1-4, 14-16
A	US 2003/0208110 A1 (MAULT et al.) 06 November 2003 (06.11.2003) entire document	1-4, 14-16

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
09 April 2012 (09.04.2012)	20 APR 2012
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 11/66418

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☒ Claims Nos.: 5-13
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

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(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

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16 August 2012 (16.08.2012)

WIPO | PCT

(10) International Publication Number
WO 2012/108936 A1

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A61B 5/00 (2006.01) *G01D 3/02* (2006.01)
C12Q 1/54 (2006.01)

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PCT/US2011/066422

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21 December 2011 (21.12.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/442,063 11 February 2011 (11.02.2011) US

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(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **BERNSTEIN, Daniel M.** [US/US]; P.O. Box 1236, El Granada, California 94018 (US). **HAYTER, Gary A.** [US/US]; 4409 Harbord Drive, Oakland, California 94618 (US). **DUNN, Timothy C.** [US/US]; 812 Clayton Street, San Francisco, California 94117 (US). **GOPAL, Mani** [IN/US]; 1520 Oak Rim Drive, Hillsborough, California 94010 (US). **DAVIS, Eric** [US/US]; 3380 Sydney Way, Castro Valley, California 94546 (US). **BRADRICK, Brittany K.** [US/US]; 425 1st Street, #1508, San Francisco, California 94105 (US). **WINKLER, Todd** [US/US]; 3185 Aeronca Way, Cameron Park, California 95682 (US).

(74) Agent: **BABA, Edward J.**; 1900 University Avenue, Suite 200, East Palo Alto, California 94303 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH,

[Continued on next page]

(54) Title: DATA SYNCHRONIZATION BETWEEN TWO OR MORE ANALYTE DETECTING DEVICES IN A DATABASE

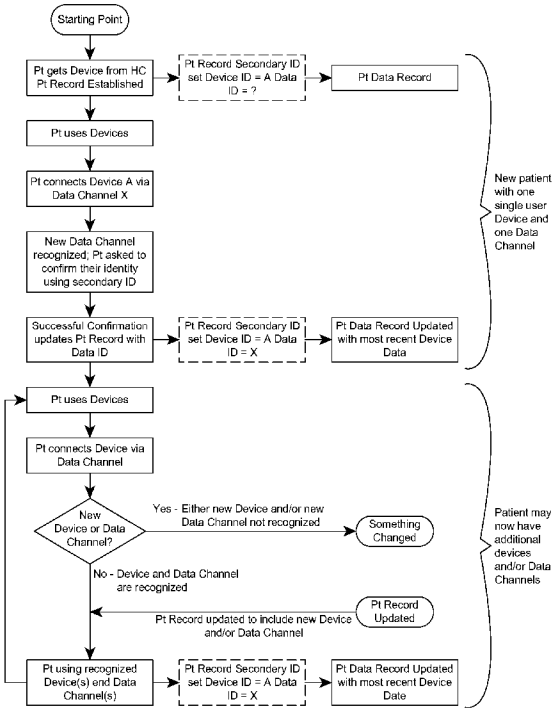


FIG. 2

(57) Abstract: An analyte measurement system includes one or more handheld analyte meters and/or measurement devices and a means for collecting data, preserving data integrity, and uniquely identifying patient data received from multiple sources. For example, provided herein is a means to uniquely identify patients and their data when the data is collected from one or more measurement devices. By providing a way to allow the patients to use multiple sources to collect data, the system described herein provides patients with more flexibility, which should encourage better compliance to protocols. Further, by having a way to uniquely identify patients' data without requiring a patient to only use one analyte meter, for example, data can be centralized and analysis can be done with more assurance that all of the patient's data is being considered in the analyses.

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GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

DATA SYNCHRONIZATION BETWEEN TWO OR MORE ANALYTE DETECTING DEVICES IN A DATABASE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] Pursuant to 35 U.S.C. § 119(e), this application claims priority to U.S. Provisional Patent Application No. 61/442,063 filed on February 11, 2011, the disclosure of which is herein incorporated by reference in its entirety.

[0002] This application is related to U.S. Provisional Application No. 61/442,085 filed on February 11, 2011; U.S. Provisional Application No. 61/486,117 filed on May 13, 2011; U.S. Provisional Application No. 61/442,092 filed on February 11, 2011; U.S. Provisional Application No. 61/485,840 filed on May 13, 2011; U.S. Provisional Application No. 61/442,093 filed on February 11, 2011; and U.S. Provisional Application No. 61/442,097 filed on February 11, 2011, the disclosures of which are all incorporated herein by reference in their entirety and for all purposes.

BACKGROUND OF THE INVENTION

The Field of the Invention

[0003] The present invention relates to analyte measurement systems. More specifically, the present invention relates to a means for preserving data integrity and uniquely identifying patient data received from multiple sources.

Background

[0004] One tool used in diabetes management is an analyte meter. An analyte meter is typically used to measure the blood glucose level of a user based on a sample of blood. The process of using an analyte meter is not complicated, and is often performed several times a day. First, the user inserts an analyte test strip into a test strip port of the meter. The user then lances her finger to obtain a small sample of blood. The blood sample is then placed onto the analyte test strip, and the meter analyzes the blood sample. The meter then typically displays a blood glucose level from the analysis.

[0005] In today's budget conscious health care world there is intense pressure to deliver improved outcomes in cost conscious ways. One way to accomplish this goal in the realm of diabetes care is to more effectively use blood glucose (BG) data and other

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biometric data collected from patients to make effective therapy and lifestyle suggestions. To effectively collect and analyze data, the patient must comply with prescribed BG (or other biometric) testing protocols. There is also a need for providing a means for easily collecting and communicating data.

[0006] What is needed is a means for collecting data, preserving data integrity, and uniquely identifying patient data received from multiple sources.

BRIEF SUMMARY

[0007] Presented herein is an analyte measurement system. The analyte measurement system includes one or more handheld analyte meters and/or measurement devices and a means for collecting data, preserving data integrity, and uniquely identifying patient data received from multiple sources. For example, provided herein is a means to uniquely identify patients and their data when the data is collected from one or more measurement devices. By providing a way to allow the patients to use multiple sources to collect data, the system described herein provides patients with more flexibility, which should encourage better compliance to protocols. Further, by having a way to uniquely identify patients' data without requiring a patient to only use one analyte meter, for example, data can be centralized and analysis can be done with more assurance that all of the patient's data is being considered in the analyses.

[0008] In addition, the methods discussed herein consider ease-of-use. By providing easy to use systems, patients are more likely to comply with testing protocols.

[0009] Finally, these methods also keep in mind data integrity. When multiple meters are used, the likelihood of a meter being lost or stolen increases. The systems proposed allow patients to maintain multiple meters without excessive risk to patient privacy as it relates to medical data (i.e.; HIPAA requirements). The methods guarantee that the data coming from any particular meter is from the patient the meter was assigned to, and therefore protects the patient's privacy.

BRIEF DESCRIPTION OF THE FIGURES

[0010] The accompanying drawings, which are incorporated herein, form part of the specification. Together with this written description, the drawings further serve to explain the principles of, and to enable a person skilled in the relevant art(s), to make and use the present invention.

[0011] **FIG. 1** provides a front-side view of handheld analyte measurement device in accordance with one embodiment presented herein.

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[0012] **FIG. 2** is a flowchart illustrating one embodiment presented herein.

[0013] **FIG. 3** is a continuation of the flowchart from **FIG. 2**.

[0014] **FIG. 4** is a flowchart illustrating another embodiment presented herein.

DETAILED DESCRIPTION OF THE INVENTION

[0015] Before the embodiments of the present disclosure are described, it is to be understood that this invention is not limited to particular embodiments described, as such may, of course, vary. It is also to be understood that the terminology used herein is for the purpose of describing particular embodiments only, and is not intended to be limiting, since the scope of the embodiments of the invention will be limited only by the appended claims.

[0016] **FIG. 1** provides a front-side view of handheld analyte measurement device, such as an analyte meter 102, in accordance with one embodiment presented herein. In one embodiment, analyte meter 102 includes a test strip port 104, a display unit 106, and at least one control button 108. In practice, an analyte test strip (or sensor) is inserted into test strip port 104 in order to conduct an analyte test; for example, a blood glucose reading or a blood ketone reading. Meter 102 includes software (as described below) to analyze the sample placed on the test strip, and the results of the analysis are typically displayed to the user via display unit 106. The user may also use control button 108 to provide appropriate instructions to meter 102.

[0017] In one embodiment, meter 102 includes one or more diabetes management software applications. The integration of software applications with meter 102 provides an opportunity to augment traditional glucose and/or ketone readings to provide more useful information and feedback to patients and doctors. As such, meter 102, with loaded software applications, can be part of a robust therapy management system. The software applications can be factory pre-loaded, or installed by the user or health care provider after first use by the user.

[0018] Analyte meter 102 may further include one or more internal or external communication modules. The communication module(s) may be used to receive and/or transmit data and/or program instructions. The communication module(s) may also download software applications from one or more servers. In one embodiment, the communication module is used to communicate with one or more external devices; such as, for example, a central server or central database, a medication (drug) deliver device; a cellular phone; a laptop computer; a mobile device, such as a PDA, iPhone, iPad, tablet computer, etc.; a desktop computer; an analyte meter; and/or another analyte

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measurement system. In one embodiment, the communication module can be configured for wireless communication to an external device. Wireless communication may be provided by, for example, but not limited to, radio frequency (RF) communication (e.g., Radio-Frequency Identification (RFID), Zigbee communication protocols, WiFi, infrared, wireless Universal Serial Bus (USB), Ultra Wide Band (UWB), Bluetooth® communication protocols, and cellular communication, such as code division multiple access (CDMA) or Global System for Mobile communications (GSM).

[0019] The methods described in this disclosure depend on the collection of identifying information by a central database, server(s), or "cloud." For the scenarios provided below, the following are assumed: 1) a centralized server or database exists that can be accessed by the user through multiple conduits (e.g., a web-based database accessible from any internet enabled PC, cell phone, tablet PC, etc.); 2) the analyte meter contains a unique identifier (e.g., serial number); and 3) the conduits used to upload data from the analyte meter to the central database are uniquely identifiable (e.g., via a MAC address or calling phone number). The following scenarios are considered below: 1) the patient has multiple analyte meters in multiple locations (e.g., at home, office, gym, etc.); 2) the patient's BG readings are sometimes taken at a hospital or clinic, where there is sanctioned use of the meters by multiple patients; 3) the patient is given multiple meters that are re-used by the clinic, to take home; 4) multiple patients share a single meter (e.g., a husband borrows wife's meter); and 5) a meter is lost or stolen and an attempt to use the meter is made by an unauthorized user.

[0020] As used herein, the term "device" is intended to include multiple analyte meters (either discreet or continuous blood glucose meters), wired- or wireless-equipped biometric measurement devices (e.g., blood pressure measurement devices), or any other medical devices. In some cases, the device may act as a data hub such that it contains not just glucose measurement data, but also other biometric data (e.g., blood pressure data, weight, pulse rate, etc.) that has been manually or automatically entered into the device or communicated to the device. The methods described herein provides a way to uniquely identify the patient regardless of which device is used and to associate the uploaded data with that patient. The following section describes the various ways in which this unique identification can be done.

[0021] 1) Barcode, RFID, or fingerprint method.

[0022] In one embodiment, the device may include a fingerprint reader to identify the patient. In another embodiment, the device may include a barcode or other optical reader

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that identifies the patient via a handheld identifier tag. In another embodiment, the device may include an RFID reader that identifies the patient via a RF card/tag kept by the patient. Identifiers or RF cards/tags may be made small enough to fit on a key chain, in a wallet, or in a carrying case that contains the patient's device, lancets, and/or test strips. In one embodiment, the patient is not allowed to take an analyte reading without first making contact (physical or electrical) between the device and identifier (or taking a fingerprint reading). The identifier used at the time of the analyte reading may be attached to each said reading. Thus each reading uniquely identifies itself to the patient. As long as the patient only uses devices that require the identifier, all of their data will be uniquely identifiable and can be aggregated to a central location. Devices may be programmed to accept only one single identifier (or fingerprint), to enforce no sharing of the device, or multiple identifiers to allow sanctioned re-use of devices. In the case where only a single identifier is allowed, the device will have to be paired with the identifier on first use.

[0023] 2) Association of devices and conduit devices with a patient.

[0024] The first time a patient uploads data, either directly to a PC or cellphone, or to the internet via a PC or cellphone conduit, the identifiers (MAC addresses, serial numbers, etc.) of the device and data conduit are collected. At the time a patient is registered, a Patient Record is established in the database system and the Patient Record includes "Secondary ID information" (that may be used to confirm a patient's identity without communicating their full name). This Secondary ID Information includes information such as SSN, DOB, zip code, mother's maiden name, etc. A patient may also be assigned a unique identifier (and optionally a password) at the time of registration. The next time the aggregating database sees the same analyte device or conduit it may assume that it is the same patient "returning" with more data (or may provide a verification prompt). When the aggregating system does not recognize the device and/or conduit devices, it can ask if the patient is a returning patient (or simply ask the patient to identify themselves using Secondary Information (to minimize patient privacy issues). If the patient is a returning patient, they could be asked for their unique ID and password, and/or other Secondary ID Information or identifiers to confirm their identity. An unrecognized patient would have to be registered in the system before they could access the system. Once the patient identity has been confirmed, the new device and/or data conduit identifiers can be added to their record. This scenario is illustrated in the flowchart in FIGs. 2 and 3.

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[0025] Another aspect of this invention is that a unique patient ID, generated by the central database, can be stored in the device software and in communication software in the conduit as part of the registration process - this communication software can be loaded into the conduit by the device the first time it is attached or loaded from the web or other communication network at an address specified by the device. This way the unique patient ID format can be controlled by the central database and uniqueness can be guaranteed. When the data is uploaded, the unique patient ID is included twice in the upload stream, by the device software and by software in the conduit (communication driver), and extracted by the central database for data association. When the unique patient ID from the device is not recognized, or that from the conduit are not recognized, the new device or conduit proceeds to a registration protocol, as described above. Other means to perform this function can be contemplated, such as having the conduit software check the device for matching patient IDs and sending a flag to the central database if they do not match.

[0026] For multiple patients using the same conduit, the communication driver would need to maintain multiple unique patient IDs and some additional patient information (such as first name), including security information such as a password, to deal with the situation where new devices are introduced. When a new device is detected and multiple unique patient IDs are stored in the communication driver, it would need to request the user to select from the list patient information associated with the stored unique patient IDs.

[0027] Process flows are provided below - these are in terms of a device attached via wire to a PC connected to the internet; however, the general method is similar for other connection methods such as 3G cellular connection, or pager network based communication.

[0028] An example registration process flow is as follows: a) register unique patient ID on website – patient provides additional security information; b) Connect new device to new PC – device installs communication driver on PC (communication driver has instructions to upload data from device to web address automatically when device is attached); and c) upon completion of the registration process, website downloads unique patient ID to device and communication driver.

[0029] An example upload process flow is as follows: a) attach device to PC, upload begins automatically as driven by communication driver; b) device and communication driver both place unique patient ID in data stream; and c) central database recognizes and matches both unique patient IDs and stores data associated with this ID.

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[0030] An example upload process flow where a new device is introduced is as follows: a) attach new device to PC with existing communication driver; b) device places a null character in the unique patient ID field of the data stream; c) the communication driver detects the mismatch of the unique patient ID with any of its stored IDs and requests the user to identify the unique patient ID based on associated patient information and/or security information; d) upon proper confirmation, the communication driver downloads the unique patient ID to the new device and includes the unique patient ID in the device field of the data stream sent to the central database; and e) central database recognizes and matches both unique patient IDs and stores data associated with this ID. For configurations where the upload conduit may not have a user interface, the security confirmation could be provided through the device UI.

[0031] An example upload process flow where a new PC is introduced is as follows: a) attach device to a new PC – device installs communication driver on PC (communication driver has instructions to upload data from device to web address automatically when device is attached); b) device loads unique patient ID into communication driver; c) device and communication driver both place unique patient ID in data stream; and d) central database recognizes and matches both unique patient IDs and stores data associated with this ID.

[0032] 3) Shared device in the context where patient may have multiple analyte devices.

[0033] This scenario expands on the case above. This scenario adds in the case where a patient uses a device that other patients may also use between upload operations (i.e., the analyte data in the device may come from more than one patient with each upload cycle). This scenario could occur in a home setting for example where a device may be shared by several people. In this case, it is necessary for the system to have positive knowledge of the source of each analyte measurement. The flowchart in FIG. 4 provides a method in accordance with such an embodiment.

[0034] 4) Patient information entered into the device.

[0035] This scenario envisions the hospital setting where devices may be used for multiple patients sequentially, but not concurrently. Whenever a new patient will be using a device, information identifying the patient can be entered into the device and associated with the data when it is sent to the aggregating device. Patient data need only be entered once until the device is given to a new patient.

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[0036] 5) Shared device with self-modifying serial number.

[0037] This scenario envisions a device given to a patient in a clinic in order to take home. The device may not be as sophisticated as a hospital device and therefore there may not be a way for the patient to enter any identifying information. Whenever the device is given to a new patient, a monotonically increasing identifier is added to the devices log. This can be made to happen at the clinic by having a function built into the device for initializing a new patient. This function increments the identifier and puts it in the log. Subsequently each record in the log is identified by the device's serial number, monotonically increasing identifier, and record ID. The monotonically increasing identifier can be said to be part of the device's serial number, so each time the aggregating database sees a new device serial number, it knows to ask if this is a new patient. It is assumed that the aggregating database software is running on a platform that can more easily handle user input, such as a cell phone, tablet, or PC.

[0038] 6) Lost or stolen device.

[0039] The analyte device may be lost or stolen. In order to guarantee data integrity, it is important that data entered by an unauthorized user not get assigned to the patient to whom the device was assigned, nor can the unauthorized user view the original patient's data. When the unauthorized user tries to upload the data to the central database, the database will detect that the conduit (PC, cellphone, tablet, etc.) is different than what was used by that patient before. The database software determines this because it has linked device ID, conduit, and patient data in its database. The database software will issue a pre-arranged challenge question to the user (e.g., What is your mother's maiden name?). If the challenge is answered successfully, the database accepts the data from the device, otherwise the data from that device is rejected and viewing of previous data is blocked. Furthermore, the system can be configured to only allow uploading when the device is connected to a limited set of data conduits.

[0040] Another aspect of this invention provides for synchronization of data between devices. For instance, if a patient utilized two different devices, it would be useful to have the data from one device additionally stored on the other. As such, when the patient examines their data on one device, they may get a complete picture of their analyte measurements. Another example is a patient who has a device and a cellphone that accepts manual analyte reading entries (presumably from a separate device). The two devices could synchronize using well established synchronization techniques

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(common with PDAs). They could synchronize periodically over a wireless channel such as Bluetooth. They could synchronize when connected via a wired channel. A preferred method is that they could synchronize during upload of data to a central database. The central database would be aware of multiple devices of compatible data-types and would perform a difference of its stored data (after upload) from predefined period of time and download the difference to the device to be stored. Variations of this synchronization scheme can be contemplated.

[0041] Another aspect of this invention deals with the possibility that identical data may come through different conduits - such as a device that can upload both through a PC and through a cellular channel. To mitigate "double counting" of readings, additional data of a particular data-type would be ignored (that is, not stored) by the central database if data of that data-type already existed with the exact same timestamp. Alternatively, the data in this situation may be stored but flagged as duplicate. As such, data processing (or preprocessing) routines would need to take the flagged duplicate data into account as needed.

[0042] Though this invention description may focus on blood glucose devices, the techniques described apply to all devices that may be used to upload patient analyte data or other patient data to a central database, such as cell phones, tablet PC's, a dedicated communication router (e.g., via Bluetooth from the device and via cellular to the internet), etc., where the data may be aggregated with these devices from manual input, and/or wired or wireless communication from a measurement device or other intermediate storage devices, This invention can also apply to any device used to measure patient data, such as continuous glucose (CG) devices, blood pressure (BP) measurement devices, height-scales, and the like.

[0043] In another embodiment, there is provided mechanisms to enforce system configuration requirements. Electronic system update configuration requirements can be enforced using key codes that are incorporated in the communication messages sent between system components. Key codes are primarily available for access by a PC (or any other electronic device). The codes may be used as a convenient book keeping tool to manage which version of the device may function with a specific version of a PC application using a particular serial command. For instance, a serial command may include a two byte key code where in the original system the PC application will issue a value of code=00 when it sends the command to a device. The original version of the device can be designed with a serial command function that will accept commands with code with a range of 00 to 0F. In this way, if another version of the device has an

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updated serial command that allows a code range of 00 to 1F, then the original PC application version will still work with this updated device, along with newer versions of the PC application that have codes in this range (in regards specifically to this particular serial command). If an updated PC application is not intended to work with the first device version but only the second device version, then the code for the PC application should be set between 10 to 1F. If the updated device is not intended to work with the original PC application, then the code for the device could be set to 10 to 1F.

[0044] Another application for the key code mechanism has a key code included in the pairing message exchange between the device and a drug delivery device, in the same fashion as described above for device serial commands access primarily by PC applications. Here the unique feature is that the key code only needs to be included in a pairing message in order to enforce all communication restrictions between versions of device and the drug delivery device, since they may not communicate (other than for pairing attempts) unless they are paired. This allows full control over which device versions will work with which drug delivery device versions.

[0045] The same effect could be used by just changing the command name or format. For instance, a device could be designed to accept serial commands with names $acona, $aconb, and $aconx, and the PC application could issue $aconb. Also, the device could be designed to accept a serial command with three parameters and with five parameters. However, the key code technique is much more convenient and easier to manage.

Integration with Medication Delivery Devices and/or Systems

[0046] In some embodiments, the analyte measurement systems disclosed herein may be included in and/or integrated with, a medication delivery device and/or system, e.g., an insulin pump module, such as an insulin pump or controller module thereof, or insulin injection pen. In some embodiments the analyte measurement system is physically integrated into a medication delivery device. In other embodiments, an analyte measurement system as described herein may be configured to communicate with a medication delivery device or another component of a medication delivery system. Additional information regarding medication delivery devices and/or systems, such as, for example, integrated systems, is provided in U.S. Patent Application Publication No. US2006/0224141, published on October 5, 2006, entitled "Method and System for Providing Integrated Medication Infusion and Analyte Monitoring System", and U.S. Patent Application Publication No. US2004/0254434, published on December 16, 2004, entitled "Glucose Measuring Module and Insulin Pump Combination," the disclosure of

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each of which is incorporated by reference herein in its entirety. Medication delivery devices which may be provided with analyte measurement system as described herein include, e.g., a needle, syringe, pump, catheter, inhaler, transdermal patch, or combination thereof. In some embodiments, the medication delivery device or system may be in the form of a drug delivery injection pen such as a pen-type injection device incorporated within the housing of an analyte measurement system. Additional information is provided in U.S. Patent Nos. 5,536,249 and 5,925,021, the disclosures of each of which are incorporated by reference herein in their entirety.

[0047] The embodiments presented herein provide further advantages such as: the ability to upgrade strip port modules as new test strip technologies evolve; the ability to clean or sterilize a strip port module; and the ability to allow users to replace strip port modules without returning the entire measurement system to the manufacture.

[0048] Certain embodiments relate to *in vivo* (e.g., continuous monitoring) systems. A continuous monitoring system typically includes a sensor that is worn or placed below the skin, a transmitter that collects glucose information from the sensor, and a receiver that collects the information from the transmitter. The sensor can collect glucose level information continuously, periodically, or at other intervals. Advantageously, a user is relieved from having to repeatedly lance his or her body to collect a blood sample once the sensor is inserted, although the sensor (e.g., an electrochemical sensor that is inserted into a body) can be replaced. U.S. Patent No. 6,175,752, which is hereby incorporated by reference in its entirety, discloses additional examples of a continuous monitoring system.

[0049] Embodiments of the invention relate to components of a continuous monitoring system that may be replaceable. In one embodiment, the interface between the sensor and the transmitter may become contaminated. The transmitter or sensor control unit, for example, may have an interface with the sensor that has been molded to form a barrier between the transmitter's contacts and circuitry internal to the transmitter. This allows the transmitter's contacts to be washed without damaging the transmitter's circuitry. Alternatively, the contacts may be included in a replaceable port that can be replaced as needed. Similarly, the interface on the sensor may be molded to form a barrier to contamination or be replaceable.

[0050] Embodiments of the invention further extend to kits. Examples of a kit include a measurement device with one or more strip connectors. In some kits, different strip connectors or ports for different types of strips may be included. This allows the measurement device to be used with different strip form factors. The kits may also

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include a plurality of test strips. In certain examples, the measurement device may be configured for use with disposable test strips as well as with test strips that are configured for continuous monitoring systems. Thus, the measurement device may include a receiver to receive information from a transmitter that collects glucose information from an inserted sensor. The measurement device may also include a strip connector, such as those disclosed herein, for use with single use test strips.

Analyte test strips

[0051] Analyte test strips for use with the present devices can be of any kind, size, or shape known to those skilled in the art; for example, FREESTYLE® and FREESTYLE LITE ™ test strips, as well as PRECISION™ test strips sold by ABBOTT DIABETES CARE Inc. In addition to the embodiments specifically disclosed herein, the devices of the present disclosure can be configured to work with a wide variety of analyte test strips, e.g., those disclosed in U.S. Patent Application No. 11/461,725, filed August 1, 2006; U.S. Patent Application Publication No. 2007/0095661; U.S. Patent Application Publication No. 2006/0091006; U.S. Patent Application Publication No. 2006/0025662; U.S. Patent Application Publication No. 2008/0267823; U.S. Patent Application Publication No. 2007/0108048; U.S. Patent Application Publication No. 2008/0102441; U.S. Patent Application Publication No. 2008/0066305; U.S. Patent Application Publication No. 2007/0199818; U.S. Patent Application Publication No. 2008/0148873; U.S. Patent Application Publication No. 2007/0068807; U.S. Patent Application No. 12/102,374, filed April 14, 2008, and U.S. Patent Application Publication No. 2009/0095625; U.S. Patent No. 6,616,819; U.S. Patent No. 6,143,164; U.S. Patent No. 6,592,745; U.S. Patent No. 6,071,391 and U.S. Patent No. 6,893,545; the disclosures of each of which are incorporated by reference herein in their entirety.

Calculation of Medication Dosage

[0052] In one embodiment, the analyte measurement system may be configured to measure the blood glucose concentration of a patient and include instructions for a long-acting insulin dosage calculation function. Periodic injection or administration of long-acting insulin may be used to maintain a baseline blood glucose concentration in a patient with Type-1 or Type-2 diabetes. In one aspect, the long-acting medication dosage calculation function may include an algorithm or routine based on the current blood glucose concentration of a diabetic patient, to compare the current measured blood glucose concentration value to a predetermined threshold or an individually tailored

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threshold as determined by a doctor or other treating professional to determine the appropriate dosage level for maintaining the baseline glucose level. In one embodiment, the long-acting insulin dosage calculation function may be based upon LANTUS® insulin, available from Sanofi-Aventis, also known as insulin glargine. LANTUS® is a long-acting insulin that has up to a 24 hour duration of action. Further information on LANTUS® insulin is available at the website located by placing "www" immediately in front of ".lantus.com". Other types of long-acting insulin include Levemir® insulin available from NovoNordisk (further information is available at the website located by placing "www" immediately in front of ".levemir-us.com". Examples of such embodiments are described in in US Published Patent Application No. US2010/01981142, the disclosure of which is incorporated herein by reference in its entirety.

Strip Port Configured to Receive Test Strips for Different Analytes

[0053] In another embodiment, there is provided an analyte measurement system for multichemistry testing. The test strips are for chemical analysis of a sample, and are adapted for use in combination with a measuring device having a test port and capable of performing a multiplicity of testing functionalities. Each type of test strip corresponds to at least one of the testing functionalities, and at least some types of test strips have indicators of the testing functionality on them. The test port is adapted for use in combination with a multiplicity of different types of test strips and includes a sensor capable of specifically interacting with the indicator(s) on the test strips, thereby selecting at least one of the multiplicity of testing functionalities corresponding to the type of test strip. Such system would include a strip port that can be used to read a test strip for glucose and a test strip for ketone bodies. Examples of such embodiment are provided in U.S. Patent No. 6,773,671, which is incorporated herein by reference in it entirety.

Strip Port Configured to Receive Test Strips Having Different Dimensions and/or Electrode Configurations

[0054] In some embodiments, an analyte measurement system as described herein includes a strip port configured to receive test strips having different dimensions and/or electrode configurations, e.g., as described in the U.S. Patent Application No. 12/695,947 filed on January 28, 2010, and entitled "Universal Test Strip Port", the disclosure of which is incorporated by reference herein in its entirety.

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Implanted Analyte Sensor

[0055] In some embodiments, an analyte measurement system as described herein may include an implanted or partially implanted analyte sensor, e.g., a system including an implanted or partially implanted glucose sensor (e.g., a continuous glucose sensor). A system including an implanted or partially implanted glucose sensor may include an analyte measurement system as described herein, which is configured to receive analyte data from the implanted or partially implanted glucose sensor either directly or through an intermediate device, e.g., an RF-powered measurement circuit coupled to an implanted or partially implanted analyte sensor. In some embodiments, where an analyte measurement system according to the present disclosure is integrated with an implanted sensor, the analyte measurement system does not include a strip port for receiving an analyte test strip. In one embodiment, the analyte measurement system may be used to calibrate the analyte monitoring system, e.g., using one point calibration or other calibration protocol. For additional information, see U.S. Pat. No. 6,175,752, the disclosure of which is incorporated by reference herein in its entirety. In some embodiments, the analyte measurement system may be configured to communicate with the implanted or partially implanted analyte sensor via Radio Frequency Identification (RFID) and provide for intermittent or periodic interrogation of the implanted analyte sensor.

[0056] Exemplary analyte monitoring systems that may be utilized in connection with the disclosed analyte measurement system include those described in U.S. Patent No. 7,041,468; U.S. Pat. No. 5,356,786; U.S. Pat. No. 6,175,752; U.S. Pat. No. 6,560,471; U.S. Pat. No. 5,262,035; U.S. Pat. No. 6,881,551; U.S. Pat. No. 6,121,009; U.S. Pat. No. 7,167,818; U.S. Pat. No. 6,270,455; U.S. Pat. No. 6,161,095; U.S. Pat. No. 5,918,603; U.S. Pat. No. 6,144,837; U.S. Pat. No. 5,601,435; U.S. Pat. No. 5,822,715; U.S. Pat. No. 5,899,855; U.S. Pat. No. 6,071,391; U.S. Pat. No. 6,120,676; U.S. Pat. No. 6,143,164; U.S. Pat. No. 6,299,757; U.S. Pat. No. 6,338,790; U.S. Pat. No. 6,377,894; U.S. Pat. No. 6,600,997; U.S. Pat. No. 6,773,671; U.S. Pat. No. 6,514,460; U.S. Pat. No. 6,592,745; U.S. Pat. No. 5,628,890; U.S. Pat. No. 5,820,551; U.S. Pat. No. 6,736,957; U.S. Pat. No. 4,545,382; U.S. Pat. No. 4,711,245; U.S. Pat. No. 5,509,410; U.S. Pat. No. 6,540,891; U.S. Pat. No. 6,730,200; U.S. Pat. No. 6,764,581; U.S. Pat. No. 6,299,757; U.S. Pat. No. 6,461,496; U.S. Pat. No. 6,503,381; U.S. Pat. No. 6,591,125; U.S. Pat. No. 6,616,819; U.S. Pat. No. 6,618,934; U.S. Pat. No. 6,676,816; U.S. Pat. No. 6,749,740; U.S. Pat. No. 6,893,545; U.S. Pat. No. 6,942,518; U.S. Pat. No. 6,514,718; U.S. Pat. No. 5,264,014;

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U.S. Pat. No. 5,262,305; U.S. Pat. No. 5,320,715; U.S. Pat. No. 5,593,852; U.S. Pat. No. 6,746,582; U.S. Pat. No. 6,284,478; U.S. Pat. No. 7,299,082; U.S. Patent Application No. 61/149,639, entitled "Compact On-Body Physiological Monitoring Device and Methods Thereof", U.S. Patent Application No. 11/461,725, filed August 1, 2006, entitled "Analyte Sensors and Methods"; U.S. Patent Application No. 12/495,709, filed June 30, 2009, entitled "Extruded Electrode Structures and Methods of Using Same"; U.S. Patent Application Publication No. US2004/0186365; U.S. Patent Application Publication No. 2007/0095661; U.S. Patent Application Publication No. 2006/0091006; U.S. Patent Application Publication No. 2006/0025662; U.S. Patent Application Publication No. 2008/0267823; U.S. Patent Application Publication No. 2007/0108048; U.S. Patent Application Publication No. 2008/0102441; U.S. Patent Application Publication No. 2008/0066305; U.S. Patent Application Publication No. 2007/0199818; U.S. Patent Application Publication No. 2008/0148873; U.S. Patent Application Publication No. 2007/0068807; US patent Application Publication No. 2010/0198034; and US provisional application no. 61/149,639 titled "Compact On-Body Physiological Monitoring Device and Methods Thereof", the disclosures of each of which are incorporated herein by reference in their entirety.

Communication Interface

[0057] As discussed previously herein, an analyte measurement system according to the present disclosure can be configured to include a communication interface. In some embodiments, the communication interface includes a receiver and/or transmitter for communicating with a network and/or another device, e.g., a medication delivery device and/or a patient monitoring device, e.g., a continuous glucose monitoring device. In some embodiments, the communication interface is configured for communication with a health management system, such as the CoPilot™ system available from Abbott Diabetes Care Inc., Alameda, CA.

[0058] The communication interface can be configured for wired or wireless communication, including, but not limited to, radio frequency (RF) communication (e.g., Radio-Frequency Identification (RFID), Zigbee communication protocols, WiFi, infrared, wireless Universal Serial Bus (USB), Ultra Wide Band (UWB), Bluetooth® communication protocols, and cellular communication, such as code division multiple access (CDMA) or Global System for Mobile communications (GSM).

[0059] In one embodiment, the communication interface is configured to include one or more communication ports, e.g., physical ports or interfaces such as a USB port, an RS-

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232 port, or any other suitable electrical connection port to allow data communication between the analyte measurement system and other external devices such as a computer terminal (for example, at a physician's office or in hospital environment), an external medical device, such as an infusion device or including an insulin delivery device, or other devices that are configured for similar complementary data communication.

[0060] In one embodiment, the communication interface is configured for infrared communication, Bluetooth® communication, or any other suitable wireless communication protocol to enable the analyte measurement system to communicate with other devices such as infusion devices, analyte monitoring devices, computer terminals and/or networks, communication enabled mobile telephones, personal digital assistants, or any other communication devices which the patient or user of the analyte measurement system may use in conjunction therewith, in managing the treatment of a health condition, such as diabetes.

[0061] In one embodiment, the communication interface is configured to provide a connection for data transfer utilizing Internet Protocol (IP) through a cell phone network, Short Message Service (SMS), wireless connection to a personal computer (PC) on a Local Area Network (LAN) which is connected to the internet, or WiFi connection to the internet at a WiFi hotspot.

[0062] In one embodiment, the analyte measurement system is configured to wirelessly communicate with a server device via the communication interface, e.g., using a common standard such as 802.11 or Bluetooth® RF protocol, or an IrDA infrared protocol. The server device could be another portable device, such as a smart phone, Personal Digital Assistant (PDA) or notebook computer; or a larger device such as a desktop computer, appliance, etc. In some embodiments, the server device has a display, such as a liquid crystal display (LCD), as well as an input device, such as buttons, a keyboard, mouse or touch-screen. With such an arrangement, the user can control the analyte measurement system indirectly by interacting with the user interface(s) of the server device, which in turn interacts with the analyte measurement system across a wireless link.

[0063] In some embodiments, the communication interface is configured to automatically or semi-automatically communicate data stored in the analyte measurement system, e.g., in an optional data storage unit, with a network or server device using one or more of the communication protocols and/or mechanisms described above.

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Input Unit

[0064] As discussed previously herein, an analyte measurement system according to the present disclosure can be configured to include an input unit and/or input buttons coupled to the housing of the analyte measurement system and in communication with a controller unit and/or processor. In some embodiments, the input unit includes one or more input buttons and/or keys, wherein each input button and/or key is designated for a specific task. Alternatively, or in addition, the input unit may include one or more input buttons and/or keys that can be 'soft buttons' or 'soft keys'. In the case where one or more of the input buttons and/or keys are 'soft buttons' or 'soft keys', these buttons and/or keys may be used for a variety of functions. The variety of functions may be determined based on the current mode of the analyte measurement system, and may be distinguishable to a user by the use of button instructions shown on an optional display unit of the analyte measurement system. Yet another input method may be a touch-sensitive display unit, as described in greater detail below.

[0065] In addition, in some embodiments, the input unit is configured such that a user can operate the input unit to adjust time and/or date information, as well as other features or settings associated with the operation of an analyte measurement system.

Display Unit

[0066] As discussed previously herein, in some embodiments, an analyte measurement system according to the present disclosure includes an optional display unit or a port for coupling an optional display unit to the analyte measurement system. The display unit is in communication with a control unit and/or processor and displays the analyte test strip signals and/or results determined from the analyte test strip signals including, for example, analyte concentration, rate of change of analyte concentration, and/or the exceeding of a threshold analyte concentration (indicating, for example, hypo- or hyperglycemia).

[0067] The display unit can be a dot-matrix display, e.g., a dot-matrix LCD display. In some embodiments, the display unit includes a liquid-crystal display (LCD), thin film transistor liquid crystal display (TFT-LCD), plasma display, light-emitting diode (LED) display, seven-segment display, E-ink (electronic paper) display or combination of two or more of the above. The display unit can be configured to provide, an alphanumeric display, a graphical display, a video display, an audio display, a vibratory output, or combinations thereof. The display can be a color display. In some embodiments, the display is a backlit display.

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[0068] The display unit can also be configured to provide, for example, information related to a patient's current analyte concentration as well as predictive analyte concentrations, such as trending information.

[0069] In some embodiments an input unit and a display unit are integrated into a single unit, for example, the display unit can be configured as a touch sensitive display, e.g., a touch-screen display, where the user may enter information or commands via the display area using, for example, the user's finger, a stylus or any other suitable implement, and where, the touch sensitive display is configured as the user interface in an icon driven environment, for example.

[0070] In some embodiments, the display unit does not include a screen designed to display results visually. Instead, in some embodiments the optional display unit is configured to communicate results audibly to a user of the analyte measurement system, e.g., via an integrated speaker, or via separate speakers through a headphone jack or Bluetooth® headset.

Expanding Menu Item for Improved Readability

[0071] In some embodiments, the display unit includes a graphical user interface including a plurality of menu items, wherein the display unit is configured to provide clarification with respect to the meaning of a menu item based on a user's response speed with respect to a user input for the menu item. The menu item could take any of a variety of forms, e.g., text, icon, object or combination thereof.

[0072] In one embodiment, the graphical user interface includes a menu which in turn includes a plurality of selectable menu items. As a user navigates through the menu, e.g., by highlighting or scrolling through individual menu items, a menu item that is either unreadable or incomprehensible to the user could cause the user to pause over a menu item to be selected. In one embodiment, a choice can be presented to the user, e.g., using a dedicated physical button on an input unit, or a soft key on the menu, that offers further explanation of the item to be selected without actually selecting the item. For example, the graphical user interface can be configured such that after a pre-determined period of time a soft key offers an explanation of the menu item to be selected, e.g., by displaying a soft key with the word "MORE", "ADDITIONAL INFORMATION", "EXPAND", "MAGNIFY" , "HELP" or a variation thereof displayed thereon.

[0073] The pre-determined period of time may be based on a fixed factory preset value, a value set by the user or a health care provider, or through an adaptive mechanism based on an analysis of the user's speed of navigation from past interactions with the graphical

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user interface. In one embodiment, the pre-determined period of time is from about 5 to about 20 seconds, e.g., from about 10 to about 15 seconds.

[0074] If the offer for clarification and/or additional information is selected, e.g., by pressing the softkey, then the menu item to be selected can be displayed in a "high emphasis" mode, e.g., where the item is displayed as if a magnifying lens is held on top of the selected item. In some embodiments, additional emphasis of the menu item to be selected can be provided, e.g., by making the menu item change color, blink, or increase in size to a pre-determined maximum limit.

Support for On-Demand Analyte Determination Using an Analyte Sensor

[0075] In some embodiments, an analyte measurement system according to the present disclosure is further configured to receive analyte concentration data and/or signals indicative of an analyte concentration from an analyte sensor, e.g., an implanted or partially implanted analyte sensor or a radio-frequency (RF)-powered measurement circuit coupled to an implanted or partially implanted analyte sensor. In some embodiments, the analyte sensor is a self-powered analyte sensor. An analyte measurement system according to the present disclosure may include software configured to analyze signals received from the analyte sensor. Additional information related to self-powered analyte sensors and methods of communicating therewith are provided in U.S. Patent Application Publication No. 2010/0213057, the disclosure of which is incorporated by reference herein in its entirety.

Analytes

[0076] A variety of analytes can be detected and quantified using the disclosed analyte measurement system. Analytes that may be determined include, for example, acetyl choline, amylase, bilirubin, cholesterol, chorionic gonadotropin, creatine kinase (e.g., CK-MB), creatine, DNA, fructosamine, glucose, glutamine, growth hormones, hormones, ketones (e.g., ketone bodies), lactate, oxygen, peroxide, prostate-specific antigen, prothrombin, RNA, thyroid stimulating hormone, and troponin. The concentration of drugs, such as, for example, antibiotics (e.g., gentamicin, vancomycin, and the like), digitoxin, digoxin, drugs of abuse, theophylline, and warfarin, may also be determined. Assays suitable for determining the concentration of DNA and/or RNA are disclosed in U.S. Patent No. 6,281,006 and U.S. Patent No. 6,638,716, the disclosures of each of which are incorporated by reference herein in their entirety.

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Conclusion

[0077] The foregoing description of the invention has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed. Other modifications and variations may be possible in light of the above teachings. The embodiments were chosen and described in order to best explain the principles of the invention and its practical application, and to thereby enable others skilled in the art to best utilize the invention in various embodiments and various modifications as are suited to the particular use contemplated. It is intended that the appended claims be construed to include other alternative embodiments of the invention; including equivalent structures, components, methods, and means.

[0078] It is to be appreciated that the Detailed Description section, and not the Summary and Abstract sections, is intended to be used to interpret the claims. The Summary and Abstract sections may set forth one or more, but not all exemplary embodiments of the present invention as contemplated by the inventor(s), and thus, are not intended to limit the present invention and the appended claims in any way.

[0079] Where a range of values is provided, it is understood that each intervening value, to the tenth of the unit of the lower limit unless the context clearly dictates otherwise, between the upper and lower limits of that range is also specifically disclosed. Each smaller range between any stated value or intervening value in a stated range and any other stated or intervening value in that stated range is encompassed within the invention. The upper and lower limits of these smaller ranges may independently be included or excluded in the range, and each range where either, neither or both limits are included in the smaller ranges is also encompassed within the invention, subject to any specifically excluded limit in the stated range. Where the stated range includes one or both of the limits, ranges excluding either or both of those included limits are also included in the invention.

[0080] In the description of the invention herein, it will be understood that a word appearing in the singular encompasses its plural counterpart, and a word appearing in the plural encompasses its singular counterpart, unless implicitly or explicitly understood or stated otherwise. Merely by way of example, reference to “an” or “the” “analyte” encompasses a single analyte, as well as a combination and/or mixture of two or more different analytes, reference to “a” or “the” “concentration value” encompasses a single concentration value, as well as two or more concentration values, and the like, unless implicitly or explicitly understood or stated otherwise. Further, it will be understood that for any given component described herein, any of the possible candidates or alternatives

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listed for that component, may generally be used individually or in combination with one another, unless implicitly or explicitly understood or stated otherwise. Additionally, it will be understood that any list of such candidates or alternatives, is merely illustrative, not limiting, unless implicitly or explicitly understood or stated otherwise.

[0081] Various terms are described to facilitate an understanding of the invention. It will be understood that a corresponding description of these various terms applies to corresponding linguistic or grammatical variations or forms of these various terms. It will also be understood that the invention is not limited to the terminology used herein, or the descriptions thereof, for the description of particular embodiments. Merely by way of example, the invention is not limited to particular analytes, bodily or tissue fluids, blood or capillary blood, or sensor constructs or usages, unless implicitly or explicitly understood or stated otherwise, as such may vary.

[0082] The publications discussed herein are provided solely for their disclosure prior to the filing date of the application. Nothing herein is to be construed as an admission that the embodiments of the invention are not entitled to antedate such publication by virtue of prior invention. Further, the dates of publication provided may be different from the actual publication dates which may need to be independently confirmed.

[0083] The detailed description of the figures refers to the accompanying drawings that illustrate an exemplary embodiment of an analyte measurement system. Other embodiments are possible. Modifications may be made to the embodiment described herein without departing from the spirit and scope of the present invention. Therefore, the following detailed description is not meant to be limiting.

[0084] Certain embodiments presented herein relate to electrical interfaces in measurement devices. Measurement devices often have electrical interfaces that allow them to electrically connect with another device or apparatus and perform an analysis of an analyte. A device that measures blood glucose levels, for example, includes electrical interfaces that allow the device to measure the blood glucose level from a small blood sample.

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CLAIMS

What is claimed is:

1. A diabetes management system, comprising:

a plurality of analyte measurement devices;

a centralized server in data communication with the plurality of analyte measurement devices;

wherein the centralized server includes at least one computer readable medium having instructions executable by at least one processing device that, when executed, cause the processing device to

collect analyte data from the plurality of analyte measurement devices,

preserve data integrity, and

uniquely identify patient data received from the plurality of analyte measurement devices.

2. An analyte meter, comprising:

a test strip port for receiving an analyte test strip sensor;

a processor for conducting an analyte test based on a sample placed on the analyte test strip sensor; and

a user-identification module for uniquely identifying a user.

3. The analyte meter of claim 2, wherein the user-identification module is selected from the group consisting of: an optical reader, a barcode reader, an RFID reader, a fingerprint reader, meter serial number, and patient ID number.

4. The analyte meter of claims 2 or 3, wherein the user-identification module identifies the user via a handheld identifier tag held by the user.

5. The analyte meter of any of claims 2-4, wherein the processor does not perform an analyte test unless the user-identification module uniquely identifies the user.

6. The analyte meter of any of claims 2-5, wherein the processor tags analyte data with the user identification.

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7. A diabetes management method, comprising:

providing a patient with an analyte measurement device;

preparing a patient record in a centralized database;

providing a data communication channel between the patient's analyte measurement device and the centralized database;

receiving a primary unique patient ID from the patient's analyte measurement device;

prompting the patient to provide a secondary unique patient ID to confirm the patient's identity; and

storing newly received patient data in the patient record on the centralized database based on a confirmation of identification of the patient.

8. The method of claim 7, wherein the patient is provided with a second analyte measurement device, further comprising:

receiving a second primary unique patient ID from the patient's second analyte measurement device;

asking the patient to provide the secondary unique patient ID to confirm the patient's identity; and

storing newly received patient data from the second analyte measurement device in the patient record on the centralized database based on a confirmation of identification of the patient.

9. The method of claims 7 or 8, further comprising:

the centralized database providing the analyte measurement device with a unique ID for confirming identification in future data transfers.

10. The method of any of claims 7-9, further comprising:

registering a patient or device if identification of the patient or device cannot be confirmed.

11. The method of any of claims 7-10, wherein the steps are repeated for a plurality of patients and devices.

12. A diabetes management method, comprising:

registering a patient to a diabetes management system by

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registering a unique patient ID on a website, wherein the patient provides security information;

connecting an analyte measurement device to a personal computer, wherein the device installs a communication driver on the personal computer, and wherein the communication driver has instructions to upload data from the device to the website automatically when the device is attached to the computer; and

upon completion of the registration process, the website downloading the unique patient ID to the device and the communication driver.

13. A diabetes management method, comprising:

attaching an analyte measurement device to a personal computer;

uploading data via a communication driver;

the device and the communication driver both placing unique patient ID in a data stream; and

a central database recognizing and matching both unique patient IDs and storing data associated with the unique patient IDs.

14. A diabetes management method, comprising:

attaching an analyte measurement device to a personal computer with a communication driver;

the device placing a null character in a unique patient ID field of a data stream;

the communication driver detecting a mismatch of a unique patient ID with any of its stored IDs;

the communication driver requesting the user to identify the unique patient ID based on associated patient information or security information;

upon proper confirmation, the communication driver downloading the unique patient ID to the device and including the unique patient ID in the device field of the data stream sent to the central database; and

the central database recognizing and matching both unique patient IDs and storing data associated with this ID.

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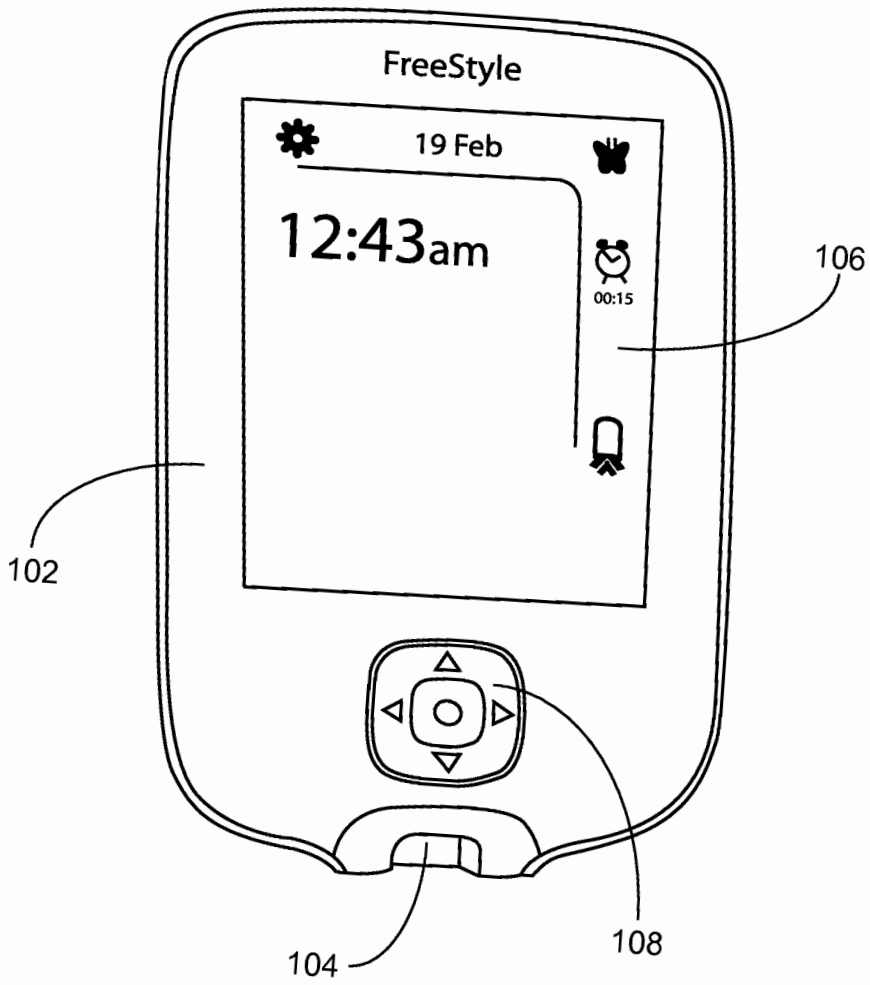


FIG. 1

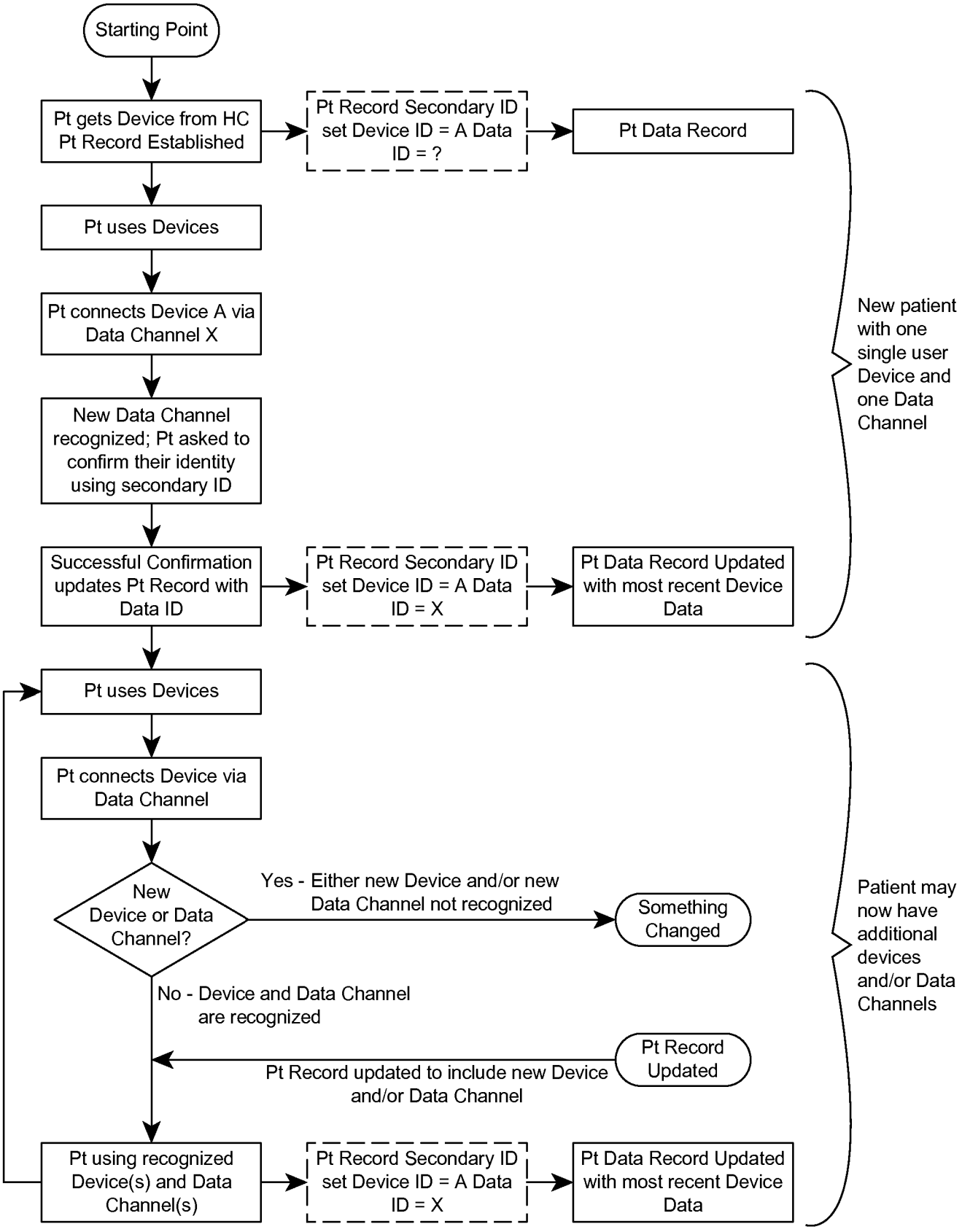

Starting Point
Pt gets Device from HC Pt Record Established
Pt Record Secondary ID set Device ID = A Data ID = ?
Pt Data Record
Pt uses Devices
Pt connects Device A via Data Channel X
New Data Channel recognized; Pt asked to confirm their identity using secondary ID
Successful Confirmation updates Pt Record with Data ID
Pt Record Secondary ID set Device ID = A Data ID = X
Pt Data Record Updated with most recent Device Data
New patient with one single user Device and one Data Channel
Pt uses Devices
Pt connects Device via Data Channel
New Device or Data Channel?
Yes - Either new Device and/or new Data Channel not recognized
Something Changed
No - Device and Data Channel are recognized
Pt Record Updated
Pt Record updated to include new Device and/or Data Channel
Pt using recognized Device(s) and Data Channel(s)
Pt Record Secondary ID set Device ID = A Data ID = X
Pt Data Record Updated with most recent Device Data
Patient may now have additional devices and/or Data Channels

FIG. 2

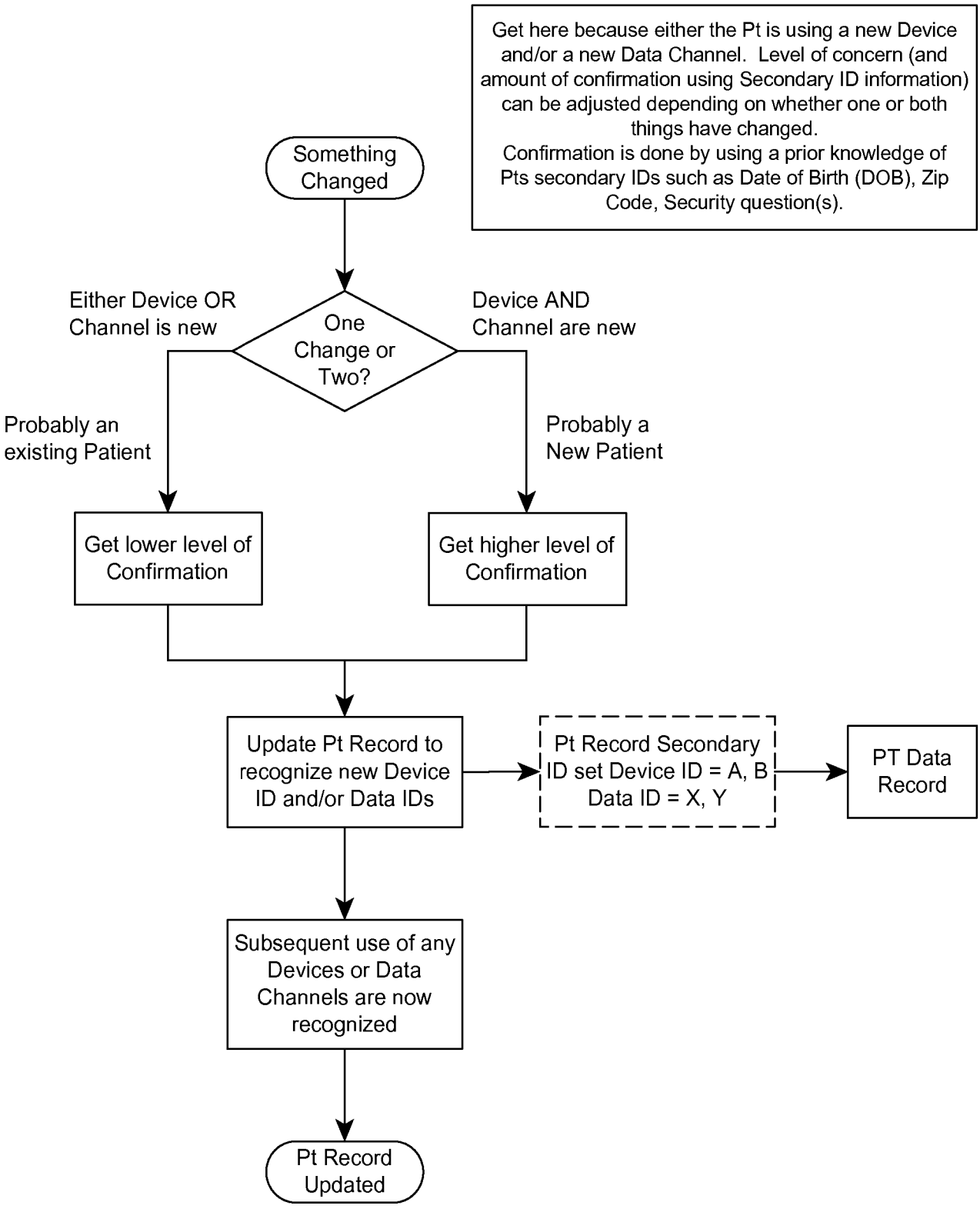
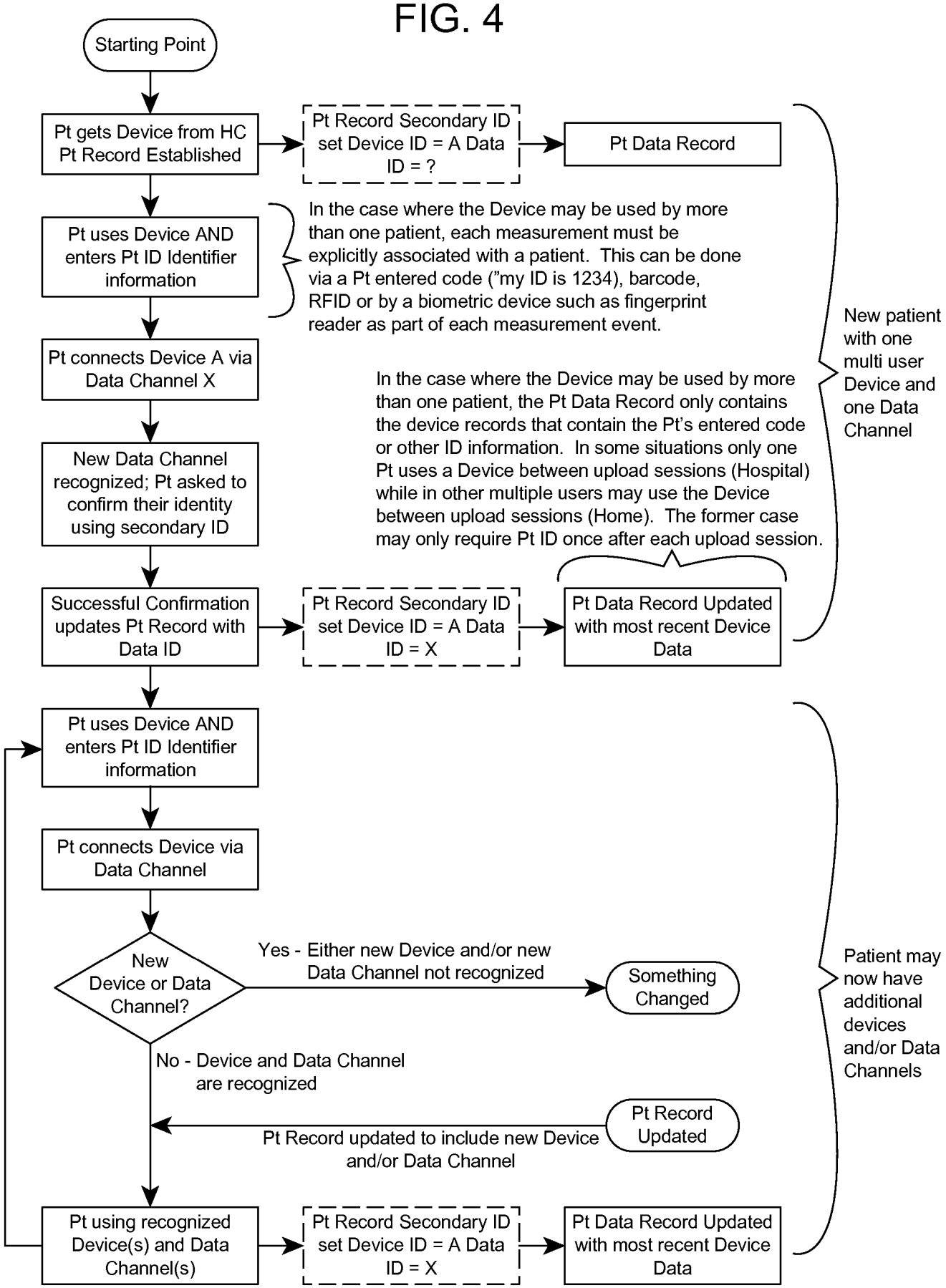

Get here because either the Pt is using a new Device and/or a new Data Channel. Level of concern (and amount of confirmation using Secondary ID information) can be adjusted depending on whether one or both things have changed.
Confirmation is done by using a prior knowledge of Pts secondary IDs such as Date of Birth (DOB), Zip Code, Security question(s).
Something Changed
One Change or Two?
Either Device OR Channel is new
Device AND Channel are new
Probably an existing Patient
Probably a New Patient
Get lower level of Confirmation
Get higher level of Confirmation
Update Pt Record to recognize new Device ID and/or Data IDs
Pt Record Secondary ID set Device ID = A, B Data ID = X, Y
PT Data Record
Subsequent use of any Devices or Data Channels are now recognized
Pt Record Updated

FIG. 3

FIG. 4


Starting Point
Pt gets Device from HC Pt Record Established
Pt Record Secondary ID set Device ID = A Data ID = ?
Pt Data Record
Pt uses Device AND enters Pt ID Identifier information
In the case where the Device may be used by more than one patient, each measurement must be explicitly associated with a patient. This can be done via a Pt entered code (”my ID is 1234), barcode, RFID or by a biometric device such as fingerprint reader as part of each measurement event.
Pt connects Device A via Data Channel X
New Data Channel recognized; Pt asked to confirm their identity using secondary ID
In the case where the Device may be used by more than one patient, the Pt Data Record only contains the device records that contain the Pt’s entered code or other ID information. In some situations only one Pt uses a Device between upload sessions (Hospital) while in other multiple users may use the Device between upload sessions (Home). The former case may only require Pt ID once after each upload session.
Successful Confirmation updates Pt Record with Data ID
Pt Record Secondary ID set Device ID = A Data ID = X
Pt Data Record Updated with most recent Device Data
New patient with one multi user Device and one Data Channel
Pt uses Device AND enters Pt ID Identifier information
Pt connects Device via Data Channel
New Device or Data Channel?
Yes - Either new Device and/or new Data Channel not recognized
Something Changed
No - Device and Data Channel are recognized
Pt Record Updated
Pt Record updated to include new Device and/or Data Channel
Pt using recognized Device(s) and Data Channel(s)
Pt Record Secondary ID set Device ID = A Data ID = X
Pt Data Record Updated with most recent Device Data
Patient may now have additional devices and/or Data Channels

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 11/66422

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A61B 5/00; C12Q 1/54; G01D 3/02 (2012.01)
USPC - 702/85; 204/403.01; 204/403.04
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8)- A61B 5/00; C12Q 1/54; G01D 3/02 (2012.01);
USPC- 702/85; 204/403.01; 204/403.04

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Patents and NPL (classification, keyword; search terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWest (US Pat, PgPub, EPO, JPO), GoogleScholar (PL, NPL), FreePatentsOnline (US Pat, PgPub, EPO, JPO, WIPO, NPL);
Search terms used: diabetes, diagnostic, glucose, manage, system, server, track, central, server, test, analyte, strip, port, register, download, optical, barcode, rf, rfid, radio, frequency, fingerprint, meter, serial, number, id, i

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 2006/0173260 A1 (GAONI et al.) 03 August 2006 (03.08.2006), para [0006], [0008], [0027]-[0034], [0038]-[0042], [0047]-[0051]	1-3 --- 4, 7-9, 12-14
Y	US 2010/0312577 A1 (GOODNOW et al.) 09 December 2010 (09.12.2010), para [0003]-[0008], [0013], [0204], [0222]-[0229], [0246], [0249], [0251], [0327], [0336], [0345]-[0354], [0369]	4, 7-9, 12-14
X, P ----- Y, P	US 2011/0125530 A1 (DRUCKER et al.) 26 May 2011 (26.05.2011), para [0009]-[0156]	1-4, 7-9 --- 12-14
Y	US 2010/0256047 A1 (SIEH et al.) 07 October 2010 (07.10.2010), para [0023]-[0070]	1-4, 7-9, 12-14
Y	US 2008/0119705 A1 (PATEL et al.) 22 May 2008 (22.05.2008), para [0006]-[0012], [0030]-[0070]	1-4, 7-9, 12-14

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 April 2012 (11.04.2012)	01 MAY 2012

Name and mailing address of the ISA/US	Authorized officer:
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 11/66422

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☒ Claims Nos.: 5, 6, 10, 11
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

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(19) World Intellectual Property Organization
International Bureau

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WIPO | PCT

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21 December 2011 (21.12.2011)

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(54) **Title**: FEEDBACK FROM CLOUD OR HCP TO PAYER OR PATIENT VIA METER OR CELL PHONE

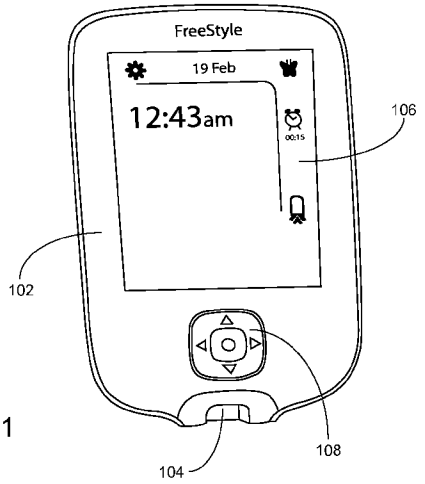


FIG. 1

(57) **Abstract**: Presented herein are one or more software applications to help a user manager their diabetes. Embodiments and descriptions of the various applications are provided below in conjunction with an analyte measurement device.

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FEEDBACK FROM CLOUD OR HCP TO PAYER OR PATIENT VIA METER OR CELL PHONE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] Pursuant to 35 U.S.C. § 119(e), this application claims priority to U.S. Provisional Application No. 61/442,085 filed on February 11, 2011, and U.S. Provisional Application No. 61/486,117 filed on May 13, 2011, the disclosures of which are herein incorporated by reference in their entirety.

[0002] This application is related to U.S. Provisional Patent Application No. 61/442,063 filed on February 11, 2011; U.S. Provisional Application No. 61/442,092 filed on February 11, 2011; U.S. Provisional Application No. 61/485,840 filed on May 13, 2011; U.S. Provisional Application No. 61/442,093 filed on February 11, 2011, and Application No. 61/442,097 filed on February 11, 2011, the disclosures of which are all incorporated herein by reference in their entirety and for all purposes.

BACKGROUND OF THE INVENTION

The Field of the Invention

[0003] The present invention relates to analyte measurement systems. More specifically, the present invention relates to a diabetes management system.

Background

[0004] One tool used in diabetes management is an analyte meter. An analyte meter is typically used to measure the blood glucose level of a user based on a sample of blood. The process of using an analyte meter is not complicated, and is often performed several times a day. First, the user inserts an analyte test strip into a test strip port of the meter. The user then lances her finger to obtain a small sample of blood. The blood sample is then placed onto the analyte test strip, and the meter analyzes the blood sample. The meter then typically displays a blood glucose level from the analysis.

[0005] Continuous Glucose Monitoring (CGM) systems are also used to manage diabetes and to collect data. A CGM system consists of a glucose-detecting sensor embedded in the interstitial layer beneath the epidermis, and an apparatus to receive and store glucose values. CGM systems have the advantage of collecting data on a regular

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basis, every 10 minutes for example, continuously for the lifetime of the sensor. This typically ranges from several days to one week. Much more data is collected, and there is 24-hour coverage.

[0006] The conventional method for providing analysis tools to help health care providers (HCPs) and patients absorb and understand glucose and other diabetes data has been to provide software that generates different graphs for HCPs and patients to review and consider. Unfortunately, the providing of graphs is lacking in that it is time consuming and requires a high level of expertise to be effective. What is needed is a system that processes data based on clinical standards and provides expert therapy decisions and support guidance.

BRIEF DESCRIPTION OF THE FIGURES

[0007] The accompanying drawings, which are incorporated herein, form part of the specification. Together with this written description, the drawings further serve to explain the principles of, and to enable a person skilled in the relevant art(s), to make and use the present invention.

[0008] **FIG. 1** provides a front-side view of handheld analyte measurement device in accordance with certain embodiments presented herein.

[0009] **FIG. 2** illustrates a glucose control level triage scale.

[0010] **FIG. 3** shows a glucose control grid: Hypoglycemia vs. Mean Glucose Exposure.

[0011] **FIG. 4** shows a glucose control grid: Mean Glucose Exposure vs. Volatility.

[0012] **FIG. 5** provides a mean and standard deviation graph of hourly 10th percentile of glucose values for 80 patients on multiple daily injections of insulin.

[0013] **FIG. 6** provides hourly hypoglycemia risk: hourly mean and standard deviation of 10th percentile adjusted for 24-hour mean (80 patients on multiple daily injections of insulin), 100% set to mean hourly hypoglycemic risk.

[0014] **FIG. 7** provides 10th percentile of glucose values at 4AM for 80 patients on multiple daily injections of insulin.

[0015] **FIG. 8** provides 10th percentile of glucose values at 9AM for 80 patients on multiple daily injections of insulin.

[0016] **FIG. 9** provides hourly volatility risk: mean and standard deviation of hourly (interquartile range/median) of glucose values for 80 patients on multiple daily injections of insulin.

[0017] **FIG. 10** provides relatively interquartile range (IQR/median) of glucose values at 9AM for 80 patients on multiple daily injections of insulin.

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[0018] **FIG. 11** provides relative interquartile range (IQR/median) of glucose values at 4PM for 80 patients on multiple daily injections of insulin.

[0019] **FIG. 12** provides hourly excess glucose risk exposure: mean and standard deviation of hourly median of glucose values for 80 patients on multiple daily injections of insulin.

[0020] **FIG. 13** provides median of glucose values at 9AM for 80 patients on multiple daily injections of insulin.

[0021] **FIG. 14** provides median of glucose values at 4PM for 80 patients of multiple daily injections of insulin.

[0022] **FIG. 15** provides an example of self-monitoring schedules according to the dimension of concern.

[0023] **FIG. 16** is a flowchart in accordance with certain embodiments of the present invention.

[0024] **FIG. 17** is a flowchart in accordance with certain embodiments of the present invention.

[0025] **FIG. 18** illustrates an example of a Contingency Analysis for the occurrence of hypoglycemic episodes (dependent variable) changing with respect to the day of the week (independent variable) from continuous glucose monitoring.

[0026] **FIG. 19** illustrates an example of a Contingency Analysis for the occurrence of hypoglycemic episodes (dependent variable) changing with respect to the day of the week (independent variable) from continuous glucose monitoring.

[0027] **FIG. 20** shows **t**he rank-order of days of the week by being most different in terms of rate of hypoglycemia from what would be expected (that is, expected if there was no pattern across the days of the week).

[0028] **FIG. 21** illustrates an example of a Contingency Analysis.

[0029] **FIG. 22** illustrates an example of a Contingency Analysis.

[0030] **FIG. 23** is a table illustrating episodes detected for a patient for four calendar days.

[0031] **FIG. 24** is a table illustrating episodes detected and allocated for a patient for four calendar days.

[0032] **FIG. 25** is a chart illustrating glucose levels versus time of day.

[0033] **FIG. 26** is a chart illustrating glucose levels versus time of day.

[0034] **FIG. 27** exemplary data in accordance with one method presented herein.

[0035] **FIG. 28** exemplary data in accordance with one method presented herein.

[0036] **FIG. 29** exemplary data in accordance with one method presented herein.

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[0037] **FIG. 30** is a plot of high glucose alarms per day versus high glucose alarm setting.

[0038] **FIG. 31** illustrates a control grid, according to certain embodiments.

[0039] **FIG. 32** illustrates a control grid displaying a centroid, according to certain embodiments.

[0040] **FIG. 33** illustrates a flowchart for a method of recommending treatment, according to certain embodiments.

[0041] **FIG. 34** illustrates a control grid, according to certain embodiments.

[0042] **FIG. 35** illustrates a flowchart for a method of recommending treatment with multiple control grids, according to certain embodiments.

[0043] **FIG. 36** illustrates an example of a treatment recommendation lookup table, according to certain embodiments.

[0044] **FIG. 37** illustrates a control grid, according to certain embodiments.

[0045] **FIG. 38** illustrates a control grid with lines of constant hypoglycemia rate shown thereon, according to certain embodiments.

[0046] **FIG. 39** illustrates the control grid shown in FIG. 32 with parallel approximations of the lines of constant hypoglycemia rate, according to certain embodiments.

[0047] **FIG. 40** illustrates a control grid showing a hypoglycemia risk zone (Hypo Risk Zone), according to certain embodiments.

[0048] **FIG. 41** illustrates possible A1c target values on the control grid of FIG. 34, according to certain embodiments.

[0049] **FIG. 42** illustrates the control grid shown in FIG. 35 with a defined target zone, according to certain embodiments.

[0050] **FIG. 43** illustrates the control grid of FIG. 36 with two additional zones, according to certain embodiments.

[0051] **FIG. 44** illustrates a graph of sample data that has been fit to a probability distribution, according to certain embodiments.

[0052] **FIG. 45** illustrates a sample point shown on a control grid along with a cloud of points derived by using a bootstrap, according to certain embodiments.

[0053] **FIG. 46** illustrates the data shown in FIG. 41 with a line drawn parallel to the border of the Hypo Risk Zone such that only 5% of the bootstrap points are below the line, according to certain embodiments.

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[0054] **FIG. 47** illustrates a projection of one bootstrap point along a line perpendicular to the lines of constant hypoglycemia rate on a control grid, according to certain embodiments.

[0055] **FIG. 48** illustrates a boundary line of a bootstrap cloud that was calculated using confidence limits, according to certain embodiments.

[0056] **FIG. 49** illustrates a control grid showing a sample point, TRP, and an anti-TRP value, according to certain embodiments.

[0057] **FIG. 50** illustrates the vertical and horizontal distances from a Hypo Risk Zone border line to a TRP point on a control grid, according to certain embodiments.

[0058] **FIG. 51** illustrates contour plots of a probability distribution function of a patient's state of glucose control, according to certain embodiments.

[0059] **FIG. 52** shows the same distribution from the same patient shown in FIG. 47, in the context of two different clinical risks, namely the risk of retinopathy (horizontal lines) and risk of severe hypoglycemia (diagonal lines), according to certain embodiments.

[0060] **FIG. 53** illustrates contour lines for 6 additional patients plotted on the same control grid, according to certain embodiments.

[0061] **FIG. 54** illustrates the contour lines generated from a relatively stringent testing schedule on the same 7 patients as shown in FIG. 48, according to certain embodiments.

[0062] **FIG. 55** illustrates the determination of areas where a given testing schedule is adequate vs. inadequate in detecting a clinically meaningful change in risk of retinopathy, according to certain embodiments.

[0063] **FIG. 56** illustrates the association between HbA1c and risk of retinopathy and HbA1c and risk of sever hypoglycemia.

[0064] **FIG. 57** illustrates a mapping a clinical risk, namely risk of retinopathy, onto a glucose control chart, according to certain embodiments.

[0065] **FIG. 58** illustrates multiple clinical risks – clinical risk of retinopathy and acute risk of hypoglycemia -- overlaid on glucose control chart containing data for two separate diabetic sub-populations, according to certain embodiments.

[0066] **FIG. 59** illustrates an example of the progression of a patient's state of glucose control relative to two clinical risks, according to certain embodiments.

[0067] **FIG. 60** illustrates an example block diagram for the software application for communicatively coupling the meter with the remote server via a computer, according to certain embodiments.

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BRIEF SUMMARY

[0068] Presented herein are one or more software applications to help a user manager their diabetes. Embodiments and descriptions of the various applications are provided below in conjunction with an analyte measurement device.

DETAILED DESCRIPTION OF THE INVENTION

[0069] Before the embodiments of the present invention are described, it is to be understood that this invention is not limited to particular embodiments described, and as such may, of course, vary. It is also to be understood that the terminology used herein is for the purpose of describing particular embodiments only, and is not intended to be limiting, since the scope of the embodiments of the invention will be limited only by the appended claims.

[0070] **FIG. 1** provides a front-side view of handheld analyte measurement device, such as an analyte meter 102, in accordance with certain embodiments presented herein. In certain embodiments, analyte meter 102 includes a test strip port 104, a display unit 106, and at least one control button 108. In practice, an analyte test strip (or sensor) is inserted into test strip port 104 in order to conduct an analyte test; for example, a blood glucose reading or a blood ketone reading. Meter 102 includes software to analyze the sample placed on the test strip, and the results of the analysis are typically displayed to the user via display unit 106. The user may also use control button 108 to provide appropriate instructions to meter 102.

[0071] In certain embodiments, meter 102 includes one or more diabetes management software applications. The integration of software applications with meter 102 provides an opportunity to augment traditional glucose and/or ketone readings to provide more useful information and feedback to patients and HCPs. As such, meter 102, with loaded software applications, can be part of a robust therapy management system. The software applications can be factory pre-loaded, or installed by the user or health care provider after first use by the user. In addition to the software applications discussed below, meter 102 may include one or more of the software applications described in U.S. Patent Application No. 7,766,829; and U.S. Provisional Patent Application Nos. 61/015,185; 61/262,849; 61/290,841; 61/254,156; and 61/325,155; the disclosures of which are incorporated herein by reference in their entirety. As such, in certain embodiments, the analytics described herein may be located on the patient's personal device.

[0072] In certain embodiments, software applications are licensed, acquired, or otherwise built by third-parties to be incorporated into meter 102, or other biometric

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devices. Examples of the types of software that may be incorporated include: (a) behavioral engagement software; (b) therapy recommendation algorithms; (c) survey applications; (d) report-generating software; etc. A means may be provided to prevent unauthorized software from being executed by the device. A number of methods may be used to prevent such unauthorized execution. For example, the operating system on the device may require a code imbedded in the software before it would allow the software to be executed. The code may be provided by the meter manufacturer to trusted third-party vendors. Furthermore, the code may be generated from information provided regarding the application, to prevent the code from being publicized. In other words, a generation algorithm code may be provided. The information used to generate the code may be, for example, the company name or product name or another code. Also, time based information may be used, such as the earliest date that the application may be installed. Further, actual loading of the software on the device may be prevented, using the same techniques. For example, the installation driver located on the device may require authorization before it proceeds with installation.

[0073] Analyte meter 102 may further include one or more internal or external communication modules. The communication module(s) may be used to receive and/or transmit data and/or program instructions. The communication module(s) may also download software applications from one or more servers. In certain embodiments, the communication module is used to communicate with one or more external devices; such as, for example, a medication (drug) deliver device; a cellular phone; a laptop computer; a mobile device, such as a PDA, iPhone, iPad, tablet computer, etc.; a desktop computer; an analyte meter; and/or another analyte measurement system. In certain embodiments, the communication module can be configured for wired or wireless communication to an external device. Wireless communication may be provided by, for example, but not limited to, radio frequency (RF) communication (e.g., Radio-Frequency Identification (RFID), Zigbee communication protocols, WiFi, infrared, wireless Universal Serial Bus (USB), Ultra Wide Band (UWB), Bluetooth® communication protocols, and cellular communication, such as code division multiple access (CDMA) or Global System for Mobile communications (GSM).

[0074] In another embodiment, the patient's analyte meter 102 may include a communication module to connect to one or more servers (e.g., networked to a "cloud"). Data obtained from an analyte test can then be uploaded to the cloud, analyzed (automatically or semi-automatically) in the cloud, and results of the analysis can be downloaded to the patient's local device for review by the patient or an HCP. As such,

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the patient's local device can have limited processing capabilities because the bulk of the processing and analysis will be performed in the cloud. Further, such a system can allow a diabetes management company to control, manage, and/or update software in the cloud, without having to control, manage, and/or update software on the local devices of a large pool of patients. As such, in certain embodiments, the analytics described herein may be located on one or more centralized servers (i.e., "cloud").

[0075] Further, such system provides an opportunity to employ systems and methods for analyzing patient analyte data based on clinical standards, and provide expert therapy decision and support guidance, even if the patient or her local care provider lacks the expertise for sophisticated analyte analysis. For example, presented herein are systems and methods that can be widely utilized by non-diabetes expert primary caretakers. Achieving this goal will generally improve the health of people with diabetes and ultimately reduce health care payor costs.

[0076] In certain embodiments, the systems and methods presented herein are applicable under the preferred architecture of a web-based system (e.g., centralized server, cloud, centralized database, etc.) which includes connectivity to personal devices used by the patients. Patient devices include glucose meters, insulin pumps, cellular phones, PDA's, mobile devices, and/or personal computers. Intermediate connectivity devices may be included, such as a repeater which acquires the glucose data periodically from a glucose meter via wired or wireless communication (e.g., Bluetooth, WiFi, cellular, etc.) and transfers the data to a server (or intermediate server) via a standard pager communication network. In addition, a health care provider (HCP), or health care payor, may use a secondary device (e.g., a personal computer, web terminal, cellular phone, etc.) to access information from the server.

[0077] In another embodiment, the analytics described herein may be located on an HCP's device/system. In addition, the analytics described herein may be distributed across all the nodes of the diabetes management system.

[0078] Provided below are exemplary analytic systems and programs, in the form of software applications or otherwise, for use in the diabetes management system described herein.

Software Application for Triaging Glucose Control Assessment and Adapting Self-Monitoring Intervention

[0079] For people with diabetes who are not taking multiple daily injections of insulin, the utility of self-monitored glucose measurements has not been well established. The

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current standard of care is to use the long-term biomarker of average glucose control A1C to assess and titrate diabetes therapies, with little or no regard to self-monitored glucose acquired using strips and sensors by patients in everyday settings. However, the failure of this approach is evident in that less than half of patients with diabetes in the U.S. meet control targets, putting them at higher risk for diabetes-related complications. The opportunity exists to create a software application which is capable of identifying underlying glucose control defects made apparent by self-monitored glucose that are not identifiable from long-term biomarkers such A1C.

[0080] Furthermore, for patients who do take insulin, identification of clinically-important patterns in their self-monitored glucose is extremely unstructured, and generally inefficient and time-consuming for care providers. The effect is such that the vast majority of care providers of insulin-using patients do not even bother creating computer-generated summary reports of downloaded self-monitored blood glucose (SMBG) values.

[0081] Further, A1C, as a long-term biomarker of excess glucose exposure, falls short of being able to monitor and assess important dimensions of glucose control. Such dimensions include overall hypoglycemia and glucose volatility, as well as periods of the day with excess hypoglycemia, glucose volatility, and glucose exposure. Therapeutic interventions to achieve target glucose control must recognize the trade-off between long-term risk of complications and acute risk of low glucose (hypoglycemia). If therapy is added improperly, there is the possibility of causing more harm (hypoglycemia) than good (reduction of long-term complication risk). To mitigate this situation, self-monitored glucose measurements may provide the necessary dimensions of control assessment, such that therapy can be adjusted in a progressively safe manner. Furthermore, since the physiologic defects in type-2 diabetes progress over time, there is a need to maintain monitoring of control even once targets have been met.

[0082] In certain embodiments, there is provided a software application that uses a clinically-rational scale of glucose control; i.e. a "triage" scale, and associated logic for selecting self-monitoring schedules (when and how often to measure) that are optimized to provide assessment of the main control defect identified on that scale. This logic is envisioned to be therapy-dependent in that the times of day posing control risk are expected to vary according to the type of diabetes therapy (e.g., single oral agent, combination therapy, background insulin only, background insulin with other agents, pre-mixed insulin, basal and bolus insulin, etc.) that is being utilized by the patient.

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[0083] The first aspect of this application provides a rational priority to addressing out-of-target dimensions of glucose control provided by self-monitored glucose, as shown in FIG. 2, where the priorities are numbered (beginning with zero) in the order that they should be addressed. Within the categories it is proposed that problems identified during the night take priority over those during the day due to the increased risk of acute problems (low glucose) being unrecognized by the patient or others while sleeping. When self-monitored glucose data is analyzed (either on a meter or external to a meter), this scale helps focus clinicians on therapy adjustments which address the triaged levels of control in a safe manner. While the general categories are fixed, the criteria for satisfying each level may vary according to individual patient differences or class of patient (e.g., age, therapy used, duration of disease, diabetes type). In any case, the goal of the software application is to focus on the optimally addressing a single aspect of glucose control while keeping other dimensions of glucose control in proper and safe context.

[0084] Progress along this glucose control scale can be represented along the dimensions of interest. For example, FIG. 3 shows how the scale maps to a grid of hypoglycemia versus glucose exposure. This representation emphasizes that hypoglycemia needs to be addressed first, even if it results in an increase in glucose exposure to get control levels 2 or 3. In another example, FIG. 4 shows a grid of glucose exposure versus glucose volatility. This representation is more effective at contrasting control levels 2 and 3.

[0085] In another aspect of the present inventions, the software application proposes how to allocate discrete self-monitored glucose measurements according to glucose control level. This aspect is intended to guide how to allocate a relatively small number of glucose measurements per day (e.g., 1-12) over a number of days such that the dimension(s) of glucose control of interest is optimally measured. At minimum, the software application proposes that there are optimal "schedules" to discrete the self-monitoring of glucose for each glucose control levels (1-4). The schedules are likely to be further refined according to diabetes therapy type being used or other patient characteristics. Furthermore, algorithms may be developed which automatically shift between schedules as each dimension of control is assessed and surpasses thresholds. In some cases, prior knowledge of the initial condition of the patient, such as non-insulin-using type-2, may be used to modify the testing schedule to reduce testing for hypoglycemia.

[0086] To demonstrate this aspect of the invention, it is applied to a group of patients on multiple daily injections of insulin (MDI). Each patient had continuous glucose

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monitoring every 10 minutes for 14 days. Within each hour of the day, the 10th percentile value was found. Typically this means there were 6 measurements per hour over 14 days for a total of 84 values within each hour. These values are sorted, highest to lowest, and one method to define the 10th percentile value is to do a linear interpolation between the 8th and 9th lowest values (since the 84/100 = "8.4th" value doesn't exist). In this way, a glucose value is found for each hour where 90% of the glucose measurements in this hour of the day are higher than that value, and 10% are lower. Combining all the patients, the mean and standard deviation of their hourly 10th percentile glucose values are shown in FIG. 5. These values are transformed into hourly hypoglycemia risk by scaling to the 24-hour mean of the 10th percentile values by: [1-(24-hr mean – *x*-hr)/24-hr mean] * 100, where *x* is each hour of the day, shown in FIG. 6. This shows that for this class of patients the highest hypoglycemia risk is between 11PM and 7AM, shown by having the error bars exceed the selective threshold of 130%. Two hours of the day are compared in FIG. 7 and FIG. 8. At 4AM, 25% of the patients have 10% of their glucose values below 67.25 mg/dL, representing more hypoglycemia during that hour of the day then at 9AM (less than 10% of the patients have 10% of their glucose values below 67.25 mg/dL). This indicates that self-monitoring schedule to assess hypoglycemia risk should be more comprehensive during the night then during the day.

[0087] It is important to manage glucose volatility, since excess volatility may result in increased hypoglycemia when therapies are adjusted to reduce overall glycemia. FIG. 9 shows the volatility per hour of this group of MDI patients, indicating that a self-monitoring schedule to assess volatility should be more comprehensive during the hours of 10PM-7AM and 2PM-8PM. FIG. 10 and FIG. 11 compare the volatility of two different hours of the day, one with the main time of concern (4PM) and one outside the time period of concern (9AM).

[0088] In order to assess excess glucose exposure, FIG. 12 shows the exposure per hour for this group of MDI patients, indicating that a self-monitoring schedule to assess excess glucose exposure should be more comprehensive during the hours of 7AM-3PM and 7PM-12AM. FIG. 13 and FIG. 14 compare the excess glucose exposure of two different hours of the day, one with the main time of concern (9AM) and one outside the time period of concern (4PM).

[0089] In summary, an example of self-monitoring schedules according to the dimension of concern is shown in FIG. 15.

[0090] In another embodiment, the software application associates specific therapies with optimal SMBG test schedules, which can be downloaded to a glucose meter. The

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software application also analyzes diabetes data based on median glucose and glucose variability to prioritize the displayed findings. As such, the recommended treatment will ultimately reduce median glucose without causing hypoglycemia.

Software Application for Workflow Automation

[0091] Therapy modifications for diabetes patients have been traditionally made based on PC software that provides HCP's with reports that illustrate glucose management. Utilization of these reports is time consuming and requires a high degree of expertise by the HCP. In certain embodiments provided herein, there is provided a method and system to automate analysis of diabetes data, which generates treatment recommendations and relevant reports that illustrate problems. In another embodiment, there is provided a method and system for workflow automation. Specifically, there is provided an optimal workflow order presented where automatic treatment recommendations are presented and utilized as part of the HCP's visit workflow.

[0092] In certain embodiments, there is provided a workflow that has two phases - one targeted for clinical assistant activities (e.g., "waiting room" workflow), and a second for the HCP (e.g., "exam room" workflow). The first phase involves uploading the device data and entering data into a PC application based on a preliminary interview with the patient. This activity can be done by the clinical assistant. The second phase is where the application provides a summary of the analysis to the HCP and provides a means for the HCP to determine and record treatment modifications, all provided in an interactive display. The HCP can review these results, which would provide detailed findings, reports associated with these detailed findings, questions to the patient associated with the findings, and treatment recommendations from which to select. Answers to questions, selected treatment recommendations, and selected reports to illustrate findings and treatment decisions, or to educate the patient, would be recorded.

[0093] **FIG. 16** is a flowchart in accordance with certain embodiments of the present invention. In FIG. 16, the boxes noted 1-6 generally correlate with the above-described "Phase 1." Boxes noted 7-12 (and TBD) generally correlate with the above-described "Phase 2."

[0094] In certain embodiments, there is provided a workflow method as follows:

1) Phase 1

i. Inputs to the automated logic are retrieved

1. Glucose data and any other pertinent logged data are uploaded from the glucose measurement device.

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2. Patient identification and specific information is retrieved based on the uploaded device serial number and a prompt is presented to allow confirmation or correction.

3. Current patient treatment is retrieved based on the uploaded device serial number, and a prompt is presented to allow confirmation or correction to this treatment.

4. A prompt is presented for entry of any recent test information, such as A1C or blood pressure.

5. A prompt is presented for entry of any other information that is required as an input to the analysis logic.

6. A prompt (optional) is presented for patients to describe any conditions or problems they wish to discuss during the exam with the HCP. This may or may not impact the analysis logic. An example situation, which would impact the analysis, would be if the patient selects a specific time period(s) that was difficult to manage and wishes to discuss/review with the HCP. Such prompts are provided for the patient to enter additional information that is not typically used as an input to the analysis logic (e.g., "unguided" or open-ended questions that can be answered by the patient).

ii. Analysis logic process is performed using the above inputs

2) Phase 2

i An interactive display (e.g., Box 7 in FIG. 16) is presented that includes:

a. results of the analysis ("Findings" and "Actions to Consider"), structured by the important periods of the day for diabetes management: "Fasting" and "Post-Meal" , and (optionally) a standardized report;

b. findings may be color-coded, or otherwise annotated, to indicate negative and positive findings;

c. means to expand and collapse Findings, where Findings can be expanded to detail findings and actions to consider, questions to ask the patient, and treatment recommendations (e.g., results from the analysis);

d. means to navigate to a report pertinent to a particular finding;

e. means to navigate to HCP-oriented reference materials pertinent to a particular finding and/or action to consider;

f. means to naviagate to patient-oriented diabetes self-care education materials pertinent to a particular finding and/or action to consider

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g. means to select or deselect the patient-oriented diabetes self-care education materials pertinent to a particular finding and/or action to consider for printing or electronic delivery to the patient

h. means to add HCP-selected detailed reports to a summary report for long-term storage (e.g., "journal" specific reports of value for medical charting or patient education);

i. means to navigate to entry screen pertinent to a particular question or treatment recommendation;

j. a displays of entry screen inputs for questions answered;

k. a displays of entry screen inputs for selected treatment recommendations; and/or

l. a displays entry screen for ad hoc questions answered and treatment recommendations.

ii A treatment order is prepared based on the selected treatment recommendations and the results of the analysis and HCP input (e.g., Box 8 in FIG. 16).

[0095] The selected treatment recommendations may be text fields and may include modification of treatment fields. The interactive display may present this information in a dashboard format, a tab format, an icon based format or some other means. Other interactive fields may be added to this interactive display, such as means to compare treatments and treatment results from prior clinical visits.

[0096] The described workflow may be extended to include two or more analysis stages. For instance, the first analysis stage may be as described above, but may generate additional questions to be asked of the patient that may form inputs to a second analysis stage (along with inputs to the first analysis stage and outputs from the first analysis stage).

Software Application for Identifying Episodes

[0097] In certain embodiments, there is provided a process for identifying features of glucose measurements (i.e., "episodes"), collecting supporting details about these episodes, using statistical methods to assess if any particular conditions or actions appear to influence the likelihood of these episodes occurring, and describing this analysis in a clinically-meaningful way to better inform health-care providers about the status of their patients and potential next steps in their treatment and disease management. FIG. 17 provides a flowchart in accordance with said process.

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[0098] HCPs who use current systems of glucose data management and assessment still request further assistance from these systems to help answer basic questions of clinical relevance. For example, HCPs want to know if a patient is experiencing hypoglycemia more often on some days of the week compared to others. Provided herein is a method to address questions of this nature, with both statistical and clinical input, to arrive at answers and suggested clinical actions.

[0099] In certain embodiments, there is provided a method to define episodes using clinical criteria. The clinical criteria may be universally applied for many patients of similar disease state and therapy, or customized for individual patients. Episodes are generally a categorized period with the possible mutually exclusive values of "Yes," "No", or "unknown." The "unknown" category would apply if a period of time has no data to relate whether an episode may or may not have occurred.

[00100] Episodes are further generally categorized by clinically-relevant criteria. Examples may include episodes of hypoglycemia, hyperglycemia, rapid glucose increases, rapid glucose drops, etc. Examples here will focus on episodes determined from glucose monitoring, but may be extended to any other frequently monitored behavior, activity, or biological parameter.

[00101] In certain embodiments, there is provided a method to collect details of episodes. Details of episodes are collected for further analysis, such as: 1) when the episode started and ended; 2) the day of the week the episode occurred; 3) the week of the month the episode occurred; 4) how long before or after the episode an activity was performed; 5) the glucose levels or statistical summaries of the glucose levels before, during and after the episode; 6) the source of the glucose measurements (say "continuous glucose monitoring" or "self-monitored blood glucose").

[00102] The method further includes finding and allocating episodes over a monitoring period. Allocation may be assigned according to a number of possible clinically relevant reasons, such as: week of a month, day of the week, time period in a day, behavior or activities (taking medication, eating, sleeping, exercising, etc), glucose value, glucose rate of change, state of health of the patient, etc.

[00103] As one example, the allocation may be done over each hour of the monitoring period being evaluated. For example, if three months have elapsed since monitoring has been initiated by the patient, there may be approximately 90*24 = 2160 hours of monitoring where an episode can be allocated as "Yes," "No," or "No monitoring available (unknown)."

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[00104] As another example, the allocation may be done according to the measured glucose value, and whether an episode occurs within some future time period. Alternatively, when an episode does occur, descriptive details of that episode can be allocated (such as the maximum glucose rate of change within 1 hour before the episode) and statistically and clinically relevant patterns can be investigated.

[00105] The method further includes identifying patterns using statistical criteria. Once allocated over the monitoring period of interest, statistical methods can be used to determine how likely occurrences of episodes (the "dependent variable") relative to any possible independent variable (i.e. "clinically relevant reason") is to be observed simply by mere coincidence. If the likelihood of coincidental observation, i.e. "by mere chance or luck," is low (say less than 1 in 20), then independent variables may be identified as having a strong association with the occurrence of episodes, and be deemed worthy of further investigation or discussion between the patient and healthcare provider, and interpretation by the healthcare provider to suggest therapy or behavior modifications.

[00106] A statistical method for this technique is the "Contingency Analysis." Shown FIGs. 18 and 19 are examples of a Contingency Analysis for the occurrence of hypoglycemic episodes (dependent variable) changing with respect to the day of the week (independent variable) from continuous glucose monitoring.

[00107] For the shown example, the statistical methods indicate a very low likelihood that the increased frequency of hypoglycemia on Sunday and Saturday is mere chance coincidence. In fact, the statistics indicate the likelihood of coincidentally seeing this pattern of hypoglycemia across the days of the week is smaller than 1 in 10,000. Therefore it's reasonable to assume that something about this patient's behavior or therapy on Saturday and Sunday is different from the rest of the week in regards to having hypoglycemic episodes. Therefore, a possible output of the system may be to summarize these findings: "Statistical analysis indicates the likelihood of coincidentally seeing this pattern of hypoglycemia across the days of the week is smaller than 1 in 10,000.

[00108] The rank-order of days of the week by being most different in terms of rate of hypoglycemia from what would be expected (that is, expected if there was no pattern across the days of the week), are shown in FIG. 20. Therefore, a possible output of the system may be to summarize these findings: "Consider evaluating therapy and/or behavior differences for those days that are at the extremes of being different from expected compared to those that are similar to expected." Or, "Consider ways to address the extremes and reduce hypoglycemic episode occurrence overall."

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[00109] Similar logic can be used for patterns related to hours of the day and patterns derived from SMBG. However, it is likely that with infrequent SMBG, the most likely outcome is to have too few monitoring periods to reach statistical significance, as shown in FIGs. 21 and 22. Therefore, a possible output of the system may be to summarize these findings: "The statistical analysis indicates the likelihood of coincidentally seeing this pattern of hypoglycemia across the days of the week is bigger than 1 in 4. Therefore no patterns of hypoglycemia across days of the week should be concluded, as they are too likely coincidental or 'mere chance' observations."

[00110] In addition, one output of the system may be to indicate that there are not enough measurements to execute the statistical analysis accurately. By convention, the rules are that the minimum expected number in any cell is 1 and that no more than 20% of the cells have an expected value of less than 5.

[00111] This invention would be incorporated into glucose data management software, either on a device or external to the glucose monitoring device. It would primarily be targeted to health care providers who guide therapy decisions to manage glucose levels. It would aid in investigating and relating clinically significant glucose measurements of interest with particular behaviors or therapy choices that their patient is performing. From there, the clinician may use his or her judgment to suggest effective actions for the patient to take in order to mitigate the observations and improve their disease control.

[00112] In certain embodiments, there is provided a process for creating summaries of patient-specific diabetes management information. Such information includes glucose (blood and interstitial), other analytes (e.g., blood lipids, albuminuria), markers of kidney (SrCr, eGFR) and liver (ALT, ULN) function, and daily activity information (meals, medication , exercise, disease symptoms). In certain embodiments, this information is used in an analytical tool that includes expert logic to drive automatic treatment recommendations. The information is used in a manner designed to make clinical review and therapeutic change decisions more rapid, consistent, and accurate.

Software Application for Providing Automatic Treatment Recommendations

[00113] Using glucose measurements to assess and determine changes to diabetes management and therapy intervention is a complicated process. HCPs in the field have repeatedly requested methods for "guidance" and "recommendations" for decisions that may help their patients better manage their disease. Historically, state-of-the-art methods for analyzing and summarizing glucose measurements have lacked clear links with

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therapy changes, and therefor automatically producing recommendations based on *a priori* logic has not be achieved in any broad sense.

[00114] Provided herein is a process for automatic and/or clinician-guided interpretation of extreme glycemic episodes for an individual with diabetes in order to improve selection of therapies and self-management intervention(s).

[00115] For example, in certain embodiments, there is provided a method for providing automated treatment recommendations by: (1) allocating episodes; (2) displaying patterns; and (3) allocating episode chains. A more specific description is provided below.

[00116] 1. Allocating episodes in "initiators" and "follow-on" episodes, and linking episodes into "chains," that start with a single "initiator" and may or may not continue with one or more "follow-on" episodes. An initiator episode with no follow-on episodes is considered here to be a "single-link episode chain." An initiator episode with two follow-on episodes is considered a "3-link episode chain," and so on. All of these are considered "episode chains." This allocation of "chains" allows focusing on self-management problems that do or do not start a series of negative effects. Review of glucose measurements may reveal an episode was treated inappropriately, and thus initiated one or more additional episodes that the individual had to handle. A specific example would be a high glucose episode that is treated too aggressively, such that a rapid fall episode and a low glucose episode occur. This low glucose episode may also be treated inappropriately, and therefore a rise episode occurs, followed by another high glucose episode . This example shows the " roller-coaster" effect that can be the hallmark of difficult-to-manage diabetes. From a clinical perspective, however, the best place to intervene in self-management behavior is likely with the "initiating" episode. If the high glucose is treated differently, or is avoided altogether, then the train of episodes following may be reduced or removed effectively.

[00117] 2. Displaying patterns of episodes relative both to time-of-day and time of initiation of a chain of episodes. Rather than a conventional 24-hour "modal day" plot, this invention plots additional "follow-on" episodes beyond the 24-hour time-axis if the chain extends past midnight of the day the chain initiated.

[00118] 3. Allocating "episode chains" (defined here to minimally include a single "initiator" episode, and may have one or more "follow-on" episodes) into clinically relevant categories. This allocation is done according to the attributes of the chain, and may be done automatically to help frame the type of therapy interventions the clinician should likely consider for the individual under his or her care. Possible attributes of the

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chain are detailed more specifically below, but may be considered to include things such as: a) start time (or "time-of-day") of the chain; b) glucose value at the start of the chain; c) presence or absence of a continuous glucose monitoring threshold or projected glucose alarm; d) order of the types of episodes in the chain, e.g., a "High-High" chain would be allocated differently than an "High-Low" chain; and e) user actions (or inactions) before or during the chain. An "action" may be eating, taking medication, exercising, or other actions that may affect their diabetes management and glucose control.

[00119] An example patient may have glucose measurements that are summarized into a list of Low, High, Rise and Fall episodes, as shown in FIG. 23. These episodes are then allocated to "initiators " and "follow-on" episodes . Methods for determining initiator versus follow-on episodes may be based optimal selection of one or more of the following criteria: 1) time elapsed since previous episode, for example, if sufficient time has passed after an episode, the next episode may automatically be considered an "initiator," which would be based on the idea that therapeutic or other actions that affect glucose only have a finite period of influence on the glucose; 2) time of day of the episode; 3) the order or type of episodes, for example, all Rise episodes followed by a High episode may be considered "initiators;" and 4) type of actions the individual has recently performed, for example, rapid-acting insulin typically has about 3 to 6 hours of action, while long-acting insulin may be 12 to 24 hours of action. Some evidence suggests exercise may have 1 to 24 hours of action. Eating may have 1 to 8 hours of action, depending on the composition of the meal. Each of these actions , and their relevance to diabetes self-management, may suggest linking or unlinking (and therefore start a new initiating episode) episodes. Using a combination of these criteria, the example data is allocated, and shown in FIG. 24. This allocation establishes three "episode chains," all initiated, in this example, by Rise episodes (11/4/06, 8:56 AM; 11/5/06, 6:57AM; 11/13/06, 9:16PM).

[00120] For the purposes of reviewing and displaying episode chains, certain embodiments of the proposed invention is to display them relative to time of day, as shown in Figure 25.

[00121] For the purposes of reviewing and displaying episode chains, certain embodiments of the proposed invention is to display them relative to time of day and time of episode chain initiation. In this case, if a follow-on episode occurs after midnight of the chain initiation, it is shown on subsequent 24-hr periods, expanded to cover as many 24-hour periods as necessary to show the entire episode chain. An example is shown in Figure 26.

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[00122] Once episode chains have been identified and displayed, the chains can also be automatically, or with clinician guidance, be assigned to clinically relevant categories. This allocation is done according to the attributes of the chain, and may be done automatically to help frame the type of therapy interventions the clinician should likely consider for the individual under his or her care. Examples of possible attributes of the chain that may be considered to include: a) start time (or "time-of-day") of the chain initiator, wherein daytime episodes may have different interventions than nighttime episodes; b) time of day of the chain follow-on episodes, wherein episodes occurring during awake versus sleep periods may be managed differently; c) glucose value at the start of the chain, wherein, for example, Rises that start less than 80 mg/dL may be assumed to be a rapid correction of a low glucose, whereas a Rise that starts above 80 mg/dL may be assumed to be due only to a typical meal intake; d) presence or absence of a continuous glucose monitoring threshold or projected glucose alarm, wherein, for example, a Rise following a glucose alarm may indicate appropriate or inappropriate management of low glucose situations; e) order of the types of episodes in the chain, wherein, for example, a "High - High" chain would be allocated differently than a "High-Loud" chain; and f) user actions (or inactions) before or during the chain, wherein, for example, an action may be eating, taking medication, exercising, or other actions that may affect their diabetes management and glucose control.

[00123] This invention would be incorporated into glucose data management software , either "on device " or external to the glucose monitoring device. It would primarily be targeted to health care providers who guide therapy decisions to manage glucose levels. It would aid in investigating and relating clinically significant glucose measurements of interest with particular behaviors or therapy choices that their patient is performing. From there, the clinician may use his or her judgment to suggest effective actions for the patient to take to mitigate the observations and improve their disease control.

Software Application for Estimating Impact of Glucose Monitoring Alarm Adjustments

[00124] In certain embodiments, there is provided a method for estimating the impact of glucose monitoring alarm adjustments on glycemic control.

[00125] People who monitor their glucose with continuous glucose monitoring systems that have real-time glucose alarms are faced with the trade-off of optimally setting the high glucose alarm to achieve glycemic control goals without being burdened by excessive alarms. Excessive alarms can lead to "alarm fatigue," or "nuisance alarms,"

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whereby the alarms interfere with the patient's daily activities and can often lead to disuse of the monitor. Both patients and HCPs would benefit from a tool that helps establishes the trade-offs inherent in setting the high glucose alarm, sets expectations of the frequency of alarm while taking measures to improve glycemic control, and estimates potential benefits of improved glucose control.

[00126] Provided herein is a method for retrospectively analyzing glucose data to estimate the potential improvement in glucose control if the high glucose alarm were adjusted lower, while estimating the increased number of alarms that the patient may expect to have to manage. Given a set of continuous glucose measurements for a patient (typically 5 days or more), the method iteratively lowers a theoretical high glucose alarm threshold, for example from 240 to 160 mg/dL in 20 mg/dL steps. At each iteration, glucose values that exceed the high glucose alarm setting are replaced with the value of the high glucose alarm setting. Then, the overall average glucose is calculated to estimate the improvement in glucose control that may be expected at that high glucose alarm setting. Thus, at each iteration of the high glucose alarm setting, at least two values are output: 1) estimated average glucose; and 2) estimated number of high glucose alarms. The number of high glucose alarms may be normalized across time, for example, the number of high glucose alarms per day. More detailed summaries of the estimated glucose control may also be calculated. For example, the hourly average glucose across a "modal 24-hr day" may be calculated, to see how changes in the high glucose values will change the typical 24-hr profile of the glucose.

[00127] The patient and clinician can review the analysis and make a more informed decision of the value of activating the high glucose alarm at a lower value, both the potential benefits and burdens. Current glucose data management systems do not facilitate estimating the impact of changing the high glucose threshold on the overall glycemic exposure a patient may expect. This method improves the understanding of the trade-off of more vigilance towards treatment of high glucose and tolerance of increased high glucose alarm occurrences with expected long-term reduction in excessive glucose exposure.

[00128] FIGs. 27-29 show an example of three iterations of the method. FIG. 27 shows an example of "original" data, that is, no replacement of glucose values by the high glucose setting has occurred. This data may or may not have had the high glucose alarm activated. If it were, then the actual experience of glucose alarm activation may be summarized. FIG. 28 shows an example of the hourly glucose distribution after

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estimating the impact of setting the high glucose alarm to 200 mg/dL. The estimated overall average glucose is seen to move closer to the target average glucose. Also, the hourly average glucose is seen to be impacted during parts of the day when the glucose was elevated above the high glucose alarm setting. FIG. 29 extends the example for the setting of the high glucose alarm to 160 mg/dL.

[00129] More specifically, FIG. 27 is a modal plot of glucose, and summary statistics table, with original data (no estimation of alarm change). Plotted are the 90th (gray open squares), 75th (gray solid squares), 50th (black solid squares), 25th (gray solid squares) and loth (gray open squares) percentile lines, the hourly average glucose (red dots), the overall average glucose (black horizontal dashed line), predicted average glucose (red horizontal dashed line), and target average glucose (green horizontal line), over the 24-hour period. FIG. 28 is a modal plot of glucose and summary statistics table, estimation of high glucose alarm change to 200 mg/dL. Plotted are the 90th (gray open squares), 75th (gray solid squares), 50th (black solid squares), 25th (gray solid squares) and 10th (gray open squares) percentile lines, the hourly average glucose (red dots), the overall average glucose (black horizontal dashed line), predicted average glucose (red horizontal dash line), and target average glucose (green horizontal line), over the 24-hour period. The predicted average glucose has been reduced by 8 mg/dL compared to the overall average glucose. FIG. 29 is a modal plot of glucose and summary statistics table, estimation of high glucose alarm change to 160 mg/dL. Plotted are the 90th (gray open squares), 75th (gray solid squares), 50th (black solid squares), 25th (gray solid squares) and loth (gray open squares) percentile lines, the hourly average glucose (red dots), the overall average glucose (black horizontal dashed line), predicted average glucose (red horizontal dashed line), and target average glucose (green horizontal line), over the 24-hour period. The predicted average glucose has been reduced by 8 mg/dL compared to the overall average glucose.

[00130] FIG. 30 shows a summary of estimated impact of high glucose alarm setting on high glucose alarms per day and average glucose. More specifically, FIG. 30 shows an example summary of iterations of estimating the impact on average glucose and number of high glucose alarms as the high glucose alarm setting is changed. It may be assumed that the right-most data point is either "actual" (experienced by the patient while wearing the device) or "simulated," for example if the patient has not activated the high glucose alarm during the monitoring period that is being reviewed. As the high glucose alarm setting is reduced, the overall average glucose is reduced, and the number of glucose

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alarms increases. However, the invention here proposes estimating these values from individual monitoring (e.g., CGM) data, and therefore is more personalized than population-based methods or other methods that summarize other patients high glucose alarm frequency.

Glucose metric mappings to diabetes treatment recommendations

[00131] In some aspects of the present disclosure, there is provided a method of mapping metrics generated from glucose results in a manner for determination of an appropriate treatment recommendation or modification for a patient based on the glucose results. For example, the metrics are mapped and the appropriate treatment determined such that the risk of hypoglycemia is taken into account and minimized. Furthermore, in some aspects of the present disclosure, there is provided a device or system that implements such methods and/or displays such mapped metrics generated by such method. For example, such method may be implemented as software within a CGM or SMBG device or system that is executed by one or more processors in the device or system. It should be appreciated that the following discussion relating to the mapped metrics may apply to the method of mapping the metrics, as well as the device or system that implements such methods and/or displays such mapped metrics generated by such method.

[00132] In certain embodiments, the metrics used are glucose median and glucose variability, calculated for a specified period of time. Variability (or volatility) may be estimated using many different possible metrics. For following example, the lower 40% percentile is used to represent variability. Median is chosen as it is less sensitive to outliers than the mean. However, it should be appreciated that mean or other type of average, or other metric that represents central tendency of data, may be used in other embodiments.

The Glucose Control Grid

[00133] The glucose median and variability may be illustrated graphically where, for instance, the median is represented along the y-axis and the variability is represented along the x-axis. As described below, this graph is divided up into zones that represent possible treatment recommendations. This graph is referred to herein as the "control grid" or "control chart". These zones may be, for example, represented mathematically and implemented in software to provide automated therapy recommendations based on glucose data. In addition, the control grid itself may be displayed to the health care provider (HCP) and/or patient by the software.

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[00134] FIG. 31 illustrates a control grid, according to certain embodiments. The control grid includes glucose median on one axis and variability on the other axis. A patient's glucose median and variability can be plotted as a point on the control grid. The uncertainty in the estimate of the median and variability may be plotted here, for instance, as represented by a cloud of points, or a "bubble", or some other representation, as described herein. For example, in some instances, a boundary line for the cloud of points may be displayed in place or in addition to the cloud of points. These metrics are compared to the lines defining the zones—e.g., the Hypoglycemia Risk Zone, Target Zone, Buffer Zone, and "Safe to Titrate" Zone, as described below. It is appreciated that there are many possible metrics that can be used for comparison, such as the centroid or "best estimate" of the metric, or the confidence point (e.g., 95% confidence point) of the metric (referred to as the Treatment Recommendation Point – TRP), as illustrated in FIG. 32. Other possible metrics can be readily contemplated.

[00135] On the control grid shown in FIG. 31 there are four zones defined. In certain embodiments, the Hypo Risk zone is defined as the region below the hypo risk line where it is determined that, if the TRP falls below, the patient is at an unacceptable risk of hypoglycemia. In this case, the displayed treatment recommendations would be related to reducing the patient's glucose variability and/or increasing the patient's glucose median. For instance, one specific recommendation related to reducing glucose variability would be for the patient to eat more regularly. A specific recommendation related to increasing glucose median may be to reduce the dose or dose rate of glucose-lowering medication, for example.

[00136] The Target zone is the ultimate goal for the patient and HCP (e.g., doctor or other health care professional). In certain embodiments, the Target zone is defined as being above the Hypo Risk line and below a Target line – the Target line can be adjusted by the HCP to provide an achievable treatment goal appropriate for a particular patient. For example, in certain embodiments, the patient is in the Target zone if a) the TRP is not below the Hypo Risk line and b) the metric centroid falls within the Target zone.

[00137] In certain embodiments, the Buffer zone is defined as the region above the Target zone and the Hypo Risk zone, but below a line defined as an offset above the Hypo Risk zone. This offset is representative of the possible or expected drop in median due to an increase in glucose-lowering mediation, for example. For instance, this zone may represent the region where, if the TRP was contained within it, it would be unsafe to recommend an increase in medication, since it may drive the patient into the Hypo Risk

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zone, assuming that glucose variability did not change. In such case, for example, the displayed recommendation may be related to reducing the patient's glucose variability.

[00138] In certain embodiments, the "Safe to Titrate" zone is defined as the region where the TRP is above the Buffer zone and above the Target zone. For example, here the recommendation may be related to increasing the patient's glucose-lowering medication dose in order to reduce their median glucose.

[00139] FIG. 33 illustrates a flowchart for a method of recommending treatment using mapped metrics, according to certain embodiments. In the embodiment shown, SMBG test data is provided and a metric (e.g., glucose median and variability) is estimated as well as the metric uncertainty due to sub-sampling. A confidence bubble (e.g., 95% confidence bubble) is estimated and compared to the various zones (e.g., hypo risk zone, target zone, safe-to-treat zone) to determine an appropriate treatment recommendation. In some instances, the "in-target" comparison may be based on "expected" metric rather than 95% confidence. Further, the current medication dosage may be considered in determining the appropriate treatment recommended.

[00140] It should be appreciated that the embodiments shown are exemplary and that the control grid may be fashioned a number of different ways in other embodiments. For example, the straight lines in the embodiments shown may be curved—e.g., the Hypo Risk line.

[00141] As another example, a control grid embodiment is shown in attached FIG. 34 which illustrates two modifications to the previous Control Grid embodiment shown in FIG. 31. The first modification is the removal of the Buffer zone and replacement with recommendations displayed that specifically indicate the distance from the Hypo Risk line. For instance, for a TRP that is located 30 mg/dL above the Hypo Risk line in the "Safe-to-Titrate" zone, the recommendation may read "Increase dose of glucose-lowering medication, margin to safely reduce median glucose is 30 mg/dL". The modified recommendations may indicate both the margin above and below the Hypo Risk line. For instance, for a TRP that is located 10 mg/dL below the Hypo Risk line, the recommendation may read "Decrease dose of glucose-lowering medication, a 10 mg/dL increase in median glucose is needed to reduce hypoglycemia risk to a safe level". Alternatively, the recommendation may indicate the positive or negative horizontal distance from the Hypo Risk line, in terms of variability reduction. Combinations of these are also contemplated. In some instances, one reason to eliminate the fixed buffer zone is that dose increments may achieve different glucose median reductions, depending on the medication used or the patient's physiology. Another embodiment is to provide a

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mechanism where the HCP can modify the Buffer zone depending on these factors that could impact glucose median reductions.

[00142] The second modification to the Control Grid shown in attached FIG. 34 is the addition of a vertical Variability line used to drive variability related recommendations. In the control grid shown, some or all of the zones are further divided into sub-zones. In the sub-zones where the centroid metric is to the right of the Variability line, variability related recommendations are provided. Where the centroid metric is to the left of the Variability line, variability related recommendations are not provided. The Variability line may be defined as fixed at a specific location on the x-axis; that is, at a specific variability value. In certain embodiments, the x-axis location of the Variability line depends on the Target line and/or the Hypo Risk line. For instance, the location may be determined by the intersection of the Target line and the line defined as 50 mg/dL above the Hypo Risk line. This provides for variability recommendations appropriate for the target set for a specific patient.

[00143] In some embodiments, a control grid includes a buffer zone at an offset above and/or below the Hypo Risk line. For instance, if the TRP is within this zone, then the recommendations does not include a recommendation for medication adjustment. Outside this zone, the recommendation includes a medication adjustment recommendation. In some embodiments, a control grid includes a zone defined by the Hypo Risk zone divided by the Target line. For example, for a centroid metric above this line, the recommendation does not include decreasing medication; but below the line, the recommendation includes decreasing medication. It should be appreciated that these embodiments are exemplary and demonstrate how alternative zones may be designed and utilized in various embodiments.

[00144] In some embodiments, zones may also indicate multiple recommendations at varying degrees of importance. The degree of importance may be indicated, for example, by the order in which they are listed, or by color coding the recommendations, or by any other appropriate means.

[00145] In some embodiments, recommendations may also include other factors not directly related to treatment. For example, the recommendations may pertain to the need to increase SMBG sampling frequency. Additional sub-zones may be included in the control grid, for instance, such that when the TRP is below the Hypo Risk line, but the centroid metric is above the Hypo Risk line, the recommendation includes reduction in variability and the need to increase sampling frequency in order to reduce uncertainty in the metric. The sampling frequency increase recommendation may also be generated by

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comparing the size of the "uncertainty bubble" to a predetermined size and if the bubble crosses one or more of the lines on the grid, then an increase in sampling frequency is recommended, for example. Various measures of "uncertainty bubble" size may be contemplated, including a figure of merit of the distance between the centroid and the TRP.

Configuration of Control Grid Logic

[00146] In some aspects of the present disclosure, the parameters of the control grid may be modified by the HCP. For example, the software that implements the automated therapy recommendation logic provides an interface, such as a popup screen or window, for the HCP to modify the control grid—e.g., alter the lines on the control grid, select certain features of the control grid, etc. For instance, in certain embodiments, the HCP may select from a list of possible Target levels and Hypo Risk levels. The Target levels on the list may be associated with various diabetes complication statistics such as corresponding A1c. For instance, it may be more acceptable for a patient with A1c of 10% to have a near-term target of 9% rather than 7% so as not to be discouraged. The Hypo Risk levels may be adjusted as necessary to tailor to a patient's tolerance of hypoglycemia. The Hypo Risk pick list labeling may be associated with expected frequency of hypoglycemia, a relative measure of hypoglycemia risk such as High, Medium, Low, or any other appropriate labeling.

[00147] In the software, the Recommendation algorithm may be initially run with default parameters (either predefined in the code or set to the last algorithm run for that patient from a previous doctor's visit). In some embodiments, a popup window or other interface may be provided to allow the HCP to alter one or more of these algorithm input parameters as needed, and the algorithm is rerun, generating new recommendations.

Control Grid by Time of Day

[00148] In some aspects of the present disclosure, the control grid based algorithm is used to process data for specific time periods of the day or relative time periods related to key events. For example, four key time periods may be defined as overnight/fasting (12am – 8am), post breakfast (8am-12pm), post lunch (12pm-6pm), and post dinner (6pm-12am). Glucose data collected for multiple days can be grouped into these time periods and the control grid algorithm run for each group. In this way, recommendations that are specific to time periods may be generated. For instance, variability recommendations may be generated specific to meals or overnight. For patient's whose treatment is multiple daily injections (MDI) of insulin, the time-period targeted recommendations may be specific to insulin needs during these times of day. For instance, the control grid for the over-

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night/fasting period may indicate that medication dosage should be increased; the recommendation may indicate that the patient's long-acting insulin dose should be increased.

[00149] In some instances, multiple control grids may be used. The treatment recommendation logic may in some cases be more complicated when multiple control grids are used. An example of this logic is shown in the attached FIG. 35. In the embodiment shown in FIG. 35, the method is repeated for different time-of-day (TOD) periods—e.g., post breakfast (PB), post lunch (PL), post dinner/early sleep (PD) and late sleep/walking (W). The results from each time period analysis may be used to determine an appropriate treatment recommendation. For example, as shown, the results for each time-of-day period may be prioritize and/or weighed to determine the appropriate treatment recommendation.

[00150] In some aspects of the present disclosure, the control grid algorithm is applied to time periods defined relatively to events. For example, data grouping may be determined a) 4 hours past breakfast, b) 4 hours past lunch, c) 4 hours past dinner, and d) 4-10 hours past dinner. It should be appreciated that various permutations of this example may be implemented in other embodiments. The data groups may then be processed by the multiple control grid algorithm described above.

Second-Stage Logic to Drive Recommendations

[00151] In some aspects of the present disclosure, there is provided an additional logic process to narrow down possible recommendations. For example, the treatment recommendation described above using the control grid algorithm may be augmented to include a second-stage process to further narrow the possible recommendations that may be made. For instance, there are many different recommendations for reducing glucose variability, such as "stop snacking", "don't forget to take your medication", "don't miss meals", "adjust correction dose of insulin". A glucose control zone may be associated with a number of these recommendations. A second-stage process may be implemented to narrow down the list of recommendations. For example, this second-stage process may utilize detection of episodic patterns to narrow the list of recommendations. For instance, if an instance of low fasting glucose is detected preceded by a post-dinner high glucose, this may be an indication of occasional correction dosing to mitigate a high glucose value, and the logic could direct the recommendation to only include "adjust correction dose of insulin". In some instances, the process may require a certain frequency of occurrence of an episodic pattern.

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Recommendation Structure and Logic Integrated with Treatment Stage

[00152] In some aspects of the present disclosure, the mapping of glucose data to treatment recommendations may be implemented with the use of a lookup table. For example, the inputs to the lookup table are the output of the control grid analysis and the current treatment and treatment stage. The outputs of the lookup table are recommendations of different types that are displayed. FIG. 36 illustrates an example of a treatment recommendation lookup table, according to certain embodiments. For the embodiment shown, multiple recommendations may be associated with a single input combination. It should be appreciated that while a lookup table has been used for exemplary purposes, the concept of a lookup table may easily be extended to more complex glucose metric to recommendation mappings.

[00153] In some instances, recommendations may comprise text that is directly displayed, as indicated in the column labeled "Recommended Text" in FIG. 36. In some embodiments, the recommendations may comprise links to source documents and specific pages of the source documents. The content of these source documents may provide more detailed instructions regarding treatment changes. For instance, for a recommendation to change dosage of a medication or a change in treatment, the source document may be published instructions for medication start and adjustment, and the link may be specified to present the appropriate page of these instructions. In some embodiments, recommendations may comprise questions that are displayed—e.g., questions displayed to guide or otherwise assist the HCP in interviewing their patient to uncover underlying issues in self-care management. These questions may be in the form of text to be directly displayed, or reference material. In some embodiments, recommendations may also comprise guidance about testing frequency or how to alter algorithm input parameters. Again, the information is targeted based on analysis of the patient's glucose tests. It should be appreciated that one or more of the various recommendations may be implemented. Further, as illustrated in FIG. 36, recommendations may be tailored to current treatment.

[00154] It is appreciated that additional types of recommendations or outputs associated with the inputs to the lookup table may be implemented, including for example: links to sources of definitions, links to appropriate pages of a user guide, links to graphical displays of the data appropriate to illustrate the glucose analysis finding and recommendation, etc. In some instances, for example, the links may be instantiated by the user via buttons (e.g., buttons associated with the recommendation and placed when needed), or they could be instantiated similarly with a hotspot, or could automatically

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present the linked information in a popup window or a window dedicated for this information.

[00155] In certain embodiments when recommendations are to be provided based on multiple time-of-day periods, the structure for the lookup table may be altered. For example, in some instances, this may be done using multiple tables or incorporating multiple algorithm result inputs and multiple associated groups of recommendations into a single table.

[00156] In certain embodiments, when a second stage process is employed, the lookup table is adjusted to accommodate the second stage process. For example, if hypoglycemic risk is detected in 3 of the 4 time-of-day periods, rather than display a separate recommendation related to reducing hypoglycemic risk for each time period, the second stage process comprises mapping these into a general recommendation and indicating that it applies to the three time periods.

Software Application for Representing Sample Data for Evaluation and Treatment Recommendation

[00157] In some aspects, there is provided a method for representing the sample data comprises transforming glucose data from CGM or from SMBG into a location on a plane that measures (e.g., average) glucose level and the amount of variability in the glucose values. In certain embodiments, the method comprises defining the control grid, transforming the data into average glucose and glucose variability (e.g., estimating the average glucose and variability from sample data provided by, for instance, an SMBG device or system), and plotting the transformed data on the control grid.

[00158] The following paragraphs describe an example method for representing the sample data, according to certain embodiments. While some of the information describe may be duplicative to that described above; the following description and example embodiments provide further details describing for representing the sample data with, and mapping the metrics on, a control grid. The following example utilizes data derived using blinded CGM data from 66 subjects in a study. It should be appreciated that in other embodiments, a different sample grouping may be used for derivation purposes.

[00159] In certain embodiments, the method comprises defining a control grid. For example, the control grid is plane upon which glucose level and variability is charted. FIG. 37 illustrates a control grid, according to certain embodiments. In the embodiment shown, the ordinate of the control grid is median glucose. Median glucose is a measure of the glucose level. The abscissa of the control grid is the difference of the median

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glucose and the 10th percentile value of the glucose, known as the "south 40." This difference is a measure of the glucose variability. It should be appreciated that the ordinate and the abscissa may be different in other embodiments. For example, the abscissa may be the difference between the ordinate (e.g., median glucose) and another reference value for glucose (e.g., a different percentile value other than 10th).

[00160] In some aspects, one or more patient risks is represented. Example patient risks may include, but are not limited to, chronic clinical risks such as retinopathy risk, acute risks such as risk of hypoglycemia. For example, for this example, a patient's risk of hypoglycemia (also referred to herein as "hypo") is tracked. In certain embodiments, hypoglycemia is counted in terms of occurrences, rather than, for example, fraction of time spent below a threshold value of glucose. For example, one hypoglycemic occurrence may be defined by a predetermined amount of time below a threshold glucose value—e.g., at least 40 continuous minutes below 60 mg/dl, or at least 30 continuous minutes below 50 mg/dl, or at least 20 continuous minutes below 40 mg/dl; etc. In some instances, requirements may be imposed between two occurrences. For example, in certain embodiments, two occurrences of hypoglycemia are separated by a predetermined minimum amount of time of non-hypoglycemia (e.g., 20 continuous minutes, etc.).

[00161] When occurrences of hypoglycemia are counted and divided by elapsed time to get the rate of hypo occurrences, lines of constant rate of hypo occurrence extend from the lower left of the Control Grid to the upper right. Low rates of occurrence are at the upper left of the grid, where average levels are high and the variability is low. High rates of occurrence are at the bottom right of the grid. Linear classification theory may be used to find straight lines that mark different rates of occurrence. Other methods, such as Support Vector Machines, can also be used. FIG. 38 illustrates a control grid with lines of constant hypoglycemia rate shown thereon, according to certain embodiments. The black dots shown on the control grid represent positions on the grid for the 66 subjects used to derive the lines. Constant lines are shown for 1 occurrence per month, 2 occurrences per month, 5 occurrences per month, and 8 occurrences per month. It should be appreciated that in some embodiments, the control grid may distinguish between different types of diabetes—e.g., one symbol used for Type 2 diabetes mellitus and another symbol for Type 1 diabetes mellitus.

[00162] In some instances, the lines of constant hypoglycemia rate are adjusted to provide parallel approximations that may be more useful in certain analysis applications. FIG. 39 illustrates the control grid shown in FIG. 38 with parallel approximations of the lines of

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constant hypoglycemia rate. As shown, the four constant lines are now parallel to one another. A formula may be derived, for instance, such that the lines may be defined according to the rate of hypoglycemia occurrence. For example, the following formula may be used to represent the values of glucose median at a given rate of hypo occurrence:

Glucose Median = 104.25 – 5 * (hypo rate) + 1.25 * (South 40)

where glucose median and south 40 are in mg/dL, and hypoglycemia rate is in occurrences per month.

[00163] In some aspects, a predetermined rate of hypoglycemia occurrence may be used to represent a danger to the patient. The predetermined rate may be based on a clinical decision, for example. Once a predetermined rate is determined, a control grid can be split into two parts using the predetermined rate. FIG. 40 illustrates a control grid showing a hypoglycemia risk zone (Hypo Risk Zone), according to certain embodiments. The border between the two sections is the line of predetermined hypoglycemia rate. The Hypo Risk Zone may be defined by the border, and patients in the hypo risk zone at the lower right may be determined to have an unacceptable risk of hypoglycemia. The first goal of treatment may be, for example, to get patients out of this area.

[00164] In some aspects, a patient's target A1c level is determined and represented on the control grid to provide for a target zone. For example, after setting the Hypo Risk Zone boundary, a clinical decision may determine the patient's target A1c level. FIG. 41 illustrates possible A1c target values on the control grid of FIG. 40, according to certain embodiments. The A1c target value is directly related to the value of the glucose level, and not to the glucose variability, thus the lines are horizontal.

[00165] The target A1c level chosen defines the Target Zone. The area of the control grid below the A1c target value that is not in the Hypo Risk Zone becomes the Target Zone. For example, FIG. 42 illustrates the control grid shown in FIG. 41 with a defined target zone, according to certain embodiments. As shown, an A1c target value of 7% is used and defines a Target Zone on the control grid that is below the horizontal line for a 7% A1c target value but not in the Hypo Risk Zone. In this way, for example, a treatment goal may comprise keeping patients in the Target Zone or moving patients into the Target Zone and keeping them there.

[00166] In some aspects, additional zones are added to the control grid. For example, FIG. 43 illustrates the control grid of FIG. 42 with two additional zones, according to certain embodiments. The control grid comprises a buffer zone and a "Safe to Titrate" Zone. The

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Buffer Zone includes the area along the border of the Hypo Risk Zone and separates the "Safe to Titrate" Zone and the Hypo Risk zone.

[00167] The slope of the Hypo Risk Zone border and the Buffer Zone, and the connection between A1c level and median glucose, may be determined based on, for example, data from CGM studies and journal articles. The actual positions of the boundaries may be determined by, for example, clinical judgment in setting the acceptable risk of hypoglycemia and the target A1c level. These positions may be known, or can be calculated.

[00168] In some aspects, the control grid may be used to direct treatment. For example, a strategy may be devised to direct treatment such that the patient avoids the Hypo Risk Zone. For instance, avoiding the Hypo Risk Zone may comprise reducing variability only (move to the left) when in the Buffer Zone, and reducing both variability and median when in the "Safe to Titrate" Zone.

[00169] In some aspects, sample data is incorporated within the control grid. For example, the sample data may be transformed or otherwise manipulated for representation on the control grid.

[00170] In certain embodiments, sample data is received for a patient. The sample data may originate from various methods, such as SMBG or CGM. The number of data points within the sample may vary. For example, the sample may originate using SMBG and include a small number of data points (e.g., 10 data points). Or, as another example, the sample may originate from CGM and include a larger number of data points (e.g., several thousand).

[00171] In certain embodiments, the median and south 40 is calculated from the sample data. The calculated median and south 40 is associated with a single point on the control grid. The calculated median and south 40 are only estimates, and there may be uncertainty as to their accuracy. For example, the south 40 is a difference of two uncertain numbers. Moreover, if the sample size is small, there may be very few values at the low end, and the 10th percentile value may be imprecise.

[00172] In some instances, to reduce such imprecision, the sample data is "fit' to a probability distribution. For example, FIG. 44 illustrates a graph of sample data that has been fit to a probability distribution, according to certain embodiments. The jagged plot for the sample data is shown and follows the sample data points (e.g., CGM data). The plot for the sample data after being fit to a gamma probability distribution is also shown (the smoother plot on the graph). Once the fit has been made, the median and south 40 can be calculated from the distribution. In other instances, a fit is made to a different

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probability distribution, such as a lognormal or Weibull distribution. In yet other instances, no such fit is made. The median glucose and south 40 are determined directly from the data.

[00173] In some aspects, uncertainty in the estimate is calculated. For example, in certain embodiments, uncertainty in the estimate is calculated by using a bootstrap to generate a "cloud" of points around the sample point. FIG. 45 illustrates a sample point shown on a control grid along with a cloud of points derived by using a bootstrap. The sample point is shown on the control grid as a triangle and the circular points surrounding the sample point are bootstrap points. The bootstrap points collectively form a "cloud" of points.

[00174] In certain embodiments, a parametric bootstrap is used. For example, the parametric bootstrap may include the following steps:

[00175] 1. Fit the sample to a gamma distribution, G0.

[00176] 2. Perform a bootstrap replication

[00177] 1. Take random points from G0. Same number of points as sample.

[00178] 2. Fit these points to a gamma distribution, G1.

[00179] 3. Calculate median and south 40 from G1.

[00180] 3. Do many bootstrap replications.

[00181] Additional information regarding parametric bootstrap may be found in the article entitled, "Performance of the Parametric Bootstrap Method in Small Sample Interval Estimates", by D. Benton and K. Krishnamoorthy (Adv. & Appl. in Stat., 2(3) (2002), pp269-285), the entirety of which is incorporated herein by reference. Other example ways to generate the point cloud include, but are not limited to, standard (nonparametric) bootstrap, and cross validation (CV) methods, including the jackknife.

[00182] In the example shown in FIG. 45, 56 data points make up the sample. Each bootstrap replication drew 56 random points from G0 (defined in step 1 "Fit the sample to a gamma distribution, G0" above). 500 replications were performed, resulting in 500 black dots shown in FIG. 45.

[00183] The sample point and bootstrap values represent probability density of patient positions on the Control Grid. Although the triangle is the most likely position, other positions are probable. For example, if the triangle were located on the border of the Hypo Risk Zone, there would be approximately a 50% chance that the patient was actually in the Hypo Risk Zone.

[00184] In some instances, however, a more conservative position may be desired. For example, it may be determined that the probability that the patient is in the Hypo Risk Zone should not be more than a specific percentage (e.g., 5%). Accordingly, a line may

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be drawn parallel to the border of the Hypo Risk Zone such that only that particular percentage (e.g., 5%) of the bootstrap points are below the line. For example, FIG. 46 illustrates the data shown in FIG. 45 with a line drawn parallel to the border of the Hypo Risk Zone such that only 5% of the bootstrap points are below the line. The line is shown extending from the bottom left of the figure to the top right of the figure. Furthermore, a second line perpendicular to this line and passing through the sample point may be used to define a Treatment Recommendation Point (TRP), as shown in FIG. 46. The intersection of these two lines defines the Treatment Recommendation Point (TRP) represented by the second triangle positioned at the intersection of the two lines. The TRP may then be moved by modifying the patient's treatment to the border of the Hypo Risk Zone to provide the 5% probability. It should be noted that 5% is an example, and any percentage may be used in other embodiments.

[00185] In certain embodiments, the TRP location is defined using projections of each bootstrap point. For example, defining the TRP location may comprise finding the projection of each bootstrap point along the perpendicular line pointing towards the Hypo Risk Zone. This may done, for example, by taking the dot product of each bootstrap point with the perpendicular line. FIG. 47 illustrates a projection of one bootstrap point along a line perpendicular to the lines of constant hypoglycemia rate on a control grid, according to certain embodiments. The sample point is shown as a triangle with the perpendicular line extending through the sample point. The bootstrap point is shown as the circular dot off to the right of the sample point, and its projected value on the perpendicular line is also shown (as the circular dot illustrated on the perpendicular line).

[00186] Defining the TRP location may also comprise determining a one-sided confidence limit of the resulting projected values. While various one-sided confidence limits may be used, a one-side confidence limit of 95% has been described for the given example. In certain embodiments, the confidence limit is determined by counting points. For example, the 95th percentile of the projected values may be determined. Bootstrap-derived confidence limits may be undependable when sample sizes are small, and thus a more reliable method may be used. For example, in certain embodiments, the Bias Corrected and Accelerated method is used. Additional details regarding this method may be found in the article, "A Practical Introduction to the Bootstrap Using the SAS System", by N. Barker (SAS Conference Proceedings, Phuse 2005, paper PK02), the entirety of which is incorporated herein by reference.

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[00187] For example, for the Bias Corrected and Accelerated method, the bias to be corrected is the difference between the sample point and the median of the bootstrap projected values. The bias correction may be represented by:

$$x_0 = \Phi^{-1}\left(\frac{\text{number of projected values} < \text{sample value}}{\text{number of projected values}}\right)$$

[00188] where Φ is the cumulative density of the normal probability distribution, and Φ-1 is the inverse.

[00189] In some instances, additional calculations are needed for the acceleration part. For example, a jackknife is first performed on the sample as follows:

1. Leave out one data point from the sample.
2. Calculate south 40 and median from the reduced set.
3. Calculate the projected value, pi.
4. Repeat for every data point.

[00190] The jackknife yields as many estimates as there are sample values, and the mean value of estimates may be calculated, <p>. The acceleration factor may be defined as:

$$a = \frac{\sum_i (\langle p \rangle - p_i)^3}{6\left(\sum_i (\langle p \rangle - p_i)^2\right)^{3/2}}$$

[00191] The corrected percentile may be determined using the bias correction and the acceleration factor. For example, the following may be used to determine the corrected percentile:

$$\alpha_1 = 100\,\Phi\left(x_0 + \frac{x_0 + \Phi^{-1}(\alpha/100)}{1 - a\left(x_0 + \Phi^{-1}(\alpha/100)\right)}\right)$$

[00192] where α is the desired percentile (e.g., 95).

[00193] In some instances, confidence limits may be used to calculate a boundary line or "bubble" that gives an indication of the size of the bootstrap cloud. For example, FIG. 48 illustrates a boundary line of a bootstrap cloud that was calculated using confidence limits, according to certain embodiments. The boundary line of the bootstrap cloud is shown along with the TRP (shown as a triangle) and Hypo Risk Zone border line. In this way, the boundary line of the bootstrap cloud may be used for display instead of the points themselves.

[00194] Each point on the boundary line of the bootstrap cloud is found in the same way as the TRP value, for example. The direction of the line drawn through the sample point varies, and the resulting polygon is smoothed.

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[00195] In some instances, confidence limits may be used to show the extent of the estimate uncertainty along the direction of hypo risk. For example, the TRP and the symmetric point on the other side of the sample point (also referred to herein as an "anti-TRP point") may be calculated. FIG. 49 illustrates a control grid showing a sample point, TRP, and an anti-TRP value, according to certain embodiments. The sample point is the middle triangle shown in the figure, and the TRP is the triangle at the 95th percentile along the dashed perpendicular line below and to the right of the middle triangle. The "anti-TRP" is thus the triangle at the 5th percentile along the dashed perpendicular line above and to the left of the middle triangle.

[00196] The distance between the two dashed perpendicular lines is the 90% two-sided confidence interval of the control grid estimate in the direction where the hypo rate is varying most quickly. This may used, for example, to advocate for larger or smaller sample sizes, because larger samples produce smaller confidence intervals. For instance, it may be used in-house as a figure of merit to evaluate various testing schedules.

[00197] In some aspects, treatment may be guided when the relationship between the TRP and control grid zones is known. For example, the vertical and horizontal distances of the TRP from the Hypo Risk Zone boundary may be calculated. FIG. 50, illustrates the vertical and horizontal distances from a Hypo Risk Zone border line to a TRP point on a control grid, according to certain embodiments.

[00198] Positive and negative distance may be defined—e.g., distances may be defined as positive if the TRP point is above or to the left of the border line. In this way, the signs of the distances determine which zone the TRP is in, and the magnitudes may be used to guide the treatment changes. For example, if the vertical distance of the TRP to the Hypo Risk Zone border is -50 mg/dl, then the patient is in the Hypo Risk Zone. The doctor might decide that the easiest way to leave the zone is to move vertically upwards by 50 mg/dl, using the patient's insulin sensitivity to calculate the decrease in basal dose.

[00199] The perpendicular distance from the TRP to the border (shortest distance) may be derived by:

$$d_{\perp} = \frac{|vh|}{\sqrt{v^2 + h^2}}$$

[00200] where v is the vertical distance, and h is the horizontal distance. This can be seen by calculating the area of the triangle using the vertical and horizontal distances, and by calculating again using the perpendicular distance and the hypotenuse

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[00201] It should be appreciated that in some instances, one or more steps of the method described above may vary—e.g., one or more steps omitted, one or more steps combined, one or more steps performed in an a different order, one step performed in multiple steps, etc.

Determination of Appropriate Glucose Testing Schedule Based on Patient's Glucose Control Level and Clinical Risk

[00202] In some aspects, there is provided a process for determining an appropriate glucose testing schedule based on a patient's glucose control level and clinical risk.

[00203] A patient's state of glucose control can be assessed in terms of 2 simple metrics. The first relates to the ability to maintain a desirable glucose level on average. The second relates to the ability to minimize the glucose excursion in the presence of meals and other factors. As described above, one method to graphically present these two metrics comprises the median glucose as the first metric, and the difference between the median and the 10th percentile glucose as the second. This graphical representation, called glucose control grid or chart. In the absence of high density data, such as from a continuous glucose monitoring (CGM) system, a glucose testing schedule may be used to collect the data.

[00204] In addition to the patient's state of glucose control, other clinically relevant information can be provided to enhance one's understanding of the impact of a planned treatment on the patient's various clinical states.

[00205] In some aspects of the present disclosure, there is provided a method wherein the appropriate testing schedule is a function of an a priori (e.g. population-based) uncertainty of various testing schedules and the relevant clinical risk being reviewed for each patient, as a reflection of the patient's state of glucose control.

[00206] As described above, a glucose control grid may be used to provide a snapshot of a patient's glucose control. The snapshot represents the multitudes of blood glucose (BG) data from self monitoring BG (SMBG) fingerstick readings and/or CGM system recordings over the course of days or weeks in between visits to the patient's health care provider (HCP), into a single point in the chart. In the case of SMBG as the sole data source, the patient needs to follow a pre-determined testing schedule.

[00207] Since the testing schedule may only sample glucose values and may not capture all the essential nature of a patient's state of glucose control, the uncertainty surrounding the single point estimate as presented in the glucose control chart depends on the testing schedule. FIG. 51 illustrates contour plots of a probability distribution function of a

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patient's state of glucose control, according to certain embodiments. For example, the distribution may be obtained from a patient performing a prescribed testing schedule over 14 days, and then using the bootstrap method to obtain 400 more estimates. This set of 400 glucose control grid data points is then used to create a probability distribution function. In the embodiment shown in FIG. 51, the 25%, 50%, and 75% contour heights are displayed. In this way, the uncertainty level of the patient's estimated glucose control level is represented.

[00208] In some aspects, different SMBG testing schedules may be implemented. For example, depending on the level of glucose control and the relevant clinical risk being focused on, different SMBG testing schedules that focus on different times of the day, different times relative to events such as meals and exercise, and testing frequency, may be needed. FIG. 52 shows the same distribution from the same patient shown in FIG. 51, in the context of two different clinical risks, namely the risk of retinopathy (horizontal lines) and risk of severe hypoglycemia (diagonal lines), according to certain embodiments. For example, the control grid shows the constant lines for 1 occurrence per month, 5 occurrences per month, and 9 occurrences per month. If the difference between five hypos per month and nine hypos per month is clinically relevant, then given the patient's current state of glucose control, the prescribed testing schedule is marginally able to distinguish a clinically meaningful change in severe hypoglycemia risk. This is because the extent of the contour lines is comparable to the distance between very different amounts of hypoglycemic risk. Assuming there is no large clinical difference between the 1% and 2% retinopathy lines, the testing schedule is sufficient to distinguish a clinically meaningful change in risk of retinopathy. Since the contour line span is significantly smaller than the gap between the nearest two retinopathy risk lines, the testing schedule is adequate to measure the patient's level of retinopathy risk.

[00209] The testing schedule used for the illustration in FIG. 52 may or may not be adequate in assessing different clinical risks for the same patient. This was already shown by the fact that the width of the contour lines along the different clinical risk gradient lines; risk of severe hypoglycemia and risk of retinopathy; are not the same. Similarly, the testing schedule used for the illustration in FIG. 52 may or may not be adequate in assessing the same clinical risks for a different patient, or the same patient with a significantly altered level of glucose control. FIG. 53 illustrates contour lines for 6 additional patients plotted on the same control grid, according to certain embodiments. Each set of contour lines A, B, C, D, E, F, and G represent the contour lines for one of the seven patients.

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[00210] Note that as the patient's glucose variability increases (as represented by a larger x-axis value), and as the patient's propensity for high BG (blood glucose) value increases (as represented by a larger y-axis value), the same testing schedule generates different uncertainty levels as indicated by the different contour line size and shapes. For example, it may not possible to say anything definite about the patient C's risk of hypoglycemia, as the uncertainty contours span a range from less than one occurrence per month to more than nine occurrences per month. This is important because either extreme can trigger different sequences of treatment priorities. For example, the former would put the patient's high mean glucose as the immediate focus for improvement, while the latter could result in the temporary reduction of glucose lowering medications to reduce the acute mortality risk associated with severe hypoglycemia.

[00211] When a more stringent testing schedule is adopted, for example, the uncertainty of the patient's glucose control generally decreases regardless of the level of glucose control (e.g., regardless of where the point is in the glucose control chart). FIG. 54 illustrates the contour lines generated from a relatively stringent testing schedule on the same 7 patients as shown in FIG. 52, according to certain embodiments. Compared to Figure 53, the uncertainty levels are markedly decreased, particularly in areas of poor glucose control. For patients A and E, for example, the more stringent testing schedule may not offer any significantly better insight with respect to the two clinical risks discussed as examples. However, for patient F, who achieves low glucose variability while maintaining high mean glucose levels, the more stringent testing schedule may help differentiate the patient's risk of retinopathy when compared to the next or previous visit (not shown in the plots). Furthermore, patient D's risk of hypoglycemia has been clarified.

[00212] In some aspects, there is provided a method to generate uncertainty levels of a patient's state of glucose control estimate as a function of specific SMBG testing schedules, a given clinical risk, and the two axis of the glucose control chart.

[00213] In certain embodiments, different SMBG testing schedules are collected, wherein for each schedule, uncertainty levels are computed a priori from population data.

[00214] In certain embodiments, the population data is comprised of CGM values or SMBG data taken at a relatively frequent interval that approaches that of a CGM. For example, in some instances, the frequency interval may range from once every 15 minutes of faster. In other instances, less frequent frequency intervals may be used.

[00215] In certain embodiments, the population data is obtained from human studies wearing CGM systems.

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[00216] In certain embodiments, the population data is obtained from in-silico human models representing a wide range of demographics, state of diabetes, and various other physiological parameters.

[00217] In certain embodiments, the uncertainty levels from the population data is projected along the gradient of a particular clinical risk. This may result, for example, in a map of uncertainty levels for a given SMBG testing schedule and clinical risk as a function of the two axis of the glucose control chart.

[00218] In certain embodiments, adequate and inadequate areas in the glucose control chart are identified for each combination of SMBG testing schedule and clinical risk being considered. For example, an area may be considered adequate if it has a sufficiently small uncertainty level relative to a clinically relevant gradient change. Otherwise, it is considered to be inadequate. For example, FIG. 55 illustrates the determination of areas where a given testing schedule is adequate vs. inadequate in detecting a clinically meaningful change in risk of retinopathy, according to certain embodiments. For FIG. 55, a testing schedule of 4 times a day at 7am, 11am, 5pm, and 10pm was used. It should be appreciated that different testing schedules may be implemented—e.g., that include any number of additional times in the day.

[00219] In FIG. 55, The shaded area corresponds to areas where the particular testing schedule is not adequate in detecting a clinically meaningful change in the risk of retinopathy, because the spread of the estimates along the direction of clinical change is much larger than the distance between local clinical risk lines. Thus, for example, it may be determined that a patient whose current state of glucose control puts their estimates in the inadequate space relative to the clinical risks being considered will need to follow a different testing schedule. Conversely, a patient whose glucose state is far from the boundary between inadequate and adequate region may be determined to be able to use a potentially less demanding testing schedule. It should be appreciated that different clinical risks (e.g. severe hypoglycemia, diabetic ketoacidosis, kidney failure, etc.) may result in different boundaries between adequate and inadequate areas for the same testing schedule.

[00220] In some aspects, there is provided a method to utilize the mapped uncertainty levels in the context of a specific set of clinical risks to provide a recommended SMBG testing schedule specific to each patient's latest state of glucose control.

[00221] In certain embodiments, given a patient's initial data under the particular SMBG testing schedule, the proper map described above (the map representing uncertainty levels of a patient's state of glucose control estimate as a function of specific SMBG

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testing schedules, a given clinical risk, and the two axis of the glucose control chart) is referenced to see if the patient's glucose control estimate falls within the adequate or inadequate region.

In certain embodiments, clinical risks being considered, a recommended SMBG testing schedule is offered that will not render the patient's testing efforts meaningless for the clinical aspect being focused on.

[00222] In certain embodiments, given the set of SMBG testing schedules that a patient can fall into the adequate range, and given the intended direction of the next treatment leading to the next follow-up visit, an SMBG testing schedule that puts the next predicted state of glucose control into an adequate range is considered, and one that is the least demanding may be offered to the patient. In this way, the least demanding schedule may be offered that will still allow for a useful determination of changes in clinical risk while keeping in mind that while a more demanding schedule may be ideal, it may practically be the exact opposite when a patient's concordance is too low.

Graphical Presentation of Clinical Impact on Patient's State of Glucose Control

[00223] In some aspects, there is provided a method for graphically representing clinical impact on a patient's state of glucose control.

[00224] In addition to the patient's state of glucose control, other clinically relevant information can be provided to enhance one's understanding of the impact of a planned treatment on the patient's various clinical state.

[00225] In some aspects, there is provided a method whereby clinically relevant states (e.g., long term cardiovascular risk, long term retinopathy risk, short term diabetic ketoacidosis risk, acute hypoglycemia risk, etc.) are adapted by performing transformations and mapping from population data. In this way, given a patient's state of glucose control, as shown in the glucose control chart, the various clinical risks may be identified, in order to provide relevancy in selecting a median glucose target.

[00226] Long-term complications may cause major morbidity and mortality in patients with insulin-dependent diabetes mellitus. Studies have established these clinical risks with measurable markers, where an association between long-term complications and HbA1c are often made. For example, associations between HbA1c and risk of progression of retinopathy, and between HbA1c and risk of severe hypoglycemia have been made—e.g., such as described in the article, "The Diabetes Control and Complications Trial Research Group, "The Effect of Intensive Treatment of Diabetes on Development and Progression of Long-Term Complications in Insulin-Dependent

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Diabetes Mellitus" (The New England Journal of Medicine, v329, n14, 1993), the entirety of which is incorporated herein by reference. FIG. 56 illustrates the association between HbA1c and risk of retinopathy and HbA1c and risk of sever hypoglycemia.

[00227] Focusing on the association between HbA1c and risk of retinopathy as an example, a connection may be made to the glucose control chart. For example, one method may use an association between estimated average glucose (eAG) and HbA1c . Using population data, a further association can be made between eAG and one or more axis of the glucose control chart. For example, an association may be made between eAG and the median glucose axis of the glucose control chart. Various methods can be used to obtain these associations. For example, the association between eAG and median glucose may be made by computing the eAG and median glucose values of a population of patients, and then using these pairs to fit a curve by Least Squares Error fit or other curve fitting methods. In another embodiment, a non parametric approach may be taken, where a table is generated that maps a certain range of eAG to a range of median glucose, and vice versa.

[00228] FIG. 57 illustrates a mapping a clinical risk, namely risk of retinopathy, onto a glucose control chart, according to certain embodiments. The graphical overlay of retinopathy risk may be added onto the glucose control chart, as shown in FIG. 57, by, for example: 1) using a Least Squares Error fit of a line may be used to define the correlation between median glucose and eAG; 2) using a correlation between eAG and HbA1c—e.g., using a previously published correlation between eAG and HbA1c, such as described in the article by Nathan et. Al, entitled "Translating the A1c Assay Into Estimated Average Glucose Values" (Diabetes Care, v.31, n8, 2008), the entirety of which is incorporated herein by reference; and then 3) determining the logarithmic correlation between HbA1c and risk of retinopathy.

[00229] In FIG. 57, each patient's state of glucose control, as represented by a single icon (each cross indicates a Type 2 Diabetes Mellitus patient, each circle indicates a Type 1 Diabetes Mellitus patient), can be viewed directly in terms of their clinical risk. In particular, the figure shows each patient's retinopathy risk. In addition, given an expected change in median glucose and glucose variability, an anticipated change in clinical risk may be estimated.

[00230] FIG. 58 illustrates multiple clinical risks – clinical risk of retinopathy and acute risk of hypoglycemia -- overlaid on glucose control chart, according to certain embodiments. The control grid also shows the constant lines for the number of occurrences of hypoglycemia per time period (e.g., 1, 5, and 9 occurrences per month).

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[00231] FIG. 59 illustrates an example of a patient's state of glucose control relative to two clinical risks, according to certain embodiments. The two risks are risk of retinopathy and hypoglycemia. If, for example, a patient's latest state of glucose control is represented by the diamond icon in FIG. 59, the patient has a 4% chance of suffering from retinopathy, and 5 severe hypoglycemic events per month, if no change is made on the patient's state of glucose control. The circle and cross icons represent, for example, two medical options that are available. While the second option offers a 50% reduction in retinopathy risk, the acute risk of hypoglycemia remains practically unchanged. The first option on the other hand, allows the patient to resolve the immediate issue of hypoglycemia risk, although at the cost of an increased risk of retinopathy. Since retinopathy is a longer term risk, this may be a more rational choice in some instances, as the subsequent visit to the patient's health care provider may then focus on further reducing glucose variability (as shown, for example, by the pentagon icon in FIG. 59) before attempting to reduce the patient's overall glucose (as represented by the triangle icon in FIG. 59)

[00232] In some aspects, a method is provided to overly various clinical risks onto the glucose control chart in order to provide context of a patient's state of glucose control relative to various clinical risks. For example, in certain embodiments, risk of retinopathy and hypoglycemia are used.

[00233] In some aspects, a method is provided to compare the relative clinical benefits of modifying one ore both aspects of a patient's glucose control given a patient's current state of glucose control and given the available treatment options.

[00234] In some aspects, a method is provided to associate clinical risks to one or more axis of the glucose control chart. For example risk of retinopathy may be associated to a glucose control chart by one of the following sequence of maps: median glucose to eAG, eAG to HbA1c, and HbA1c to risk of retinopathy. It should be appreciated that different paths may be needed in different circumstances depending on data availability from clinical studies.

[00235] In some aspects, a method is provided to allow doctors or other health care professionals to recommend treatment to patients. For example, the doctor may select an appropriate median glucose target from a range of possible targets by associating these targets with a) long term and short term complications, and b) an achievable near-term goal based on where the patient metrics currently fall on the grid. The combination of the target and the grid provides the clinician with a clinical perspective of how to modify therapy (e.g., by addressing the median or addressing variability or both) in relationship

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to the target. In certain embodiments, for example, the method may comprise 1) processing glucose data to determine the median and variability metrics, 2) plotting the point (or uncertainty bubble) representing these metrics on the grid, 3) displaying the grid with various targets related to complications (e.g., this may be done with multiple tabbed displays where each tab is related to a different complication), 4) providing a means for the doctor to select a target (for instance, mouse clicking on the desired target), 5) displaying the grid with only the selected target, 6) generating treatment recommendations based on which grid zone the metric falls into.

Medication Titration Between Clinical Visits Using Glucose Median and Variability Algorithm

[00236] In some aspects of the present disclosure, the methods and devices described above that map the glucose median and variability metric to treatment recommendations may be used to titrate medication, such as insulin, in a setting outside the standard clinical visit. For instance, in certain embodiments, algorithms for such methods may be implemented completely within the glucose measurement system, such as an SMBG meter, an "on-demand" CG meter or a CGM, where the outputs of the algorithm are titration instructions displayed periodically, e.g., once per week, on the device to the patient. The titration amounts may be preconfigured, or the algorithm could determine titration amounts based on preconfigured parameters, such as maximum titration amount, maximum total dose amount, and parameters common to bolus calculators, such as insulin sensitivity and carbohydrate ratio.

[00237] In another embodiment, the algorithms for methods described herein may be implemented partially within the glucose measurement device and partially within a remote software program accessible to clinicians (e.g, via a remote computer). The remote software program may provide, for example, titration recommendations to be approved by the clinician and then allow the clinician to remotely configure the glucose measurement device to display updated dosing instructions. The functionality may be divided between the device and the remote program a variety of ways. As an example, the device may upload data periodically to the remote software program, which contains the mapping algorithm and generates titration recommendation and other analysis to the clinician. The clinician may confirm the recommendation or otherwise alter the current titration and remotely configures the device with the new titration settings. In this way, the clinician is able to monitor patient titration. Remote data upload and configuration

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may be accomplished using any number of communication mechanisms, wired or unwired, known in the art.

Software Application for Communicatively Coupling an Analyte Monitoring Device with a Remote Server via a Computer

[00238] In some aspects, a software program is provided for transferring data from an analyte meter to a computer or other data processing device. For example, in certain embodiments, once loaded on the patient's computer or data processing device, the software application will activate whenever their meter is connected to the computer and will automatically upload the data from the meter to a remote server. In some instances, no user action may be required by the user for the automatic upload process. It should be appreciated that the source of this data from a blood glucose meter or any other type of analyte monitoring device.

[00239] FIG. 60 illustrates an example block diagram for the software application for communicatively coupling an analyte monitoring device (e.g., a glucose meter) with the remote server via a computer, according to certain embodiments. In certain embodiments, two separate software programs are used--one program (#2) runs in the background on the patient's computer ("PC") and the other comprises scripts (#3a,#3b) running on a remote server (e.g., PERL scripts or other suitable scripts). The scripts may include, for example, a script for uploading data (#3a), a script for viewing data (#3b). The software running on the remote server may also include a data file (#4) on the remote server that accumulates uploaded data.

[00240] In certain embodiments, once the PC program is installed, it runs silently in background mode until the monitoring device is communicatively coupled to the computer (e.g., plugged into a USB port or wirelessly connected, for example). If the device is appropriate, the PC program invokes the remote server script #3a for uploading some or all of the data ("File #1") by for example making an HTTP request, which uploaded data is then stored on the remote server in the data file. For example, the upload script (#3a) is invoked via HTTP POST request from the program #2, wherein the data is sent via STDOUT and arrives via STDIN on the server side. For example, the data file (#4) is written by script #3a to a server directory protected by HTTP authentication. A browser user may then visit the URL for Script #3b and logs in via HTTP authentication to view the uploaded data. Script #3b reads the data file (#4), formats it into an HTML table, and generates a web page that is sent to the user's browser.

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[00241] In some instances, the communicated data also includes other related information such as the BGM serial number and/or the MAC address of the PC which could be used to minimize the possibility that the BGM data gets associated with the wrong patient. It should also be appreciated, that in some instances, the software program may include a script for deleting the data from the monitoring device. For example, the computer program may invoke a script on the monitoring device to delete the data from the monitoring device after the data is uploaded.

Software Application for Configuring a Continuous Glucose Monitor (CGM)

[00242] In certain embodiments there is provided a CGM alarm configuration tool. CGM alarms include high and low threshold crossings and projected threshold crossing based on trend information. These alarms can be configured to be more or less sensitive based on the threshold values and the projection time. For instance, a projected low glucose alarm would occur more often if the threshold is set high and/or the projected time is long. This may be annoying for the patient. On the other hand, a high threshold and/or long projected time may also lead to better glucose management. So a trade-off can be made between better glucose management and usability (fewer annoying alarms).

[00243] This trade-off may not be easy for most CGM patients or their HCPs to understand. Provided herein is a software tool that can be used to inform patients and HCPs on how to best adjust alarm settings.

[00244] The software tool incorporates a glucose response simulation based on a glucose response model defined for that specific patient or defined for a population of patients. The simulation would be based on recorded inputs of prior glucose, meals, insulin injection and other recorded factors that may impact glucose response. Assuming that the patient would treat a high or low glucose alarm immediately or soon after occurrence, various alarm setting scenarios would be simulated and results (glucose control metrics and alarm occurrences) would be generated for each of these settings. The "treatments" associated with each scenario, such as eating and insulin injection, would be included as inputs to the simulation. The software would provide a "'trade-off table" or plot of glucose control metrics and alarm metrics as a function of alarm settings. For example, the table may provide average glucose, hypoglycemia occurrences, and alarms per day versus combinations of low glucose threshold and projection time. The HCP may then discuss these results with the patient and decide on appropriate alarm settings. The software may also have a means to program the CGM with the selected settings.

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[00245] In another embodiment, the software tool uses a non-parametric model that simulates the statistical characteristics of a patient's glucose variability. For instance, the spectral characteristics of the glucose response would be estimated from the patient's glucose data, using standard data analysis techniques, and a random simulation based on these characteristics would be generated for different alarm setting scenarios.

[00246] In another embodiment, the software tool creates a database of various actual glucose responses based on various alarm settings and patient glucose control characteristics. For each category of glucose response characteristic, a trade-off table is generated using associated data in the database. The patient's glucose response characteristic would be matched to the closest data set in the database, and the software would look up the associated trade-off table.

[00247] These features may be incorporated into any diabetes analysis software, into a stand-alone application, or into a stand-alone device (e.g., CGM device).

Software Application for Creating Therapy Recommendation Smart Reports

[00248] In certain embodiments, there is provided a method for creating therapy recommendation smart reports.

[00249] A common complaint from HCPs who treat people with diabetes is the time and involvement required to analyze retrospective data associated with the diabetic condition. Specifically, HCPs have favorite reports that they walk through to try to understand how well the patient is managing their diabetes and to determine necessary treatment adjustments. Data analysis software that detects adverse conditions and reports these conditions, and perhaps makes recommendations, has been disclosed. The condition would be reported by some means like a textual display listing the adverse conditions by priority. The data may be summarized on a standard report with for instance a modal day plot and key statistics. However, some HCPs like to look through various reports to get different perspectives of the data and the problem that has been detected.

[00250] Provided herein is an automated feature associated with data analysis that detects adverse conditions and makes recommendations. This feature is to pre-define one or more specific types of reports for each possible adverse condition and/or recommendation, and then when the analysis software detects this condition, to display the specific report(s) that best illustrates the problem. The advantage here is that HCPs will no longer need to take the time to drill down to the report they want for a specific condition (some HCPs may not even know what the best report is to illustrate a condition/recommendation). The optimum report type is generated automatically and

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displayed to the HCP. The report may illustrate the condition and demonstrate the expected effect from a recommended treatment adjustment.

[00251] For example, the software would detect that the patient almost always has low glucose in the morning prior to breakfast. Along with an indication displayed to the HCP of this condition, the software may also display a modal day graphic that shows the aggregate effect of being low in the morning – perhaps only the first half of the day is displayed. The plot may also highlight the portion where it is low and show the low target. Finally, the plot may also show an expected modal plot based on the recommendation which may be a reduction in the basal insulin dose, demonstrating how the recommendation would be executed to improve glucose management. The HCP would see this almost instantly after initiating the analysis and would not have to search for the appropriate plot or report.

[00252] Another example would be that the patient is occasionally very high after the dinner meal. When this is detected by the analysis routine, an overlay plot where each data series is time aligned around the dinner meal would be appropriate. The problem data series may be highlighted and when the cursor is placed over it, more information about the meal may be presented. Then, the HCP can have a discussion with the patient about these specific meals and perhaps find out that the patient is having a problem counting carbs for a specific type of meal, for instance.

[00253] A final example is where the analysis routine detects that there is not enough glucose measurements to adequately detect adverse conditions. Then, the graphic may be a bar chart showing average BG measurements per each day over the period of analysis. The HCP can then have a discussion about the importance of taking frequent measurements.

[00254] The process steps for this invention, in certain embodiments, would be as follows: 1) retrieve stored data associated with diabetes management for a specific patient, such as glucose readings, insulin delivery data, meal data, etc.; 2) analyze the data based on one or more predefined conditions to check; 3) for each condition detected, output a specific graphical report that best demonstrates that condition.

[00255] The process steps for this invention, in another embodiment, would be as follows: 1) retrieve stored data associated with diabetes management for a specific patient, such as glucose readings, insulin delivery data, meal data, etc.; 2) analyze the data based on one or more predefined conditions to check; 3) for the pre-defined highest priority condition detected, output a specific graphical report that best demonstrates that condition; 4) provide a graphical means for the user to select any lower priority

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conditions detected and output the corresponding specific graphical report that best demonstrates that condition.

[00256] This invention would preferably be implemented on a PC software program, but may also be incorporated into a handheld device, that may interact with glucose measurement and/or insulin delivery.

Software Application for Providing a Single Page Integrated Multi-Day Report

[00257] In certain embodiments, there is provide a method for creating a single page integrated multi-day report. For example, in certain embodiments, there is provided a multi-day report that integrates insulin, glucose, exercise, meal, and medication details into one single, readable, page. This integrated multi-day report concept contains all the contextual glucose, insulin, meal, exercise, and medication information and presented over a period of multiple days in an iconic display. The iconic approach to present different events also enhances port comprehension. The advantage of a single multi-day report is that more contractual information in a single page will aid the interpretation and treatment of diabetes.

Software Application for Providing Recommendations for Glucose Monitor Type Based on Simulations

[00258] In certain embodiments, there is provided a method for recommending glucose monitor type based on simulations.

[00259] A therapy calculator determines optimal glucose response model parameters based on glucose history, meal history, and insulin delivery history. These parameters can be loaded into an enhanced bolus calculator that accounts for this model and provides the patient with more accurate bolus recommendations. Software can then be used to simulate expected glucose response to treatment events for different types of glucose measurement devices; e.g., SMBG, GoD, CGM, or blind (no glucose measurement device is used).

[00260] As such, there is provided a process to use these simulations to recommend to a HCP the appropriate glucose measurement device to use. The more effective methods typically are also more costly and inconvenient, so the natural choice of device is to use the least costly and inconvenient, that can still effectively treat the patient's condition. The least effective is generally "blind" or no glucose measurement device, then SMBG, GoD, and CGM are progressively more effective, in that order.

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[00261] The simulations are based on multiple meal and/or correction events that have been recorded. The therapy calculator uses the glucose history, meal information and insulin delivery information around these events to calculate the optimal parameters specific to the patient for the model. The simulation for the 'blind" scenario then assumes that each meal bolus event is based only on meal information not glucose. Glucose correction events, for instance for a CGM simulation where a hyper alarm is indicated, would not assume a correction occurred for the blind scenario.

[00262] The simulation for the SMBG scenario assumes that for each meal bolus event, the bolus is now based on the meal information and the glucose level but not the trend. For correction events, it should be assumed that like the blind situation, these are not accounted for.

[00263] The GoD simulation scenario is much like that for SMBG except that glucose trend can be taken into account for the bolus calculation. Alternatively, the GoD and SMBG simulation scenarios may take into account extreme low and high glucose events assuming that patients may sense these and would initiate a glucose reading.

[00264] The CGM simulation will assume that whenever the glucose exceeds a high or low threshold, that a correction bolus occurred, which is based on glucose level and trend. Alternative, corrections based on projected high or low thresholds may trigger a correction event. Finally, correction events may be associated with actual correction events from the data.

[00265] The process would generate these multiple simulations based on past glucose, meal and insulin history. Metrics may be generated from these simulation results to provide an indication of acceptable glucose control – the least expensive and inconvenient glucose measurement device that provides an adequate simulated glucose management metric should be selected for the patient. Alternatively, or in conjunction with metrics), the simulations may be presented to the HCP so they can visually determine the appropriate device for that patient.

[00266] The above invention may also be extended to non-insulin medication treatments, diet/exercise treatments, etc.

Software Application for Providing Extension of Therapy Calculator to Treatments Beyond Insulin Delivery

[00267] In certain embodiments, there is provided methods for providing an extension of the therapy calculator to treatments beyond insulin delivery.

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[00268] A therapy calculator generally records insulin delivery data, glucose measurements, and food intake (and potentially other data relevant to diabetes) for a patient for some time, transfers data to a processor that uses it along with a model of the patient's physiology, and calculates key model parameters that would be used to optimize subsequent insulin treatment such that glucose levels would stay level. Specifically, the treatment adjustments may include adjustments to the amount of insulin needed to compensate for meals or glucose level corrections. These adjustments may include other factors such as when to bolus relative start of meal, type of bolus and variations related to the type of meal.

[00269] Provided herein are methods of extending the above-described design to other treatments for diabetes, and for treatments for other deceases. Specifically in regards to insulin treatment, these methods may be used to inform a patient of how much insulin to take via other mechanisms, such as oral or nasal, for example. A physiological model is needed for the specific type of insulin medication/delivery, and one or more parameters are identified related to insulin amount or timing or any other parameter type in which the patient may use to determine how to administer the drug. These parameters may be utilized by the patient directly, such as to determine how much to inject or ingest, or these parameters may be loaded (manually or automatically) into a device that calculates how much insulin should be delivered. The amount may be delivered manually with an amount indicated by a bolus calculator, or remotely by a device designed for convenient user interaction, or automatically by a system that is programmed to delivery this amount at a various times (for instance the same time(s) every day or at times relative to other events such as meals, meal announcements, glucose level/profile indicators, etc.).

[00270] The bolus calculator may take into account one or more CGM data in order to better compensate for glucose rate-of-change. To do this, the bolus calculator may incorporate the same or similar model as the therapy calculator, where some of the model parameters are identified by the therapy calculator. These parameters would not need to be such that they are usable directly by the patient (e.g., insulin-to-carb ratio or insulin-to-glucose ratio) but may be combinations of these. The bolus calculator may be able to utilize the identified parameters to provide an optimal dose information to the patient.

[00271] In certain embodiments, the methods may be extended to drug therapies other than insulin. For any drug that induces a physiological response with a means to measure one or more relevant patient's conditions, a model can be developed to describe this response. Some model parameters can be considered constant for a population and others can be identified specifically for that patient for that point in time. Additionally, some

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parameters may be identified for the patient at that time, then subsequently held constant, while other parameters are identified at a later time. The parameters may be related to drug amount, or time of day timing, or timing related to some patient condition indicator. The parameters may be utilized directly by the patient, or programmed into a device that provides delivery information, allows the patient a remote means to initiate delivery, or can be programmed for automatic delivery.

Integration with Medication Delivery Devices and/or Systems

[00272] In some embodiments, the analyte measurement systems disclosed herein may be included in and/or integrated with, a medication delivery device and/or system, e.g., an insulin pump module, such as an insulin pump or controller module thereof, or insulin injection pen. In some embodiments the analyte measurement system is physically integrated into a medication delivery device. In other embodiments, an analyte measurement system as described herein may be configured to communicate with a medication delivery device or another component of a medication delivery system. Additional information regarding medication delivery devices and/or systems, such as, for example, integrated systems, is provided in U.S. Patent Application Publication No. US2006/0224141, published on October 5, 2006, entitled "Method and System for Providing Integrated Medication Infusion and Analyte Monitoring System", and U.S. Patent Application Publication No. US2004/0254434, published on December 16, 2004, entitled "Glucose Measuring Module and Insulin Pump Combination," the disclosure of each of which is incorporated by reference herein in its entirety. Medication delivery devices which may be provided with analyte measurement system as described herein include, e.g., a needle, syringe, pump, catheter, inhaler, transdermal patch, or combination thereof. In some embodiments, the medication delivery device or system may be in the form of a drug delivery injection pen such as a pen-type injection device incorporated within the housing of an analyte measurement system. Additional information is provided in U.S. Patent Nos. 5,536,249 and 5,925,021, the disclosures of each of which are incorporated by reference herein in their entirety.

[00273] The embodiments presented herein provide further advantages such as: the ability to upgrade strip port modules as new test strip technologies evolve; the ability to clean or sterilize a strip port module; and the ability to allow users to replace strip port modules without returning the entire measurement system to the manufacture.

[00274] Certain embodiments relate to *in vivo* (e.g., continuous monitoring) systems. A continuous monitoring system typically includes a sensor that is worn or placed below

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the skin, a transmitter that collects glucose information from the sensor, and a receiver that collects the information from the transmitter. The sensor can collect glucose level information continuously, periodically, or at other intervals. Advantageously, a user is relieved from having to repeatedly lance his or her body to collect a blood sample once the sensor is inserted, although the sensor (e.g., an electrochemical sensor that is inserted into a body) can be replaced. U.S. Patent No. 6,175,752, which is hereby incorporated by reference in its entirety, discloses additional examples of a continuous monitoring system.

[00275] Embodiments of the invention relate to components of a continuous monitoring system that may be replaceable. In certain embodiments, the interface between the sensor and the transmitter may become contaminated. The transmitter or sensor control unit, for example, may have an interface with the sensor that has been molded to form a barrier between the transmitter's contacts and circuitry internal to the transmitter. This allows the transmitter's contacts to be washed without damaging the transmitter's circuitry. Alternatively, the contacts may be included in a replaceable port that can be replaced as needed. Similarly, the interface on the sensor may be molded to form a barrier to contamination or be replaceable.

[00276] Embodiments of the invention further extend to kits. Examples of a kit include a measurement device with one or more strip connectors. In some kits, different strip connectors or ports for different types of strips may be included. This allows the measurement device to be used with different strip form factors. The kits may also include a plurality of test strips. In certain examples, the measurement device may be configured for use with disposable test strips as well as with test strips that are configured for continuous monitoring systems. Thus, the measurement device may include a receiver to receive information from a transmitter that collects glucose information from an inserted sensor. The measurement device may also include a strip connector, such as those disclosed herein, for use with single use test strips.

Analyte test strips

[00277] Analyte test strips for use with the present devices can be of any kind, size, or shape known to those skilled in the art; for example, FREESTYLE® and FREESTYLE LITE ™ test strips, as well as PRECISION™ test strips sold by ABBOTT DIABETES CARE Inc. In addition to the embodiments specifically disclosed herein, the devices of the present disclosure can be configured to work with a wide variety of analyte test strips, e.g., those disclosed in U.S. Patent Application No. 11/461,725, filed August 1,

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2006; U.S. Patent Application Publication No. 2007/0095661; U.S. Patent Application Publication No. 2006/0091006; U.S. Patent Application Publication No. 2006/0025662; U.S. Patent Application Publication No. 2008/0267823; U.S. Patent Application Publication No. 2007/0108048; U.S. Patent Application Publication No. 2008/0102441; U.S. Patent Application Publication No. 2008/0066305; U.S. Patent Application Publication No. 2007/0199818; U.S. Patent Application Publication No. 2008/0148873; U.S. Patent Application Publication No. 2007/0068807; U.S. Patent Application No. 12/102,374, filed April 14, 2008, and U.S. Patent Application Publication No. 2009/0095625; U.S. Patent No. 6,616,819; U.S. Patent No. 6,143,164; U.S. Patent No. 6,592,745; U.S. Patent No. 6,071,391 and U.S. Patent No. 6,893,545; the disclosures of each of which are incorporated by reference herein in their entirety.

Calculation of Medication Dosage

[00278] In certain embodiments, the analyte measurement system may be configured to measure the blood glucose concentration of a patient and include instructions for a long-acting insulin dosage calculation function. Periodic injection or administration of long-acting insulin may be used to maintain a baseline blood glucose concentration in a patient with Type-1 or Type-2 diabetes. In one aspect, the long-acting medication dosage calculation function may include an algorithm or routine based on the current blood glucose concentration of a diabetic patient, to compare the current measured blood glucose concentration value to a predetermined threshold or an individually tailored threshold as determined by a HCP or other treating professional to determine the appropriate dosage level for maintaining the baseline glucose level. In certain embodiments, the long-acting insulin dosage calculation function may be based upon LANTUS® insulin, available from Sanofi-Aventis, also known as insulin glargine. LANTUS® is a long-acting insulin that has up to a 24 hour duration of action. Further information on LANTUS® insulin is available at the website located by placing "www" immediately in front of ".lantus.com". Other types of long-acting insulin include Levemir® insulin available from NovoNordisk (further information is available at the website located by placing "www" immediately in front of ".levemir-us.com". Examples of such embodiments are described in in US Published Patent Application No. US2010/01981142, the disclosure of which is incorporated herein by reference in its entirety.

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Strip Port Configured to Receive Test Strips for Different Analytes

[00279] In another embodiment, there is provided an analyte measurement system for multichemistry testing. The test strips are for chemical analysis of a sample, and are adapted for use in combination with a measuring device having a test port and capable of performing a multiplicity of testing functionalities. Each type of test strip corresponds to at least one of the testing functionalities, and at least some types of test strips have indicators of the testing functionality on them. The test port is adapted for use in combination with a multiplicity of different types of test strips and includes a sensor capable of specifically interacting with the indicator(s) on the test strips, thereby selecting at least one of the multiplicity of testing functionalities corresponding to the type of test strip. Such system would include a strip port that can be used to read a test strip for glucose and a test strip for ketone bodies. Examples of such embodiment are provided in U.S. Patent No. 6,773,671, which is incorporated herein by reference in it entirety.

Strip Port Configured to Receive Test Strips Having Different Dimensions and/or Electrode Configurations

[00280] In some embodiments, an analyte measurement system as described herein includes a strip port configured to receive test strips having different dimensions and/or electrode configurations, e.g., as described in the U.S. Patent Application No. 12/695,947 filed on January 28, 2010, and entitled "Universal Test Strip Port", the disclosure of which is incorporated by reference herein in its entirety.

Implanted Analyte Sensor

[00281] In some embodiments, an analyte measurement system as described herein may include an implanted or partially implanted analyte sensor, e.g., a system including an implanted or partially implanted glucose sensor (e.g., a continuous glucose sensor). A system including an implanted or partially implanted glucose sensor may include an analyte measurement system as described herein, which is configured to receive analyte data from the implanted or partially implanted glucose sensor either directly or through an intermediate device, e.g., an RF-powered measurement circuit coupled to an implanted or partially implanted analyte sensor. In some embodiments, where an analyte measurement system according to the present disclosure is integrated with an implanted sensor, the analyte measurement system does not include a strip port for receiving an analyte test strip. In certain embodiments, the analyte measurement system may be used

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to calibrate the analyte monitoring system, e.g., using one point calibration or other calibration protocol. For additional information, see U.S. Pat. No. 6,175,752, the disclosure of which is incorporated by reference herein in its entirety. In some embodiments, the analyte measurement system may be configured to communicate with the implanted or partially implanted analyte sensor via Radio Frequency Identification (RFID) and provide for intermittent or periodic interrogation of the implanted analyte sensor.

[00282] Exemplary analyte monitoring systems that may be utilized in connection with the disclosed analyte measurement system include those described in U.S. Patent No. 7,041,468; U.S. Pat. No. 5,356,786; U.S. Pat. No. 6,175,752; U.S. Pat. No. 6,560,471; U.S. Pat. No. 5,262,035; U.S. Pat. No. 6,881,551; U.S. Pat. No. 6,121,009; U.S. Pat. No. 7,167,818; U.S. Pat. No. 6,270,455; U.S. Pat. No. 6,161,095; U.S. Pat. No. 5,918,603; U.S. Pat. No. 6,144,837; U.S. Pat. No. 5,601,435; U.S. Pat. No. 5,822,715; U.S. Pat. No. 5,899,855; U.S. Pat. No. 6,071,391; U.S. Pat. No. 6,120,676; U.S. Pat. No. 6,143,164; U.S. Pat. No. 6,299,757; U.S. Pat. No. 6,338,790; U.S. Pat. No. 6,377,894; U.S. Pat. No. 6,600,997; U.S. Pat. No. 6,773,671; U.S. Pat. No. 6,514,460; U.S. Pat. No. 6,592,745; U.S. Pat. No. 5,628,890; U.S. Pat. No. 5,820,551; U.S. Pat. No. 6,736,957; U.S. Pat. No. 4,545,382; U.S. Pat. No. 4,711,245; U.S. Pat. No. 5,509,410; U.S. Pat. No. 6,540,891; U.S. Pat. No. 6,730,200; U.S. Pat. No. 6,764,581; U.S. Pat. No. 6,299,757; U.S. Pat. No. 6,461,496; U.S. Pat. No. 6,503,381; U.S. Pat. No. 6,591,125; U.S. Pat. No. 6,616,819; U.S. Pat. No. 6,618,934; U.S. Pat. No. 6,676,816; U.S. Pat. No. 6,749,740; U.S. Pat. No. 6,893,545; U.S. Pat. No. 6,942,518; U.S. Pat. No. 6,514,718; U.S. Pat. No. 5,264,014; U.S. Pat. No. 5,262,305; U.S. Pat. No. 5,320,715; U.S. Pat. No. 5,593,852; U.S. Pat. No. 6,746,582; U.S. Pat. No. 6,284,478; U.S. Pat. No. 7,299,082; U.S. Patent Application No. 61/149,639, entitled "Compact On-Body Physiological Monitoring Device and Methods Thereof", U.S. Patent Application No. 11/461,725, filed August 1, 2006, entitled "Analyte Sensors and Methods"; U.S. Patent Application No. 12/495,709, filed June 30, 2009, entitled "Extruded Electrode Structures and Methods of Using Same"; U.S. Patent Application Publication No. US2004/0186365; U.S. Patent Application Publication No. 2007/0095661; U.S. Patent Application Publication No. 2006/0091006; U.S. Patent Application Publication No. 2006/0025662; U.S. Patent Application Publication No. 2008/0267823; U.S. Patent Application Publication No. 2007/0108048; U.S. Patent Application Publication No. 2008/0102441; U.S. Patent Application Publication No. 2008/0066305; U.S. Patent Application Publication No. 2007/0199818; U.S. Patent Application Publication No. 2008/0148873; U.S. Patent Application

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Publication No. 2007/0068807; US patent Application Publication No. 2010/0198034; and US provisional application no. 61/149,639 titled "Compact On-Body Physiological Monitoring Device and Methods Thereof", the disclosures of each of which are incorporated herein by reference in their entirety.

Communication Interface

[00283] As discussed previously herein, an analyte measurement system according to the present disclosure can be configured to include a communication interface. In some embodiments, the communication interface includes a receiver and/or transmitter for communicating with a network and/or another device, e.g., a medication delivery device and/or a patient monitoring device, e.g., a continuous glucose monitoring device. In some embodiments, the communication interface is configured for communication with a health management system, such as the CoPilot™ system available from Abbott Diabetes Care Inc., Alameda, CA.

[00284] The communication interface can be configured for wired or wireless communication, including, but not limited to, radio frequency (RF) communication (e.g., Radio-Frequency Identification (RFID), Zigbee communication protocols, WiFi, infrared, wireless Universal Serial Bus (USB), Ultra Wide Band (UWB), Bluetooth® communication protocols, and cellular communication, such as code division multiple access (CDMA) or Global System for Mobile communications (GSM).

[00285] In certain embodiments, the communication interface is configured to include one or more communication ports, e.g., physical ports or interfaces such as a USB port, an RS-232 port, or any other suitable electrical connection port to allow data communication between the analyte measurement system and other external devices such as a computer terminal (for example, at a physician's office or in hospital environment), an external medical device, such as an infusion device or including an insulin delivery device, or other devices that are configured for similar complementary data communication.

[00286] In certain embodiments, the communication interface is configured for infrared communication, Bluetooth® communication, or any other suitable wireless communication protocol to enable the analyte measurement system to communicate with other devices such as infusion devices, analyte monitoring devices, computer terminals and/or networks, communication enabled mobile telephones, personal digital assistants, or any other communication devices which the patient or user of the analyte

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measurement system may use in conjunction therewith, in managing the treatment of a health condition, such as diabetes.

[00287] In certain embodiments, the communication interface is configured to provide a connection for data transfer utilizing Internet Protocol (IP) through a cell phone network, Short Message Service (SMS), wireless connection to a personal computer (PC) on a Local Area Network (LAN) which is connected to the internet, or WiFi connection to the internet at a WiFi hotspot.

[00288] In certain embodiments, the analyte measurement system is configured to wirelessly communicate with a server device via the communication interface, e.g., using a common standard such as 802.11 or Bluetooth® RF protocol, or an IrDA infrared protocol. The server device may be another portable device, such as a smart phone, Personal Digital Assistant (PDA) or notebook computer; or a larger device such as a desktop computer, appliance, etc. In some embodiments, the server device has a display, such as a liquid crystal display (LCD), as well as an input device, such as buttons, a keyboard, mouse or touch-screen. With such an arrangement, the user can control the analyte measurement system indirectly by interacting with the user interface(s) of the server device, which in turn interacts with the analyte measurement system across a wireless link.

[00289] In some embodiments, the communication interface is configured to automatically or semi-automatically communicate data stored in the analyte measurement system, e.g., in an optional data storage unit, with a network or server device using one or more of the communication protocols and/or mechanisms described above.

Input Unit

[00290] As discussed previously herein, an analyte measurement system according to the present disclosure can be configured to include an input unit and/or input buttons coupled to the housing of the analyte measurement system and in communication with a controller unit and/or processor. In some embodiments, the input unit includes one or more input buttons and/or keys, wherein each input button and/or key is designated for a specific task. Alternatively, or in addition, the input unit may include one or more input buttons and/or keys that can be 'soft buttons' or 'soft keys'. In the case where one or more of the input buttons and/or keys are 'soft buttons' or 'soft keys', these buttons and/or keys may be used for a variety of functions. The variety of functions may be determined based on the current mode of the analyte measurement system, and may be

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distinguishable to a user by the use of button instructions shown on an optional display unit of the analyte measurement system. Yet another input method may be a touch-sensitive display unit, as described in greater detail below.

[00291] In addition, in some embodiments, the input unit is configured such that a user can operate the input unit to adjust time and/or date information, as well as other features or settings associated with the operation of an analyte measurement system.

Display Unit

[00292] As discussed previously herein, in some embodiments, an analyte measurement system according to the present disclosure includes an optional display unit or a port for coupling an optional display unit to the analyte measurement system. The display unit is in communication with a control unit and/or processor and displays the analyte test strip signals and/or results determined from the analyte test strip signals including, for example, analyte concentration, rate of change of analyte concentration, and/or the exceeding of a threshold analyte concentration (indicating, for example, hypo- or hyperglycemia).

[00293] The display unit can be a dot-matrix display, e.g., a dot-matrix LCD display. In some embodiments, the display unit includes a liquid-crystal display (LCD), thin film transistor liquid crystal display (TFT-LCD), plasma display, light-emitting diode (LED) display, seven-segment display, E-ink (electronic paper) display or combination of two or more of the above. The display unit can be configured to provide, an alphanumeric display, a graphical display, a video display, an audio display, a vibratory output, or combinations thereof. The display can be a color display. In some embodiments, the display is a backlit display.

[00294] The display unit can also be configured to provide, for example, information related to a patient's current analyte concentration as well as predictive analyte concentrations, such as trending information.

[00295] In some embodiments an input unit and a display unit are integrated into a single unit, for example, the display unit can be configured as a touch sensitive display, e.g., a touch-screen display, where the user may enter information or commands via the display area using, for example, the user's finger, a stylus or any other suitable implement, and where, the touch sensitive display is configured as the user interface in an icon driven environment, for example.

[00296] In some embodiments, the display unit does not include a screen designed to display results visually. Instead, in some embodiments the optional display unit is

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configured to communicate results audibly to a user of the analyte measurement system, e.g., via an integrated speaker, or via separate speakers through a headphone jack or Bluetooth® headset.

Expanding Menu Item for Improved Readability

[00297] In some embodiments, the display unit includes a graphical user interface including a plurality of menu items, wherein the display unit is configured to provide clarification with respect to the meaning of a menu item based on a user's response speed with respect to a user input for the menu item. The menu item may take any of a variety of forms, e.g., text, icon, object or combination thereof.

[00298] In certain embodiments, the graphical user interface includes a menu which in turn includes a plurality of selectable menu items. As a user navigates through the menu, e.g., by highlighting or scrolling through individual menu items, a menu item that is either unreadable or incomprehensible to the user may cause the user to pause over a menu item to be selected. In certain embodiments, a choice can be presented to the user, e.g., using a dedicated physical button on an input unit, or a soft key on the menu, that offers further explanation of the item to be selected without actually selecting the item. For example, the graphical user interface can be configured such that after a pre-determined period of time a soft key offers an explanation of the menu item to be selected, e.g., by displaying a soft key with the word "MORE", "ADDITIONAL INFORMATION", "EXPAND", "MAGNIFY" , "HELP" or a variation thereof displayed thereon.

[00299] The pre-determined period of time may be based on a fixed factory preset value, a value set by the user or a health care provider, or through an adaptive mechanism based on an analysis of the user's speed of navigation from past interactions with the graphical user interface. In certain embodiments, the pre-determined period of time is from about 5 to about 20 seconds, e.g., from about 10 to about 15 seconds.

[00300] If the offer for clarification and/or additional information is selected, e.g., by pressing the softkey, then the menu item to be selected can be displayed in a "high emphasis" mode, e.g., where the item is displayed as if a magnifying lens is held on top of the selected item. In some embodiments, additional emphasis of the menu item to be selected can be provided, e.g., by making the menu item change color, blink, or increase in size to a pre-determined maximum limit.

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Support for On-Demand Analyte Determination Using an Analyte Sensor

[00301] In some embodiments, an analyte measurement system according to the present disclosure is further configured to receive analyte concentration data and/or signals indicative of an analyte concentration from an analyte sensor, e.g., an implanted or partially implanted analyte sensor or a radio-frequency (RF)-powered measurement circuit coupled to an implanted or partially implanted analyte sensor. In some embodiments, the analyte sensor is a self-powered analyte sensor. An analyte measurement system according to the present disclosure may include software configured to analyze signals received from the analyte sensor. Additional information related to self-powered analyte sensors and methods of communicating therewith are provided in U.S. Patent Application Publication No. 2010/0213057, the disclosure of which is incorporated by reference herein in its entirety.

Analytes

[00302] A variety of analytes can be detected and quantified using the disclosed analyte measurement system. Analytes that may be determined include, for example, acetyl choline, amylase, bilirubin, cholesterol, chorionic gonadotropin, creatine kinase (e.g., CK-MB), creatine, DNA, fructosamine, glucose, glutamine, growth hormones, hormones, ketones (e.g., ketone bodies), lactate, oxygen, peroxide, prostate-specific antigen, prothrombin, RNA, thyroid stimulating hormone, and troponin. The concentration of drugs, such as, for example, antibiotics (e.g., gentamicin, vancomycin, and the like), digitoxin, digoxin, drugs of abuse, theophylline, and warfarin, may also be determined. Assays suitable for determining the concentration of DNA and/or RNA are disclosed in U.S. Patent No. 6,281,006 and U.S. Patent No. 6,638,716, the disclosures of each of which are incorporated by reference herein in their entirety.

Conclusion

[00303] It should be understood that techniques introduced above can be implemented by programmable circuitry programmed or configured by software and/or firmware, or they can be implemented entirely by special-purpose "hardwired" circuitry, or in a combination of such forms. Such special-purpose circuitry (if any) can be in the form of, for example, one or more application-specific integrated circuits (ASICS), programmable logic devices (PLDs), field-programmable gate arrays (FPGAs), etc.

[00304] Software or firmware implementing the techniques introduced herein may be stored on a computer-readable storage medium and may be executed by one or more

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general-purpose or special-purpose programmable microprocessors. A "computer-readable medium", as the term is used herein, includes any mechanism that can store information in a form accessible by a computer (a computer may be, for example, a personal computer, network device, cellular phone, personal digital assistant (PDA), manufacturing took, any device with one or more processors, etc.). For example, a computer-accessible medium includes recordable/non-recordable media (e.g., read-only memory (ROM); random access memory (RAM); magnetic disk storage media; optical storage media; flash memory devices; etc.), etc.

[00305] The foregoing description of the invention has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed. Other modifications and variations may be possible in light of the above teachings. The embodiments were chosen and described in order to best explain the principles of the invention and its practical application, and to thereby enable others skilled in the art to best utilize the invention in various embodiments and various modifications as are suited to the particular use contemplated. It is intended that the appended claims be construed to include other alternative embodiments of the invention; including equivalent structures, components, methods, and means.

[00306] It is to be appreciated that the Detailed Description section, and not the Summary and Abstract sections, is intended to be used to interpret the claims. The Summary and Abstract sections may set forth one or more, but not all exemplary embodiments of the present invention as contemplated by the inventor(s), and thus, are not intended to limit the present invention and the appended claims in any way.

[00307] Where a range of values is provided, it is understood that each intervening value, to the tenth of the unit of the lower limit unless the context clearly dictates otherwise, between the upper and lower limits of that range is also specifically disclosed. Each smaller range between any stated value or intervening value in a stated range and any other stated or intervening value in that stated range is encompassed within the invention. The upper and lower limits of these smaller ranges may independently be included or excluded in the range, and each range where either, neither or both limits are included in the smaller ranges is also encompassed within the invention, subject to any specifically excluded limit in the stated range. Where the stated range includes one or both of the limits, ranges excluding either or both of those included limits are also included in the invention.

[00308] In the description of the invention herein, it will be understood that a word appearing in the singular encompasses its plural counterpart, and a word appearing in the

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plural encompasses its singular counterpart, unless implicitly or explicitly understood or stated otherwise. Merely by way of example, reference to "an" or "the" "analyte" encompasses a single analyte, as well as a combination and/or mixture of two or more different analytes, reference to "a" or "the" "concentration value" encompasses a single concentration value, as well as two or more concentration values, and the like, unless implicitly or explicitly understood or stated otherwise. Further, it will be understood that for any given component described herein, any of the possible candidates or alternatives listed for that component, may generally be used individually or in combination with one another, unless implicitly or explicitly understood or stated otherwise. Additionally, it will be understood that any list of such candidates or alternatives, is merely illustrative, not limiting, unless implicitly or explicitly understood or stated otherwise.

[00309] Various terms are described to facilitate an understanding of the invention. It will be understood that a corresponding description of these various terms applies to corresponding linguistic or grammatical variations or forms of these various terms. It will also be understood that the invention is not limited to the terminology used herein, or the descriptions thereof, for the description of particular embodiments. Merely by way of example, the invention is not limited to particular analytes, bodily or tissue fluids, blood or capillary blood, or sensor constructs or usages, unless implicitly or explicitly understood or stated otherwise, as such may vary.

[00310] The publications discussed herein are provided solely for their disclosure prior to the filing date of the application. Nothing herein is to be construed as an admission that the embodiments of the invention are not entitled to antedate such publication by virtue of prior invention. Further, the dates of publication provided may be different from the actual publication dates which may need to be independently confirmed.

[00311] The detailed description of the figures refers to the accompanying drawings that illustrate an exemplary embodiment of an analyte measurement system. Other embodiments are possible. Modifications may be made to the embodiment described herein without departing from the spirit and scope of the present invention. Therefore, the following detailed description is not meant to be limiting.

[00312] Certain embodiments presented herein relate to electrical interfaces in measurement devices. Measurement devices often have electrical interfaces that allow them to electrically connect with another device or apparatus and perform an analysis of an analyte. A device that measures blood glucose levels, for example, includes electrical interfaces that allow the device to measure the blood glucose level from a small blood sample.

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CLAIMS

What is claimed is:

1. A diabetes management system, comprising:

a web-based system which includes connectivity to one or more personal devices used by one or more patients, wherein the personal devices include glucose meters, insulin pumps, cellular phones, PDA's, mobile devices, and/or personal computers

intermediate connecting devices which acquire glucose data periodically from a personal device and transfers the data to a server via a communication network; and

a secondary device managed by a health care provider to access information from the server.

2. A method for workflow automation in a diabetes management system, comprising:

retrieving automated logic inputs by uploading data from an analyte measurement device;

retrieving patient identification based on the device's serial number;

providing prompt to allow confirmation or correction of patient identification;

retrieving a current patient treatment based on the device's serial number;

providing a prompt to allow confirmation or correction of current patient treatment;

providing a prompt for entry of any recent test information;

conducting analysis logic process using retrieved inputs; and

providing a prompt to for entry of additional information that is not used as an input to the analysis logic.

3. The method of claim 2, further comprising:

providing an interactive display that includes results of the analysis, answers to one or more unguided questions, inputs that are useful to present to the HCP, and a standardized report.

4. The method of claim 3, further comprising:

displaying the results of the analysis in a color-coded fashion.

5. The method of claim 4, further comprising:

providing means to navigate to a report pertinent to a particular finding.

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6. The method of claim 5, further comprising:

displaying entry screen inputs for questions answered;

displaying entry screen inputs for selected treatment recommendations; and

displaying ad hoc questions answered and treatment recommendations.

7. The method of claim 6, further comprising:

preparing a treatment order based on the selected treatment recommendations, the results of the analysis, and HCP input.

8. A method for estimating the impact of glucose monitoring alarm adjustments on glycemic control, comprising:

retrospectively analyzing glucose data to estimate a potential improvement in glucose control if the high glucose alarm were adjusted lower; and

estimating the increased number of alarms that a patient may expect to have to manage.

9. The method of claim 8, further comprising:

iteratively lowering a theoretical high glucose alarm threshold.

10. The method of claim 9, wherein at each iteration, glucose values that exceed the high glucose alarm setting are replaced with the value of the high glucose alarm setting.

11. The method of claim 10, further comprising:

calculating an overall average glucose to estimate an improvement in glucose control that may be expected at a high glucose alarm setting.

12. The method of claim 11, wherein at each iteration of the high glucose alarm setting, at least two values are outputted: 1) estimated average glucose, and 2) estimated number of high glucose alarms.

13. The method of claim 12, further comprising:

normalizing the number of high glucose alarms across time.

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14. A computer-readable storage medium, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to create a glucose response simulation based on a glucose response model defined for a diabetes patient, wherein the simulation is based on recorded inputs of prior glucose readings, meals, insulin injection, or other recorded factors that may impact glucose response.

15. A computer-readable storage medium, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to create a non-parametric model that simulates a statistical characteristics of a patient's glucose variability.

16. A computer-readable storage medium, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to create a database of various actual glucose responses based on various alarm settings and patient glucose control characteristics.

17. A diabetes management method, comprising:

retrieving stored data associated with diabetes management for a specific patient, wherein said stored data includes glucose readings, insulin delivery data, or meal data.;

analyzing the data based on one or more predefined conditions; and

for each condition detected, outputting a specific graphical report that best demonstrates that condition.

18. A diabetes management method comprising:

retrieving stored data associated with diabetes management for a specific patient, wherein said stored data includes glucose readings, insulin delivery data, or meal data;

analyzing the data based on one or more pre-defined conditions;

for the pre-defined highest priority condition detected, outputting a specific graphical report that best demonstrates that condition;

providing a graphical means for a user to select any lower priority conditions detected; and

outputting a corresponding specific graphical report that best demonstrates that condition.

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19. A method for identifying episodes of glucose measurements, comprising:

defining episodes using clinical criteria;

collecting details about one or more episodes;

identifying episodes over monitoring period;

allocating episodes over monitoring period;

identifying patterns using statistical criteria; and

reporting findings.

20. A method, comprising:

displaying a chart having median glucose as a first axis and glucose variability as a second axis; and

displaying an identifier on the chart corresponding to a median glucose value and a glucose variability value for sample data from a first patient, wherein the identifier represents a state of glucose control for the first patient.

21. The method of claim 20, wherein glucose variability is defined by the difference between the median glucose value and a predetermined percentile value of glucose.

22. The method of claim 21, wherein the predetermined percentage value is 10 percent.

23. The method of any of claims 20-22, comprising:

displaying a graphical overlay representing a chronic clinical risk on the chart, wherein the graphical overlay derived representing retinopathy risk is based on eAG and median glucose values for a population of patients.

24. The method of claim 23, wherein the chronic clinical risk is retinopathy risk.

25. The method of claim 24, comprising:

displaying a graphical overlay representing an acute risk on the chart, wherein the graphical overlay representing acute risk of hypoglycemia comprises one or more lines of hypoglycemia occurrences per a given time period.

26. The method of claim 25, wherein the acute risk is a risk of hypoglycemia.

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27. The method of claim 26, comprising:

directing patient treatment based on the position of the identifier representing the state of glucose control for the first patient with respect to the graphical overlays for retinopathy risk and/or acute risk of hypoglycemia.

28. The method of any of claims 20-27, comprising:

displaying a graphical overlay for one or more clinical risks on the chart, wherein the graphical overly of the one or more clinical risks is associated with one or more axis of the chart.

29. The method of any of claims 20-28, comprising:

determining lines of constant hypoglycemia rates, wherein the lines of constant hypoglycemia rates are based on a number of occurrences of hypoglycemia per a given time period.

30. The method of claim 29, wherein the lines of constant hypoglycemia rates are determined from a number of occurrences of hypoglycemia per a given time period for a sample population of patients.

31. The method of claim 29 or 30, wherein the lines of constant hypoglycemia rates are parallel approximations.

32. The method of any of claims 29-31, comprising:

determining a threshold line of constant hypoglycemia rate; and

displaying a hypoglycemia risk zone having a border line on the threshold line of constant hypoglycemia rate.

33. The method of claim 32, comprising:

determining a target A1c level corresponding to a median glucose value; and

displaying a target zone defined by the target A1c level and the border line of the hypoglycemia risk zone.

34. The method of claim 33, comprising:

displaying a buffer zone along the border line and adjacent the target zone; and

defining the remaining area of the chart as a fourth zone.

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35. The method of claim 34, comprising:

directing treatment of the first patient based on the position of the identifier representing the state of glucose control for the first patient with respect to the hypoglycemia risk zone, target zone, buffer zone, and/or fourth zone.

36. The method of any of claims 33-35, comprising:

directing treatment of the first patient based on the position of the identifier representing the state of glucose control for the first patient with respect to the hypoglycemia risk zone and/or the target zone.

37. The method of any of claims 20-36, wherein the identifier representing the state of glucose control for the first patient is calculated from the sample data.

38. The method of any of claims 20-37, wherein the identifier representing the state of glucose control for the first patient is calculated from fitting the sample data to a probability distribution.

39. The method of claim 38, wherein the probability distribution is a gamma probability distribution.

40. The method of any of claims 20-39, wherein the identifier comprises a bootstrap point cloud.

41. The method of claim 40, comprising:

defining a treatment recommendation point based on a predetermined threshold percentage value, wherein the predetermined threshold percentage value correlates to an acceptable probability threshold of being in a hypoglycemia risk zone on the chart.

42. The method of any of claims 20-41, wherein the identifier comprises a boundary line of a bootstrap point cloud.

43. The method of any of claims 20-42, wherein the identifier comprises contour plots of a probability distribution function for the state of glucose control for the first patient, wherein the contour plots represent uncertainty levels for the estimate.

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44. The method of claim 43, wherein the probability distribution function is based on a first testing schedule over a first time period.

45. The method of claim 44, comprising:

displaying a graphical overlay representing retinopathy risk on the chart, wherein the graphical overlay derived representing retinopathy risk is based on eAG and median glucose values for a population of patients; and

displaying a graphical overlay representing acute risk of hypoglycemia on the chart, wherein the graphical overlay representing acute risk of hypoglycemia comprises one or more lines of hypoglycemia occurrences per a given time period.

46. The method of claim 45, comprising:

directing patient treatment based on a comparison of the contour lines with respect to the graphical overlays for retinopathy risk and/or acute risk of hypoglycemia.

47. The method of claim 45 or 46, comprising:

directing patient treatment to a second testing schedule based on a comparison of the contour lines with respect to the graphical overlays for retinopathy risk and/or acute risk of hypoglycemia.

48. The method of any of claims 44-47, wherein the first testing schedule is a self-monitored blood glucose (SMBG) testing schedule.

49. The method of any of claims 43-48, wherein contour plots are associated with one or more clinical risks.

50. The method of claim 49, wherein the one or more clinical risks comprises retinopathy risk and/or acute risk of hypoglycemia.

51. The method of claim 49 or 50, wherein different SMBG testing schedules are collected, and wherein for each schedule, the contour plots are computed a priori from population data.

52. The method of claim 51, wherein the population data is comprised of CGM values or SMBG data taken every 15 minutes or faster.

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53. The method of claim 51, wherein the population data is obtained from human studies wearing CGM systems.

54. The method of claim 51, wherein the population data is obtained from in-silico human models representing a wide range of demographics and/or state of diabetes.

55. The method of any of claims 51-54, wherein the contour plots from the population data is projected along the gradient of a particular clinical risk.

56. The method of claim 51, wherein adequate and inadequate areas in the glucose control chart are identified for each combination of SMBG testing schedule and clinical risk.

57. The method of claim 56, comprising:

identifying the areas of inadequacy on the chart.

58. The method of claim 49, comprising:

recommending a SMBG testing schedule specific to a latest state of glucose control for the first patient.

59. The method of claim 58, comprising:

identifying adequate and inadequate areas in the chart; and

determining whether initial data under the recommended SMBG testing schedule falls within the adequate or the inadequate area.

60. The method of claim 49, comprising:

identifying adequate and inadequate areas in the chart; and

recommending a SMBG testing schedule to position a next predicted state of glucose control in the adequate area.

61. A computer-readable storage medium, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to:

display a chart having median glucose as a first axis and glucose variability as a second axis; and

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display an identifier on the chart corresponding to a median glucose value and a glucose variability value for sample data from a first patient, wherein the identifier represents a state of glucose control for the first patient.

62. The computer-readable storage medium of claim 61, wherein glucose variability is defined by the difference between the median glucose value and a predetermined percentile value of glucose.

63. The computer-readable storage medium of claim 62, wherein the predetermined percentage value is 10 percent.

64. The computer-readable storage medium of any of claims 61-63, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to display a graphical overlay representing retinopathy risk on the chart, wherein the graphical overlay derived representing retinopathy risk is based on eAG and median glucose values for a population of patients.

65. The computer-readable storage medium of claim 64, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to display a graphical overlay representing acute risk of hypoglycemia on the chart, wherein the graphical overlay representing acute risk of hypoglycemia comprises one or more lines of hypoglycemia occurrences per a given time period.

66. The computer-readable storage medium of claim 65, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to direct patient treatment based on the position of the identifier representing the state of glucose control for the first patient with respect to the graphical overlays for retinopathy risk and/or acute risk of hypoglycemia.

67. The computer-readable storage medium of any of claims 61-66, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to display a graphical overlay for one or more clinical risks on the chart, wherein the graphical overly of the one or more clinical risks is associated with one or more axis of the chart.

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68. The computer-readable storage medium of any of claims 61-67, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to determine lines of constant hypoglycemia rates, wherein the lines of constant hypoglycemia rates are based on a number of occurrences of hypoglycemia per a given time period.

69. The computer-readable storage medium of claim 68, wherein the lines of constant hypoglycemia rates are determined from a number of occurrences of hypoglycemia per a given time period for a sample population of patients.

70. The computer-readable storage medium of claim 68, wherein the lines of constant hypoglycemia rates are parallel approximations.

71. The computer-readable storage medium of any of claims 68-70, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to:

determine a threshold line of constant hypoglycemia rate; and

display a hypoglycemia risk zone having a border line on the threshold line of constant hypoglycemia rate.

72. The computer-readable storage medium of claim 71, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to:

determine a target A1c level corresponding to a median glucose value; and

display a target zone defined by the target A1c level and the border line of the hypoglycemia risk zone.

73. The computer-readable storage medium of claim 72, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to:

display a buffer zone along the border line and adjacent the target zone; and

define the remaining area of the chart as a fourth zone.

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74. The computer-readable storage medium of claim 73, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to direct treatment of the first patient based on the position of the identifier representing the state of glucose control for the first patient with respect to the hypoglycemia risk zone, target zone, buffer zone, and/or fourth zone.

75. The computer-readable storage medium of claim 72, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to direct treatment of the first patient based on the position of the identifier representing the state of glucose control for the first patient with respect to the hypoglycemia risk zone and/or the target zone.

76. The computer-readable storage medium of any of claims 61-75, wherein the identifier representing the state of glucose control for the first patient is calculated from the sample data.

77. The computer-readable storage medium of any of claims 61-76, wherein the identifier representing the state of glucose control for the first patient is calculated from fitting the sample data to a probability distribution.

78. The computer-readable storage medium of claim 77, wherein the probability distribution is a gamma probability distribution.

79. The computer-readable storage medium of any of claims 61-78, wherein the identifier comprises a bootstrap point cloud.

80. The computer-readable storage medium of claim 79, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to define a treatment recommendation point based on a predetermined threshold percentage value, wherein the predetermined threshold percentage value correlates to an acceptable probability threshold of being in a hypoglycemia risk zone on the chart.

81. The computer-readable storage medium of any of claims 61-80, wherein the identifier comprises a boundary line of a bootstrap point cloud.

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82. The computer-readable storage medium of any of claims 61-81, wherein the identifier comprises contour plots of a probability distribution function for the state of glucose control for the first patient, wherein the contour plots represent uncertainty levels for the estimate.

83. The computer-readable storage medium of claim 82, wherein the probability distribution function is based on a first testing schedule over a first time period.

84. The computer-readable storage medium of claim 83, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to:

display a graphical overlay representing retinopathy risk on the chart, wherein the graphical overlay derived representing retinopathy risk is based on eAG and median glucose values for a population of patients; and

display a graphical overlay representing acute risk of hypoglycemia on the chart, wherein the graphical overlay representing acute risk of hypoglycemia comprises one or more lines of hypoglycemia occurrences per a given time period.

85. The computer-readable storage medium of claim 84, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to direct patient treatment based on a comparison of the contour lines with respect to the graphical overlays for retinopathy risk and/or acute risk of hypoglycemia.

86. The computer-readable storage medium of claim 84, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to direct patient treatment to a second testing schedule based on a comparison of the contour lines with respect to the graphical overlays for retinopathy risk and/or acute risk of hypoglycemia.

87. The computer-readable storage medium of claim 83, wherein the first testing schedule is a self-monitored blood glucose (SMBG) testing schedule.

88. The computer-readable storage medium of any of claims 82-87, wherein contour plots are associated with one or more clinical risks.

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89. The computer-readable storage medium of claim 88, wherein the one or more clinical risks comprises retinopathy risk and/or acute risk of hypoglycemia.

90. The computer-readable storage medium of claim 88, wherein different SMBG testing schedules are collected, and wherein for each schedule, the contour plots are computed a priori from population data.

91. The computer-readable storage medium of claim 90, wherein the population data is comprised of CGM values or SMBG data taken every 15 minutes of faster.

92. The computer-readable storage medium of claim 90 wherein the population data is obtained from human studies wearing CGM systems.

93. The computer-readable storage medium of claim 90, wherein the population data is obtained from in-silico human models representing a wide range of demographics and/or state of diabetes.

94. The computer-readable storage medium of claim 90, wherein the contour plots from the population data is projected along the gradient of a particular clinical risk.

95. The computer-readable storage medium of claim 90, wherein adequate and inadequate areas in the glucose control chart are identified for each combination of SMBG testing schedule and clinical risk.

96. The computer-readable storage medium of claim 95, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to identify the areas of inadequacy on the chart.

97. The computer-readable storage medium of any of claims 88-96, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to recommend a SMBG testing schedule specific to a latest state of glucose control for the first patient.

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98. The computer-readable storage medium of claim 97, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to identify adequate and inadequate areas in the chart; and

instructions executable by at least one processing device that, when executed, cause the processing device to determine whether initial data under the recommended SMBG testing schedule falls within the adequate or the inadequate area.

99. The computer-readable storage medium of any of claims 88-98, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to:

identify adequate and inadequate areas in the chart; and

recommend a SMBG testing schedule to position a next predicted state of glucose control in the adequate area.

100. A method of communicatively coupling an analyte monitoring device with a remote server via a computer, wherein a first program is stored on the computer and a second program is stored on the remote device, the method comprising:

running a first program on the computer in a background mode;

detecting an analyte monitoring device communicatively coupled to the computer;

receiving data from the analyte monitoring device;

invoking a second program on the remote server to upload the data to the remote server;

storing the uploaded data in a data file on the server;

providing the uploaded data for viewing with a web browser.

101. The method of claim 100, wherein the analyte monitoring device is a glucose monitoring device.

102. A computer-readable storage medium, comprising:

instructions executable by at least one processing device that, when executed, cause the processing device to:

run a first program on the data processing device in a background mode;

detect when an analyte monitoring device is communicatively coupled to the computer;

receive data from the analyte monitoring device;

invoke a second program on a remote server to upload the data to the remote server; and

communicate the data to the remote server.

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103. The computer-readable storage medium of claim 102, wherein the analyte monitoring device is a glucose monitoring device.

104. A method comprising:

receiving glucose data;

determining one or more metrics based on central tendency and variability;

determining one or more classifications represented by the one or more metrics, wherein the classifications are predetermined;

determining one or more recommendations associated with the determined classification.

105. The method of claim 104, wherein the determining of the one or more metrics comprises:

determining a first metric based on a central tendency of the glucose data; and

determining a second metric based on variability of the glucose data.

106. The method of claim 105, wherein the first metric is a median glucose value.

107. The method of any of claims 105-106, wherein the determining of the one or more metrics comprises:

determining a treatment recommendation point.

108. The method of any of claims 105-107, wherein the determining of the one or more metrics comprises:

determining a centroid.

109. The method of any of claims 104-108, wherein the one or more classification are selected from a fixed number of predetermined classification, and wherein the classifications comprise a classification for a chronic clinical health risk.

110. The method of claim 109, wherein the chronic clinical health risk is a risk for retinopathy.

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111. The method of any of claims 104-110, wherein the one or more classification are selected from a fixed number of predetermined classification, and wherein the classifications comprise a classification for an acute health risk.

112. The method of claim 111, wherein the acute health risk is a risk for retinopathy.

113. The method of any of claims 104-112, wherein at least one of the one or more metrics incorporates metric uncertainty.

114. The method of any of claims 104-113, wherein the one or more recommendations are displayed.

115. The method of any of claims 104-114, wherein the determining of one or more recommendations associated with the determined classification comprises detecting episodic patterns.

116. The method of any of claims 104-115, wherein the method is performed for a specific time period.

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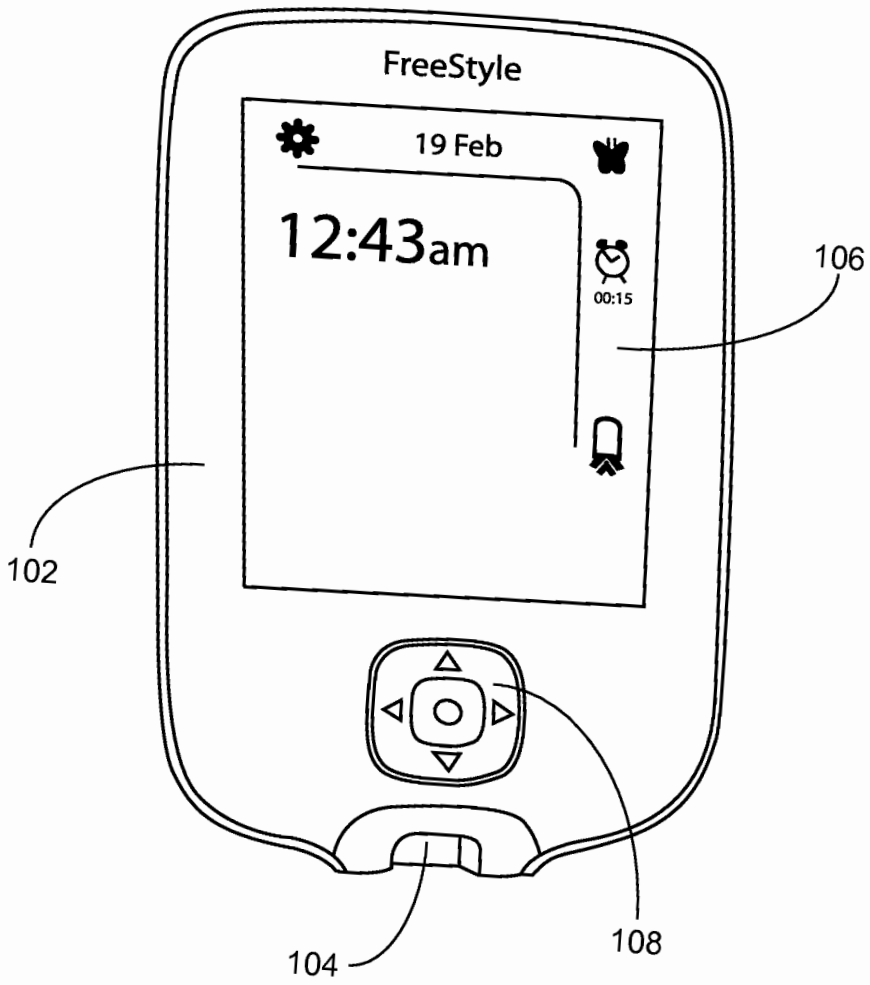


FIG. 1

4	Glucose control targets achieved for hypoglycemia, variability and mean glucose exposure.	
3	Reduce mean glucose exposure.	A. Both Day and Night above target. i. Day = Night ii. Night > Day iii. Day > Night
		B. Night only above target.
		C. Day only above target.
2	Reduce glucose volatility.	A. Both Day and Night above target.
		B. Night only above target.
		C. Day only above target.
1	Reduce hypoglycemia.	A. Both Day and Night above target.
		B. Night only above target.
		C. Day only above target.
0	Increase glucose monitoring.	Insufficient monitoring is available to assess control level.

FIG. 2

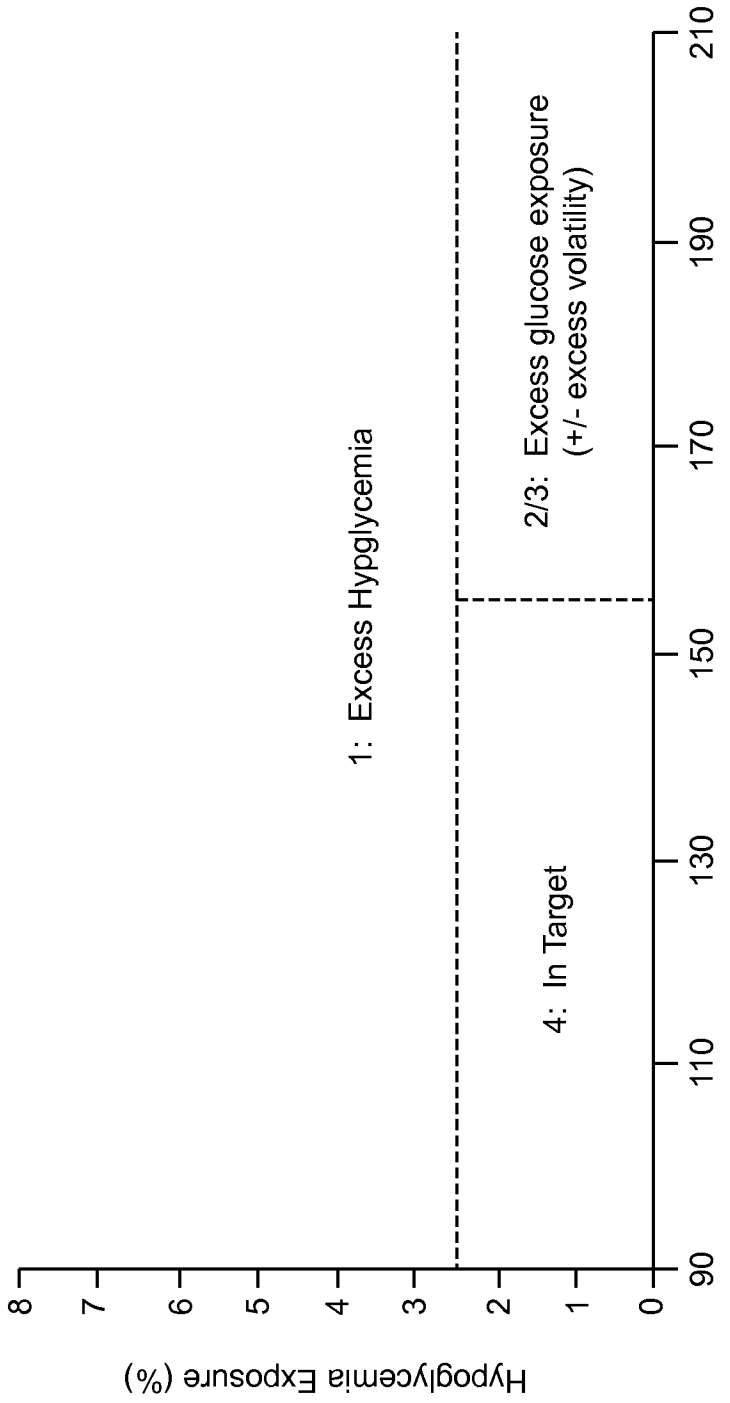

Hypoglycemia Exposure (%)
0
1
2
3
4
5
6
7
8
90
110
130
150
170
190
210
Mean Glucose Exposure (mg/dL)
1: Excess Hypglycemia
2/3: Excess glucose exposure
(+/- excess volatility)
4: In Target

FIG. 3

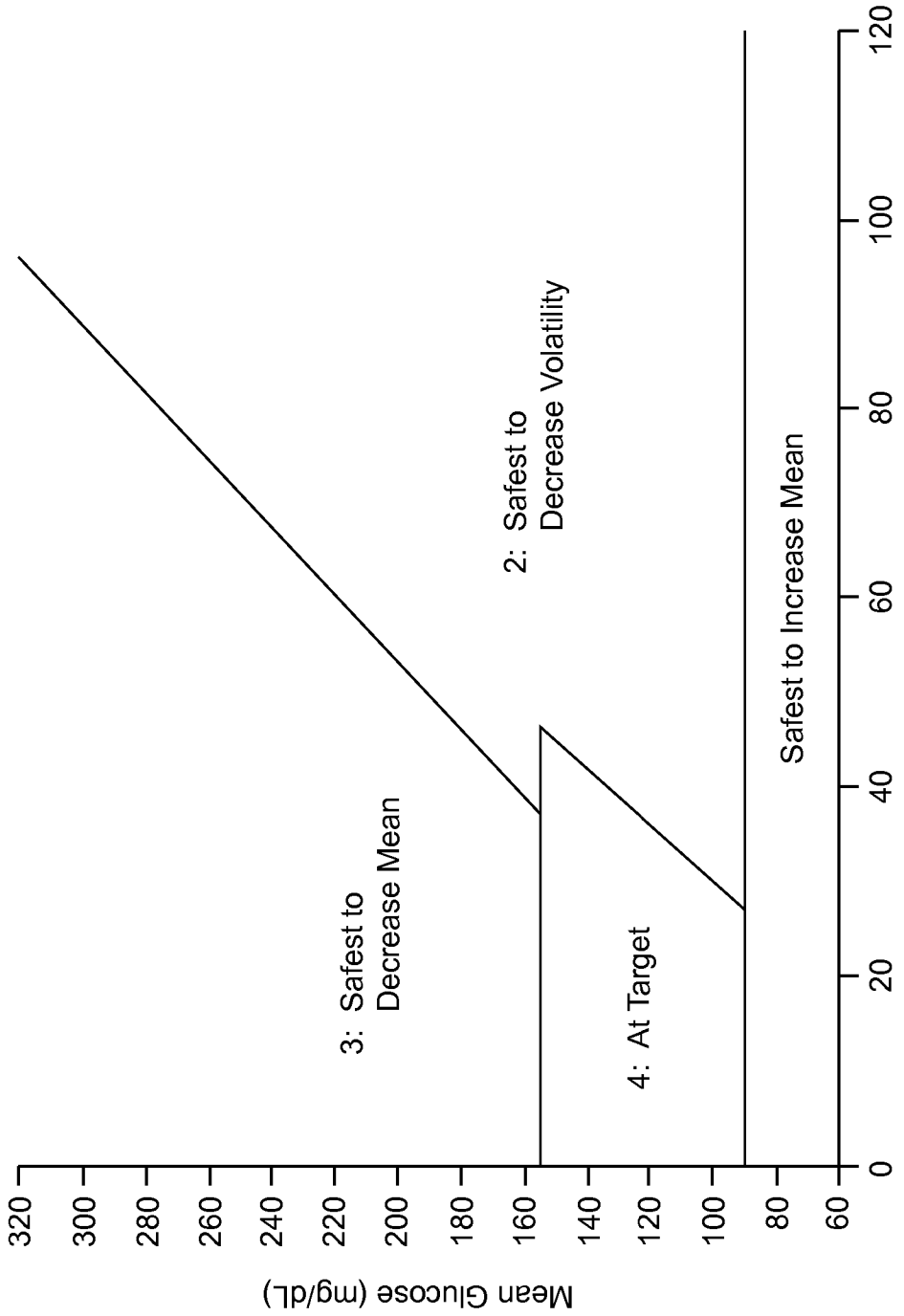

Mean Glucose (mg/dL)
320
300
280
260
240
220
200
180
160
140
120
100
80
60
0
20
40
60
80
100
120
Volatility (mg/dL)
3: Safest to Decrease Mean
2: Safest to Decrease Volatility
4: At Target
Safest to Increase Mean

FIG. 4

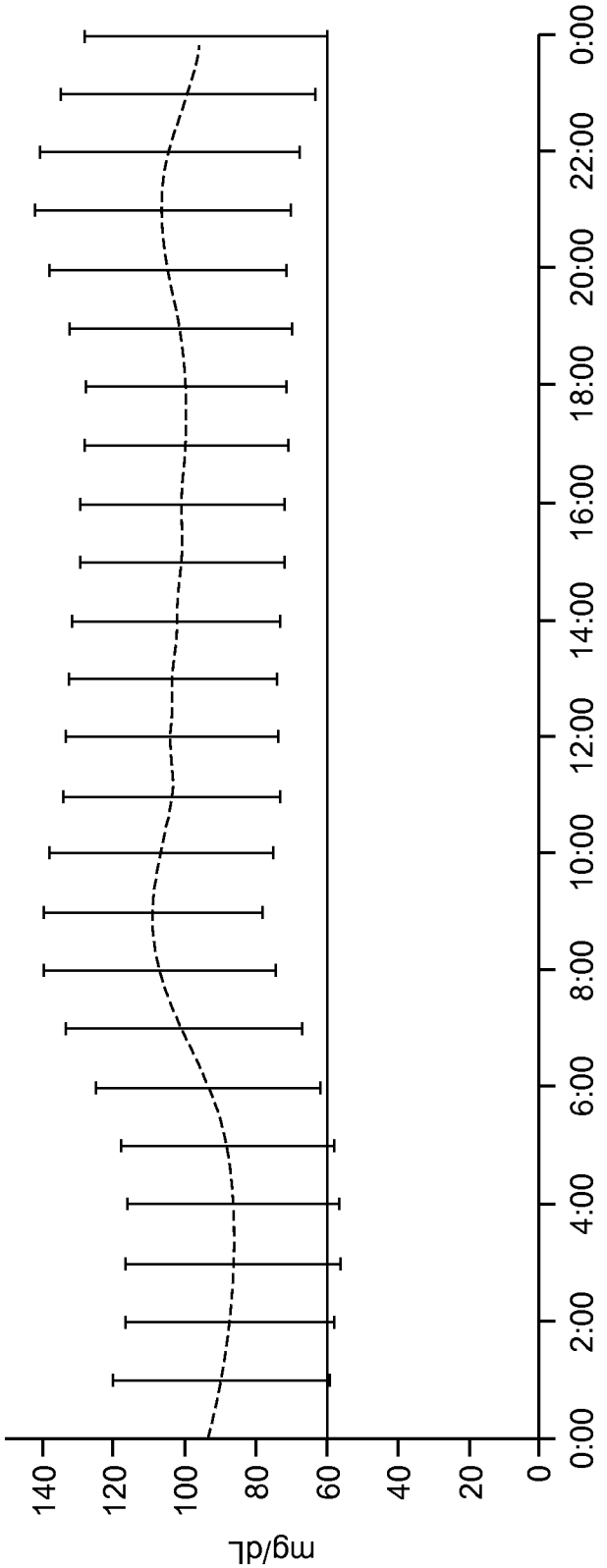

mg/dL
140
120
100
80
60
40
20
0
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
0:00

FIG. 5

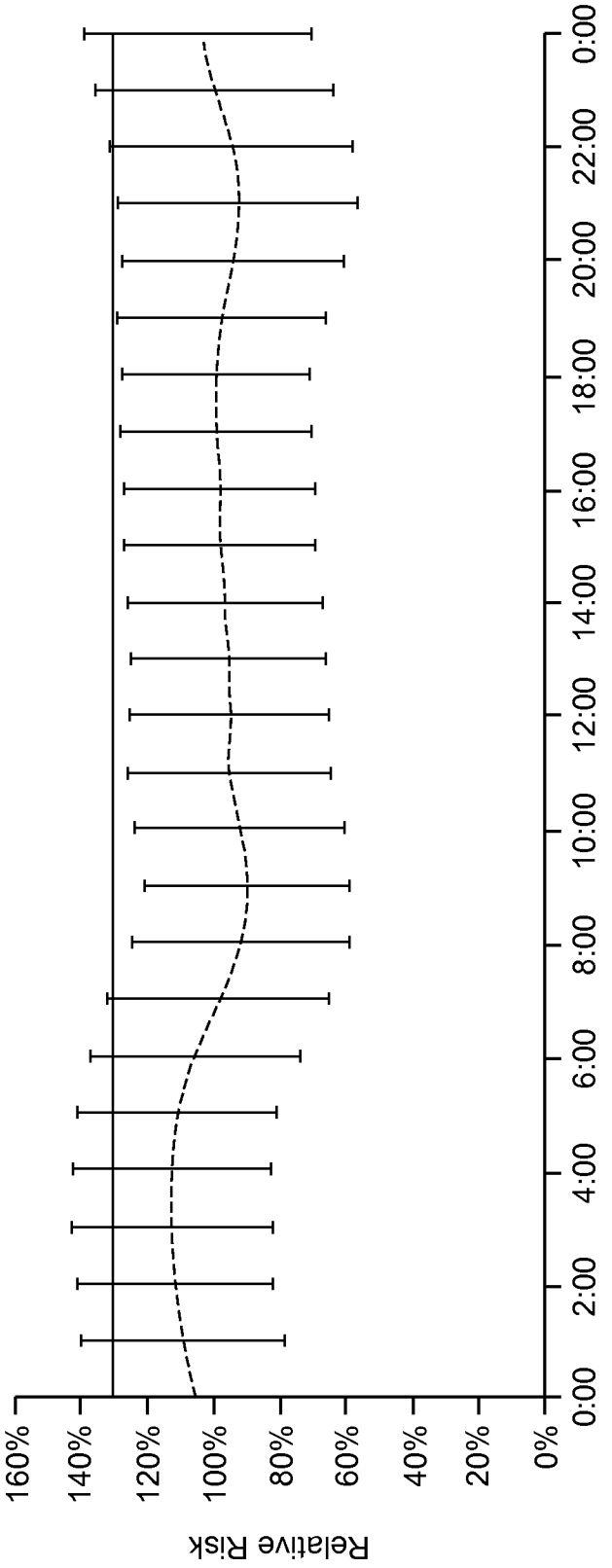
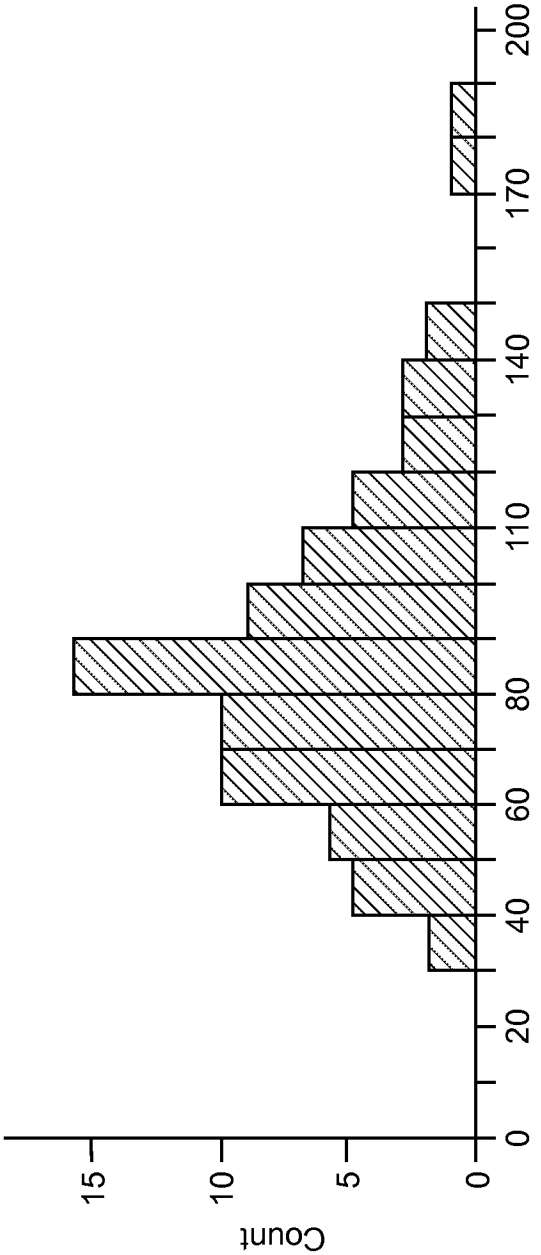

Relative Risk
160%
140%
120%
100%
80%
60%
40%
20%
0%
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
0:00

FIG. 6

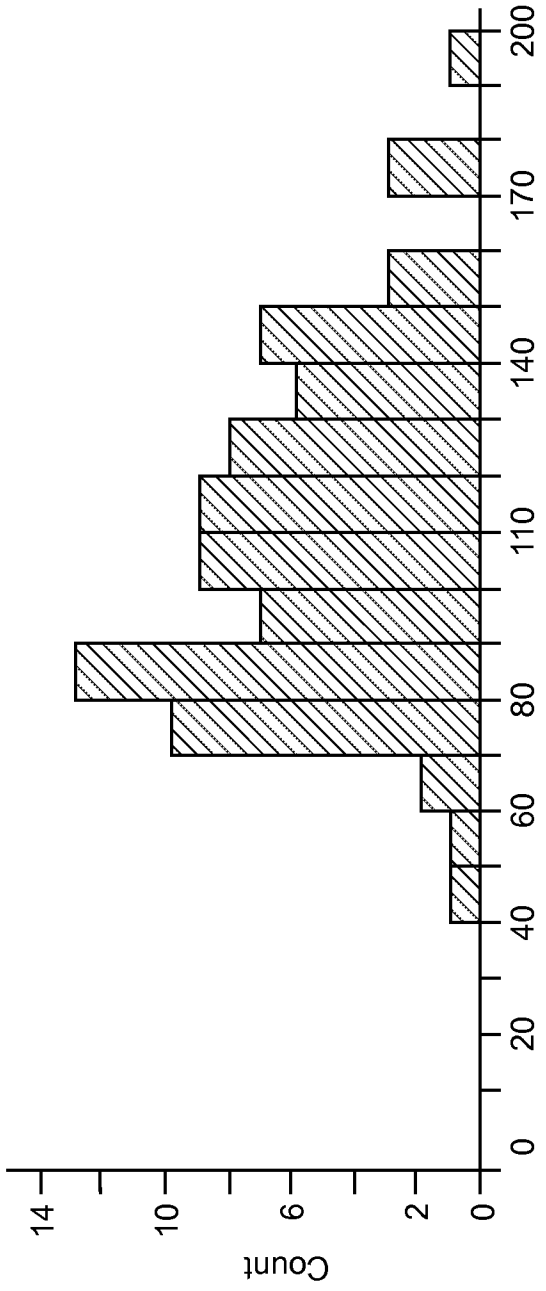


Quantiles	
100.0%	Maximum
99.5%	
97.5%	
90.0%	
75.0%	Quartile
50.0%	Median
25.0%	Quartile
10.0%	
2.5%	
0.5%	
0.0%	Minimum

Quantiles	
100.0%	180.00
99.5%	180.00
97.5%	176.27
90.0%	123.70
75.0%	103.25
50.0%	84.00
25.0%	67.25
10.0%	51.10
2.5%	33.23
0.5%	31.00
0.0%	31.00

Moments	
Mean	86.7625
Std Dev	29.794335
Std Err Mean	3.3311079
Upper 95% Mean	93.392904
Lower 95% Mean	80.132096
N	80

FIG. 7



Quantiles	
100.0%	Maximum
99.5%	
97.5%	
90.0%	
75.0%	Quartile
50.0%	Median
25.0%	Quartile
10.0%	
2.5%	
0.5%	
0.0%	Minimum

195.00	
195.00	
178.92	
147.90	
129.75	
106.00	
85.00	
73.10	
52.20	
46.00	
46.00	

Moments	
Mean	108.7625
Std Dev	30.780252
Std Err Mean	3.4413368
Upper 95% Mean	115.61231
Lower 95% Mean	101.91269
N	80

FIG. 8

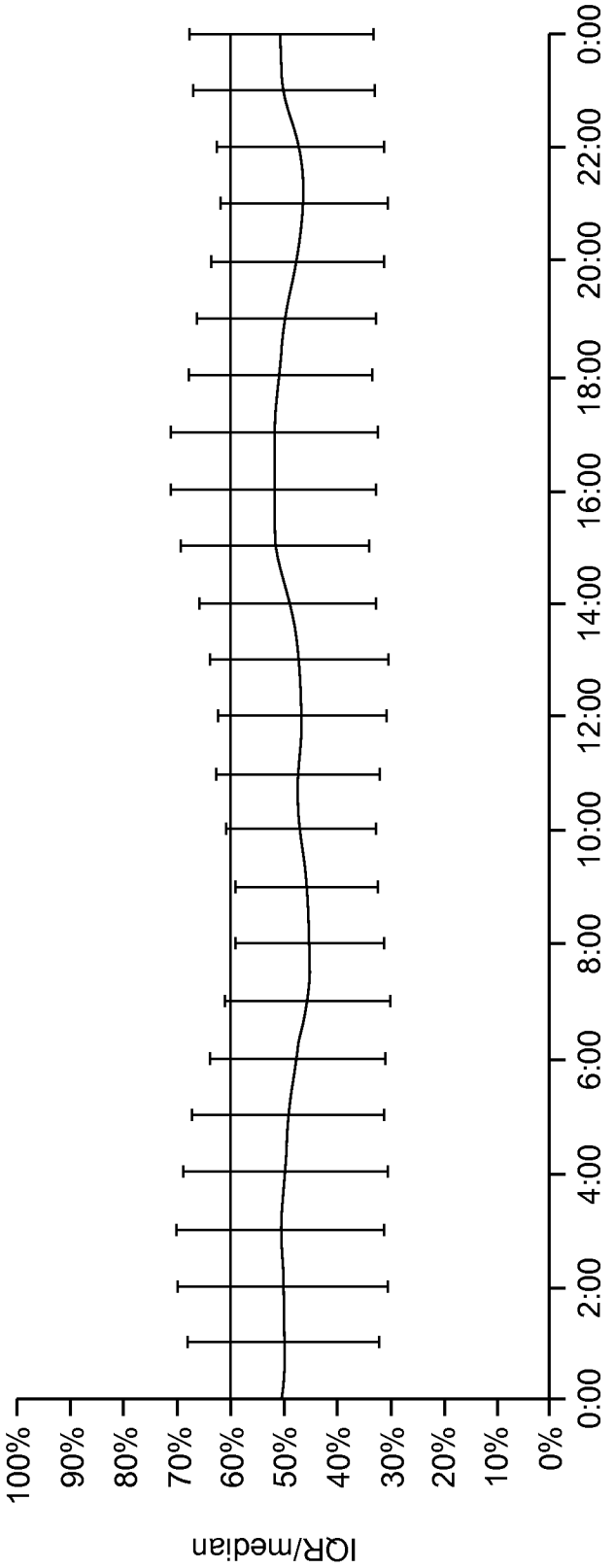
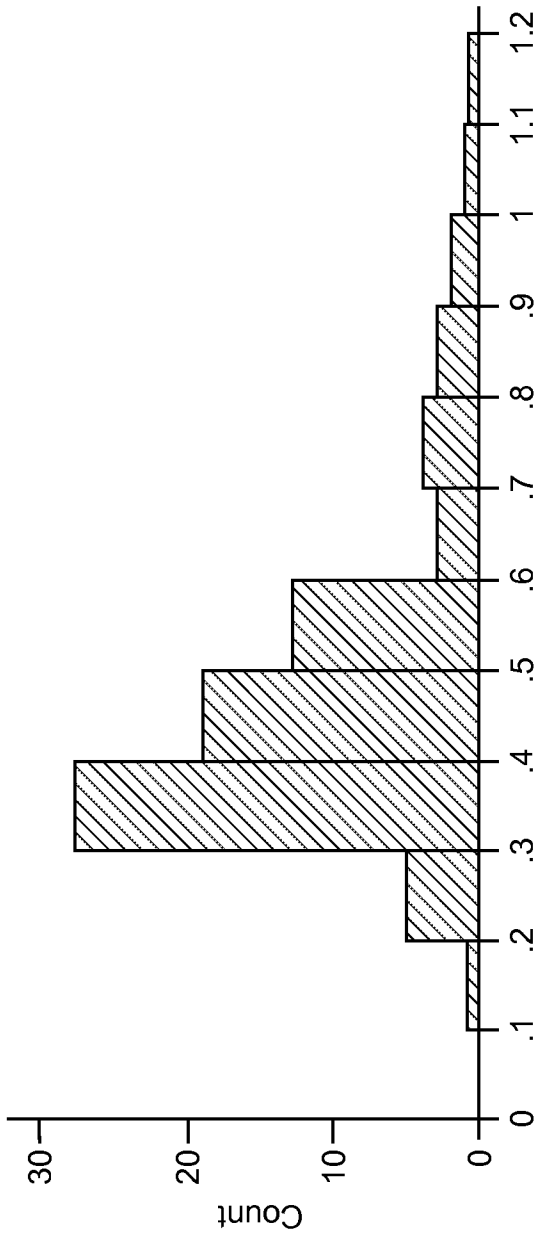

IQR/median
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
0:00

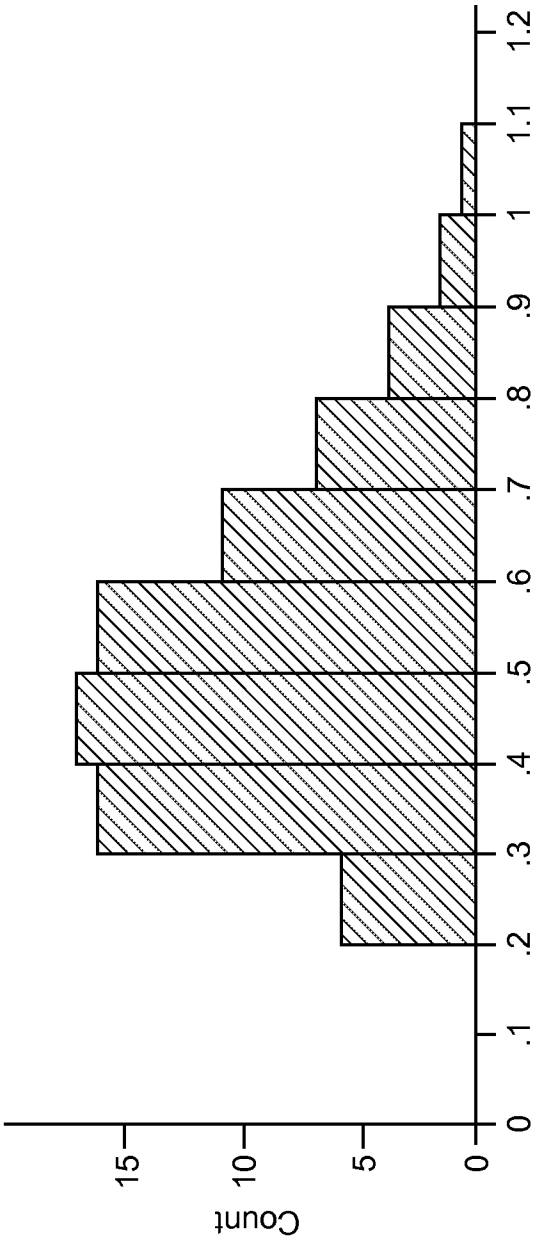
FIG. 9



Quantiles	
100.0%	Maximum 1.1121
99.5%	1.1121
97.5%	1.0144
90.0%	0.7790
75.0%	Quartile 0.5372
50.0%	Median 0.4264
25.0%	Quartile 0.3552
10.0%	0.3093
2.5%	0.2160
0.5%	0.1911
0.0%	Minimum 0.1911

Moments	
Mean	0.4785111
Std Dev	0.1874633
Std Err Mean	0.020959
Upper 95% Mean	0.520229
Lower 95% Mean	0.4367932
N	80

FIG. 10



Quantiles	
100.0%	Maximum 1.0373
99.5%	1.0373
97.5%	0.9651
90.0%	0.7976
75.0%	Quartile 0.6596
50.0%	Median 0.5033
25.0%	Quartile 0.3799
10.0%	0.3062
2.5%	0.2480
0.5%	0.2342
0.0%	Minimum 0.2342

Moments	
Mean	0.5287626
Std Dev	0.1808936
Std Err Mean	0.0202245
Upper 95% Mean	0.5690185
Lower 95% Mean	0.4885067
N	80

FIG. 11

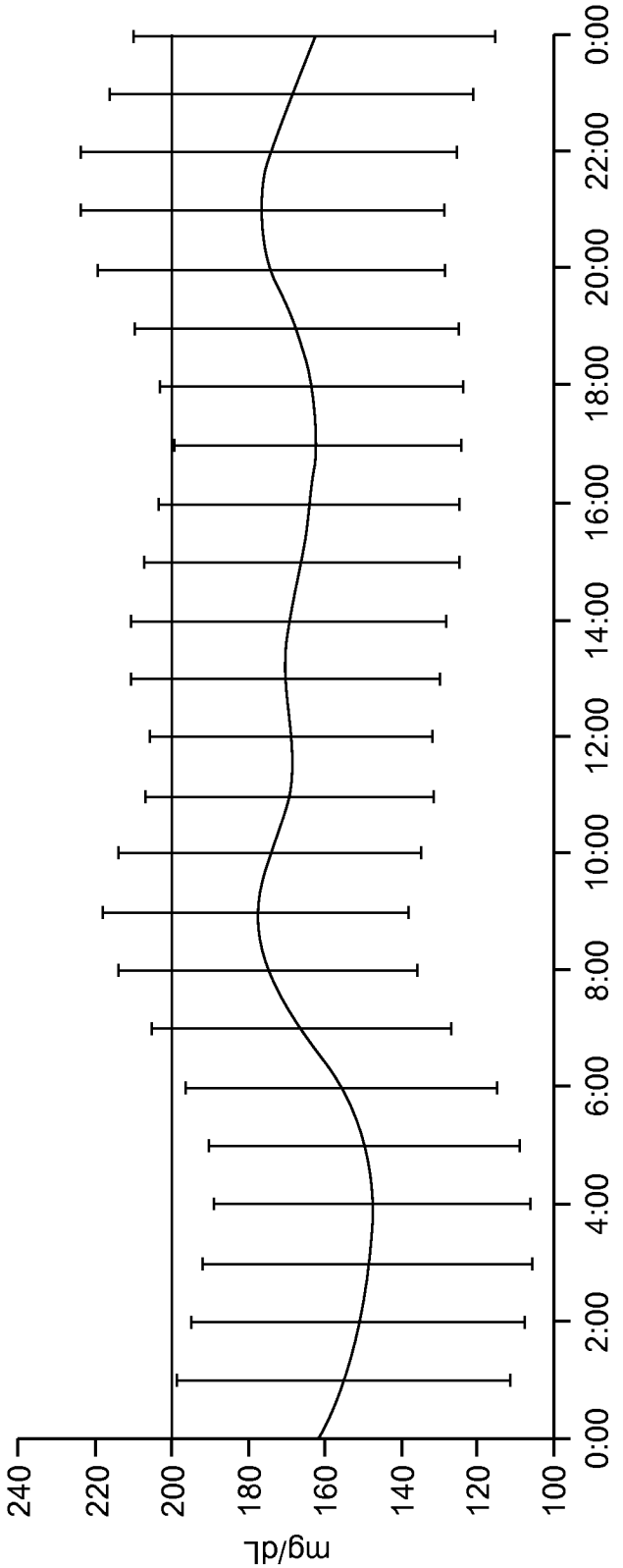
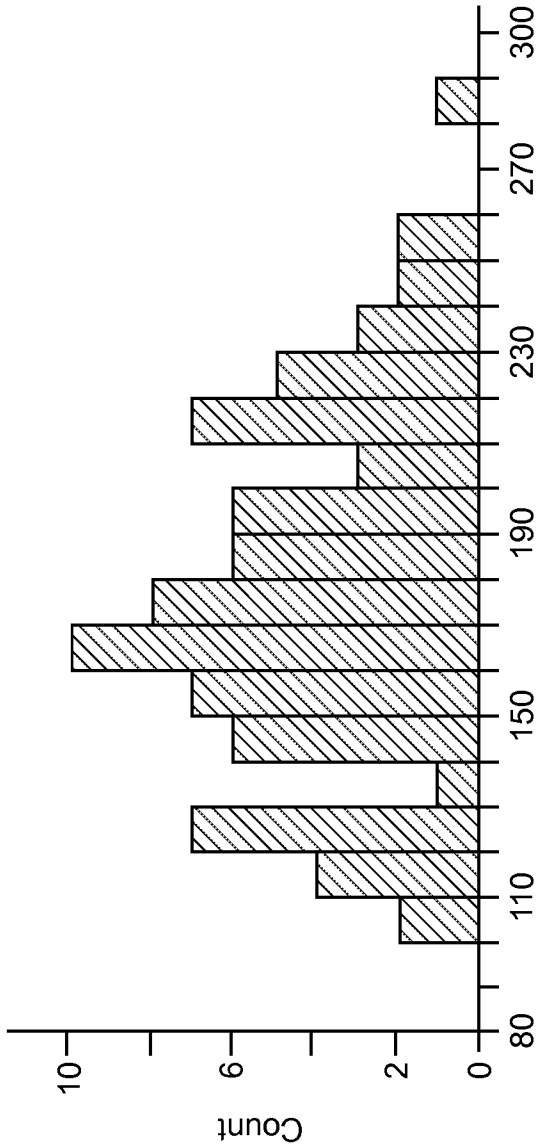

mg/dL
240
220
200
180
160
140
120
100
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
0:00

FIG. 12

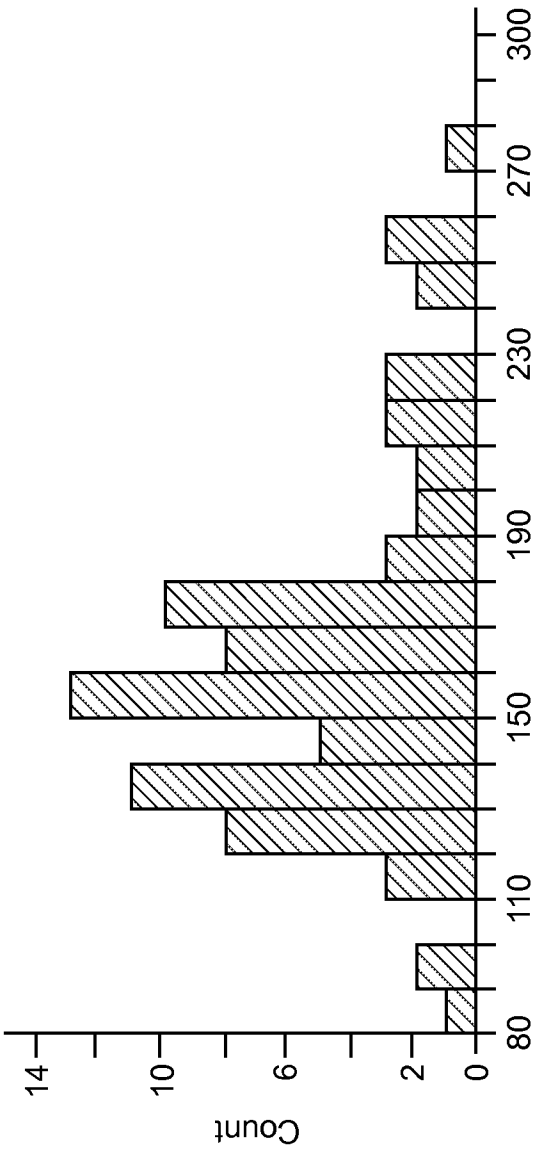


Quantiles	
100.0%	Maximum
99.5%	
97.5%	
90.0%	
75.0%	Quartile
50.0%	Median
25.0%	Quartile
10.0%	
2.5%	
0.5%	
0.0%	Minimum

283.00	
283.00	
255.85	
233.20	
209.75	
174.50	
149.00	
122.00	
105.28	
104.00	
104.00	

Moments	
Mean	177.1375
Std Dev	39.78701
Std Err Mean	4.448323
Upper 95% Mean	185.99167
Lower 95% Mean	168.28333
N	80

FIG. 13



Quantiles	
100.0%	Maximum
99.5%	
97.5%	
90.0%	
75.0%	Quartile
50.0%	Median
25.0%	Quartile
10.0%	
2.5%	
0.5%	
0.0%	Minimum

270.00	
270.00	
255.90	
222.00	
178.50	
156.00	
135.25	
124.20	
91.05	
86.00	
86.00	

Moments	
Mean	163.225
Std Dev	38.981325
Std Err Mean	4.3582446
Upper 95% Mean	171.89987
Lower 95% Mean	154.55013
N	80

FIG. 14

Assessment Schedule	Early Sleep 11pm-3am	Late Sleep 3am-7am	Morning 7am-11am	Midday 11am-4pm	Evening 4pm-11pm
Hypoglycemia	X	XX		X	
Volatility	X	XX			XX
Excess Exposure		X	XX		XX

X = Collect a measurement on 5 of 14 days.
XX = Collect a measurement on 10 of 14 days.

FIG. 15

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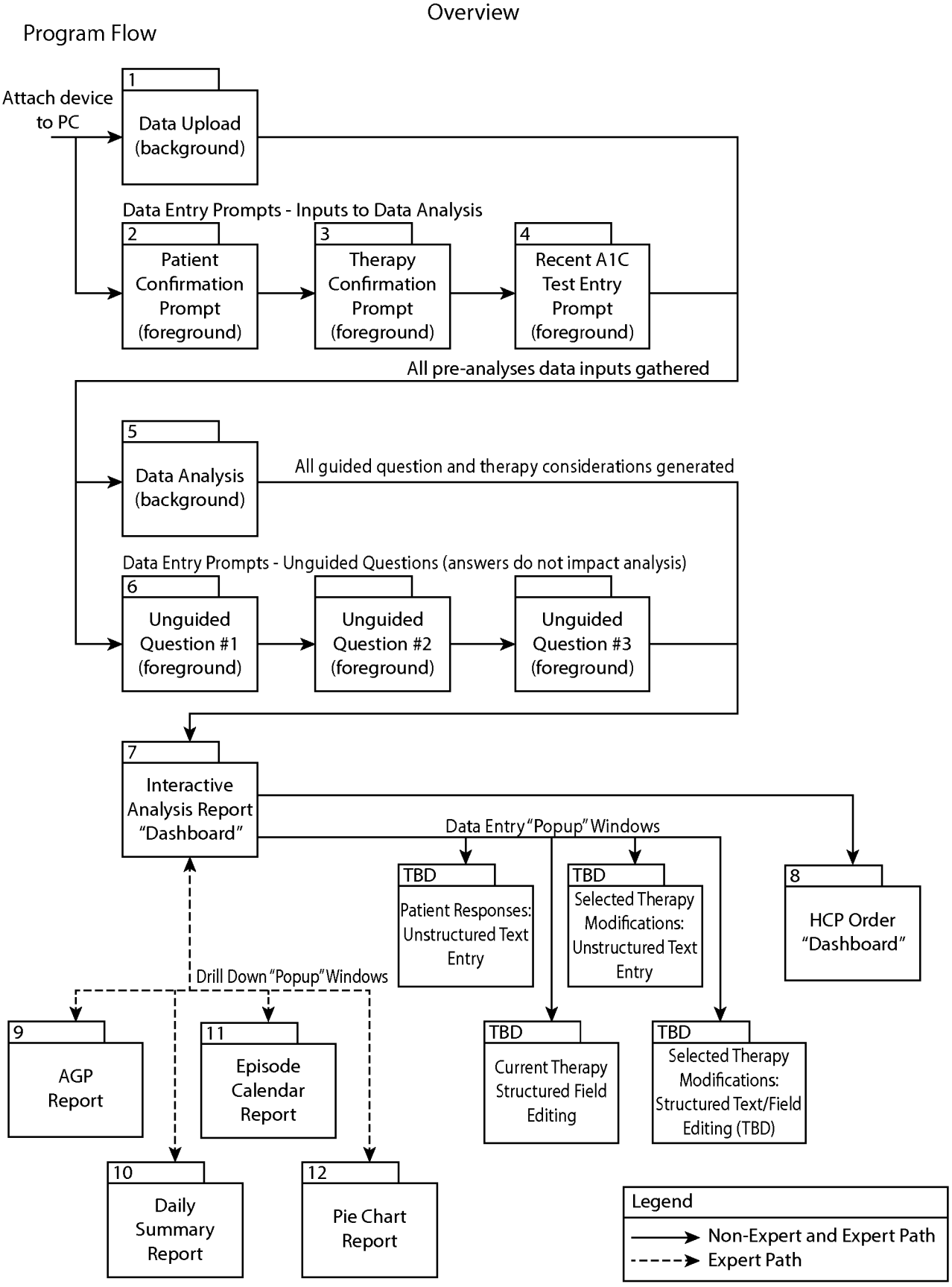

Overview
Program Flow
Attach device to PC
1
Data Upload (background)
Data Entry Prompts - Inputs to Data Analysis
2
Patient Confirmation Prompt (foreground)
3
Therapy Confirmation Prompt (foreground)
4
Recent A1C Test Entry Prompt (foreground)
All pre-analyses data inputs gathered
5
Data Analysis (background)
All guided question and therapy considerations generated
Data Entry Prompts - Unguided Questions (answers do not impact analysis)
6
Unguided Question #1 (foreground)
Unguided Question #2 (foreground)
Unguided Question #3 (foreground)
7
Interactive Analysis Report "Dashboard"
Data Entry "Popup" Windows
TBD
Patient Responses: Unstructured Text Entry
TBD
Selected Therapy Modifications: Unstructured Text Entry
8
HCP Order "Dashboard"
Drill Down "Popup" Windows
9
AGP Report
11
Episode Calendar Report
TBD
Current Therapy Structured Field Editing
TBD
Selected Therapy Modifications: Structured Text/Field Editing (TBD)
10
Daily Summary Report
12
Pie Chart Report
Legend
Non-Expert and Expert Path
Expert Path

FIG. 16

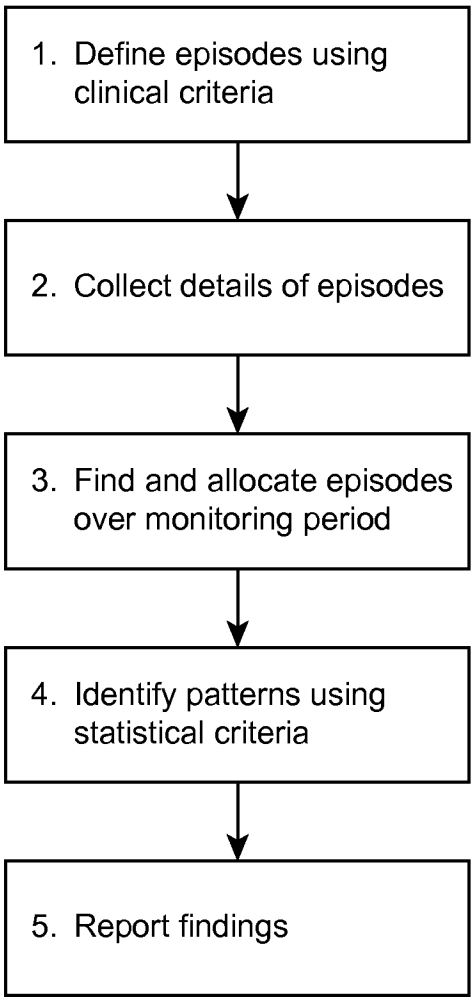

1. Define episodes using clinical criteria
2. Collect details of episodes
3. Find and allocate episodes over monitoring period
4. Identify patterns using statistical criteria
5. Report findings

FIG. 17

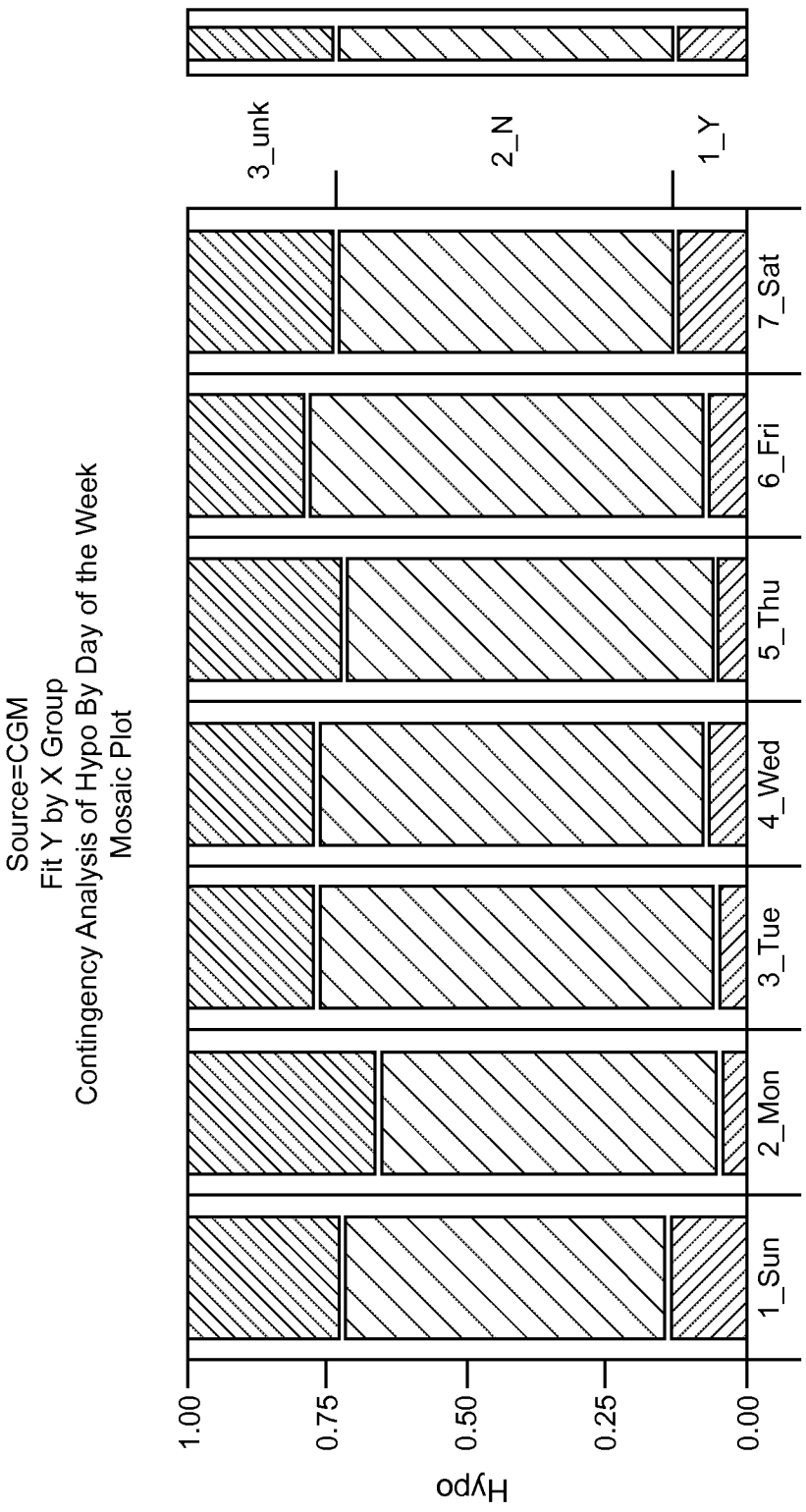

Source=CGM
Fit Y by X Group
Contingency Analysis of Hypo By Day of the Week
Mosaic Plot
Hypo
1.00
0.75
0.50
0.25
0.00
1_Sun
2_Mon
3_Tue
4_Wed
5_Thu
6_Fri
7_Sat
3_unk
2_N
1_Y

FIG. 18

Contingency Table
Day By Hypo

Count Total % Col % Row% Expected Deviation Cell Chi^2	1_Y	2_N	3_unk	
1_Sun	54	224	106	384
	2.05	8.48	4.02	14.55
	25.84	12.90	15.27	
	14.06	58.33	27.60	
	30.4	252.655	100.945	
	23.6	-28.655	5.05455	
	18.3211	3.2498	0.2531	
2_Mon	18	235	131	384
	0.068	8.90	4.96	14.55
	8.61	13.53	18.88	
	4.69	61.20	34.11	
	30.4	252.655	100.945	
	-12.4	-17.655	30.0545	
	5.05749	1.2336	8.9482	
3_Tue	19	257	84	360
	0.72	9.73	3.18	13.64
	9.09	14.80	12.10	
	5.28	71.39	23.33	
	28.5	236.864	94.6364	
	-9.5	20.1364	-10.636	
	3.1667	1.7118	1.1954	
4_Wed	24	254	85	360
	0.91	9.62	3.11	13.64
	11.48	14.62	11.82	
	6.67	70.56	22.78	
	28.5	236.864	94.6364	
	-4.5	17.1364	-12.636	
	0.7105	1.2398	1.6873	
5_Thu	20	256	108	384
	0.76	9.70	4.09	14.55
	9.57	14.74	15.56	
	5.21	6.667	28.13	
	30.4	252.655	100.945	
	-10.4	3.34545	7.05455	
	3.5579	0.0443	0.4930	
6_Fri	26	276	82	384
	0.98	10.45	3.11	14.55
	12.44	15.89	11.82	
	6.77	71.88	21.35	
	30.4	252.655	100.945	
	-4.4	23.3455	-18.945	
	0.6368	2.1571	3.5557	
7_Sat	48	235	101	384
	1.82	8.90	3.83	14.55
	22.97	13.53	14.55	
	12.50	61.20	26.30	
	30.4	252.655	100.945	
	17.6	-17.655	0.05455	
	10.1895	1.2336	0.0000	
	209	1737	694	2640
	7.92	65.80	26.29	

Tests

Source	DF	-LogLike	Rsquare (U)
Model	12	32.5673	0.0149
Error	2626	2151.8676	
C. Total	2638	2184.4349	
N	2640		

Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	65.135	<0001
Pearson	68.643	<0001

FIG. 19

(sorting is based 1st of Deviation, then on chi-squared)

Day	Expect Hypo Rate (count)	Observed Hypo Rate (count)	Deviation	Chi-squared
1_Sun	30.4	54	23.6	18.3211
7_Sat	30.4	48	17.6	10.1895
6_Fri	30.4	26	-4.4	0.6368
4_Wed	28.5	24	-4.5	0.7105
3_Tue	28.5	19	-9.5	3.1667
5_Thu	30.4	20	-10.4	3.5579
2_Mon	30.4	18	-12.4	5.0579

FIG. 20

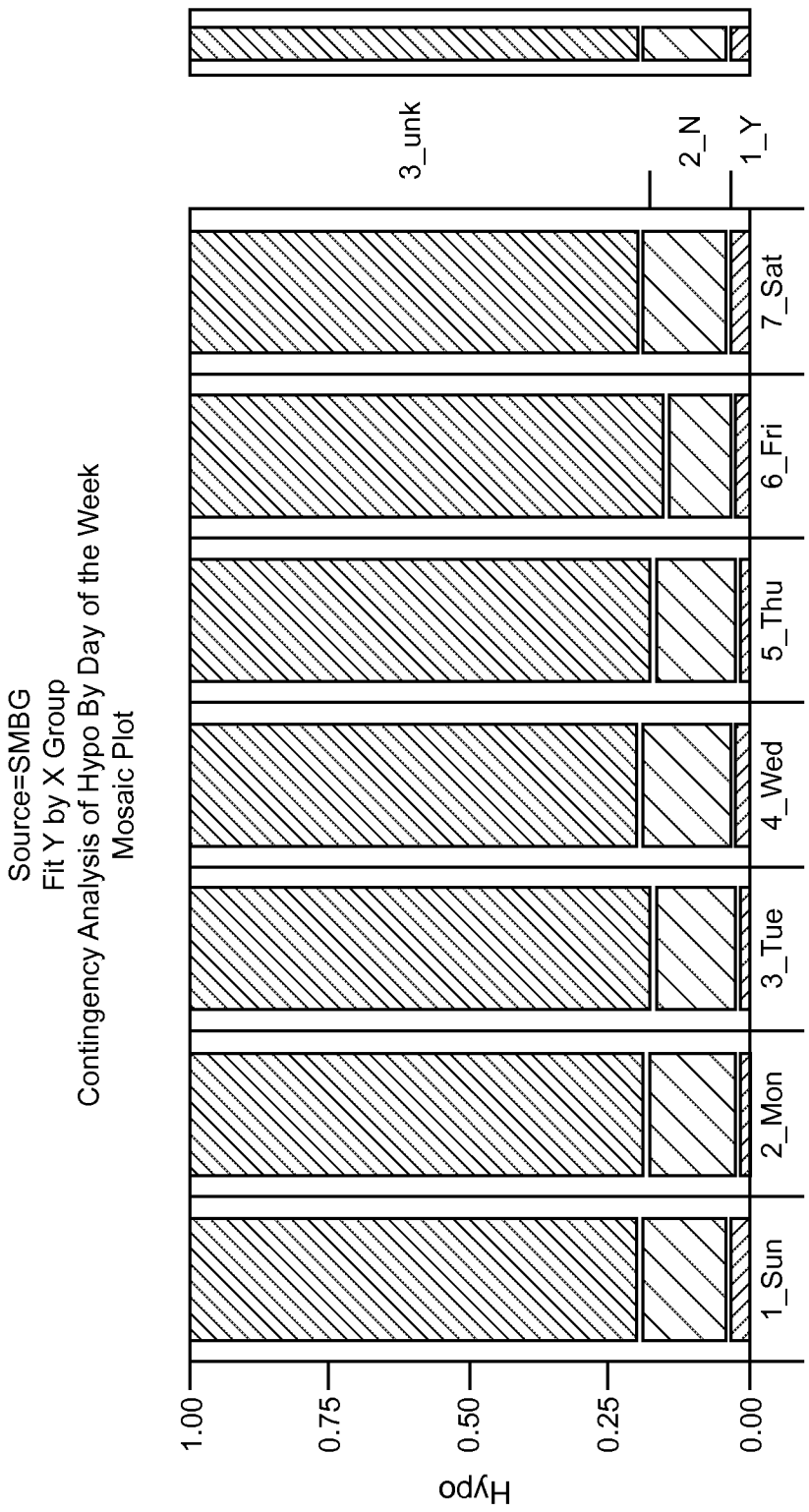

Source=SMBG
Fit Y by X Group
Contingency Analysis of Hypo By Day of the Week
Mosaic Plot
Hypo
1.00
0.75
0.50
0.25
0.00
1_Sun
2_Mon
3_Tue
4_Wed
5_Thu
6_Fri
7_Sat
1_Y
2_N
3_unk

FIG. 21

Contingency Table
Day By Hypo

Count Total % Col % Row% Expected Deviation Cell Chi^2	1_Y	2_N	3_unk	
1 Sunday	13	43	328	384
	0.49	1.63	12.42	14.55
	26.53	13.61	14.42	
	3.39	11.20	85.42	
	7.12727	45.9636	330.909	
	5.87273	-2.9636	-2.9091	
	4.8390	0.1911	0.0256	
2 Monday	4	48	332	384
	0.15	1.82	12.58	14.55
	8.16	15.19	14.59	
	1.04	12.50	86.46	
	7.12727	45.9636	330.909	
	-3.1273	2.03636	1.09091	
	1.3722	0.0902	0.0036	
3 Tuesday	6	41	313	360
	0.23	1.55	11.86	13.64
	12.24	12.97	13.76	
	1.67	11.39	86.94	
	6.68182	43.0909	310.227	
	-0.6818	-2.0909	2.77273	
	0.0696	0.1015	0.0248	
4 Wednesday	7	49	304	360
	0.27	1.86	11.52	13.64
	14.29	15.51	13.36	
	1.94	13.61	84.44	
	6.68182	43.0909	310.227	
	0.31818	5.90909	-6.2273	
	0.0152	0.8103	0.1250	
5 Thursday	3	47	334	384
	0.11	1.78	12.65	14.55
	6.12	14.87	14.68	
	0.78	12.24	86.98	
	7.12727	45.9636	330.909	
	-4.1273	1.03636	3.09091	
	2.3900	0.0234	0.0289	
6 Friday	5	39	340	384
	0.19	1.48	12.88	14.55
	10.20	12.34	14.95	
	1.30	10.16	88.54	
	7.12727	45.9636	330.909	
	-2.1273	-6.9636	9.09091	
	0.6349	1.0550	0.2498	
7 Saturday	11	49	324	384
	0.42	1.86	12.27	14.55
	22.45	15.51	14.24	
	2.86	12.76	84.38	
	7.12727	459636	330.909	
	3.87273	3.03636	-6.9091	
	2.1043	0.2006	0.1443	
	49	316	2275	2640
	1.86	11.97	86.17	

Tests

Source	DF	-LogLike	Rsquare (U)
Model	12	7.1361	0.0059
Error	2626	1197.5325	
C. Total	2638	1204.6687	
N	2640		

Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	14.272	0.2837
Pearson	14.499	0.2700

FIG. 22

Table 1: Episodes detected for a patient for 4 calendar days.

Episode Type	Day	Start	End	Lowest Value	Duration	CGM Alarm?	Source
Rise	Saturday	11/04/2006 08:56	11/04/2006 09:26	118	30	Yes	CGM
Fall	Saturday	11/04/2006 09:56	11/04/2006 10:36	173	40	Yes	CGM
Rise	Saturday	11/04/2006 10:36	11/04/2006 12:06	68	90	Yes	CGM
High	Saturday	11/04/2006 11:41	11/04/2006 11:41	223	0	Yes	SMBG
Fall	Saturday	11/04/2006 12:06	11/04/2006 13:26	218	80	Yes	CGM
Rise	Saturday	11/04/2006 13:26	11/04/2006 14:06	54	40	Yes	CGM
Fall	Saturday	11/04/2006 14:06	11/04/2006 15:06	153	60	Yes	CGM
Rise	Saturday	11/04/2006 15:06	11/04/2006 16:26	74	80	Yes	CGM
Rise	Sunday	11/05/2006 06:57	11/05/2006 08:37	106	100	Yes	CGM
Fall	Sunday	11/05/2006 10:27	11/05/2006 11:57	184	90	Yes	CGM
Rise	Sunday	11/05/2006 11:57	11/05/2006 12:27	85	30	Yes	CGM
Rise	Sunday	11/05/2006 14:57	11/05/2006 16:07	125	70	Yes	CGM
Fall	Sunday	11/05/2006 17:27	11/05/2006 18:28	178	60	Yes	CGM
Rise	Monday	11/13/2006 21:16	11/13/2006 22:26	54	70	Yes	CGM
Low	Tuesday	11/14/2006 02:56	11/14/2006 04:46	46	110	Yes	CGM
Low	Tuesday	11/14/2006 05:56	11/14/2006 06:26	57	30	Yes	CGM
Low	Tuesday	11/14/2006 07:04	11/14/2006 07:04	60	0	Yes	SMBG
Rise	Tuesday	11/14/2006 07:16	11/14/2006 08:17	64	60	Yes	CGM
Rise	Tuesday	11/14/2006 12:57	11/14/2006 13:57	65	60	No	CGM

FIG. 23

Abbott Ex. 1002 - 606/834

Table 1: Episodes detected and allocated for a patient for 4 calendar days.

Episode Type	Allocation	Day	Start	End	Lowest Value	Duration	CGM Alarm?	Source
Rise	Initiator	Saturday	11/04/2006 08:56	11/04/2006 09:26	118	30	Yes	CGM
Fall	Follow-on	Saturday	11/04/2006 09:56	11/04/2006 10:36	173	40	Yes	CGM
Rise	Follow-on	Saturday	11/04/2006 10:36	11/04/2006 12:06	68	90	Yes	CGM
High	Follow-on	Saturday	11/04/2006 11:41	11/04/2006 11:41	223	0	Yes	SMBG
Fall	Follow-on	Saturday	11/04/2006 12:06	11/04/2006 13:26	218	80	Yes	CGM
Rise	Follow-on	Saturday	11/04/2006 13:26	11/04/2006 14:06	54	40	Yes	CGM
Fall	Follow-on	Saturday	11/04/2006 14:06	11/04/2006 15:06	153	60	Yes	CGM
Rise	Follow-on	Saturday	11/04/2006 15:06	11/04/2006 16:26	74	80	Yes	CGM
Rise	Initiator	Sunday	11/05/2006 06:57	11/05/2006 08:37	106	100	Yes	CGM
Fall	Follow-on	Sunday	11/05/2006 10:27	11/05/2006 11:57	184	90	Yes	CGM
Rise	Follow-on	Sunday	11/05/2006 11:57	11/05/2006 12:27	85	30	Yes	CGM
Rise	Follow-on	Sunday	11/05/2006 14:57	11/05/2006 16:07	125	70	Yes	CGM
Fall	Follow-on	Sunday	11/05/2006 17:27	11/05/2006 18:28	178	60	Yes	CGM
Rise	Initiator	Monday	11/13/2006 21:16	11/13/2006 22:26	54	70	Yes	CGM
Low	Follow-on	Tuesday	11/14/2006 02:56	11/14/2006 04:46	46	110	Yes	CGM
Low	Follow-on	Tuesday	11/14/2006 05:56	11/14/2006 06:26	57	30	Yes	CGM
Low	Follow-on	Tuesday	11/14/2006 07:04	11/14/2006 07:04	60	0	Yes	SMBG
Rise	Follow-on	Tuesday	11/14/2006 07:16	11/14/2006 08:17	64	60	Yes	CGM
Rise	Follow-on	Tuesday	11/14/2006 12:57	11/14/2006 13:57	65	60	No	CGM

FIG. 24

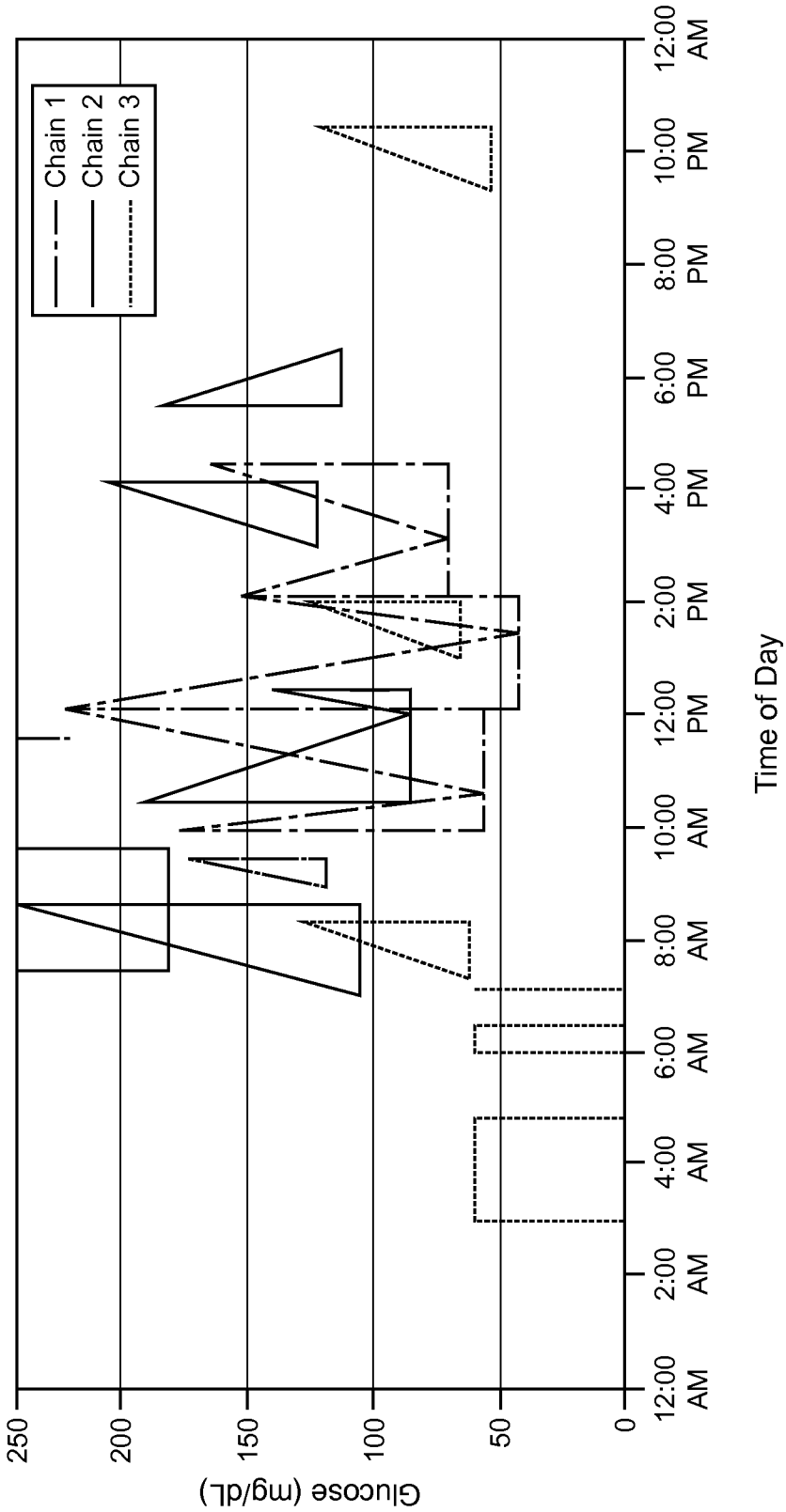

Chain 1
Chain 2
Chain 3
Glucose (mg/dL)
250
200
150
100
50
0
12:00 AM
2:00 AM
4:00 AM
6:00 AM
8:00 AM
10:00 AM
12:00 PM
2:00 PM
4:00 PM
6:00 PM
8:00 PM
10:00 PM
12:00 AM
Time of Day

FIG. 25

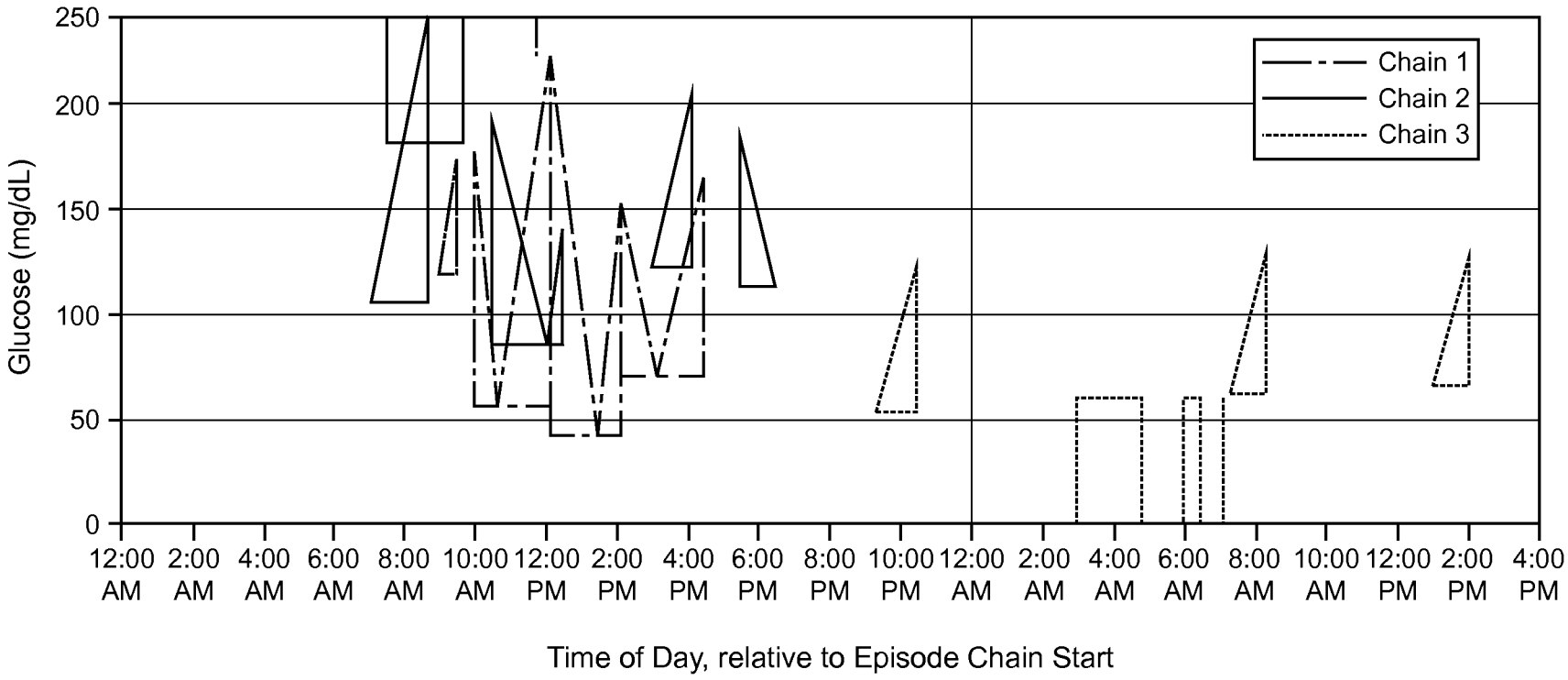
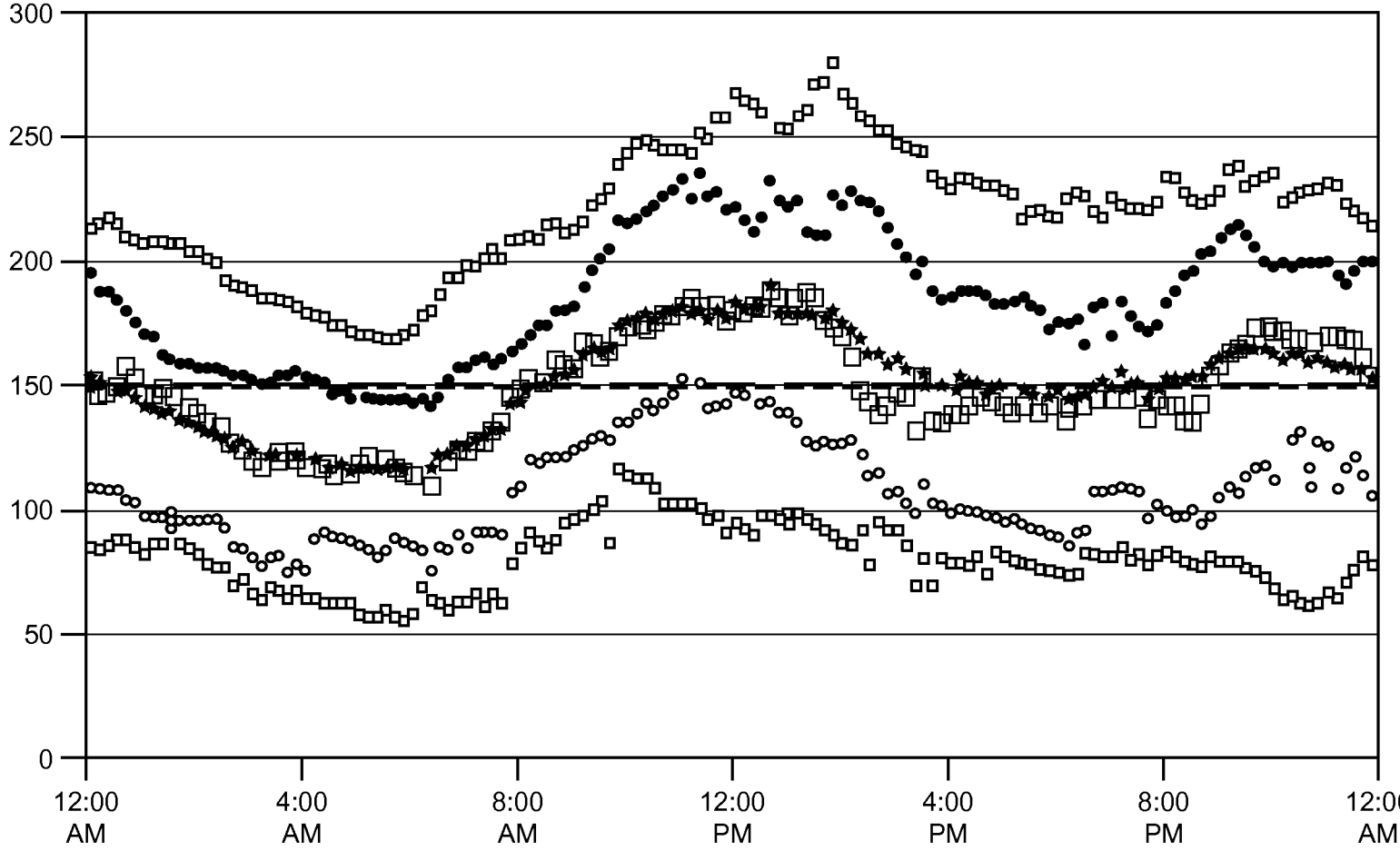


FIG. 26

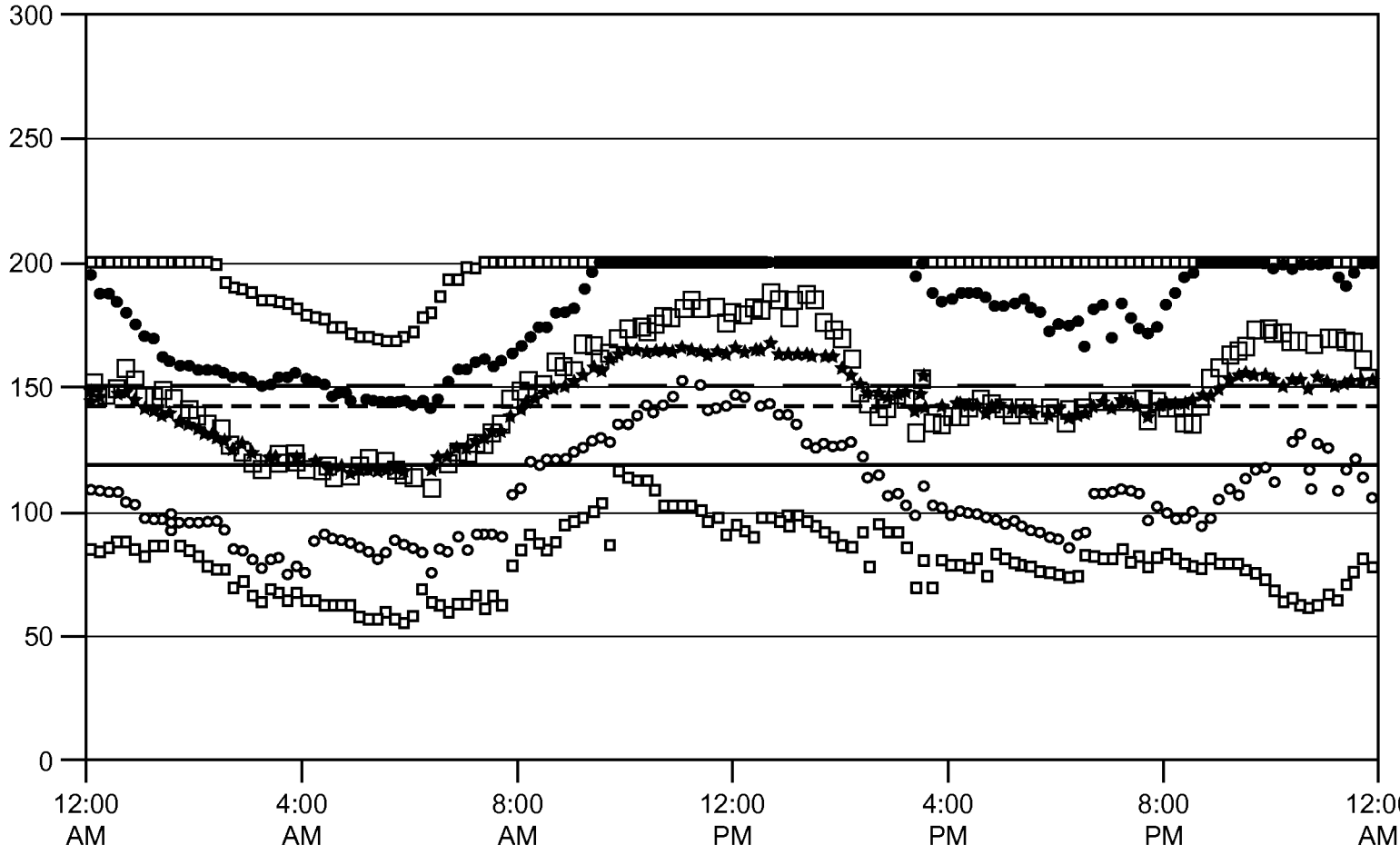
Abbott Ex. 1002 - 609/834



	Overall	12AM-5AM Fasting	5AM-9AM B	9AM-11AM PB	11AM-1PM L	1PM-4PM PL	4PM-7PM D	7PM-10PM PD	10PM-12AM Bedtime
N	*5021*	*1058*	*849*	*418*	*401*	*595*	*613*	*661*	*426*
Median	146	134	131	172	183	154	142	153	168
IQR	87	69	67	81	82	106	89	94	86
Avg	150	132	130	171	181	166	149	156	159
SD	61	47	50	57	63	66	65	67	62

FIG. 27

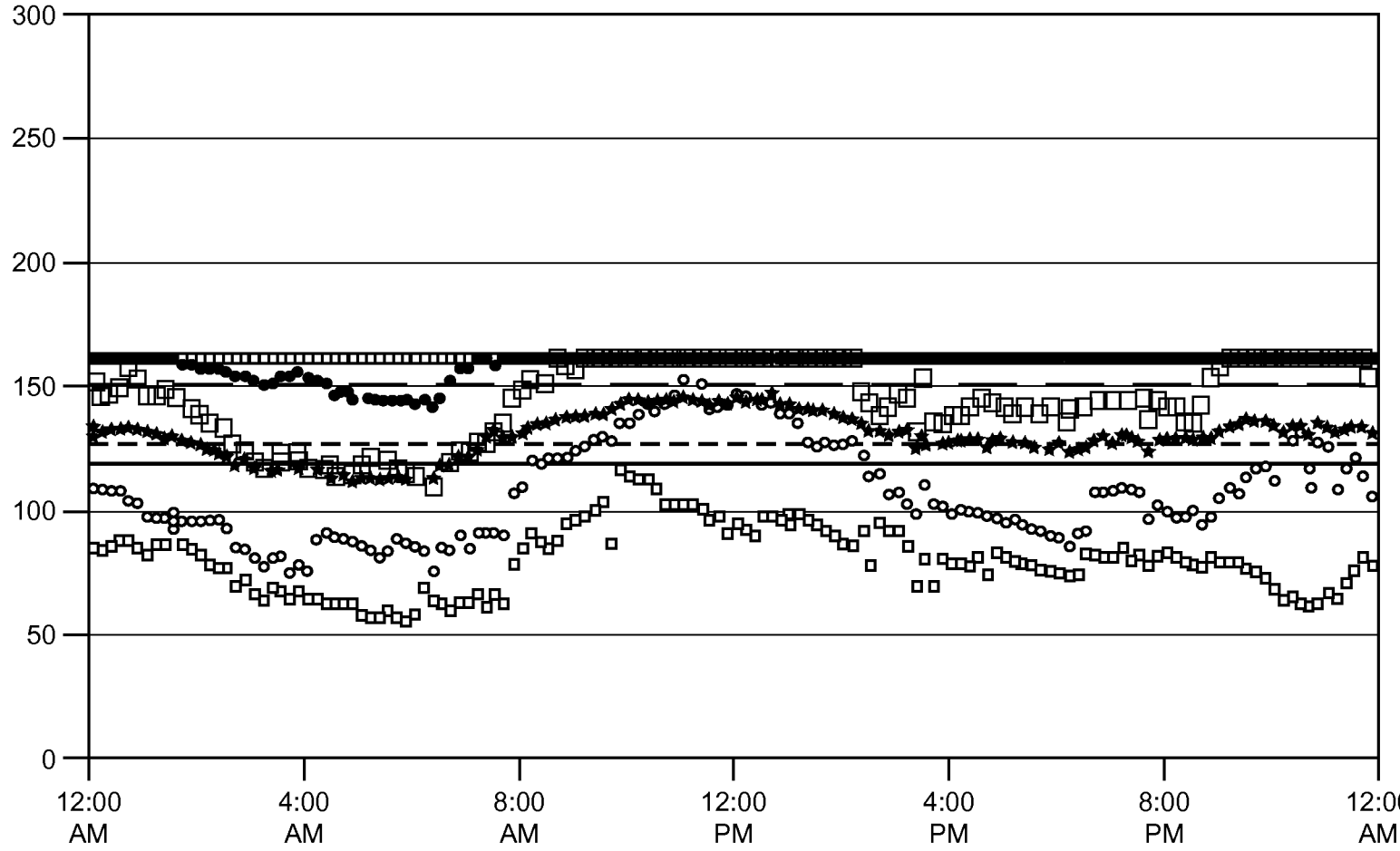
Abbott Ex. 1002 - 610/834



	Overall	12AM-5AM Fasting	5AM-9AM B	9AM-11AM PB	11AM-1PM L	1PM-4PM PL	4PM-7PM D	7PM-10PM PD	10PM-12AM Bedtime
N	*5021*	*1058*	*849*	*418*	*401*	*595*	*613*	*661*	*426*
Median	146	134	131	172	183	154	142	153	168
IQR	87	69	67	68	57	86	89	94	86
Avg	142	130	128	160	164	152	139	145	151
SD	47	44	45	41	43	46	47	47	50

FIG. 28

Abbott Ex. 1002 - 611/834



	Overall	12AM-5AM Fasting	5AM-9AM B	9AM-11AM PB	11AM-1PM L	1PM-4PM PL	4PM-7PM D	7PM-10PM PD	10PM-12AM Bedtime
N	*5021*	*1058*	*849*	*418*	*401*	*595*	*613*	*661*	*426*
Median	146	134	131	160	160	154	142	153	160
IQR	58	66	67	28	17	46	65	59	48
Avg	130	123	121	142	144	136	128	132	135
SD	35	35	37	28	29	31	35	34	37

FIG. 29

Abbott Ex. 1002 - 612/834

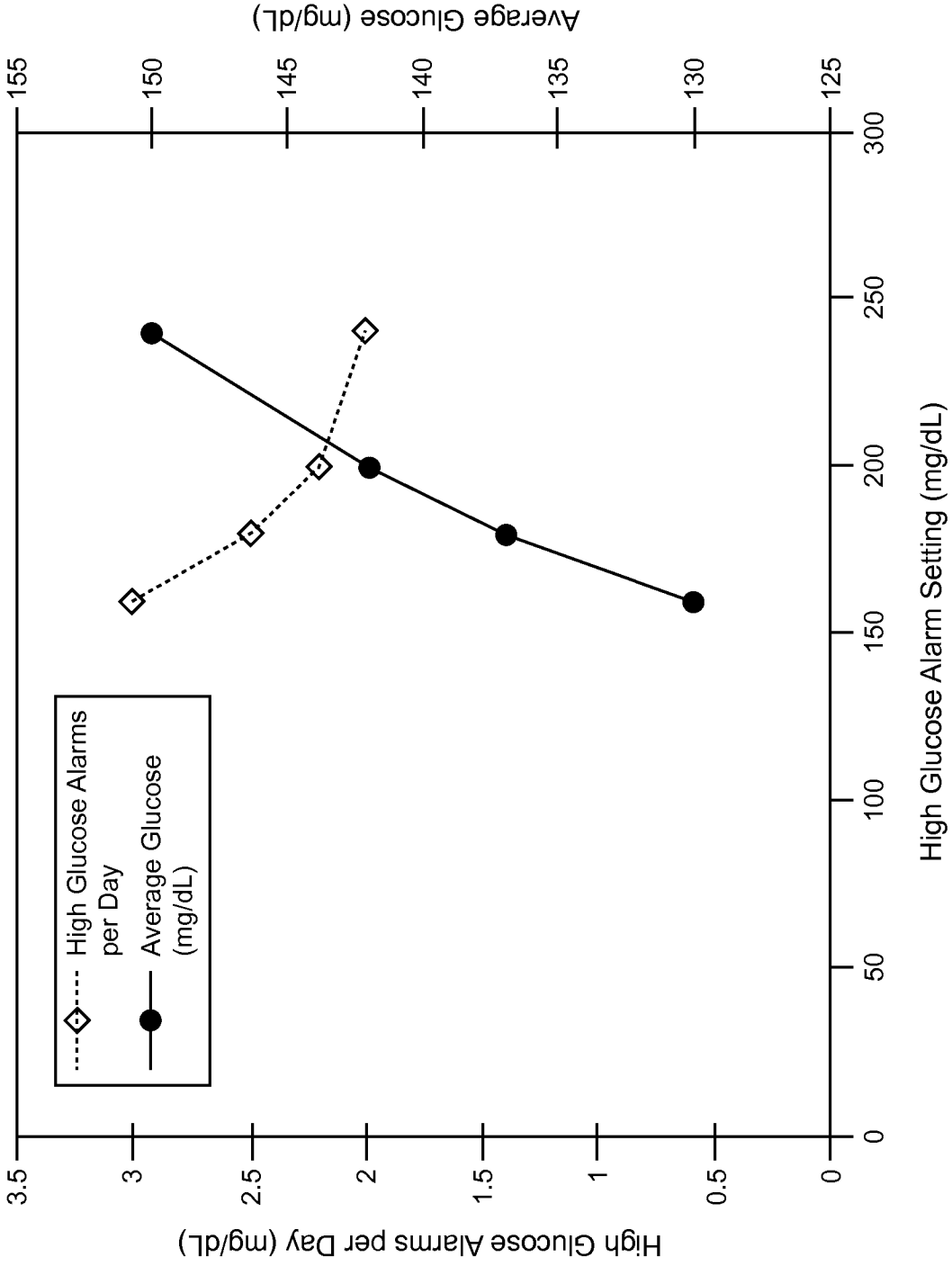

High Glucose Alarms per Day
Average Glucose (mg/dL)
High Glucose Alarms per Day (mg/dL)
Average Glucose (mg/dL)
High Glucose Alarm Setting (mg/dL)
0
0.5
1
1.5
2
2.5
3
3.5
125
130
135
140
145
150
155
0
50
100
150
200
250
300

FIG. 30

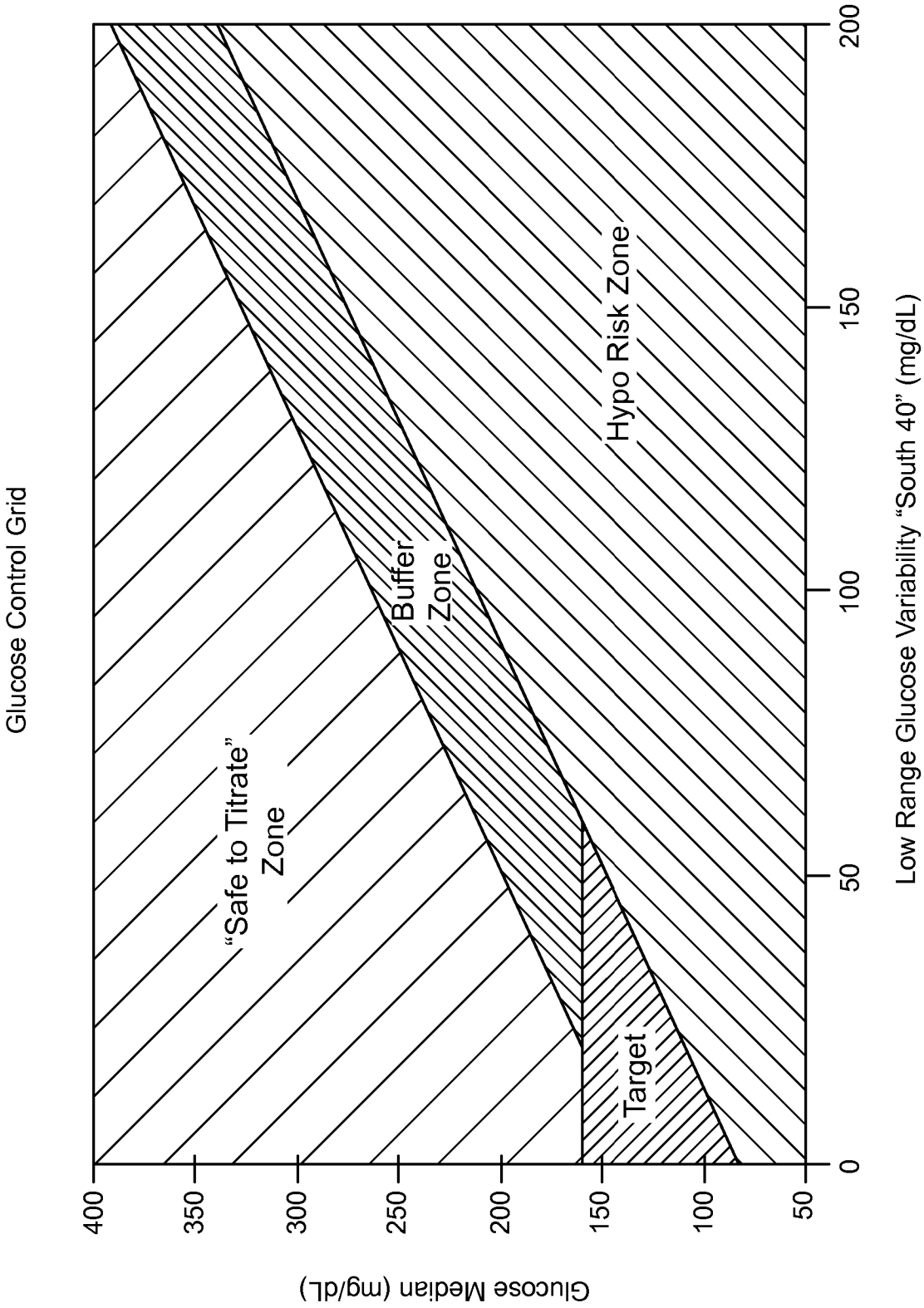

Glucose Control Grid
Glucose Median (mg/dL)
400
350
300
250
200
150
100
50
0
50
100
150
200
Low Range Glucose Variability "South 40" (mg/dL)
"Safe to Titrate" Zone
Buffer Zone
Hypo Risk Zone
Target

FIG. 31

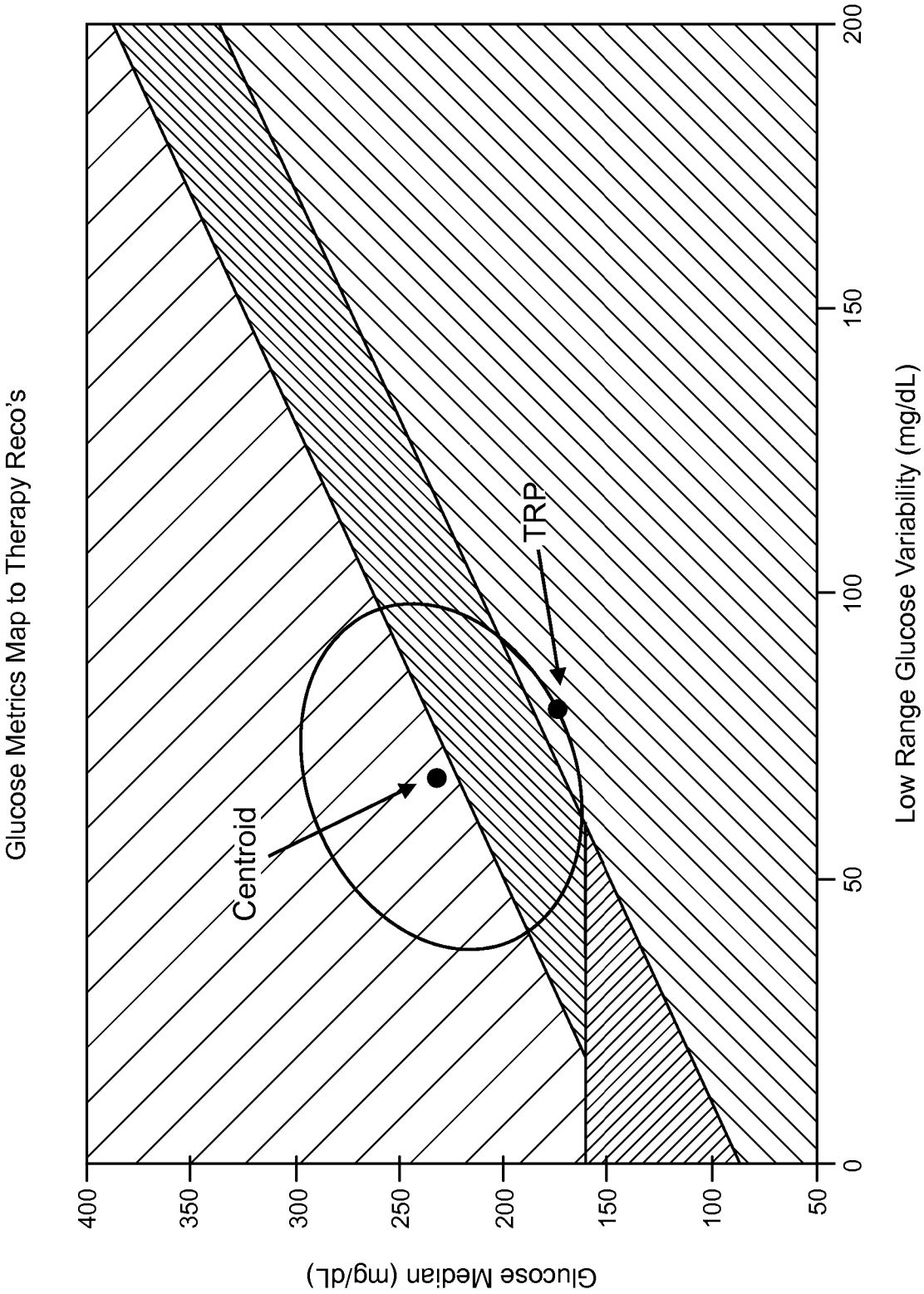

Glucose Metrics Map to Therapy Reco's
Centroid
TRP
Glucose Median (mg/dL)
400
350
300
250
200
150
100
50
0
50
100
150
200
Low Range Glucose Variability (mg/dL)

FIG. 32

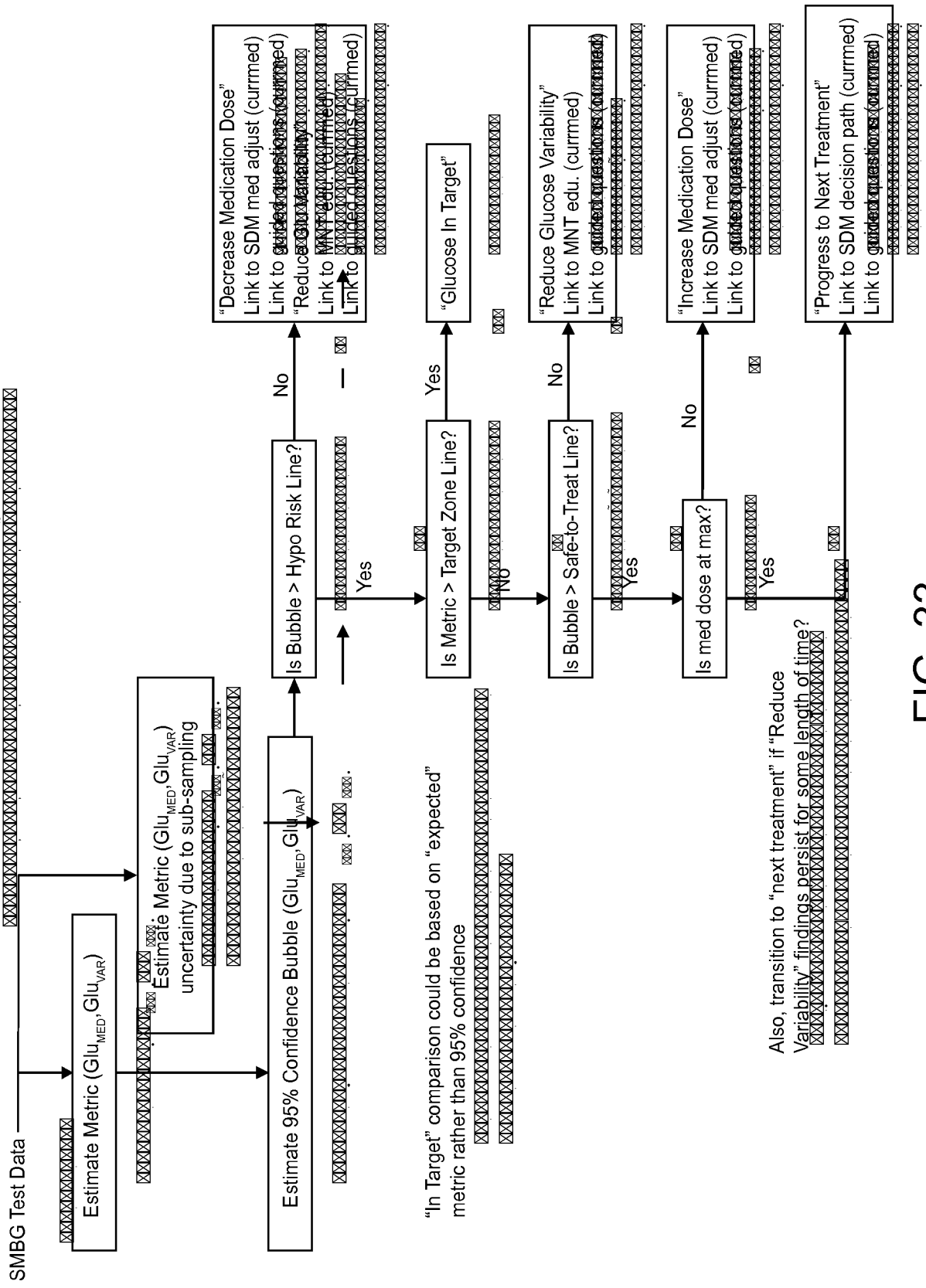

Treatment Reco Algorithm Function
SMBG Test Data
Estimate Metric (Glu_{MED},Glu_{VAR})
Estimate Metric (Glu_{MED},Glu_{VAR}) uncertainty due to sub-sampling
Estimate 95% Confidence Bubble (Glu_{MED},Glu_{VAR})
Is Bubble > Hypo Risk Line?
No
Yes
"Decrease Medication Dose"
Link to SDM med adjust (currmed)
Link to guided questions (currmed)
"Reduce Glucose Variability"
Link to MNT edu. (currmed)
Link to guided questions (currmed)
Is Metric > Target Zone Line?
Yes
No
"Glucose In Target"
"In Target" comparison could be based on "expected" metric rather than 95% confidence
Is Bubble > Safe-to-Treat Line?
No
Yes
"Reduce Glucose Variability"
Link to MNT edu. (currmed)
Link to guided questions (currmed)
Is med dose at max?
No
Yes
"Increase Medication Dose"
Link to SDM med adjust (currmed)
Link to guided questions (currmed)
Also, transition to "next treatment" if "Reduce Variability" findings persist for some length of time?
"Progress to Next Treatment"
Link to SDM decision path (currmed)
Link to guided questions (currmed)

FIG. 33

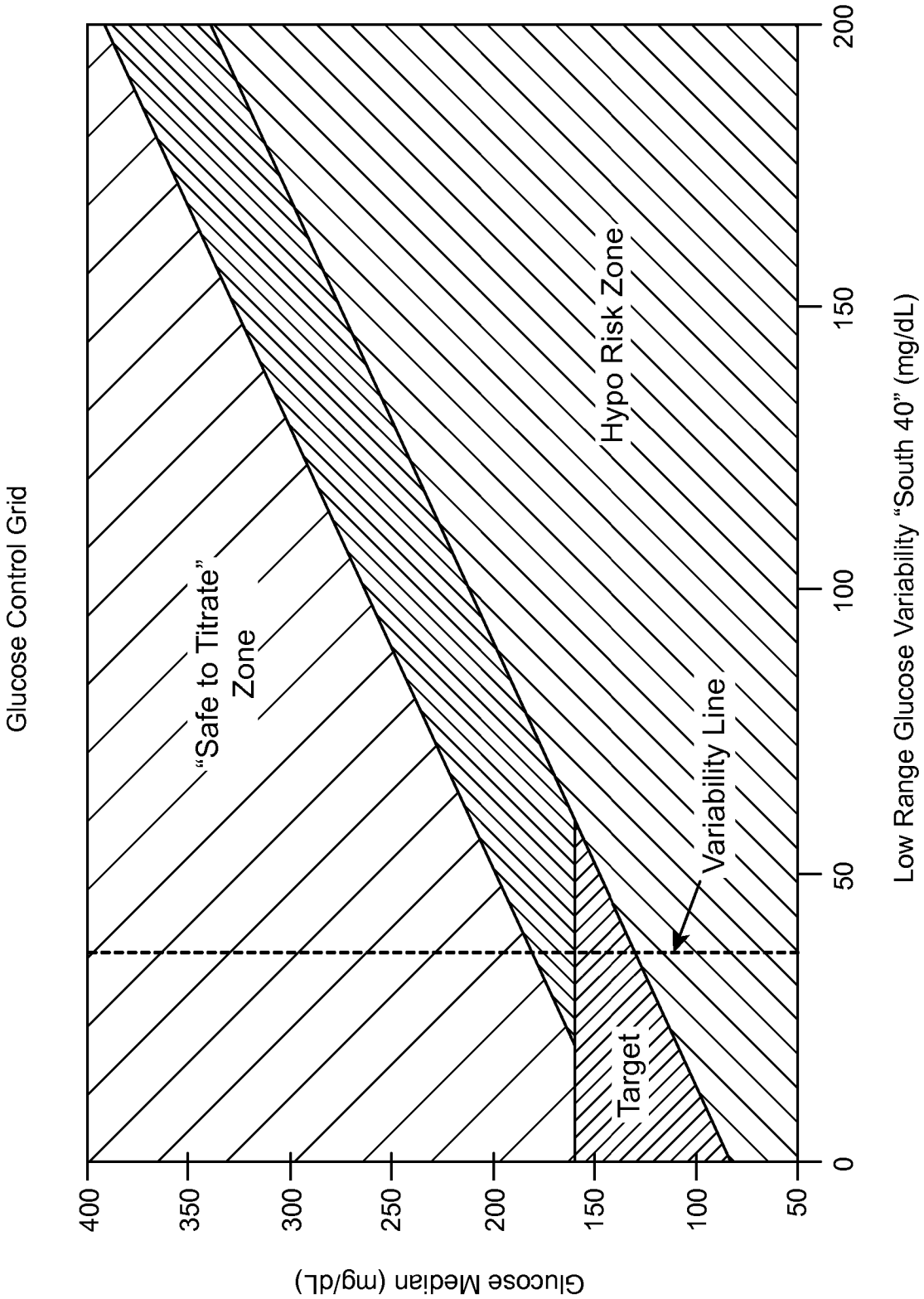

Glucose Control Grid
"Safe to Titrate" Zone
Hypo Risk Zone
Variability Line
Target
Glucose Median (mg/dL)
400
350
300
250
200
150
100
50
0
50
100
150
200
Low Range Glucose Variability "South 40" (mg/dL)

FIG. 34

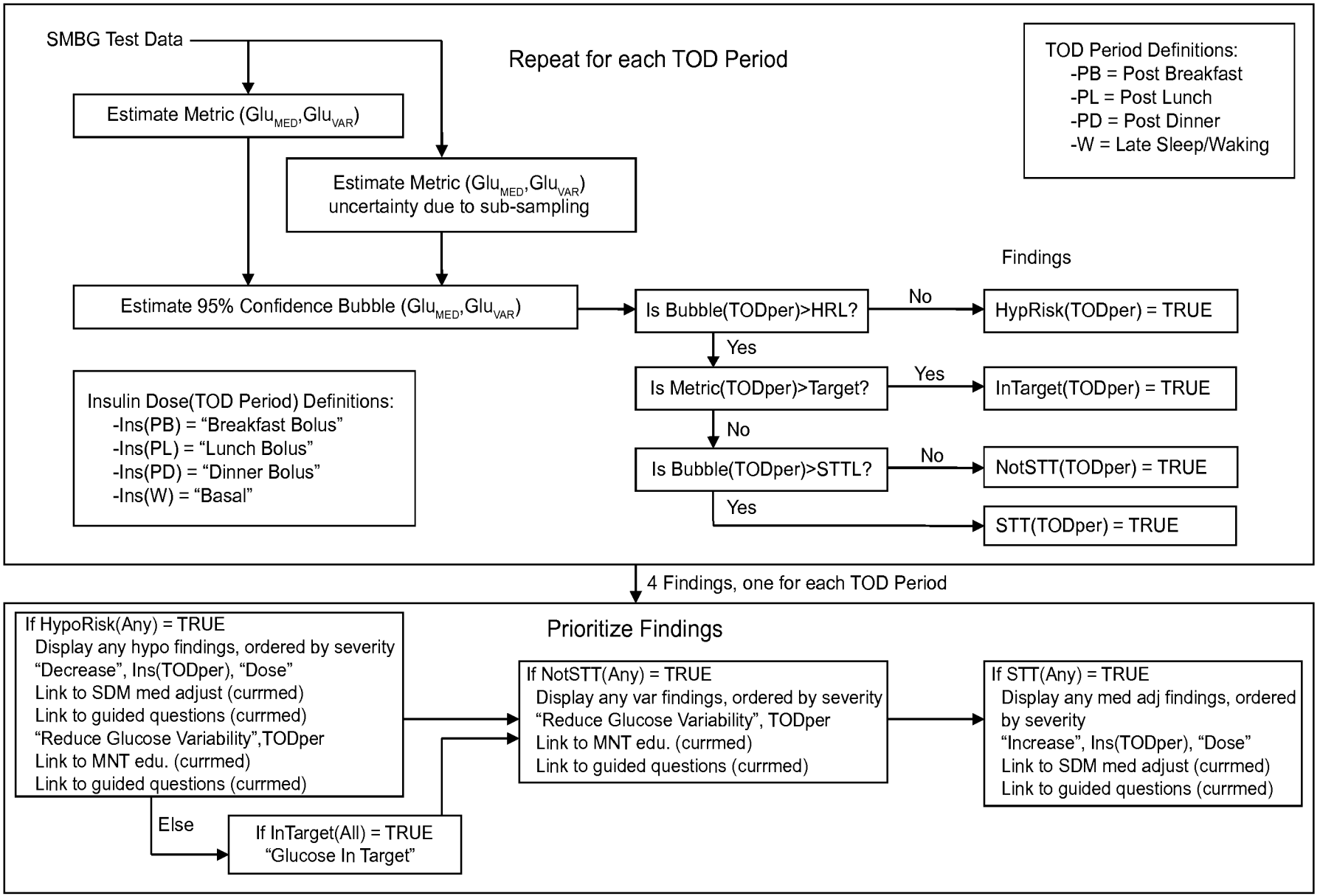

OPTION Treatment Reco Algorithm Functional Flow: MDI (3 meal therapy)
SMBG Test Data
Repeat for each TOD Period
TOD Period Definitions:
-PB = Post Breakfast
-PL = Post Lunch
-PD = Post Dinner
-W = Late Sleep/Waking
Estimate Metric (Glu_MED,Glu_VAR)
Estimate Metric (Glu_MED,Glu_VAR) uncertainty due to sub-sampling
Findings
Estimate 95% Confidence Bubble (Glu_MED,Glu_VAR)
Is Bubble(TODper)>HRL?
No
HypRisk(TODper) = TRUE
Yes
Is Metric(TODper)>Target?
Yes
InTarget(TODper) = TRUE
No
Is Bubble(TODper)>STTL?
No
NotSTT(TODper) = TRUE
Yes
STT(TODper) = TRUE
Insulin Dose(TOD Period) Definitions:
-Ins(PB) = "Breakfast Bolus"
-Ins(PL) = "Lunch Bolus"
-Ins(PD) = "Dinner Bolus"
-Ins(W) = "Basal"
4 Findings, one for each TOD Period
Prioritize Findings
If HypoRisk(Any) = TRUE
Display any hypo findings, ordered by severity
"Decrease", Ins(TODper), "Dose"
Link to SDM med adjust (currmed)
Link to guided questions (currmed)
"Reduce Glucose Variability",TODper
Link to MNT edu. (currmed)
Link to guided questions (currmed)
If NotSTT(Any) = TRUE
Display any var findings, ordered by severity
"Reduce Glucose Variability", TODper
Link to MNT edu. (currmed)
Link to guided questions (currmed)
If STT(Any) = TRUE
Display any med adj findings, ordered by severity
"Increase", Ins(TODper), "Dose"
Link to SDM med adjust (currmed)
Link to guided questions (currmed)
Else
If InTarget(All) = TRUE
"Glucose In Target"

FIG. 35

	INPUT	INPUT	OUTPUTS	OUTPUTS	OUTPUTS
Stage	**Treatments**	**Control Grid Zone**	**Recommendation Text**	**Guide Link**	**Q Link**
Metformin	Metformin	Hypo Risk Zone	NA	NA	(TBD)
		Buffer Zone	Decrease variability Go to next treatment stage	MNT 2Drug Start	(TBD)
		"Safe to Titrate" Zone	Increase Met dose At max Met dose	Met Adj 2Drug Start	(TBD)
		Target Zone	You're on target!		
Two-Drug Therapy	Metformin + SU	Hypo Risk Zone	Decrease SU dose Decrease Variability	SU Adj MNT	(TBD)
		Buffer Zone	Decrease Variability Out of target for 3 mos?	MNT 3Drug Start	(TBD)
		"Safe to Titrate" Zone	Increase SU dose At max SU dose	SU Adj 3Drug Start	(TBD)
		Target Zone	You're on target!		
	Metformin + DPP-4	Hypo Risk Zone	Decrease DPP-4 dose Decrease Variability	DPP-4 Adj MNT	(TBD)
		Buffer Zone	Decrease Variability Out of target for 3 mos?	MNT 3Drug Start	(TBD)
		"Safe to Titrate" Zone	Increase DPP-4 dose At max DPP-4 dose	DPP-4 Adj 3Drug Start	(TBD)
		Target Zone	You're on target!		
	etc...				
Three-Drug Therapy	Met + SU + Basal Ins	Hypo Risk Zone	Decrease Basal dose Decrease Variability	Basal Adj MNT(*)	(TBD)
		Buffer Zone	Decrease Variability Out of target for 3 mos?	MNT(*) T2 MDI Start	(TBD)
		"Safe to Titrate" Zone	Increase Basal dose	SU Adj	(TBD)
		Target Zone	You're on target!		
	etc...				

FIG. 36

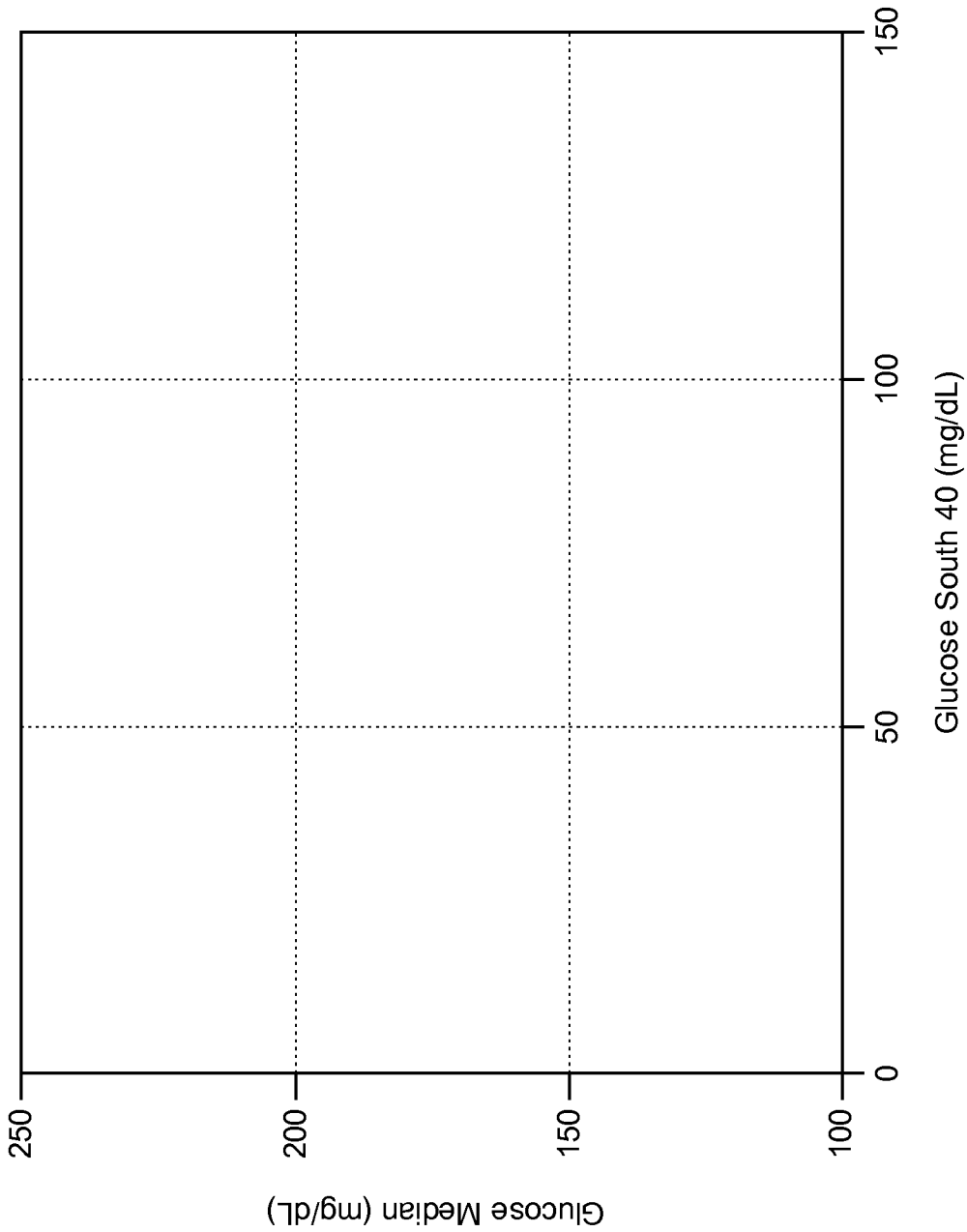

Glucose Median (mg/dL)
250
200
150
100
0
50
100
150
Glucose South 40 (mg/dL)

FIG. 37

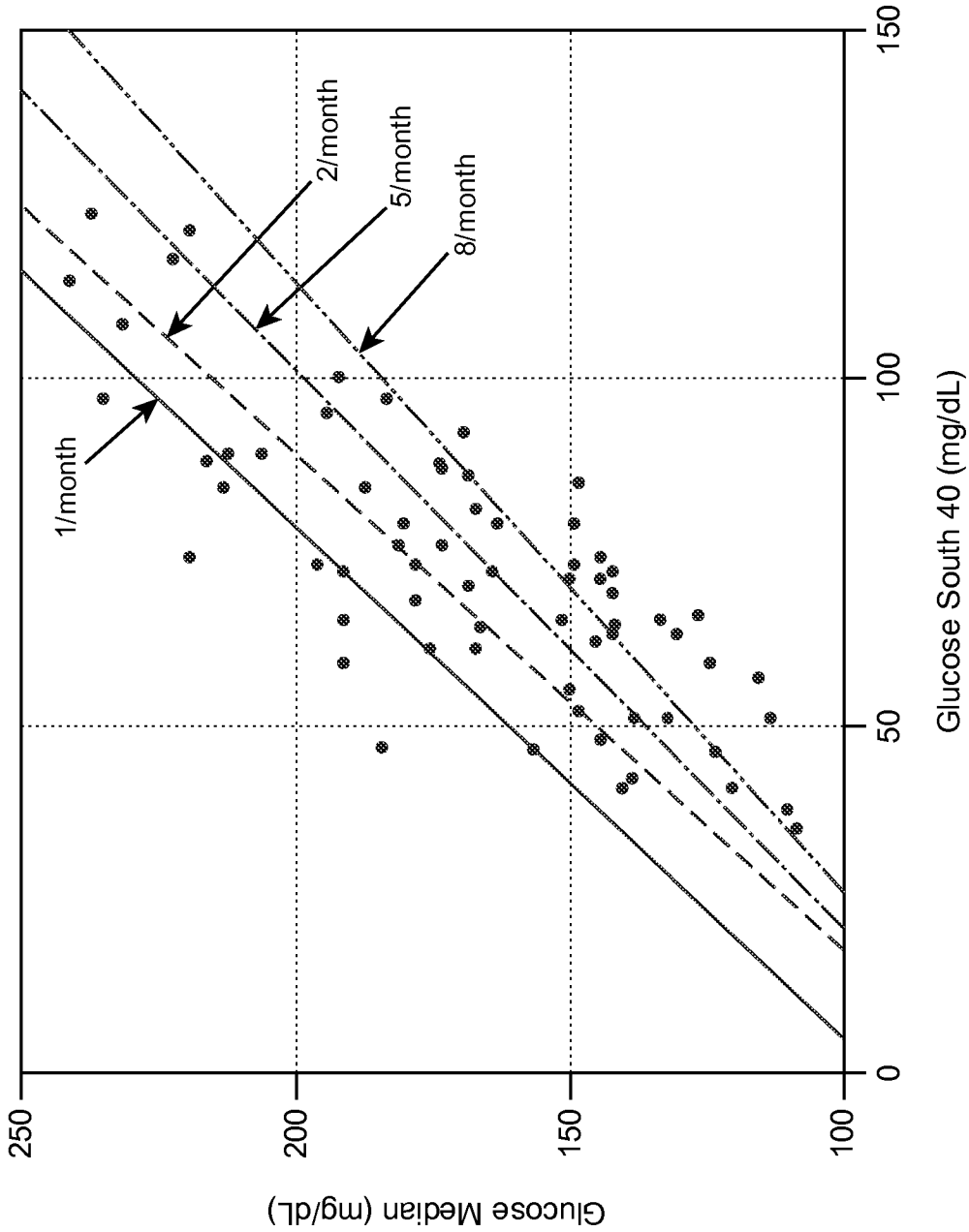

Glucose Median (mg/dL)
250
200
150
100
Glucose South 40 (mg/dL)
0
50
100
150
1/month
2/month
5/month
8/month

FIG. 38

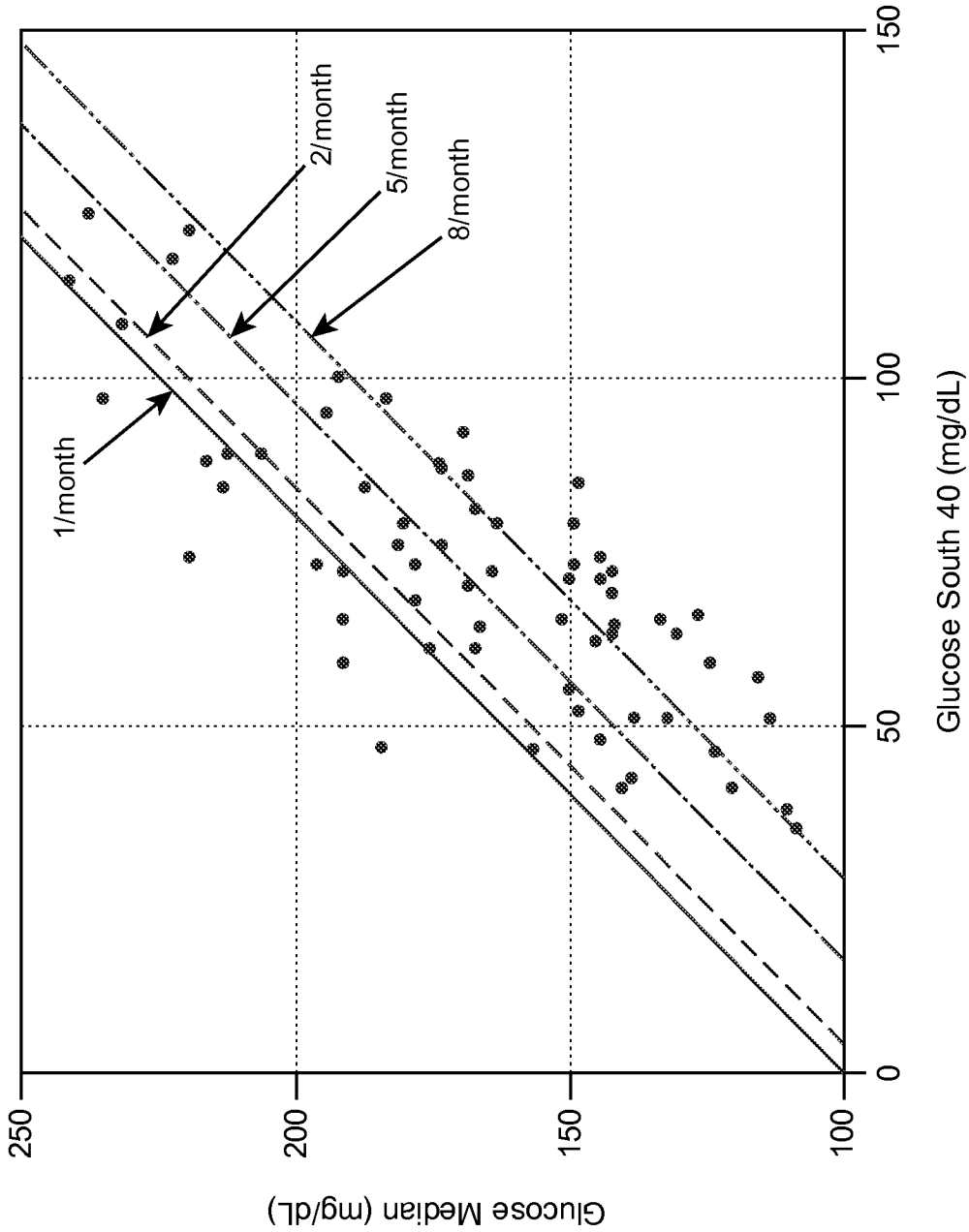

Glucose Median (mg/dL)
250
200
150
100
Glucose South 40 (mg/dL)
0
50
100
150
1/month
2/month
5/month
8/month

FIG. 39

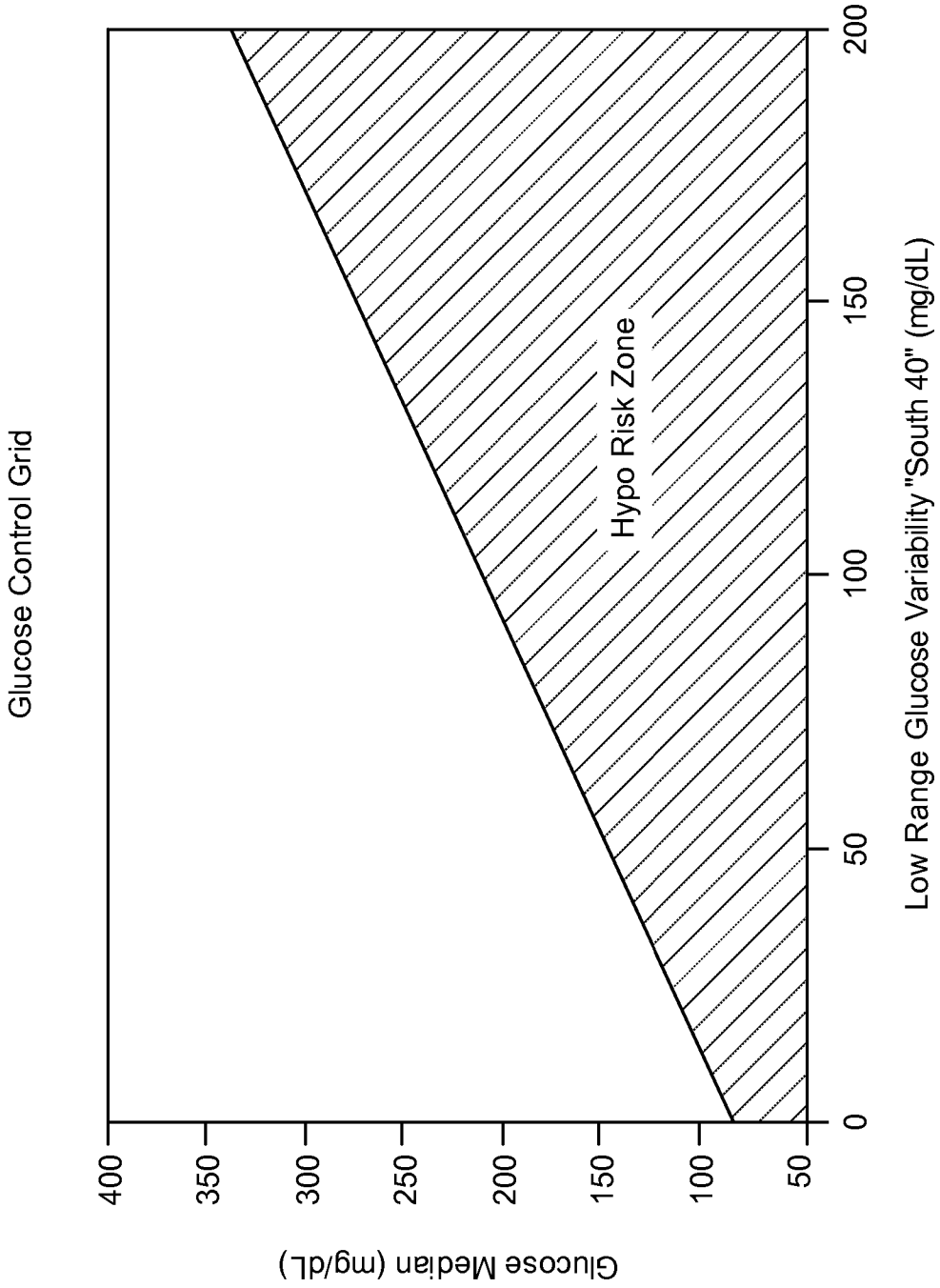

Glucose Control Grid
Hypo Risk Zone
Glucose Median (mg/dL)
400
350
300
250
200
150
100
50
0
50
100
150
200
Low Range Glucose Variability "South 40" (mg/dL)

FIG. 40

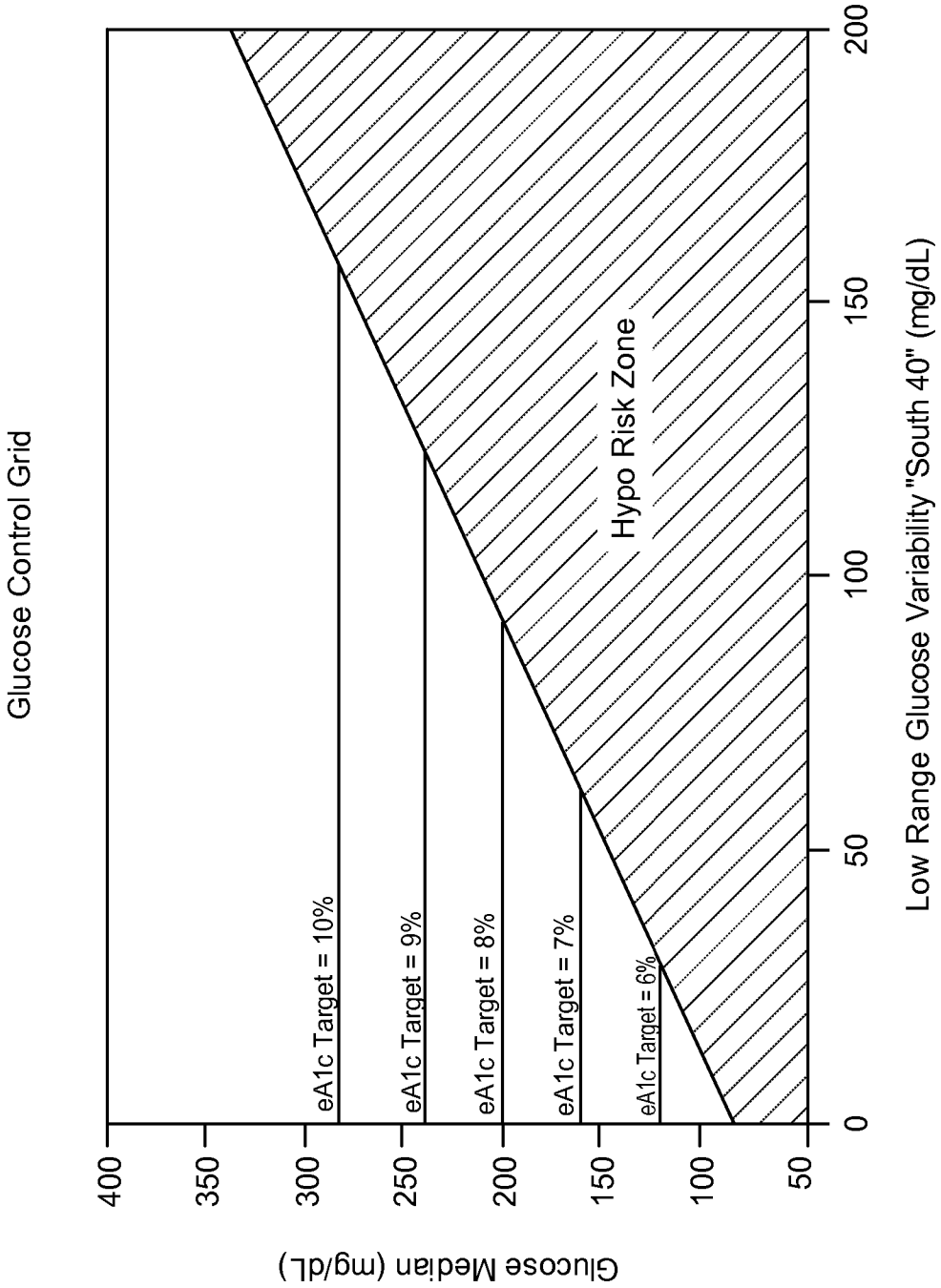

Glucose Control Grid
Hypo Risk Zone
eA1c Target = 10%
eA1c Target = 9%
eA1c Target = 8%
eA1c Target = 7%
eA1c Target = 6%
Glucose Median (mg/dL)
400
350
300
250
200
150
100
50
0
50
100
150
200
Low Range Glucose Variability "South 40" (mg/dL)

FIG. 41

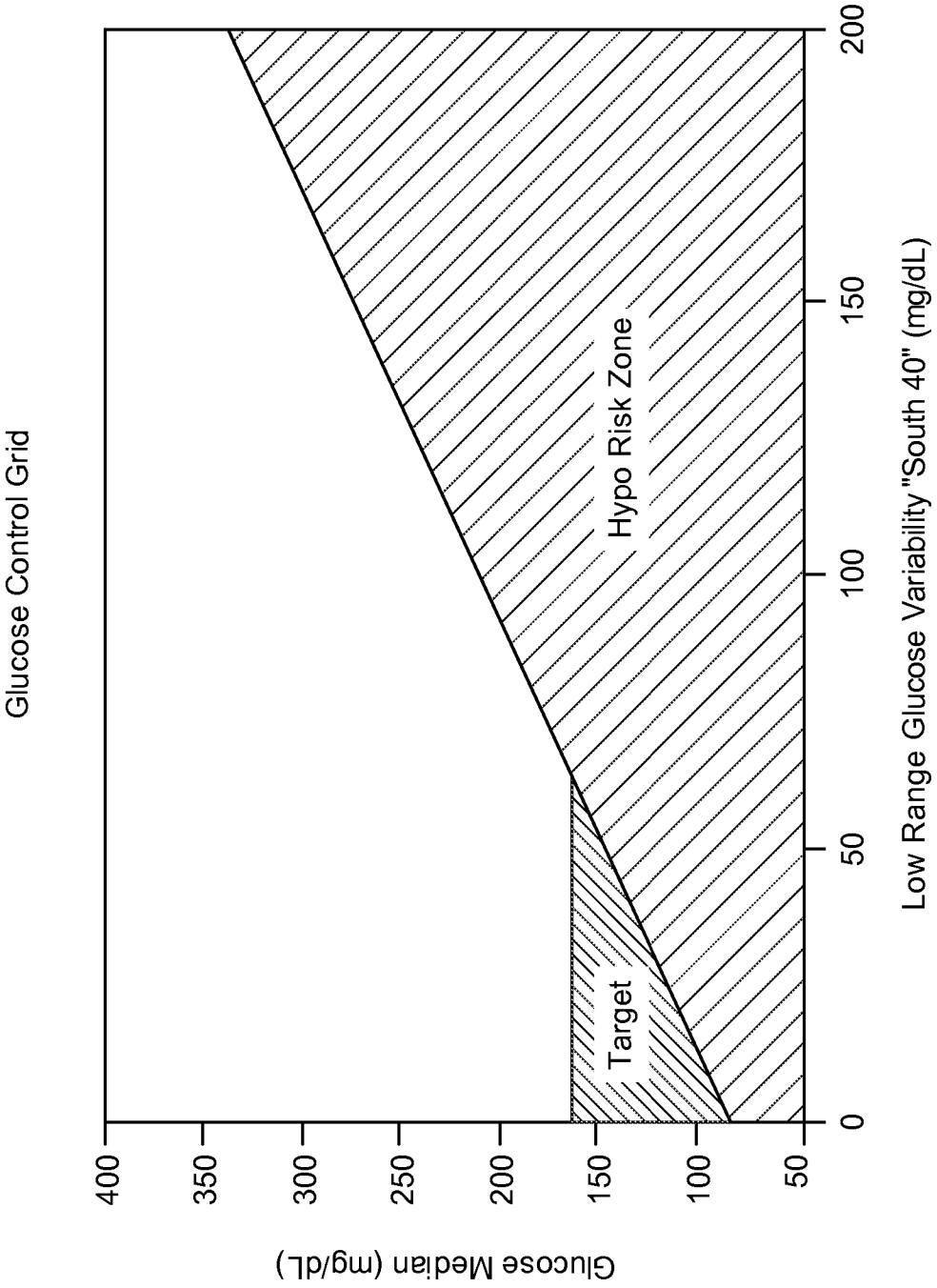

Glucose Control Grid
Hypo Risk Zone
Target
Glucose Median (mg/dL)
400
350
300
250
200
150
100
50
0
50
100
150
200
Low Range Glucose Variability "South 40" (mg/dL)

FIG. 42

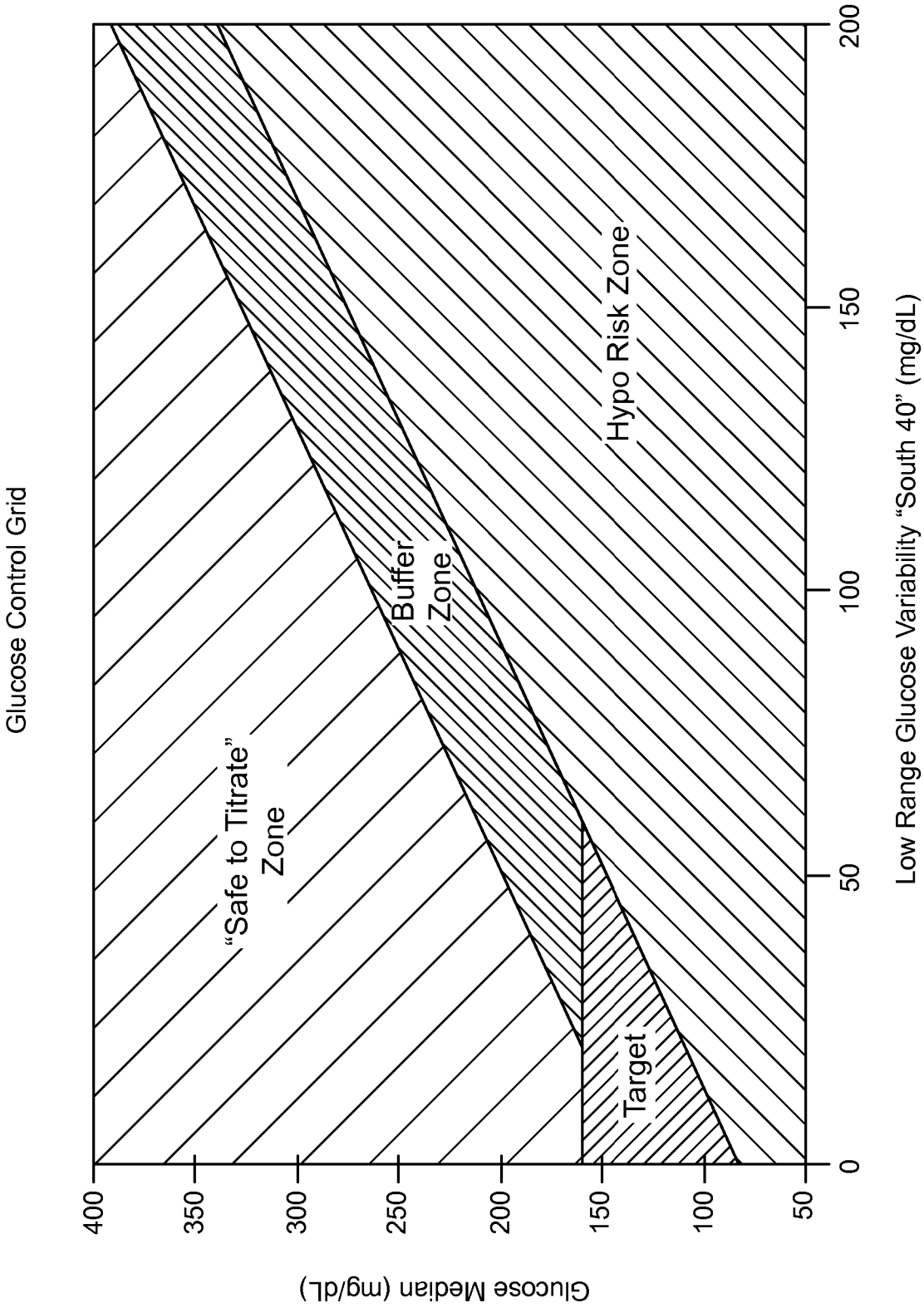

Glucose Control Grid
Glucose Median (mg/dL)
400
350
300
250
200
150
100
50
0
50
100
150
200
Low Range Glucose Variability "South 40" (mg/dL)
"Safe to Titrate" Zone
Buffer Zone
Hypo Risk Zone
Target

FIG. 43

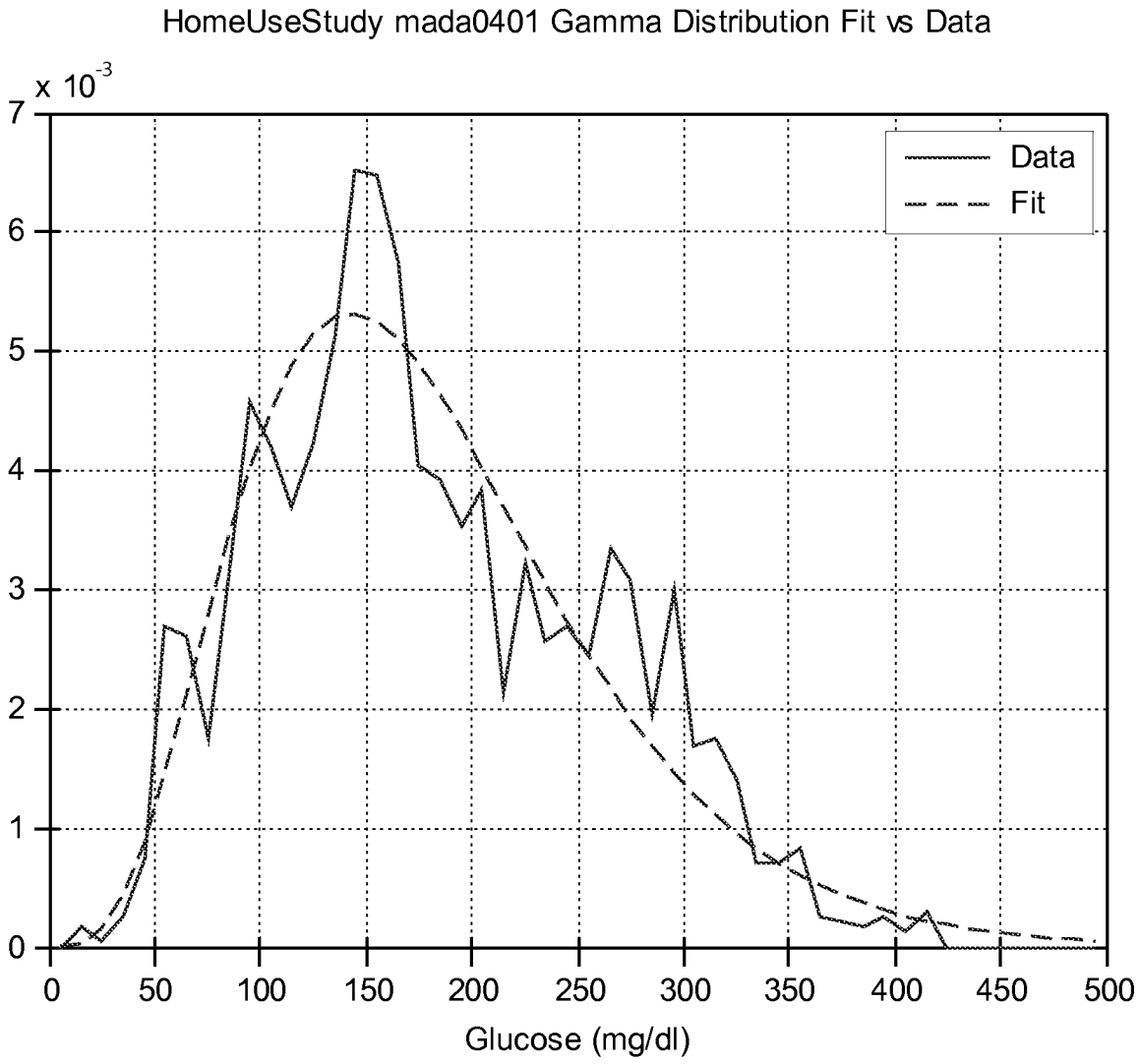

HomeUseStudy mada0401 Gamma Distribution Fit vs Data
x 10^-3
7
6
5
4
3
2
1
0
0
50
100
150
200
250
300
350
400
450
500
Glucose (mg/dl)
Data
Fit

FIG. 44

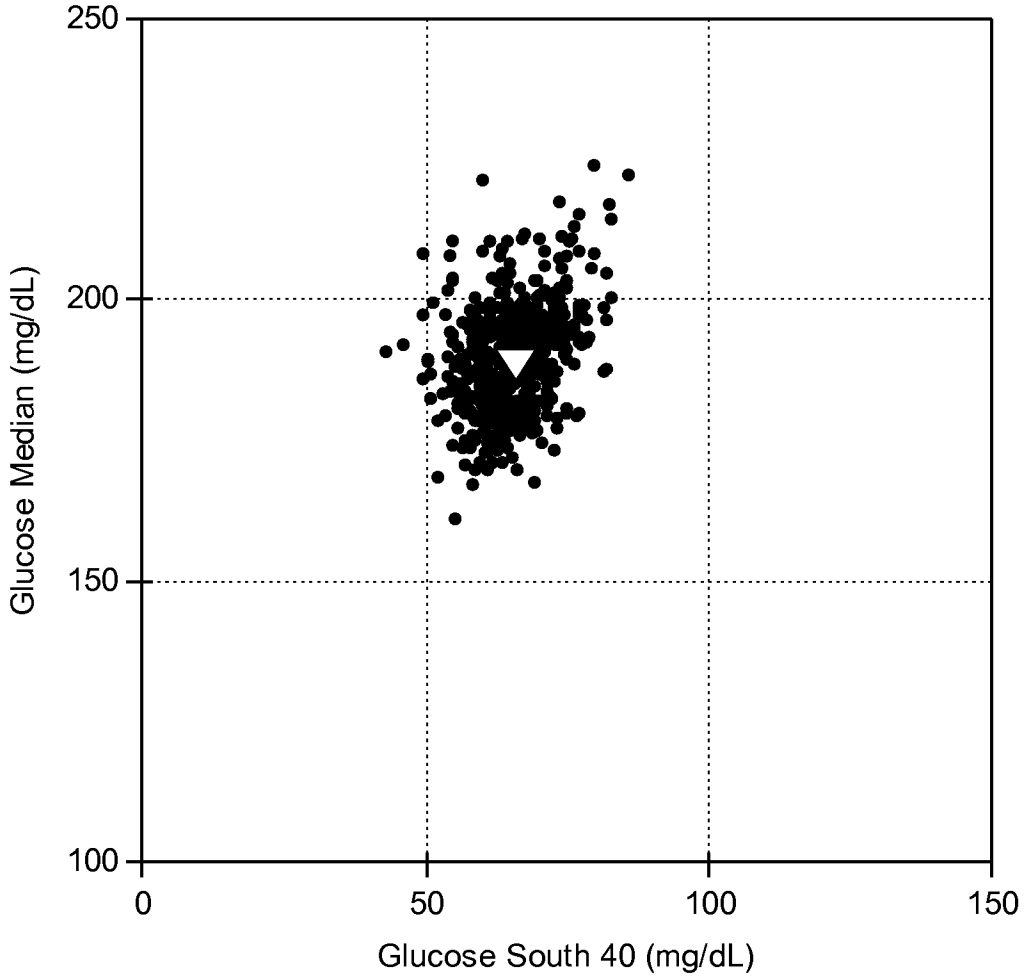

250
200
150
100
0
50
100
150
Glucose Median (mg/dL)
Glucose South 40 (mg/dL)

FIG. 45

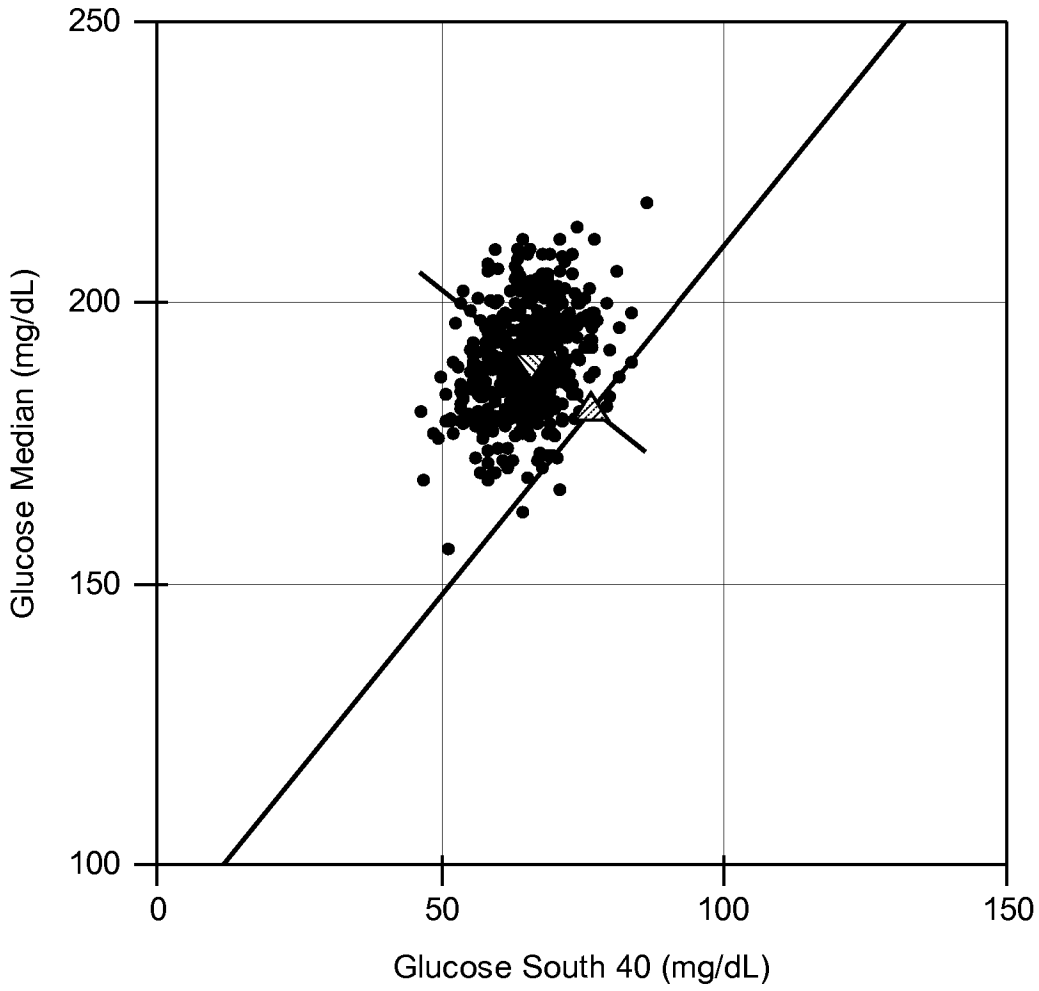

250
200
150
100
0
50
100
150
Glucose Median (mg/dL)
Glucose South 40 (mg/dL)

FIG. 46

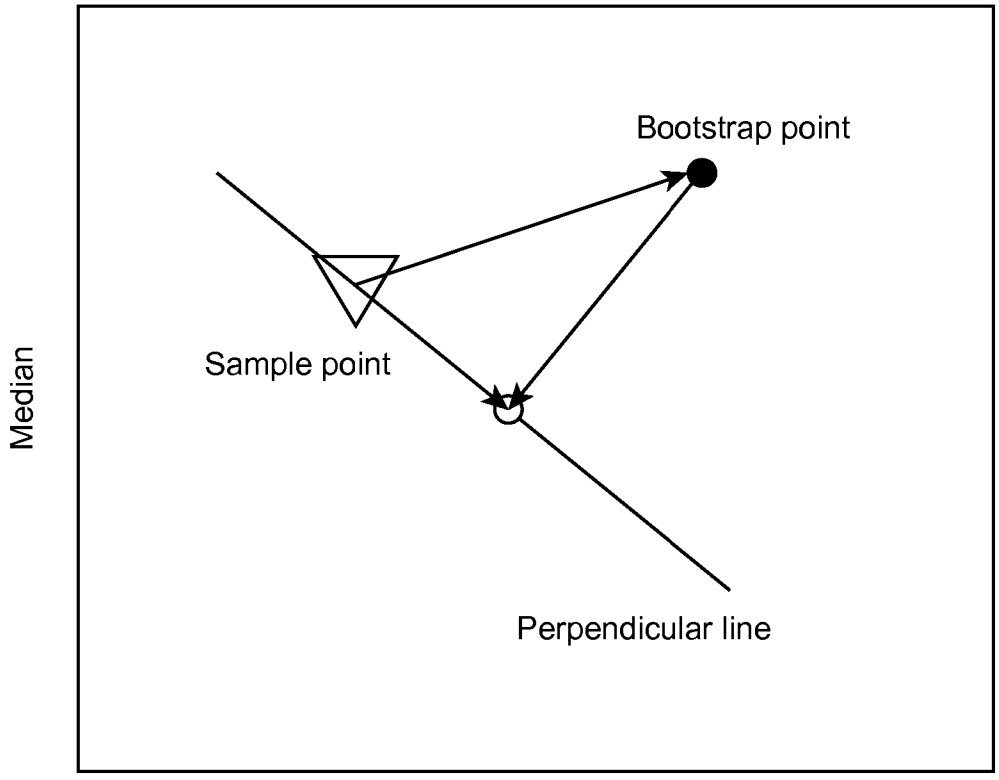

Bootstrap point
Sample point
Median
Perpendicular line
South 40

FIG. 47

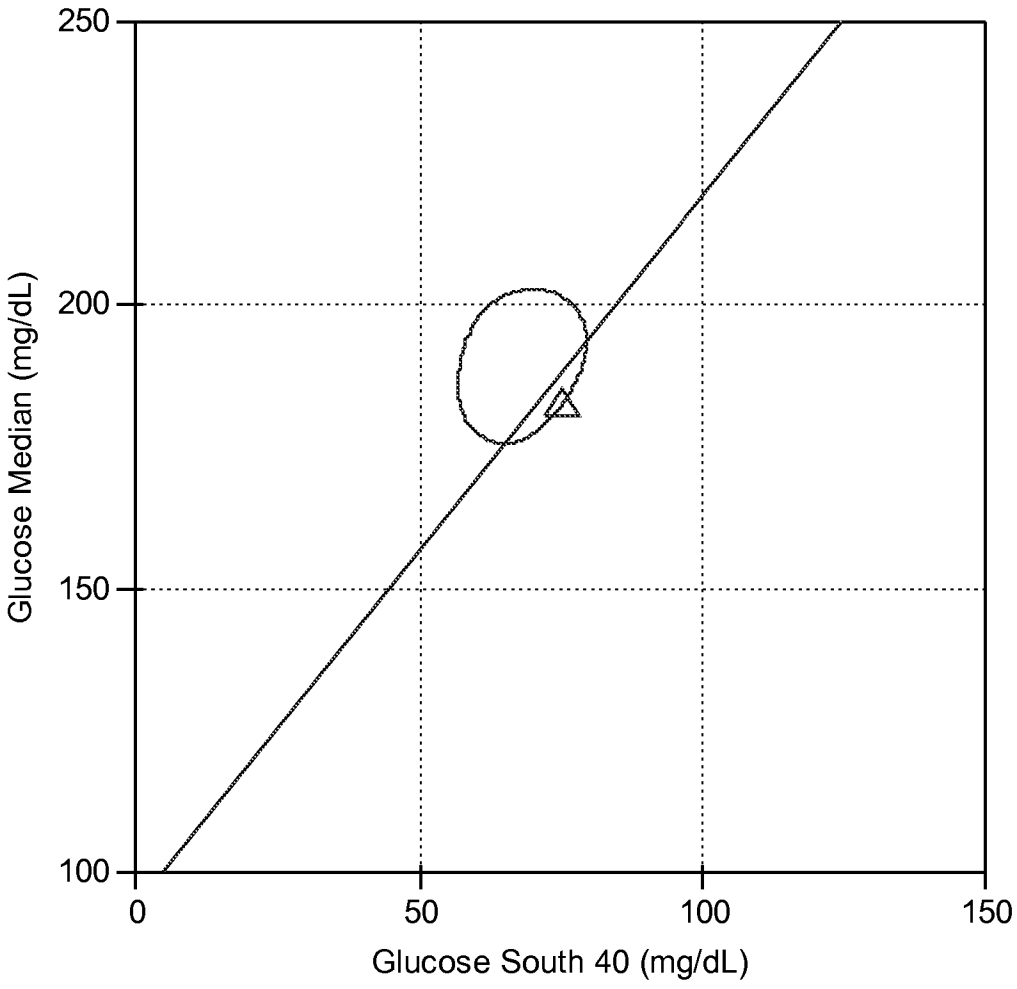

250
200
150
100
Glucose Median (mg/dL)
0
50
100
150
Glucose South 40 (mg/dL)

FIG. 48

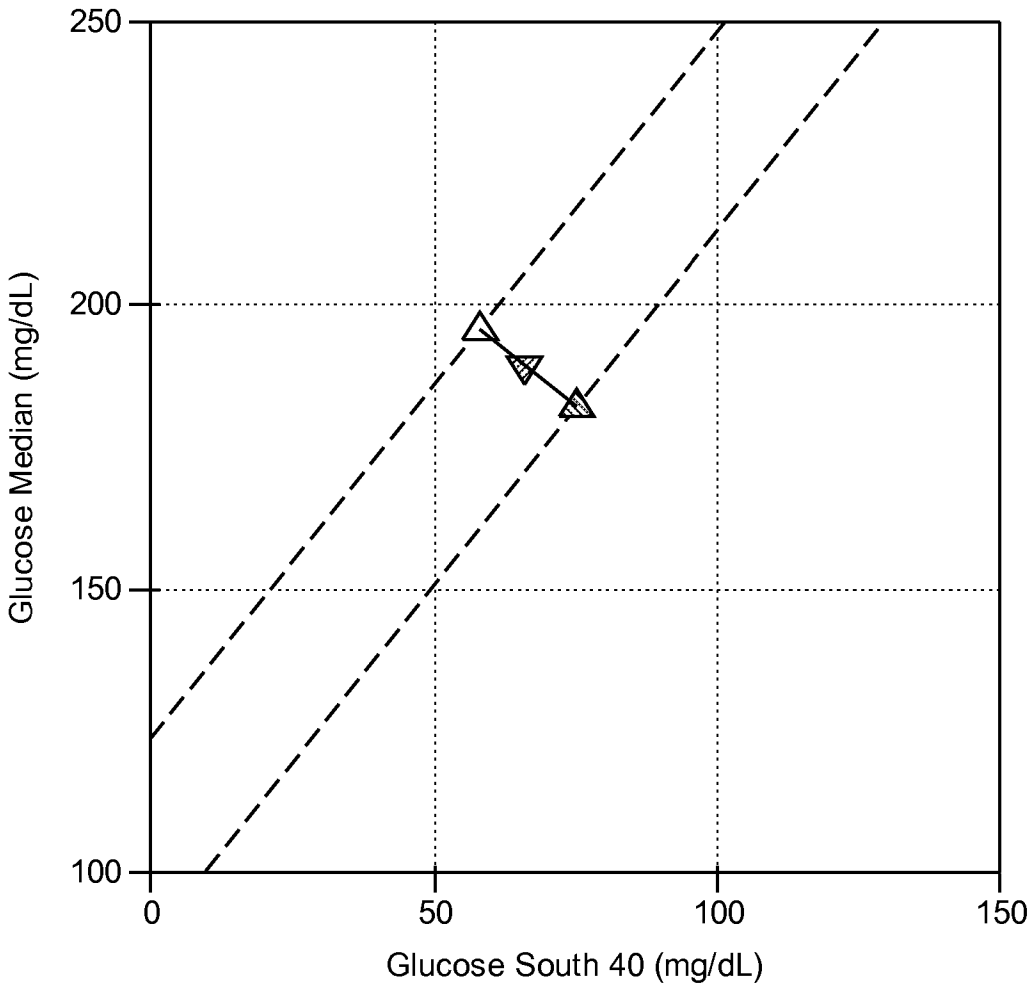

250
200
150
100
0
50
100
150
Glucose Median (mg/dL)
Glucose South 40 (mg/dL)

FIG. 49

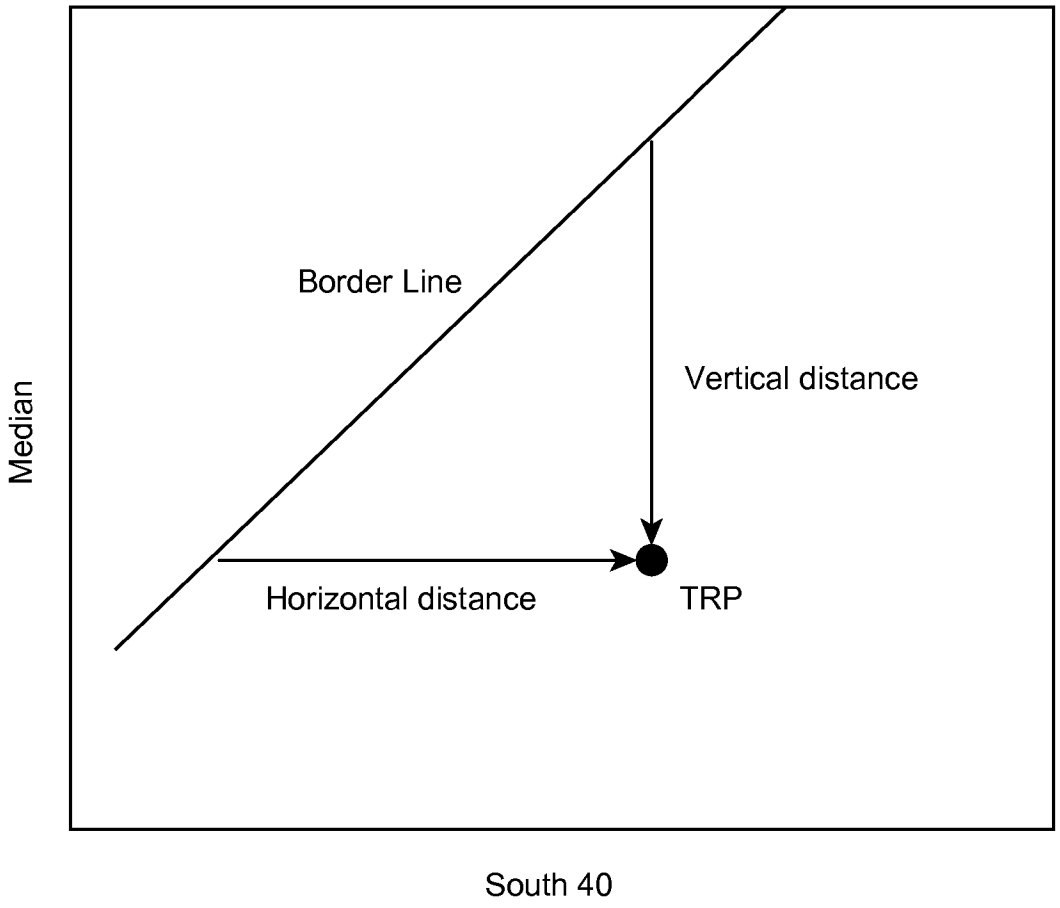

Median
Border Line
Vertical distance
Horizontal distance
TRP
South 40

FIG. 50

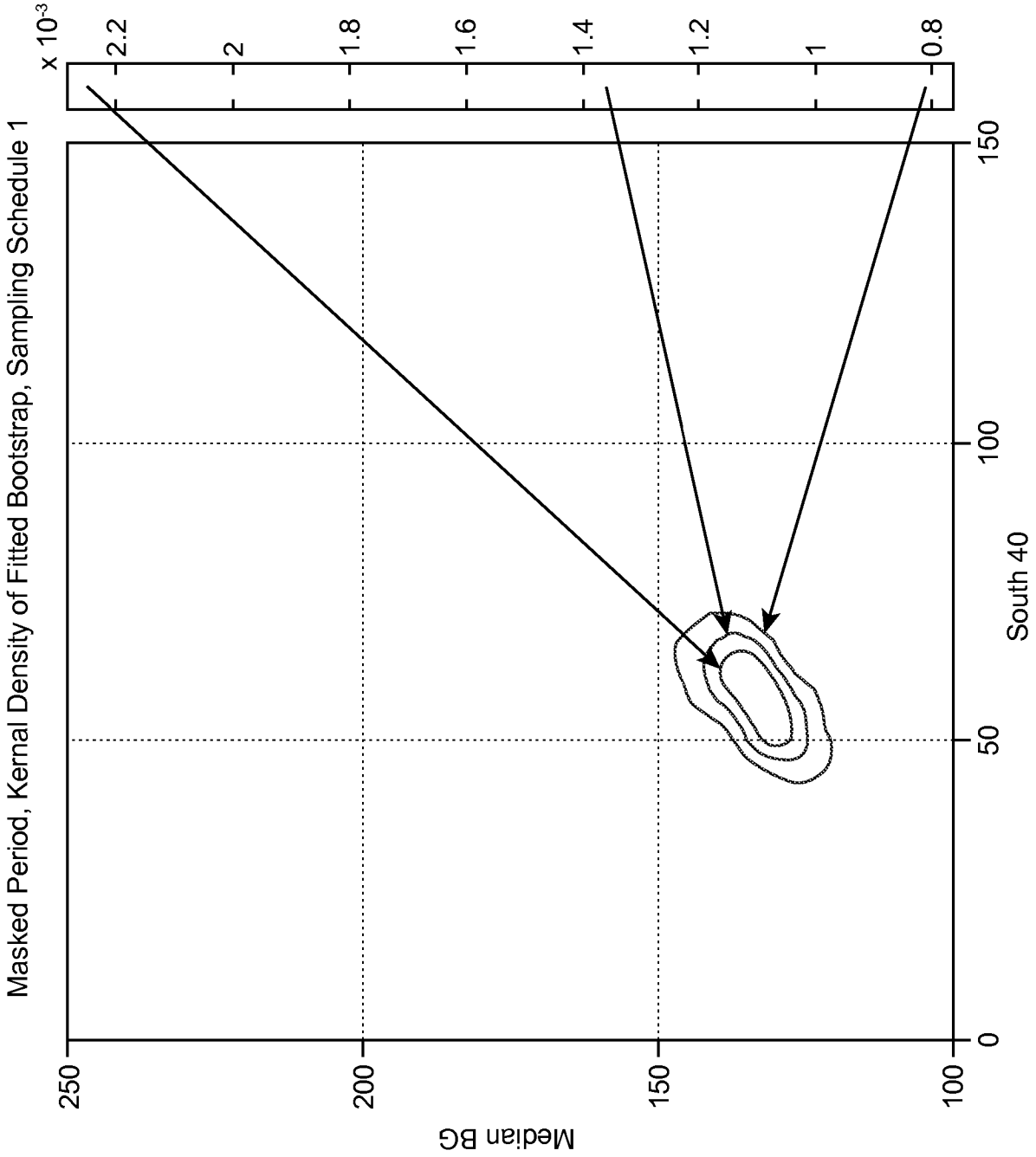

Masked Period, Kernal Density of Fitted Bootstrap, Sampling Schedule 1
x 10-3
2.2
2
1.8
1.6
1.4
1.2
1
0.8
Median BG
250
200
150
100
South 40
150
100
50
0

FIG. 51

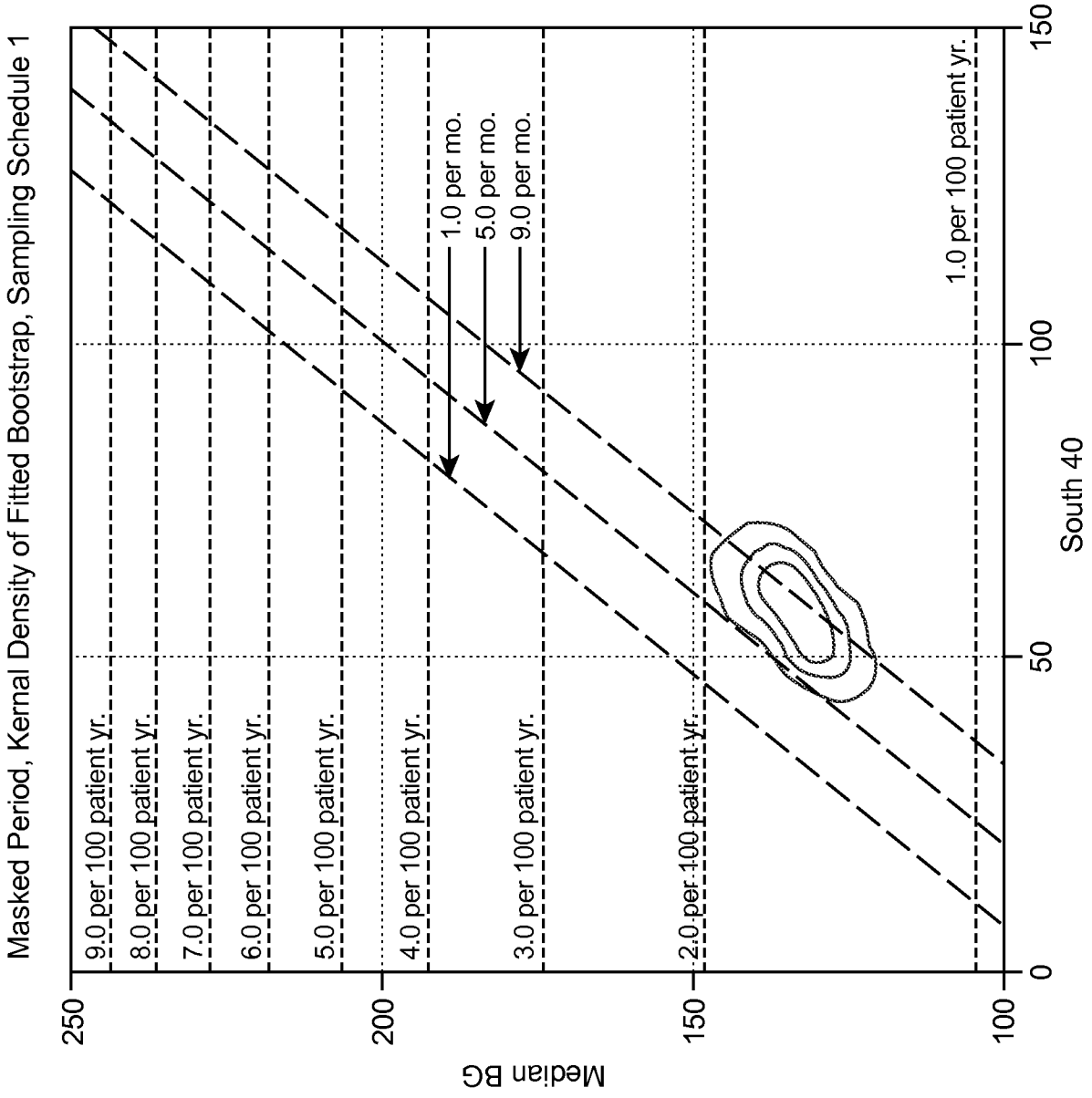

Masked Period, Kernal Density of Fitted Bootstrap, Sampling Schedule 1
9.0 per 100 patient yr.
8.0 per 100 patient yr.
7.0 per 100 patient yr.
6.0 per 100 patient yr.
5.0 per 100 patient yr.
4.0 per 100 patient yr.
3.0 per 100 patient yr.
2.0 per 100 patient yr.
1.0 per 100 patient yr.
1.0 per mo.
5.0 per mo.
9.0 per mo.
Median BG
250
200
150
100
South 40
0
50
100
150

FIG. 52

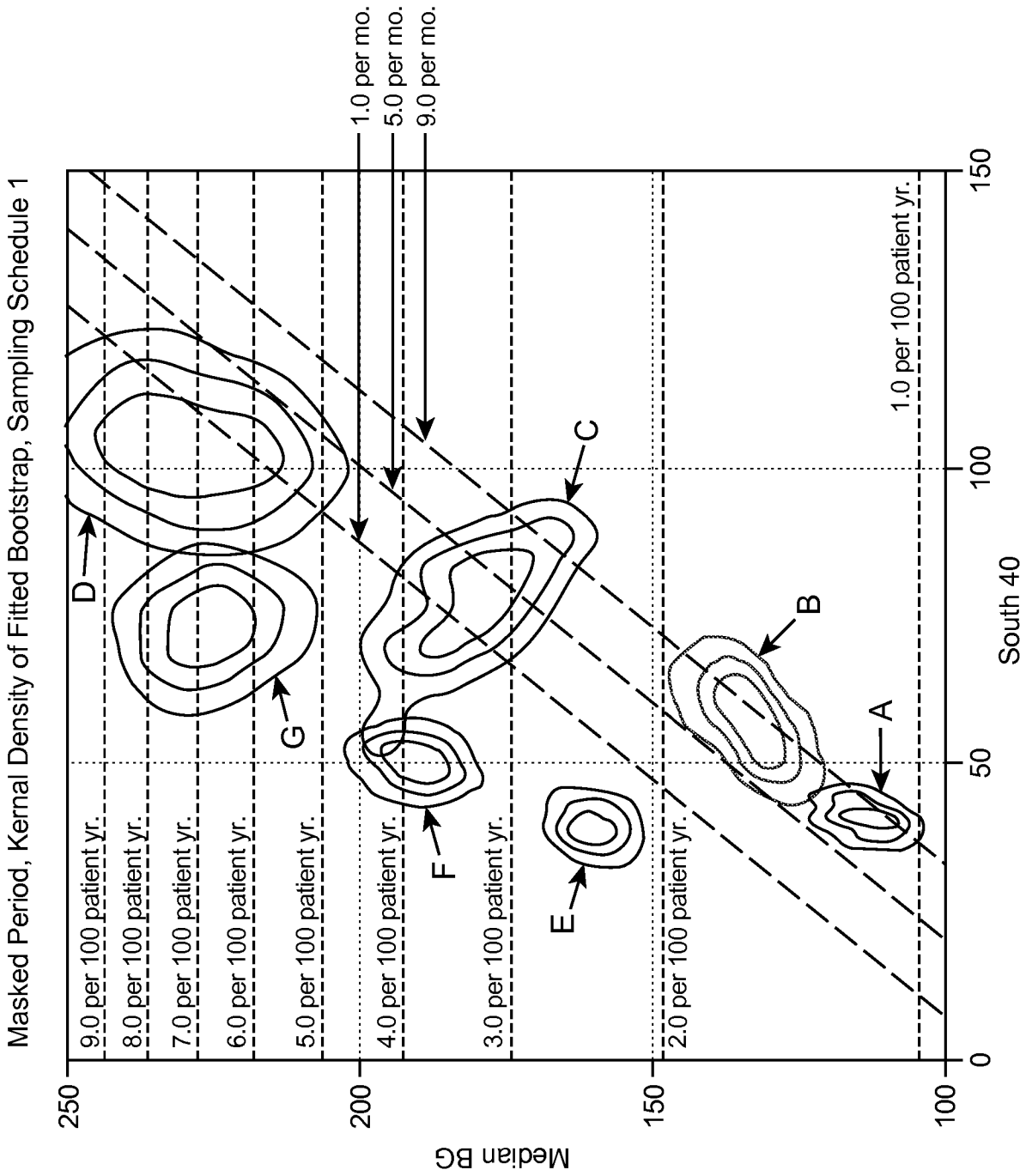

Masked Period, Kernal Density of Fitted Bootstrap, Sampling Schedule 1
Median BG
250
200
150
100
0
50
100
150
South 40
1.0 per mo.
5.0 per mo.
9.0 per mo.
9.0 per 100 patient yr.
8.0 per 100 patient yr.
7.0 per 100 patient yr.
6.0 per 100 patient yr.
5.0 per 100 patient yr.
4.0 per 100 patient yr.
3.0 per 100 patient yr.
2.0 per 100 patient yr.
1.0 per 100 patient yr.
A
B
C
D
E
F
G

FIG. 53

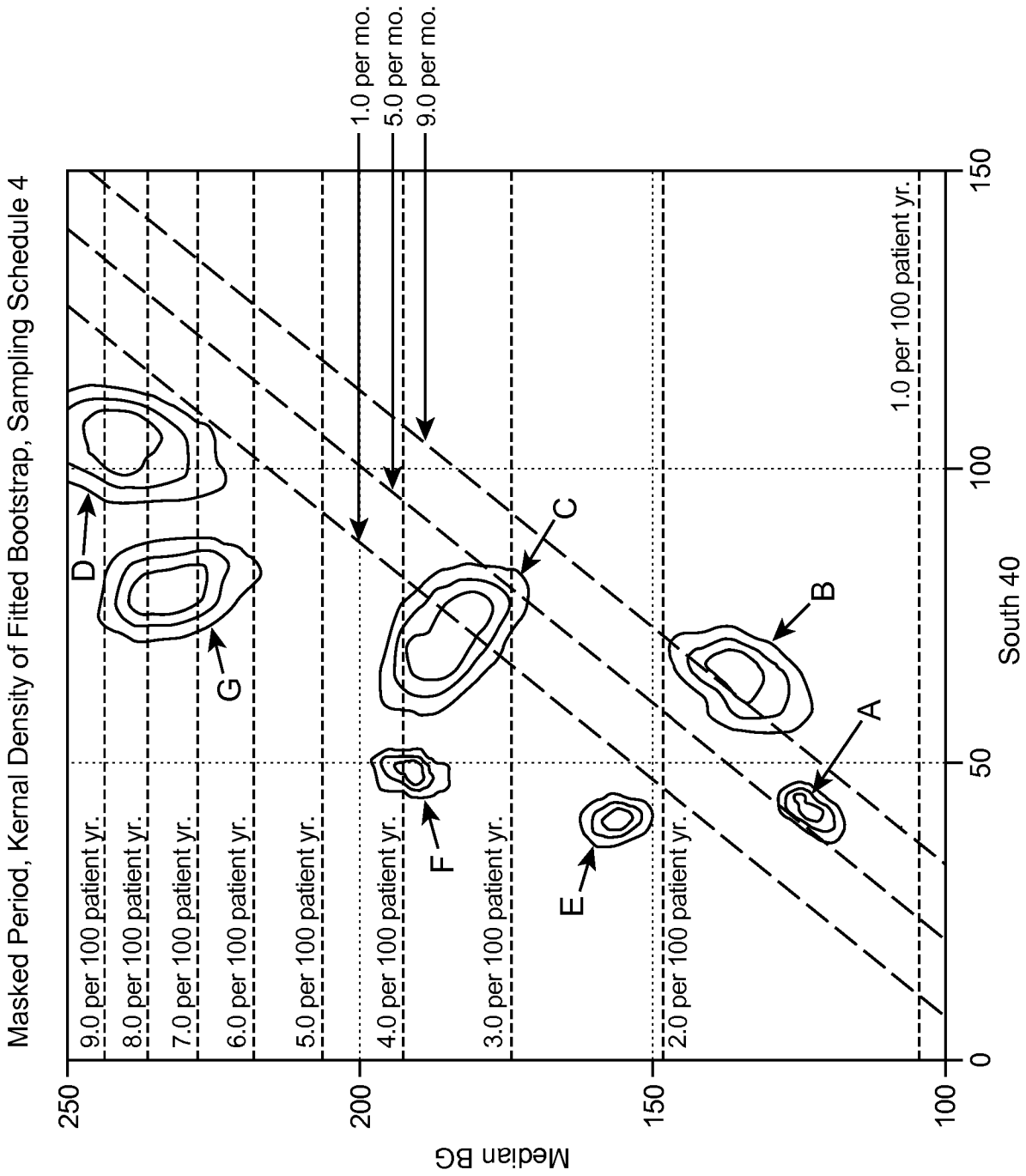

Masked Period, Kernal Density of Fitted Bootstrap, Sampling Schedule 4
Median BG
250
200
150
100
0
50
100
150
South 40
1.0 per mo.
5.0 per mo.
9.0 per mo.
9.0 per 100 patient yr.
8.0 per 100 patient yr.
7.0 per 100 patient yr.
6.0 per 100 patient yr.
5.0 per 100 patient yr.
4.0 per 100 patient yr.
3.0 per 100 patient yr.
2.0 per 100 patient yr.
1.0 per 100 patient yr.
A
B
C
D
E
F
G

FIG. 54

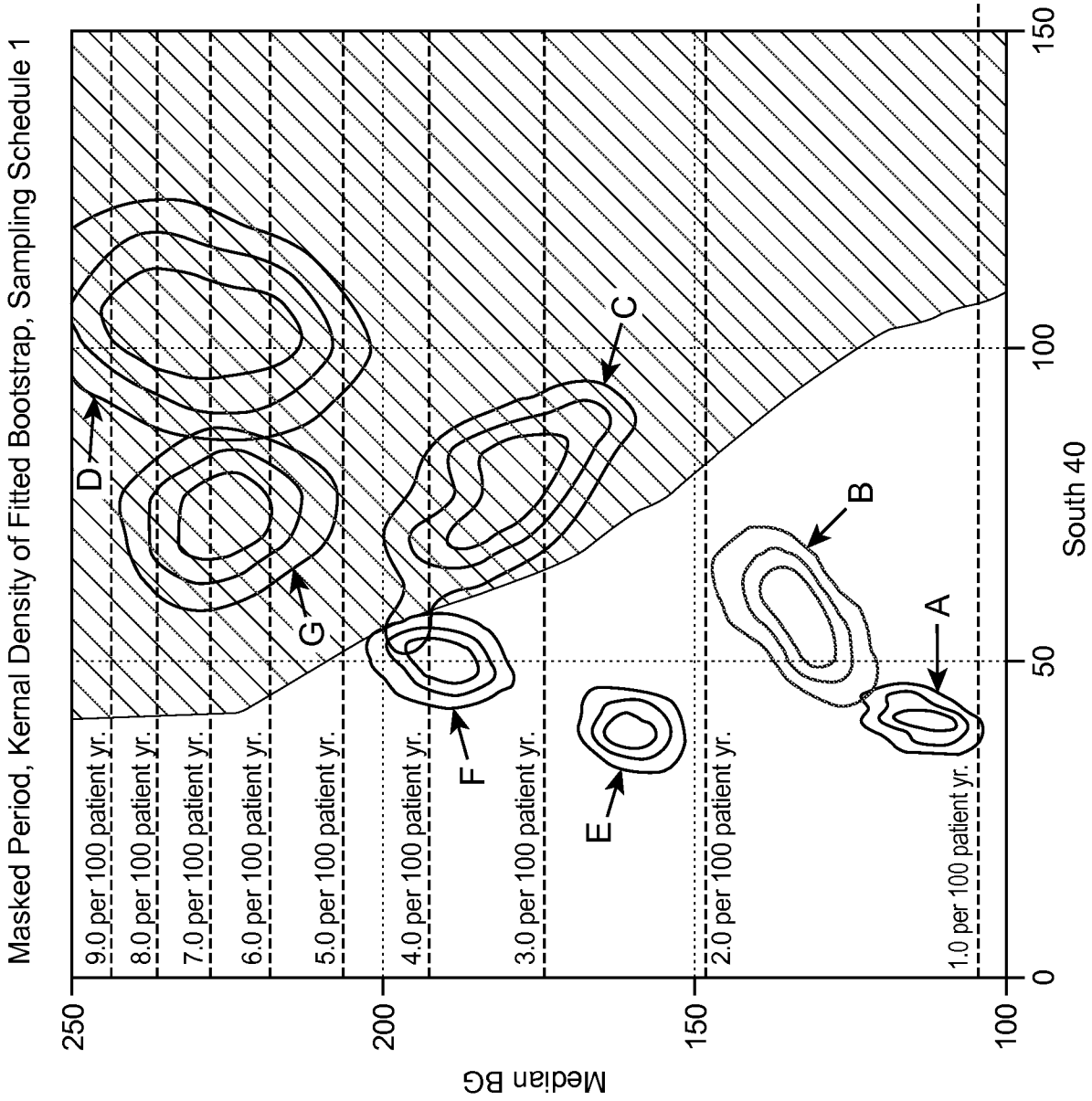
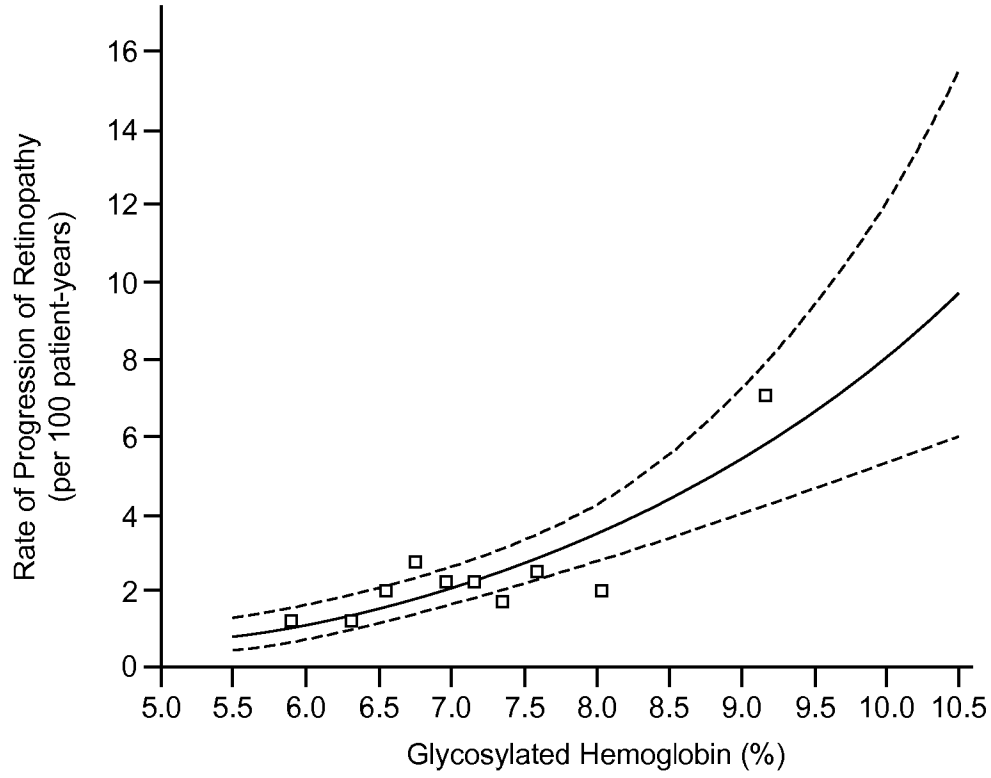

Masked Period, Kernal Density of Fitted Bootstrap, Sampling Schedule 1
Median BG
250
200
150
100
0
50
100
150
South 40
9.0 per 100 patient yr.
8.0 per 100 patient yr.
7.0 per 100 patient yr.
6.0 per 100 patient yr.
5.0 per 100 patient yr.
4.0 per 100 patient yr.
3.0 per 100 patient yr.
2.0 per 100 patient yr.
1.0 per 100 patient yr.
A
B
C
D
E
F
G

FIG. 55


Rate of Progression of Retinopathy
(per 100 patient-years)
16
14
12
10
8
6
4
2
0
5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10.0 10.5
Glycosylated Hemoglobin (%)

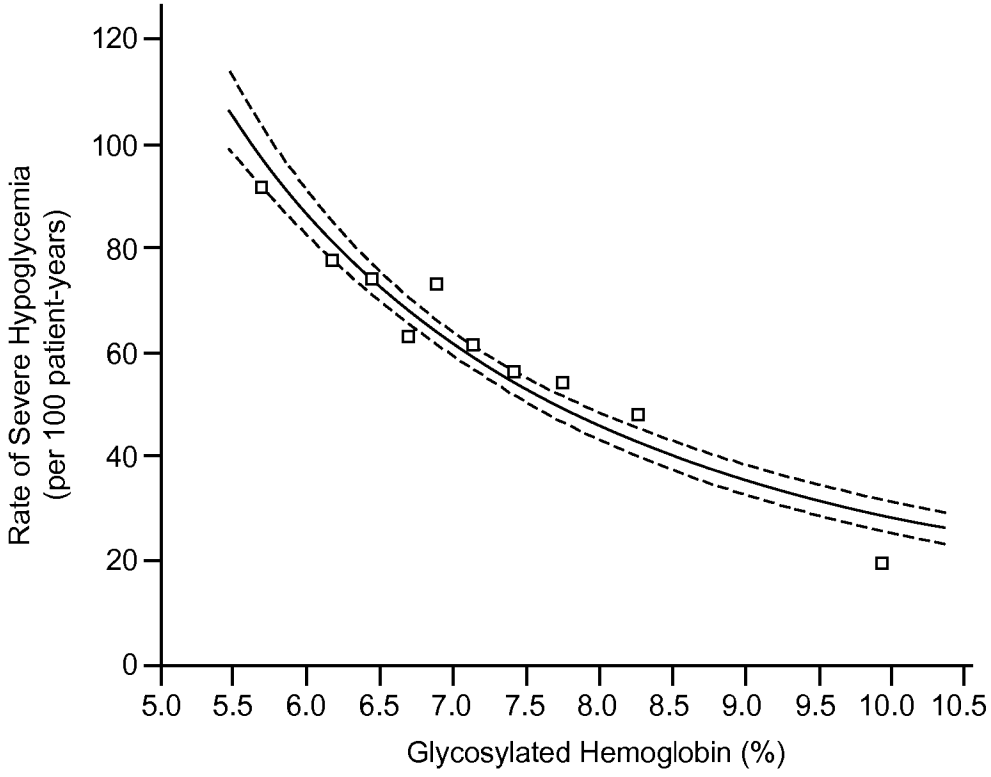

Rate of Severe Hypoglycemia
(per 100 patient-years)
120
100
80
60
40
20
0
5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10.0 10.5
Glycosylated Hemoglobin (%)

FIG. 56

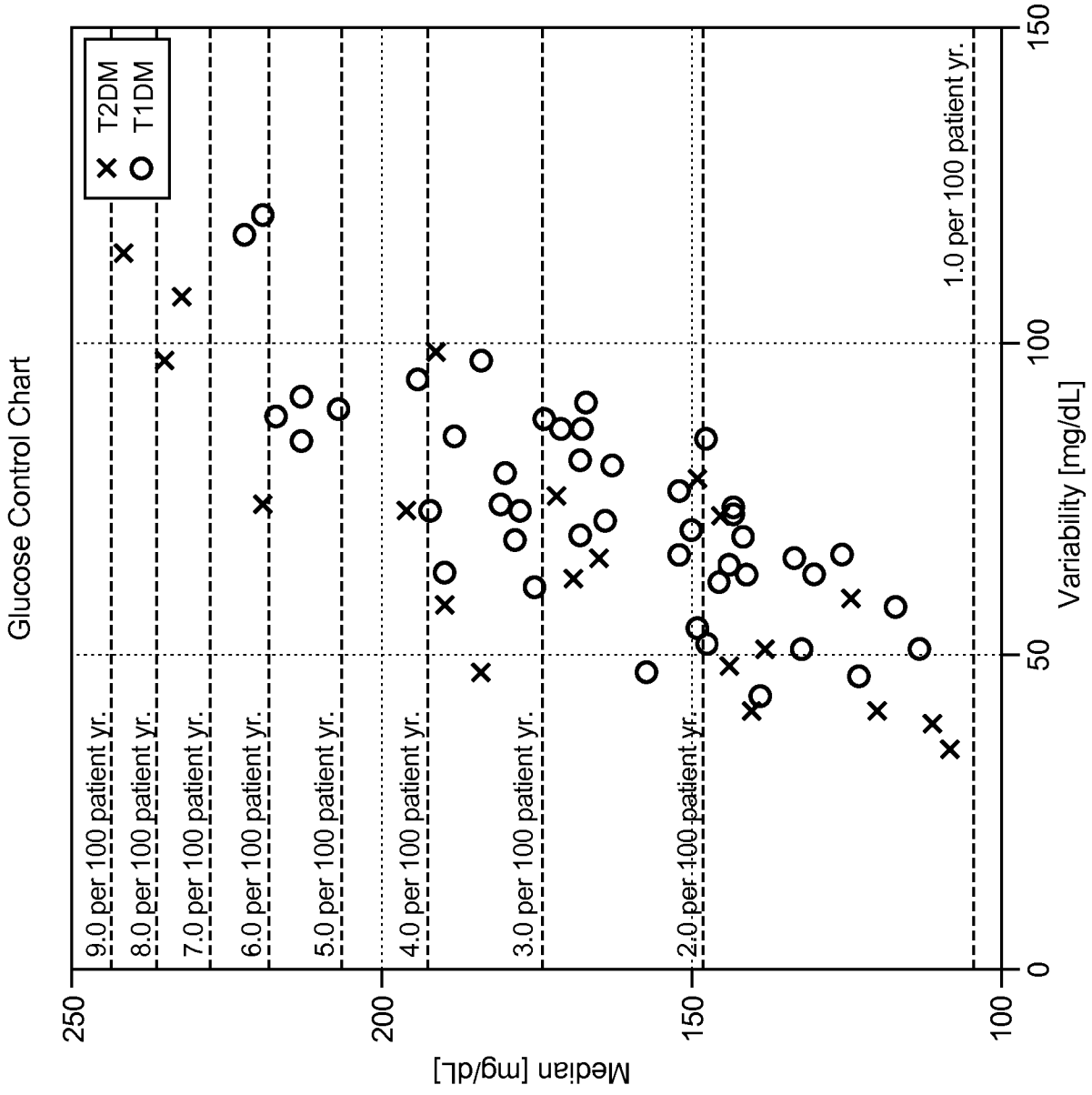

Glucose Control Chart
T2DM
T1DM
9.0 per 100 patient yr.
8.0 per 100 patient yr.
7.0 per 100 patient yr.
6.0 per 100 patient yr.
5.0 per 100 patient yr.
4.0 per 100 patient yr.
3.0 per 100 patient yr.
2.0 per 100 patient yr.
1.0 per 100 patient yr.
Median [mg/dL]
Variability [mg/dL]
250
200
150
100
0
50
100
150

FIG. 57

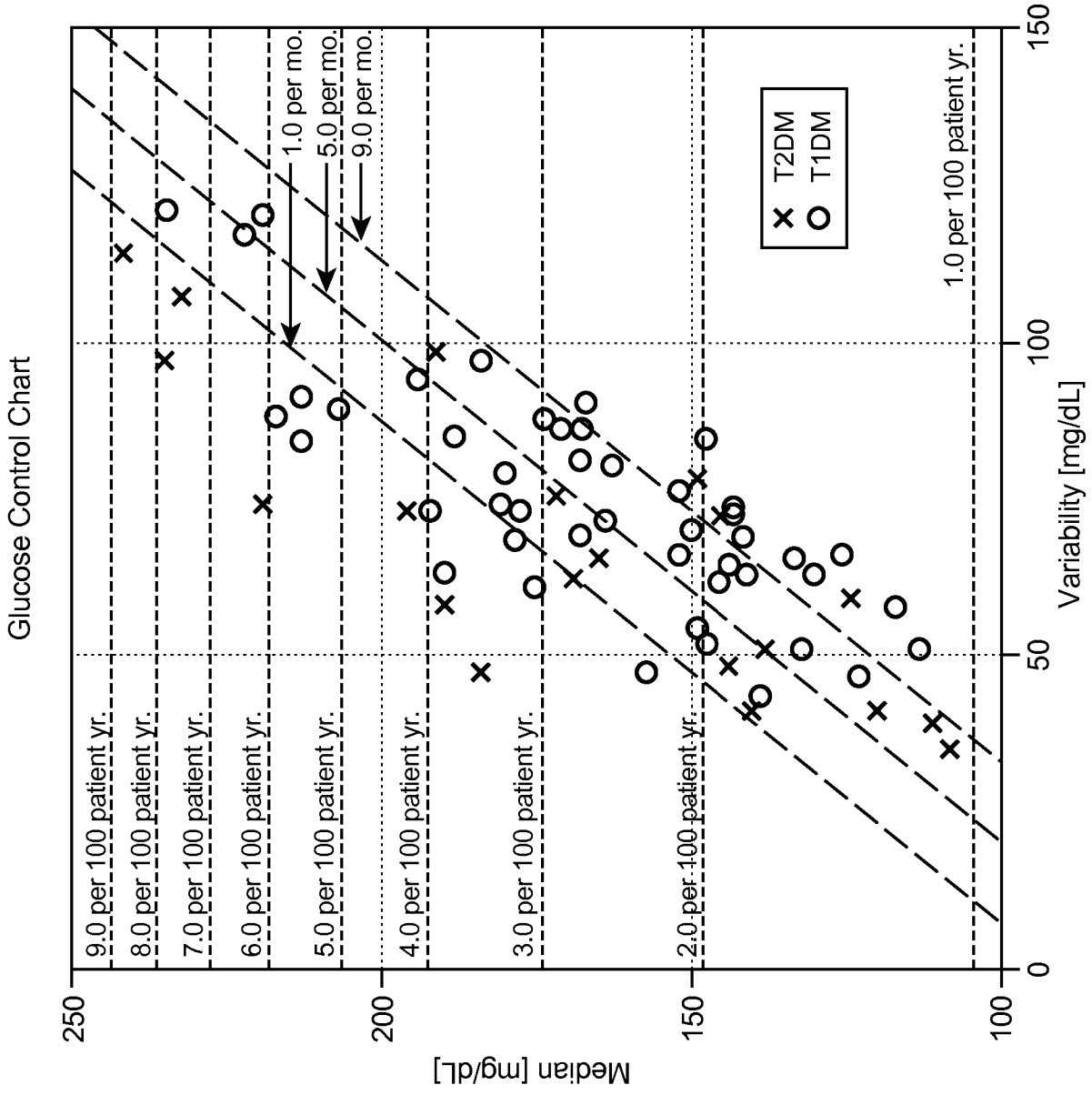

Glucose Control Chart
Median [mg/dL]
Variability [mg/dL]
250
200
150
100
0
50
100
150
9.0 per 100 patient yr.
8.0 per 100 patient yr.
7.0 per 100 patient yr.
6.0 per 100 patient yr.
5.0 per 100 patient yr.
4.0 per 100 patient yr.
3.0 per 100 patient yr.
2.0 per 100 patient yr.
1.0 per 100 patient yr.
1.0 per mo.
5.0 per mo.
9.0 per mo.
T2DM
T1DM

FIG. 58

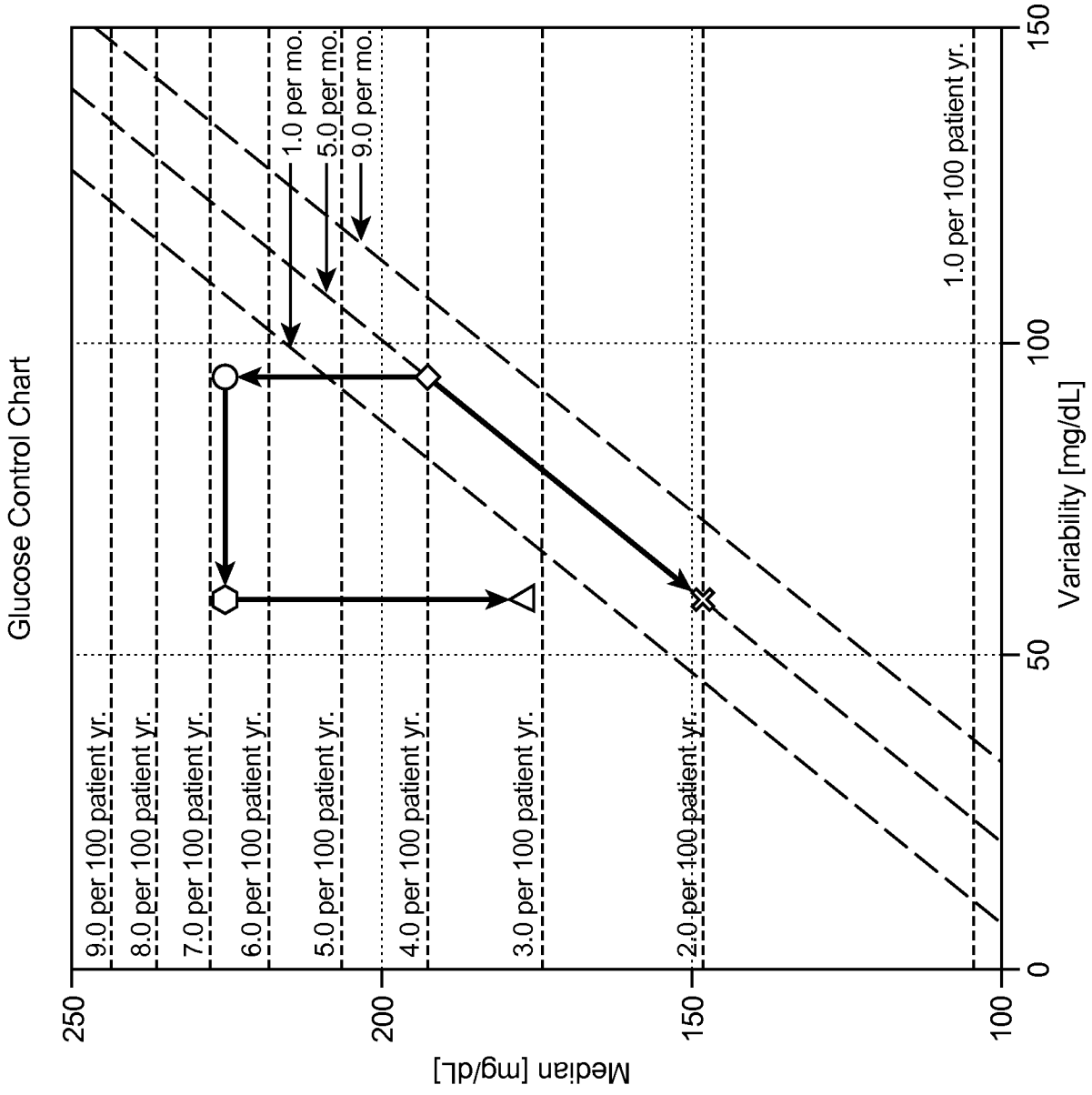

Glucose Control Chart
Median [mg/dL]
Variability [mg/dL]
250
200
150
100
0
50
100
150
9.0 per 100 patient yr.
8.0 per 100 patient yr.
7.0 per 100 patient yr.
6.0 per 100 patient yr.
5.0 per 100 patient yr.
4.0 per 100 patient yr.
3.0 per 100 patient yr.
2.0 per 100 patient yr.
1.0 per 100 patient yr.
1.0 per mo.
5.0 per mo.
9.0 per mo.

FIG. 59

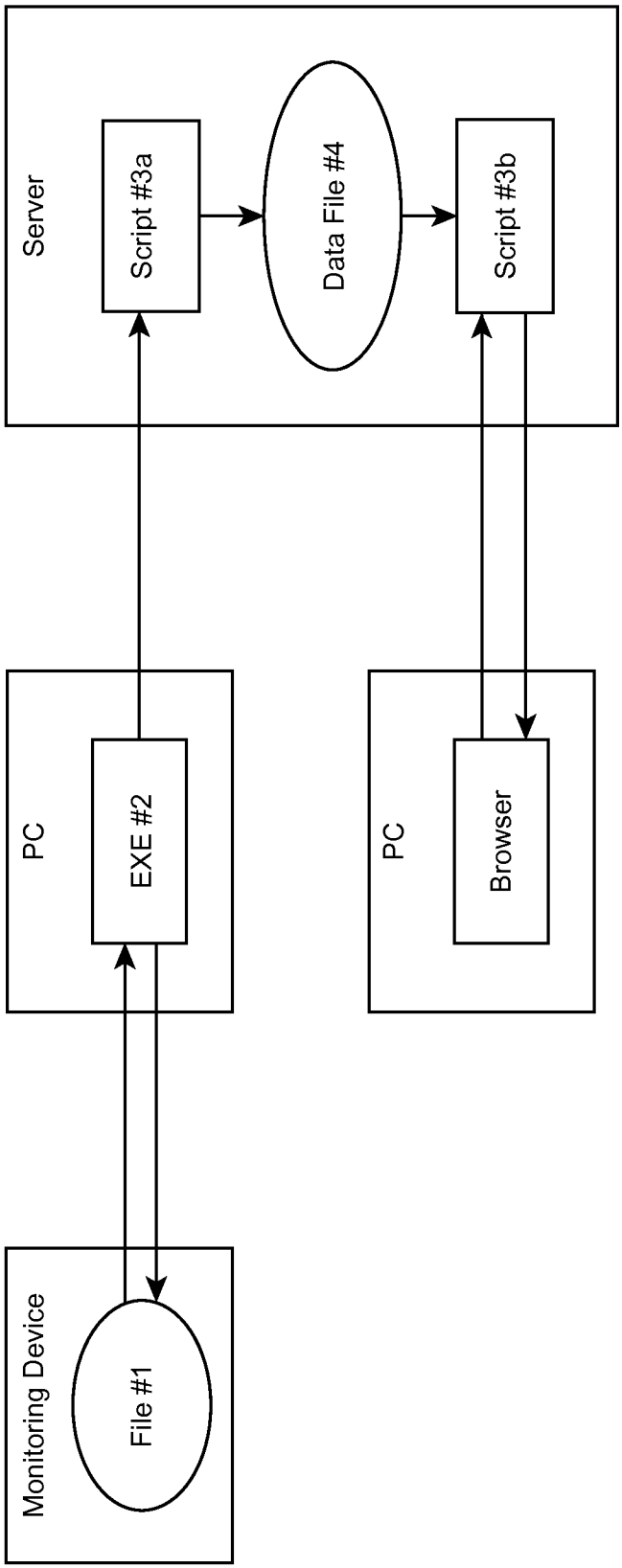

Server
Script #3a
Data File #4
Script #3b
PC
EXE #2
PC
Browser
Monitoring Device
File #1

FIG. 60

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 11/66610

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A61B 5/00; C12Q 1/54; G01D 3/02 (2012.01)
USPC - 702/85; 204/403.01
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
USPC -- 702/85; 204/403.01

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC -- 702/85; 204/403.01 (keyword delimited)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST (USPT, PGPB, JPAB, EPAB); Google
Search Terms Used: Diabetes, glucose, analyte, data, measurement, gulcometer, PC, computer, software, application, phone, PDA, doctor, record, graph, charts

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ---- Y	US 2010/0222648 A1 (Tan) 02 September 2010 (02.09.2010), entire document especially Abstract, para [0056], [0064], [0075], [0025]-[0026], [0049], [0103]-[0104], [0095]-[0096], [0128] and [0130]; Fig. 5A-6	1, 8-27, 61-66, 100-107 ---------- 2-7
Y	US 2008/0249470 A1 (Malave et al.) 09 October 2008 (09.10.2008), entire document especially Abstract, para para [0140] and [0143]	2-7
A	US 7,766,829 B2 (Sloan et al.) 03 August 2010 (03.08.2010), entire document	1-27, 61-66,100-107

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
17 April 2012 (17.04.2012)	30 APR 2012
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 11/66610

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☒ Claims Nos.: 28-60, 67-99, 108-116
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

Abbott Ex. 1002 - 645/834

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
16 August 2012 (16.08.2012)

WIPO | PCT

(10) International Publication Number
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(22) International Filing Date:
21 December 2011 (21.12.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/442,097 11 February 2011 (11.02.2011) US

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(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **GOPAL, Mani** [IN/US]; 1520 Oak Rim Drive, Hillsborough, California 94010 (US). **HAYTER, Gary A.** [US/US]; 4409 Harbord Drive, Oakland, California 94618 (US). **DUNN, Timothy C.** [US/US]; 812 Clayton Street, San Francisco, California 94117 (US). **BERNSTEIN, Daniel M.** [US/US]; P.O. Box 1236, El Granada, California 94018 (US). **DAVIS, Eric** [US/US]; 3380 Sydney Way, Castro Valley, California 94546 (US). **BRADRICK, Brittany K.** [US/US]; 425 1st Street, #1508, San Francisco, California 94105 (US). **WINKLER, Todd** [US/US]; 3185 Aeronca Way, Cameron Park, California 95682 (US).

(74) Agent: **BABA, Edward J.**; 1900 University Avenue, Suite 200, East Palo Alto, California 94303 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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Published:

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(54) **Title**: ANALYTICS AND DATA MINING IN CLOUD FOLLOWING UPLOAD OF ANALYTE DATA VIA GSM OR CDM

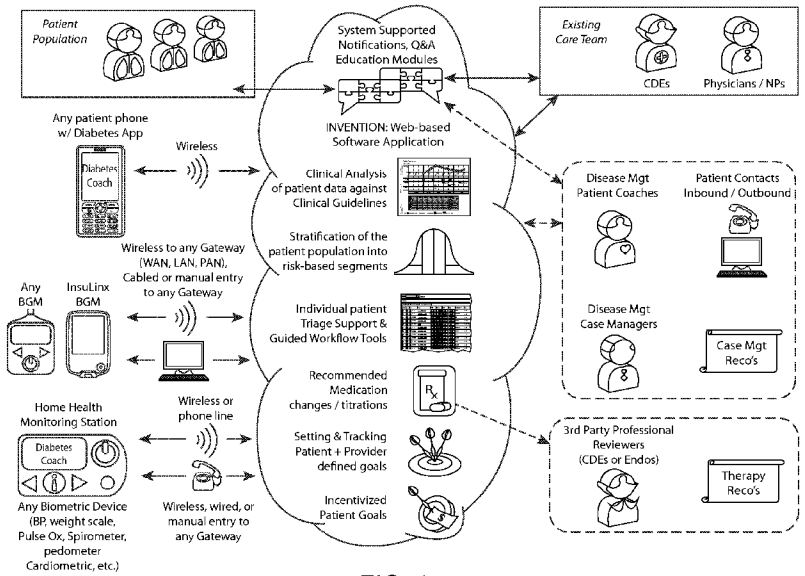


FIG. 1

(57) **Abstract**: Presented herein is a web-based software application that clinically analyzes multiple sources of diabetes patient data against codified care plan guidelines. The software application creates risk-based stratifications of a patient population, initiates rule-based notifications, allocates care provider resources, guides role-based workflow, manages patient communications, and provides therapy recommendations.

WO 2012/108940 A1

ANALYTICS AND DATA MINING IN CLOUD FOLLOWING UPLOAD OF ANALYTE DATA VIA GSM OR CDM

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] Pursuant to 35 U.S.C. § 119(e), this application claims priority to U.S. Provisional Application No. 61/442,097 filed on February 11, 2011, the disclosure of which is herein incorporated by reference in its entirety.

[0002] This application is related to U.S. Provisional Application No. 61/442,085 filed on February 11, 2011; U.S. Provisional Application No. 61/486,117 filed on May 13, 2011; U.S. Provisional Patent Application No. 61/442,063 filed on February 11, 2011; U.S. Provisional Application No. 61/442,092 filed on February 11, 2011; U.S. Provisional Application No. 61/485,840 filed on May 13, 2011; and U.S. Provisional Application No. 61/442,093 filed on February 11, 2011, the disclosures of which are all incorporated herein by reference in their entirety and for all purposes.

BACKGROUND OF THE INVENTION

The Field of the Invention

[0003] The present invention relates to diabetes management systems. More specifically, the present invention relates to a web-based diabetes management/monitoring software application.

Background

[0004] Healthcare organizations and care providers, such as disease management companies, have a responsibility of providing continuous care to their patient populations. To effectively carry out this responsibility, these care organizations must appropriately allocate their resources (i.e., triage) across the criticality of needs within their patient populations. Such triage activity relies upon patients to notify their care providers about their status, and the care providers to initiate an appropriate workflow in response.

[0005] Current diabetes management systems have several disadvantages. First, diabetes patients are often unaware when their health status departs from pre-defined boundaries of their normal care plan. These departures may go unnoticed, or slowly growing and

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worsening, especially if the departures are episodic. Second, in severe cases of departure from normal status, diabetes patients may become incapacitated and unable to contact their care providers. Third, care providers who are contacted by patients must rely upon self-reported symptoms to triage criticality. These self-reported symptoms often disguise the true causality or severity, which may result in a dangerous under/over estimation of criticality. Further, the procedures that care providers initiate in response to patient status are commonly guided by standards of care. The workflows that underlie those procedures, however, are typically not well-defined or appropriately monitored. As such, care provider resources are used efficiently. Finally, care providers base their therapy decisions upon the patient data at hand. In many clinical settings, the process of accessing patient self-monitoring data is inconsistent and results in inefficient workflows that undermine the care provider's efforts to collect the data. In cases where these obstacles are overcome, the acquired self-monitoring data typically lacks appropriate analysis and does not insightfully guide therapy decisions. As a result, clinical therapy decisions are primarily guided by point-in-time lab test results that do not depict important health patterns, which fully analyzed self-monitoring data can reveal. Without a full depiction of the patient's status, prescribed therapies are typically under-informed and lack appropriate levels of effectiveness.

BRIEF SUMMARY

[0006] Presented herein is a web-based system (e.g., software application) that clinically analyzes multiple sources of diabetes patient data against codified care plan guidelines. The software application creates risk-based stratifications of a patient population, initiates rule-based notifications, allocates care provider resources, guides role-based workflow, manages patient communications, and provides therapy recommendations.

BRIEF DESCRIPTION OF THE FIGURES

[0007] The accompanying drawings, which are incorporated herein, form part of the specification. Together with this written description, the drawings further serve to explain the principles of, and to enable a person skilled in the relevant art(s), to make and use the present invention.

[0008] **FIG. 1** provides a schematic illustration of one aspect of the present invention.

[0009] **FIG. 2** provides a schematic illustration of another aspect of the present invention.

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DETAILED DESCRIPTION OF THE INVENTION

[0010] Before the embodiments of the present disclosure are described, it is to be understood that this invention is not limited to particular embodiments described, as such may, of course, vary. It is also to be understood that the terminology used herein is for the purpose of describing particular embodiments only, and is not intended to be limiting, since the scope of the embodiments of the invention will be limited only by the appended claims.

[0011] In one embodiment, there is provided a diabetes management system that clinically analyzes multiple sources of diabetes patient data against codified care plan guidelines. The system may be in the form of a web-based software application. The system may create risk-based stratifications of a patient population, initiate rule-based notifications, allocate care provider resources, guide role-based workflows, provide therapy recommendations, and/or real-time/retrospective clinical analysis.

[0012] In one embodiment, diabetes patient data is uploaded to a web-based software application. The software application then compares the data against care plan guidelines established by a health care provider, payor, care provider organization, medical association, government standard board, or any combination thereof. The software application can then use clinical algorithms to assign a status value to the patient. The status value may represent triage criteria, such as status criticality, regimen adherence, data recency, and/or usual care schedule (including lab results and completeness metrics). The patient's assigned status value(s) are correlated with the rest of the patient population under care to produce sortable stratifications for the care managers. The care managers then use these stratifications to allocate health provider resources according to their care roles.

[0013] In one embodiment, health providers receive their assigned responsibilities and use the system to guide their workflows in the performance of their assigned responsibilities. As tasks are completed, and procedural results are logged, the system continually processes newly entered data against clinical guidelines to adapt the workflows and notify hand-offs between care provider roles.

[0014] In another embodiment, the system gathered data is used to provide therapy recommendations. For example, the system may include a therapy recommendation engine. The therapy recommendation engine may be configured to enforce adherence to established clinical guidelines and cost efficiencies. These configuration mechanisms are represented by: 1) a list of medications where payors select/deselect medications depending on their willingness to pay for the medication (the deselected medications

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would not be included in the possible recommended treatment paths); 2) a list of allowable treatment guidelines, which includes glucose measurement methods, glucose measurement frequency, clinical visit frequency, and/or specialist referrals; and 3) diabetes metric thresholds such as mean glucose, HbA1C, and hypoglycemia frequency, which can be configured to conditionally approve certain medications and treatments.

[0015] In yet another embodiment, the system provides patients with guidance that supports their adherence to prescribed regimens. The prescribed regimen may be translated into a task and schedule list that may be electronically published to a patient's local device. The patient's local device may be a blood glucose meter, a mobile phone, local kiosk, or a home health monitoring hub. System software on the patient's device guides the patient's adherence to the published regimen, and provides escalated notifications when their adherence level drops. According to rules configured within the system, these notifications may be routed to any stakeholder using the diabetes management system; including family members, care providers, payors, etc.

[0016] The system may further communicate, in parallel, to a variety of patient endpoints. This communication may be electronic messaging or voice telephony. These endpoints may be, for example: multiple patient devices that operate locally-resident components of the system software, such as blood glucose meters, mobile phones, or home health monitoring hubs; email addresses; telephone numbers; etc.

[0017] Various protocols may be provided to implementing the diabetes management system. For example, the patient's data may be automatically uploaded whenever a new data set has been produced, and a data connection is present. Alternatively, the patient's data may be automatically uploaded according to synchronization rules held in the web-based application, and pushed to the patient device through data communication channels. In another example, the patient's data may be uploaded by a patient-initiated action, prompted through a notification alert generated by the web-based application rules pushed to the patient device through the data communication channels.

[0018] In one embodiment, the diabetes management system includes patient communications means, which includes automated notifications that are managed between multiple devices registered to a single patient. Such patient communication means are governed by a content management system component, which appropriately adapts the communication for the device class, device capability, and patient set preferences. in the case of data conflicts due to connection persistence, or lack thereof, trickle synch methods compare the conflicts to establish a master record and modify each slave record according to synchronization rules such as overwrite, append, or ignore.

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The data analysis results produced by the web-based application may be published in the care providers electronic health record system.

[0019] **FIG. 1** provides a schematic illustration of one aspect of the present invention. As shown in FIG. 1, a patient population (left side of schematic) communicates data to a cloud, network, or centralized database. The communication between the patient population and the cloud, network, or centralized database may be through one or more patient devices such as mobile phones with diabetes application software; wired or wireless BG meters; home health monitoring systems; or any other biometric device configured to communicate with the cloud, network, or centralized database.

[0020] The cloud, network, or centralized database includes a system support and notification engine; a clinical analysis engine; a patient stratification engine; an individual patient triage engine; a recommendation engine; a setting & tracking engine; and/or a patient incentive engine. Each of such engines provides information, and may be managed by, one or more HCPs (right side of schematic) for the patient population. As such, FIG. 1 presents a robust diabetes management system.

[0021] **FIG. 2** provides a schematic illustration of another aspect of the present invention. FIG. 2 shows the three vertical levels of the present invention. The first vertical level is the patient population with individual diabetes monitoring, data collection, and data communication devices. The patient population sends data to the second and third vertical levels, and receive analysis/instructions from the second and third vertical levels, through their individual devices. The second vertical level is a web-based software application including one or more of the above-listed software engines. The third vertical level is the HCP network, which includes: a core patient care team; an augmented care team; and/or expert advice resources. The flow of information can be managed accordingly such that the most efficient use of the HCPs' time can be used. In other words, only patients with the highest degree of need, would receive the highest level of HCP attention.

[0022] The system presented herein provides several advantages over the current practices. First, automatically collected patient data, from several sources, is combined and clinically analyzed to produce an accurate assessment of patient condition. This patient condition is analyzed against codified care plan guidelines to automatically recognize exceptions and grade their criticality. Patient status is accurately monitored without reliance on patient recognition of symptoms and self-reporting. Second, in severe cases of patient incapacitation, the automated process of collecting and analyzing patient data may still occur, and the appropriate notifications automatically sent to care

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providers. Third, when care providers receive exception-based notifications, the system provides them with a data-supported clinical analysis of patient condition, which enables clinical judgments superior to those made with only patient self-reported symptoms. Further, the system contains codified workflows that guide appropriately triaged clinical responses to each patient's status. These workflows allocate the proper care provider roles, guide their clinical procedures, track their completion status, modify the workflows in accordance with procedural findings, and coordinate the handoffs between different care provider roles. As a result, health provider resources are more efficiently allocated and utilized across the collective needs of the patient population. Finally, the automatically collected and analyzed patient data is readily accessible to care providers through a consistent and efficient workflow. This data analysis includes a comparison of alternative treatment regimens against evidence-based clinical guidelines to suggest the most appropriate therapy choices. As a result, care providers' prescribed therapies are much more informed and effective.

[0023] In one embodiment, the systems and methods presented herein are used to provide personalized trials for patients with individualized treatments, medications, or regimens. Real-time or short-term data can be provided to the HCP in a feedback loop for the HCP to determine if/how the trial is working for the patient. The systems may also include algorithms for determining how the patient is doing within the personalized trial.

[0024] The types diabetes medications disclosed herein include insulin and other diabetes medications such as alpha-glucosidase inhibitors, amylin analogs, SGLT2 inhibitors, and the like.

[0025] In one embodiment, the systems and methods presented herein are resident in EMR/PHR systems. The systems and methods can be context sensitive and self-populate within the EMR/PHR system.

Conclusion

[0026] The foregoing description of the invention has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed. Other modifications and variations may be possible in light of the above teachings. The embodiments were chosen and described in order to best explain the principles of the invention and its practical application, and to thereby enable others skilled in the art to best utilize the invention in various embodiments and various modifications as are suited to the particular use contemplated. It is intended that the

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appended claims be construed to include other alternative embodiments of the invention; including equivalent structures, components, methods, and means.

[0027] It is to be appreciated that the Detailed Description section, and not the Summary and Abstract sections, is intended to be used to interpret the claims. The Summary and Abstract sections may set forth one or more, but not all exemplary embodiments of the present invention as contemplated by the inventor(s), and thus, are not intended to limit the present invention and the appended claims in any way.

[0028] Where a range of values is provided, it is understood that each intervening value, to the tenth of the unit of the lower limit unless the context clearly dictates otherwise, between the upper and lower limits of that range is also specifically disclosed. Each smaller range between any stated value or intervening value in a stated range and any other stated or intervening value in that stated range is encompassed within the invention. The upper and lower limits of these smaller ranges may independently be included or excluded in the range, and each range where either, neither or both limits are included in the smaller ranges is also encompassed within the invention, subject to any specifically excluded limit in the stated range. Where the stated range includes one or both of the limits, ranges excluding either or both of those included limits are also included in the invention.

[0029] In the description of the invention herein, it will be understood that a word appearing in the singular encompasses its plural counterpart, and a word appearing in the plural encompasses its singular counterpart, unless implicitly or explicitly understood or stated otherwise. Merely by way of example, reference to “an” or “the” “analyte” encompasses a single analyte, as well as a combination and/or mixture of two or more different analytes, reference to “a” or “the” “concentration value” encompasses a single concentration value, as well as two or more concentration values, and the like, unless implicitly or explicitly understood or stated otherwise. Further, it will be understood that for any given component described herein, any of the possible candidates or alternatives listed for that component, may generally be used individually or in combination with one another, unless implicitly or explicitly understood or stated otherwise. Additionally, it will be understood that any list of such candidates or alternatives, is merely illustrative, not limiting, unless implicitly or explicitly understood or stated otherwise.

[0030] Various terms are described to facilitate an understanding of the invention. It will be understood that a corresponding description of these various terms applies to corresponding linguistic or grammatical variations or forms of these various terms. It will also be understood that the invention is not limited to the terminology used herein,

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or the descriptions thereof, for the description of particular embodiments. Merely by way of example, the invention is not limited to particular analytes, bodily or tissue fluids, blood or capillary blood, or sensor constructs or usages, unless implicitly or explicitly understood or stated otherwise, as such may vary.

[0031] The publications discussed herein are provided solely for their disclosure prior to the filing date of the application. Nothing herein is to be construed as an admission that the embodiments of the invention are not entitled to antedate such publication by virtue of prior invention. Further, the dates of publication provided may be different from the actual publication dates which may need to be independently confirmed.

[0032] The detailed description of the figures refers to the accompanying drawings that illustrate an exemplary embodiment of an analyte measurement system. Other embodiments are possible. Modifications may be made to the embodiment described herein without departing from the spirit and scope of the present invention. Therefore, the following detailed description is not meant to be limiting.

[0033] Certain embodiments presented herein relate to electrical interfaces in measurement devices. Measurement devices often have electrical interfaces that allow them to electrically connect with another device or apparatus and perform an analysis of an analyte. A device that measures blood glucose levels, for example, includes electrical interfaces that allow the device to measure the blood glucose level from a small blood sample.

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CLAIMS

What is claimed is:

1. A diabetes management system, comprising:

a plurality of analyte measurement devices distributed over a patient population;

a centralized server having a web-based software application, wherein the software application includes instructions executable by a processing device, wherein, when executed, the instructions cause the processor to perform one or more functions selected from the group consisting of: patient support notifications, clinical analysis of patient data, stratification of patient population in risk-based segments, individual patient triage, medication recommendations, setting and tracking of patient or provider defined goals, titration, change of medication amount, change of medication timing, change of medication type, and incentive patient goals; and

a network receiving information from the centralized server and managing the functions performed by the web-based software application on the centralized server.

2. The diabetes management system of claim 1, wherein the plurality of analyte measurement devices communicate with the centralized server via a wired or wireless network.

3. The diabetes management system of any of the previous claims, wherein the plurality of analyte measurement devices communicate with the centralized server via a cellular network.

4. The diabetes management system of any of the previous claims, wherein the plurality of analyte measurement devices include: a cellular phone with a diabetes software application, a blood glucose meter, a home health monitoring system, or other biometric device.

5. The diabetes management system of claim 4, wherein the other biometric device is selected from the group consisting of: a blood pressure measurement device, a weight scale, a pulse oximeter, a spirometer, a pedometer, and a cardiometric measurement device.

6. A diabetes management system for clinically analyzing multiple sources of diabetes patient data against codified care plan guidelines, comprising:

a web-based software application having instructions executable by a processing device, wherein, when executed, the instructions cause the processor to

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create risk-based stratifications of a patient population,

initiate rule-based notifications,

allocate care provider resources,

guide role-based workflows, and

provide therapy recommendations.

7. A diabetes management system for clinically analyzing multiple sources of diabetes patient data against codified care plan guidelines, comprising:

a web-based software application having instructions executable by a processing device, wherein, when executed, the instructions cause the processor to

uploaded patient data to the web-based software application,

compare the data against care plan guidelines established by a health care provider, payor, care provider organization, medical association, government standard board, or any combination thereof,

use clinical algorithms to assign a status value to the patient, wherein the status value represents triage criteria selected from the group consisting of: status criticality, regimen adherence, data recency, and usual care schedule, and

correlate the patient's assigned status value(s) the rest of the patient population under care to produce sortable stratifications for the care managers.

8. The diabetes management system of claim 7, wherein the care managers use the stratifications to allocate health provider resources according to their care roles.

9. The diabetes management system of any of claims 7 or 8, wherein the care managers receive assigned responsibilities and use the web-based software application to guide their workflows in the performance of their assigned responsibilities.

10. The diabetes management system of any of claims 7-9, wherein as tasks are completed, and procedural results are logged, the web-based software application continually processes newly entered data against clinical guidelines to adapt the workflows and notify hand-offs between care manager roles.

11. The diabetes management system of any of claims 7-10, wherein the web-based software application further includes instructions executable by a processing device, wherein, when executed, the instructions cause the processor to provide therapy recommendations.

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12. The diabetes management system of claim 11, wherein the therapy recommendations enforce adherence to established clinical guidelines and cost efficiencies.

13. The diabetes management system of claim 12, wherein the web-based software application further includes instructions that provide:

a list of medications to select/deselect medications,

a list of treatment guidelines, which includes glucose measurement methods, glucose measurement frequency, clinical visit frequency, and specialist referrals, and

diabetes metric thresholds such as mean glucose, HbA1C, and hypoglycemia frequency.

14. A diabetes management system for clinically analyzing multiple sources of diabetes patient data against codified care plan guidelines, comprising:

a web-based software application having instructions executable by a processing device, wherein, when executed, the instructions cause the processor to provide patients with guidance that supports their adherence to prescribed regimens, wherein the prescribed regimen may be translated into a task and schedule list that may be electronically published to a patient's local device.

15. The diabetes management system of claim 14, wherein the patient's local device is selected from the group consisting of: a blood glucose meter, a mobile phone, and a home health monitoring hub.

16. The diabetes management system of claim 15, wherein software on the patient's device guides the patient's adherence to the prescribed regimen, and wherein software on the patient's devices provides escalated notifications when the patient's adherence to the prescribed regimen drops, or lack of interaction.

17. The diabetes management system of claim 16, wherein the notifications are routed to a family member, a care provider, or a payor.

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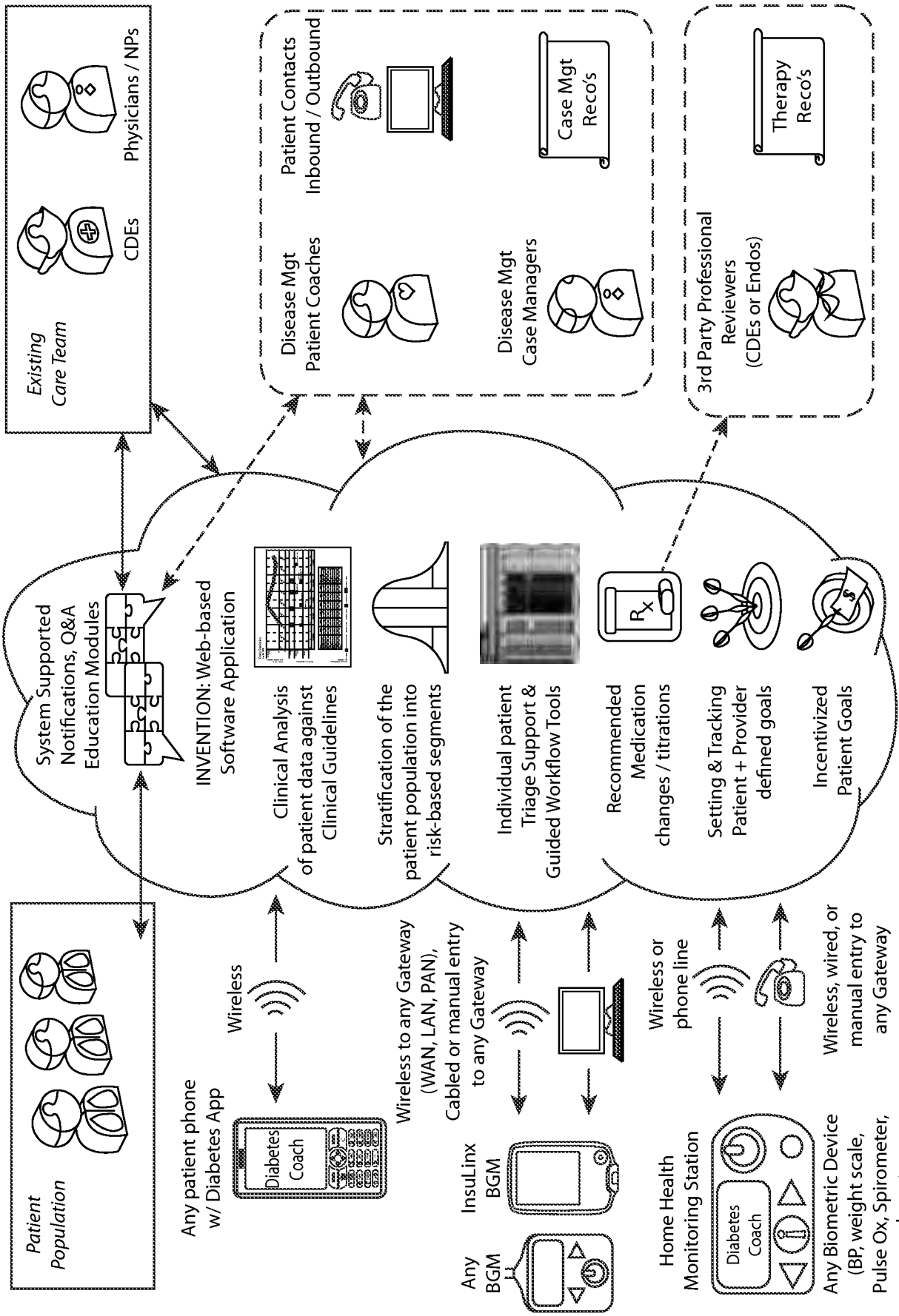

Existing Care Team
CDEs
Physicians / NPs
Disease Mgt Patient Coaches
Patient Contacts Inbound / Outbound
Disease Mgt Case Managers
Case Mgt Reco's
3rd Party Professional Reviewers (CDEs or Endos)
Therapy Reco's
System Supported Notifications, Q&A Education Modules
INVENTION: Web-based Software Application
Clinical Analysis of patient data against Clinical Guidelines
Stratification of the patient population into risk-based segments
Individual patient Triage Support & Guided Workflow Tools
Recommended Medication changes / titrations
Setting & Tracking Patient + Provider defined goals
Incentivized Patient Goals
Patient Population
Any patient phone w/ Diabetes App
Diabetes Coach
Wireless
Wireless to any Gateway (WAN, LAN, PAN), Cabled or manual entry to any Gateway
InsuLinx BGM
Any BGM
Wireless or phone line
Home Health Monitoring Station
Diabetes Coach
Any Biometric Device (BP, weight scale, Pulse Ox, Spirometer, pedometer Cardiometric, etc.)
Wireless, wired, or manual entry to any Gateway

FIG. 1

FIG. 2

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 11/66615

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06F 7/00 (2012.01)
USPC - 707/776
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
707/776

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
604/504 | 707/602 | 707/941

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST(USPT, PGPB, EPAB, JPAB): Google Scholar; diabetes management system, server, medicine, drugs, prescription, regimen, guidelines, cellular network, analtye, tool, web, patient, doctor, physician, notifications, alert, message,

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2011/0015511 A1 (Bousamra et al.) 20 January 2011 (20.01.2011) entire document (especially para [0026],[0065],[0083],[0088]),	1-3, 6-9, and 14-17
X	US 2010/0274592 A1 (Nitzan et al.) 28 October 2010 (28.10.2010) entire document (especially para [0003],[0008],[0069]-[0072],[0088]-[0089],[0098]-[0099], [0178],[0229])	1-3, 6-9, and 14-17
A	US 2004/0054263 A1 (Moerman) 18 March 2004 (18.03.2004) entire document	1-3, 6-9, and 14-17

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
20 April 2012 (20.04.2012)	03 MAY 2012
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 11/66615

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☒ Claims Nos.: 4-5, 10-13
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

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Electronic Acknowledgement Receipt

EFS ID:	16828865
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Kaare Douglas Larson/Renee Zavala
Filer Authorized By:	Kaare Douglas Larson
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	11-SEP-2013
Filing Date:	15-MAR-2013
Time Stamp:	18:13:59
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2013--0911-IDS-initial-225A.pdf	532124 4c733543555e400dc7af92e7b7801a925e624595	yes	5

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Transmittal Letter	1	1
	Information Disclosure Statement (IDS) Form (SB08)	2	5
Warnings:			
Information:			

2	Foreign Reference	X-WO-2012-108935-A1.pdf	4397520 54ec8b7c334a756d985d5ea629b68801b1ae221d	no	40
Warnings:					
Information:					
3	Foreign Reference	X-WO-2012-108936-A1.pdf	3775497 63ec31f463b9922ece7ce7fcfa81d5add372bd37	no	32
Warnings:					
Information:					
4	Foreign Reference	X-WO-2012-108939-A1.pdf	14782287 c1215a956fa1225f1098fbdd676a74fc592ff225	no	143
Warnings:					
Information:					
5	Foreign Reference	X-WO-2012-108940SA1.pdf	2063972 4d3d1f4c2169ab5fd233c2195ffb077f8f038aec	no	16
Warnings:					
Information:					
6	Non Patent Literature	X-Garg-DiabCare-2006.pdf	1008766 fed182104aa971cd76bec3f733a7c3f70fbbccda	no	7
Warnings:					
Information:					
7	Non Patent Literature	X-Hirsch-Brownlee-JDiabCompl-2005.pdf	120850 3c20ff986ce47c1c229f2cc6b1864c8da8e85417	no	4
Warnings:					
Information:					
8	Non Patent Literature	X-Kovatchev-DiabTechTher-2003.pdf	294074 abdb3ed275372f846f5e551371e7854ca8e819bf	no	15
Warnings:					
Information:					

9	Non Patent Literature	X-Marling-JDiabSciTech-2011.pdf	1391223 e3bd1ba5f2d72264b8ad4492fcd165c9363d6b8b	no	8
Warnings:					
Information:					
10	Non Patent Literature	X-Penckofer-DiabTechTher-2012.pdf	609548 4d00f58a7df21a352e81ef675dee8c8c4b28d114	no	9
Warnings:					
Information:					
11	Non Patent Literature	X-Wiley-IntlConfMachineLrngApp-2011.pdf	994304 2e57dbc03c5be9c2a6b0f8b12f3aeeb46f496305	no	7
Warnings:					
Information:					
		Total Files Size (in bytes):	29970165		

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

Docket No. DEXCOM.225A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Michael Robert Mensinger, et al.
App. No	:	13/842679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	WU, Daniel
Art Unit	:	2681
Conf #	:	8793

CERTIFICATE OF TRANSMITTAL UNDER 37 C.F.R. 1.8

I hereby certify that this paper (along with anything referred to as being attached or enclosed) is being filed electronically via EFS-Web at the United States Patent and Trademark Office on September 11, 2013.

By: Renee Zavala

INFORMATION DISCLOSURE STATEMENT

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

Dear Sir:

Submitted herewith in the above-identified application is an Information Disclosure Statement listing references for consideration. Copies of the listed references, other than United States patent publications, are provided with this submission.

This Information Disclosure Statement is being filed within three months of the filing date or date of national phase entry, before the receipt of a First Office Action on the merits, with an RCE or before receipt of a First Office Action after an RCE, and no fee is required. If a fee is due, the Commissioner is hereby authorized to charge any fees due, or credit any overpayments, to Deposit Account No. 506176, referencing Docket No. DEXCOM.225A.

Respectfully submitted,

DEXCOM, INC.

Dated: 9/11/2013

By: _____

Kaare D. Larson, PTO Reg. No. 51,920

Customer Number 68851
DEXCOM, INC.
6340 Sequence Drive
San Diego, CA 92121
Telephone: 858.875.9786

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
13/842,679	03/15/2013	2681	1390	DEXCOM.225A	19	1

CONFIRMATION NO. 8793

CORRECTED FILING RECEIPT

68851
KNOBBE, MARTENS, OLSEN & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

OC000000062362540

Date Mailed: 07/05/2013

Receipt is acknowledged of this non-provisional 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 APPLICANT, 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 Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Michael Robert Mensinger, San Diego, CA;
Eric Cohen, San Diego, CA;
Phil Mayou, San Diego, CA;
Eli Reihman, San Diego, CA;
Katherine Yerre Grubstein, San Diego, CA;
Rian Draeger, San Diego, CA;
Angela Marie Traven, San Marcos, CA;

Applicant(s)

DexCom, Inc., San Diego, CA

Assignment For Published Patent Application

DexCom, Inc., San Diego, CA

Power of Attorney: The patent practitioners associated with Customer Number 68851

Domestic Priority data as claimed by applicant

This appln claims benefit of 61/747,717 12/31/2012

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 - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

Abbott Ex. 1002 - 666/834

If Required, Foreign Filing License Granted: 05/01/2013

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/842,679**

Projected Publication Date: 07/03/2014

Non-Publication Request: No

Early Publication Request: No
Title

REMOTE MONITORING OF ANALYTE MEASUREMENTS

Preliminary Class

340

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

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).

Abbott Ex. 1002 - 667/834

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 AssetsControl, 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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A

CONFIRMATION NO. 8793

POA ACCEPTANCE LETTER

68851
KNOBBE, MARTENS, OLSEN & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

OC000000062189147

Date Mailed: 06/28/2013

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/19/2013.

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

/sleutchit/

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

Please Direct All Correspondence to Customer Number 68851

TRANSMITTAL

Inventor	:	Mensinger, et al.
App. No	:	13/842,679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	Daniel J. Wu
Art Unit	:	2681
Conf No.	:	8793

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

Dear Sir:

Enclosed please find the following:

(X) Declaration in 5 pages; and

(X) Statement 3.73, Power of Attorney, and copy of Assignment in 10 pages.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 6/19/13

By: _____

Rose M. Thiessen
Registration No. 40,202
Attorney of Record
Customer No. 68851
(858) 707-4000

15609161:JSJ

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A

CONFIRMATION NO. 8793

68851
KNOBBE, MARTENS, OLSEN & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

NOTICE

OC000000060887931

Date Mailed: 05/07/2013

INFORMATIONAL NOTICE TO APPLICANT

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

The item(s) indicated below are also required and should be submitted with any reply to this notice to avoid further processing delays.

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
  ALL
  Applicant may submit the inventor's oath or declaration at any time before the Notice of Allowance and Fee(s) Due, PTOL-85, is mailed.

Abbott Ex. 1002 - 671/834

Doc Code: Oath
Document Description: Oath or declaration filed

PTO/AIA/08 (06-12)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)

☐ Declaration Submitted With Initial Filing OR ☒ Declaration Submitted After Initial Filing (surcharge (37 CFR 1.16(f)) required)

Attorney Docket Number	DEXCOM.225A
First Named Inventor	Michael Robert Mensinger
COMPLETE IF KNOWN	
Application Number	13/842679
Filing Date	March 15, 2013
Art Unit	
Examiner Name	

REMOTE MONITORING OF ANALYTE MEASUREMENTS

(Title of the Invention)

As a below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application,

OR

☒ United States Application Number or PCT International application number 13/842679 filed on March 15, 2013.

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

I believe 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.

Authorization To Permit Access To Application by Participating Office

☑ If 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 World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the above-identified patent application is filed access to the above-identified patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the above-identified patent application is filed to have access to the above-identified patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the above-identified patent application with respect to: 1) the above-identified patent application-as-filed; 2) any foreign application to which the above-identified patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the above-identified patent application; and 3) any U.S. application-as-filed from which benefit is sought in the above-identified patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing the Authorization to Permit Access to Application by Participating Offices.

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 21 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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DECLARATION — Utility or Design Patent Application

Direct all correspondence to:	■	The address associated with Customer Number:	68851	OR ☐	Correspondence address below

Name		
Address		
City	State	Zip
Country	Telephone	Email

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available. Petitioner/applicant is advised that documents which form the record of a patent application (such as the PTO/SB/01) are placed into the Privacy Act system of records DEPARTMENT OF COMMERCE, COMMERCE-PAT-7, System name: *Patent Application Files* . Documents not retained in an application file (such as the PTO-2038) are placed into the Privacy Act system of COMMERCE/PAT-TM-10, System name: *Deposit Accounts and Electronic Funds Transfer Profiles* .

LEGAL NAME OF SOLE OR FIRST INVENTOR:

(*E.g.*, Given Name (first and middle (if any)) and Family Name or Surname)

Michael Robert Mensinger

Inventor's Signature	Date (Optional)
	6/5/13

Residence: City	State	Country
San Diego	CA	US

Mailing Address

12705 Amaranth Street

City	State	Zip	Country
San Diego	CA	92129	US

■ Additional inventors are being named on the 2 supplemental sheet(s) PTO/AIA/10 attached hereto

Abbott Ex. 1002 - 673/834

PTO/AIA/10 (06-12)
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SUPPLEMENTAL SHEET FOR DECLARATION | **ADDITIONAL INVENTOR(S)**
Supplemental Sheet (for PTO/AIA/08,09) Page 3 of 5

Legal Name of Additional Joint Inventor, if any:

(*E.g.*, Given Name (first and middle (if any)) and Family Name or Surname)

Eric Cohen

Inventor's Signature | Date (Optional) 5/16/13

Residence: City San Diego | State CA | Country US

Mailing Address 8511 Ridgefield Place

City San Diego | State CA | Zip 92129 | Country US

Legal Name of Additional Joint Inventor, if any:

(*E.g.*, Given Name (first and middle (if any)) and Family Name or Surname)

Phil Mayou

Inventor's Signature | Date (Optional) 5-16-2013 5-16-2013

Residence: City San Diego | State CA | Country US

Mailing Address 12550 Foxcroft Court

City San Diego | State CA | Zip 92129 | Country US

Legal Name of Additional Joint Inventor, if any:

(*E.g.*, Given Name (first and middle (if any)) and Family Name or Surname)

Eli Reihman

Inventor's Signature | Date (Optional) 05/14/13

Residence: City San Diego | State CA | Country US

Mailing Address 9019 Meadowrun

City San Diego | State CA | Zip 92129 | Country US

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 21 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 (1-800-786-9199) and select option 2.

PTO/AIA/10 (06-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

SUPPLEMENTAL SHEET FOR DECLARATION | **ADDITIONAL INVENTOR(S)**
Supplemental Sheet (for PTO/AIA/08,09) Page 4 of 5

Legal Name of Additional Joint Inventor, if any:

(*E.g.*, Given Name (first and middle (if any)) and Family Name or Surname)

Katherine Yerre Grubstein

Inventor's Signature: Katherine Yerre Grubstein Date (Optional): 6/10/13

Residence: City: San Diego State: CA Country: US

Mailing Address: 3857 Pell Place, #412

City: San Diego State: CA Zip: 92130 Country: US

Legal Name of Additional Joint Inventor, if any:

(*E.g.*, Given Name (first and middle (if any)) and Family Name or Surname)

Rian Draeger

Inventor's Signature: Date (Optional): 5/16/13

Residence: City: State: Country:

Mailing Address:

City: State: Zip: Country:

Legal Name of Additional Joint Inventor, if any:

(*E.g.*, Given Name (first and middle (if any)) and Family Name or Surname)

Angela Marie Traven

Inventor's Signature: Date (Optional): 5/8/13

Residence: City: San Marcos State: CA Country: US

Mailing Address: 1845 Lodgepole Road

City: San Marcos State: CA Zip: 92078 Country: US

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 21 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 (1-800-786-9199) and select option 2.

Privacy Act Statement

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

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

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

STATEMENT UNDER 37 CFR § 3.73
ESTABLISHMENT OF ASSIGNEE

Applicant	:	Mensinger, et al.
App. No.	:	13/842,679
Filed	:	March 15, 2013
For	:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
Examiner	:	Daniel J. Wu
Group Art Unit	:	2681

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

Dear Sir:

This document is being filed with a copy of a Power of Attorney signed by the Assignee. This Statement sets forth the chain of title of the above-identified application.

DexCom, Inc., a Corporation, is the Assignee of the entire right, title, and interest of the above-referenced application by virtue of:

The Assignment from the inventors to the Assignee recorded in the United States Patent and Trademark Office on June 11, 2013, at Reel 030590, and Frame 0001.

The undersigned is an agent of Customer No. 68851 and is authorized to act on behalf of the Assignee. Please recognize or change the correspondence address for the above-identified application to **Customer No. 68851.**

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 6/19/13

By: _____

Rose M. Thiessen
Registration No. 40,202
Attorney of Record
Customer No. 68851
(858) 707-4000

15609273:JSJ

PTO/AIA/80 (07-12)
Approved for use through 11/30/2014. OMB 0651-0035
U.S. Patent and Trademark Office; U.S DEPARTMENT OF COMMERCE
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.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

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

I hereby appoint:

■ Practitioners associated with Customer Number: 68851

OR

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

Name	Registration Number	Name	Registration Number

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

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

■ The address associated with Customer Number: 68851

OR

☐	Firm or Individual Name			
	Address			
	City		State	Zip
	Country			
	Telephone		Email	

Assignee Name and Address: DexCom, Inc.
6340 Sequence Drive
San Diego, CA 92121

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

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

Signature	Laura Johnson	Date	May 28, 2013
Name	Laura Johnson	Telephone	
Title	Vice President of Intellectual Property		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to 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.

ASSIGNMENT

WHEREAS, Michael Robert Mensinger, residing at 12705 Amaranth Street, San Diego, CA 92129; Eric Cohen, residing at 8511 Ridgefield Place, San Diego, CA 92129; Phil Mayou, residing at 12550 Foxcroft Court, San Diego, CA 92129; Eli Reihman, residing at 9019 Meadowrun, San Diego, CA 92129; Katherine Yerre Grubstein, residing at 3857 Pell Place, #412, San Diego, CA 92130; Rian Draeger, residing at c/o DexCom, Inc., 6340 Sequence Drive, San Diego, CA 92121; Angela Marie Traven, residing at 1845 Lodgepole Road, San Marcos, CA 92078, (individuals hereinafter "ASSIGNOR") invented certain new and useful improvements, technology, inventions, developments, ideas, ornamental design or discoveries related to REMOTE MONITORING OF ANALYTE MEASUREMENTS (collectively hereinafter referred to as the "Work") for which an application for Letters Patent in the United States has been prepared for filing (identified above) with the United States Patent and Trademark Office (hereinafter the "Application");

AND WHEREAS, DexCom, Inc., a Corporation, with its principal place of business at 6340 Sequence Drive, San Diego, CA 92121 (hereinafter the "ASSIGNEE"), desires to acquire the entire right, title, and interest in and to the Application and the Work:

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, ASSIGNOR hereby acknowledges that ASSIGNOR has sold, assigned, transferred and set over, and by these presents does hereby sell, assign, transfer and set over, unto said ASSIGNEE, its successors, legal representatives and assigns, the entire right, title, and interest throughout the world in the Application and the Work, including all provisional applications relating thereto (including but not limited to U.S. Provisional Application No. 61/747717, filed December 31, 2012), and all nonprovisional applications claiming priority thereto, including, all divisions, continuations, continuations-in-part, reissues, and reexaminations thereof, and all Letters Patent of the United States which may be granted thereon and all reissues and extensions thereof, and all rights of priority under International Conventions and any related Letters Patent which may hereafter be granted or filed in any country or countries foreign to the United States, all extensions, renewals and reissues thereof; and ASSIGNOR hereby authorizes and requests the Commissioner of Patents of the United States, and any Official of any country or countries foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all related Letters Patent to the ASSIGNEE, its successors, legal representatives and assigns, in accordance with the terms of this instrument.

AND ASSIGNOR DOES HEREBY sell, assign, transfer, and convey to ASSIGNEE, its successors, legal representatives, and assigns all claims for damages and all remedies arising out of any violation of the rights assigned hereby that may have accrued prior to the date of assignment to ASSIGNEE, or may accrue hereafter, including, but not limited to, the right to sue for, collect, and retain damages for past infringements of said Letters Patent before or after issuance.

AND ASSIGNOR DOES HEREBY covenant and agree that ASSIGNOR will communicate to said ASSIGNEE, its successors, legal representatives and assigns, any facts known to ASSIGNOR respecting the Work, and testify in any legal proceeding, assist in the preparation of any other provisional or non-provisional applications relating to the Application and the Work or any improvements made thereto, sign all lawful papers, execute and make all rightful oaths and/or declarations in connection with the Application and the Work including any improvements made thereto, any patent applications filed therefrom, and any continuing application filed from any of the aforementioned applications, and generally do everything possible to aid the ASSIGNEE, its successors, legal representatives and assigns, to obtain and enforce proper patent protection for the Work in all countries.

Legal Name of Inventor: Michael Robert Mensinger

Signature: _____ Date: 6/5/13

Signature before a Notary is desirable but not required.

STATE OF CALIFORNIA }
} ss.
COUNTY OFSAN DIEGO }

On 05 June 2013, before me, Renee Zavala, notary public, personally appeared **Michael Robert Mensinger**, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument, and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Renee Zavala
Notary Signature

[SEAL]

RENEE ZAVALA
COMM. #1859755
Notary Public - California
San Diego County
My Comm. Expires Aug. 1, 2013

Legal Name of inventor: Eric Cohen

Signature: _____ Date: 5/16/13

Signature before a Notary is desirable but not required.

STATE OF CALIFORNIA }
} ss.
COUNTY OF SAN DIEGO }

On 16-May 2013, before me, Renee Zavala, notary public, personally appeared **Eric Cohen,** who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument, and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Renee Zavala
Notary Signature

[SEAL]

RENEE ZAVALA
COMM. #1859755
Notary Public · California
San Diego County
My Comm. Expires Aug. 1, 2013

Legal Name of inventor: Phil Mayou

Signature: _____ Date: 5-16-2013

Signature before a Notary is desirable but not required.

STATE OF CALIFORNIA }
} ss.
COUNTY OF SAN DIEGO }

On 16 May 2013, before me, Renee Zavala, notary public, personally appeared **Phil Mayou**, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument, and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Renee Zavala
Notary Signature

[SEAL]

RENEE ZAVALA
COMM. #1859755
Notary Public - California
San Diego County
My Comm. Expires Aug. 1, 2013

Legal Name of inventor: Eli Reihman

Signature: _____ Date: 05/14/13

Signature before a Notary is desirable but not required.

STATE OF CALIFORNIA }
} ss.
COUNTY OF SAN DIEGO }

On MAY 14, 2013, before me, Renee Zavala, notary public, personally appeared **Eli Reihman**, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument, and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Renee Zavala
Notary Signature

[SEAL]

RENEE ZAVALA
COMM. #1859755
Notary Public · California
San Diego County
My Comm. Expires Aug. 1, 2013
NRO1 NRO1

Legal Name of inventor: Katherine Yerre Grubstein

Signature: Katherine Grubstein Date: 6/10/13

Signature before a Notary is desirable but not required.

STATE OF CALIFORNIA }
} ss.
COUNTY OF SAN DIEGO }

On 10-June-2013, before me, Renee Zavala, notary public, personally appeared **Katherine Yerre Grubstein**, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument, and acknowledged to me that she executed the same in her authorized capacity, and that by her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Renee Zavala
Notary Signature

[SEAL]

RENEE ZAVALA
COMM. #1859755
Notary Public · California
San Diego County
My Comm. Expires Aug. 1, 2013

Legal Name of inventor: Rian Draeger

Signature: _____ Date: 5/16/13

Signature before a Notary is desirable but not required.

STATE OF CALIFORNIA }
} ss.
COUNTY OF San Diego }

On 16-MAY-2013, before me, RENEE ZAVALA, notary public, personally appeared **Rian Draeger**, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument, and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Renee Zavala
Notary Signature

[SEAL]

RENEE ZAVALA
COMM. #1859755
Notary Public - California
San Diego County
My Comm. Expires Aug. 1, 2013
NRO1 NRO1

Legal Name of inventor: Angela Marie Traven

Signature: _____ Date: 5/8/13

Signature before a Notary is desirable but not required.

STATE OF CALIFORNIA }
} ss.
COUNTY OF San Diego }

On 08-MAY-2013, before me, RENEE ZAVALA, notary public, personally appeared **Angela Marie Traven**, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument, and acknowledged to me that she executed the same in her authorized capacity, and that by her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

[SEAL] Notary Signature

RENEE ZAVALA
COMM. #1859755
Notary Public · California
San Diego County
My Comm. Expires Aug. 1, 2013

15048270:JSJ

Electronic Acknowledgement Receipt

EFS ID:	16088223
Application Number:	13842679
International Application Number:	
Confirmation Number:	8793
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Customer Number:	68851
Filer:	Rose M. Thiessen/Daniela Lopez
Filer Authorized By:	Rose M. Thiessen
Attorney Docket Number:	DEXCOM.225A
Receipt Date:	19-JUN-2013
Filing Date:	15-MAR-2013
Time Stamp:	17:54:16
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		20130619131438.pdf	903537 a55d30ff21de07ff4f21253417c88433b2cfb ed1	yes	17

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Applicant Response to Pre-Exam Formalities Notice	1	2
	Oath or Declaration filed	3	7
	Assignee showing of ownership per 37 CFR 3.73.	8	8
	Power of Attorney	9	17
Warnings:			
Information:			
	Total Files Size (in bytes):	903537	

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

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

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
13/842,679	03/15/2013	2681	1390	DEXCOM.225A	19	1

CONFIRMATION NO. 8793

68851
KNOBBE, MARTENS, OLSEN & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

FILING RECEIPT

OC00000060887930

Date Mailed: 05/07/2013

Receipt is acknowledged of this non-provisional 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 APPLICANT, 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 Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Michael Robert Mensinger, San Diego, CA;
Eric Cohen, San Diego, CA;
Phil Mayou, San Diego, CA;
Eli Reihman, San Diego, CA;
Katherine Yerre Grubstein, San Diego, CA;
Rian Draeger, San Diego, CA;
Angela Marie Traven, San Marcos, CA;

Applicant(s)

DexCom, Inc., San Diego, CA

Assignment For Published Patent Application

DexCom, Inc., San Diego, CA

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 61/747,717 12/31/2012

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 - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

Abbott Ex. 1002 - 689/834

If Required, Foreign Filing License Granted: 05/01/2013

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/842,679**

Projected Publication Date: 07/03/2014

Non-Publication Request: No

Early Publication Request: No
Title

REMOTE MONITORING OF ANALYTE MEASUREMENTS

Preliminary Class

340

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

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

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

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

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

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

Abbott Ex. 1002 - 690/834

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 AssetsControl, 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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/842,679	03/15/2013	Michael Robert Mensinger	DEXCOM.225A

CONFIRMATION NO. 8793

68851
KNOBBE, MARTENS, OLSEN & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

NOTICE

OC000000060887931

Date Mailed: 05/07/2013

INFORMATIONAL NOTICE TO APPLICANT

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

The item(s) indicated below are also required and should be submitted with any reply to this notice to avoid further processing delays.

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
  ALL
  Applicant may submit the inventor's oath or declaration at any time before the Notice of Allowance and Fee(s) Due, PTOL-85, is mailed.

Abbott Ex. 1002 - 692/834

PTO/AIA/14 (08-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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	DEXCOM.225A
	Application Number	
Title of Invention	REMOTE MONITORING OF ANALYTE MEASUREMENTS	

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 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Michael	Robert	Mensinger	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	San Diego	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	12705 Amaranth Street		
Address 2			
City	San Diego	State/Province	CA
Postal Code	92129	Country	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Eric		Cohen	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	San Diego	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	8511 Ridgefield Place		
Address 2			
City	San Diego	State/Province	CA
Postal Code	92129	Country	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Phil		Mayou	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	DEXCOM.225A
	Application Number	
Title of Invention	REMOTE MONITORING OF ANALYTE MEASUREMENTS	

City	San Diego	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	12550 Foxcroft Court		
Address 2			
City	San Diego	State/Province	CA
Postal Code	92129	Country	US

Remove

Inventor 4

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Eli		Reihman	

Residence Information (Select One) (•) US Residency ( ) Non US Residency ( ) Active US Military Service

City	San Diego	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	9019 Meadowrun		
Address 2			
City	San Diego	State/Province	CA
Postal Code	92129	Country	US

Remove

Inventor 5

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Katherine	Yerre	Grubstein	

Residence Information (Select One) (•) US Residency ( ) Non US Residency ( ) Active US Military Service

City	San Diego	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	3857 Pell Place, #412		
Address 2			
City	San Diego	State/Province	CA
Postal Code	92130	Country	US

Remove

Inventor 6

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Rian		Draeger	

Residence Information (Select One) (•) US Residency ( ) Non US Residency ( ) Active US Military Service

City		State/Province		Country of Residence	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	DEXCOM.225A
	Application Number	
Title of Invention	REMOTE MONITORING OF ANALYTE MEASUREMENTS	

Mailing Address of Inventor:

Address 1	c/o DexCom, Inc.		
Address 2	6340 Sequence Drive		
City	San Diego	**State/Province**	CA
Postal Code	92121	**Country** i	US

Inventor 7 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Angela	Marie	Traven	

Residence Information (Select One) (•) US Residency ( ) Non US Residency ( ) Active US Military Service

City	San Marcos	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	1845 Lodgepole Road		
Address 2			
City	San Marcos	**State/Province**	CA
Postal Code	92078	**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:

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	68851		
Email Address	efiling@knobbe.com	Add Email	Remove Email

Application Information:

Title of the Invention	REMOTE MONITORING OF ANALYTE MEASUREMENTS		
Attorney Docket Number	DEXCOM.225A	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		**Sub Class (if any)**	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	23	**Suggested Figure for Publication (if any)**	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	DEXCOM.225A
	Application Number	
Title of Invention	REMOTE MONITORING OF ANALYTE MEASUREMENTS	

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	68851		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this 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.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	non provisional of	61747717	2012-12-31

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 benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. 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(a).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Priority Claimed
			○ Yes ○ No

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

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	DEXCOM.225A
	Application Number	
Title of Invention	REMOTE MONITORING OF ANALYTE MEASUREMENTS	

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices

If 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 World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

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	DexCom, Inc.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	DEXCOM.225A
	Application Number	
Title of Invention	REMOTE MONITORING OF ANALYTE MEASUREMENTS	

Mailing Address Information:			
Address 1	6340 Sequence Drive		
Address 2			
City	San Diego	**State/Province**	CA
Country i	US	Postal Code	92121
Phone Number		Fax Number	
Email Address			

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

Non-Applicant Assignee Information:

Providing assignment information in this section does not subsitute 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 only if non-applicant assignee information is desired to be included on the patent application publication in accordance with 37 CFR 1.215(b). Do not include in this section 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), as the patent application publication will include the name of the applicant(s).

If the Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information:			
Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

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

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	DEXCOM.225A
	Application Number	
Title of Invention	REMOTE MONITORING OF ANALYTE MEASUREMENTS	

Signature:

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

Signature				Date (YYYY-MM-DD)	2013-03-15
First Name	Rose	Last Name	Thiessen	Registration Number	40202

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

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

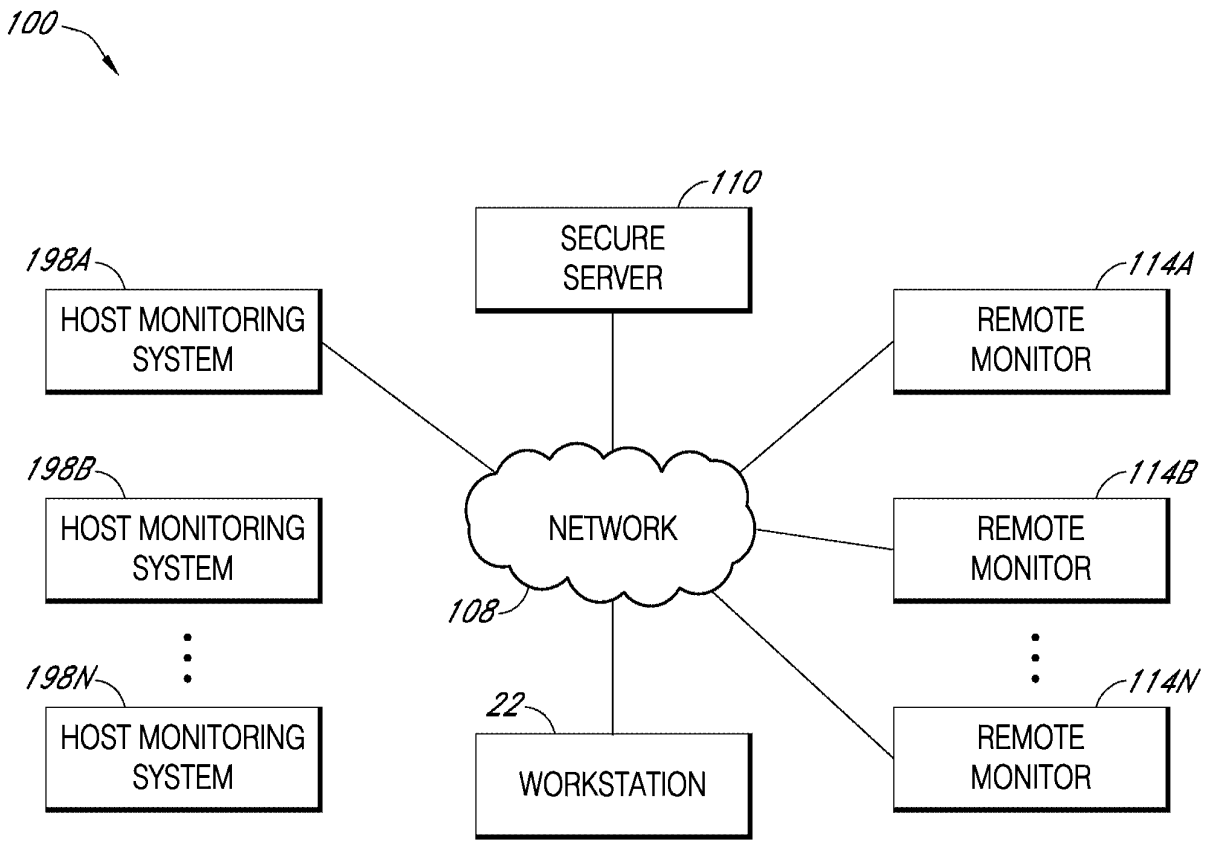


FIG. 1

Abbott Ex. 1002 - 701/834

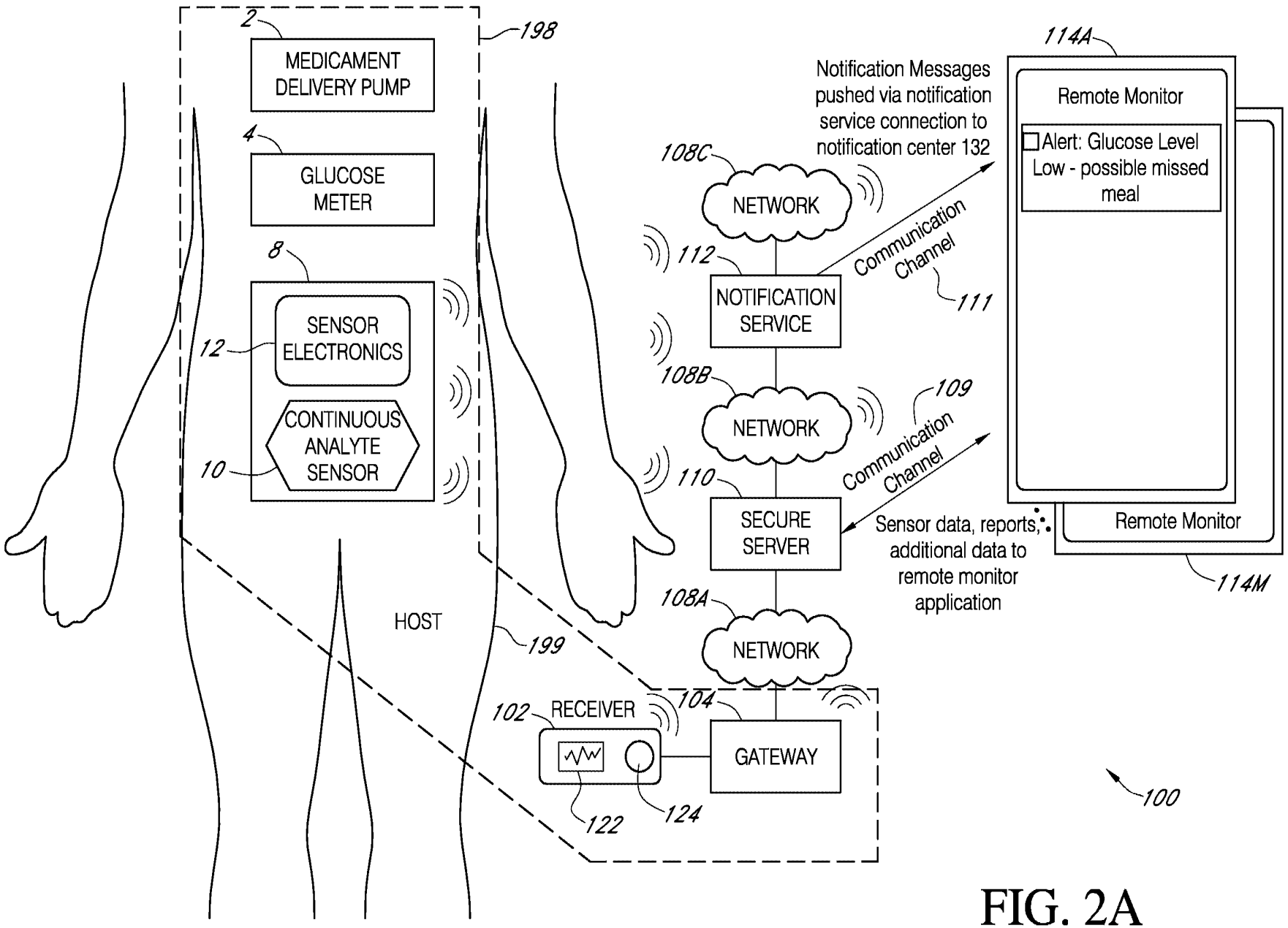


FIG. 2A

Abbott Ex. 1002 - 702/834

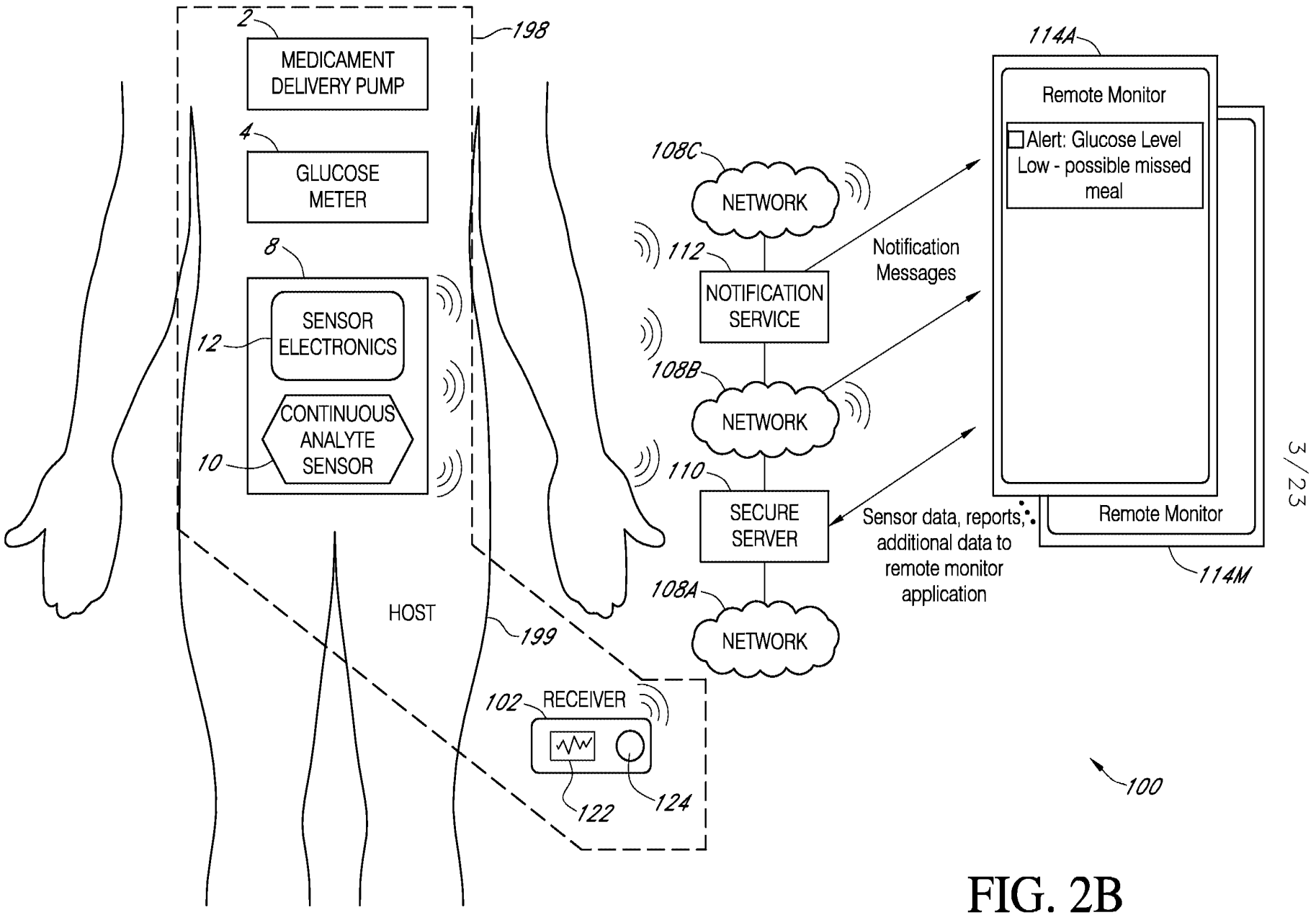


FIG. 2B

Abbott Ex. 1002 - 703/834

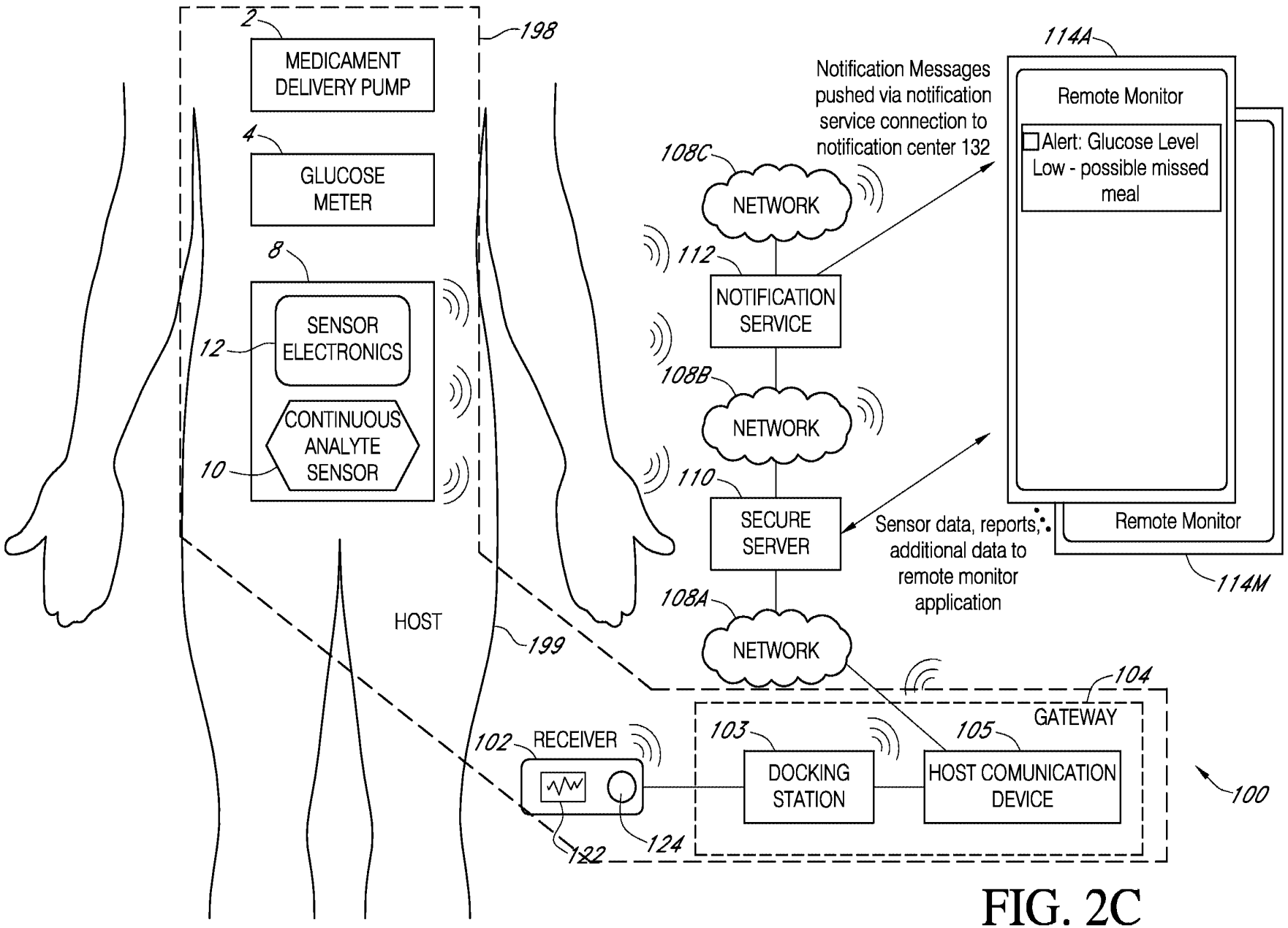


FIG. 2C

Abbott Ex. 1002 - 704/834

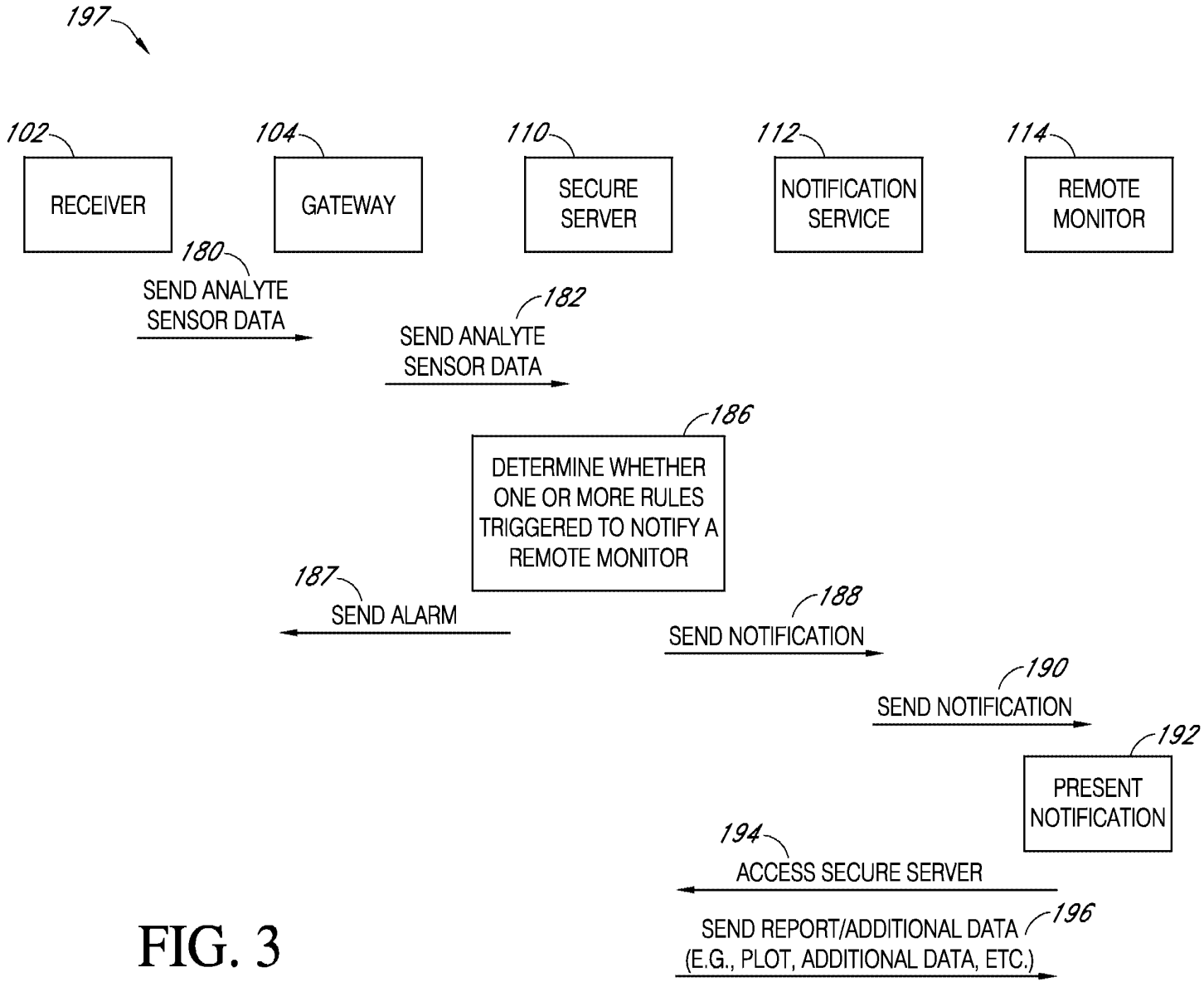


FIG. 3

Abbott Ex. 1002 - 705/834

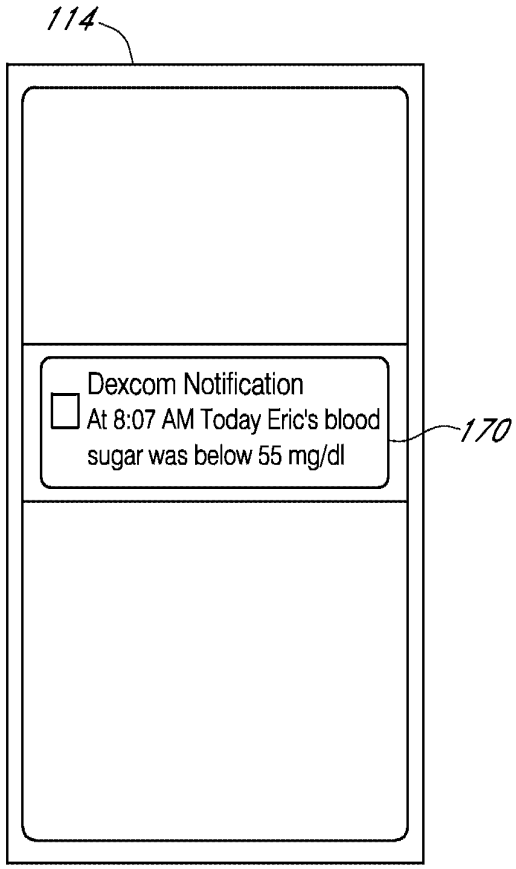


FIG. 4A

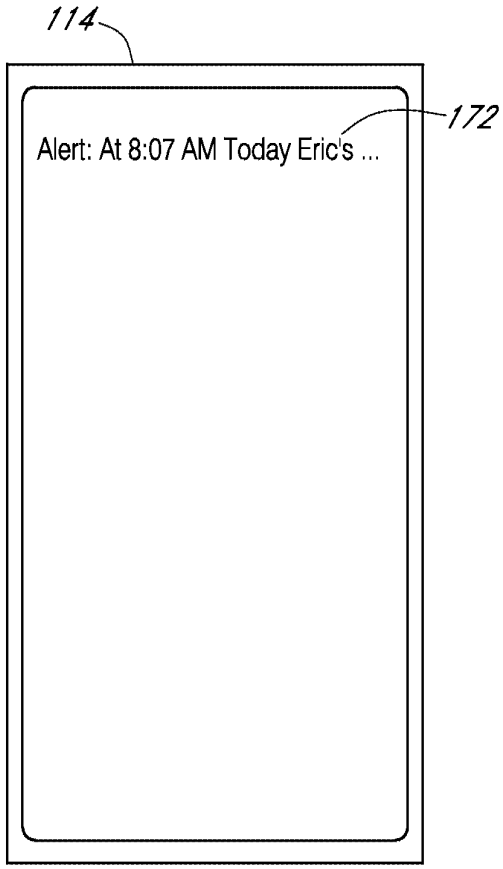


FIG. 4B

Abbott Ex. 1002 - 706/834

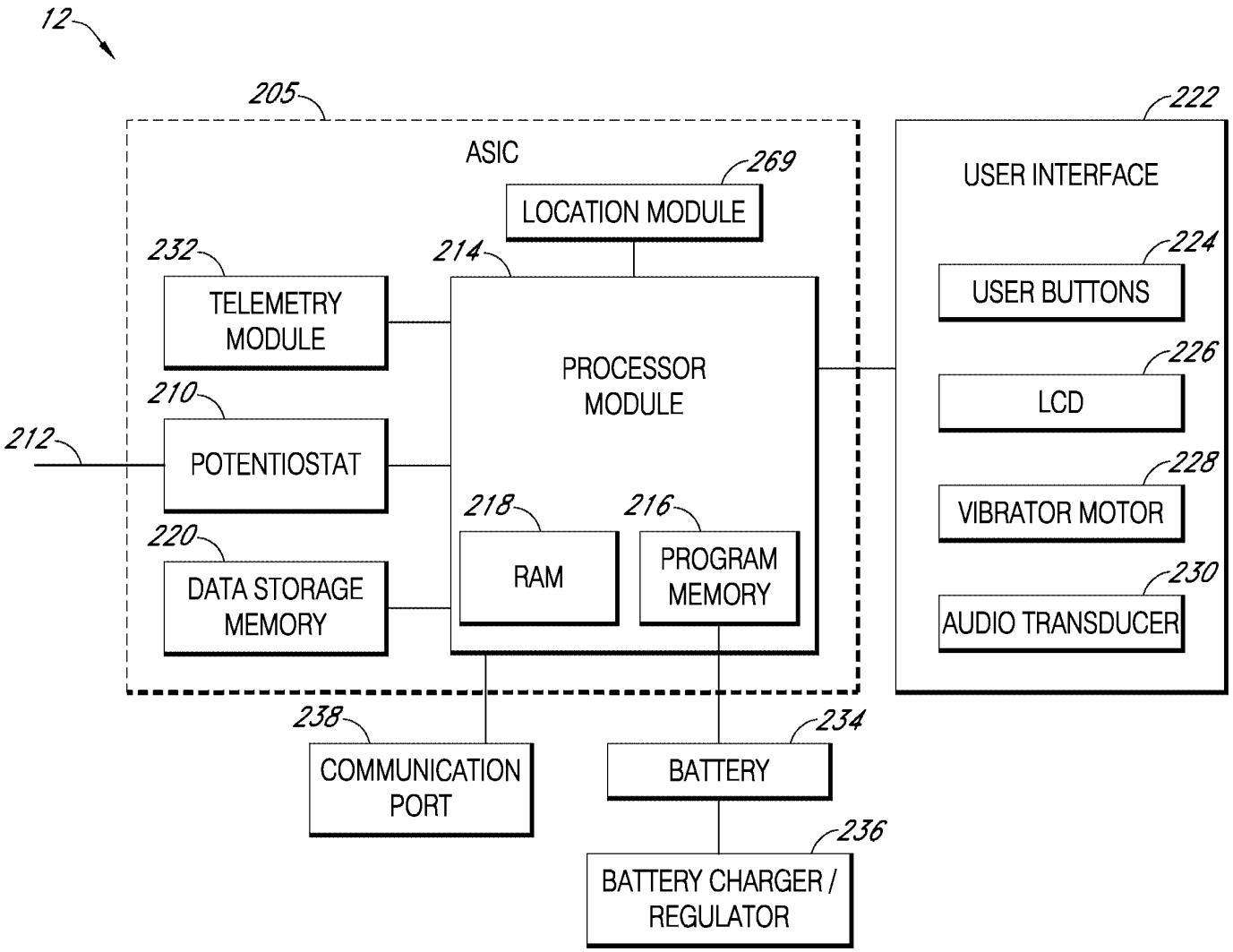


FIG. 5

Abbott Ex. 1002 - 707/834

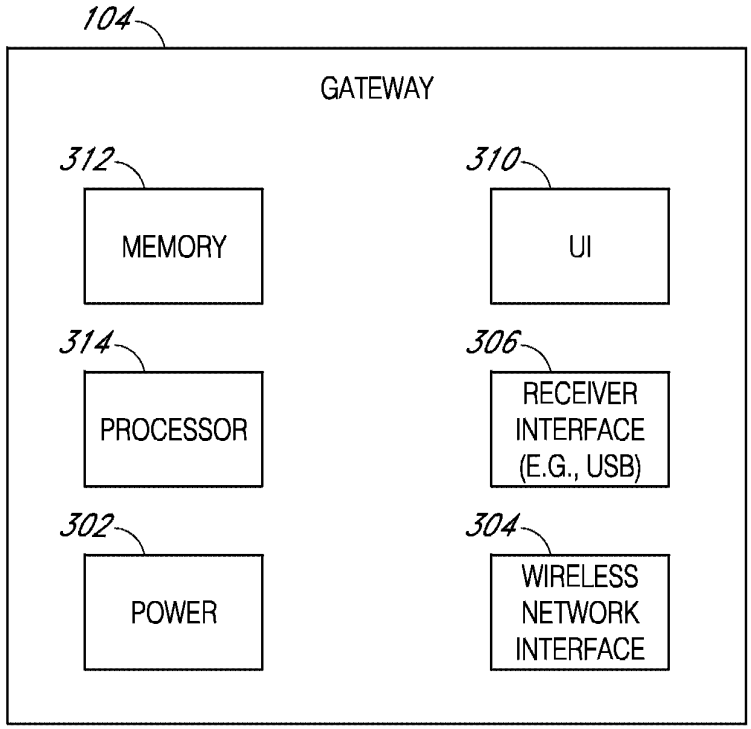


FIG. 6

Abbott Ex. 1002 - 708/834

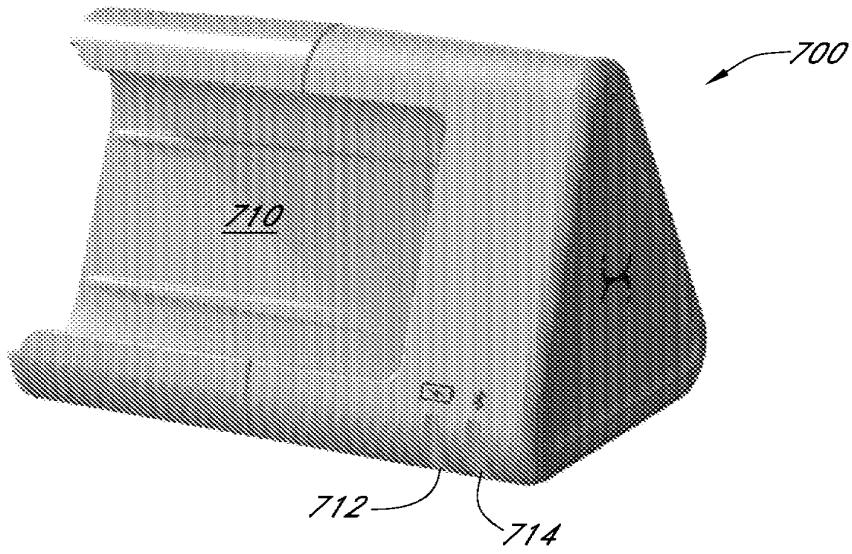


FIG. 7A



FIG. 7B

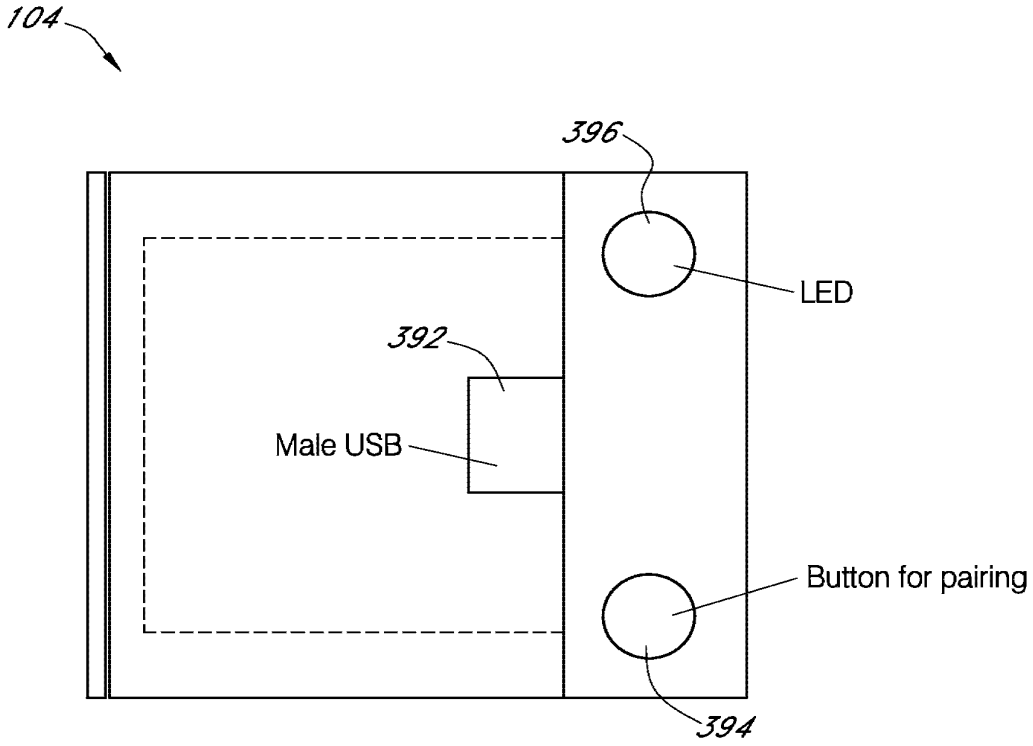


FIG. 8

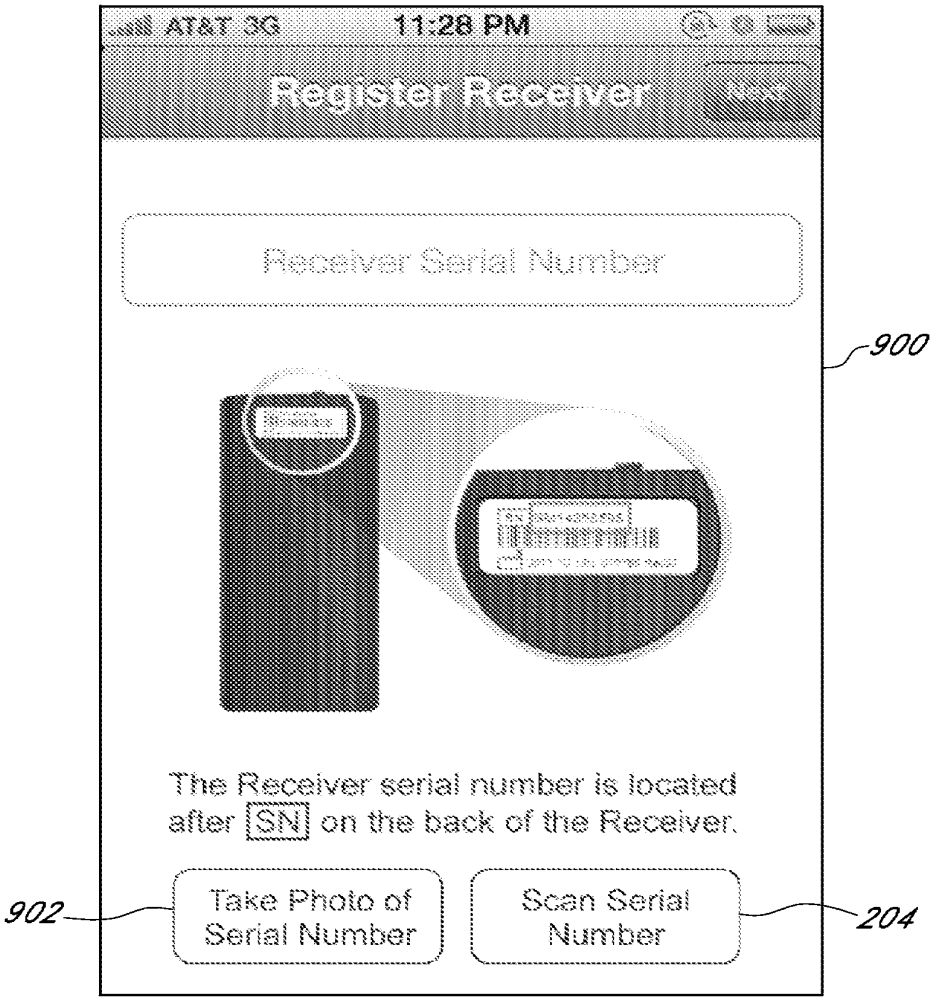

AT&T 3G
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Register Receiver
Next
Receiver Serial Number
900
The Receiver serial number is located after SN on the back of the Receiver.
902
Take Photo of Serial Number
Scan Serial Number
204

FIG. 9

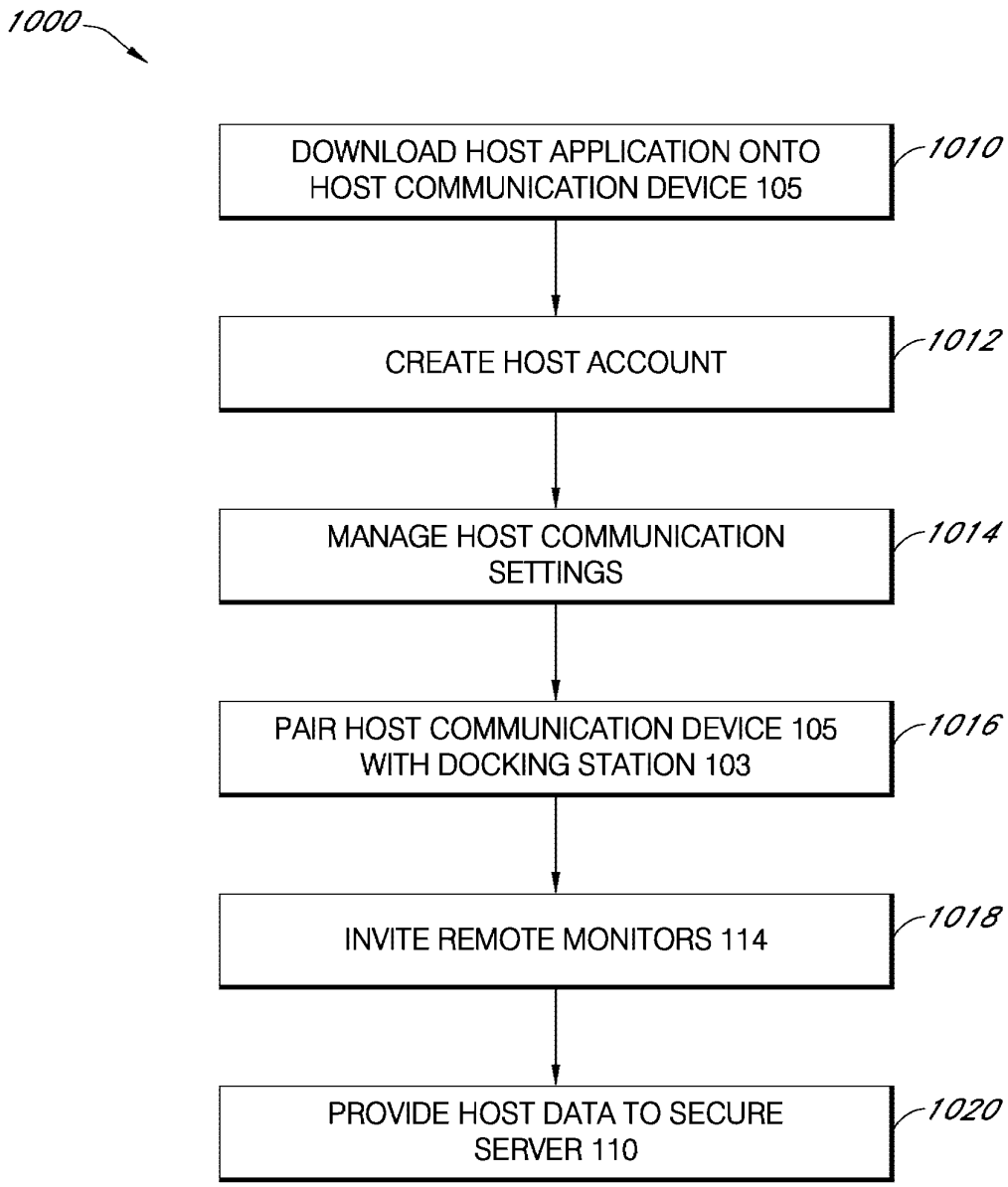

1000
DOWNLOAD HOST APPLICATION ONTO HOST COMMUNICATION DEVICE 105
1010
CREATE HOST ACCOUNT
1012
MANAGE HOST COMMUNICATION SETTINGS
1014
PAIR HOST COMMUNICATION DEVICE 105 WITH DOCKING STATION 103
1016
INVITE REMOTE MONITORS 114
1018
PROVIDE HOST DATA TO SECURE SERVER 110
1020

FIG. 10

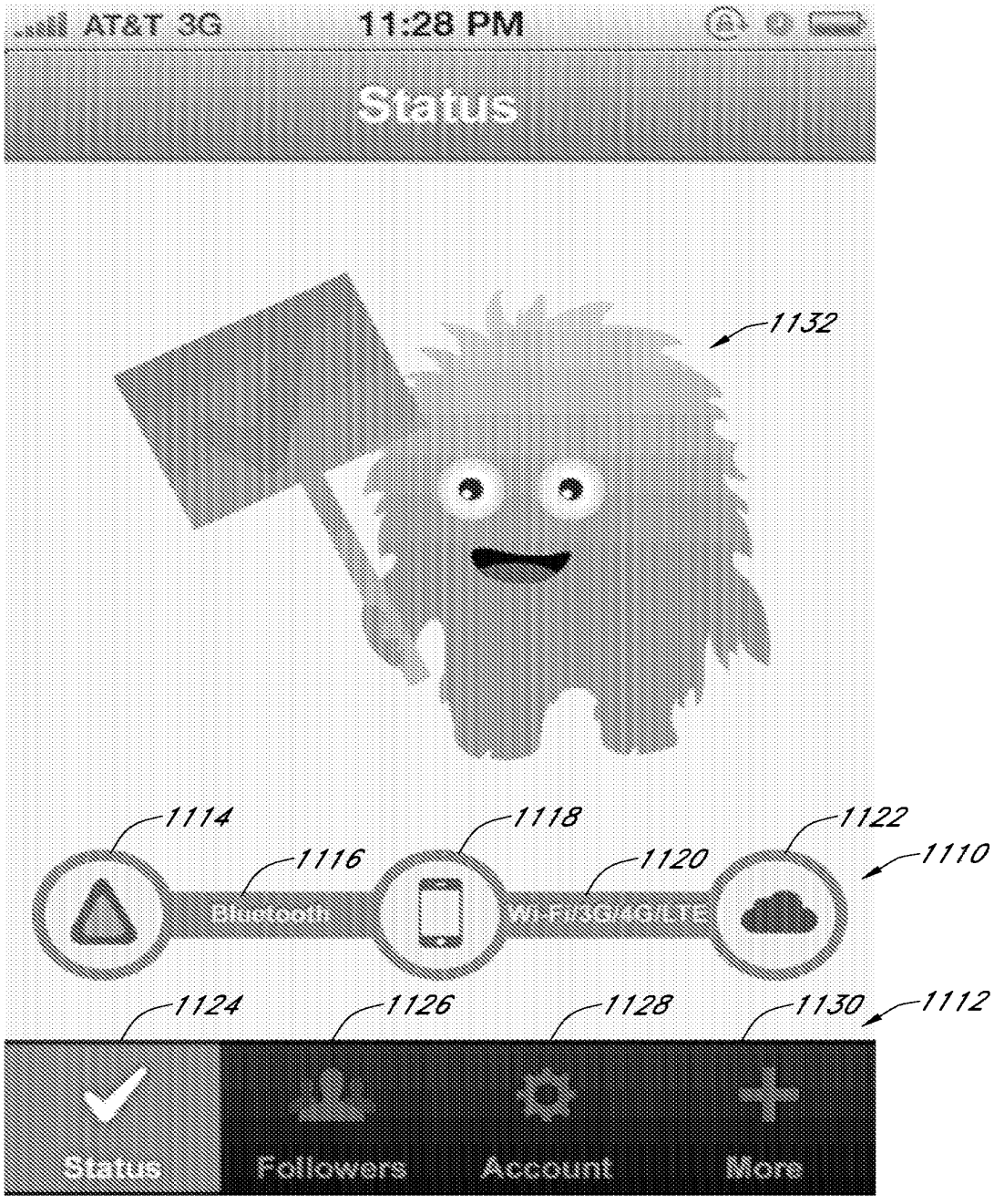

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More

FIG. 11A

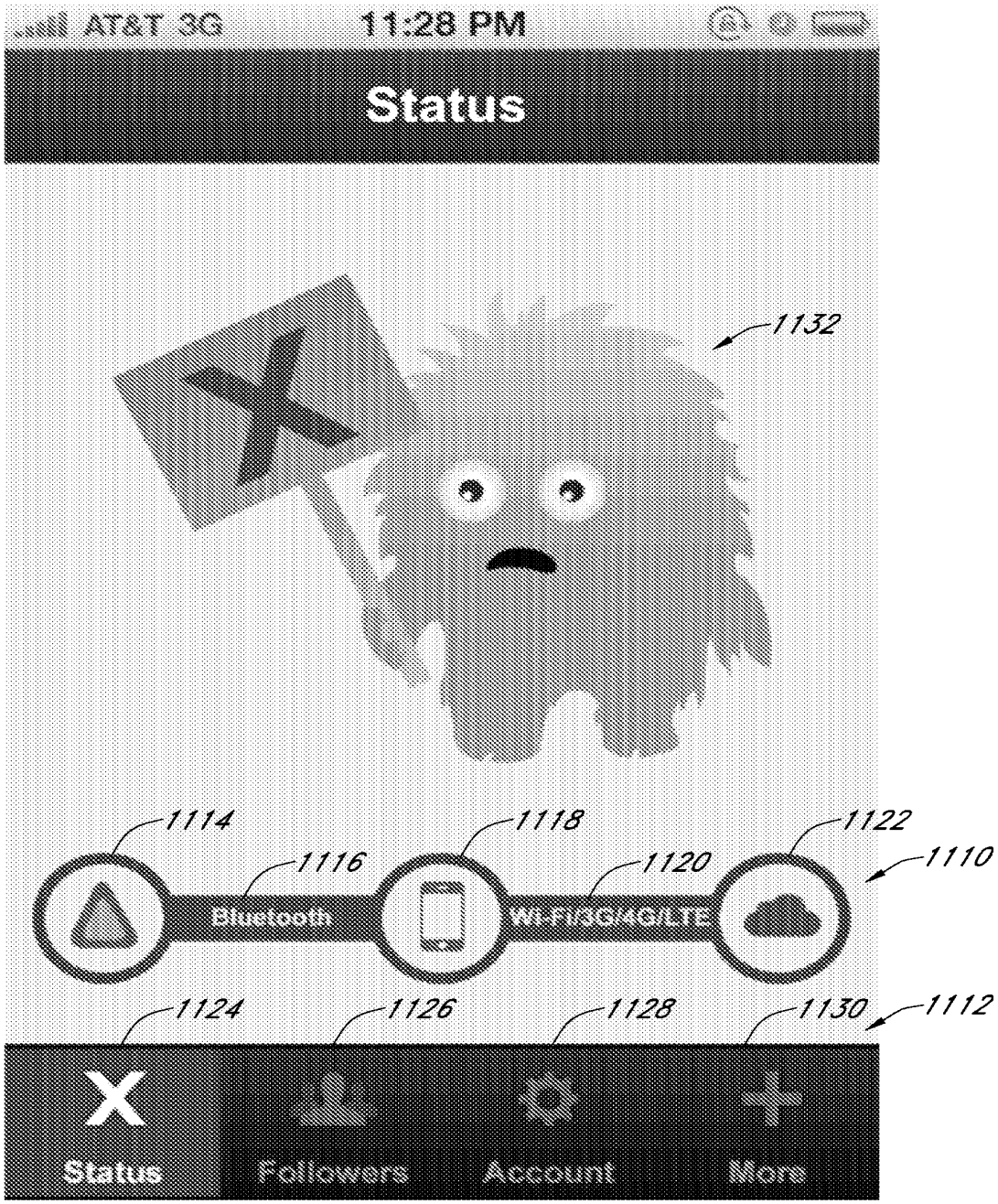

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Status
Followers
Account
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FIG. 11B

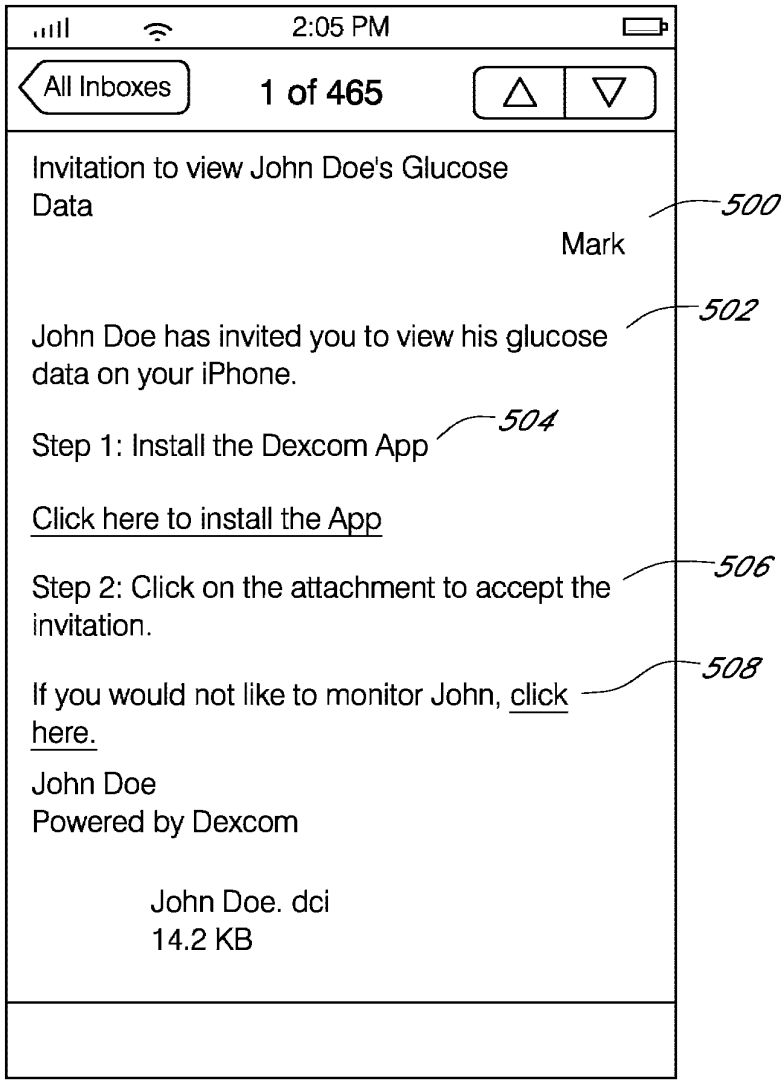

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All Inboxes
1 of 465
Invitation to view John Doe's Glucose Data
500
Mark
John Doe has invited you to view his glucose data on your iPhone.
502
Step 1: Install the Dexcom App
504
Click here to install the App
Step 2: Click on the attachment to accept the invitation.
506
If you would not like to monitor John, click here.
508
John Doe
Powered by Dexcom
John Doe. dci
14.2 KB

FIG. 12

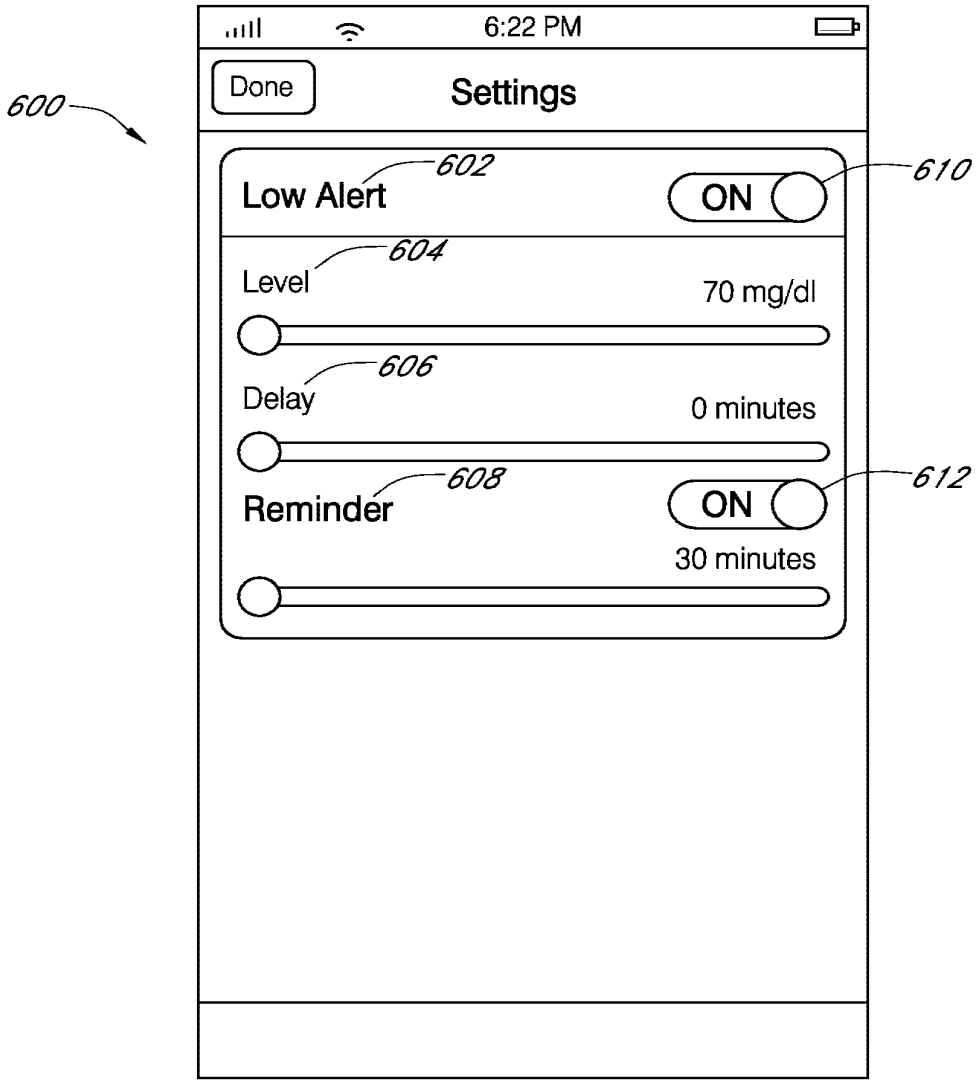

600
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Done
Settings
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Low Alert
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604
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606
Delay
0 minutes
608
Reminder
ON
612
30 minutes

FIG. 13

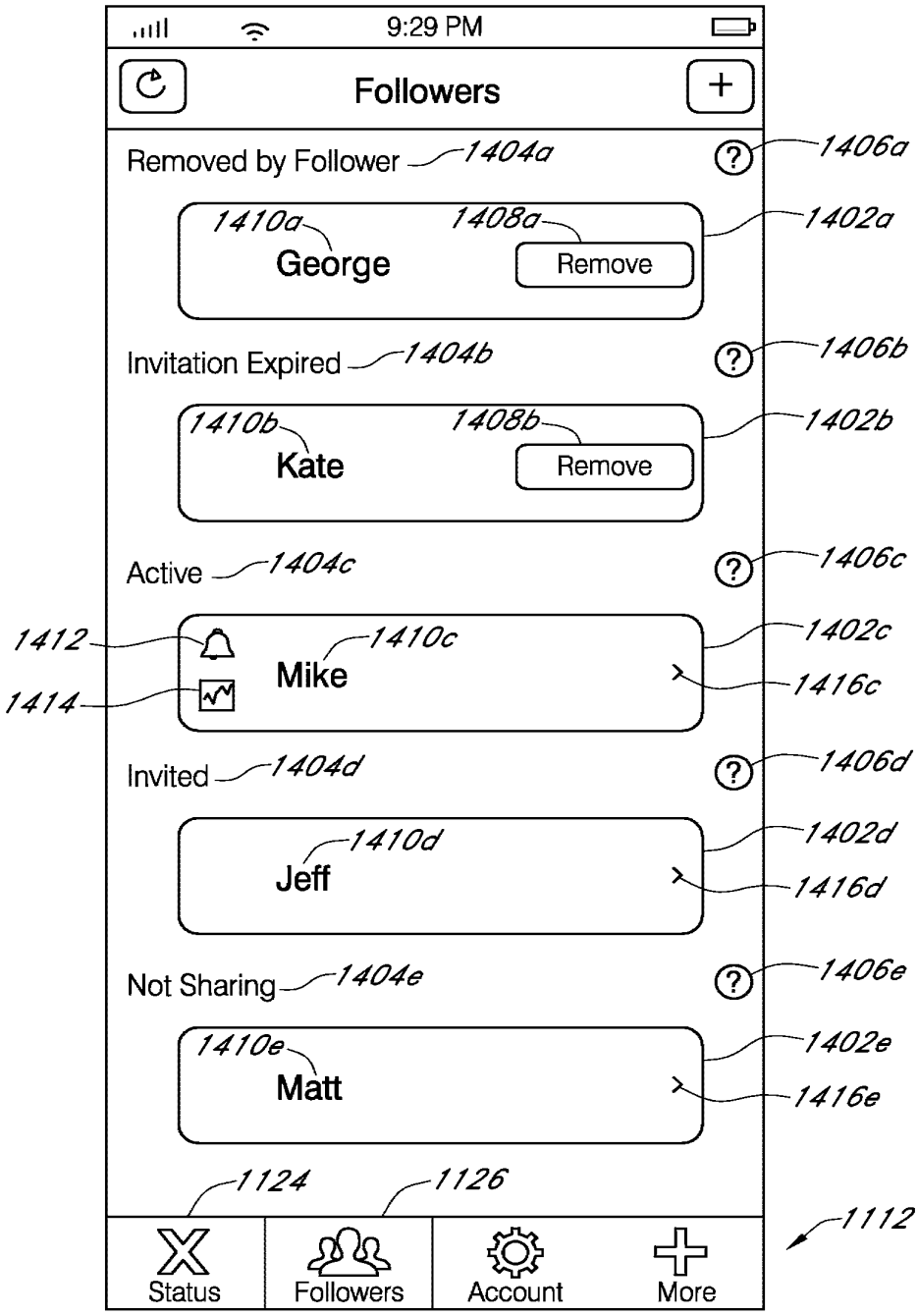

9:29 PM
Followers
Removed by Follower
1404a
1406a
1410a
George
1408a
Remove
1402a
Invitation Expired
1404b
1406b
1410b
Kate
1408b
Remove
1402b
Active
1404c
1406c
1412
1410c
Mike
1402c
1414
1416c
Invited
1404d
1406d
1410d
Jeff
1402d
1416d
Not Sharing
1404e
1406e
1410e
Matt
1402e
1416e
1124
1126
1112
Status
Followers
Account
More

FIG. 14

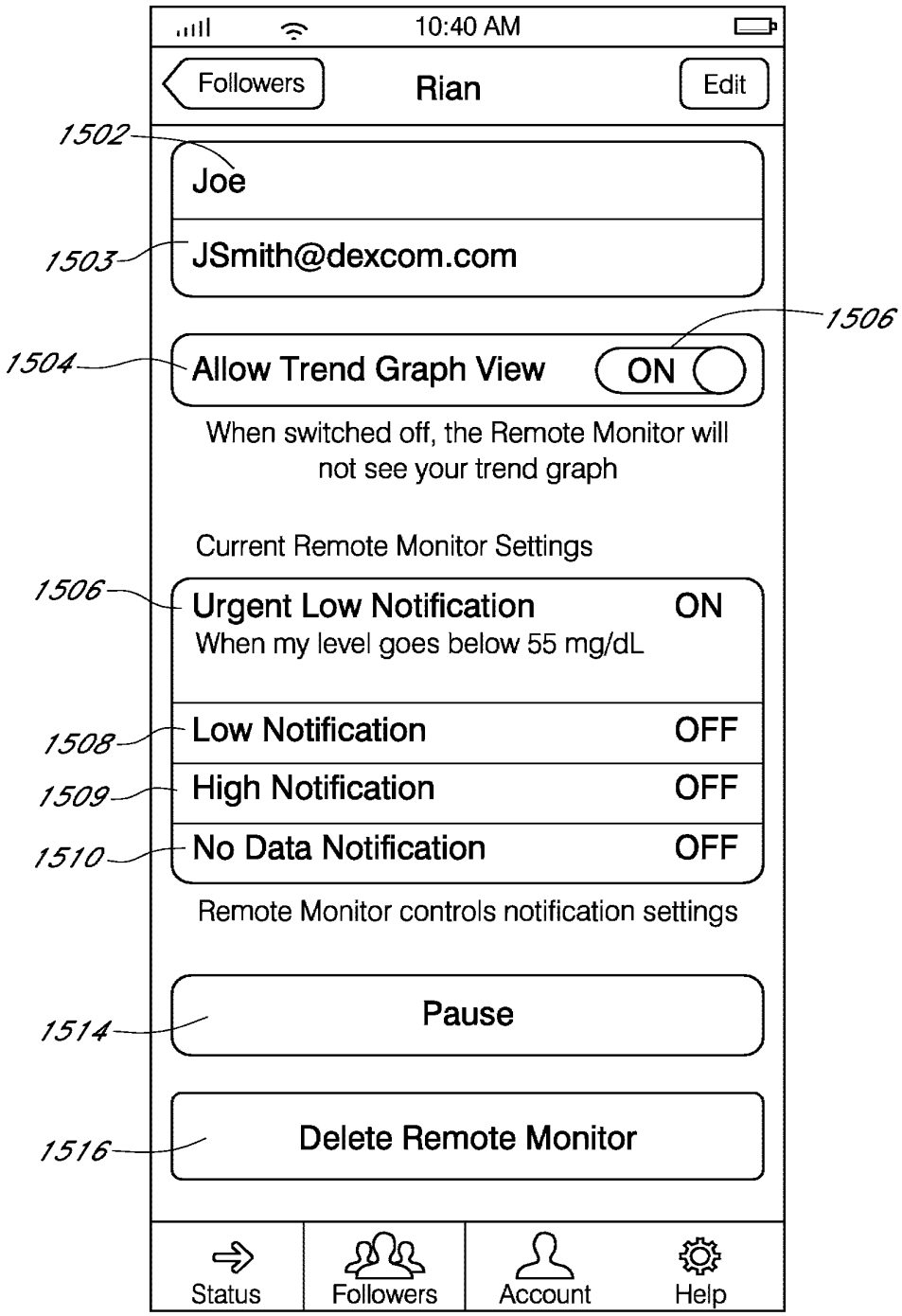

10:40 AM
Followers
Rian
Edit
1502
Joe
1503
JSmith@dexcom.com
1506
1504
Allow Trend Graph View
ON
When switched off, the Remote Monitor will not see your trend graph
Current Remote Monitor Settings
1506
Urgent Low Notification
ON
When my level goes below 55 mg/dL
1508
Low Notification
OFF
1509
High Notification
OFF
1510
No Data Notification
OFF
Remote Monitor controls notification settings
1514
Pause
1516
Delete Remote Monitor
Status
Followers
Account
Help

FIG. 15

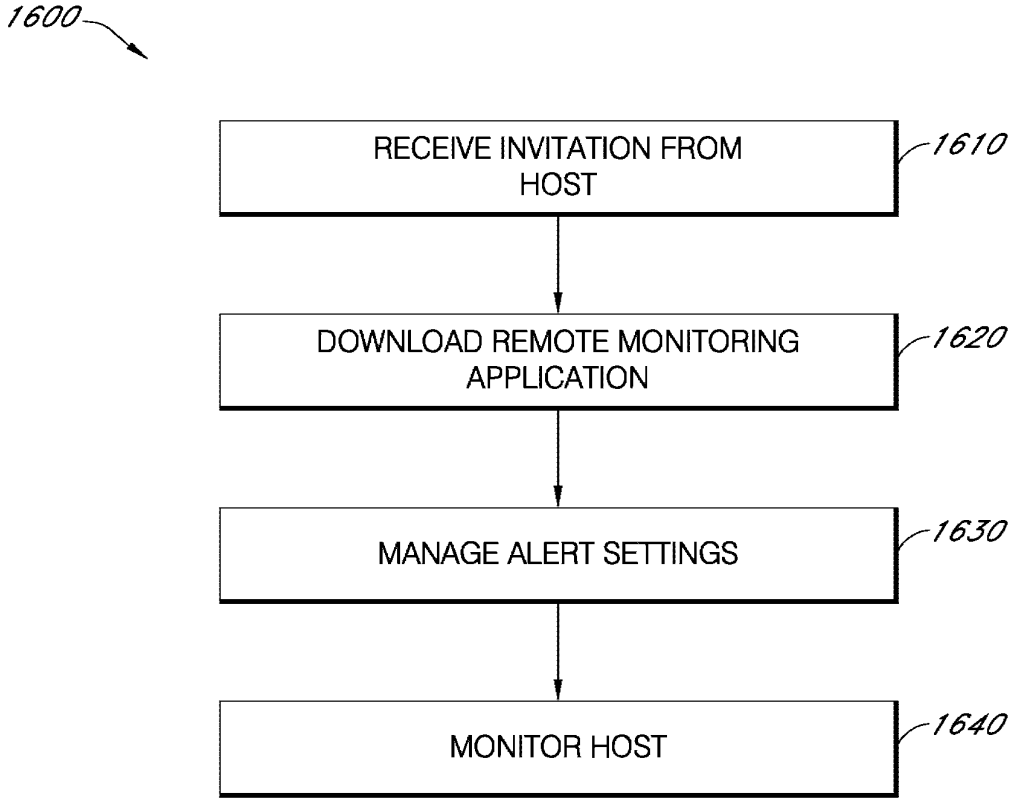

1600
RECEIVE INVITATION FROM HOST
1610
DOWNLOAD REMOTE MONITORING APPLICATION
1620
MANAGE ALERT SETTINGS
1630
MONITOR HOST
1640

FIG. 16

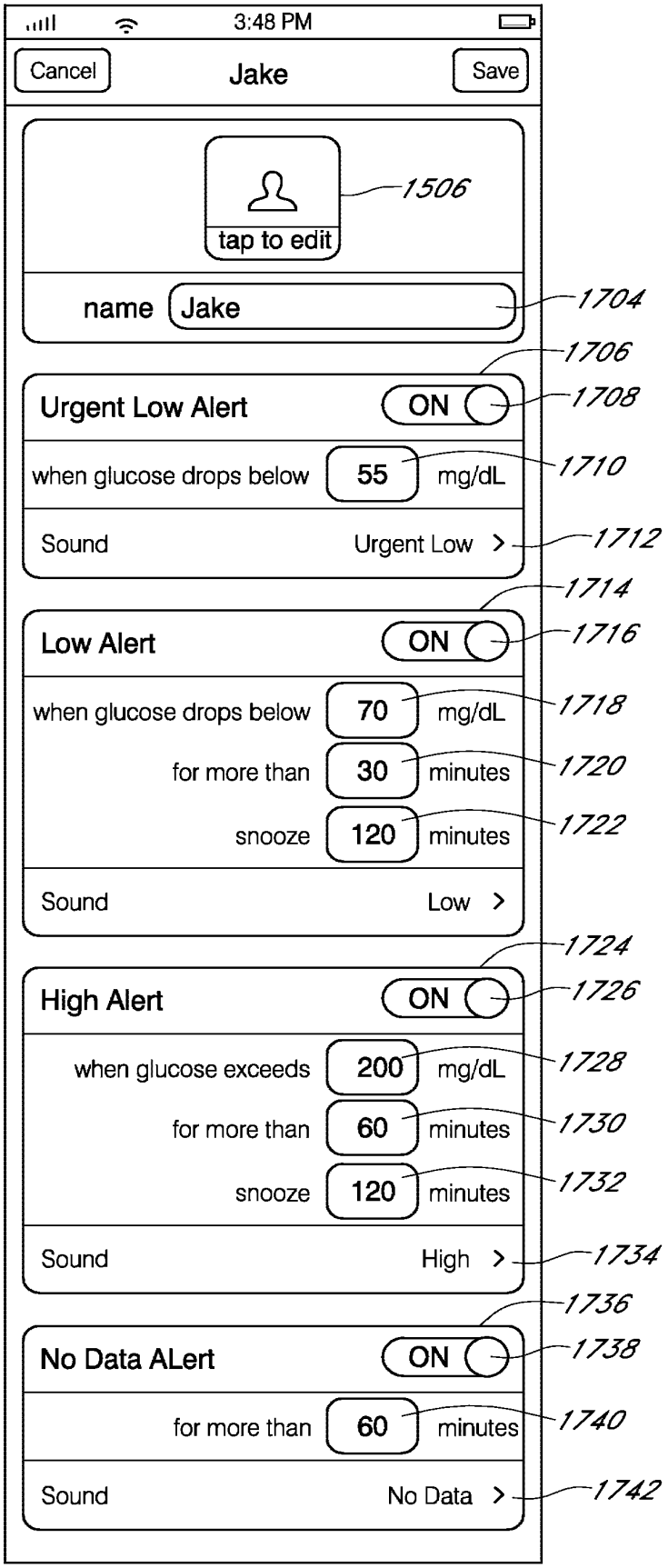

3:48 PM
Cancel
Jake
Save
tap to edit
1506
name
Jake
1704
1706
Urgent Low Alert
ON
1708
when glucose drops below
55
mg/dL
1710
Sound
Urgent Low
1712
1714
Low Alert
ON
1716
when glucose drops below
70
mg/dL
1718
for more than
30
minutes
1720
snooze
120
minutes
1722
Sound
Low
1724
High Alert
ON
1726
when glucose exceeds
200
mg/dL
1728
for more than
60
minutes
1730
snooze
120
minutes
1732
Sound
High
1734
1736
No Data ALert
ON
1738
for more than
60
minutes
1740
Sound
No Data
1742

FIG. 17

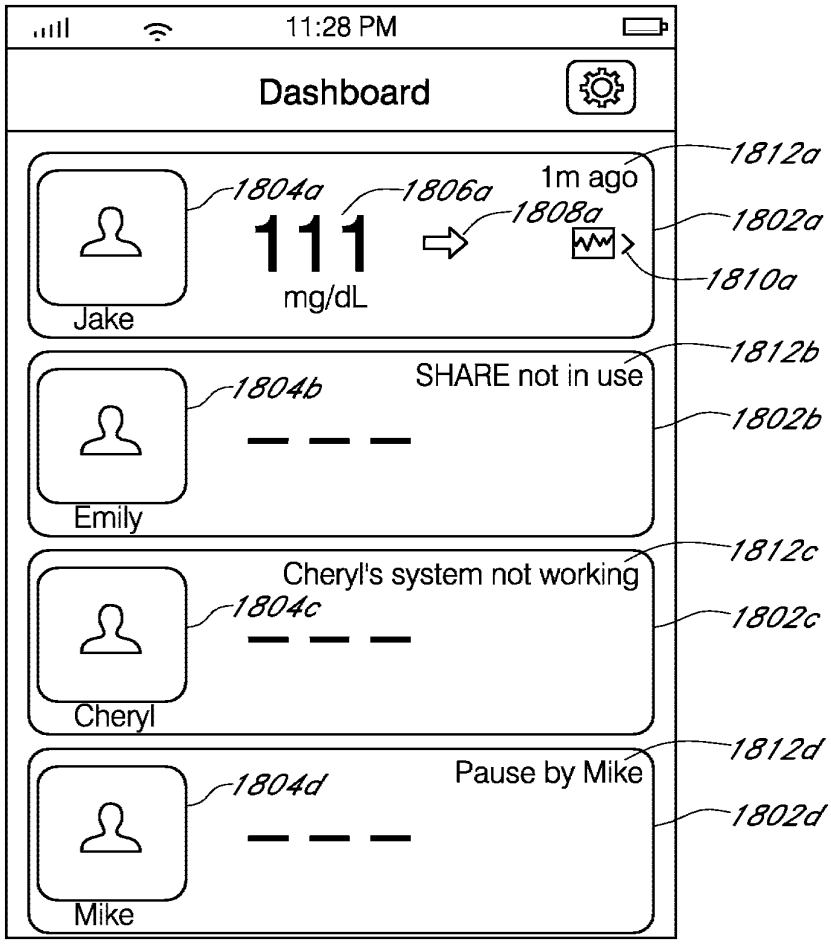

11:28 PM
Dashboard
1812a
1m ago
1804a
1806a
1808a
1802a
111
mg/dL
1810a
Jake
1812b
SHARE not in use
1804b
1802b
Emily
1812c
Cheryl's system not working
1804c
1802c
Cheryl
1812d
Pause by Mike
1804d
1802d
Mike

FIG. 18A

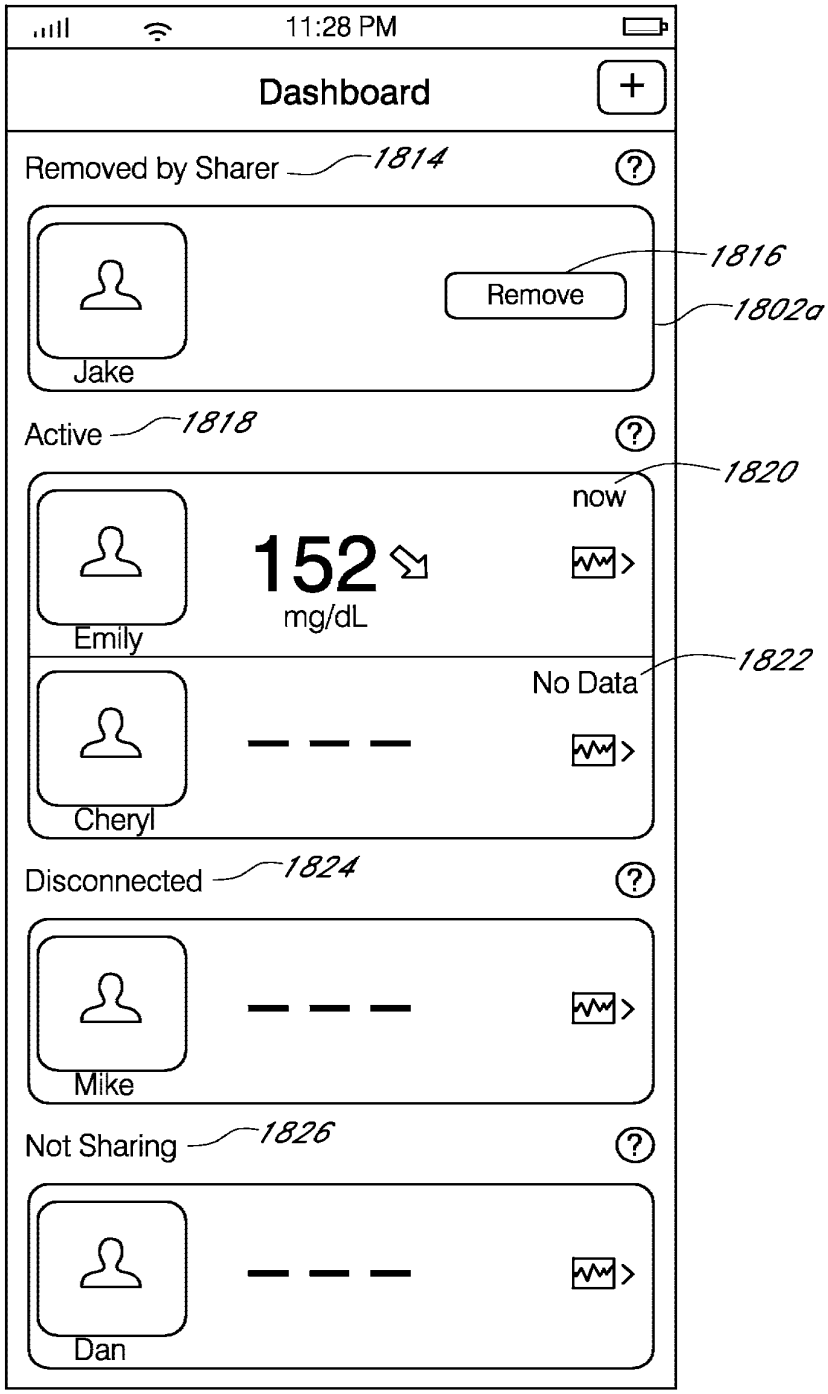

11:28 PM
Dashboard
+
Removed by Sharer
1814
Remove
1816
1802a
Jake
Active
1818
now
1820
152
mg/dL
Emily
No Data
1822
Cheryl
Disconnected
1824
Mike
Not Sharing
1826
Dan

FIG. 18B

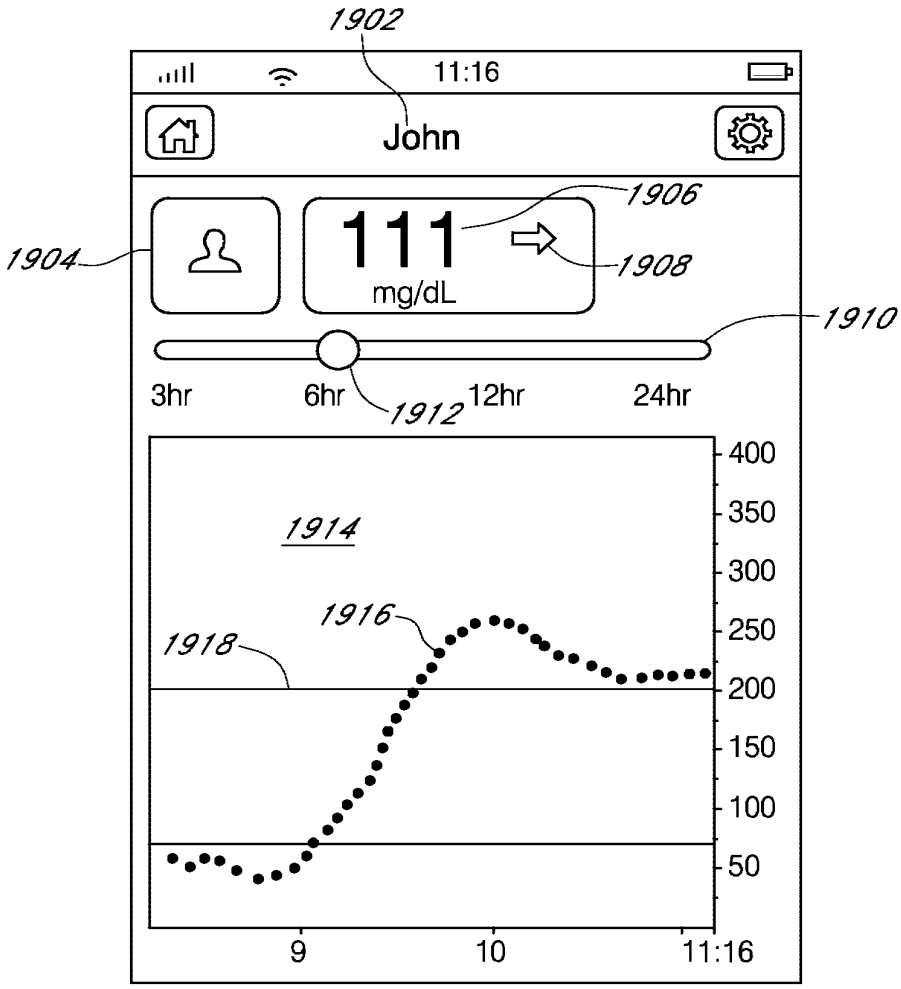

1902
11:16
John
1906
1904
111
mg/dL
1908
1910
3hr
6hr
1912
12hr
24hr
1914
400
350
300
250
1916
1918
200
150
100
50
9
10
11:16

FIG. 19

DEXCOM.225A

REMOTE MONITORING OF ANALYTE MEASUREMENTS

INCORPORATION BY REFERENCE TO RELATED APPLICATIONS

[001] Any and all priority claims identified in the Application Data Sheet, or any correction thereto, are hereby incorporated by reference under 37 CFR 1.57. This application claims the benefit of U.S. Provisional Application No. 61/747,717, filed December 31, 2012, the disclosure of which is hereby expressly incorporated by reference in its entirety and is hereby expressly made a portion of this application.

FIELD

[002] The present disclosure generally relates to remote monitoring.

BACKGROUND

[003] Diabetes mellitus is a disorder in which the pancreas cannot create sufficient insulin, such as in the case of Type I diabetes and/or in which insulin is not effective, such as Type 2 diabetes. In a diabetic state, a victim suffers from high blood sugar, which causes an array of physiological derangements, such as kidney failure, skin ulcers, or bleeding into the vitreous of the eye, associated with the deterioration of small blood vessels. A hypoglycemic reaction, such as low blood sugar, may be induced by an inadvertent overdose of insulin, or after a normal dose of insulin or glucose-lowering agent accompanied by extraordinary exercise or insufficient food intake.

[004] A diabetic person may carry a self-monitoring blood glucose (SMBG) monitor, which typically requires uncomfortable finger pricking methods. Due to the lack of comfort and convenience, a diabetic typically measures his or her glucose level only two to four times per day.

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Unfortunately, these time intervals are spread so far apart that the diabetic will likely find out too late, sometimes incurring dangerous side effects, of a hyperglycemic or hypoglycemic condition. In fact, it is not only unlikely that a diabetic will take a timely SMBG value, but additionally the diabetic will not know if his blood glucose value is higher or lower based on conventional methods.

[005] Consequently, a variety of non-invasive, transdermal (e.g., transcutaneous) and/or implantable electrochemical sensors are being developed for continuously detecting and/or quantifying blood glucose values. These as well as other types of devices generally transmit raw or minimally processed data for subsequent analysis at a remote device, which can include a display, to allow presentation of information to a user hosting the sensor.

SUMMARY

[006] Methods and apparatus, including computer program products, are provided for remote monitoring of analyte data. In some example implementations, there is provided a method. The method may include receiving, at a remote monitor, a notification message representative of an event detected, by a server, from analyte sensor data obtained from a receiver monitoring an analyte state of a host; presenting, at the remote monitor, the notification message to activate the remote monitor, wherein the remote monitor is configured by the server to receive the notification message to augment the receiver monitoring of the analyte state of the host; accessing, by the remote monitor, the server, in response to the presenting of the notification message; and receiving, in response to the accessing, information including at least the analyte sensor data.

[007] In some example implementations, the above-noted aspects may further include additional features described herein including one or more of the following. The notification message may be received from at least a first wireless connection between the remote monitor and a notification service coupled to the server, wherein the additional information may be received from at least a

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second wireless connection between the remote monitor and the server. The first wireless connection may comprise a persistent, encrypted connection configured to carry a short message pushed by the notification service to a notification message center at the remote monitor, and wherein the second wireless connection may comprise a momentary, encrypted connection established, in response the accessing, to provide the additional information comprising at least additional analyte sensor data. The presenting may further comprise inhibiting access to one or more applications at the remote monitor until an action at the remote monitor is detected to indicate receipt of the notification message, wherein the remote monitor further may comprise a monitoring application. The notification message may be presented as a momentary message on a display at the remote monitor, without the inhibiting access. The at least one of the remote monitor and the receiver may comprise one or more of a mobile station, a wireless terminal, a tablet, a smart phone, a multi-mode wireless device, and a computer. The server may comprise at least one processor configured to receive analyte sensor data from the receiver, process the analyte sensor data to detect the event, and forward, when the event is detected, the notification message to the remote monitor based on one or more rules mapping the event to the remote monitor designated to receive the notification message for the detected event. The event may be detected based on a first set of rules at the server, wherein the first set of rules used to generate the notification message may be different from a second set of rules used to detect alerts sent to the receiver coupled to a sensor system at the host. The receiver may include, or couple to, a gateway interfacing a wireless connection to a public land mobile network and the server. A plurality of remote monitors may be configured, wherein at least one of the plurality of remote monitors may be designated as a primary monitor, and at least one of the plurality of remote monitors may be designated as a secondary monitor. The remote monitor may configure at least one rule representative of a trigger causing an alert to be sent by the server to the receiver. The remote monitor may configure one or more invitations sent to one or more devices to invite the one or more devices to monitor the receiver.

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The server may send a message acknowledging a receipt of the notification message. The notification message may include at least one of an indication of a need to calibrate a sensor and an acknowledgement message indicating at least one of an action or an acknowledgement sent by the receiver in response to an alarm sent to the receiver. The activation of the remote monitor may comprise opening the monitoring application. A connection may be established between the remote monitor and the server to enable the receiving of the information including the analyte sensor data. The server may register at least one of the remote monitor, the receiver, an analyte sensor coupled to the receiver, and the registration may include a code provided by a health care provider. The method may be implemented on an apparatus comprising at least one processor and at least one memory including code, which when executed by the at least one processor causes the apparatus to provide the method. A computer-readable storage medium may include code which when executed by at least one processor causes the method.

[008] In another aspect, there is provided a method. The method may include receiving, at a remote monitor, an invitation to access a secure server and data associated with a receiver monitoring an analyte state of a host; and modifying, by the remote monitor, a rule defining an alert representative of an event associated with the analyte state of the host, wherein the alert, when triggered, causes a message to be sent to the remote monitor to notify the remote monitor of the event.

[009] In some example implementations, the above-noted aspects may further include additional features described herein including one or more of the following. The modifying the rule may comprise varying a first threshold associated with a low level of glucose at the host, varying a second threshold associated with a high level of glucose at the host, varying a delay between when an associated alert is triggered by a receiver and a notification message is sent to the remote monitor, and/or varying a time value when a reminder notification is sent to the remote monitor. The method may be implemented on an apparatus comprising at least one processor and at least one memory

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including code, which when executed by the at least one processor causes the apparatus to provide the method. A computer-readable storage medium may include code which when executed by at least one processor causes the method.

[010] It is to be understood that both the foregoing general description and the following detailed description are example and explanatory only and are not restrictive. Further features and/or variations may be provided in addition to those set forth herein. For example, the implementations described herein may be directed to various combinations and subcombinations of the disclosed features and/or combinations and subcombinations of several further features disclosed below in the detailed description.

DESCRIPTION OF THE DRAWINGS

[011] In the drawings,

[012] FIG. 1 depicts a high-level system architecture of a remote monitoring system in accordance with some exemplary implementations;

[013] FIGS. 2A-2C illustrate different system architectures of the remote monitoring system of FIG. 1 in accordance with some exemplary implementations;

[014] FIG. 3 depicts an example process for notifying a remote monitor of an event in accordance with some example implementations.

[015] FIGS. 4A and 4B depict examples of notification messages 170 and 172, respectively, in accordance with some implementations.

[016] FIG. 5 depicts an example of a sensor electronics module in accordance with some example implementations.

[017] FIG. 6 is a block diagram of an implementation of a gateway in accordance with some implementations.

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[018] FIGS. 7A and 7B depict an example of a docking station in accordance with some implementations.

[019] FIG. 8 depicts an implementation of a gateway or docking stations in accordance with some implementations.

[020] FIG. 9 illustrates an exemplary display page to facilitate entry of the serial number of a receiver 1or other unique identifier in accordance with some implementations.

[021] FIG. 10 is a flow chart depicting a process for setting up host monitoring system in accordance with some implementations.

[022] FIGS. 11A and 11B are exemplary views of a status page in accordance with some implementations.

[023] FIG. 12 depicts an example invitation page presented at a remote monitor in the form of an email message in accordance with some implementations.

[024] FIG. 13 depicts an example page that may be presented on a display of the host computing device.

[025] FIG. 14 illustrates an overview page in accordance with some implementations.

[026] FIG. 15 is an exemplary settings display page in accordance with some implementations.

[027] FIG. 16 is a flowchart of an exemplary process of remote monitoring using a remote monitor.

[028] FIG. 17 is an implantation of a settings page that can allow the remote monitor to configure remote monitoring settings of a host in some implementations.

[029] FIGS. 18A and 18B are two different implementations of a dashboard page in accordance with some implementations.

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[030] FIG. 19 is an exemplary page that provides a trend graph of a host's monitored analyte concentration in accordance with some implementations.

DETAILED DESCRIPTION

[031] Implementations described herein can include a system for one or more caretakers (e.g., a parent, spouse or healthcare practitioner) to remotely monitor health characteristics of one or more hosts. The health characteristics can include an analyte concentration of a host, such as glucose, or a bodily function, such as heart rate, blood pressure, temperature and the like. In addition, other characteristics of a host can be monitored to facilitate care of a host, such as a location of the host, state of a host (e.g., exercising, sleeping, or working) and the like. The health characteristics and other characteristics can be gathered using a host monitoring system that incorporates a computing device, such as a smart phone, and one or more sensors, such a continuous glucose sensor, heart-rate monitor, GPS device, etc. Additionally, a host can manually input information into the computing device, such as meal information, medication administration times and amounts, and the like. The information gathered by the host monitoring system can then be transmitted to one or more remote monitors used by caretakers. The caretaker(s) can then receive information about the host's health condition using a remote monitoring system. In some implementations, a host monitoring system can transmit information directly to the one or more remote monitors and/or the host monitoring system transmits information first to a remote server, which then transmits information to the host monitor.

[032] For purposes of illustration only, the following example is a non-limiting exemplary environment in which implementations of remote monitoring systems described herein can be used.

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[033] In this exemplary environment, a host having diabetes is monitored by several different caretakers. The host has a continuous glucose monitoring system, such as the DexCom G4® Platinum continuous glucose monitoring system, commercially available from DexCom, Inc., which provides measurements of the host's glucose levels on a display device, such as the DexCom G4® Platinum Receiver, also commercially available from DexCom, Inc.

[034] Further, in this exemplary environment, the display device can be in communication with a gateway device, either wired communication or wireless communication. The gateway device gathers information, including real-time or near-real-time glucose concentration values, from the display device and transmits the information to a secure server. The gateway device can include a smartphone, such as an iPhone 4S or iPhone 5, each commercially available from Apple, Inc., and a host monitoring software application that comprises instructions configured to cause the smartphone to function as the gateway. The host monitoring software application can be in the form of a so-called "App" downloaded from the Apple App Store operated by Apple, Inc. The gateway can transmit information gathered from the continuous glucose monitoring system wirelessly to the secure server over a cellular network, Wi-Fi network, and the like.

[035] The remote server can store and monitoring the information received from the remote monitoring system. The monitoring can include comparing glucose values of the host (generated by the continuous glucose monitoring system and transmitted to the server via the gateway) to predetermined thresholds and initiating an action if a threshold is exceeded. For example, the server can compare a current glucose value with a predetermined glucose threshold and initiate a notification, such as a text message over a cellular network, to a remote monitoring system if the glucose value exceeds the threshold. The server can also provide historical and current glucose values to the remote monitoring system on demand.

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[036] As discussed above, the remote monitor can be used by a caretaker to monitor health characteristics of a host, which in this exemplary environment is glucose concentration levels of the host. Similar to the host monitoring system, the remote monitoring system can be a smartphone, such as an iPhone 4S or iPhone 5, and a remote monitoring software application that comprises instructions configured to cause the smartphone to function as the remote monitoring system. The remote monitoring software application can be in the form of a so-called "App" downloaded from the Apple App Store operated by Apple, Inc. The remote monitoring system can receive notifications from the server when a threshold is exceeded, notifying the caretaker using the remote monitoring system of the condition of the host. The remote monitoring system can also be used to view historical information about the monitored glucose levels of the host and modify notification rules, such as the threshold levels that trigger notifications.

[037] The following provides more detail of specific implementations, which may or may not include features noted in the above-discussed exemplary environment.

[038] FIG. 1 depicts a high-level system architecture of an implementation of remote monitoring system 100. Here, remote monitoring system 100 includes a plurality of host monitoring systems 198A – 198N connected to a plurality of remote monitors 114A -114M via network 118. Each host 198 monitoring system may be one or more health monitoring devices that gather health-related data associated with a host and transmit the health-related data via network 108. Exemplary implementations of health monitoring systems 198A-198N are described in more detail elsewhere in this disclosure, but in some implementations can include one or more sensors and computing devices operably coupled to the sensors to gather, process and transmit the health-related data. Network 108 can include any communication medium, such as wired and wireless networks including cellular networks, local area networks, wide area networks, Wi-Fi networks, the internet, and the like. Network 108 can also include one or more servers 110

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to process the health-related data received from and transmit notifications and data to one or more remote monitors 114A-114M either automatically or in response to a request from the remote monitors. Each remote monitor 114A-114M can be associated with an individual or entity that is monitoring the health of one or more of hosts using host monitoring systems 198A-198N. Each remote monitor 114 can be associated with a caretaker, such as parent, spouse, doctor, nurse, hospital and the like. The remote monitor 114 can include a computing device that receives notifications from network 108 and requests additional information, such as historical health-related data generated by one or more host monitoring systems 198A-198N.

[039] Remote monitoring system 100 of FIG. 1 can also include workstation 22. Workstation 22 may be a computing device, such as a personal computer, that has access to remote monitoring system 100 for configuring settings of system 100 and/or viewing information associated with one or more host monitoring systems 198, such as reports generated by remote monitoring system based on a host's health-related data.

[040] Using remote monitoring system 100 of FIG. 1, one or more remote monitors 114A-11M can monitor one or more host monitoring systems 198A-198N. That is, host monitoring system 198A can be monitored by remote monitors 114A and 114B, and at the same time, remote monitor 114A can monitor host monitoring system 198B in addition to host monitoring system 198A. Various permissions and invitations can be used to limit which remote monitors 114A-114M can monitor host monitoring systems 198A-118N, as described in more detail later in this disclosure.

[041] In one non-limiting example of remote monitoring system 100, each host monitoring system 198A-198N comprises a smartphone, such as an iPhone from Apple, Inc., and, likewise, each remote monitor 114A-114M has a smart mobile telephone, such as an iPhone. Each host mobile telephone has a host software application downloaded from a server of network

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108, the application configuring the mobile telephone to perform any of the functions by host monitoring system 198 described herein, including gathering and transmitting health-related data used in remote monitoring system 100. The host software application can be an application downloaded using the App Store service hosted by Apple, Inc. Similarly, each remote monitor 114A-114M has a remote monitoring application downloaded from a server of network 108, the remote monitoring application configuring to perform any of the remote monitoring functions described herein, including receiving notifications and requesting health-related data of a host. The remote monitoring application can also be a software application downloaded using the App Store service hosted by Apple, Inc.

[042] FIG. 2A depicts an example of system 100 for monitoring health-related information of host 199, in accordance with some example implementations. Here, the remote system 100 includes a continuous analyte monitoring system 8 including a sensor electronics module 12 and a continuous analyte sensor 10. The system 100 may also include devices and/or sensors, such as medicament delivery pump 2 (e.g., an insulin or glucagon pump), a glucose meter 4 (e.g., a blood finger stick meter), and any other device and/or sensor. The continuous analyte sensor 10 may be physically connected to sensor electronics module 12 and may be integral with (e.g., non-releasably attached to) or releasably attachable to the continuous analyte sensor 10.

[043] The sensor electronics module 12, medicament delivery pump 2, a glucose meter 4, and/or other devices/sensors may couple via a wired or wireless links to one or more devices, such as a receiver 102. The receiver 102 may include a display 122 to enable the host 199 to present information from continuous analyte sensor 10, delivery pump 2, glucose meter 4, and/or other devices/sensors.

[044] The implementation of system 100 illustrated in FIG. 2A provides via a gateway 104, networks 108A-C, a secure server 110, and a notification service 112, notification messages to

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one or more remote monitors 114A-114M, such as remote monitor 114A. Each remote monitor 114 may be configured at system 100 to provide a separate mechanism for monitoring the activity associated with host 199 including receiver 102, continuous analyte sensor 10, delivery pump 2, glucose meter 4, and/or any other sensor associated with host 199.

[045] To illustrate by way of an example, host 199 may access receiver 102 to view data from, or control aspects of, continuous analyte sensor 10, delivery pump 2, and/or glucose meter 4. However, another entity, such as a parent, a care giver, a health care professional, a school nurse, and the like, may have remote monitor 114 receive notification messages representative of certain events determined based on sensor data from receiver 102, continuous analyte sensor 10, delivery pump 2, and/or glucose meter 4, and view historical and substantially real-time sensor data. For example, an event may comprise one or more of the following: a measured analyte sensor value above or below a predetermined threshold, a rate of change or a level of glucose measurements above a predetermined threshold, a predicted glucose value approaching (or predicted to approach) a predetermined threshold, a host 199 not responding to a prompt, a message, or an alert displayed at receiver 102, and/or any other event detected by secure server 110 and/or receiver 102. In the example of FIG. 2A, the remote monitor 114 depicts a notification message 132 indicating low glucose level of host 199. As such, an entity having remote monitor 114 may assist host 199 by providing an additional layer of monitoring and oversight of host 199, as well as receiver 102, continuous analyte sensor 10, delivery pump 2, glucose meter 4, and the like.

[046] In some example implementations, the remote monitor 114 may include a processor, a computer-readable storage medium (e.g., memory, storage, and the like), a radio access mechanism (e.g., a modem and the like), and/or a user interface. The computer readable medium may include code which when executed by a processor provides one or more applications, operating systems, and the like. For example, an application may be configured as a remote monitoring application

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configured to monitor and/or control one or more of the receivers 102, the continuous analyte sensor 10, the delivery pump 2, the glucose meter 4, and the like. In some implementations, the remote monitor 114 is an iPhone mobile phone from Apple, Inc. and the application is an application downloaded over the Internet using the App Store service operated by Apple, Inc.

[047] In some example implementations, the remote monitor 114 may comprise one or more of the following: a mobile station, a wireless terminal, a tablet, a smart phone, or the like. For example, the remote monitor 114 may be implemented as a wireless handheld device, a wireless plug-in accessory, or the like. Moreover, the remote monitor 114 may be implemented as multi-mode device configured to operate using a plurality of radio access technologies, such as Long Term Evolution (LTE), wireless local area network (WLAN) technology, such as 802.11 Wi-Fi and the like, Bluetooth, Bluetooth low energy (BT-LE), near field communications (NFC), and any other radio access technologies. Moreover, the remote monitor 114 may be configured to establish connections to access points in network 108A, such as cellular base stations, Wi-Fi access points, and the like, using at least one of the plurality of the radio access technologies. Although some of the examples herein refer to the remote monitor as a mobile, wireless device, the remote monitor may also be implemented as a stationary device, such as a personal computer and the like.

[048] In some example implementations, the receiver 102 may be configured differently than the remote monitor 114. For example, the receiver 102 may include a different set of rules defining when an alert is sent to the receiver 102, when compared to the set of rules used to trigger a notification to the remote monitor 114. Moreover, although the receiver 102 may trigger alerts on its own (e.g. applying thresholds to sensor data received from sensor system 8), receive alerts from sensor system 8 or receive alerts directly from the secure server 110, the remote monitor 114 may be configured to receive messages, such as short messages, text messages, and the like, from a notification service 112, and these messages can serve to activate the remote monitor 114, such as

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activating the remote monitor application of the remote monitor. For example, the remote monitor 114 may close the remote monitor application session (as well as close network connection 109 to secure server 110), when the remote monitor application is not actively being used to conserve power at the remote monitor. When this is the case, the notification service 112 may send a message over network connection 111 to allow activation of the remote monitor 114 and/or a remote monitor application (and this activation may be automatic or under the control of a user of remote monitor 114).

[049] Although some of the examples described herein refer to secure server 110 as an intermediary node between the receiver 102 and the remote monitor 114, in some example implementations, the secure server 110 may be by-passed. For example, the gateway 104 may communicate directly with the remote monitor 114, and vice-versa. In addition, the gateway 104 and receiver 102 may receive notification messages to activate an application at the receiver 102 or gateway 104 to allow the host to be alerted.

[050] FIG. 3 depicts an example process 197 for notifying a remote monitor 114 of an event associated with receiver 102, continuous analyte sensor 10, delivery pump 2, glucose meter 4, and/or host 199, in accordance with some example implementations. The description of FIG. 3 also refers to FIG. 2A.

[051] In some example implementations, the secure server 110 may register and/or configure one or more of the receiver 102, the continuous analyte sensor 10, the delivery pump 2, the glucose meter 4, and the host 199 before process 197 is initiated, although registration and/or configuration may occur at other times as well. The registration process may be performed to register the receiver 102, the continuous analyte sensor 10, the delivery pump 2, the glucose meter 4, the remote monitor 114, and/or the host 199 with the secure server 110. Moreover, the configuration process may be performed to configure system 100 including the identities of the one or more remote monitors used to monitor receiver 102, configure one or more rules used to trigger notification

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messages to the remote monitors, configure one or more rules designating primary and secondary remote monitors, configure one or more rules establishing schedules for the primary and secondary monitors, configure one or more rules defining an escalation sequence representative of when to elevate an event to a primary monitor or a secondary monitor, and the like.

[052] At 180, receiver 102 may send sensor data, such as analyte data from sensor system 8 and the like, to gateway 104, which then forwards the sensor data at 182 to secure server 110. For example, receiver 102 may couple to gateway 104 via a wired or wireless connection, and gateway 104 may couple to secure server 110 via network 108A. The gateway 104 may be configured to pull current and/or historical data from the receiver 102 on its own or in response to a request from secure server 110.

[053] At 186, the secure server 110 may determine whether one or more of the remote monitors114A-114M, such as remote monitor 114A, should be sent a notification message regarding an event. The secure server 110 may determine whether to send a notification message to a remote monitor based on received sensor data (as well as any other data available at the secure server), which triggers an event (or satisfies a rule) at the secure server. For example, secure server 110 may receive the sensor data at 182 and then process the received sensor data alone or along with other data (e.g., historical data, data from other sources of patient information, and the like) to determine whether to send the notification message alerting the remote monitor 114 of the event. The secure server 110 may also receive information from other systems, such as a heath management system or a health care provider's systems, and this information may be used to trigger notification messages to the remote monitor. In addition, the secure server 110 may send notification messages to confirm whether the remote monitor is still actively monitoring the host 199.

[054] To illustrate by way of an example, receiver 102 may receive sensor data from host 199 and transmit the sensor data to secure server 110 via gateway 104 and network 108A, and the

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secure server 110 may process the sensor data and determine a low level of glucose by comparing the most current glucose level data to a predetermined low glucose threshold, although other events described herein may be detected as well. The secure server 110 may include one or more rules defining events, such as the low level of glucose exceeding a threshold and include rules defining the identities of the remote monitors receiving a notification message indicating the low level of glucose at the host 199. For example, the rule may define that when a low level of glucose is detected for a certain host, a certain remote monitor should receive a notification message. The notification message may include an indication of the low level of glucose (e.g., the glucose value), the time of the event, and other information, such a plot of current and past glucose levels, host information (e.g., name), and/or any other host related information.

[055] The one or more rules defining the events may be defined during the configuration process by a user, such as host 199, a caregiver, and/or predefined as default rules (which may be reconfigured by a user or may be adapted by the system 100 over time to accommodate the host). In some example implementations, the one or more rules may define a threshold value representative of a severity of the event that should be reported to the one or more remote monitors, the times of day when a notification message should be sent to each of the remote monitors, the identities (e.g., phone number, Internet Protocol address, email address, and the like) of the one or more remote monitors, and the like.

[056] Furthermore, the one or more rules may include escalation rules, so that events can be handled differently based on severity of event, type of event, and/or lack of responsiveness by a designated remote monitor. For example, a rule may define that a glucose value below a certain value should not be the subject of a notification message to remote monitor 114 (although an alert message may be sent to the receiver 102 or gateway 104 to notify the host 199); another rule may define that a glucose value between a range of values should be the subject of a notification message to remote

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monitor 114; while another rule may define sending, when a dangerously low glucose value is detected, notification messages to remote monitor 114A as well as other remote monitors 114B-M. In some example implementations, the rules used to trigger alerts to host 199 at receiver 102 may be different from the rules used to send notification messages to remote monitor 114, although one or more of the rules may be the same as well.

[057] Although the previous examples described an event associated with low glucose levels, other types of events may be defined as well at the secure server 110 in order to trigger notification messages to the remote monitor 114 and/or trigger alerts to the receiver 102.

[058] At 187, the secure server 110 may send an alert to the receiver 102 and/or gateway 104. The alerts may be triggered based on events which are the same or different as the rules used to trigger events for notification messages to the remote monitor 114. Moreover, the secure server 110 may include a delay between when the alert is sent at 187 and the notification messages are sent at 188-190. For example, the delay may allow the receiver 102 to acknowledge or take action before sending messages at 188-190, as the receiver may also have a set of rules that are the same or different than those for the receiver stored on the secure server. That is, the receiver 102 may trigger an alert based on rules residing within the receiver, and the receiver may receive an alarm from the secure server based on a different set of rules stored at secure server. The delay prior to the secure server 110 sending a notification to the receiver 102 may be varied by the secure server based on the severity or type of event, and the delay may be configured by a user and/or configured programmatically. For example, a first delay may be used for a first low analyte threshold, but no delay may be used for a second, more severe, low glucose threshold.

[059] At 188-190, a notification message may be sent to one or more remote monitors based on whether one or more rules are triggered at 186. In some example implementations, the secure server may send a notification message to a push notification service 112, which then pushes a

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notification to the remote monitor(s). Examples of push notification services include the Apple Push Notification Service (APNS) and Google Cloud Messaging, although any other messaging mechanism including email, short messaging service, tweets, and the like may be used as well. In the case of APNS, the remote monitor 114 (or a notification message center therein) may establish an Internet Protocol (IP) connection with the APNS. This connection may be encrypted, persistent, and/or accredited, so that the notification service can send notification messages to the notification message center even when the remote monitor application and/or remote monitor are not actively being used. For example, the notification message center may alert the user of the remote monitor 114 that a notification message had arrived for the remote monitor application.

[060] In an implementation utilizing a push notification service, the notification service 112 may receive a notification message from secure server 110. The notification message may include a destination address, such as a phone number of the remote monitor 114, an IP address, and the like, and a payload, such as the contents of the notification message. Returning to the previous example regarding low glucose level, the notification message may include the phone number of remote monitor 114 and a short text message, such as a low glucose level value, time of measurement of the value, and/or an identity of the host. The notification message may be limited to 256 bytes, although other sized messages may be used as well. In any case, the notification service 112 pushes the notification message to remote monitor 114 via a connection, such as an Internet Protocol (IP) connection, between the notification service 112 and a notification message center at the remote monitor 114. When the notification message center at the remote monitor 114 receives the notification message, the notification message center may display the notification message, generate a sound, a vibration, and another other indication to a user of the remote monitor 114. And, in some example implementations, the notification message center or a user of the remote monitor may activate the remote monitoring application if the remote monitoring application at the remote monitor 114 is not

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actively being used. The notification service 112 may be used in implementations in which the remote monitor 114 resides on a device, such as a smart phone and the like, that places the remote monitor 114 or the applications therein in an idle or an inactive mode to conserve power or reduce signaling to/from the network.

[061] In some example implementations, the push notification service may be by-passed, so that the secure server 110 sends the notification message directly to the remote monitor 114 and/or the remote monitoring application therein. This may occur, for example, when the remote monitoring application is open on the remote monitoring device.

[062] When the notification message is received at 192, the remote monitor 114 or a remote monitoring application therein may be activated if in an idle mode or an inactive mode. Once activated (which can be programmatically or under the control of a user), the remote monitor 114 may attempt to establish a connection to secure server 110. For example, the remote monitoring application may not be actively being used (e.g., in an idle mode, sleep mode, off, in background mode, and the like). To activate the remote monitoring application, the remote monitoring application may be activated by, for example, opening the remote monitoring application by selecting and expanding the remote monitoring application, actively using the remote monitoring application by entering a value into, selecting an element of, the user interface of the remote monitoring application, and the like. Moreover, the remote monitor and/or remote monitoring application may be activated by other ways as well. For example, activation may be invoked by movement of the remote monitor detected by a motion sensor and/or turning on, or increasing the intensity, of the display at the remote monitor.

[063] In response to acknowledgement that the remote monitor 114 has activated the remote monitoring application via access message 194, the secure server 110 may send at 196 additional information to the remote monitor. The content of the additional information sent from the secure server 110 to the remote monitor 114 may be automatically determined or may be defined by a

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request from remote monitor, which may be a request included in the access message 194 or a subsequent message from the remote monitor. The additional information may include one or more of the following: all available sensor data not currently stored in the receiver 102, sensor data over a predetermined amount of time, such as the previous 3 or 24 hours of glucose data obtained from the sensor system 100, receiver 102, and/or secure server 110, a plot of the glucose levels over time, a glucose variability value, instructions, motivational messages, status of host, remote monitoring permissions modified by the host, and the like.

[064] In some implementations, the secure server automatically sends sensor data from the past three hours to the remote monitor and the remote monitor can request any additional amount of past sensor data should the remote monitor want to evaluate the host over a longer period of time. The secure server 110 may query the receiver 102 via gateway 104 for additional data in order to respond should the secure server not have all sensor data specified in a request from the remote monitor 114.

[065] To illustrate further, when the remote monitor 114 receives the notification message, the notification may cause message 132 to appear on a display screen of the remote monitor 114. From the message 132, the remote monitoring application may be activated, either autonomously or under the direction of a user and/or notification message center. The remote monitoring application may then access at 192 the secure server 110 and programmatically receive any additional information associated with the event or other data since the last connection to secure server 110. For example, once the notification message is acknowledged with an access at 194 or an acknowledgement message, secure server 110 may automatically respond with a page having a trend graph of the current glucose state and information indicating the severity of the event (or any other information available at secure sensor 110). Although the secure server 100 may instead respond with a subset of the data, in which case, the secure server 110 may automatically respond with new data since the last connection to

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secure server 110, so that remote monitor can generate a page including the trend graph showing the last 3 hours' worth of glucose levels. In any case, the remote monitor may be configured to automatically present, when message 196 is received, the page showing relevant event information, such as a trend graph covering a predetermined time period (e.g., a three hour history of glucose levels) for the host. An exemplary page that can be automatically presented is illustrated in FIG. 19, which is discussed in more detail elsewhere in this disclosure.

[066] Although FIG. 3 is primarily discussed with respect to remote monitor 114 monitoring a single host for ease of understanding, it is understood that the remote monitor may be monitoring multiple hosts, as discussed elsewhere herein. As such, secure server 110 may have sensor data and additional information associated with other hosts. Accordingly, in some implementations secure server can automatically send over sensor data of the other hosts remote monitor is monitoring, along with the sensor data from the host that triggered the notification 190 to the remote monitor. In this manner, remote monitor 114 can have an updated set of sensor data and other information associated with each of the hosts remote monitor is monitoring.

[067] FIGS. 4A and 4B depict examples of notification messages 170 and 172, respectively. In the example of notification message 170, the notification message 170 may be presented at remote monitor 114 as a window requiring a user interaction, when the remote monitor 114 receives the notification message. For example, the user interaction may comprise pressing a button on remote monitor 114, touching the screen of remote monitor over the area associated with a portion of the message 170 or activating (e.g., executing, opening, and the like) the remote monitoring application at remote monitor 114. In some instances, the notification message 170 may appear when another application at remote monitor 114 is actively being used. When this is the case, a user interaction may comprise touching the screen over the area associated with a portion of the message 170 to acknowledge receipt of the notification message 170 before the user is allowed to resume the

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other application, although the user action may also preempt the other application and make the remote monitoring application the active application being viewed at the remote monitor. Moreover, the decision of whether to preempt the other application or resume the other application may be predetermined based on the severity level of the event, so that relatively more severe events preempt the other application, while less severe events do not.

[068] In the example of notification message 172, the notification message 172 may be presented at remote monitor 114 as a message that appears in the user interface as an informational message not requiring intervention on the part of the user. Furthermore, when notification message 172 appears while another application is being used at remote monitor 114, notification message 172 does not require the user to acknowledge notification message 172, or even activation of the remote monitoring application (which may be idle or inactive state at remote monitor 114), resulting thus in the continued use of the other application by the user.

[069] FIG. 2B depicts another example architecture of remote monitoring system 100. Referring to FIG. 2B, the receiver 102 may incorporate the gateway 104 of FIG. 2A. For example, the receiver 102 may include an interface, such as a radio frequency modem, to network 108A. To illustrate further, in the example of FIG. 2B, the receiver 102 may include a smart phone or other processor-based wireless device and provide access to network 108A and thus secure server 110 via the public land mobile network and other networks (e.g., the Internet).

[070] In addition, while illustrated separately in FIG. 2B, the secure server 110 may incorporate the notification service 112 or by-pass the notification service 112 in some implementations. In such implementations, the operation of the system at FIG. 2B may be similar to the process described at FIG. 3 but sensor data 180 may be sent at 180 directly to secure server 110, and secure server 110 may send a notification message at 188 directly to the remote monitor 114.

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[071] FIG. 2C depicts yet another example architecture of remote monitoring system 100. Here, gateway 104 is depicted as a dashed box including separate devices comprising a docking station 103 and a host communication device 105. Any of the functions for gateway 104 described herein can be divided between the docking station and host communication device in some implementations. For example, docking station 103 may communicate with receiver 102 and host communication device 105 may communicate with the secure server 110.

[072] In some implementations, the host communication device 105 is a smart phone and the docking station 103 physically, electrically and communicatively couples to receiver 102 to hold, power and communicate with, respectively, the receiver. In one implementation, the docking station 103 couples to the receiver via a USB connection to both provide power to the receiver 102 and communicate with the receiver 102. The docking station 103 then communicates with host communication device 105 via wireless communication, e.g. using the BLE protocol, and the host communication device communicates to secure server 110 via network 108A. Such an implementation including the docking station 103 may be used in the case where receiver 102 and host communication device 105 do not have the capability to communicate directly with one another because, for example, the receiver and host communication device not use a compatible communication protocol.

[073] In an example of the implementation of FIG. 2C, the host communication device 105 is a mobile telephone having a host monitoring application downloaded from the Apple App Store, wherein the application configures the mobile telephone to gather information from receiver 102 via docking station 103 and transmit that information to secure server 110, as well as any other functions described herein associated with gateway 104.

[074] Before providing additional implementation examples for gateway 104, networks 108A-C, secure server 110, notification service 112, and remote monitor 114, the following provides

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implementation examples for the receiver 102, continuous analyte sensor 10, delivery pump 2, and/or glucose meter 4.

[075] Referring again to FIGS. 2A-2C, sensor electronics module 12 may, in some example implementations, include electronic circuitry associated with measuring and processing data generated by the continuous analyte sensor 10. This generated continuous analyte sensor data may also include algorithms, which can be used to process and calibrate the continuous analyte sensor data, although these algorithms may be provided in other ways as well. The sensor electronics module 12 may include hardware, firmware, software, or a combination thereof to provide measurement of levels of the analyte via a continuous analyte sensor, such as a continuous glucose sensor. An example implementation of the sensor electronics module 12 is described further below with respect to FIG. 2.

[076] The sensor electronics module 12 may, as noted, couple (e.g., wirelessly and the like) with one or more devices, such as receiver 102 and the like, presenting (and/or alerting) information, such as sensor information transmitted by the sensor electronics module 12 for display at receiver 102.

[077] The receiver 102 may include one or more interfaces, such as machine-to-machine interfaces and user interfaces. For example, the user interfaces may include a variety of interfaces, such as one or more buttons 124, a liquid crystal display 122, a vibrator, an audio transducer (e.g., speaker), a backlight, and/or the like. The components that comprise the user interface may provide controls to interact with the user (e.g., the host). One or more buttons may allow, for example, toggle, menu selection, option selection, status selection, yes/no response to on-screen questions, a "turn off" function (e.g., for an alert), a "snooze" function (e.g., for an alert), a reset, and/or the like. The LCD 122 may provide the user with, for example, visual data output. The audio transducer 230 (e.g., speaker) may provide audible signals in response to triggering of certain alerts, such as present and/or predicted hyperglycemic and hypoglycemic conditions. In some example implementations, audible

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signals may be differentiated by tone, volume, duty cycle, pattern, duration, and/or the like. In some example implementations, the audible signal may be configured to be silenced (e.g., snoozed or turned off) by pressing one or more buttons 224 on the receiver 102 and/or by signaling the sensor electronics module using a button or selection on the receiver.

[078] Although FIGS. 2A,and 2B depict example implementations of receiver 102 as a hand-held display device, other form factors may be used as well, such as a relatively small, key fob-like, dongle-like display device, a cellular phone (e.g., a smart phone, a tablet, and the like), a personal computer 20, and/or any other user equipment configured to at least present information (e.g., a medicament delivery information, discrete self-monitoring glucose readings, heart rate monitor, caloric intake monitor, and the like).

[079] In some example implementations, the continuous analyte sensor 10 comprises a sensor for detecting and/or measuring analytes, and the continuous analyte sensor 10 may be configured to continuously detect and/or measure analytes as a non-invasive device, a subcutaneous device, a transdermal device, and/or an intravascular device. In some example implementations, the continuous analyte sensor 10 may analyze a plurality of intermittent blood samples, although other analytes may be used as well.

[080] In some example implementations, the continuous analyte sensor 10 may comprise a glucose sensor configured to measure glucose in the blood using one or more measurement techniques, such as enzymatic, chemical, physical, electrochemical, spectrophotometric, polarimetric, calorimetric, iontophoretic, radiometric, immunochemical, and the like. In implementations in which the continuous analyte sensor 10 includes a glucose sensor, the glucose sensor may be comprise any device capable of measuring the concentration of glucose and may use a variety of techniques to measure glucose including invasive, minimally invasive, and non-invasive sensing techniques (e.g., fluorescent monitoring), to provide a data, such as a data stream, indicative of the concentration of glucose in a

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host. The data stream may be raw data signal, which is converted into a calibrated and/or filtered data stream used to provide a value of glucose to a user, such as a host, or a caretaker (e.g., a parent, a relative, a guardian, a teacher, a doctor, a nurse, or any other individual that has an interest in the wellbeing of the host). Moreover, the continuous analyte sensor 10 may be implanted as at least one of the following types of sensors: an implantable glucose sensor, a transcutaneous glucose sensor, implanted in a host vessel or extracorporeally, a subcutaneous sensor, a refillable subcutaneous sensor, an intravascular sensor.

[081] Although the description herein refers to some implementations that include a continuous analyte sensor 10 comprising a glucose sensor, the continuous analyte sensor 10 may comprise other types of analyte sensors as well. Moreover, although some implementations refer to the glucose sensor as an implantable glucose sensor, other types of devices capable of detecting a concentration of glucose and providing an output signal representative of glucose concentration may be used as well. Furthermore, although the description herein refers to glucose as the analyte being measured, processed, and the like, other analytes may be used instead or as well including, for example, ketone bodies (e.g., acetone, acetoacetic acid and beta hydroxybutyric acid, lactate, etc.), glucagon, Acetyl Co A, triglycerides, fatty acids, intermediaries in the citric acid cycle, choline, insulin, cortisol, testosterone, and the like. In some implementations, other health characteristics of a host are monitored in addition to or instead of analyte monitoring described herein, including, but not limited to heart rate, blood pressure levels, blood oxygen levels, body temperature, caloric intake, medicament delivery and the like.

[082] In one implementation, the sensor system 8 and receiver 102 comprise the DexCom G4® Platinum continuous glucose monitoring system available from DexCom, Inc., and gateway 104 comprises an Apple iPhone® smartphone available from Apple, Inc. with software downloaded thereon to cause the smart phone to perform the functions of gateway 104 described herein.

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[083] FIG. 5 depicts an example of a sensor electronics module 12, in accordance with some example implementations. The sensor electronics module 12 may include sensor electronics that are configured to process sensor information, such as sensor data, and generate transformed sensor data and displayable sensor information. For example, the sensor electronics module may transform sensor data into one or more of the following: filtered sensor data (e.g., one or more filtered analyte concentration values), raw sensor data, calibrated sensor data (e.g., one or more calibrated analyte concentration values), rate of change information, trend information, rate of acceleration information, sensor diagnostic information, location information (which may be provided by a location module 269 providing location information, such as global positioning/navigation system information), alarm/alert information, calibration information, smoothing and/or filtering algorithms of sensor data, and/or the like.

[084] In some example implementations, the sensor electronics module 12 may be configured to calibrate the sensor data, and the data storage memory 220 may store the calibrated sensor data points as transformed sensor data. Moreover, the sensor electronics module 12 may be configured, in some example implementations, to receive wirelessly calibration information from a device, such as receiver 102, to enable calibration of the sensor data. Furthermore, the sensor electronics module 12 may be configured to perform additional algorithmic processing on the sensor data (e.g., calibrated and/or filtered data and/or other sensor information), and the data storage memory 220 may be configured to store the transformed sensor data and/or sensor diagnostic information associated with the algorithms.

[085] In some example implementations, the sensor electronics module 12 may comprise an application-specific integrated circuit (ASIC) 205 coupled to a user interface 122. The ASIC 205 may further include a potentiostat 210, a telemetry module 232 for transmitting data from the sensor electronics module 12 to one or more devices, such receiver 102 and the like, and/or other components

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for signal processing and data storage (e.g., processor module 214 and data store 220). Although FIG. 2 depicts ASIC 205, other types of circuitry may be used as well, including field programmable gate arrays (FPGA), one or more microprocessors configured to provide some (if not all of) the processing performed by the sensor electronics module 12, analog circuitry, digital circuitry, or a combination thereof.

[086] In the example depicted at FIG. 5, the potentiostat 210 is coupled to a continuous analyte sensor 10, such as a glucose sensor, via data line 212 to receive sensor data from the analyte. The potentiostat 210 may also provide via data line 212 a voltage to the continuous analyte sensor 10 to bias the sensor for measurement of a value (e.g., a current and the like) indicative of the analyte concentration in a host (also referred to as the analog portion of the sensor). The potentiostat 210 may have one or more channels (and corresponding one or more data lines 212), depending on the number of working electrodes at the continuous analyte sensor 10.

[087] In some example implementations, the potentiostat 210 may include a resistor that translates a current value from the sensor 10 into a voltage value, while in some example implementations, a current-to-frequency converter may also be configured to integrate continuously a measured current value from the sensor 10 using, for example, a charge-counting device. In some example implementations, an analog-to-digital converter may digitize the analog signal from the sensor 10 into so-called "counts" to allow processing by the processor module 214. The resulting counts may be directly related to the current measured by the potentiostat 210, which may be directly related to an analyte level, such as a glucose level, in the host.

[088] The telemetry module 232 may be operably connected to processor module 214 and may provide the hardware, firmware, and/or software that enable wireless communication between the sensor electronics module 12 and one or more other devices, such as receiver 102, display devices, processors, network access devices/gateways, and the like. A variety of wireless radio technologies

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that can be implemented in the telemetry module 232 include Bluetooth, Bluetooth Low-Energy, the ANT protocol, NFC (near field communications), ZigBee, IEEE 802.11, IEEE 802.16, cellular radio access technologies, radio frequency (RF), infrared (IR), paging network communication, magnetic induction, satellite data communication, spread spectrum communication, frequency hopping communication, near field communications, and/or the like. In some example implementations, the telemetry module 232 comprises a Bluetooth chip, although the Bluetooth technology may also be implemented in a combination of the telemetry module 232 and the processor module 214. Further, while telemetry module is depicted as part of the ASIC 205 in FIG. 2, some or all of the telemetry module can be separate from the ASIC in other implementations.

[089] The processor module 214 may control the processing performed by the sensor electronics module 12. For example, the processor module 214 may be configured to process data (e.g., counts), from the sensor, filter the data, calibrate the data, perform fail-safe checking, and/or the like.

[090] In some example implementations, the processor module 214 may comprise a digital filter, such as for example an infinite impulse response (IIR) or a finite impulse response (FIR) filter. This digital filter may smooth a raw data stream received from sensor 10, data line 212 and potentiostat 210 (e.g., after the analog-to-digital conversion of the sensor data). Generally, digital filters are programmed to filter data sampled at a predetermined time interval (also referred to as a sample rate). In some example implementations, such as when the potentiostat 210 is configured to measure the analyte (e.g., glucose and the like) at discrete time intervals, these time intervals determine the sampling rate of the digital filter. In some example implementations, the potentiostat 210 is configured to measure continuously the analyte, for example, using a current-to-frequency converter. In these current-to-frequency converter implementations, the processor module 214 may be programmed to request, at predetermined time intervals (acquisition time), digital values from the

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integrator of the current-to-frequency converter. These digital values obtained by the processor module 214 from the integrator may be averaged over the acquisition time due to the continuity of the current measurement. As such, the acquisition time may be determined by the sampling rate of the digital filter.

[091] The processor module 214 may further include a data generator configured to generate data packages for transmission to devices, such as receiver 102. Furthermore, the processor module 215 may generate data packets for transmission to these outside sources via telemetry module 232. In some example implementations, the data packages may, as noted, be customizable and/or may include any available data, such as a time stamp, displayable sensor information, transformed sensor data, an identifier code for the sensor and/or sensor electronics module, raw data, filtered data, calibrated data, rate of change information, trend information, error detection or correction, and/or the like.

[092] The processor module 214 may also include a program memory 216 and other memory 218. The processor module 214 may be coupled to a communications interface, such as a communication port 238, and a source of power, such as a battery 234. Moreover, the battery 234 may be further coupled to a battery charger and/or regulator 236 to provide power to sensor electronics module 12 and/or charge the batteries 234.

[093] The program memory 216 may be implemented as a semi-static memory for storing data, such as an identifier for a coupled sensor 10 (e.g., a sensor identifier (ID)) and for storing code (also referred to as program code) to configure the ASIC 205 to perform one or more of the operations/functions described herein. For example, the program code may configure processor module 214 to process data streams or counts, filter, calibrate, perform fail-safe checking, and the like.

[094] The memory 218 may also be used to store information. For example, the processor module 214 including memory 218 may be used as the system's cache memory, where temporary

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storage is provided for recent sensor data received from data line 212 and potentiostat 210. In some example implementations, the memory may comprise memory storage components, such as read-only memory (ROM), random-access memory (RAM), dynamic-RAM, static-RAM, non-static RAM, easily erasable programmable read only memory (EEPROM), rewritable ROMs, flash memory, and the like.

[095] The data storage memory 220 may be coupled to the processor module 214 and may be configured to store a variety of sensor information. In some example implementations, the data storage memory 220 stores one or more days of continuous analyte sensor data. For example, the data storage memory may store 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 20, and/or 30 (or more days) of continuous analyte sensor data received from sensor 10 via data line 212. The stored sensor information may include one or more of the following: a time stamp, raw sensor data (one or more raw analyte concentration values), calibrated data, filtered data, transformed sensor data, location information, and/or any other sensor related or displayable information.

[096] The user interface 222 may include a variety of interfaces, such as one or more buttons 224, a liquid crystal display (LCD) 226, a vibrator 228, an audio transducer (e.g., speaker) 230, a backlight, and/or the like. The components that comprise the user interface 222 may provide controls to interact with the user (e.g., the host). One or more buttons 224 may allow, for example, toggle, menu selection, option selection, status selection, yes/no response to on-screen questions, a "turn off" function (e.g., for an alert), a "snooze" function (e.g., for an alert), a reset, and/or the like. The LCD 226 may provide the user with, for example, visual data output. The audio transducer 230 (e.g., speaker) may provide audible signals in response to triggering of certain alerts, such as present and/or predicted hyperglycemic and hypoglycemic conditions. In some example implementations, audible signals may be differentiated by tone, volume, duty cycle, pattern, duration, and/or the like. In some example implementations, the audible signal may be configured to be silenced (e.g., snoozed or turned off) by pressing one or more buttons 224 on the sensor electronics module and/or by signaling the

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sensor electronics module using a button or selection on a display device (e.g., key fob, cell phone, and/or the like).

[097] Although audio and vibratory alerts are described with respect to FIG. 2, other alerting mechanisms may be used as well. For example, in some example implementations, a tactile alert is provided including a poking mechanism configured to "poke" the patient in response to one or more alert conditions.

[098] The battery 234 may be operatively connected to the processor module 214 (and possibly other components of the sensor electronics module 12) and provide the necessary power for the sensor electronics module 12. In some example implementations, the battery is a Lithium Manganese Dioxide battery, however any appropriately sized and powered battery can be used (e.g., AAA, Nickel-cadmium, Zinc-carbon, Alkaline, Lithium, Nickel-metal hydride, Lithium-ion, Zinc-air, Zinc-mercury oxide, Silver-zinc, or hermetically-sealed). In some example implementations, the battery is rechargeable. In some example implementations, a plurality of batteries can be used to power the system. In yet other implementations, the receiver can be transcutaneously powered via an inductive coupling, for example.

[099] A battery charger and/or regulator 236 may be configured to receive energy from an internal and/or external charger. In some example implementations, a battery regulator (or balancer) 236 regulates the recharging process by bleeding off excess charge current to allow all cells or batteries in the sensor electronics module to be fully charged without overcharging other cells or batteries. In some example implementations, the battery 234 (or batteries) is configured to be charged via an inductive and/or wireless charging pad, although any other charging and/or power mechanism may be used as well.

[0100] One or more communication ports 238, also referred to as external connector(s), may be provided to allow communication with other devices, for example a personal computer (PC)

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communication (com) port can be provided to enable communication with systems that are separate from, or integral with, the sensor electronics module. The communication port, for example, may comprise a serial (e.g., universal serial bus or "USB") communication port, to communicate with another computer system (e.g., PC, personal digital assistant or "PDA," server, or the like), a dongle with a wireless transceiver coupled to a docking station as described further below, and/or any other interface. The communication port may also be coupled to, or include, a wireless transceiver to allow wireless communications as well. In some example implementations, the sensor electronics module 12 is able to transmit historical data to a PC or other computing device (e.g., a secure server as disclosed herein) for retrospective analysis by a patient and/or physician.

[0101] In some continuous analyte sensor systems, an on-skin portion of the sensor electronics may be simplified to minimize complexity and/or size of on-skin electronics, for example, providing only raw, calibrated, and/or filtered data to a display device such as receiver 102 configured to run calibration and other algorithms described above with respect to the sensor electronics module 12. However, the sensor electronics module 12 may be implemented to execute prospective algorithms used to generate transformed sensor data and/or displayable sensor information, including, for example, algorithms that: evaluate a clinical acceptability of reference and/or sensor data, evaluate calibration data for best calibration based on inclusion criteria, evaluate a quality of the calibration, compare estimated analyte values with time corresponding measured analyte values, analyze a variation of estimated analyte values, evaluate a stability of the sensor and/or sensor data, detect signal artifacts (noise), replace signal artifacts, determine a rate of change and/or trend of the sensor data, perform dynamic and intelligent analyte value estimation, perform diagnostics on the sensor and/or sensor data, set modes of operation, evaluate the data for aberrancies, and/or the like.

[0102] Although separate data storage and program memories are shown in FIG. 5, a variety of configurations may be used as well. For example, one or more memories may be used to

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provide storage space to support data processing and storage requirements at sensor electronic module 12.

[0103] Although some of the examples noted refer to a continuous analyte sensor 10, a glucose meter 4, and pump 2 in communications with sensor electronics module 12 and/or receiver 102, other devices may be used as well. For example, sensor electronics module 12 and/or receiver 102 may couple (either via wired and/or wireless links) to other sensors, including a glucose sensor, an altimeter, an accelerometer, a temperature sensor, a location module (e.g., a global positioning system processor or other source of location information), a heart rate monitor, a blood pressure monitor, a pulse oximeter, a caloric intake monitor, a medicament delivery device, and the like.

[0104] As noted above, the sensor electronics module 12 may generate and transmit, via a wireless or wired medium, a data package to a device, such as receiver 102, configured to receive, store, forward/retransmit, and/or display sensor data. The sensor electronics module 12 may, as noted, analyze the sensor data from the multiple sensors and determine which sensor data is to be transmitted based on one or more of many characteristics of the host, the receiver 102, a user of the receiver 102, a remote monitor 114, and/or characteristics of the sensor data. Moreover, one or more of the functions and/or components described herein with respect to the sensor system 8 may also or instead be found one or more of the receiver 102, gateway or secure server 110, and the one or more of the functions described herein with respect to the receiver 102 may also be found on the sensor system 8.

[0105] Referring again to FIG. 2A for purposes of illustration, the receiver 102 may forward analyte sensor data, as well as other available data, via wired and/or wireless links to gateway 104. In some example implementations, the gateway 104 may include a network interface configured as a radio interface, such as a cellular radio interface (e.g., Long Term Evolution and the like), a wireless local area network interface (e.g., Wi-Fi and the like), and/or any other type of wireless or wired interface. For example, the gateway 104 may include at least one processor including a radio

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frequency subsystem (e.g., a modem). In these wireless examples, when the receiver 102 couples to gateway 104, the gateway 104 sends analyte sensor data and the like wirelessly to secure server 110 via network 108A, which may include one or more of an access network, a wireless local area network, a radio access network, a cellular network, the Internet, and/or any other communication mechanism. In some example implementations, gateway 104 may also include a wired connection network 108A, which further couples to secure server 110.

[0106] Gateway 104 can automatically send sensor analyte data and additional information from receiver 102 in one or more of a plurality of ways. For example, receiver 102 can provide gateway 104 with information without a request from gateway. The information can be provided automatically, such as after the expiration of a timer or upon the generation of a new sensor data point, or can be responsive to user input to receiver 102. Gateway 104 can then automatically send the information from receiver to secure server 110. In another example, gateway can automatically request information based upon predetermined rules, such as after the expiration of a timer, such as a 5 minute timer. The information provided by the receiver 102 can then be automatically sent to secure server 110. In yet another example, gateway may send a request for information to gateway 104 which then forwards the request to receiver 102. The receiver 102 can then provide the requested information to gateway, which then forwards the information to secure server 110. In each of these examples, the information requested can be for specific information (e.g., a specific time period of sensor data) or simply a general request to send information. In the latter case, the receiver 102 can determine what information to send responsive to the request, such as any new sensor data generated by receiver since the receiver last provided information to the server 110.

[0107] FIG. 6 is a block diagram of an implementation of gateway 104. The gateway 104 can include a power module 302 for charging the receiver 102 when it is coupled to the gateway 104, a wireless network interface 304 to allow wireless access to network 108A using a variety of network

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access technologies, although wired connectivity may also be provided by gateway 104 to network 108A, processor 414 and computer memory for storing instructions for processor 314 to execute functions of gateway 104 and storing health-related information received from receiver 102.

[0108] Moreover, the gateway 104 can include a receiver interface 306 to provide a wired and/or wireless interface to the receiver 102 in implementations where the receiver is separate from the gateway and the gateway does not include intermediate docking station 103. For example, receiver interface 306 may include a universal serial bus interface through which receiver 102 can communicate with gateway 104, secure server 110, and the like. The universal serial bus may also provide a physical connection for charging the receiver 102, although wireless charging may be used as well. Furthermore, receiver interface 306 may include a wireless interface, such as Bluetooth, Bluetooth low energy, Zig-bee, Atom, and any other wireless technology, through which receiver 102 can communicate with gateway 104, secure server 110, and the like. The gateway 104 may also include a user interface 310, such as a display, a touch screen display, a key pad, a speaker, a light emitting diode, and the like. For example, one or more light emitting diodes may be used to indicate whether the gateway 104 is properly coupled to the receiver 102, network 108A, secure server 110, and the like, whether the gateway 104 is connected to a power source (e.g., electrical outlet), whether the battery is charged, and the like. The display may also allow presentation of sensor data, alerts, notifications, and the like. For example, a user interface, such as a display, a light emitting diode, and the like, may provide an indication, such as a specific color light emitting diode, a message, and the like, representing that a connection, such as an Internet Protocol connection, a secure tunnel, and the like, has been establish between the gateway 104 and the secure server 110, so that the user of the gateway 104 recognizes that the receiver is coupled to the so-called "cloud" which includes the secure server 110.

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[0109] As discussed above, in some implementations, gateway 104 can comprise a smart phone having a host monitoring application stored thereon that configures the smart phone to perform the functions of gateway 104 described herein.

[0110] FIGS. 7A and 7B depict an example of the docking station 700, which can be the docking station 103 described with respect to of FIG. 2C. FIG. 7A illustrates a perspective view of the docking station 700 without receiver 102 physically coupled to the docking station, and FIG. 7B illustrates a front view of docking station with receiver 102 physically coupled to the docking station. Docking station 700 may have a cavity 710 to allow receiver 102 to be slideably inserted and releasably held into the docking station. The docking station 700 may also include a mechanical mechanism to releasably secure the receiver 102 to the docking station (not shown). The mechanism can be a latch assembly or the like. The docking station may electrically couple to the receiver 102 via, for example, an electrical connector, such as a universal serial bus connector, and/or a wireless interface, such as Bluetooth, Bluetooth low-energy, Wi-Fi, and any other wireless technology, and may transmit data received from the receiver 102 to host communication device 105, secure server 110 or remote monitor 114 using an electrical connector, and/or a wireless interface, such as Bluetooth, Bluetooth low-energy, Wi-Fi, and any other wireless technology.

[0111] The docking station 700 may also serve as a repeater and/or amplifier of any alert triggered by the receiver 102 and/or secure server 110. For example, the docking station 103 may receive an indication of an alert triggered by the receiver 102 from the receiver. The docking station 700 may repeat the alert by, for example, sounding an audible alarm, causing a vibration, and/or lighting a light emitting diode to indicate the alert to a user. Moreover, the receiver 102 may alert using a first alarm, such as a vibration, while the docking station 700 may re-alert using a second type of alarm that is different from the first alarm. For example, the first alarm can be a vibratory alarm and the second alarm can be an audible alarm or vice versa. As another example, the first alarm can be an

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audible alarm and the second alarm can also be an audible alarm, but the second audible alarm is louder than the first alarm and/or has a different tonal pattern.

[0112] In some implementations, the docking station 700 can trigger an alert by physically sensing an alarm from the receiver 102. For example, the docking station can include a vibratory and/or audible sensor that can sense vibrations or sounds, respectively, emanating from receiver 102. In this way, the docking station 103 can trigger an alert upon sensing the receiver 102 triggering an alarm while the receiver is docked in the docking station.

[0113] Furthermore, the alert settings at the docking station 700 may be the same or different as those at the receiver 102. For example, alert settings at docking station 700 may be more stringent than those at the receiver 102. For instance, the receiver 102 may have a low glucose threshold at a value that is greater than a corresponding low glucose threshold at the docking station 700. The alert settings of the docking station 700 can be user configurable using a user interface of the docking station or a user interface of the host communication device 105, for example.

[0114] Additionally or alternatively, in some implementations the docking station 700 delays triggering an alert that was triggered by receiver 102 to allow the host time to cure the alert prior to the docking station triggering an alarm. Should the host cure the alert prior to the expiration of the delay, then the docking station 700 does not trigger the alert.

[0115] Further to FIGS. 7A and 7B, the docking station 700 can include one or more light indicators, such as LEDs, that indicate a status of the docking station 700 and/or other components of the system 100. For example, a first light indicator 712 can indicate (by either turning on or changing color) if the docking station 700 is receiving power from an external power source, a second light indicator 714 can indicate (by turning on, changing color or blinking) if the docking station is paired to host communication device 105. Other light indicators can be used as well, such as a third light indicator that indicates if the communication channel between docking station 700 and host

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communication device 105 and/or secure server 110 is open and successfully transmitting sensor data from receiver 102.

[0116] FIG. 8 depicts another implementation of gateway 104. In the example of FIG. 8, the gateway 104 is configured as a dongle, such as a universal serial bus dongle, including universal serial bus connector 392 for coupling to the receiver 102, a user interface, such as a button 394 for performing a Bluetooth pairing to another device, such as host device 105, having access to network 108A, or directly to network 108A over a Wi-Fi or cellular communication channel. Although the gateway/dongle may be configured for Bluetooth pairing, the gateway/dongle may support connection establishment to the other devices using other radio access technologies, such as Bluetooth low energy, Wi-Fi, Atom, Zig-bee, NFC, and the like. The gateway/dongle depicted at FIG. 8 may also include a light emitting diode 396 for providing an indication of the state of the gateway 104 or receiver 102 (e.g., battery level, glucose level status, whether a user is in a low or high glycemic state, connection status to network, connection status to secure server, and the like). In some example implementations, the gateway at FIG. 8 may include its own rechargeable battery to power the gateway and/or the receiver 102, although it may rely on the receiver 102 as a power source as well.

[0117] In some example implementations, the gateway 104 may, as noted, include a radio frequency interface to allow the data to be automatically uploaded in a compressed format or uncompressed format from the receiver 102 to the secure server 110, which may be implemented as a so-called "cloud." And, the uploading may occur programmatically – without user intervention - when receiver 102 is in communication with gateway104. The gateway 104 may also be configured to gather an identifier of the receiver 102 (or the receiver may automatically provide the identifier without a request for the identifier from the gateway 104) and provide the identifier to the secure server 110 to allow the secure server 110 to associate the received sensor data with the host 199, receiver, and any previously provided sensor data stored at secure server 110 (or a repository coupled to

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secure server 110) associated with the host. In some implementations, the identifier is the serial number of the receiver 102, and the receiver automatically sends the identifier along with any sensor data the receiver provides to gateway. Moreover, in some example implementations, the gateway 104 may be configured to send data incrementally, i.e., data previously received would not be re-sent to secure server 110 unless requested by secure server 110. Furthermore, gateway 104 may select between a cellular connection and a Wi-Fi connection based on connection speed, cost, and the like. For example, a free Wi-Fi connection may be selected over a fee-based cellular connection if available. Further, a cellular connection may be used for sending substantially real-time data generated by sensor system 8, but a Wi-Fi connection used for sending historical data, as it may not be as important for sending historical data in a timely fashion in some implementations.

[0118] In some example implementations, the gateway 104, receiver 102, sensor system 8, and remote monitor 114 may be preconfigured, so that when the sensor system 8 and receiver 102 communicatively couple to gateway 104, the gateway 104 recognizes the sensor system/receiver and/or users thereof. Further, the remote monitor 114 may also be recognized by server 110 to allow remote monitoring of receiver 102 to occur with little (if any) configuration by an end-user/host of receiver 102. For example, the secure server 110, gateway 104, receiver 102, sensor system 8, and remote monitor 114 may be preconfigured and preregistered, with little, if any, configuration or registration effort on the part of the host.

[0119] Referring again to FIGS. 2A-2C, the network 108A may include a wireless access network, such as a cellular network, a wireless local area network, and the like. In addition, network 108A may couple to other networks as well. For example, the gateway 104 may couple to an access network served by a base station or a Wi-Fi access point, which may have backhaul links to other networks including the public land mobile network, the Internet, and the like. Networks 108B-C may be implemented in a manner that is the same or similar to network 108A.

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[0120] The secure server 110 may receive analyte sensor data, store analyte sensor data, process analyte sensor data to detect events and thus allow generation of notifications to remote monitors 114 and/or generation of alerts to receiver 102 and/or gateway 104, generate pages or reports for display at remote monitor 114, receiver 102 and/or gateway 104, allow registration and/or configuration of host 199, sensor system 8, receiver 102, gateway 104 and remote monitor 114.

[0121] In some example implementations, one or more entities may have remote monitors 114A-114M. For example, the secure server 110 may register the identity of the users of remote monitors 114A-114M and a schedule for when each entity performs monitoring. Moreover, one or more of the entities may be configured at the secure server 110 as primary monitors for receiving notifications, while other entities may be configured as backup, secondary monitors for receiving notifications when a primary monitor does not acknowledge, or act on the, notification message sent to a remote monitor 114 according to one or more predefined rules. Furthermore, the secure server 110 may include one or more rules defining when an event results in a notification to one or more of the remote monitor(s) 114.

[0122] The secure server 110 may also provide a cloud-based diabetes data management framework that receives patient-related data from various devices, such as a medical device, a glucose meter, a continuous glucose monitor, a sensor system, a receiver, and/or other devices (e.g., a device providing food consumption, such as carbohydrates, consumed by a host or patient, medicament delivery data, time of day, temperature sensors, exercise/activity sensors, and the like) including any device disclosed herein. Furthermore, the cloud-based diabetes data management system may receive data programmatically with little (or no) intervention on the part of a user. The data received from devices, receivers, source systems, and the like may be in a variety of formats and may be structured or unstructured. For example, the secure server 110 may receive, from sensor system 8 and receiver 102, raw sensor data, which has been minimally processed or analyzed, and the received data is then

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formatted, processed (e.g., analyzed), and/or stored in order to enable report generation by secure server 110. In addition to sensor data, the secure server 110 may also receive data from source systems, such as health care management systems, patient management systems, prescription management systems, electronic medical record systems, personal health record systems, and the like.

[0123] In some example implementations, the secure server 110 may check received data for transmission-related errors, data formatting, device-related error codes, validity of the data, duplicate data points, and/or other aspects of the data. Moreover, if out-of-range data points or device errors are found, the secure server 110 may identify those data points by, for example, flagging those data points, subsequently correcting the identified data points programmatically or by a system administrator, and storing the corrected data points. Moreover, secure server 110 may be configured by a user, such as a clinician, doctor, and the like, to perform additional data processing steps, such as correcting time of day, correcting the date, and analyzing data by specific cohorts, groups, and relationships (e.g., demographics, such as age, city, state, gender, ethnicity, Type I diabetes, Type II diabetes, age of diabetes diagnosis, lab results, prescription drugs being used, self-reported conditions of the patient, diagnosed conditions of the patient, responses to questions posed to patient, and any other metadata representative of the host/patient). Once secure server 110 performs initial data processing (e.g., checks, cleaning, and analysis), the processed data and/or the raw data may be stored at a repository coupled to the secure server 110.

[0124] The processing at secure server 110 may also include associating metadata with the data received from the devices and/or sensors. Examples of metadata include patient information, keys used to encrypt the data, patient accelerometer data, location data (e.g., location of patient or location of patient's clinic), time of day, date, type of device used to generate associated sensor data, and the like. The patient information can include the patient's age, weight, sex, home address and/or any past

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health-related information, such as whether the patient has been diagnosed as a Type 1 or Type 2 diabetic, high-blood pressure, or as having any other health condition.

[0125] The processing may also include one or more of the following: analysis, such as determining one or more descriptive measurements; detecting or predicting events (e.g., a hypoglycemic, a hyperglycemic, and/or any other feature detected in the sensor data); applying pattern detectors to the received sensor data; and generating reports based on received information, such as sensor data, and descriptive measurements of the information including sensor data. The descriptive measurements may include statistics (e.g., median, inner, and outer quartile ranges, mean, sum, n, standard deviation, and coefficients of variation). In some example implementations, secure server 110 may also associate metadata with the data received from the devices, sensors, source system, and/or receivers; determine one or more descriptive measurements, such as statistics (e.g., median, inner and outer quartile ranges, mean, sum, n, and standard deviation); generate reports including descriptive measurements; validating and verifying the integrity of the received data from the devices, sensors, source system, and/or receivers; processing received data based on metadata (e.g., to select certain patients, devices, conditions, diabetic type, and the like), and/or correlating received data from the devices, sensors, source system, and/or receiver, so that the data can be compared and combined for processing including analysis. Moreover, the results of any processing performed by secure server 110 may be used to generate one or more reports, such as graphs, bar graphs, static charts, charts, and the like. Furthermore, the reports and other outputs generated secure server 110 may be provided to receiver 102, remote monitor 114, and any other processor via one or more delivery mechanisms.

[0126] Secure server 110 may be considered secure in the sense that it keeps private, patient identifiable information and/or restricts access to users registered and thus authorized to use secure server 110. For example, secure server 110 may receive a request from a device, such as receiver 102 or remote monitor 114, to perform an action (e.g., provide data, store data,

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analyze/process data, request a report, request configuration information, request registration, and the like). Before secure server 110 services the request, the secure server 110 may process the request to determine whether the request is authorized and authenticated. For example, an authenticator and authorizer may determine whether the sender of the request is authorized by requiring a user to provide a security credential (e.g., a user identifier, a password, a stored security token, and/or a verification identifier provided by text message, phone, or email) at a user interface presented on a processor, such as receiver 102, remote monitor 114, and/or any other computer. If authorized, authenticator and authorizer may authenticate the sender of the request to check whether a security credential associated with sender of the request indicates that the sender is indeed permitted to access a specific resource at system 100 in order to perform the action, such as store (or upload) data at a repository, perform analyze/process data, request report generation, receive alerts, receive notification messages, and the like.

[0127] In some example implementations, the secure server 100 may include a pattern detector to perform pattern detection on data, such as sensor data representative of blood glucose data, analytes, and other data as well (e.g., insulin pump data, carbohydrate consumption data, and the like). The pattern detector may detect the pattern and generate an output, which may be provided to a report generator at secure server for generating an alert to receiver 102, a notification message to remote monitor 114, and/or a page containing a report.

[0128] Moreover, the pattern detector may detect patterns in data/sensor data retrospectively for a predetermined time defined by system 100 and/or a user. For example, the pattern detector may receive input data from a repository coupled to secure server 110, and the input data may include sensor data representative of glucose concentration data, analytes, and other data as well (e.g., insulin pump data, carbohydrate consumption data, histograms and/or counts, data from a continuous glucose monitor (CGM data), time of day, amount of carbohydrates, other food related information,

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exercise, awake/sleep timer intervals, medications ingested, and the like). Moreover, the input data may comprise historical data obtained over a timeframe, such as 8 hours, 1 day, 2 days, 7 days, 30 days, and/or any other time period. For example, the input data may comprise counts representative of monitored analyte detection levels (e.g., glucose concentration levels) received and stored at system 100 over a period covering a four-week timeframe.

[0129] To further illustrate the pattern detector, patterns can be recognized based on one or more predefined triggers (also referred to as criteria, rules, and filters). Furthermore, the one or more predefined triggers may be variable and adjustable based user input and/or programmatically based on one or more rules at the secure server 110. And, some types of patterns may be selected, turned off and on, and/or modified by a user, a user's physician, or a user's guardian, although system 100 may select, adjust, and/or otherwise modify triggers programmatically as well.

[0130] Some examples of the types of relationships in the input data that can be considered a pattern are one or more of the following: a glucose level that exceeds a target glucose range (which may be defined by a user, a health care provider, secure server 110, or a combination thereof); a glucose level that is below a target glucose range; a rapid change in glucose level from a low to a high (or vice versa); times of day when a low, a high, an at range, or rapid glucose level event occurs; days when a low, a high, an at range, or a rapid glucose level event occurs; a hyperglycemic pattern; a hypoglycemic pattern; patterns associated with a time of day or week; a weighted scoring for different patterns based on frequency, a sequence, and a severity; a custom sensitivity of a user; a transition from a hypoglycemic to hyperglycemic pattern; an amount of time spent in a severe event; a combination of glucose change and time information; and/or a pattern of high variability of glucose data. Further, a pattern may be based on a combination of previous pattern data and a currently detected situation, whereby the combined information generates a predictive alert.

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[0131] Hypoglycemic patterns by time of day may be detected based on events detected by secure server 110. For example, a pattern may be identified in situations where the user has low glucose concentrations around the same time in the day. Another type of pattern, which may be identified, is a "rebound high" situation. For example, a rebound high may be defined as a situation where a user overcorrects a hypoglycemic event by overly increasing glucose intake, thereby going into a hyperglycemic event. These events may be detected based on one or more predefined triggers.

[0132] To further illustrate examples of the patterns, basic patterns may be configured to allow a search for certain patterns in the data, such as values within range, high coefficient of variance, and the like. Each pattern may have one dimension, such as within range, with a separate pattern looking specifically for below range, another looking for low coefficient of variance, and the like. Each pattern may be statistically based and use standard descriptive statistics in the application of pattern matching. Each pattern may be assigned scores for various rules encoded with each pattern, such as is it positive, negative, how important an insight is, and the like. Each pattern may also be assigned a possible set of date ranges for which the pattern is applicable. For example, counting the number of times a high glucose value is followed by a low below range is a pattern that just applies to the full range. However, looking at high levels of variance can apply to a month, a week, a day, an intraday, every other hour, hourly, and combinations thereof. Every pattern may be assigned a minimally acceptable score before it can be considered for display or generation of an alert sent to the receiver 102 (or host 199) and/or notification message sent to remote monitor 114. Each pattern (and any associated triggers/rules) may be processed for a set of data for a certain timeframe, and if the pattern is applied and meets certain minimal requirements, then the patterns are ranked according to significance. As such, the ranked patterns may each correspond to an alert sent to the receiver 102 (or host 199) and/or notification message sent to remote monitor 114 (or a primary monitor or secondary monitor access the remote monitor 114).

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[0133] Connection establishment refers to the process of adding one or more remote monitors to system 100 to provide a second layer of oversight into the operation of sensor system 8 and receiver 102. The connections to the remote monitor 114 may be established based on an invitation sent to the remote monitor 114. This invitation may be sent with the consent of the receiver 102, gateway 104 (e.g., via a user interface therein), and/or host 199. For example, the receiver 102 and remote monitor 114 may be required to both accept invitations or to enter a code (e.g., a password, shared secret, and the like) in order to opt in to the remote monitoring provided at system 100.

[0134] To illustrate further with respect to FIG. 1, host monitoring system 198A may have a single remote monitor 114A or a plurality of remote monitors 114A-114M, and the rules associated with when the remote monitors receive alerts and what types of alerts should be sent may be stored at the secure server 110. For example, first remote monitor 114A may receive notification messages during the day, while second remote monitor 114B may receive notification messages at night, although other schedules may be used as well. As another example, first remote monitor 114A may have high and low threshold values that trigger an alert to remote monitor 114A that are different than one or both of the high and low threshold values that trigger an alert to remote monitor 114B. Moreover, one or more rules may define first remote monitor 114A as a primary monitor, while second remote monitor 114B may be defined as a backup or secondary monitor.

[0135] The remote monitor 114 may acknowledge a received notification message by activating (e.g., opening, interacting with, accessing, selecting, and the like) the remote monitoring application which causes a message to be sent at 194 (FIG. 3) to the secure server 110 or responding to a message presented at the user interface of the remote monitor. If the secure server 110 does not receive any form of acknowledgement that the user has seen or otherwise acknowledged the notification message at the remote monitor after a predetermined amount of time (which may depend on the severity or type of the event), the secure server 110 may resend the notification to the remote

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monitor 114. In some example implementations, the secure server 110 may receive a message from the notification service 112 that the remote monitor 114A is out of service or otherwise unreachable, in which case the secure server 110 may resend the notification message to a different remote monitor 114B. The delay used by the secure server for resending the notification messages may be configured based on the severity or type of the event, and the secure server may also include rules defining a predetermined quantity of unsuccessful resends before escalation to another primary monitor, a secondary/backup monitor, an emergency medical service, and the like. And, this predetermined quantity of unsuccessful resends may also be configured at the secure server to vary based on severity or type of the event or user configured.

[0136] In some example implementations, as illustrated in FIG. 1, the remote monitor 114 may receive notification messages for a single host monitoring system 198A or a plurality of host monitoring systems 198A-198N. Furthermore, a page may be generated by secure server 110 and then sent to the one or more remote monitors for presentation at a user interface at each of the remote monitors, although the secure server 110 may instead send the data to the remote monitor 114 to enable page generation at the remote monitor 114. The page may include a textual and/or a graphical indication of the status of the one or more hosts being monitored. To illustrate, a school nurse may have a remote monitor 114 with a page depicting each of the host monitoring systems 198A the remote monitor is monitoring. Each remote monitoring system 198A-198N may be associated with a student. In this example, the page may have the status information for each of the students, the most recent notification message for each of the students, a graphical or a textual indication that the student is within limits, or an indication that the student is above limits, and the like. Each student may be associated with a cell (a defined space on the display). As such, the nurse may quickly view the user interface and see the status of each of the students being monitored. A graphical indication may be used to visually convey the overall status of each student in each student's cell. For example, a so-

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called "smiley" face icon may indicate the student's glucose levels are within limits and a so-called "sad" face icon may indicate the host's glucose levels are of concern because they are above a threshold. Moreover, in some example implementations, the page may be presented on a display, so that a selection (e.g., touch on a touch screen, mouse over, click, etc.) of a cell, notification or face icon results in additional information being provided to the remote monitor. For example, selecting a cell of a student may cause the remote monitor 114 to access the secure server 110 and then receive additional information, such as one or more of current and prior glucose levels, patient information, and the like, and update the display page or transition to a new display page that displays information about the selected student in more detail (e.g., displaying a trend graph of the student's glucose level over the past three hours). Although the previous example refers to glucose levels and specific types of messages and icons, other types of events, messages, and icons discussed herein may be used to convey the status of a host.

[0137] In some example implementations, the page discussed above may be configured as a so-called "dashboard" including dynamic content. For example, the icons for the host-patients requiring the greatest care or attention (e.g., the patients with glycemic levels that are extremely high or low) may be arrange in the top row of page to allow the remote monitor to quickly ascertain the state of riskier host patients. Although the previous arrangement described using the top row of the page to segregate some of the so-called riskier host-patients other segregation schemes may be used (e.g., different colors, intensities, and/or locations on the page). Furthermore, the page may be considered dynamic as the patients segregated for extra attention may change over time causing the page to depict different icons for different patients in the segregated top row of the page. Examples of dashboards are discussed in greater detail with respect to FIGS. 18A and 18B.

[0138] Designating remote monitors

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[0139] In some example implementations, an entity, such as a user, may be designated by secure server 110 as a primary monitor. When this is the case, the primary monitor at remote monitor 114 may not be available due to for example a dead battery of the remote monitoring 114A, a device out of service, a lack of radio reception, and the like. A secondary monitor may thus be designated by secure server 110 to receive the notification message, which would otherwise be sent to the primary monitor. The secondary monitor may have access to another remote monitoring device 114 and thus receive the notification message, when the first notification message to the primary monitor is not received or acknowledged within a predetermined amount of time. The amount of time can be variable based on the severity or type of event. In addition to monitoring acknowledgements from the remote monitor 114, the secure server 110 may access the quality of service mechanisms at the notification service 112 to determine whether the remote monitor 114 device is not in service (e.g., due to a failure, a dead battery, out of range, or otherwise not accepting notification messages) to enable the secure server 110 to select another monitor that is in service.

[0140] Escalation

[0141] The remote monitor 114 may, in some example implementations, generate a message for presentation requiring some form of acknowledgement or action by the user of the remote monitor 114 (e.g., a primary or secondary monitor) to confirm receipt of a notification message. The acknowledgement or action may comprise responding to the notification message, opening a remote monitoring application at the remote monitor 114, and the like. Moreover, if the action is not performed within a predetermined amount of time, the secure server 110 may determine that the user of the remote monitor has not seen (or otherwise been notified by) the notification message. When this is the case, the secure server may escalate the notification message to another remote monitor as defined by one or more rules at the secure server. The secure server may also check the push notification service (or quality of service mechanism therein) to see if the notification message has

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been delivered. If not, the secure server may determine that the user of the remote monitor has not seen the notification message and use this as a basis to escalate the notification message to another remote monitor.

[0142] In some implementations, the secure server 110 may include one or more rules defining an escalation sequence defining which notification messages should be sent to primary first remote monitor 114A and, given an out of service state, when the messages should be resent to one or more other remote monitors 114B-114M. During configuration of the remote monitors 114A-114M, the secure server 110 may be configured via user input (e.g., the host and/or one or more of the remote monitors) how and/or when each of remote monitors 114A-114M is to be notified in an escalation sequence. This escalation sequence configuration may be defined by a user or provided as a default setting (which may be reconfigurable or adaptable over time based on the responsiveness of the user/host/monitor) and may vary based on severity of the event and type of event. For example, the escalation sequence may define rules defining when to alert a host-patient at a receiver 102, when to escalate to a primary monitor at a remote monitor, when to escalate to a secondary monitor at a remote monitor, and/or when to escalate to an emergency medical service or 911-emergency response.

[0143] In some example implementations, the escalation rules may be different for each of the remote monitors 114A-114N and/or different from the thresholds set for the host monitoring system 198. For example, a first rule may define that if a glucose value exceeds a first threshold value, the secure server 110 should send an alert to first remote monitor 114A. The secure server 110 may include a second, separate rule that defines sending a notification message to a second remote monitor 114B when the glucose value exceeds a second threshold value, and yet another third rule that defines sending another notification message to a third remote monitor 114M when the glucose value exceeds a third threshold value. In addition, a rule may define sending a notification to more than one remote monitor, such as all remote monitors or a subset of the remote monitors monitoring a host. The rules

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may be configured by a user (e.g., using receiver 102, gateway 104, workstation 22, etc.) or provided as default settings (which may be reconfigurable by a user).

[0144] Furthermore, if a user at the receiver 102 does not acknowledge an alert within a predetermined amount of time, an escalation sequence may also be implemented. For example, referring to FIG. 2A, the secure server 110 may determine (e.g., by monitoring sensor data received from receiver 102 and knowing the thresholds on the receiver) that receiver 102 alerted (or should have alerted) host 199, where the alert required an acknowledgement. The acknowledgement can be in the form of a user responding to a message presented on a user interface 122 of receiver 102, or the user otherwise curing the alert, such as taking an action that can be measured by a device associated with the host-user (e.g., medicament pump 2 indicating that insulin has been administered to the user, an analyte measurement indicating that the underlying cause of the alert is no longer a problem because measured level above a threshold or trend moving in a desired direction, etc.). In this example, if the secure server 110 does not receive some form of acknowledgement and/or an indication of the underlying event that triggered the alert is cured after waiting a predetermined amount of time, the secure server 110 may resend the alert and/or send a notification message to a primary remote monitor, a secondary remote monitor, and/or an emergency medical service. And, this escalation, including the retries and delay, may be configured at the secure server 110 to vary based on the severity and/or type of event triggering the alert.

[0145] Reminders

[0146] In some example implementations, the secure server 110 may include rules providing a so-called "follow-up" reminder. For example, if a host-user at receiver 102 has not taken an action, such as take insulin, drink a glass of juice, etc., the secure server 110 may send a reminder notification to the remote monitor 114 and/or to the receiver 102 and/or gateway 104 after a predetermined amount of time. The predetermined amount of time and which of the one or more of

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remote monitors 114A-114M, receiver 102, gateway 104 associated with a reminder may be configurable and may vary based on severity of the event and/or type of event.

[0147] Furthermore, in some implementations, the secure server 110 may re-send notifications repeatedly (e.g., every 5 minutes or any other time) to remote monitor 114 and/or receiver 102 until the receipt of the notification message is acknowledged. In some example implementations, the secure server 110 may configure different alarm types to be triggered by the receiving device (e.g., remote monitor 114 or receiver 102) as each re-send is sent to the receiving device (e.g., successively increasing volume, brightness, or vibration with each repeated, unacknowledged notification message, or triggering a vibratory alarm with a first reminder and a vibratory alarm with a second reminder, etc.). Opening a message from the secure server 110 at receiving device may serve as an acknowledgment, as well as other actions detectable by the secure server.

[0148] In some example implementations, a user designated as a primary monitor may signal to secure server 110 an inability to provide monitoring by sending a message to secure server 110 and/or receiver 102, using, for example, remote monitor 114A or workstation 22. When this is the case, the secure server 110 may demote the primary monitor to a secondary (or backup monitor) and promote one of the secondary monitors to a primary monitor. The secure server may have rules defining which of the secondary monitors may be promoted or each of the secondary remote monitors may be polled to assess availability to assume the role of primary remote monitor. And, the secure server 110 may send a message (via notification service, for example) to the secondary monitor that has been promoted to a primary monitor that it has been designated as a primary monitor (and send a corresponding message to a demoted primary monitor).

[0149] To assure quality of service with respect to the receipt by the remote monitors of notification messages, one or more operations may be performed to mitigate the potential loss of a notification message sent to remote monitor 114. For example, if notification service 112 comprises a

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push notification service (e.g., Apple Push Notification Server, Google Cloud Messaging Server, and the like) and the notification service cannot be contacted (or a connection cannot be established between secure server 110 and notification service 112), the secure server 110 may send notification via another mechanism, such a separate a short message service (SMS) message directly to the remote monitor 114, a phone call, an email, or any other mechanism to establish contact with the remote monitor(s) and/or the users associated with those remote monitoring devices.

[0150] Registration/invitations for remote monitoring

[0151] As noted above, in some example implementations, the devices used at system 100 may be required to register with the secure server 110. To illustrate with respect to FIG. 2B, the receiver 102 (which may be implemented on a processor-based wireless device, such as a smart phone or a tablet computer) may send a message via the public land mobile network or other network(s) to invite remote monitor 114 to accept a connection establishment request from secure server 110. If accepted, remote monitor 114 may be provided with notification messages for events associated with receiver 102 and access to sensor data and reports associated with host 199. Although the previous example describes the receiver 102 sending an invite to remote monitor 114, other devices, such as secure server 110, gateway 104, user communication device 105, workstation 22, and/or remote monitor 114, may send invitations as well or instead, depending upon the implementation.

[0152] In some example implementations, the receiver 102 may send a plurality of invitations to a plurality of remote monitors 114A-114M. Moreover, the invitations may be managed by the receiver 102, gateway 104, user communication device 105 and/or secure server 110, so that at any given instant of time, a user can monitor the status of invitations, such as how many invitations have been sent, how many have been accepted, how many have been rejected, and the identity of any primary and secondary remote monitors. For example, receiver 102 gateway 104, user communication

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device 105 and/or secure server 110 may manage the invitations, so that at any given instant, a quantity of remote monitors 114A-114M does not exceed a threshold amount (e.g., 5 or 10 remote monitors).

[0153] Moreover, the receiver 102, gateway 104, user communication device 105 and/or secure server 110 may also manage the quantity of remote 114 monitors based on location and/or time, so that a host-user has a predetermined quantity of remote monitors 114 at any given location and/or any given time.

[0154] In some example implementations, a host 199 or caretaker of host may manage the status of invitations (e.g., invitation sent, invitation accepted, monitoring cancelled, and the like) via receiver 102, gateway 104, user communication device 105 and/or secure server 110. For example, one or more user-interactive pages may be presented on a computer display (e.g., of receiver 102, gateway 104, user communication device 105, or workstation 22, etc.) including the status of the invitations (e.g., whether invitation pending, denied, or accepted). These one or more pages may be configured to allow changes to the rules associated with the remote monitors 114A-114M. For example, changes may be made to the rules used to trigger notification messages, the designation of primary monitors (including time and location designations), the designation of secondary monitors (including time and location designations), the escalation sequence and escalation threshold settings, and the like. In addition, the page(s) may provide a list of remote monitors from which a user can designate primary and secondary remote monitors and send invitations to any selected monitors. The page(s) may allow configuration of permissions, such as whether a remote monitor 114 is authorized to receive one or more of notification messages, authorized to view patient data (e.g., sensor data including current and/or past data), and the like.

[0155] FIG. 12 depicts an example invitation page 500 presented at a remote monitor 114 in the form of an email message. In this example, a user, "John Doe," associated with a sensor system 8 and receiver 102 has invited remote monitor 114 to be a monitor as indicated by the invitation at 502.

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Moreover, the invitation may include instructions for the remoter monitor, which in this example includes clicking on a link at 504 to allow a download of the remote monitor application code from secure server 110 or another server (e.g., iTunes server operated by Apple, Inc.) and accepting the invite at 506 (which sends an acceptance message to secure server 110). The remote monitor may also be given the option to not accept the invitation to monitor by selecting a user-selectable decline icon 508, which may notify secure server 110 of the decline indication.

[0156] To register an invited remote monitor 114 with the secure server 110, the remote monitor and the receiver 102 may each input a value, such as a code, a shared secret, a link (e.g., a uniform resource locator), a password, or a combination thereof, to allow connection establishment and thus enabling remote monitor 114 to receive notification messages for events associated with receiver 102 and to have access to sensor data and reports at secure server 110. Moreover, a user, such as host 199, may access an Internet browser using workstation 22 of FIG. 1, for example, to access secure server 110 and login to view and manage the one or more devices granted remote monitoring privileges.

[0157] In some example implementations, one or more of the devices of remote monitoring system 100 (e.g., remote monitor 114, receiver 102, gateway 104, user communication device 105, or workstation 22) may need a code, such a prescription code provided by a health care provider, in order to register with secure server 110. The code may expire after a predetermined time and/or may be limited to a predetermined number of uses (e.g., a single use code that can be used once to register with secure server 110 to obtain a remote monitor code). Furthermore, the code may also define at the server 110 a configuration for the device being registered as a remote monitor 114, such as permissions (e.g., whether can receive notifications, view past sensor data and/or view current sensor data) of and/or alert settings associated with the remote monitor.

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[0158] In some example implementations, the secure server 110 may have configuration information defining the identity of the receiver 102 and remote monitor 114, so that a user, such as host 199, may access secure server 110 and then add one or more devices, such as receiver 102 and remote monitor 114 to the user's system. The remote monitor 114 may query secure server 110 to obtain information regarding which hosts (or receivers) the remote monitor is allowed to monitor and the secure server can configure the remote monitor 114 accordingly. In some example implementations, the notification messages sent to the remote monitor(s) may be configured to suit the needs of a given remote monitor-user and these needs may be different from the needs of the host-patient. Accordingly, the rules dictating the sending of a notification message to remote monitor 114 may be different from a rule used to trigger an alert to the receiver 102 being used by the host-patient.

[0159] The following provides an illustrative example of a caregiver using remote monitor 114 as part of host-patient care with reference to FIG. 2A. Specifically, the caregiver may be administering an analyte therapy to the host-patient. For example, the caregiver may be a parent of a young child. In this example, a parent may want to receive notification messages, which are identical to the alerts, sent to the receiver 102 (or triggered by the receiver) and host-patient (which in this example is a child). Moreover, the secure server 110 may obtain the receiver 102 settings through the gateway 104. During the configuration of the remote monitor 114, the secure server 110 may prompt the parent to select a set of rules that are identical to those being used by the child's receiver. In this example, any subsequent changes made to the set of rules being used for the child's receiver would be programmatically propagated to the set of rules being used to send notifications to the parent's remote monitor 114. Although the previous example described the same set of rules being used from the host and monitor, the host and monitor may implement different rules as well.

[0160] The following provides another illustrative example of a host-patient administering treatment but in this case, the host-patient or caregiver may not want a high degree of oversight of the

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host-patient. To that end, the caregiver at remote monitor 114 may want the host-patient to receive an alert first, but allow the patient-host time to act on the alert to correct or acknowledge the event prior to an alert being sent to the caregiver. As an example, an alert triggered by the receiver 102 may indicate a hypoglycemic or hyperglycemic event, and if after a certain period of time the host-patient has not taken one or more predetermined action(s) to remediate the event (as evident by subsequent glucose measurement indicating the same or worsening patient state, for example), the caregiver at remote monitor 114 may receive a notification message responsive to the event. That is, if a patient-host using receiver 102 does not respond or acknowledge an alert in a predetermined manner, the caregiver at remote monitor 114 may then receive a notification message. The caregiver at remote monitor 114 may thus receive a notification message when the host patient at receiver 102 fails to respond to, or acknowledge, certain, real time events, such as a low glucose event (which may be considered severe as the host-patient may be incapacitated or unaware of the event so a notification to the remote monitor is in order). However, the secure server 110 either delays sending reminders or stops sending reminders responsive to a notification message if one or more predetermined occurrences are identified by the secure server. The one or more predefined occurrences can be curing the underlying event triggering the alert, acknowledging the alert or taking a defined action, such as administering insulin and the like (which causes data to be sent to the secure server a remote monitor.

[0161] Further, the secure server 110 may be configured with a delay to wait for an acknowledgement or action before notifying the remote monitor 114, and this delay may vary based on the type and/or severity of the condition causing the alarm, and vary depending upon default or user configured settings of the remote monitor. In addition, the secure server 110 may be configured to also monitor data from the receiver 102 even after an acknowledgement message is received from the receiver 102 in response to an alert. For example, the secure server 110 may receive the acknowledgement message (which may be a message sent by receiver 102), but secure server 110 may

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wait a predetermined time for sensor data from the receiver 102 confirming that the host-patient has indeed taken action. Again, this delay may vary based on the type and/or severity of the condition causing the alarm.

[0162] The following provides yet another illustrative example of a host-patient administering treatment but in this case, the host-patient is highly independent so the remote monitor may only be triggered in an emergency. For example, the secure server 110 may include a rule to trigger a remote monitor in the case of an emergency, such as a severe hypoglycemia event occurring at night. In this scenario, the host-patient may not be able to respond to the alert of the event, so the secure server 110 may trigger a notification message if the glucose falls to an extremely low level for a period of time or the user does not respond after a period of time to the very low glucose alert sent to receiver 102. And, the period of time may be varied based on the type and/or severity of the condition causing the alarm.

[0163] The following provides another illustrative example of a host-patient that is highly independent but is hypoglycemia unaware and has no trusted sources for emergency response. In this use case, the host-patient may select a remote monitor 114 associated with an emergency medical service so as to automatically notify the service in the event of a severe hypoglycemic event when the glucose falls to an extremely low level for a period of time or the user does not respond after a period of time to the very low glucose triggered by receiver 102.

[0164] Managing remote monitor alert settings

[0165] In some example implementations, a user may manage the alerts for each of remote monitors 114A-114M monitoring a host199. For example, the host 199 can use host monitoring system 198 to invite remote monitor 114A to be a monitor and configure the permissions at secure server 114 using receiver 102, gateway 104 (including host communication device), or workstation 22. The permission may be specific to one or more certain alerts or global in the sense that all the alerts for

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remote monitor 114A may be manipulated by the user. Although the previous example describes the permissions being set by a user, the permissions may be determined programmatically as well.

[0166] To manage alerts, a user may access secure server 110 using a computing device, such as remote monitor 114, receiver 102, gateway 104, host communication device 105 or workstation 22, and manage the alerts by for example setting alerts, changing thresholds, turning alerts on or off, and the like. FIG. 13 depicts an example page 600 that may be presented on a display of the host computing device. The page 600 may allow changes to alerts for a certain remote monitor 114A. In the example of FIG. 6, a low glucose alarm 602 may be turned on 610, and the threshold 604 that defines the threshold configured by the user. FIG. 6 also depicts that delay 606 may be managed using page 600 as well. For example, the delay 606 may define how long the secure server 110 waits before sending a notification message from the secure server (via notification service) to the remote monitor 114A if the host's glucose concentration remains below the low threshold. In this example, the delay is zero seconds, but can be changed using page 600 to be another amount of time, such as 5, 10, 15 or 30 minutes, or an hour. Page 600 also allows secure server 110 and/or notification service 112 to trigger sending reminders 612 and vary a time 606 associated with triggering the reminders. For example, the reminders represent the amount of time that elapses before the secure server 110 triggers another notification to remote monitor 114A if remote monitor has not acknowledged the alert or if the host has not cured the event that originally triggered the alert. In this example, if a user fails to acknowledge an alert or take corrective action within 30 minutes after an original notification responsive to a reading below 70mg/dl, the secure server 110 sends another notification regarding the low glucose level to the remote monitor 114A. Although the example described with respect to FIG. 6 refers to a low glucose value, a delay, and a reminder, any other aspect of the alerts for a remote monitor 114 described elsewhere herein can be likewise managed as well, such as high glucose level alerts, high rate of change alerts and the like.

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[0167] In addition, while the above description with respect to FIG. 6 refers to managing alerts for a remote monitor 114, a similar page can be used by receiver 102, gateway 104 or host communication device 105 to manage alerts triggered by host communication device in the implementations of FIGS. 2a-2C. As an example, host communication device 105 can display page 600 for managing alerts by host communication device independent from receiver 102. In this way, host communication device 105 can function as a secondary alert device for host 199.

[0168] In some implementations, a user may modify one or more rules defining alerts representative of events associated with the analyte state of the host. A user may use a computing device, such as remote monitor 114, receiver 102, gateway 104, host communication device 105, or workstation 22, to modify the alert settings, such as low glucose level thresholds and the like, of the host monitoring system 198. In this way, a parent, for example, can modify the settings of their child's remote monitoring system 198.

[0169] Although the previous example refers to modifying low glucose alarms, the modification may include varying a first threshold associated with a low level of glucose at the host, varying a second threshold associated with a high level of glucose at the host, varying a delay between when the message is triggered by the receiver 102, varying a time value between when a reminder message is sent, and any other alert that may be triggered for a host monitoring system 198 or remote monitor 114.

[0170] Moreover, the secure server 110 may adapt the set of rules used for a host-patient. For example, the set of rules for a remote monitor 114 may be predetermined based on some basic host-patient demographics. After initial use of remote monitoring system 100, secure server 110 may programically adjust thresholds used to trigger some or all events. These adjustments may be made for a variety of reasons. For example, thresholds, such as glucose levels, glucose rates of changes, and the like, used to determine when to trigger an event may be adjusted to reduce the frequency of some alerts

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and/or notifications as a remote monitor 114 receiving too many messages may decide to ignore the messages. The thresholds may also be adjusted to tighten the range of a patient's glucose variation during the day in order to decrease the variability in a host's day-to-day glucose variability.

[0171] In some example implementations, data management tools and CGM analyses may be used to help patients better manage their diabetes or assist clinicians in enhancing recommendations. As CGM data (and/or analyte data) may be provided to secure server 110 in about real time, the data may be used by case managers in payer systems and/or medical systems to enhance ongoing diabetes management. However, it may be impractical for a diabetes case manager to review the resulting so-called "big data." As such, filters may be used to allow exception based reporting of use or glycemic patterns to promote efficient use of the case manager's time by identifying specific issues. To that end, one or more patterns may be defined at the secure server to identify the issues requiring the attention of the case manager. The patterns may include longitudinal analysis or comparisons between time periods. These patterns may also identify high-risk patients, such as those with frequent or severe lows, frequent or severe highs, and/or marked glucose variability. This may be considered particularly important for use with patients on intensive insulin therapy, with hypoglycemia unawareness, poor control, those new to insulin, and the like. The patterns may also identify therapy non-responders identifying, such as those with sustained hyperglycemia, suggesting non-response to therapy or worsening of control, suggesting non-adherence, disease progression, or tachyphylaxis. This may be considered particularly useful when new medicaments are added or therapy is optimized. The patterns may also identify responders or non-responders linked to diabetes education or by particular providers or consultants.

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[0172] In some example implementations, additional performance information may be gathered at the secure server 110 from patients at a plurality of locations. This additional information may be used to evaluate environmental factors that could influence and affect the sensor's performance. Rather than gathering and analyzing information solely from a single host-patient, data may be gathered at the secure server and then compared on a macro level spanning across a plurality of host patients and/or across a plurality of geographic locations (or regions). In essence, the sensor system's 8 overall effectiveness may be evaluated based upon various environmental factors being monitored. For example, data gathered in real time from across the United States or even the World may show if temperature, humidity, altitude, or the like influence the sensor system's 8 performance and thus provide an indication as to whether the sensor system 8 and/or sensor 10 should be replaced or repaired. Moreover, the secure server 110 may also process received sensor information and identify patterns (e.g., by lot number, region, or the like), and additional algorithms, calibration information or fail-safes may be uploaded based on these identified patterns to improve the sensor accuracy and/or performance.

[0173] In some example implementations, the secure server 110 may programmatically track product performance and utilization of a sensor system including sensor 8 and/or receiver 102. For example, the sensor system and/or receiver may programmatically provide to secure server 110 information identifying the sensor (e.g., lot number) and summarizing its performance. The performance metrics may include accuracy, on time, data capture, and the like. Moreover, if one or more sensor performance metrics fall outside of an expected range, then secure server 110 may request additional information to be transmitted from the sensor system/receiver to the secure server to allow classification of the failure mode. For example, the secure server 110 may send alerts and/or notifications to receiver 102, gateway 104 and/or remote monitor 114 that the sensor system 8 and/or receiver 102 needs to be maintained (e.g., replaced, repaired, calibrated, and the like) based on

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determined performance information. And, the secure server 110 may also be configured to send, based on the performance information, alerts or notification messages indicating that the sensors requires a reset, a new calibration value is needed, or a new sensor should be ordered. The data provided to the secure server 110 may be configurable and stored at a repository coupled to the secure server 110.

[0174] Moreover, sensor system tracking by the secure server may include tracking the performance of the receiver's wireless interface. For example, if a hardware error (or any detected error condition) occurs, information related to the error may be transmitted to the secure server 110. The data transmitted may also be used to track feature utilization, which may include alert settings, number of screen visits, and the like. In addition, this data may be used to collect and manage data during clinical studies. Furthermore, the sensor data transmitted to the secure server 110 may also be expanded to tracking of patient performance of glycemic control. When this is the case, performance metrics may include the "time spent" in different glucose ranges, amplitudes of glycemic excursions, insulin dose information, and the like. For example, during a continuous glucose monitoring (CGM) session, data may be automatically transmitted to a secure server 110 and/or a coupled repository accessible to the host-patient and/or the patient's clinical care provider. Accordingly, the above-noted automatic tracking of product performance and classification of failure modes may, in some example implementations, provide more accurate information regarding product performance, facilitate resolving sensor issues experienced by patients, and automate product replacement (or shipment) when the sensor performance is deemed ready for replacement.

[0175] In some example implementations, the secure server 110 may provide a closed control loop. Specifically, secure server 110 may send a message to receiver 102, which responds to secure server 110. Moreover, secure server 110 may send messages to remote monitor 114, which responds to secure server 110. Accordingly, secure server 110 may request an action from receiver

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102 and/or remote monitor 114, and receive acknowledgement from receiver 102 and/or remote monitor 114, when the action is completed, forming thus a closed loop. The receiver 102 may include one or more aspects of the functions provided by the remote monitor 114, and remote monitor 114 may include one or more aspects of the functions provided by the receiver 102.

[0176] Example host monitoring system set-up process 1000

[0177] FIG. 10 is a flow chart depicting process 1000 for setting up host monitoring system 198 in accordance with some implementations. For illustrative purposes, the setup process 1000 will be discussed with reference to the remote monitoring system architecture illustrated in FIG. 2C, although it is understood that setup process 1000 can be applied to the architecture of FIG. 2A or FIG. 2B with changes to accommodate the differences of architectures.

[0178] Additionally, for further ease of understanding, the following components of FIG. 2C are used in one example of process 1000: the sensor system 8 and receiver 102 make comprise a DexCom G4 Platinum continuous monitoring system, available from DexCom, Inc., where the sensor 10 is a DexCom G4 sensor, the sensor electronics module 12 is a DexCom G4 transmitter, and the receiver is the DexCom G4 receiver; the receiver 102 is docked in the docking station 103 as illustrated and discussed with reference to FIG. 7B; the host communication device 105 comprises an Apple iPhone available from Apple, Inc.; and each remote monitor 114A-114M comprises an Apple iPhone or other mobile phone having an iOS® (commercially manufactured by Apple, Inc.), Android® (commercially manufactured by Google, Inc.) or Windows® (manufactured by Microsoft, Inc.) based mobile operating system.

[0179] At block 1000, a user downloads a host monitoring application on to the host communication device 105. (It is understood in the host monitoring application can be downloaded onto gateway 104 the implementation of FIG. 2A or downloaded onto receiver 102 in the implementation of FIG. 2B the host monitoring application can be, for example.) In some

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implementations, the host monitoring application is downloaded from a server, which can be independent (e.g., operated by a different entity) of secure server 110, such as the Apple App server operated by Apple, Inc. However, in some implementations, the host monitoring application is downloaded from server 110. The host monitoring application comprises instructions for the host communication device 105 to perform the host communication device functions described herein, such as gathering sensor data from the receiver 102 via the docking station 103, transmit the sensor data to the secure server 110, manage alerts of host monitoring system 198, inviting users to become remote monitors of host, manage remote monitor settings, pairing with the docking station 103 and/or receiver 102, and the like.

[0180] Once the host monitoring application is downloaded to the host communication device 105, a user can open the application (e.g., by selecting an icon associated with the host monitoring application on a home screen of the host communication device) and uses the application to create an account at block 1012. In addition to storing account information on the host communication device 105, the account is created and stored on secure server 110. In some implementations, creating the account includes entering user identifying information, such as name and email address, a password, and a unique identifier associated with the receiver 102, such as the receiver's serial number. As discussed below in block 1016, the receiver's serial number can be used for pairing the receiver 102 and/or docking station 103 with the host communication device 105, as well as other functions.

[0181] FIG. 9 illustrates an exemplary page 900 host monitoring application can display to a user at the account setup block 1012 to facilitate entry of the serial number of the receiver 102 or other unique identifier. Here, the page 900 is an illustration of the location of the serial number to aid the user in finding the serial number of entry. Page 900 also provides an alphanumeric entry field where the user can select to manually enter the serial number. In addition, page 900 provides

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selectable icons 902 and 904 that allow the user to take a photo of the serial number using a camera of the host communication device 105 and scan in the serial number using a bar code scanner of the host communication device 105, respectively.

[0182] At block 1014, the user uses the host monitoring application to manage alert settings for the host communication device 105. The host application can initially present default alert settings, where the user can modify the default user settings using the user interface of the host communication device 105. In some implementations, the alert settings comprise repeating one or more alerts on the receiver 102. This way, the host communication device 105 can amplify (e.g., trigger a different type of alarm than the receiver, such as a louder alarm) and/or echo alarms of the receiver (e.g., only sounding the alarm after a predetermined amount of time from the alarm of the receiver if the event triggering the alert on the receiver has not been cured). The alert settings can also include turning off or on alerts for various events.

[0183] The user pairs the host communication device 105 with the docking station 103 at block 1016. In some implementations, to pair the host communication device 105 with the docking station 103, the user powers on the docking station and connects the receiver 102 to the docking station. At this point, the host communication device 105 and the docking station 103 begin a pairing and authentication procedure.

[0184] In some implementations, the docking station 103 does not have a display and thus conventional pairing and authentication procedures may not be adequate. Thus in some implementations, receiver 102 provides a serial number to the docking station 103 and a user enters the receiver serial number into the host communication device 105. The host communication device 105 can then transmit the serial number (or encrypted version of the serial number) to the docking station to establish an authenticated communication channel.

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[0185] The following pairing and authentication procedure may be used in some implementations. In response to the receiver 102 being docked to the docking station 103, the docking station derives an authentication token from the receiver's serial number (which the receiver transmits to the docking station) and puts it in a Generic Attribute Profile (GATT) characteristic. The docking station 103 then broadcasts a general advertisement to bond. The host communication device 105 device looks for the advertisement. After discovering the docking station 103, the host communication device 105 connects and performs a service discovery. The host communication device 105 then attempts to read the GATT characteristic mentioned previously. The docking station 103 responds with an insufficient authorization message (pairing and encryption is required). The host communication device 105 then prompts the user to pair with the docking station 103. Both the docking station 103 and the host communication device 105 compromise a long term key to use for encryption and are then paired. The host communication device 105 then reads the token from the characteristic mentioned above, and using this characteristic, verifies the authenticity of the docking station 103. The host communication device 105, which has previously derived its own token from the receiver serial number entered previously into the host communication device in block 1012, writes this token to a GATT characteristic in the docking station 103. The docking station 103 then uses this token to verify the authenticity of the host communication device and, if authentic, enters a persistent bonded state.

[0186] Using the above-mentioned pairing and authentication process, if the two devices (receiver 102 and docking station 103) are disconnected at any point, the docking station 103 directs an advertisement for connection.

[0187] At block 1018, the user uses the application on the host device 105 to invite remote monitors 114. Here, the application may prompt the user for identifying information of a potential user of a remote monitor, including a name and email address accessible from a device capable of being a

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remote monitor 114, such as a mobile smart phone or tablet computer. In addition, the application can prompt the user for permissions that the user wants the remote monitor 114 to have, such as permission to view trend graph data, and alert settings that the user wants the remote monitor 114 to have. Once finished, the application sends an invitation to the remote monitor 114, with the information in the invitation, such as identifying information, permissions and alert settings stored on secure sever 110. The user can invite additional remote monitors using the above described invitation procedure. In some implementations, the application can include a page that lists the status of all invitations sent by the user.

[0188] Note that process 1000 can be implemented using a setup wizard implemented by the host monitoring application on host monitoring device 105 to guide the user through the setup process 1000.

[0189] Example of Remote Monitor Set-up Process 1600

[0190] FIG. 16 is a flowchart of an exemplary process of remote monitoring using remote monitor 114. Similar to process 1000, FIG. 16 will be described for illustrative purposes only with respect to the remote monitoring system 100 architecture of FIG. 2C.

[0191] At block 1610, a user receives on a computing device, such as a smart mobile phone, an invitation to become a remote monitor. An example invitation is illustrated and discussed in more detail with respect to FIG. 12. In some implementations, a user receiving the invitation can either accept or deny the invitation by selecting an accept icon or deny icon, respectively, in the email. Denying the invitation ends process 1600, whereas accepting the invitation moves process 1600 to block 1620.

[0192] At block 1620, the invitation programically directs the user via the user's computing device to download a remote monitoring application, if the user accepts the invitation. In some implementations, accepting the invitation at block 1610 programically triggers the user's computing

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device to automatically access a server carrying the remote monitoring application. The server can be the App Store operated by Apple, Inc. in the case that the user's device is an Apple mobile device. The user then downloads the remote monitoring application onto the computing device.

[0193] Note that in some implementations, the user of the remote monitor 114 need not register with secure server 110, as the secure server already has the user's account information from when the invitation was formed in block 1012 of process 1000 (FIG. 10).

[0194] At block 1630, the user manages alert settings using the remote monitoring application downloaded on the computing device (now considered a remote monitor 114). The alert settings can initially be set at recommended alert settings set by the person that sent the invitation at step 1012 in process 1000 (or default settings in the case the person sending the invitation did not enter any recommended settings) in some implementations. The user of the remote monitor 114 can then modify any of the recommended or default settings. The settings can include setting threshold values for when to trigger an alert to the remote monitor, delays, reminders and no data alert settings, discussed in more detail elsewhere herein. The remote monitor 114 may then transmit the settings of the remote monitor to the secure store for storage and use when triggering alerts associated with the remote monitor.

[0195] At block 1640, the remote monitor 114 monitors hosts' analyte levels as permitted. The monitoring can include monitoring a plurality of hosts using the remote monitor, as discussed in more detail with respect to FIG. 1. The monitoring can include receiving notifications triggered by secure server 110 and sent via notification service 112 and viewing sensor data accessible from secure server. For example, in some implementations, a user can activate the remote monitoring application on remote monitor 114 to view a dashboard page of a plurality of host's glucose levels.

[0196] Example Invitation to become remote monitor

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[0197] As discussed above in block 1610 of FIG. 16, a user can receive an invitation to remotely monitor host 199. In some implementations, the invitation is the form of an email, such as that depicted in FIG. 12. The user can accept or deny the invitation using the email. The user can accept the invitation by indicating that the user wants to install the remote monitoring application by selecting selectable text 504, or deny the invitation by selecting selectable text 508. If the user denies the invitation, then the remote monitoring system 100 can notify the host that sent the invitation of the denial by sending a notification via server 110 and/or notification service 112 to communication device 105, for example. However, if the user accepts the invitation, then the remote monitoring system 100 can notify the host of the acceptance by sending a notification via server 110 and/or notification service 112 to communication device 105, for example, and process 1600 continues to block 1620.

[0198] In some implementations, a receipt accepting the invitation automatically sets up a remote monitoring account on server 110. That is, the recipient need not log in and create an account, as the host provided account creation information (recipient name, email, phone number and the like) for the recipient when generating the invitation. Further, the host can include a picture of the host during the invitation creation process so that the invitation includes a picture of the host in the vitiation sent to the recipient (which can help the recipient know the invitation is valid) and the picture of the host can be used as the picture of the host in the remote monitor (such as on a dashboard as discussed with reference to Fig. 18A and 18B and elsewhere).

[0199] The invitation can include a single use token which the recipient of the invitation can use to accept the invitation without requiring the recipient to log into the remote monitoring system, in some implementations. The toke can be in the form of a Globally Unique Identifier (GUID). The invitation may also include a timestamp of when the invitation was sent and when the invitations expires.

[0200] System Status View

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[0201] In some implementations, a user of remote monitoring system 100 may not readily know if the remote monitoring system 100 is working or why the system may not be working. For example, in the implementation of FIG. 2B, a host 199 may not realize that data is not being transmitted from the sensor system 8 to the server 110, or even if the host realizes that data is not being transmitted, the host my not recognize where the problem lies so that data transmission can resume. Accordingly, some embodiments provide a system status page the help a user understand if the system is working correctly, and, if not, what the source of the problem may be.

[0202] FIGS. 11A and 11B are exemplary views of a status page 1100 in accordance with some implementations. Status page 1100 includes a status bar 1110 that includes representations of various components of remote monitoring system, which in this example, includes docking station 1114, host communication device 1118 and server 1112, and the communication channels between each of the components, such as a near-filed wireless communication (Bluetooth®) channel between the docking station and the host communication device, and a communication channel (e.g. Wi-Fi or cellular) between the host communication device and the server 1112. The status bar can indicate where connections are working and where connections are not working. For example, if a connection is determined to be working, then the connection can be graphically displayed in a first state, and if the connection is not working then the connection can be graphically displayed in a second, different state. The first state and the second state can be, for example, a different color (e.g., green if working, red if not working) and the like. Further, each portion of the status bar, 1114, 1116, 1118, 1120 and 1122 can be user selectable, where if a user selects a particular portion, the host monitoring application can display help information (in the form of a pop-up message or new display screen, for example) that can help a user resolve issues associated with the portion selected by the user. For instance, if the user selects the docking station icon 1114, the remote monitoring application can display a message asking the user to make sure the docking station is plugged in, for example.

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[0203] Status page 1100 can also include a character icon 1132 that displays an overall status of the system. In the example of FIGS. 11A and 11B, the character icon 1132 is in the form of a monster holding a sign. The appearance of the character icon 1132 can change based on the status of the system so a user can quickly determine the status by viewing the character icon. For instance, character icon 1132 can have a smiling expression and holding a sign with a check mark to indicate the system is working and transmitting sensor data, as illustrated in FIG. 11A. In contrast, the character icon 1132 can have a frowning expression and holding a sign with an X to indicate the system is not working, as illustrated in FIG. 11B. The eyes of the character icon 1132 can also help indicate to a user if the system is working, such as the eyes blinking if host monitoring application is working, or the eyes not blinking if the eyes aren't blinking. The blinking of the eyes can also correspond to the transmission rate between the docking station 103 and the host communication device.

[0204] Host monitoring application can also display a status tab 1124 on status page 1100 and any other pages displayed by host monitoring application, as illustrated in FIGS. 11A and 11B. Status tab can be part of a menu that includes a plurality of different selectable tabs associated with different display pages of the host monitoring application that, when selected, display the associated display page The tabs in FIGS. 11A and 11B additionally include a follower tab, 1126, account tab 1128 and more tab 1130. Notably, the status tab can always display an indication of the connection state of the system, such being displayed in green and with a check mark, as illustrated in FIG. 11A, if the system is working, or in red and with an X, as illustrated in FIG. 11B, if the system is not working. The status tab can be displayed regardless of the current page being displayed, thereby providing the user with an indication of the status of the system regardless of the page being displayed.

[0205] In some implementations, host monitoring system 198 may be configured to periodically send messages to server 110. If the server detects a lack of messages from the host monitoring system 198for a predetermined amount of time, then the server can trigger a notification to

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be sent to the host monitoring system (such as receiver 102, gateway 104 or host communication device 105) notifying the host of the lack of messages so that the host can check to determine if the host monitoring system is working, using for example status page 1100.,

[0206] Host Monitoring Control Pages

[0207] Host monitoring application can also include various display pages that allow the user to view statuses of remote monitors and configure permissions and settings associated with remote monitors.

[0208] FIG. 14 illustrates an overview page 1400 in accordance with some implementations. Over view page can include a plurality of cells 1402a-1402e, each cell associated with a remote monitor or potential remote monitor. Each cell can include a name 1410a -1410e associated with the remote monitor for identification purposes. The cells 1402a-1402e can also be displayed according to a status of the remote monitor. For example, cell 1402a is grouped under a removed by remote monitor (referred to as a follower in FIG. 14) status 1404a, cell 1402b is grouped under an expired invitation status 1404b, cell 1402c is grouped under an active status 1404c, cell 1402d is grouped under an invited status 1404d, and cell 1402e is grouped under a not sharing status 1404e. Not that a plurality of cells can be displayed under each group; FIG. 14 merely illustrates one cell for ease of explanation of the different statuses.

[0209] Page 1400 also includes a selectable help icon 1406a-1406e associated with each group status. By selecting a help icon, the host monitoring application can provide further information to a user that explains what the associated status involves. The help information can be displayed in a pop-up window for example.

[0210] Icons can also be displayed in in a cell that illustrate permissions and/or enabled functions associated with that remote monitor. For instance, icons 1412 and 1414 indicate that remote

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monitor associated with cell 1402c has notifications enabled and has permission to view trend graph information associated with the host being monitored.

[0211] Selectable tabs can also be provided in each cell. For example, FIG. 14 illustrates removal tabs 1408a and 1408b that remove the cell from the page when selected by a user. Arrow tabs 1416c-1416e can be used to provide further information about the remote monitor associated with that cell. For example, selecting a selectable arrow 1416 can cause the host monitoring application to transition to settings display page that provides more detail about the associated remote monitor and the remote monitor's settings.

[0212] An exemplary settings display page 1500 is illustrated in FIG. 15 in accordance with some implementations. Settings display page 1500 can include identification information, such as a name 1502 and email address 1504 associated with the remote monitor, permissions of the remote monitor and notification settings of the remote monitor. In the example of FIG. 15, the permissions can include a trend graph permission 1504 tab that a user can use to toggle between allowing and denying. If permitted, remote monitoring system 100 allows that remote monitor to view trend graph information of the host 199 and, if denied, then the remote monitor cannot view the trend graph information of the host. Notification settings allow the user of host monitoring application to view the current notification settings of the associated remote monitor. The notification settings can include an urgent low notification alert 1506, a low notification alert 1508, a high notification alert 1509 and a no data notification alert 1510, and each alerts associated status (e.g., associated threshold values and whether the alert is off or on). In some implementations, a user using host monitoring application can modify the remote monitors' settings using page 1500, for example, but in other implementations some or all of the settings can only be modified by the remote monitor, as indicated in FIG. 15.

[0213] Display page 1500 can also allow a user of the host monitoring application to pause and cancel the capabilities of remote monitor monitoring the host. A pause/resume control button 1514

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can selectably stop and re-start remote monitoring capabilities of the remote monitor, such as stopping and starting notifications being sent to the remote monitor and/permission for the remote monitor to view sensor data of the host. Such a function can be useful in instances where a host does not always want a remote monitor to be monitoring the host. A specific example can include a baby sitter as a remote monitor. It may be desirable for the baby sitter to have remote monitoring capabilities when caring for a child being monitored by the host monitoring system, but stop the remote monitoring when the baby sitter is no longer caring for the child. This way, a new invitation need not be sent to the baby sitter each time the baby sitter cares for the child.

[0214] A delete Remote Monitor control button 1516 can be used to delete the remote monitor from the list of remote monitors that can monitor the host. In contrast to the pause/resume control 1514, deleting a remote monitor using the delete control 1516 would necessitate the host to re-invite the person to become a remote monitor in some implementations. As discussed elsewhere herein, remote monitoring system may have a predefined limit to the number of remote monitors that can monitor a host, thus it may be become necessary for the host to delete the remote monitor so that the host can add another remote monitor in some implementations.

[0215] In some implementations, remote monitoring system 100 sends a notification message to a remote monitor that has had its permissions or settings changed, or has been paused, resumed or canceled. This way, the remote monitor is aware of the change and is not relying on the previous configuration.

[0216] In addition, each of the pause, cancel, and resume functions may be configured globally across all of a host-patient's monitors instead of or in addition to individual monitors as described above. In the case of a global function, control buttons can be provided on page 1400 of FIG. 14, for example, where pressing the control button implements the function globally across all remote monitors monitoring the host.

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[0217] Remote Monitoring Dashboard View

[0218] As discussed elsewhere herein, the remote monitor 114 can provide a so-called dashboard view of hosts it is monitoring. FIGS. 18A and 18B are two different implementations of dashboard page 1800 in accordance with some implementations. The dashboard 1800 can include a plurality of cells 1802a-1802d, each associated with a different host. Each cell 1802 can include identifiers of the host, such as a name of the host and a picture of the host 1804a-1804d.

[0219] In the implementation of FIG. 18A, each cell lists a current status of the cell, such as a time 1812a when the displayed analyte value 1806a was measured, a statement 1812b whether the host is using the remote monitoring system 100, a statement 1812c whether the hosts host monitoring system is working, or a statement 1812d indicating that the remote monitor has been paused, for example.

[0220] In the implementation of FIG. 18B, the cells 1802 can be grouped on page 1800 according to the status of the cell, such as removed 1814 by the host (referred to as Sharer in FIG. 18B), active 1818 (i.e., system is connected and providing data of the associated host to the remote monitor), disconnected 1824 (i.e. system is not connected, e.g., because receiver 102 is not in docking station 103 in the implementation of FIG. 2B) and not sharing 1826 (i.e. the host has paused the remote monitor). Further, cells within a group can be ordered by severity of the monitored condition or other criteria, as discussed elsewhere herein.

[0221] Cells 1802 can also include an indication of the permissions and/or settings of the remote monitor associated with that host. For example, a trend graph icon 1810 can indicate that the remote monitor has permission to view a trend graph of sensor data of that host.

[0222] Cells 1802 that are in the active group 1818 can also include information about the health condition being monitored. For example the cell 1802 can display the most current analyte concentration value1806a that was provided to remote monitor and an trend arrow 1808a indicating a

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rate of change of the measured analyte. Further information can also be provided in the cell, such as a time associated with the measurement of the displayed analyte concentration or if data has not been received from the host monitoring system.

[0223] User selection of a cell 1802 can also cause the remote monitor to transition to another display page that provides additional information about the host associated with that cell. For example, the remote monitor can transition to a trend graph display (FIG. 19) associated with that host or a settings page (FIG. 17) associated with that host.

[0224] Trend Graph View

[0225] FIG. 19 is an exemplary page that provides a trend graph 914 of a host's monitored analyte concentration in accordance with some implementations. The trend graph can display a trend line1916 of measured analyte concentrations, as well as low and high thresholds 1918 and 1920 that are used for alerting either the remote monitor 114 or the host monitoring system 198. The trend graph page can also include a user-selectable slider bar that allows a user to select different time frames of sensor data to view, such as three, six, 12 and 24 hour views. A picture of the host 1904 and name of the host 1902 can also be provided so that a remote monitor is not confused as to the individual being monitored in case the remote monitor is monitoring a plurality of different hosts.

[0226] In some implementations, the page of FIG. 19 can automatically be displayed when the remote monitoring application is initially opened responsive to a user directly opening the application and/or a user opening a remote monitoring notification on remote monitor 114 sent by server 110 or notification service 112, as discussed elsewhere wherein.

[0227] Remote Monitor Settings Page

[0228] FIG. 17 is an implantation of a settings page 1700 that can allow the remote monitor to configure remote monitoring settings of a host. Settings page can include a picture filed that displays a picture of the host 1506 and a name field that displays a name of the host, both of which can

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be modified by the remote monitor using the settings page 1700. The settings page also includes settings for various alert/notification settings, such as an urgent low alert 1706, low alert 1714, high alert 1724 and not data alert 1736. The function of each of these alerts is discussed elsewhere herein. As illustrated in FIG. 17, the settings associated with each of these alerts can be modified, such as turning the alert on or off, the threshold value(s) associated with each alert and an alert sound associated with each alert.

[0229] Automatic detection of new receivers and registration

[0230] In some implementations, receivers 102 need to be associated with a host 199 so that when glucose data gets to server 110, the data can be associated with the host. Accordingly, remote monitoring system 100 can assign a receiver to a host. This can initially be done through the pairing process discussed above with respect to block 1016 of Fig. 10. If a host receives a new receiver, to make a friendly user experience and prevent errors, the host monitoring application can see that a different serial number is being used, check with the server 110 to see if this is a new receiver or if this receiver is already owned by another host and asks the host via communication device 105 if this is their receiver and allows them to take ownership or it gives them an error telling them that it is already owned.

[0231] Accordingly, an exemplary detection of a new receiver process can be as follows. First, the host communication device 105 if a new receiver is being used by validating with server if the receiver is owned by someone else (via comparison of receiver serial numbers to a database, for example). If the server determines that no one else owns the receiver, then the host monitoring application asks if the user if he or she wants to make that receiver theirs. If yes, then the receiver and the data from that receiver are associated with that host.

[0232] Loss of data alert

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[0233] In some example implementations, the secure server 110 may include a rule to automatically trigger a notification message or another communication mechanism (e.g., a phone call, short message service message, and the like) to a remote monitor 114 if data has not been received from host monitoring system 198 for a predetermined amount of time. This way, a user of remote monitor 114 can be aware that something may be wrong with host monitoring system 198 and attempt to contact the host.

[0234] Location-based alerts

[0235] In some example implementations, the secure server 110 may use the location of the receiver 102, gateway 104, host 199, and/or remote monitor(s) 114 when determining whether to send a notification message and/or determine destination of a notification message. For example, when a host-patient is in a first location and travels to a second location, the secure server 110 may, based on rules, select a first remote monitor 114A near the first location and, when the host-patent moves to the second location, select a second remote monitor 114B located near that second location. Location may also be used to vary alerts and notifications. For example, the secure server 110 may vary the rules used to trigger an alert or notification based on the host-patient's location. Location may be used in combination with time as well, so the secure server 110 may vary thresholds associated with alerts and notifications based on location and time of day.

[0236] Acknowledgement Notifications

[0237] In some example implementations, the receiver 102 or gateway 104 may present a prompt (e.g., message, window, etc.) at a user interface requiring the host-patient to acknowledge the triggered alert and/or indicate what corrective action was taken in response to the alert. The prompt may include a list of options that the user can select (e.g., administered insulin, consumed carbohydrates, and the like) to indicate the corrective action that was taken. A notification message may be sent directly to one or more remote monitors 114, or through the secure server 110 and/or

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notification service 112, to the remote monitor(s), so that the remote monitors are aware that the patient has acknowledged the alert and/or that corrective action taken (and/or a description of the corrective action).

[0238] In addition, remote monitor 114 can allow a user to select from a plurality of pre-written messages to send to host monitoring system. A user can select the notification, whereupon the remote monitor displays a list of pre-written text messages that the user can select from to send to the host monitoring system. The messages can be selected by remote monitor to be relevant to the underlying cause that triggered the notification message. For instance, if the notification message was triggered by a low glucose level of the host, then the messages can be statements related to low glucose levels, such as "are you feeling okay?", "should you drink some orange juice?", and the like. Each message can be user selectable, and when selected, cause the remote monitor 114 to send the message to the host monitoring system for display on the host monitoring system. In addition, selection of the notification can automatically display a prompt to call the host, where user selection of the prompt causes the remote monitor to dial the phone number associated with the host (e.g. a smartphone that is part of the host monitoring system).

[0239] Motivational messages

[0240] In some example implementations, the alerts sent to the receiver 102 and/or the notification messages may include motivational concepts. For example, if the host-patient has minimized the rate of change in glycemic levels, the secure server may send an alert to the receiver 102 and/or a notification message to remote monitor 114 stating "Great job maintaining your therapy-keep it up!." These motivational concepts may positively motivate the users to stay on the therapy program. In some example implementations, secure server 110 may include one or more events mapped to motivational concepts, so that triggering an event causes sending a message including the motivation concept to the receiver 102 and/or a remote monitor 114.

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[0241] In some example implementations, the secure server 110 may use patterns, as noted above, to predict aspects of the patient-host's treatment. For example, a pattern may detect a glycemic change at a given time of day from a prior, established pattern, and then trigger a rule to send an alert to the receiver 102 and a notification to the receiver 114 stating, "Did you miss lunch?" These simple, non-technical query messages may evoke a better response from the host-patient to maintain a therapy, when compared to only providing measured data or statistics to a host-patient or remote monitor. In some example implementations, secure server 110 may include one or more events mapped to simple messages, so that triggering an event causes sending a message including the simple message to the receiver 102 and/or a remote monitor 114.

[0242] Audit Trail

[0243] The secure server 110 may also provide an audit trail. For example, the secure server 110 may store information related to when notifications were pushed to the remote monitor 114 using, for example, notification service 112, and when the remote monitor acknowledges the notification. The secure server 110 may also generate one or more reports to determine timelines and/or identify the effectiveness of remote monitors 114 (which can be used to select remote monitors and/or settings of system 100, such as alert settings, to more effectively monitor host 199).

[0244] Timestamping

[0245] In some implementations, analyte levels provided to remote monitors 114 may not be real-time. For example, while it may be desired to provide analyte values to remote monitors in real time, there may be a time delay between when the analyte value is measured by the analyte sensor system 8 and when the analyte level is provided to the remote monitor 114 and/or secure server 110. The delay may be due to any of the sensor system 8 only transmitting values periodically to the receiver 102, the receiver 102 transmitting only periodically values to gateway 104, the gateway having difficulty connecting to secure server 110, and secure server having difficulty connecting to

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remote monitor 114, for example. Consequently, in some implementations, a glucose value transmitted to the remote monitor 114 is displayed on the remote monitor with a time indicating the time the analyte value that triggered the notification corresponds to (e.g., the analyte value that met or exceeded the threshold that triggered the notification). The time may be the time of day the analyte value was measured (e.g., 2:10 p.m. Pacific Standard Time), or may be a difference in time since the analyte value was measured (e.g., 2 minutes ago, 30 minutes ago, 4 hours ago, etc.).

[0246] In addition, due to a time delay, the secure server 110 may end up sending a notification to remote monitor 114 based on a time delayed analyte value. In such a case, the notification can include a time associated with the alert that triggered the notification, such as "Mike's blood glucose went below 70 mg/dl at 2:10 P.S.T." or "Mike's blood glucose went below 70 mg/dl 25 minutes ago." Further, because a notification may not be viewed right away on the remote monitoring device, the remote monitoring device 114 can update any time associated with the notification until the notification is acknowledged.

[0247] To accommodate for differentness in time zones between a host and a remote monitor, the remote monitoring system can use a universal time and then convert the universal time to the time zone of the remote monitor, in accordance with some implementations. That is, a time stamp of a sensor data value generated by host monitoring system 198 and provided to secure server 110 can be in Universal Standard time (UST) or Greenwich Mean Time (GMT) and provided to the remote monitor 114 in the same universal time, whereby the remote monitor converts the universal time to the time zone in which the remote monitor is located.

[0248] In some implementations, due to difficulties with displaying time due to time lag and potential time zone differences between a host monitoring system 198 and remote monitor 114, which can cause confusion, notifications sent to remote monitor 114 do not display a time. To remedy the lack of time indication, some implementations automatically open the remote monitoring

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application on the remote monitor 114 and display the user's monitored health information upon user acknowledgment of the notification. The host's monitored health information that is initially displayed upon opening the application can include indications of the host's current state, such as the most current analyte value and/or a trend graph showing the past three hours of the host's measured analyte level.

[0249] Loss of data transmission

[0250] In some implementations, data may not be transmitted at times from the sensor system 8 to the secure server 110. This may be due to an unintentional lost data transmission connection between one or more of sensor system 8 and receiver 102, receiver 102 and gateway 104, docking station 103 and host communication device 105, or gateway 104 and secure server 110, for example. Or, the loss may be intentional, such as a user turning one or more of the components of the remote monitoring system 100 off, such as the receiver 102 or host communication device 105. In any such instance, the secure server 110 can be configured to send a notification indicating the loss of data transmission to one or more of the host monitoring system 198 and remote monitors 114A-114M.

[0251] However, it may be at times desirable not to send a notification so remote monitors 114 are not overly messaged. As an example, a host being monitored may be sleeping at night and get up to go to the kitchen for a drink of water. This can result in a loss of data transmission if the sensor system 8 is out of range from the receiver 102 resting on a nightstand of the host 199, for example. Consequently, a delay associated with loss of data transmission errors can be implemented so that the server 110 initiates a loss of data notification only if data is not received after a predetermined amount of time or after a predetermined number of attempted connection attempts with host monitoring system 198.

[0252] Further, it may be desirable to not send loss of data notifications every time there is a loss of data transmission, even if the loss of data transmission is for an extended period of time. For

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example, in the implementation of FIG. 2C, the docking station 103 may be stationary. Thus, a host may only be able to transmit health readings when the host has the receiver 102 docked in the docking station and the host is in sufficient proximity to the receiver and docking station for data transmission. However, a host may want to remove his or her receiver 102 from the docking station 103 when the host leaves for work, for example. It may not be desirable to trigger a notification to remote monitors 114 when the host removes the receiver from the docking station 103, as this may not be considered an important enough event.

[0253] Accordingly, in some implementations, the remote monitoring system 100 can determine that the receiver was removed from the docking station 103 as opposed to, for some reason, the host monitoring system 198 is not functioning correctly and not providing sensor data to the secure server. In one implementation, the remote monitoring system 100 determines that the receiver is not docked in the docking station 103 by monitoring transmissions from the cradle. For instance, transmissions from the docking station 103 that include information generated by the receiver 102 indicates that the receiver is docked and transmissions from the docking station 103 that do not include information generated by the receiver indicates that the receiver has been removed from the docking station.

[0254] Eyewear display device

[0255] Although the above disclosure is primarily described with respect to use of a hand-held computing device, it should be understood that other devices can be used instead or in place of the smart phone. For example, in some implementations, sensor data are transmitted from the personal computing device to a computing device in the form of eyewear and messages and information displayed on the eyewear for the user to view. An example of such eyewear is Google Glasses manufactured by Google, Inc. The user's eyewear interface can use a near-field radio link to receive

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data, either directly from sensor system 8, or through an intermediary device, such as receiver 102 or gateway 104.

[0256] In some implementations, transmission of the data may be event-driven. For example, driven by the occurrence of a low or high glucose excursion, as discussed herein.

[0257] Various implementations of the subject matter described herein may be realized in digital electronic circuitry, integrated circuitry, specially designed ASICs (application specific integrated circuits), computer hardware, firmware, software, and/or combinations thereof. The circuitry may be affixed to a printed circuit board (PCB), or the like, and may take a variety of forms, as noted. These various implementations may include implementation in one or more computer programs that are executable and/or interpretable on a programmable system including at least one programmable processor, which may be special or general purpose, coupled to receive data and instructions from, and to transmit data and instructions to, a storage system, at least one input device, and at least one output device.

[0258] These computer programs (also known as programs, software, software applications, or code) include machine instructions for a programmable processor, and may be implemented in a high-level procedural and/or object-oriented programming language, and/or in assembly/machine language. As used herein, the term "machine-readable medium" refers to any non-transitory computer program product, apparatus and/or device (e.g., magnetic discs, optical disks, memory, Programmable Logic Devices (PLDs)) used to provide machine instructions and/or data to a programmable processor, including a machine-readable medium that receives machine instructions.

[0259] To provide for interaction with a user, the subject matter described herein may be implemented on a computer having a display device (e.g., a CRT (cathode ray tube) or LCD (liquid crystal display) monitor) for displaying information to the user and a keyboard and a pointing device (e.g., a mouse or a trackball) by which the user may provide input to the computer. Other kinds of

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devices may be used to provide for interaction with a user as well; for example, feedback provided to the user may be any form of sensory feedback (e.g., visual feedback, auditory feedback, or tactile feedback); and input from the user may be received in any form, including acoustic, speech, or tactile input.

[0260] The subject matter described herein may be implemented in a computing system that includes a back-end component (e.g., as a data server), or that includes a middleware component (e.g., an application server), or that includes a front-end component (e.g., a client computer having a graphical user interface or a Web browser through which a user may interact with an implementation of the subject matter described herein), or any combination of such back-end, middleware, or front-end components. The components of the system may be interconnected by any form or medium of digital data communication (e.g., a communication network). Examples of communication networks include a local area network ("LAN"), a wide area network ("WAN"), the public land mobile network, satellite networks, and the Internet.

[0261] Although a few variations have been described in detail above, other modifications are possible. For example, while the descriptions of specific implementations of the current subject matter discuss analytic applications, the current subject matter is applicable to other types of software and data services access as well. Moreover, although the above description refers to specific products, other products may be used as well. In addition, the logic flows depicted in the accompanying figures and described herein do not require the particular order shown, or sequential order, to achieve desirable results. Moreover, as used herein the term "set" includes zero or more items, and the phrase "based on" can be used interchangeably (unless otherwise noted) with the phrase "based on at least." Other implementations may be within the scope of the following claims.

[0262] While the disclosure has been illustrated and described in detail in the drawings and foregoing description, such illustration and description are to be considered illustrative or exemplary

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and not restrictive. The disclosure is not limited to the disclosed embodiments. Variations to the disclosed embodiments can be understood and effected by those skilled in the art in practicing the claimed disclosure, from a study of the drawings, the disclosure and the appended claims.

[0263] Methods and devices that are suitable for use in conjunction with aspects of the preferred embodiments are disclosed in U.S. Pat. No. 4,757,022; U.S. Pat. No. 4,994,167; U.S. Pat. No. 6,001,067; U.S. Pat. No. 6,558,321; U.S. Pat. No. 6,702,857; U.S. Pat. No. 6,741,877; U.S. Pat. No. 6,862,465; U.S. Pat. No. 6,931,327; U.S. Pat. No. 7,074,307; U.S. Pat. No. 7,081,195; U.S. Pat. No. 7,108,778; U.S. Pat. No. 7,110,803; U.S. Pat. No. 7,134,999; U.S. Pat. No. 7,136,689; U.S. Pat. No. 7,192,450; U.S. Pat. No. 7,226,978; U.S. Pat. No. 7,276,029; U.S. Pat. No. 7,310,544; U.S. Pat. No. 7,364,592; U.S. Pat. No. 7,366,556; U.S. Pat. No. 7,379,765; U.S. Pat. No. 7,424,318; U.S. Pat. No. 7,460,898; U.S. Pat. No. 7,467,003; U.S. Pat. No. 7,471,972; U.S. Pat. No. 7,494,465; U.S. Pat. No. 7,497,827; U.S. Pat. No. 7,519,408; U.S. Pat. No. 7,583,990; U.S. Pat. No. 7,591,801; U.S. Pat. No. 7,599,726; U.S. Pat. No. 7,613,491; U.S. Pat. No. 7,615,007; U.S. Pat. No. 7,632,228; U.S. Pat. No. 7,637,868; U.S. Pat. No. 7,640,048; U.S. Pat. No. 7,651,596; U.S. Pat. No. 7,654,956; U.S. Pat. No. 7,657,297; U.S. Pat. No. 7,711,402; U.S. Pat. No. 7,713,574; U.S. Pat. No. 7,715,893; U.S. Pat. No. 7,761,130; U.S. Pat. No. 7,771,352; U.S. Pat. No. 7,774,145; U.S. Pat. No. 7,775,975; U.S. Pat. No. 7,778,680; U.S. Pat. No. 7,783,333; U.S. Pat. No. 7,792,562; U.S. Pat. No. 7,797,028; U.S. Pat. No. 7,826,981; U.S. Pat. No. 7,828,728; U.S. Pat. No. 7,831,287; U.S. Pat. No. 7,835,777; U.S. Pat. No. 7,857,760; U.S. Pat. No. 7,860,545; U.S. Pat. No. 7,875,293; U.S. Pat. No. 7,881,763; U.S. Pat. No. 7,885,697; U.S. Pat. No. 7,896,809; U.S. Pat. No. 7,899,511; U.S. Pat. No. 7,901,354; U.S. Pat. No. 7,905,833; U.S. Pat. No. 7,914,450; U.S. Pat. No. 7,917,186; U.S. Pat. No. 7,920,906; U.S. Pat. No. 7,925,321; U.S. Pat. No. 7,927,274; U.S. Pat. No. 7,933,639; U.S. Pat. No. 7,935,057; U.S. Pat. No. 7,946,984; U.S. Pat. No. 7,949,381; U.S. Pat. No. 7,955,261; U.S. Pat. No. 7,959,569; U.S. Pat. No. 7,970,448; U.S. Pat. No. 7,974,672; U.S. Pat. No. 7,976,492; U.S. Pat. No. 7,979,104; U.S. Pat.

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[0264] Methods and devices that are suitable for use in conjunction with aspects of the preferred embodiments are disclosed in U.S. Patent Publication No. 2003-0032874-A1; U.S. Patent Publication No. 2005-0033132-A1; U.S. Patent Publication No. 2005-0051427-A1; U.S. Patent Publication No. 2005-0090607-A1; U.S. Patent Publication No. 2005-0176136-A1; U.S. Patent Publication No. 2005-0245799-A1; U.S. Patent Publication No. 2006-0015020-A1; U.S. Patent Publication No. 2006-0016700-A1; U.S. Patent Publication No. 2006-0020188-A1; U.S. Patent Publication No. 2006-0020190-A1; U.S. Patent Publication No. 2006-0020191-A1; U.S. Patent

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Publication No. 2013-0035865-A1; U.S. Patent Publication No. 2013-0035871-A1; U.S. Patent Publication No. 2005-0056552-A1; U.S. Patent Publication No. 2005-0182451-A1; U.S. Patent Publication No. 2013000536650A1; and U.S. Patent Publication No. 2013-0053666-A1.

[0265] Methods and devices that are suitable for use in conjunction with aspects of the preferred embodiments are disclosed in U.S. Appl. No. 09/447,227 filed on November 22, 1999 and entitled "DEVICE AND METHOD FOR DETERMINING ANALYTE LEVELS"; U.S. Appl. No. 12/828,967 filed on July 1, 2010 and entitled "HOUSING FOR AN INTRAVASCULAR SENSOR"; U.S. Appl. No. 13/461,625 filed on May 1, 2012 and entitled "DUAL ELECTRODE SYSTEM FOR A CONTINUOUS ANALYTE SENSOR"; U.S. Appl. No. 13/594,602 filed on August 24, 2012 and entitled "POLYMER MEMBRANES FOR CONTINUOUS ANALYTE SENSORS"; U.S. Appl. No. 13/594,734 filed on August 24, 2012 and entitled "POLYMER MEMBRANES FOR CONTINUOUS ANALYTE SENSORS"; U.S. Appl. No. 13/607,162 filed on September 7, 2012 and entitled "SYSTEM AND METHODS FOR PROCESSING ANALYTE SENSOR DATA FOR SENSOR CALIBRATION"; U.S. Appl. No. 13/624,727 filed on September 21, 2012 and entitled "SYSTEMS AND METHODS FOR PROCESSING AND TRANSMITTING SENSOR DATA"; U.S. Appl. No. 13/624,808 filed on September 21, 2012 and entitled "SYSTEMS AND METHODS FOR PROCESSING AND TRANSMITTING SENSOR DATA"; U.S. Appl. No. 13/624,812 filed on September 21, 2012 and entitled "SYSTEMS AND METHODS FOR PROCESSING AND TRANSMITTING SENSOR DATA"; U.S. Appl. No. 13/732,848 filed on January 2, 2013 and entitled "ANALYTE SENSORS HAVING A SIGNAL-TO-NOISE RATIO SUBSTANTIALLY UNAFFECTED BY NON-CONSTANT NOISE"; U.S. Appl. No. 13/733,742 filed on January 3, 2013 and entitled "END OF LIFE DETECTION FOR ANALYTE SENSORS"; U.S. Appl. No. 13/733,810 filed on January 3, 2013 and entitled "OUTLIER DETECTION FOR ANALYTE SENSORS"; U.S. Appl. No. 13/742,178 filed on January 15, 2013 and entitled "SYSTEMS AND METHODS FOR

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PROCESSING SENSOR DATA"; U.S. Appl. No. 13/742,694 filed on January 16, 2013 and entitled "SYSTEMS AND METHODS FOR PROVIDING SENSITIVE AND SPECIFIC ALARMS"; U.S. Appl. No. 13/742,841 filed on January 16, 2013 and entitled "SYSTEMS AND METHODS FOR DYNAMICALLY AND INTELLIGENTLY MONITORING A HOST'S GLYCEMIC CONDITION AFTER AN ALERT IS TRIGGERED"; U.S. Appl. No. 13/747,746 filed on January 23, 2013 and entitled "DEVICES, SYSTEMS, AND METHODS TO COMPENSATE FOR EFFECTS OF TEMPERATURE ON IMPLANTABLE SENSORS"; U.S. Appl. No. 13/779,607 filed on February 27, 2013 and entitled "ZWITTERION SURFACE MODIFICATIONS FOR CONTINUOUS SENSORS"; U.S. Appl. No. 13/780,808 filed on February 28, 2013 and entitled "SENSORS FOR CONTINUOUS ANALYTE MONITORING, AND RELATED METHODS"; U.S. Appl. No. 13/784,523 filed on March 4, 2013 and entitled "ANALYTE SENSOR WITH INCREASED REFERENCE CAPACITY"; U.S. Appl. No. 13/789,371 filed on March 7, 2013 and entitled "MULTIPLE ELECTRODE SYSTEM FOR A CONTINUOUS ANALYTE SENSOR, AND RELATED METHODS"; U.S. Appl. No. 13/789,279 filed on March 7, 2013 and entitled "USE OF SENSOR REDUNDANCY TO DETECT SENSOR FAILURES"; U.S. Appl. No. 13/789,339 filed on March 7, 2013 and entitled "DYNAMIC REPORT BUILDING"; U.S. Appl. No. 13/789,341 filed on March 7, 2013 and entitled "REPORTING MODULES"; U.S. Appl. No. 13/790,281 filed on March 8, 2013 and entitled "SYSTEMS AND METHODS FOR MANAGING GLYCEMIC VARIABILITY"; U.S. Appl. No. 13/796,185 filed on March 12, 2013 and entitled "SYSTEMS AND METHODS FOR PROCESSING ANALYTE SENSOR DATA"; U.S. Appl. No. 13/796,642 filed on March 12, 2013 and entitled "SYSTEMS AND METHODS FOR PROCESSING ANALYTE SENSOR DATA"; U.S. Appl. No. 13/801,445 filed on March 13, 2013 and entitled "SYSTEMS AND METHODS FOR LEVERAGING SMARTPHONE FEATURES IN CONTINUOUS GLUCOSE MONITORING"; U.S. Appl. No. 13/802,424 filed on March 13, 2013 and entitled "SYSTEMS AND METHODS FOR LEVERAGING SMARTPHONE

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FEATURES IN CONTINUOUS GLUCOSE MONITORING"; U.S. Appl. No. 13/802,237 filed on March 13, 2013 and entitled "SYSTEMS AND METHODS FOR LEVERAGING SMARTPHONE FEATURES IN CONTINUOUS GLUCOSE MONITORING"; U.S. Appl. No. 13/802,317 filed on March 13, 2013 and entitled "SYSTEMS AND METHODS FOR LEVERAGING SMARTPHONE FEATURES IN CONTINUOUS GLUCOSE MONITORING"; U.S. Appl. No. 13/830,540 filed on March 14, 2013 and entitled "TRANSCUTANEOUS ANALYTE SENSORS, APPLICATORS THEREFOR, AND ASSOCIATED METHODS"; U.S. Appl. No. 13/829,722 filed on March 14, 2013 and entitled "TRANSCUTANEOUS ANALYTE SENSORS, APPLICATORS THEREFOR, AND ASSOCIATED METHODS"; U.S. Appl. No. 13/830,330 filed on March 14, 2013 and entitled "SYSTEMS AND METHODS FOR PROCESSING AND TRANSMITTING SENSOR DATA"; U.S. Appl. No. 13/827,577 filed on March 14, 2013 and entitled "SYSTEMS AND METHODS FOR PROCESSING AND TRANSMITTING SENSOR DATA"; U.S. Appl. No. 13/830,330 filed on March 14, 2013 and entitled "SYSTEMS AND METHODS FOR PROCESSING AND TRANSMITTING SENSOR DATA"; and U.S. Appl. No. 13/827,119 filed on March 14, 2013 and entitled "ADVANCED CALIBRATION FOR ANALYTE SENSORS".

[0266] All references cited herein are incorporated herein by reference in their entirety. To the extent publications and patents or patent applications incorporated by reference contradict the disclosure contained in the specification, the specification is intended to supersede and/or take precedence over any such contradictory material.

[0267] Unless otherwise defined, all terms (including technical and scientific terms) are to be given their ordinary and customary meaning to a person of ordinary skill in the art, and are not to be limited to a special or customized meaning unless expressly so defined herein. It should be noted that the use of particular terminology when describing certain features or aspects of the disclosure should not be taken to imply that the terminology is being re-defined herein to be restricted to include any

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specific characteristics of the features or aspects of the disclosure with which that terminology is associated. Terms and phrases used in this application, and variations thereof, especially in the appended claims, unless otherwise expressly stated, should be construed as open ended as opposed to limiting. As examples of the foregoing, the term 'including' should be read to mean 'including, without limitation,' 'including but not limited to,' or the like; the term 'comprising' as used herein is synonymous with 'including,' 'containing,' or 'characterized by,' and is inclusive or open-ended and does not exclude additional, unrecited elements or method steps; the term 'having' should be interpreted as 'having at least;' the term 'includes' should be interpreted as 'includes but is not limited to;' the term 'example' is used to provide exemplary instances of the item in discussion, not an exhaustive or limiting list thereof; adjectives such as 'known', 'normal', 'standard', and terms of similar meaning should not be construed as limiting the item described to a given time period or to an item available as of a given time, but instead should be read to encompass known, normal, or standard technologies that may be available or known now or at any time in the future; and use of terms like 'preferably,' 'preferred,' 'desired,' or 'desirable,' and words of similar meaning should not be understood as implying that certain features are critical, essential, or even important to the structure or function of the invention, but instead as merely intended to highlight alternative or additional features that may or may not be utilized in a particular embodiment of the invention. Likewise, a group of items linked with the conjunction 'and' should not be read as requiring that each and every one of those items be present in the grouping, but rather should be read as 'and/or' unless expressly stated otherwise. Similarly, a group of items linked with the conjunction 'or' should not be read as requiring mutual exclusivity among that group, but rather should be read as 'and/or' unless expressly stated otherwise.

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[0268] Where a range of values is provided, it is understood that the upper and lower limit, and each intervening value between the upper and lower limit of the range is encompassed within the embodiments.

[0269] With respect to the use of substantially any plural and/or singular terms herein, those having skill in the art can translate from the plural to the singular and/or from the singular to the plural as is appropriate to the context and/or application. The various singular/plural permutations may be expressly set forth herein for sake of clarity. The indefinite article "a" or "an" does not exclude a plurality. A single processor or other unit may fulfill the functions of several items recited in the claims. The mere fact that certain measures are recited in mutually different dependent claims does not indicate that a combination of these measures cannot be used to advantage. Any reference signs in the claims should not be construed as limiting the scope.

[0270] It will be further understood by those within the art that if a specific number of an introduced claim recitation is intended, such an intent will be explicitly recited in the claim, and in the absence of such recitation no such intent is present. For example, as an aid to understanding, the following appended claims may contain usage of the introductory phrases "at least one" and "one or more" to introduce claim recitations. However, the use of such phrases should not be construed to imply that the introduction of a claim recitation by the indefinite articles "a" or "an" limits any particular claim containing such introduced claim recitation to embodiments containing only one such recitation, even when the same claim includes the introductory phrases "one or more" or "at least one" and indefinite articles such as "a" or "an" (e.g., "a" and/or "an" should typically be interpreted to mean "at least one" or "one or more"); the same holds true for the use of definite articles used to introduce claim recitations. In addition, even if a specific number of an introduced claim recitation *is* explicitly recited, those skilled in the art will recognize that such recitation should typically be interpreted to mean *at least* the recited number (e.g., the bare recitation of "two recitations," without other modifiers,

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typically means *at least* two recitations, or *two or more* recitations). Furthermore, in those instances where a convention analogous to "at least one of A, B, and C, etc." is used, in general such a construction is intended in the sense one having skill in the art would understand the convention (e.g., "a system having at least one of A, B, and C" would include but not be limited to systems that have A alone, B alone, C alone, A and B together, A and C together, B and C together, and/or A, B, and C together, etc.). In those instances where a convention analogous to "at least one of A, B, or C, etc." is used, in general such a construction is intended in the sense one having skill in the art would understand the convention (e.g., "a system having at least one of A, B, or C" would include but not be limited to systems that have A alone, B alone, C alone, A and B together, A and C together, B and C together, and/or A, B, and C together, etc.). It will be further understood by those within the art that virtually any disjunctive word and/or phrase presenting two or more alternative terms, whether in the description, claims, or drawings, should be understood to contemplate the possibilities of including one of the terms, either of the terms, or both terms. For example, the phrase "A or B" will be understood to include the possibilities of "A" or "B" or "A and B."

[0271] All numbers expressing quantities of ingredients, reaction conditions, and so forth used in the specification are to be understood as being modified in all instances by the term 'about.' Accordingly, unless indicated to the contrary, the numerical parameters set forth herein are approximations that may vary depending upon the desired properties sought to be obtained. At the very least, and not as an attempt to limit the application of the doctrine of equivalents to the scope of any claims in any application claiming priority to the present application, each numerical parameter should be construed in light of the number of significant digits and ordinary rounding approaches.

[0272] Furthermore, although the foregoing has been described in some detail by way of illustrations and examples for purposes of clarity and understanding, it is apparent to those skilled in the art that certain changes and modifications may be practiced. Therefore, the description and

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examples should not be construed as limiting the scope of the invention to the specific embodiments and examples described herein, but rather to also cover all modification and alternatives coming with the true scope and spirit of the invention.

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WHAT IS CLAIMED IS:

1. A method comprising:

receiving, at a remote monitor, a notification message representative of an event detected, by a server, from analyte sensor data obtained from a receiver monitoring an analyte state of a host;

presenting, at the remote monitor, the notification message to activate the remote monitor, wherein the remote monitor is configured by the server to receive the notification message to augment the receiver monitoring of the analyte state of the host;

accessing, by the remote monitor, the server, in response to the presenting of the notification message; and

receiving, in response to the accessing, information including at least the analyte sensor data.

2. The method of claim 1, wherein the receiving further comprises receiving the notification message from at least a first wireless connection between the remote monitor and a notification service coupled to the server, wherein the additional information is received from at least a second wireless connection between the remote monitor and the server.

3. The method of Claim 1, wherein the first wireless connection comprises a persistent, encrypted connection configured to carry a short message pushed by the notification service to a notification message center at the remote monitor, and wherein the second wireless connection comprises a momentary, encrypted connection established, in response the accessing, to provide the additional information comprising at least additional analyte sensor data.

4. The method of Claim 1, wherein the presenting further comprises inhibiting access to one or more applications at the remote monitor until an action at the remote monitor is detected to

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indicate receipt of the notification message, wherein the remote monitor further comprises a monitoring application.

5. The method of Claim 1, wherein the presenting further comprises presenting the notification message as a momentary message on a display at the remote monitor, without the inhibiting access.

6. The method of Claim 1, wherein at least one of the remote monitor and the receiver comprise one or more of a mobile station, a wireless terminal, a tablet, a smart phone, a multi-mode wireless device, and a computer.

7. The method of Claim 1, wherein the server comprises at least one processor configured to receive analyte sensor data from the receiver, process the analyte sensor data to detect the event, and forward, when the event is detected, the notification message to the remote monitor based on one or more rules mapping the event to the remote monitor designated to receive the notification message for the detected event.

8. The method of Claim 1 further comprising detecting, based on a first set of rules at the server, the event, wherein the first set of rules used to generate the notification message are different from a second set of rules used to detect alerts sent to the receiver coupled to a sensor system at the host.

9. The method of Claim 1, wherein the receiver includes, or couples to, a gateway interfacing a wireless connection to a public land mobile network and the server.

10. The method of Claim 1 further comprising configuring a plurality of remote monitors, wherein at least one of the plurality of remote monitors is designated as a primary monitor, and at least one of the plurality of remote monitors is designated as a secondary monitor.

11. The method of Claim 1 further comprising configuring, by the remote monitor, at least one rule representative of a trigger causing an alert to be sent by the server to the receiver.

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12. The method of Claim 1 further comprising configuring, by the remote monitor, one or more invitations sent to one or more devices to invite the one or more devices to monitor the receiver.

13. The method of Claim 1 further comprising sending, to the server, a message acknowledging a receipt of the notification message.

14. The method of Claim 1, wherein the notification message includes at least one of an indication of a need to calibrate a sensor and an acknowledgement message indicating at least one of an action or an acknowledgement sent by the receiver in response to an alarm sent to the receiver.

15. The method of Claim 1, wherein the activation of the remote monitor comprises opening the monitoring application.

16. The method of Claim 1, wherein the accessing further comprises establishing a connection between the remote monitor and the server to enable the receiving of the information including the analyte sensor data.

17. The method of Claim 1 further comprising registering, at the server, at least one of the remote monitor, the receiver, and an analyte sensor coupled to the receiver, wherein the registration includes a code provided by a health care provider.

18. The method of Claim 1, wherein the method is implemented on an apparatus comprising at least one processor and at least one memory including code, which when executed by the at least one processor causes the apparatus to provide the method.

19. The method of Claim 1, wherein a computer-readable storage medium includes code which when executed by at least one processor causes the method.

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REMOTE MONITORING OF ANALYTE MEASUREMENTS

ABSTRACT OF THE DISCLOSURE

Methods and apparatus, including computer program products, are provided for remote monitoring. In some example implementations, there is provided a method. The method may include receiving, at a remote monitor, a notification message representative of an event detected, by a server, from analyte sensor data obtained from a receiver monitoring an analyte state of a host; presenting, at the remote monitor, the notification message to activate the remote monitor, wherein the remote monitor is configured by the server to receive the notification message to augment the receiver monitoring of the analyte state of the host; accessing, by the remote monitor, the server, in response to the presenting of the notification message; and receiving, in response to the accessing, information including at least the analyte sensor data. Related systems, methods, and articles of manufacture are also disclosed.

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Filing Date:	
Title of Invention:	REMOTE MONITORING OF ANALYTE MEASUREMENTS
First Named Inventor/Applicant Name:	Michael Robert Mensinger
Filer:	Rose M. Thiessen/Jennifer Jung
Attorney Docket Number:	DEXCOM.225A

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Utility Examination Fee	1311	1	250	250
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Miscellaneous-Filing:				
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Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
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1	Application Data Sheet	20130315153008.pdf	456918 4e3d4f55d255ab6444cd5d5df283e6ad886a37a4	no	8
Warnings:					
Information:					
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	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	101
	Claims	102	104
	Abstract	105	105

Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	36436 0b6b00541e987190dd9794aa18ec9aa113b1c70d	no	2
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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

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.

SCORE Placeholder Sheet for IFW Content

Application Number: 13842679 Document Date: 03/15/2013

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