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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/593,349	01/09/2015	Shahrooz Shahparnia	941131.422C1

CONFIRMATION NO. 2295

POA ACCEPTANCE LETTER

500
SEED INTELLECTUAL PROPERTY LAW GROUP LLP
701 FIFTH AVE
SUITE 5400
SEATTLE, WA 98104

OC000000103466850

Date Mailed: 10/31/2018

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/23/2018.

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

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

/ldvan/

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/593,349	01/09/2015	Shahrooz Shahparnia	080900.2781

CONFIRMATION NO. 2295

POWER OF ATTORNEY NOTICE

12323
Baker Botts L.L.P./Atmel Corporation
2001 Ross Avenue
SUITE 700
Dallas, TX 75201

OC000000103466840

Date Mailed: 10/31/2018

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/23/2018.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71.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

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

/ldvan/

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82A (07-13)
Approved for use through 11/30/2014. OMB 0651-0051
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.

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

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

Application Number	14/593,349
Filing Date	January 9, 2015
First Named Inventor	Shahrooz Shahparnia
Title	Pulse- or Frame-Based Communication Using Active Stylus
Art Unit	2695
Examiner Name	Emily J. Frank
Attorney Docket Number	941131.422C1

SIGNATURE of Applicant or Patent Practitioner

Signature	/Shoko Leek/	Date (Optional)	10/23/2018
Name	Shoko I. Leek	Registration Number	43,746
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

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

☑ *Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82B (07-13)
Approved for use through 11/30/2014. OMB 0651-0051
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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number

POWER OF ATTORNEY BY APPLICANT

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

Application Number	Filing Date

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

☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 00500

OR

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

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

☑ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

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

Wacom Co., Ltd.

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

SIGNATURE of Applicant for Patent

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

Signature	Yuichi Ide	Date (Optional)	
Name	Yuichi Ide		
Title	Vice President Intellectual Property, Wacom Co., Ltd		

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

☑ Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

Electronic Acknowledgement Receipt

EFS ID:	34090415
Application Number:	14593349
International Application Number:	
Confirmation Number:	2295
Title of Invention:	Pulse- or Frame-Based Communication Using Active Stylus
First Named Inventor/Applicant Name:	Shahrooz Shahparnia
Customer Number:	12323
Filer:	Shoko I. Leek
Filer Authorized By:	
Attorney Docket Number:	080900.2781
Receipt Date:	23-OCT-2018
Filing Date:	09-JAN-2015
Time Stamp:	16:13:39
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	Assignee showing of ownership per 37 CFR 3.73	373.pdf	2166773 fddbe8f7b5b948717083eba011d7f63cc2bad6aa	no	21

Warnings:

Information:					
2	Power of Attorney	POA.pdf	210657 425fafe14ad03afcc3d7737c49c1a09b28ad5e63	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	2377430	

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/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Wacom Co., Ltd.

Application No./Patent No.: 9,280,220 Filed/Issue Date: March 8, 2016

Titled: Pulse- or Frame-Based Communication Using Active Stylus

Wacom Co., Ltd., a limited liability company

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

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

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

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

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

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

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

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

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

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Shahrooz Shahparnia et al. To: Atmel Corporation

   The document was recorded in the United States Patent and Trademark Office at
   Reel 034674, Frame 0257, or for which a copy thereof is attached.

2. From: John Stanley Dubery et al. To: Atmel Technologies U.K. Limited

   The document was recorded in the United States Patent and Trademark Office at
   Reel 034674, Frame 0746, or for which a copy thereof is attached.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(c)

3. From: Atmel Technologies U.K. Limited To: Atmel Corporation

The document was recorded in the United States Patent and Trademark Office at
Reel 034674, Frame 0851, or for which a copy thereof is attached.

4. From: Atmel Corporation To: Wacom Co., Ltd.

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

5. From: _____ To: _____

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

6. From: _____ To: _____

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

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

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

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

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

/Shoko Leek/	October 23, 2018
Signature	Date
Shoko I. Leek	43,746
Printed or Typed Name	Title or Registration 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.

Schedule 2.2

Form of Patent Assignment

Patent Assignment

For good and valuable consideration, the receipt of which is hereby acknowledged, and subject to the encumbrances described, and the other terms and conditions set forth, in the Patent Sale and Assignment Agreement dated as of September 6, 2018 ("**Patent Sale Agreement**") between Microchip Technology Inc., a Delaware corporation and its Affiliates, including Atmel Corporation ("**Assignor**"), and Wacom Co., Ltd. ("**Assignee**"), Assignor hereby sells and assigns to Assignee, all of Assignor's right, title, and interest in and to (i) the U.S patents and patent applications listed in Attachment A ("**Listed Patents**"), (ii) any patents that may issue on the patent applications included in the Listed Patents, (iii) any reissues and renewals of any Listed Patents, (iv) any results of oppositions, reexaminations, supplemental examinations, and other review procedures with respect to any Listed Patents, and (v) any other patents or patent applications from which any Listed Patents claim priority and all inventions disclosed and claimed in any of (i) through (v) (collectively, including the Listed Patents, the "**Assigned Patents**") for the full term of such Assigned Patents, including any rights to (a) maintain, further prosecute, and renew the Assigned Patents (in each case where possible under applicable law), (b) transfer, and grant licenses and other rights under, the Assigned Patents, and (c) enforce, and bring actions for all past, present and future infringement of, the Assigned Patents.

Notwithstanding, and without limitation of the generality of, the foregoing, the Assigned Patents and the sale and assignment to Assignee or any successor thereto or assignee thereof are subject to the terms and conditions of the Patent Sale Agreement.

IN WITNESS WHEREOF, Assignor has caused this Patent Assignment to be duly signed on its behalf.

MICROCHIP TECHNOLOGY INC.	**ATMEL CORPORATION**
By:	By:
Name: Eric Bjornholt	Name: Kim van Herk
Title: VP, CFO	Title: VP, General Counsel

Listed Patents

Patent / Publication Number	Title	Current Assignee	Country Code	Application Number	Filed Date	Publication / Issue Date	Terminal Disclaimer
US8947404	Stylus	Atmel Corporation	US	US13/044237	3/9/2011	2/3/2015	
US20130106719	Data transfer from active stylus to configure a device or application	Atmel Corporation	US	US13/356122	1/23/2012	5/2/2013	
US20130106740	Touch-sensitive system with motion filtering	Atmel Corporation	US	US13/553532	7/19/2012	5/2/2013	
US20130106717	Multi-electrode active stylus tip	Atmel Corporation	US	US13/332919	12/21/2011	5/2/2013	
	Multi-electrode active stylus tip	Atmel Corporation	US	US16/135,749	9/19/2018		
US20130106798	Differential sensing in an active stylus	Atmel Corporation	US	US13/434596	3/29/2012	5/2/2013	
US20130106714	Power management system for active stylus	Atmel Corporation	US	US13/329270	12/17/2011	5/2/2013	
US20160091992	Executing gestures with active stylus	Atmel Corporation	US	US14/832049	8/21/2015	3/31/2016	
US20170192540	Adaptive transmit voltage in active stylus	Atmel Corporation	US	US15/462959	3/20/2017	7/6/2017	US9606641
US9116558	Executing gestures with active stylus	Atmel Corporation	US	US13/419087	3/13/2012	8/25/2015	

Patent / Publication Number	Title	Current Assignee	Country Code	Application Number	Filed Date	Publication / Issue Date	Terminal Disclaimer
US8947379	Inductive charging for active stylus	Atmel Corporation	US	US13/363140	1/31/2012	2/3/2015	
US9160331	Capacitive and inductive sensing	Atmel Corporation	US	US13/355013	1/20/2012	10/13/2015	
US8581886	Tuning algorithm for noise reduction in an active stylus	Atmel Corporation	US	US13/427721	3/22/2012	11/12/2013	
US8933899	Pulse- or frame-based communication using active stylus	Atmel Corporation	US	US13/363043	1/31/2012	1/13/2015	
US8797287	Selective scan of touch-sensitive area for passive or active touch or proximity input	Atmel Corporation	US	US13/331238	12/20/2011	8/5/2014	
US9310930	Selective scan of touch-sensitive area for passive or active touch or proximity input	Atmel Corporation	US	US14/448698	7/31/2014	4/12/2016	
US9164603	Executing gestures with active stylus	Atmel Corporation	US	US13/363190	1/31/2012	10/20/2015	
US9164598	Active stylus with surface-modification materials	Atmel Corporation	US	US13/362921	1/31/2012	10/20/2015	
US9958990	Authenticating with active stylus	Atmel Corporation	US	US13/556799	7/24/2012	5/1/2018	US9965107

Patent / Publication Number	Title	Current Assignee	Country Code	Application Number	Filed Date	Publication / Issue Date	Terminal Disclaimer
US9965107	Authenticating with active stylus	Atmel Corporation	US	US13/556766	7/24/2012	5/8/2018	US9958990
US9946408	Communication between a master active stylus and a slave touch-sensor device	Atmel Corporation	US	US13/326981	12/15/2011	4/17/2018	
US9690431	Locking active stylus and touch-sensor device	Atmel Corporation	US	US13/328055	12/16/2011	6/27/2017	
US9557833	Dynamic adjustment of received signal threshold in an active stylus	Atmel Corporation	US	US13/335296	12/22/2011	1/31/2017	US8581886
US9874920	Power management system for active stylus	Atmel Corporation	US	US13/328594	12/16/2011	1/23/2018	
US9389707	Active stylus with configurable touch sensor	Atmel Corporation	US	US13/333791	12/21/2011	7/12/2016	
US9389701	Data transfer from active stylus	Atmel Corporation	US	US13/364803	2/2/2012	7/12/2016	
US9280218	Modulating drive signal for communication between active stylus and touch-sensor device	Atmel Corporation	US	US13/335328	12/22/2011	3/8/2016	
US9354728	Active stylus with capacitive buttons and sliders	Atmel Corporation	US	US13/335522	12/22/2011	5/31/2016	
US9250719	Active stylus with filter	Atmel Corporation	US	US13/329274	12/17/2011	2/2/2016	

Patent / Publication Number	Title	Current Assignee	Country Code	Application Number	Filed Date	Publication / Issue Date	Terminal Disclaimer
US9459709	Scaling voltage for data communication between active stylus and touch-sensor device	Atmel Corporation	US	US13/329273	12/17/2011	10/4/2016	
US9182856	Capacitive force sensor	Atmel Corporation	US	US13/330312	12/19/2011	11/10/2015	
US9086745	Dynamic reconfiguration of electrodes in an active stylus	Atmel Corporation	US	US13/334875	12/22/2011	7/21/2015	
US9933866	Active stylus with high voltage	Atmel Corporation	US	US14/516845	10/17/2014	4/3/2018	
US8866767	Active stylus with high voltage	Atmel Corporation	US	US13/362830	1/31/2012	10/21/2014	
US9189121	Active stylus with filter having a threshold	Atmel Corporation	US	US13/329268	12/17/2011	11/17/2015	
US9891723	Active stylus with surface-modification materials	Atmel Corporation	US	US14/876176	10/6/2015	2/13/2018	
US9880645	Executing gestures with active stylus	Atmel Corporation	US	US14/883064	10/14/2015	1/30/2018	
US9164604	Tuning algorithm for noise reduction in an active stylus	Atmel Corporation	US	US14/076892	11/11/2013	10/20/2015	
US8872792	Active stylus with energy harvesting	Atmel Corporation	US	US13/402681	2/22/2012	10/28/2014	

Patent / Publication Number	Title	Current Assignee	Country Code	Application Number	Filed Date	Publication / Issue Date	Terminal Disclaimer
US9280220	Pulse- or frame-based communication using active stylus	Atmel Corporation	US	US14/593349	1/9/2015	3/8/2016	
US9606641	Adaptive transmit voltage in active stylus	Atmel Corporation	US	US14/642128	3/9/2015	3/28/2017	
DE102012219329	Input pen for touch sensing device for, e.gsmart phone, has several sensors for recovering kinetic, thermal, solar or electrical energy from input pin or environment of input pen	Atmel Corporation	DE	DE201210219329	10/23/2012	5/2/2013	
DE102016203848	Adaptive transfer voltage in an active pin	Atmel Corporation	DE	DE201610203848	3/9/2016	9/15/2016	
DE102012219167	Input pen for touch sensing device for, e.gsmart phone, has several sensors for recovering kinetic, thermal, solar or electrical energy from input pin or environment of input pen	Atmel Corporation	DE	DE201210219167	10/22/2012	5/2/2013	
DE102012219165	Input pen for touch sensing device for, e.gsmart phone, has several sensors for	Atmel Corporation	DE	DE201210219165	10/22/2012	5/2/2013	

Patent / Publication Number	Title	Current Assignee	Country Code	Application Number	Filed Date	Publication / Issue Date	Terminal Disclaimer
	recovering kinetic, thermal, solar or electrical energy from input pin or environment of input pen						
DE102012219000	Input pen for touch sensing device for, e.gsmart phone, has several sensors for recovering kinetic, thermal, solar or electrical energy from input pin or environment of input pen	Atmel Corporation	DE	DE201210219000	10/18/2012	5/2/2013	
DE102012218999	Input pen for touch sensing device for, e.gsmart phone, has several sensors for recovering kinetic, thermal, solar or electrical energy from input pin or environment of input pen	Atmel Corporation	DE	DE201210218999	10/18/2012	5/2/2013	
DE102012218965	Input pen for touch sensing device for, e.gsmart phone, has several sensors for recovering kinetic, thermal, solar or electrical energy from	Atmel Corporation	DE	DE201210218965	10/18/2012	5/2/2013	

Patent / Publication Number	Title	Current Assignee	Country Code	Application Number	Filed Date	Publication / Issue Date	Terminal Disclaimer
	input pin or environment of input pen						
DE102012218784	Input pen for touch sensing device for, e.gsmart phone, has several sensors for recovering kinetic, thermal, solar or electrical energy from input pin or environment of input pen	Atmel Corporation	DE	DE201210218784	10/16/2012	5/2/2013	
DE102012218779	Input pen for touch sensing device for, e.gsmart phone, has several sensors for recovering kinetic, thermal, solar or electrical energy from input pin or environment of input pen	Atmel Corporation	DE	DE201210218779	10/16/2012	5/2/2013	
DE102012218493	Input pen for touch sensing device for, e.gsmart phone, has several sensors for recovering kinetic, thermal, solar or electrical energy from input pin or environment of input pen	Atmel Corporation	DE	DE201210218493	10/11/2012	5/2/2013	

Patent / Publication Number	Title	Current Assignee	Country Code	Application Number	Filed Date	Publication / Issue Date	Terminal Disclaimer
DE102012218308	Said touch-sensitive system with a movement filtering	Atmel Corporation	DE	DE201210218308	10/8/2012	5/2/2013	
DE102012218267	Input pen for touch sensing device for, e.gsmart phone, has several sensors for recovering kinetic, thermal, solar or electrical energy from input pin or environment of input pen	Atmel Corporation	DE	DE201210218267	10/8/2012	5/2/2013	
DE102012218167	Input pen for touch sensing device for, e.gsmart phone, has several sensors for recovering kinetic, thermal, solar or electrical energy from input pin or environment of input pen	Atmel Corporation	DE	DE201210218167	10/4/2012	5/2/2013	
DE102012218165	Input pen for touch sensing device for, e.g. smart phone, has several sensors for recovering kinetic, thermal, solar or electrical energy from input pin or environment of input pen	Atmel Corporation	DE	DE201210218165	10/4/2012	5/2/2013	

Patent / Publication Number	Title	Current Assignee	Country Code	Application Number	Filed Date	Publication / Issue Date	Terminal Disclaimer
DE202012101911	Capacitive force sensor	Atmel Corporation	DE	DE201220101911U	5/24/2012	6/15/2012	
DE202012102273	Active input pen with capacitive keys and slider controls	Atmel Corporation	DE	DE201220102273U	6/20/2012	7/12/2012	
DE202012102427	Contact sensor - an apparatus with modulated control signal for communication with active stylus	Atmel Corporation	DE	DE201220102427U	7/2/2012	7/26/2012	
DE202012102752	Adaptation algorithm in order to reduce the noise in an active pin	Atmel Corporation	DE	DE201220102752U	7/23/2012	9/18/2012	
DE202012102444	Active input pen, can be carried out with the gestures	Atmel Corporation	DE	DE201220102444U	7/3/2012	7/26/2012	
DE202012102253	Energy par a system for an active pin	Atmel Corporation	DE	DE201220102253U	6/19/2012	7/24/2012	
DE202012101967	Touch sensor with a selective scanning of touch sensitive area for passive or active non-contacting - or - input approach	Atmel Corporation	DE	DE201220101967U	5/30/2012	7/13/2012	
DE202012102976	Touch sensor with active pin	Atmel Corporation	DE	DE201220102976U	8/8/2012	9/5/2012	

Patent / Publication Number	Title	Current Assignee	Country Code	Application Number	Filed Date	Publication / Issue Date	Terminal Disclaimer
DE202012101735	Active input pen with an energy - harvesting	Atmel Corporation	DE	DE201220101735U	5/11/2012	5/24/2012	
DE202012101769	Touch sensor with a pulse - or frame-based communication with the use of an active input pen	Atmel Corporation	DE	DE201220101769U	5/14/2012	5/29/2012	
DE202012101881	More electrodes tip of an active input pen	Atmel Corporation	DE	DE201220101881U	5/23/2012	6/15/2012	
DE202012101913	Active stylus with the optical filter, the threshold value has	Atmel Corporation	DE	DE201220101913U	5/24/2012	6/18/2012	
DE202012102059	Active stylus with an inductive charging	Atmel Corporation	DE	DE201220102059U	6/5/2012	7/4/2012	
DE202012102057	Active stylus with a filter	Atmel Corporation	DE	DE201220102057U	6/5/2012	7/5/2012	
DE202012102274	Active input pen having a dynamic reconfiguration of electrodes	Atmel Corporation	DE	DE201220102274U	6/20/2012	7/12/2012	
DE202012102975	Touch sensor with a capacitive and inductive sensing	Atmel Corporation	DE	DE201220102975U	8/8/2012	9/14/2012	
DE202012102443	Active stylus with a fixed coupling and touch sensor - apparatus	Atmel Corporation	DE	DE201220102443U	7/3/2012	9/13/2012	

Patent / Publication Number	Title	Current Assignee	Country Code	Application Number	Filed Date	Publication / Issue Date	Terminal Disclaimer
DE202012102787	Active input pen, can be carried out with the gestures	Atmel Corporation	DE	DE201220102787U	7/25/2012	9/18/2012	
DE202012102572	Differential detection in an active pin	Atmel Corporation	DE	DE201220102572U	7/12/2012	9/20/2012	
DE202012101742	Active input pen with data transmission	Atmel Corporation	DE	DE201220101742U	5/11/2012	5/24/2012	
DE202012101768	Active input pen with surfaces modification materials	Atmel Corporation	DE	DE201220101768U	5/14/2012	5/30/2012	
DE202012101912	Active input pen with a high voltage	Atmel Corporation	DE	DE201220101912U	5/24/2012	6/15/2012	
DE202012102222	Active input pen, of the data for configuring a device or application transmits	Atmel Corporation	DE	DE201220102222U	6/18/2012	7/11/2012	
DE202012102252	Active input pen having a dynamic adaptation of the reception signal threshold value	Atmel Corporation	DE	DE201220102252U	6/19/2012	7/17/2012	
DE202012102338	Active stylus - pin with configurable touch sensor	Atmel Corporation	DE	DE201220102338U	6/26/2012	7/19/2012	
DE202012102987	Active pin and contact sensor device with scaled voltages for the data transmission	Atmel Corporation	DE	DE201220102987U	8/9/2012	9/5/2012	

Patent / Publication Number	Title	Current Assignee	Country Code	Application Number	Filed Date	Publication / Issue Date	Terminal Disclaimer
DE202012102967	Energy par system for active pin	Atmel Corporation	DE	DE201220102967U	8/7/2012	9/5/2012	
DE202012101966	Combined contact sensor input	Atmel Corporation	DE	DE201220101966U	5/30/2012	7/12/2012	
DE202012102386	Touch sensor with look-up table	Atmel Corporation	DE	DE201220102386U	6/28/2012	7/26/2012	
US9354737	Active stylus self-capacitance measurement	Atmel Corporation	US	US13/571016	8/9/2012	5/31/2016	
US9563304	Active stylus with passive mutual measurements	Atmel Corporation	US	US13/586745	8/15/2012	2/7/2017	
DE102013215800	Active input pen with passive mutual capacitance measurements	Atmel Corporation	DE	DE201310215800	8/9/2013	2/20/2014	
US20180232025	Stylus communication with near-field coupling		US	US15/909755	3/1/2018	8/16/2018	
US9921626	Stylus communication with near-field coupling	Atmel Corporation	US	US13/630990	9/28/2012	3/20/2018	
DE102013219130	With a near-field coupling stylus communication	Atmel Corporation	DE	DE201310219130	9/24/2013	4/3/2014	
US9256301	Active stylus with noise immunity	Atmel Corporation	US	US13/648665	10/10/2012	2/9/2016	

Patent / Publication Number	Title	Current Assignee	Country Code	Application Number	Filed Date	Publication / Issue Date	Terminal Disclaimer
US9958966	Active stylus communication and position system	Atmel Corporation	US	US13/653300	10/16/2012	5/1/2018	
DE102013220920	Active pin communication and positioning system	Atmel Corporation	DE	DE201310220920	10/16/2013	4/17/2014	
US10031590	Active stylus with a parallel communication channel	Atmel Corporation	US	US13/653200	10/16/2012	7/24/2018	
DE102013220963	Active pin with parallel communication channel	Atmel Corporation	DE	DE201310220963	10/16/2013	4/30/2014	
US9841862	Stylus position system	Atmel Corporation	US	US13/653247	10/16/2012	12/12/2017	
DE102013220964	Pin positioning system	Atmel Corporation	DE	DE201310220964	10/16/2013	4/30/2014	
US9213455	Stylus with resonant circuit	Atmel Corporation	US	US13/653818	10/17/2012	12/15/2015	
US9035919	Electrostatics stylus	Microchip Technology Incorporated	US	US13/842869	3/15/2013	5/19/2015	
EP2972706	Electrostatic stylus	Microchip Technology Incorporated	EP	EP20140712846	3/1/2014	1/20/2016	
KR20150129643	Electrostatic stylus	Microchip Technology Incorporated	KR	KR20157008290	3/1/2014	11/20/2015	

Patent / Publication Number	Title	Current Assignee	Country Code	Application Number	Filed Date	Publication / Issue Date	Terminal Disclaimer
TW201443712	Electrostatic stylus	Microchip Technology Incorporated	TW	TW20140108551	3/12/2014	11/16/2014	
CN104685458	Electrostatic stylus	Microchip Technology Incorporated	CN	CN2014802578	3/1/2014	7/6/2018	
US9274644	Synchronization of active stylus and touch sensor	Atmel Corporation	US	US13/975926	8/26/2013	3/1/2016	
DE102014216860	Synchronization of an actively pin and a touch sensor	Atmel Corporation	DE	DE201410216860	8/25/2014	2/26/2015	
US9785263	Touch screen stylus with force and/or angle sensing functionality	Microchip Technology Incorporated	US	US14/462242	8/18/2014	10/10/2017	
EP3036609	Touch screen stylus with force and/or angle sensing functionality	Microchip Technology Incorporated	EP	EP20140759409	8/21/2014	6/29/2016	
KR20160044496	Touch screen stylus with force and/or angle sensing functionality	Microchip Technology Incorporated	KR	KR20167005513	8/21/2014	4/25/2016	
CN105556445	Touch screen stylus with force and/or angle sensing functionality	Microchip Technology Incorporated	CN	CN2014850739	8/21/2014	5/4/2016	
TW201523346	Touch screen stylus with force and / or angle sensing functionality	Microchip Technology Incorporated	TW	TW20140129066	8/22/2014	6/16/2015	

Patent / Publication Number	Title	Current Assignee	Country Code	Application Number	Filed Date	Publication / Issue Date	Terminal Disclaimer
US20160098105	Method and system for determining stylus tilt in relation to a touch-sensing device	Atmel Corporation	US	US14/968585	12/14/2015	4/7/2016	US9213423
US9213423	Method and system for determining stylus tilt in relation to a touch-sensing device	Atmel Corporation	US	US14/026466	9/13/2013	12/15/2015	
US9329705	Stylus with asymmetric electronic characteristics	Atmel Corporation	US	US14/073417	11/6/2013	5/3/2016	
DE102014222429	Pin with asymmetric electronic properties	Atmel Corporation	DE	DE201410222429	11/4/2014	5/7/2015	
US9152254	Electrical connection for active-stylus electrode	Atmel Corporation	US	US14/086626	11/21/2013	10/6/2015	
US20150138165	Replaceable tip for active stylus	Atmel Corporation	US	US14/086735	11/21/2013	5/21/2015	
US20170344139	Timing synchronization of active stylus and touch sensor	Atmel Corporation	US	US15/676620	8/14/2017	11/30/2017	
US9733731	Timing synchronization of active stylus and touch sensor	Atmel Corporation	US	US14/275462	5/12/2014	8/15/2017	
TW201610763	Timing synchronization of active stylus and touch sensor	Atmel Corporation	TW	TW20150115092	5/12/2015	3/16/2016	

Patent / Publication Number	Title	Current Assignee	Country Code	Application Number	Filed Date	Publication / Issue Date	Terminal Disclaimer
DE102015208460	Synchronization of the timing of an active pin and of a touch sensor	Atmel Corporation	DE	DE201510208460	5/7/2015	11/12/2015	
CN105094384	Timing synchronization of active stylus and touch sensor	Atmel Corporation	CN	CN20151236470	5/11/2015	11/25/2015	
US9389708	Active stylus with force sensor	Atmel Corporation	US	US14/272882	5/8/2014	7/12/2016	
US20180046273	Low-power and low-frequency data transmission for stylus and associated signal processing	Atmel Corporation	US	US15/791002	10/23/2017	2/15/2018	
US9798396	Low-power and low-frequency data transmission for stylus and associated signal processing	Atmel Corporation	US	US14/687691	4/15/2015	10/24/2017	US9569016
US9569016	Low-power and low-frequency data transmission for stylus	Atmel Corporation	US	US14/461956	8/18/2014	2/14/2017	
US9483129	Active stylus with fractional clock-cycle timing	Atmel Corporation	US	US14/709755	5/12/2015	11/1/2016	
US9696826	Stylus with low-power detector	Atmel Corporation	US	US14/788637	6/30/2015	7/4/2017	

Patent / Publication Number	Title	Current Assignee	Country Code	Application Number	Filed Date	Publication / Issue Date	Terminal Disclaimer
US9904377	Communication between active stylus and touch sensor	Atmel Corporation	US	US14/925748	10/28/2015	2/27/2018	
US20180217689	Active stylus with multiple sensors for receiving signals from a touch sensor	Atmel Corporation	US	US15/935701	3/26/2018	8/2/2018	
US9939930	Active stylus with multiple sensors for receiving signals from a touch sensor	Atmel Corporation	US	US15/177846	6/9/2016	4/10/2018	

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/593,349	03/08/2016	9280220	080900.2781	2295

12323 7590 02/17/2016

Baker Botts L.L.P.
2001 Ross Avenue, 6th Floor
Dallas, TX 75201

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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

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

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

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

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

Shahrooz Shahparnia, Monte Sereno, CA;
Atmel Corporation, San Jose, CA;
Vivek Pant, San Jose, CA;
Esat Yilmaz, Santa Cruz, CA;
Vemund Kval Bakken, Tiller, NORWAY;
Kishore Sundara-Rajan, San Jose, CA;
John Stanley Dubery, Basingstoke, UNITED KINGDOM;
Martin J. Simmons, Whiteley, UNITED KINGDOM;
Sherif Hanna, Foster City, CA;

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Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
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or Fax (571)-273-2885

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/593,349	01/09/2015	Shahrooz Shahparnia	080900.2781	2295

TITLE OF INVENTION: Pulse- or Frame-Based Communication Using Active Stylus

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	02/02/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
FRANK, EMILY J	2695	345-174000

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.

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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: Atmel Corporation

(B) RESIDENCE: (CITY and STATE OR COUNTRY): San Jose, CA

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

4a. The following fee(s) are submitted:
- ☒ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
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- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
- ☐ Applicant changing to regular undiscounted fee status.

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

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

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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 1/29/16
Typed or printed name Chad D. Terrell Registration No. 52,279

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Shahrooz Shahparnia, et al.
Serial No.:	14/593,349
Filed:	January 9, 2015
Group No.:	2695
Examiner:	Emily J. Frank
Notice of Allowance Mailed:	November 2, 2015
Confirmation No.:	2295
Title:	Pulse- or Frame Based Communication Using Active Stylus

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Alexandria, VA 22313-1450

Dear Sir:

COMMENTS ON STATEMENT OF REASONS FOR ALLOWANCE

Applicants appreciate the Examiner's allowance of Claims 21-38. Pursuant to 37 C.F.R. § 1.104, Applicants respectfully issue a statement commenting on the Examiner's reasons for allowance. Applicants respectfully disagree with the Examiner's reasons for allowance to the extent that they are inconsistent with applicable case law, statutes, and regulations. Furthermore, Applicants do not admit to any characterization or limitation of the claims or to any characterization of a reference by the Examiner, particularly any that are inconsistent with the language of the claims considered in their entirety and including all of their constituent limitations.

Respectfully submitted,
BAKER BOTTS L.L.P.
Attorneys for Applicants

Chad D. Terrell
Registration No. 52,279

Date: January 29, 2016
CUSTOMER NO. 12323

Electronic Patent Application Fee Transmittal

Application Number:	14593349
Filing Date:	09-Jan-2015
Title of Invention:	Pulse- or Frame-Based Communication Using Active Stylus
First Named Inventor/Applicant Name:	Shahrooz Shahparnia
Filer:	Harrison G. Rich/mary johnson
Attorney Docket Number:	080900.2781

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:	24767777
Application Number:	14593349
International Application Number:	
Confirmation Number:	2295
Title of Invention:	Pulse- or Frame-Based Communication Using Active Stylus
First Named Inventor/Applicant Name:	Shahrooz Shahparnia
Customer Number:	12323
Filer:	Harrison G. Rich/mary johnson
Filer Authorized By:	Harrison G. Rich
Attorney Docket Number:	080900.2781
Receipt Date:	29-JAN-2016
Filing Date:	09-JAN-2015
Time Stamp:	15:15:30
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$960
RAM confirmation Number	1463
Deposit Account	020384
Authorized User	BAKER & BOTTS, LLP

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

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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	0809002781issuefee.PDF	99167 abc1e3fd667cd2143bc4c05a97a4ace088c16222	no	1
Warnings:					
Information:					
2	Post Allowance Communication - Incoming	0809002781comments.PDF	45115 1667f13d614636d6300771c8007361a364ad414f	no	1
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30521 737aa6b69608f517dcf147391e227297664433e1	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	174803		

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

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New International Application Filed with the USPTO as a Receiving Office

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NOTICE OF ALLOWANCE AND FEE(S) DUE

12323 7590 11/02/2015

Baker Botts L.L.P.
2001 Ross Avenue, 6th Floor
Dallas, TX 75201

EXAMINER
FRANK, EMILY J

ART UNIT	PAPER NUMBER
2695	

DATE MAILED: 11/02/2015

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/593,349	01/09/2015	Shahrooz Shahparnia	080900.2781	2295

TITLE OF INVENTION: Pulse- or Frame-Based Communication Using Active Stylus

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	02/02/2016

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)

12323 7590 11/02/2015
Baker Botts L.L.P.
2001 Ross Avenue, 6th Floor
Dallas, TX 75201

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.
14/593,349	01/09/2015	Shahrooz Shahparnia	080900.2781	2295

TITLE OF INVENTION: Pulse- or Frame-Based Communication Using Active Stylus

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	02/02/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
FRANK, EMILY J	2695	345-174000

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. _____

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.
14/593,349	01/09/2015	Shahrooz Shahparnia	080900.2781	2295

12323 7590 11/02/2015

Baker Botts L.L.P.
2001 Ross Avenue, 6th Floor
Dallas, TX 75201

EXAMINER	
FRANK, EMILY J	

ART UNIT	PAPER NUMBER
2695	

DATE MAILED: 11/02/2015

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. 14/593,349	Applicant(s) SHAHPARNIA ET AL.	
	Examiner EMILY FRANK	Art Unit 2695	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 *the preliminary amendment filed 02/02/2015*.
   ☐ 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 *21-38 hereinafter renumbered as 1-18 respectively*. 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 01/09/2015
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 _____.

/EMILY FRANK/
Examiner, Art Unit 2695

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

Allowable Subject Matter

2. Claims 21-38 are allowed.

3. The following is an examiner's statement of reasons for allowance: Claims are allowable over the prior art of record in light of the preliminary amendment filed 02/02/2015 and based on the arguments made during prosecution of parent application 13/363043.

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

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Orsley (United States Patent 8,278,571) discloses a cross-sectional view of one embodiment of capacitive touchscreen or touchpad system 10 with active stylus 64 (figure 3).

Westhues et al. (United States Patent Application Publication 2012/0050231) discloses a block diagram of an active stylus (figure 3).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EMILY FRANK whose telephone number is (571)270-7255. The examiner can normally be reached on Monday to Thursday 8:00 AM to 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on (571)272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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

/EJF/

/JOSEPH FEILD/
Supervisory Patent Examiner, Art Unit 2695

Notice of References Cited	Application/Control No. 14/593,349	Applicant(s)/Patent Under Reexamination SHAHPARNIA ET AL.	
	Examiner EMILY FRANK	Art Unit 2695	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-8,278,571 B2	10-2012	Orsley; Timothy J.	G06F3/044	178/18.03
*	B	US-2012/0050231 A1	03-2012	Westhues; Jonathan	G06F3/03545	345/179
	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.

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	Unassigned
Filing Date	Herewith
First Named Inventor	Shahrooz SHAHPARNIA
Art Unit	Unassigned
Examiner Name	Unassigned
Attorney Docket Number	080900.2781

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	8278571		2012-10-02	Orsley	
	2	7875814		2011-01-25	CHEN	
	3	8040326		2011-10-18	Hotelling	
	4	8179381		2012-05-15	Frey	
	5	4695680		1987-09-22	Kable	
	6	5973677		1999-10-26	Gibbons	
	7	7612767		2009-11-03	Griffin	
	8	7663607		2010-02-16	Hotelling	

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	First Named Inventor	Shahrooz SHAHPARNIA
	Art Unit	Unassigned
	Examiner Name	Unassigned
	Attorney Docket Number	080900.2781

	9	7920129		2011-04-05	Hotelling	
	10	8031094		2011-10-04	Hotelling	
	11	8031174		2011-10-04	Hamblin	
	12	8049732		2011-11-01	Hotelling	

If you wish to add additional U.S. Patent citation information please click the Add button.

U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20120050231		2012-03-01	Westhues	
	2	20100155153		2010-06-24	Zachut	
	3	20120105362		2012-05-03	Kremin	
	4	20080158165		2008-07-03	Geaghan	
	5	20090315854		2009-12-24	Matsuo	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	Unassigned
	Filing Date	Herewith
	First Named Inventor	Shahrooz SHAHPARNIA
	Art Unit	Unassigned
	Examiner Name	Unassigned
	Attorney Docket Number	080900.2781

	6	20120242588		2012-09-27	Myers	
	7	20120242592		2012-09-27	Rothkopf	
	8	20120243151		2012-09-27	Lynch	
	9	20120243719		2012-09-27	Franklin	
	10	20120327041		2012-12-27	Harley	
	11	20080238885		2008-10-02	Zachut	
	12	20090095540		2009-04-16	Zachut	
	13	20090115725		2009-05-07	Shemesh	
	14	20090127005		2009-05-21	Zachut	
	15	20090153152		2009-06-18	Maharyta	
	16	20090184939		2009-07-23	Wohlstadter	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /E.F.C./

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	Unassigned
	Filing Date	Herewith
	First Named Inventor	Shahrooz SHAHPARNIA
	Art Unit	Unassigned
	Examiner Name	Unassigned
	Attorney Docket Number	080900.2781

	17	20090251434		2009-10-08	Rimon	
	18	20100006350		2010-01-14	Elias	
	19	20100155153		2010-06-24	Zachut	
	20	20100292945		2010-11-18	REYNOLDS	
	21	20100315384		2010-12-16	Hargreaves	
	22	20110007029		2011-01-13	Ben-David	

If you wish to add additional U.S. Published Application citation information please click the Add button.

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2012129247	WO		2012-09-27	Apple Inc.		☐

If you wish to add additional Foreign Patent Document citation information please click the Add button

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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

EFS Web 2.1.16

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /E.F.C./

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	Unassigned
	Filing Date	Herewith
	First Named Inventor	Shahrooz SHAHPARNIA
	Art Unit	Unassigned
	Examiner Name	Unassigned
	Attorney Docket Number	080900.2781

	1	U.S. Provisional Application No. 61/454936, filing date: March 21, 2011; Applicant: Myers	☐
	2	U.S. Provisional Application No. 61/454950, filing date: March 21, 2011; Applicant: Lynch	☐
	3	U.S. Provisional Application No. 61/454894, filing date: March 21, 2011; Applicant: Rothkopf	☐
	4	KYUNG, KI-UK et al., "wUbi-Pen : Windows Graphical User Interface Interacting with Haptic Feedback Stylus," SIGGRAPH,, Los Angeles, California (August 2008)	☐
	5	LEE, JOHNNY C. et al., "Haptic Pen: A Tactile Feedback Stylus for Touch Screens," UIST '04, Vol. 6, Issue 2, Santa Fe, New Mexico (October 2004)	☐
	6	SONG, HYUNYOUNG et al., "Grips and Gestures on a Multi-Touch Pen," CHI 2011, Session: Flexible Grips & Gestures, Vancouver, BC, Canada (May 2011)	☐
	7	TAN, ENG CHONG et al., "Application of Capacitive Coupling to the Design of an Absolute-Coordinate Pointing Device," IEEE Transactions on Instrumentation and Measurement, Vol. 54, No. 5 (October 2005)	☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature	/Emily Frank/	Date Considered	10/08/2015

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

EFS Web 2.1.16

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /E.F./

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14593349	SHAHPARNIA ET AL.
	Examiner	**Art Unit**
	EMILY FRANK	2695

CPC						
Symbol					**Type**	**Version**
G06F		3	/	0383	F	2013-01-01
G06F		3	/	03545	I	2013-01-01
G06F		3	/	038	I	2013-01-01
G06F		3	/	044	I	2013-01-01
G06F		3	/	0416	I	2013-01-01
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CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

/EMILY FRANK/ Examiner.Art Unit 2695	10/08/2015	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	18	
/JOSEPH FEILD/ Supervisory Patent Examiner.Art Unit 2695	10/19/2015	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	4

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14593349	SHAHPARNIA ET AL.
	Examiner	**Art Unit**
	EMILY FRANK	2695

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION														
CLASS	SUBCLASS	CLAIMED									NON-CLAIMED					
345	174	G	0	6	F	3 / 038 (2013.0)										
CROSS REFERENCE(S)		G	0	6	F	3 / 044 (2006.0)										
		G	0	6	F	3 / 0354 (2013.0)										
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)	G	0	6	F	3 / 041 (2006.0)										

/EMILY FRANK/ Examiner.Art Unit 2695	10/08/2015	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	18	
/JOSEPH FEILD/ Supervisory Patent Examiner.Art Unit 2695	10/19/2015	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	4

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14593349	SHAHPARNIA ET AL.
	Examiner	**Art Unit**
	EMILY FRANK	2695

☐ 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	13	33										
--	2	--	18	14	34										
--	3	--	19	15	35										
--	4	--	20	16	36										
--	5	1	21	17	37										
--	6	2	22	18	38										
--	7	3	23												
--	8	4	24												
--	9	5	25												
--	10	6	26												
--	11	7	27												
--	12	8	28												
--	13	9	29												
--	14	10	30												
--	15	11	31												
--	16	12	32												

/EMILY FRANK/ Examiner.Art Unit 2695 (Assistant Examiner)	10/08/2015 (Date)	**Total Claims Allowed:** 18	
/JOSEPH FEILD/ Supervisory Patent Examiner.Art Unit 2695 (Primary Examiner)	10/19/2015 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 4

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14593349	SHAHPARNIA ET AL.
	Examiner	Art Unit
	EMILY FRANK	2695

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
East Text Search (see attached)	10/08/2015	EJF

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
	East Interference Search (see attached)	10/08/2015	EJF

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

BIB DATA SHEET

CONFIRMATION NO. 2295

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
14/593,349	01/09/2015	345	2695	080900.2781

APPLICANTS

Atmel Corporation, San Jose, CA;

INVENTORS

Shahrooz Shahparnia, Monte Sereno, CA;
Vivek Pant, San Jose, CA;
Esat Yilmaz, Santa Cruz, CA;
Vemund Kval Bakken, Tiller, NORWAY;
Kishore Sundara-Rajan, San Jose, CA;
John Stanley Dubery, Basingstoke, UNITED KINGDOM;
Martin J. Simmons, Whiteley, UNITED KINGDOM;
Sherif Hanna, Foster City, CA;

**** CONTINUING DATA ***************************

This application is a CON of 13/363,043 01/31/2012 PAT 8933899
which claims benefit of 61/553,114 10/28/2011

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

01/20/2015

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /EMILY J FRANK/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		CA	8	18 ~~20~~	3 ~~2~~

ADDRESS

Baker Botts L.L.P.
2001 Ross Avenue, 6th Floor
Dallas, TX 75201
UNITED STATES

TITLE

Pulse- or Frame-Based Communication Using Active Stylus

FILING FEE RECEIVED		
1740	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

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
14/593,349	01/09/2015	2695	1740	080900.2781	20	2

CONFIRMATION NO. 2295

CORRECTED FILING RECEIPT

12323
Baker Botts L.L.P.
2001 Ross Avenue, 6th Floor
Dallas, TX 75201

OC000000078943137

Date Mailed: 08/19/2015

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)

Shahrooz Shahparnia, Monte Sereno, CA;
Vivek Pant, San Jose, CA;
Esat Yilmaz, Santa Cruz, CA;
Vemund Kval Bakken, Tiller, NORWAY;
Kishore Sundara-Rajan, San Jose, CA;
John Stanley Dubery, Basingstoke, UNITED KINGDOM;
Martin J. Simmons, Whiteley, UNITED KINGDOM;
Sherif Hanna, Foster City, CA;

Applicant(s)

Atmel Corporation, San Jose, CA;

Power of Attorney: The patent practitioners associated with Customer Number 12323

Domestic Priority data as claimed by applicant

This application is a CON of 13/363,043 01/31/2012 PAT 8933899
which claims benefit of 61/553,114 10/28/2011

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.

If Required, Foreign Filing License Granted: 01/20/2015

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/593,349**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No

Title

Pulse- or Frame-Based Communication Using Active Stylus

Preliminary Class

345

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

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

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

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

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

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

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Shahrooz Shahparnia, et al.
Serial No.:	14/593,349
Filing Date:	January 9, 2015
Confirmation No.	2295
Title:	Pulse- or Frame-Based Communication Using Active Stylus

OFFICE OF DATA MANAGEMENT
Commissioner of Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

REQUEST FOR CORRECTED OFFICIAL FILING RECEIPT

A Request for Corrected Filing Receipt is hereby submitted. Enclosed is a red-lined copy of the Application Data Sheet requesting correction of the address for inventor Shahrooz Shahparnia.

The Commissioner is hereby authorized to charge any amount required by this paper and/or credit any overpayment to Deposit Account No. 02-0384 of Baker Botts L.L.P.

BAKER BOTTS L.L.P.
Attorneys for Applicants

/Chad D. Terrell/
Chad D. Terrell
Reg. No. 52,279

August 10, 2015

CUSTOMER NO. 12323

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

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
	Shahrooz		Shahparnia	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Monte Sereno	State/Province	CA	Country of Residence	CA

Mailing Address of Inventor:

Address 1	17730 Vista Avenue		
Address 2			
City	Monte Sereno	State/Province	CA
Postal Code	95030	Country	

Inventor 2 — Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Vivek		Pant	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	San Jose	State/Province	CA	Country of Residence	

Mailing Address of Inventor:

Address 1	1600 Technology Drive		
Address 2			
City	San Jose	State/Province	CA
Postal Code	95110-1382	Country	

Inventor 3 — Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Esat		Yilmaz	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

City	Santa Cruz	State/Province	CA	Country of Residence i	

Mailing Address of Inventor:

Address 1	1600 Technology Drive		
Address 2			
City	San Jose	State/Province	CA
Postal Code	95110-1382	Country i	

Remove

Inventor 4

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Vemund	Kval	Bakken	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Tiller	Country of Residence i	NO

Mailing Address of Inventor:

Address 1	Fossestuv. 62		
Address 2			
City	Tiller	State/Province	
Postal Code	7075	Country i	NO

Remove

Inventor 5

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Kishore		Sundara-Rajan	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	San Jose	State/Province	CA	Country of Residence i	

Mailing Address of Inventor:

Address 1	1600 Technology Drive		
Address 2			
City	San Jose	State/Province	CA
Postal Code	95110-1382	Country i	

Remove

Inventor 6

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	John	Stanley	Dubery	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

City	Basingstoke, Hants	Country of Residence [i]	GB

Mailing Address of Inventor:

Address 1	1560 Parkway		
Address 2	Solent Business Park		
City	Whiteley, Fareham, Hampshire	State/Province	
Postal Code	PO15 7AG	Country [i]	GB

Remove

Inventor 7

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Martin	John	Simmons	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Whiteley, Hampshire	Country of Residence [i]	GB

Mailing Address of Inventor:

Address 1	1560 Parkway		
Address 2	Solent Business Park		
City	Whiteley, Fareham, Hampshire	State/Province	
Postal Code	PO15 7AG	Country [i]	GB

Remove

Inventor 8

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Sherif		Hanna	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Foster City	State/Province	CA	Country of Residence [i]	

Mailing Address of Inventor:

Address 1	1600 Technology Drive		
Address 2			
City	San Jose	State/Province	CA
Postal Code	95110-1382	Country [i]	

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

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	12323		
Email Address	ptomail1@bakerbotts.com	Add Email	Remove Email

Application Information:

Title of the Invention	Pulse- or Frame-Based Communication Using Active Stylus		
Attorney Docket Number	080900.2781	**Small Entity Status Claimed** ☐	
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	8	**Suggested Figure for Publication (if any)**	

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	12323		

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.
When referring to the current application, please leave the application number blank.

Prior Application Status			Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	13/363043	2012-01-31

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

Prior Application Status			Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13/363043	Claims benefit of provisional	61/553114	2011-10-28

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

Foreign Priority Information:

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

			Remove
Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

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

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

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

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 o f 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. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

Mailing Address Information For Applicant:			
Address 1			
Address 2			
City		**State/Province**	
Country[i]		Postal Code	
Phone Number		Fax Number	
Email Address			

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

Assignee Information including 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 if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication . An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:			
Address 1			
Address 2			
City		**State/Province**	
Country[i]		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

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	/chad d terrell/			Date (YYYY-MM-DD)	2015-08-10
First Name	Chad D.	Last Name	Terrell	Registration Number	52279

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.**

Electronic Acknowledgement Receipt

EFS ID:	23157902
Application Number:	14593349
International Application Number:	
Confirmation Number:	2295
Title of Invention:	Pulse- or Frame-Based Communication Using Active Stylus
First Named Inventor/Applicant Name:	Shahrooz Shahparnia
Customer Number:	12323
Filer:	Harrison G. Rich/mary johnson
Filer Authorized By:	Harrison G. Rich
Attorney Docket Number:	080900.2781
Receipt Date:	10-AUG-2015
Filing Date:	09-JAN-2015
Time Stamp:	10:50:32
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	Request for Corrected Filing Receipt	0809002781correctedfr.PDF	530024 9c09347ad3cf9ccb9faa908e5a8ccda518fc825c	no	9

Warnings:	
Information:	

Total Files Size (in bytes):	530024

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	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/593,349	01/09/2015	Shahrooz Shahparnia	080900.2781

CONFIRMATION NO. 2295

POA ACCEPTANCE LETTER

12323
Baker Botts L.L.P.
2001 Ross Avenue, 6th Floor
Dallas, TX 75201

OC000000075804296

Date Mailed: 06/18/2015

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/15/2015.

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

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

/yteferra/

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
14/593,349	01/09/2015	2621	1740	080900.2781	20	2

CONFIRMATION NO. 2295

REPLACEMENT FILING RECEIPT

12323
Baker Botts L.L.P.
2001 Ross Avenue, 6th Floor
Dallas, TX 75201

OC000000075804329

Date Mailed: 06/18/2015

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)

Shahrooz Shahparnia, Monte Sereno, CANADA;
Vivek Pant, San Jose, CA;
Esat Yilmaz, Santa Cruz, CA;
Vemund Kval Bakken, Tiller, NORWAY;
Kishore Sundara-Rajan, San Jose, CA;
John Stanley Dubery, Basingstoke, UNITED KINGDOM;
Martin John Simmons, Whiteley, UNITED KINGDOM;
Sherif Hanna, Foster City, CA;

Applicant(s)

Atmel Corporation, San Jose, CA;

Power of Attorney: The patent practitioners associated with Customer Number 12323

Domestic Priority data as claimed by applicant

This application is a CON of 13/363,043 01/31/2012 PAT 8933899
which claims benefit of 61/553,114 10/28/2011

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.

If Required, Foreign Filing License Granted: 01/20/2015

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/593,349**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No

Title

Pulse- or Frame-Based Communication Using Active Stylus

Preliminary Class

345

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

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

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

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

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

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

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

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

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82A (07-13)
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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 displays a valid OMB control number.

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

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

Application Number	14/593,349
Filing Date	January 9, 2015
First Named Inventor	Shahrooz Shahparnia
Title	PULSE- OR FRAME-BASED COMMUNICATION USING ACTIVE STYLUS
Art Unit	2688
Examiner Name	Not Assigned
Attorney Docket Number	080900.2781

SIGNATURE of Applicant or Patent Practitioner

Signature		Date (Optional)	
Name	Brian D. Johnston	Registration Number	69,041
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

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

☑ *Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

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

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: 12323

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: 12323

OR

☐

Firm or Individual Name			
Address			
City		State	Zip
Country			
Telephone		Email	

Assignee Name and Address: Atmel Corporation
1600 Technology Drive
San Jose, California 95110-1382

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

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

Signature		Date	4/6/15
Name	Scott Wornow	Telephone	408-487-2706
Title	Senior Vice President, Chief Legal Officer & Corporate Secretary		

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Shahrooz Shahparnia, et al.
Application No.:	14/593,349
Filing Date:	January 9, 2015
Group Art Unit:	2688
Confirmation No.:	2295
Title:	*Pulse- or Frame-Based Communication Using Active Stylus*

Dear Sir:

Applicants respectfully submit the following documents to be considered in the above-identified pending patent application:

(a) A corrected Application Data Sheet which identifies the Applicant in the Applicant Information section and, as required, the new information is underlined.

(b) Newly executed Declarations to comply with the requirements of 35 U.S.C. § 115, as amended by the America Invents Act.

(c) A Transmittal for Power of Attorney and an executed Power of Attorney to Prosecute Applications before the USPTO.

(d) A Statement under 37 C.F.R. 3.73(c).

The $140.00 surcharge fee was charged to Deposit Account No. 02-0384 of Baker Botts L.L.P. on January 9, 2015. Therefore, Applicants believe no fee is due at this time. However, the Commissioner is authorized to charge any appropriate fees and credit any overpayments to Deposit Account No. 02-0384 of Baker Botts L.L.P.

Respectfully submitted,
Baker Botts L.L.P.
Attorneys for Applicant

Brian D. Johnston
Reg. No. 69,041
(214) 953.6629

Date: June 15, 2015

Correspondence Address: Customer No. **12323**

Electronic Acknowledgement Receipt

EFS ID:	22638309
Application Number:	14593349
International Application Number:	
Confirmation Number:	2295
Title of Invention:	Pulse- or Frame-Based Communication Using Active Stylus
First Named Inventor/Applicant Name:	Shahrooz Shahparnia
Customer Number:	12323
Filer:	Bradley P Williams/Linda Henretta
Filer Authorized By:	Bradley P Williams
Attorney Docket Number:	080900.2781
Receipt Date:	15-JUN-2015
Filing Date:	09-JAN-2015
Time Stamp:	19:33:57
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	Assignee showing of ownership per 37 CFR 3.73	0809002781_373c.pdf	134806 d24eb57587fb2942869209f314231342fb4a3c81	no	2

Warnings:

The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					
2	Application Data Sheet	0809002781CorrectedADS.pdf	523948 9cbc4830018f12e49b5bb1427889a9907a4e5ed3	no	7
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
3	Oath or Declaration filed	0809002781_Declarations.pdf	758990 b32f1599bd9aec0f18eafb570fcded7db5f36ca9	no	8
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					
4		0809002781_POA_and_transmittal.pdf	167177 7c9d8c9add53afeae2dac238b7d28e9d0c523591	yes	2

Multipart Description/PDF files in .zip description

Document Description	Start	End
Power of Attorney	1	1
Power of Attorney	2	2

Warnings:					
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Information:					
5	Transmittal Letter	0809002781_Transmittal.pdf	54018 fdb743e0be4e1a5e13288a4ca9f4d873ae8e7667	no	1
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					
Total Files Size (in bytes):			1638939		

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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/AIA/96 (08-12)
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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 displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Atmel Corporation 080900.2781 Conf. 2295

Application No./Patent No.: 14/593,349 Filed/Issue Date: January 9, 2015

Titled: PULSE- OR FRAME-BASED COMMUNICATION USING ACTIVE STYLUS

Atmel Corporation, a corporation

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

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

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

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

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

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

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

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

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

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Shahparnia, Pant, Yilmaz, Bakken, Sundara-Rajan, Hanna To: Atmel Corporation

   The document was recorded in the United States Patent and Trademark Office at
   Reel 34674, Frame 257, or for which a copy thereof is attached.

2. From: Dubery and Simmons To: Atmel Technologies U.K. Limited

   The document was recorded in the United States Patent and Trademark Office at
   Reel 34674, Frame 746, or for which a copy thereof is attached.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(c)

3. From: Atmel Technologies UK Limited To: Atmel Corporation

The document was recorded in the United States Patent and Trademark Office at
Reel 34674, Frame 851, or for which a copy thereof is attached.

4. From: _____ To: _____

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

5. From: _____ To: _____

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

6. From: _____ To: _____

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

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

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

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

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

Signature	6-15-2015 Date
Brian D. Johnston Printed or Typed Name	69,041 Title or Registration Number

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	14/593,349
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

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
	Shahrooz		Shahparnia	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Monte Sereno	Country of Residence i	CA

Mailing Address of Inventor:

Address 1	17730 Vista Avenue		
Address 2			
City	Monte Sereno	State/Province	CA
Postal Code	95030	Country i	

Inventor 2 — Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Vivek		Pant	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	San Jose	State/Province	CA	Country of Residence i	

Mailing Address of Inventor:

Address 1	1600 Technology Drive		
Address 2			
City	San Jose	State/Province	CA
Postal Code	95110-1382	Country i	

Inventor 3 — Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Esat		Yilmaz	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	14/593,349
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

Residence Information (Select One) (•) US Residency ( ) Non US Residency ( ) Active US Military Service

City	Santa Cruz	State/Province	CA	Country of Residence	

Mailing Address of Inventor:

Address 1	1600 Technology Drive		
Address 2			
City	San Jose	State/Province	CA
Postal Code	95110-1382	Country	

Remove

Inventor 4

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Vemund	Kval	Bakken	

Residence Information (Select One) ( ) US Residency (•) Non US Residency ( ) Active US Military Service

City	Tiller	Country of Residence	NO

Mailing Address of Inventor:

Address 1	Fossestuv. 62		
Address 2			
City	Tiller	State/Province	
Postal Code	7075	Country	NO

Remove

Inventor 5

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Kishore		Sundara-Rajan	

Residence Information (Select One) (•) US Residency ( ) Non US Residency ( ) Active US Military Service

City	San Jose	State/Province	CA	Country of Residence	

Mailing Address of Inventor:

Address 1	1600 Technology Drive		
Address 2			
City	San Jose	State/Province	CA
Postal Code	95110-1382	Country	

Remove

Inventor 6

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	John	Stanley	Dubery	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	14/593,349
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Basingstoke, Hants	Country of Residence [i]	GB

Mailing Address of Inventor:

Address 1	1560 Parkway		
Address 2	Solent Business Park		
City	Whiteley, Fareham, Hampshire	State/Province	
Postal Code	PO15 7AG	Country [i]	GB

Remove

Inventor 7

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Martin	~~John~~ J.	Simmons	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Whiteley, Hampshire	Country of Residence [i]	GB

Mailing Address of Inventor:

Address 1	1560 Parkway		
Address 2	Solent Business Park		
City	Whiteley, Fareham, Hampshire	State/Province	
Postal Code	PO15 7AG	Country [i]	GB

Remove

Inventor 8

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Sherif		Hanna	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Foster City	State/Province	CA	Country of Residence [i]	

Mailing Address of Inventor:

Address 1	1600 Technology Drive		
Address 2			
City	San Jose	State/Province	CA
Postal Code	95110-1382	Country [i]	

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	14/593,349
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

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	12323		
Email Address	ptomail1@bakerbotts.com	Add Email	Remove Email

Application Information:

Title of the Invention	Pulse- or Frame-Based Communication Using Active Stylus		
Attorney Docket Number	080900.2781	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	8	**Suggested Figure for Publication (if any)**	

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	12323		

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.
When referring to the current application, please leave the application number blank.

Prior Application Status		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	13/363043	2012-01-31

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	14/593,349
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

Prior Application Status			Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13/363043	Claims benefit of provisional	61/553114	2011-10-28
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.			

Foreign Priority Information:

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

			Remove
Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.			

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

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	14/593,349
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

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 o f 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	Atmel Corporation

Mailing Address Information For Applicant:

Address 1	1600 Technology Drive		
Address 2			
City	San Jose	**State/Province**	CA
Country	US	Postal Code	95110-1382
Phone Number		Fax Number	

PTO/AIA/14 (11-13)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	14/593,349
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

Email Address	

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

Assignee Information including 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 if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication . An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

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)	2015-1
First Name	Brian D.	Last Name	Johnston	Registration Number	69041

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

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

Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus

As the below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application, or

☒ United States application or PCT international application number 14/593,349 filed on January 9, 2015.

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

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

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

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.

LEGAL NAME OF INVENTOR

Inventor: Shahrooz Shahparnia Date (Optional) :

Signature:

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

PTO/AIA/01 (06-12)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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

Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus

As the below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application, or

☒ United States application or PCT international application number 14/593,349

filed on January 9, 2015.

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LEGAL NAME OF INVENTOR

Inventor: Vivek Pant Date (Optional) :

Signature: Vivek Pant

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

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

Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus

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LEGAL NAME OF INVENTOR

Inventor: Esat Yilmaz Date (Optional): 01/30/2015

Signature: Esat Yilmaz

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

PTO/AIA/01 (06-12)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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

Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus

As the below named inventor, I hereby declare that:

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LEGAL NAME OF INVENTOR

Inventor: Vemund Kval Bakken Date (Optional): 2/2 2015

Signature: Vemund Kval Bakken

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

PTO/AIA/01 (06-12)
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LEGAL NAME OF INVENTOR

Inventor: Kishore Sundara-Rajan Date (Optional) :

Signature:

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

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LEGAL NAME OF INVENTOR

Inventor: John Stanley Dubery Date (Optional): 30-Jan-2015

Signature: [signature]

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

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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

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- ☐ The attached application, or
- ■ United States application or PCT international application number 14/593,349 filed on January 9, 2015

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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.

WARNING:

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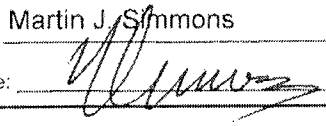
LEGAL NAME OF INVENTOR

Inventor: Martin J. Simmons Date (Optional): 30/1/2015

Signature: 

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

PTO/AIA/01 (06-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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

Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus

As the below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application, or

☒ United States application or PCT international application number 14/593,349 filed on January 9, 2015.

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

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

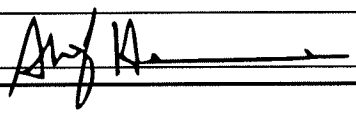
I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

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.

LEGAL NAME OF INVENTOR

Inventor: Sherif Hanna Date (Optional): January 29, 2015

Signature: 

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

Document code: WFEE

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United States Patent and Trademark Office
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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
14/593,349	01/09/2015	Shahrooz Shahparnia	080900.2781

CONFIRMATION NO. 2295

12323
Baker Botts L.L.P.
2001 Ross Avenue, 6th Floor
Dallas, TX 75201

PUBLICATION NOTICE

OC000000074913264

Title: Pulse- or Frame-Based Communication Using Active Stylus

Publication No.US-2015-0116271-A1
Publication Date:04/30/2015

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Shahrooz Shahparnia, et al.
Application No.:	14/593,349
Filing Date:	January 9, 2015
Group Art Unit:	2688
Confirmation No.:	2295
Title:	*Pulse- or Frame-Based Communication Using Active Stylus*

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313.1450

Supplemental Preliminary Amendment

Prior to the initial review of this non-provisional utility continuation patent application entitled "*Pulse- or Frame-Based Communication Using Active Stylus*" by Shahrooz Shahparnia, et al., please amend the Application as follows:

In the Claims:

1-20. **(Cancelled)**

21. **(New)** A stylus comprising:

one or more sensors;

one or more electrodes configured to communicate with a device by receiving signals from and transmitting signals to a touch sensor of the device; and

one or more computer-readable non-transitory storage media embodying logic that is operable when executed to:

receive sensor data from the one or more sensors;

receive a first signal generated by the device;

generate a second signal by modulating a carrier signal based on the sensor data; and

transmit to the device, in response to the first signal, the second signal, the sensor data being obtainable by demodulating the second signal.

22. **(New)** The stylus of Claim 21, wherein the first signal is the carrier signal modulated to generate the second signal.

23. **(New)** The stylus of Claim 21, wherein the second signal is generated using one of:

amplitude modulation;

frequency modulation; and

phase modulation.

24. **(New)** The stylus of Claim 21, wherein:

the one or more sensors comprise a pressure sensor and a button; and

the sensor data comprises pressure data and button state data.

25. **(New)** The stylus of Claim 21, wherein the sensor data is digital.

26. **(New)** The stylus of Claim 21, wherein the second signal is transmitted in a single electric pulse.

27. **(New)** One or more computer-readable non-transitory storage media embodying logic that is operable when executed to:

receive sensor data from one or more sensors in or on a stylus, the stylus comprising one or more electrodes configured to communicate with a device by receiving signal from and transmitting signals to a touch sensor of the device;

receive a first signal generated by the device;

generate a second signal by modulating a carrier signal based on the sensor data; and

transmit to the device, in response to the first signal, the second signal, the sensor data being obtainable by demodulating the second signal.

28. **(New)** The media of Claim 27, wherein the first signal is the carrier signal modulated to generate the second signal.

29. **(New)** The media of Claim 27, wherein the second signal is generated using one of:

amplitude modulation;

frequency modulation; and

phase modulation.

30. **(New)** The media of Claim 27, wherein:

the one or more sensors comprise a pressure sensor and a button; and

the sensor data comprises pressure data and button state data.

31. **(New)** The media of Claim 27, wherein the sensor data is digital.

32. **(New)** The media of Claim 27, wherein the second signal is transmitted in a single electric pulse.

33. **(New)** A system comprising:

a device comprising a touch sensor; and

a stylus comprising:

one or more sensors;

one or more electrodes configured to communicate with a device by receiving signals from and transmitting signals to a touch sensor of the device; and

one or more computer-readable non-transitory storage media embodying logic that is operable when executed to:

receive sensor data from the one or more sensors;

receive a first signal generated by the device;

generate a second signal by modulating a carrier signal based on the sensor data; and

transmit to the device, in response to the first signal, the second signal, the device being operable to obtain the sensor data by demodulating the second signal.

34. **(New)** The system of Claim 33, wherein the first signal is the carrier signal modulated to generate the second signal.

35. **(New)** The system of Claim 33, wherein the second signal is generated using one of:

amplitude modulation;

frequency modulation; and

phase modulation.

36. **(New)** The system of Claim 33, wherein:

the one or more sensors comprise a pressure sensor and a button; and

the sensor data comprises pressure data and button state data.

37. **(New)** The system of Claim 33, wherein the sensor data is digital.

38. **(New)** The system of Claim 33, wherein the second signal is transmitted in a single electric pulse.

Remarks

Applicants respectfully request that these amendments be entered. Favorable consideration of this continuation application is respectfully requested.

If the Examiner feels that a telephone conference would advance prosecution of this Application in any manner, the Examiner is invited to contact Brian D. Johnston, Attorney for Applicants, at the Examiner's convenience at (214) 953-6629.

Respectfully submitted,
BAKER BOTTS L.L.P.
Attorneys for Applicants

Brian D. Johnston
Registration No. 69,041

Dated: February 2, 2015

Correspondence Address:

Customer No. **12323**

Electronic Acknowledgement Receipt

EFS ID:	21375327
Application Number:	14593349
International Application Number:	
Confirmation Number:	2295
Title of Invention:	Pulse- or Frame-Based Communication Using Active Stylus
First Named Inventor/Applicant Name:	Shahrooz Shahparnia
Customer Number:	12323
Filer:	Bradley P Williams/Linda Henretta
Filer Authorized By:	Bradley P Williams
Attorney Docket Number:	080900.2781
Receipt Date:	02-FEB-2015
Filing Date:	09-JAN-2015
Time Stamp:	17:13:08
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		0809002781PreliminaryAmendClaims.PDF	176189 f3ab5d2d42787bbd50d255df420f254bba5324e8	yes	6

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Preliminary Amendment	1	1
	Claims	2	5
	Applicant Arguments/Remarks Made in an Amendment	6	6

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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.

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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.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/593,349	Filing Date 01/09/2015	☐ 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

02/02/2015	(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))	* 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.

LDRC
/CARMEN WILLIAMS/

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 14/593,349

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	600
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*			OR	x 80 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 minus 3 =	*				x 420 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1600

APPLICATION AS AMENDED - PART II

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

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

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/593,349	01/09/2015	Shahrooz Shahparnia	080900.2781

CONFIRMATION NO. 2295

12323
Baker Botts L.L.P.
2001 Ross Avenue, 6th Floor
Dallas, TX 75201

NOTICE

OC000000072924399

Date Mailed: 01/23/2015

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):
  Shahrooz Shahparnia
  Vivek Pant
  Esat Yilmaz
  Vemund Kval Bakken
  Kishore Sundara-Rajan
  John Stanley Dubery
  Martin John Simmons
  Sherif Hanna

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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
14/593,349	01/09/2015	2688	1740	080900.2781	20	2

CONFIRMATION NO. 2295

12323
Baker Botts L.L.P.
2001 Ross Avenue, 6th Floor
Dallas, TX 75201

FILING RECEIPT

OC000000072924398

Date Mailed: 01/23/2015

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)

Shahrooz Shahparnia, Monte Sereno, CANADA;
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Vemund Kval Bakken, Tiller, NORWAY;
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Martin John Simmons, Whiteley, UNITED KINGDOM;
Sherif Hanna, Foster City, CA;

Applicant(s)

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Kishore Sundara-Rajan, San Jose, CA;
John Stanley Dubery, Basingstoke, UNITED KINGDOM;
Martin John Simmons, Whiteley, UNITED KINGDOM;
Sherif Hanna, Foster City, CA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 13/363,043 01/31/2012 PAT 8933899
which claims benefit of 61/553,114 10/28/2011

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.

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If Required, Foreign Filing License Granted: 01/20/2015

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/593,349**

Projected Publication Date: 04/30/2015

Non-Publication Request: No

Early Publication Request: No

Title

Pulse- or Frame-Based Communication Using Active Stylus

Preliminary Class

369

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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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.

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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).

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Shahrooz Shahparnia, et al.
Application No.:	Unassigned
Filing Date:	Herewith
Group Art Unit:	Unassigned
Confirmation No.:	Unassigned
Title:	*Pulse- or Frame-Based Communication Using Active Stylus*

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313.1450

Preliminary Amendment

Prior to the initial review of this non-provisional utility continuation patent application entitled "*Pulse- or Frame-Based Communication Using Active Stylus*" by Shahrooz Shahparnia, et al., please amend the Application as follows:

In the Specification:

Please amend the RELATED APPLICATION section, which appears on Page 1 of the Specification as follows:

RELATED APPLICATION**S**

This application **is a continuation, under 35 U.S.C. § 120, of U.S. Patent Application Serial No. 13/363,043, filed 31 January 2012, which** claims the benefit, under 35 U.S.C. § 119(e), of U.S. Provisional Patent Application No. 61/553114, filed 28 October 2011**.,** ~~**which is incorporated herein by reference.**~~

Remarks

Applicants respectfully request that these amendments be entered. Favorable consideration of this continuation application is respectfully requested.

If the Examiner feels that a telephone conference would advance prosecution of this Application in any manner, the Examiner is invited to contact Brian D. Johnston, Attorney for Applicants, at the Examiner's convenience at (214) 953-6629.

Respectfully submitted,
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Dated: 1-9-2015

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PULSE- OR FRAME-BASED COMMUNICATION USING ACTIVE STYLUS

RELATED APPLICATION

[1] This application claims the benefit, under 35 U.S.C. § 119(e), of U.S. Provisional Patent Application No. 61/553114, filed 28 October 2011, which is incorporated herein by reference.

TECHNICAL FIELD

[2] This disclosure generally relates to touch sensors.

BACKGROUND

[3] A touch sensor may detect the presence and location of a touch or the proximity of an object (such as a user's finger or a stylus) within a touch-sensitive area of the touch sensor overlaid on a display screen, for example. In a touch-sensitive-display application, the touch sensor may enable a user to interact directly with what is displayed on the screen, rather than indirectly with a mouse or touch pad. A touch sensor may be attached to or provided as part of a desktop computer, laptop computer, tablet computer, personal digital assistant (PDA), smartphone, satellite navigation device, portable media player, portable game console, kiosk computer, point-of-sale device, or other suitable device. A control panel on a household or other appliance may include a touch sensor.

[4] There are a number of different types of touch sensors, such as, for example, resistive touch screens, surface acoustic wave touch screens, and capacitive touch screens. Herein, reference to a touch sensor may encompass a touch screen, and vice versa, where appropriate. When an object touches or comes within proximity of the surface of the capacitive touch screen, a change in capacitance may occur within the touch screen at the location of the touch or proximity. A touch-sensor controller may process the change in capacitance to determine its position on the touch screen.

BRIEF DESCRIPTION OF THE DRAWINGS

[5] FIGURE 1 illustrates an example touch sensor with an example touch-sensor controller.

[6] FIGURE 2 illustrates an example active stylus exterior.

[7] FIGURE 3 illustrates an example active stylus interior.

[8] FIGURE 4 illustrates an example active stylus with touch sensor device.

[9] FIGURE 5 illustrates an example touch-sensitive area of a touch sensor device.

[10] FIGURE 6 illustrates an example method for communication from an active stylus to a touch sensor device.

[11] FIGURE 7A illustrates an example method for communicating modulated data between an active stylus and a device.

[12] FIGURE 7B illustrates an example method for communicating modulated data between an active stylus and a device.

DESCRIPTION OF EXAMPLE EMBODIMENTS

[13] FIGURE 1 illustrates an example touch sensor 10 with an example touch-sensor controller 12. Touch sensor 10 and touch-sensor controller 12 may detect the presence and location of a touch or the proximity of an object within a touch-sensitive area of touch sensor 10. Herein, reference to a touch sensor may encompass both the touch sensor and its touch-sensor controller, where appropriate. Similarly, reference to a touch-sensor controller may encompass both the touch-sensor controller and its touch sensor, where appropriate. Touch sensor 10 may include one or more touch-sensitive areas, where appropriate. Touch sensor 10 may include an array of drive and sense electrodes (or an array of electrodes of a single type) disposed on one or more substrates, which may be made of a dielectric material. Herein, reference to a touch sensor may encompass both the electrodes of the touch sensor and the substrate(s) that they are disposed on, where appropriate. Alternatively, where appropriate, reference to a touch sensor may encompass the electrodes of the touch sensor, but not the substrate(s) that they are disposed on.

[14] An electrode (whether a ground electrode, guard electrode, drive electrode, or sense electrode) may be an area of conductive material forming a shape, such as for example a disc, square, rectangle, thin line, other suitable shape, or suitable combination of these. One or more cuts in one or more layers of conductive material may (at least in part) create the shape of an electrode, and the area of the shape may (at least in part) be bounded by those cuts. In particular embodiments, the conductive material of an electrode may occupy approximately 100% of the area of its shape. As an example and not by way of limitation, an electrode may be made of indium tin oxide (ITO) and the ITO of the electrode may occupy approximately 100% of the area of its shape (sometimes referred to as a 100% fill), where appropriate. In particular embodiments, the conductive material of an electrode may occupy substantially less than 100% of the area of its shape. As an example and not by way of limitation, an electrode may be made of fine lines of metal or other conductive material (FLM), such as for example copper, silver, or a copper- or silver-based material, and the fine lines of conductive material may occupy approximately 5% of the area of its shape in a hatched, mesh, or other suitable pattern. Herein, reference to FLM encompasses such material, where appropriate. Although this disclosure describes or illustrates particular electrodes made of particular conductive material forming

particular shapes with particular fill percentages having particular patterns, this disclosure contemplates any suitable electrodes made of any suitable conductive material forming any suitable shapes with any suitable fill percentages having any suitable patterns.

[15] Where appropriate, the shapes of the electrodes (or other elements) of a touch sensor may constitute in whole or in part one or more macro-features of the touch sensor. One or more characteristics of the implementation of those shapes (such as, for example, the conductive materials, fills, or patterns within the shapes) may constitute in whole or in part one or more micro-features of the touch sensor. One or more macro-features of a touch sensor may determine one or more characteristics of its functionality, and one or more micro-features of the touch sensor may determine one or more optical features of the touch sensor, such as transmittance, refraction, or reflection.

[16] A mechanical stack may contain the substrate (or multiple substrates) and the conductive material forming the drive or sense electrodes of touch sensor 10. As an example and not by way of limitation, the mechanical stack may include a first layer of optically clear adhesive (OCA) beneath a cover panel. The cover panel may be clear and made of a resilient material suitable for repeated touching, such as for example glass, polycarbonate, or poly(methyl methacrylate) (PMMA). This disclosure contemplates any suitable cover panel made of any suitable material. The first layer of OCA may be disposed between the cover panel and the substrate with the conductive material forming the drive or sense electrodes. The mechanical stack may also include a second layer of OCA and a dielectric layer (which may be made of PET or another suitable material, similar to the substrate with the conductive material forming the drive or sense electrodes). As an alternative, where appropriate, a thin coating of a dielectric material may be applied instead of the second layer of OCA and the dielectric layer. The second layer of OCA may be disposed between the substrate with the conductive material making up the drive or sense electrodes and the dielectric layer, and the dielectric layer may be disposed between the second layer of OCA and an air gap to a display of a device including touch sensor 10 and touch-sensor controller 12. As an example only and not by way of limitation, the cover panel may have a thickness of approximately 1 mm; the first layer of OCA may have a thickness of approximately 0.05 mm; the substrate with the conductive material forming the drive or sense

electrodes may have a thickness of approximately 0.05 mm; the second layer of OCA may have a thickness of approximately 0.05 mm; and the dielectric layer may have a thickness of approximately 0.05 mm. Although this disclosure describes a particular mechanical stack with a particular number of particular layers made of particular materials and having particular thicknesses, this disclosure contemplates any suitable mechanical stack with any suitable number of any suitable layers made of any suitable materials and having any suitable thicknesses. As an example and not by way of limitation, in particular embodiments, a layer of adhesive or dielectric may replace the dielectric layer, second layer of OCA, and air gap described above, with there being no air gap to the display.

[17] One or more portions of the substrate of touch sensor 10 may be made of polyethylene terephthalate (PET) or another suitable material. This disclosure contemplates any suitable substrate with any suitable portions made of any suitable material. In particular embodiments, the drive or sense electrodes in touch sensor 10 may be made of ITO in whole or in part. In particular embodiments, the drive or sense electrodes in touch sensor 10 may be made of fine lines of metal or other conductive material. As an example and not by way of limitation, one or more portions of the conductive material may be copper or copper-based and have a thickness of approximately 5 μm or less and a width of approximately 10 μm or less. As another example, one or more portions of the conductive material may be silver or silver-based and similarly have a thickness of approximately 5 μm or less and a width of approximately 10 μm or less. This disclosure contemplates any suitable electrodes made of any suitable material.

[18] Touch sensor 10 may implement a capacitive form of touch sensing. In a mutual-capacitance implementation, touch sensor 10 may include an array of drive and sense electrodes forming an array of capacitive nodes. A drive electrode and a sense electrode may form a capacitive node. The drive and sense electrodes forming the capacitive node may come near each other, but not make electrical contact with each other. Instead, the drive and sense electrodes may be capacitively coupled to each other across a space between them. A pulsed or alternating voltage applied to the drive electrode (by touch-sensor controller 12) may induce a charge on the sense electrode, and the amount of charge induced may be susceptible to external influence (such as a touch or the proximity of an object). When an object touches or comes

within proximity of the capacitive node, a change in capacitance may occur at the capacitive node and touch-sensor controller 12 may measure the change in capacitance. By measuring changes in capacitance throughout the array, touch-sensor controller 12 may determine the position of the touch or proximity within the touch-sensitive area(s) of touch sensor 10.

[19] In a self-capacitance implementation, touch sensor 10 may include an array of electrodes of a single type that may each form a capacitive node. When an object touches or comes within proximity of the capacitive node, a change in self-capacitance may occur at the capacitive node and controller 12 may measure the change in capacitance, for example, as a change in the amount of charge needed to raise the voltage at the capacitive node by a pre-determined amount. As with a mutual-capacitance implementation, by measuring changes in capacitance throughout the array, controller 12 may determine the position of the touch or proximity within the touch-sensitive area(s) of touch sensor 10. This disclosure contemplates any suitable form of capacitive touch sensing, where appropriate.

[20] In particular embodiments, one or more drive electrodes may together form a drive line running horizontally or vertically or in any suitable orientation. Similarly, one or more sense electrodes may together form a sense line running horizontally or vertically or in any suitable orientation. In particular embodiments, drive lines may run substantially perpendicular to sense lines. Herein, reference to a drive line may encompass one or more drive electrodes making up the drive line, and vice versa, where appropriate. Similarly, reference to a sense line may encompass one or more sense electrodes making up the sense line, and vice versa, where appropriate.

[21] Touch sensor 10 may have drive and sense electrodes disposed in a pattern on one side of a single substrate. In such a configuration, a pair of drive and sense electrodes capacitively coupled to each other across a space between them may form a capacitive node. For a self-capacitance implementation, electrodes of only a single type may be disposed in a pattern on a single substrate. In addition or as an alternative to having drive and sense electrodes disposed in a pattern on one side of a single substrate, touch sensor 10 may have drive electrodes disposed in a pattern on one side of a substrate and sense electrodes disposed in a pattern on another side of the substrate. Moreover, touch sensor 10 may have drive electrodes disposed in a

pattern on one side of one substrate and sense electrodes disposed in a pattern on one side of another substrate. In such configurations, an intersection of a drive electrode and a sense electrode may form a capacitive node. Such an intersection may be a location where the drive electrode and the sense electrode "cross" or come nearest each other in their respective planes. The drive and sense electrodes do not make electrical contact with each other—instead they are capacitively coupled to each other across a dielectric at the intersection. Although this disclosure describes particular configurations of particular electrodes forming particular nodes, this disclosure contemplates any suitable configuration of any suitable electrodes forming any suitable nodes. Moreover, this disclosure contemplates any suitable electrodes disposed on any suitable number of any suitable substrates in any suitable patterns.

[22] As described above, a change in capacitance at a capacitive node of touch sensor 10 may indicate a touch or proximity input at the position of the capacitive node. Touch-sensor controller 12 may detect and process the change in capacitance to determine the presence and location of the touch or proximity input. Touch-sensor controller 12 may then communicate information about the touch or proximity input to one or more other components (such one or more central processing units (CPUs)) of a device that includes touch sensor 10 and touch-sensor controller 12, which may respond to the touch or proximity input by initiating a function of the device (or an application running on the device). Although this disclosure describes a particular touch-sensor controller having particular functionality with respect to a particular device and a particular touch sensor, this disclosure contemplates any suitable touch-sensor controller having any suitable functionality with respect to any suitable device and any suitable touch sensor.

[23] Touch-sensor controller 12 may be one or more integrated circuits (ICs), such as for example general-purpose microprocessors, microcontrollers, programmable logic devices (PLDs) or programmable logic arrays (PLAs), application-specific ICs (ASICs). In particular embodiments, touch-sensor controller 12 comprises analog circuitry, digital logic, and digital non-volatile memory. In particular embodiments, touch-sensor controller 12 is disposed on a flexible printed circuit (FPC) bonded to the substrate of touch sensor 10, as described below. The FPC may be active or passive, where appropriate. In particular embodiments multiple touch-sensor controllers 12 are disposed on the FPC. Touch-sensor controller 12 may include a

processor unit, a drive unit, a sense unit, and a storage unit. The drive unit may supply drive signals to the drive electrodes of touch sensor 10. The sense unit may sense charge at the capacitive nodes of touch sensor 10 and provide measurement signals to the processor unit representing capacitances at the capacitive nodes. The processor unit may control the supply of drive signals to the drive electrodes by the drive unit and process measurement signals from the sense unit to detect and process the presence and location of a touch or proximity input within the touch-sensitive area(s) of touch sensor 10. The processor unit may also track changes in the position of a touch or proximity input within the touch-sensitive area(s) of touch sensor 10. The storage unit may store programming for execution by the processor unit, including programming for controlling the drive unit to supply drive signals to the drive electrodes, programming for processing measurement signals from the sense unit, and other suitable programming, where appropriate. Although this disclosure describes a particular touch-sensor controller having a particular implementation with particular components, this disclosure contemplates any suitable touch-sensor controller having any suitable implementation with any suitable components.

[24] Tracks 14 of conductive material disposed on the substrate of touch sensor 10 may couple the drive or sense electrodes of touch sensor 10 to connection pads 16, also disposed on the substrate of touch sensor 10. As described below, connection pads 16 facilitate coupling of tracks 14 to touch-sensor controller 12. Tracks 14 may extend into or around (e.g. at the edges of) the touch-sensitive area(s) of touch sensor 10. Particular tracks 14 may provide drive connections for coupling touch-sensor controller 12 to drive electrodes of touch sensor 10, through which the drive unit of touch-sensor controller 12 may supply drive signals to the drive electrodes. Other tracks 14 may provide sense connections for coupling touch-sensor controller 12 to sense electrodes of touch sensor 10, through which the sense unit of touch-sensor controller 12 may sense charge at the capacitive nodes of touch sensor 10. Tracks 14 may be made of fine lines of metal or other conductive material. As an example and not by way of limitation, the conductive material of tracks 14 may be copper or copper-based and have a width of approximately 100 μm or less. As another example, the conductive material of tracks 14 may be silver or silver-based and have a width of approximately 100 μm or less. In particular embodiments, tracks 14 may be made of ITO in whole or in part in addition or as an alternative

to fine lines of metal or other conductive material. Although this disclosure describes particular tracks made of particular materials with particular widths, this disclosure contemplates any suitable tracks made of any suitable materials with any suitable widths. In addition to tracks 14, touch sensor 10 may include one or more ground lines terminating at a ground connector (which may be a connection pad 16) at an edge of the substrate of touch sensor 10 (similar to tracks 14).

[25] Connection pads 16 may be located along one or more edges of the substrate, outside the touch-sensitive area(s) of touch sensor 10. As described above, touch-sensor controller 12 may be on an FPC. Connection pads 16 may be made of the same material as tracks 14 and may be bonded to the FPC using an anisotropic conductive film (ACF). Connection 18 may include conductive lines on the FPC coupling touch-sensor controller 12 to connection pads 16, in turn coupling touch-sensor controller 12 to tracks 14 and to the drive or sense electrodes of touch sensor 10. In another embodiment, connection pads 16 may be connected to an electro-mechanical connector (such as a zero insertion force wire-to-board connector); in this embodiment, connection 18 may not need to include an FPC. This disclosure contemplates any suitable connection 18 between touch-sensor controller 12 and touch sensor 10.

[26] FIGURE 2 illustrates an example exterior of an example active stylus 20. Active stylus 20 may include one or more components, such as buttons 30 or sliders 32 and 34 integrated with an outer body 22. These external components may provide for interaction between active stylus 20 and a user or between a device and a user. As an example and not by way of limitation, interactions may include communication between active stylus 20 and a device, enabling or altering functionality of active stylus 20 or a device, or providing feedback to or accepting input from one or more users. The device may by any suitable device, such as, for example and without limitation, a desktop computer, laptop computer, tablet computer, personal digital assistant (PDA), smartphone, satellite navigation device, portable media player, portable game console, kiosk computer, point-of-sale device, or other suitable device. Although this disclosure provides specific examples of particular components configured to provide particular interactions, this disclosure contemplates any suitable component configured to provide any suitable interaction. Active stylus 20 may have any suitable dimensions with outer body 22

made of any suitable material or combination of materials, such as, for example and without limitation, plastic or metal. In particular embodiments, exterior components (e.g. 30 or 32) of active stylus 20 may interact with internal components or programming of active stylus 20 or may initiate one or more interactions with one or more devices or other active styluses 20.

[27] As described above, actuating one or more particular components may initiate an interaction between active stylus 20 and a user or between the device and the user. Components of active stylus 20 may include one or more buttons 30 or one or more sliders 32 and 34. As an example and not by way of limitation, buttons 30 or sliders 32 and 34 may be mechanical or capacitive and may function as a roller, trackball, or wheel. As another example, one or more sliders 32 or 34 may function as a vertical slider 34 aligned along a longitudinal axis, while one or more wheel sliders 32 may be aligned along the circumference of active stylus 20. In particular embodiments, capacitive sliders 32 and 34 or buttons 30 may be implemented using one or more touch-sensitive areas. Touch-sensitive areas may have any suitable shape, dimensions, location, or be made from any suitable material. As an example and not by way of limitation, sliders 32 and 34 or buttons 30 may be implemented using areas of flexible mesh formed using lines of conductive material. As another example, sliders 32 and 34 or buttons 30 may be implemented using a FPC.

[28] Active stylus 20 may have one or more components configured to provide feedback to or accepting feedback from a user, such as, for example and without limitation, tactile, visual, or audio feedback. Active stylus 20 may include one or more ridges or grooves 24 on its outer body 22. Ridges or grooves 24 may have any suitable dimensions, have any suitable spacing between ridges or grooves, or be located at any suitable area on outer body 22 of active stylus 20. As an example and not by way of limitation, ridges 24 may enhance a user's grip on outer body 22 of active stylus 20 or provide tactile feedback to or accept tactile input from a user. Active stylus 20 may include one or more audio components 38 capable of transmitting and receiving audio signals. As an example and not by way of limitation, audio component 38 may contain a microphone capable of recording or transmitting one or more users' voices. As another example, audio component 38 may provide an auditory indication of a power status of active stylus 20. Active stylus 20 may include one or more visual feedback components 36, such

as a light-emitting diode (LED) indicator. As an example and not by way of limitation, visual feedback component 36 may indicate a power status of active stylus 20 to the user.

[29] One or more modified surface areas 40 may form one or more components on outer body 22 of active stylus 20. Properties of modified surface areas 40 may be different than properties of the remaining surface of outer body 22. As an example and not by way of limitation, modified surface area 40 may be modified to have a different texture, temperature, or electromagnetic characteristic relative to the surface properties of the remainder of outer body 22. Modified surface area 40 may be capable of dynamically altering its properties, for example by using haptic interfaces or rendering techniques. A user may interact with modified surface area 40 to provide any suitable functionally. For example and not by way of limitation, dragging a finger across modified surface area 40 may initiate an interaction, such as data transfer, between active stylus 20 and a device.

[30] One or more components of active stylus 20 may be configured to communicate data between active stylus 20 and the device. For example, active stylus 20 may include one or more tips 26 or nibs. Tip 26 may include one or more electrodes configured to communicate data between active stylus 20 and one or more devices or other active styluses. Tip 26 may be made of any suitable material, such as a conductive material, and have any suitable dimensions, such as, for example, a diameter of 1 mm or less at its terminal end. Active stylus 20 may include one or more ports 28 located at any suitable location on outer body 22 of active stylus 20. Port 28 may be configured to transfer signals or information between active stylus 20 and one or more devices or power sources. Port 28 may transfer signals or information by any suitable technology, such as, for example, by universal serial bus (USB) or Ethernet connections. Although this disclosure describes and illustrates a particular configuration of particular components with particular locations, dimensions, composition and functionality, this disclosure contemplates any suitable configuration of suitable components with any suitable locations, dimensions, composition, and functionality with respect to active stylus 20.

[31] FIGURE 3 illustrates an example internal components of example active stylus 20. Active stylus 20 may include one or more internal components, such as a controller 50, sensors 42, memory 44, or power source 48. In particular embodiments, one or more internal

components may be configured to provide for interaction between active stylus 20 and a user or between a device and a user. In other particular embodiments, one or more internal components, in conjunction with one or more external components described above, may be configured to provide interaction between active stylus 20 and a user or between a device and a user. As an example and not by way of limitation, interactions may include communication between active stylus 20 and a device, enabling or altering functionality of active stylus 20 or a device, or providing feedback to or accepting input from one or more users.

[32] Controller 50 may be a microcontroller or any other type of processor suitable for controlling the operation of active stylus 20. Controller 50 may be one or more ICs—such as, for example, general-purpose microprocessors, microcontrollers, PLDs, PLAs, or ASICs. Controller 50 may include a processor unit, a drive unit, a sense unit, and a storage unit. The drive unit may supply signals to electrodes of tip 26 through center shaft 41. The drive unit may also supply signals to control or drive sensors 42 or one or more external components of active stylus 20. The sense unit may sense signals received by electrodes of tip 26 through center shaft 41 and provide measurement signals to the processor unit representing input from a device. The sense unit may also sense signals generated by sensors 42 or one or more external components and provide measurement signals to the processor unit representing input from a user. The processor unit may control the supply of signals to the electrodes of tip 26 and process measurement signals from the sense unit to detect and process input from the device. The processor unit may also process measurement signals from sensors 42 or one or more external components. The storage unit may store programming for execution by the processor unit, including programming for controlling the drive unit to supply signals to the electrodes of tip 26, programming for processing measurement signals from the sense unit corresponding to input from the device, programming for processing measurement signals from sensors 42 or external components to initiate a pre-determined function or gesture to be performed by active stylus 20 or the device, and other suitable programming, where appropriate. As an example and not by way of limitation, programming executed by controller 50 may electronically filter signals received from the sense unit. Although this disclosure describes a particular controller 50 having

a particular implementation with particular components, this disclosure contemplates any suitable controller having any suitable implementation with any suitable components.

[33] In particular embodiments, active stylus 20 may include one or more sensors 42, such as touch sensors, gyroscopes, accelerometers, contact sensors, or any other type of sensor that detect or measure data about the environment in which active stylus 20 operates. Sensors 42 may detect and measure one or more characteristic of active stylus 20, such as acceleration or movement, orientation, contact, pressure on outer body 22, force on tip 26, vibration, or any other suitable characteristic of active stylus 20. As an example and not by way of limitation, sensors 42 may be implemented mechanically, electronically, or capacitively. As described above, data detected or measured by sensors 42 communicated to controller 50 may initiate a pre-determined function or gesture to be performed by active stylus 20 or the device. In particular embodiments, data detected or received by sensors 42 may be stored in memory 44. Memory 44 may be any form of memory suitable for storing data in active stylus 20. In other particular embodiments, controller 50 may access data stored in memory 44. As an example and not by way of limitation, memory 44 may store programming for execution by the processor unit of controller 50. As another example, data measured by sensors 42 may be processed by controller 50 and stored in memory 44.

[34] Power source 48 may be any type of stored-energy source, including electrical or chemical-energy sources, suitable for powering the operation of active stylus 20. In particular embodiments, power source 48 may be charged by energy from a user or device. As an example and not by way of limitation, power source 48 may be a rechargeable battery that may be charged by motion induced on active stylus 20. In other particular embodiments, power source 48 of active stylus 20 may provide power to or receive power from the device. As an example and not by way of limitation, power may be inductively transferred between power source 48 and a power source of the device.

[35] FIGURE 4 illustrates an example active stylus 20 with an example device 52. Device 52 may have a display (not shown) and a touch sensor with a touch-sensitive area 54. Device 52 display may be a liquid crystal display (LCD), a LED display, a LED-backlight LCD, or other suitable display and may be visible though a cover panel and substrate (and the drive

and sense electrodes of the touch sensor disposed on it) of device 52. Although this disclosure describes a particular device display and particular display types, this disclosure contemplates any suitable device display and any suitable display types.

[36] Device 52 electronics may provide the functionality of device 52. As example and not by way of limitation, device 52 electronics may include circuitry or other electronics for wireless communication to or from device 52, execute programming on device 52, generating graphical or other user interfaces (UIs) for device 52 display to display to a user, managing power to device 52 from a battery or other power source, taking still pictures, recording video, other suitable functionality, or any suitable combination of these. Although this disclosure describes particular device electronics providing particular functionality of a particular device, this disclosure contemplates any suitable device electronics providing any suitable functionality of any suitable device.

[37] In particular embodiments, active stylus 20 and device 52 may be synchronized prior to communication of data between active stylus 20 and device 52. As an example and not by way of limitation, active stylus 20 may be synchronized to device through a pre-determined bit sequence transmitted by the touch sensor of device 52. As another example, active stylus 20 may be synchronized to device by processing the drive signal transmitted by drive electrodes of the touch sensor of device 52. Active stylus 20 may interact or communicate with device 52 when active stylus 20 is brought in contact with or in proximity to touch-sensitive area 54 of the touch sensor of device 52. In particular embodiments, interaction between active stylus 20 and device 52 may be capacitive or inductive. As an example and not by way of limitation, when active stylus 20 is brought in contact with or in the proximity of touch-sensitive area 54 of device 52, signals generated by active stylus 20 may influence capacitive nodes of touch-sensitive area of device 52 or vice versa. As another example, a power source of active stylus 20 may be inductively charged through the touch sensor of device 52, or vice versa. Although this disclosure describes particular interactions and communications between active stylus 20 and device 52, this disclosure contemplates any suitable interactions and communications through any suitable means, such as mechanical forces, current, voltage, or electromagnetic fields.

[38] In particular embodiments, measurement signal from the sensors of active stylus 20 may initiate, provide for, or terminate interactions between active stylus 20 and one or more devices 52 or one or more users, as described above. Interaction between active stylus 20 and device 52 may occur when active stylus 20 is contacting or in proximity to device 52. As an example and not by way of limitation, a user may perform a gesture or sequence of gestures, such as shaking or inverting active stylus 20, whilst active stylus 20 is hovering above touch-sensitive area 54 of device 52. Active stylus may interact with device 52 based on the gesture performed with active stylus 20 to initiate a pre-determined function, such as authenticating a user associated with active stylus 20 or device 52. Although this disclosure describes particular movements providing particular types of interactions between active stylus 20 and device 52, this disclosure contemplates any suitable movement influencing any suitable interaction in any suitable way.

[39] As described above in connection with FIGURE 1, in particular embodiments, a touch sensor (e.g., touch sensor 10 illustrated in FIGURE 1) may include an array of drive and sense electrodes or an array of electrodes of a single type. These electrodes may be coupled to a controller (e.g., controller 12 illustrated in FIGURE 1) by specific tracks (e.g., tracks 14 illustrated in FIGURE 1). The drive unit of the controller may supply drive signals to the drive electrodes through some tracks, and the sense unit of the controller may sense charge at the capacitive nodes through other tracks. The electrodes may be arranged in various patterns and this disclosure contemplates any suitable patterns for the electrode arrangements. For example, FIGURE 5 illustrates an example array of electrodes arranged in a X-Y grid pattern. In particular embodiments, the drive electrodes may be arranged along one set of lines (e.g., the X lines: X_1 to X_n) and the sense electrodes may be arranged along another set of lines (e.g., the Y lines: Y_1 to Y_n). The capacitive nodes are at one or more intersections of the X and Y lines. A touch-sensitive area 500 may be populated with these electrodes.

[40] In particular embodiments, to determine the location of an object, such as a stylus or a user's finger, within a touch-sensitive area (e.g., touch-sensitive area 500), a scan of the electrodes or coordinates within the touch-sensitive area may be performed (e.g., driving the drive electrodes and scanning the capacitive nodes within touch-sensitive area 500). In some

implementations, the drive electrodes are driven one line at a time. More specifically, a number of pulses (e.g., 3 or 4 pulses) is sent down each line of drive electrodes (e.g., each X line), and for each pulse, a number of signal samples (e.g., 1 or 2 samples) is read by scanning the corresponding capacitive nodes. For example, in FIGURE 5, the drive electrodes along the X_1 line may be driven first; the charge is transferred through the capacitive coupling between the drive and sense lines; and the corresponding capacitive nodes along the Y lines (e.g., Y_1 to Y_n) may be scanned to take the signal samples. Then, the drive electrodes along the X_2 line are driven next; the charge is again transferred through the capacitive coupling between the drive and sense lines; and the corresponding capacitive nodes along the Y lines are scanned to take the signal samples. And so on, until the electrodes down the last line, X_n, are driven and the corresponding capacitive nodes down the Y lines are scanned to take the signal samples. The samples may be digitally quantized (e.g., via an analog-to-digital converter (ADC)). The digital samples are then transmitted in individual frames. In particular embodiments, a frame includes a full scan of some or all the capacitive nodes within a touch-sensitive area. As an example, in the case illustrated in FIGURE 5, a frame includes [MxN] samples, where N denotes the number of X lines (e.g., drive lines) and M denotes the number of receive line.

[41] In particular embodiments, active stylus 20 receives the signal or signals from one or more drive lines (e.g., the X lines in its vicinity) of device 52. The stylus (e.g., active stylus 20) may then process this received signal to create another signal to transmit back to device 52. As an example, the stylus may transmit a function of the received signal (whether linear or non-linear) that is then multiplied by a gain and that may be added to an offset value. Thus, if R is the signal received at active stylus 20 (e.g., from device 52), T is the signal transmitted by active stylus 20 (e.g., back to device 52), f is a function (whether linear or non-linear), A is a gain factor, and B is an offset, the transmitted signal T may be written as:

$$T = A * f(R) + B.$$

The signal R received by the stylus may be the series of pulses sent down each drive line that active stylus 20 is able to detect. In particular embodiments, the signal T transmitted by the stylus may also be a series of pulses. The transmitted signal T will create a transfer of charge through capacitive coupling between active stylus 20 and the sense lines (e.g., Y_1 to Y_n) of

touch-sensitive area 500. Device 52, and, in particular embodiments, touch controller 12 may then receive samples of transmitted signal T via a scan of the nodes along the sense lines of touch-sensitive area 500. As described above, these samples may be digitally quantized and may be transmitted in individual frames (each frame including, for example, a full scan of the capacitive nodes in touch-sensitive area 500).

[42] Active stylus 20 may transmit additional data to device 52 or touch controller 12 via the pulses that make up the transmitted signal T. As an example, active stylus 20 may transmit data regarding stylus status or information gathered from sensors 42 (e.g., pressure data, touch data, accelerometer data, or gyroscope data), power source 48 (e.g., battery life), electrodes in active stylus tip 26, memory 44, controller 50, buttons 30 (e.g. whether a button has been pressed), sliders 32, or any other data gathered by any other component of active stylus 20.

[43] The stylus may transmit this data to device 52 or touch controller 12 by modulating the data onto the pulses that make up transmitted signal T. The modulation of the data may occur, for example, in controller 50 and be transmitted via center shaft 41 and through electrodes in active stylus tip 26. As an example of data modulation, active stylus 20 may change the amplitude (i.e., amplitude shift keying including on-off keying), phase (i.e., phase shift keying), or frequency (i.e., frequency shift keying) of the pulses sent in order to transmit information. In particular embodiments, this modulation of the data may include changing the amplitude by changing the gain A used to create transmitted signal T. In yet other embodiments, this modulation of the data may include changing the amplitude by changing the offset B used to create transmitted signal T. In yet other embodiments, the modulation of the data may include changing the frequency or phase by changing the function f used to create transmitted signal T.

[44] In particular embodiments, active stylus 20 may transmit modulated data on a pulse-by-pulse basis. As an example, the stylus may wish to transmit information regarding pressure data gathered from a pressure sensor. The stylus may digitize this pressure information using an analog-to-digital converter (ADC). The bits of the digitized pressure information value may be transmitted by the stylus such that one bit of data is transmitted per pulse. If, in this example, the stylus uses amplitude shift keying to modulate the data, then at each pulse, the stylus will adjust the amplitude of the pulse to be one of two pre-set amplitude values. In the

case of on-off shift keying, the amplitude value that represents the binary value "0" is itself 0, and the second amplitude value may represent the binary value "1." The touch controller 12 may know the pre-set amplitude values, as well, and with this information may demodulate the bit stream sent through the series of pulses and recover the pressure data. Thus, in this manner, the bits that encode the value of the pressure information may be transmitted one at a time, one bit per pulse transmitted, using variations in the amplitudes of the pulses.

[45] FIGURE 6 illustrates an example embodiment of the transmission of data from active stylus 20 to touch controller 12 on a pulse-by-pulse basis using on-off keying. Pulses 611 and 612 each have an amplitude of 'a', which may represent the binary value "0." Pulses 622 and 623 each have an amplitude of 'b', which may represent the binary value "1." Thus, the bit stream of FIGURE 6 conveys the bits "0" "0" "0" "1" "1" "1" "0" "0" "0" from active stylus 20 to touch controller 12. Amplitude values 'a' and 'b' form the set of two amplitude values that both active stylus and touch controller 12 know, so that the signal may be demodulated by touch controller 12.

[46] Although the foregoing example described digital modulation of data on a pulse-by-pulse basis, analog data may also be modulated on a pulse-by-pulse basis. As an example, if the pressure data is not digitized, it may still be conveyed from the stylus to device 52 or controller 12 using amplitude changes in the pulses. In this example, the value of the analog pressure data may be added to the standard offset value B for each pulse. By doing this, the amplitude of each pulse can convey the actual, analog value of the pressure data. Touch controller 12 may, in particular embodiments, recover the value of the pressure data by knowing the value B ahead of time (and subtracting B from the amplitude of the pulse received from the stylus). Each pulse in this example, therefore, conveys more than simply one bit of information — it conveys the actual value of the pressure data. In particular embodiments, the value of the pressure data may be quantized.

[47] In particular embodiments, active stylus 20 may transmit modulated data on a frame-by-frame basis. As an example, the stylus may wish to transmit information regarding pressure data gathered from a pressure sensor. The stylus may digitize this pressure information using an analog-to-digital converter (ADC). The bits of the digitized pressure information value

may be transmitted by the stylus such that one bit of data is transmitted per frame. Thus, if the frame rate is 200 Hz, the data rate (given one bit per frame) would be 200 bits per second. If, in this example, the stylus uses amplitude shift keying to modulate the data, then at each frame, the stylus will choose one of two pre-set amplitude values to use for every pulse transmitted in that frame. In the case of on-off shift keying, the amplitude value that represents the binary value "0" is itself 0, and the second amplitude value may represent the binary value "1." The touch controller 12 may know the pre-set amplitude values, as well, and with this information may demodulate the bit stream sent through the series of frames (i.e., the changing pulse amplitudes from frame to frame) and recover the pressure data. Thus, in this manner, the bits that encode the value of the pressure information may be transmitted one at a time, one bit per frame transmitted, using variations in the amplitudes of the pulses.

[48] Although the foregoing example described digital modulation of data on a frame-by-frame basis, analog data may also be modulated on a frame-by-frame basis. As an example, if the pressure data is not digitized, it may still be conveyed from the stylus to device 52 or touch controller 12 using amplitude changes in the pulses. In this example, the value of the analog pressure data may be added to the standard offset value B for every pulse in a frame. By doing this, the amplitude of the pulses in a frame can convey the actual, analog value of the pressure data. Touch controller 12 may, in particular embodiments, recover the value of the pressure data by knowing the value B ahead of time (and subtracting B from the amplitude of the pulses received in a frame from the stylus). Each frame in this example, therefore, conveys more than simply one bit of information — it conveys the actual value of the pressure data. In particular embodiments, the value of the pressure data may be quantized.

[49] In particular embodiments, each data-conveying unit (whether a frame or a pulse) may convey data in and of itself, or, alternatively, it may convey data in a differential form through comparison to prior (or future) data units. As an example, active stylus 20 may transmit analog pressure data on a frame-by-frame basis using amplitude modulation. Active stylus 20 may, in each frame, convey the analog pressure data value by adding this value to the amplitude of each pulse in the frame (e.g., adding the value to offset B, a value that touch controller 12 knows), thereby conveying the pressure data directly. Alternatively, active stylus 20 may

differentially convey the pressure data by adding the pressure data value to the value of the amplitude of the pulses in the previous frame and using this new amplitude value for all the pulses in the current frame. Touch controller 12 may recover the pressure data value (without needing any reference information like B) by simply subtracting the amplitude of a pulse of the current frame from the amplitude of a pulse of the previous frame. The choice of frame-based or pulse-based data transmission may, in particular embodiments, depend on the type of data being transmitted. As examples, pressure data may be transmitted on a pulse-by-pulse basis, and battery life information or input from buttons may be transmitted on a frame-by-frame basis.

[50] Although the specific examples discussed above illustrate the use of on-off keying or amplitude shift keying, active stylus 20 may also use frequency shift keying, phase shift keying, or any other suitable data modulation scheme to transmit data (whether digital or analog) on a pulse-by-pulse or frame-by-frame basis. In particular embodiments, both frame-based and pulse-based communication schemes may be used simultaneously by active stylus 20 and device 52. Active stylus 20 may encode the data (using, e.g., error-correcting codes) or add a packet header describing the data packet's contents or encoding before transmitting it to device 52 or touch controller 12. Data may be transmitted in groups other than pulses or frames encompassing the entire touch-sensor area. For example, data may be transmitted on a fraction of a frame basis. Data transmission may, in particular embodiments, occur on the same communication layer (e.g., physical layer) regardless of whether the data is transmitted per frame or per fraction of a frame. Different types of data (e.g. pressure and battery life) may be communicated in a time-multiplexed manner between pulses or frames. Touch controller 12 may have the same logic as active stylus 20 for the transmission or receipt of data using any of the communication schemes described.

[51] FIGURE 7A illustrates an example method for communicating modulated data between active stylus 20 and device 52, including touch controller 12. The method may start at step 710, where active stylus 20 receives sensor data from sensors 42. At step 720, active stylus 20 waits to receive a carrier signal from touch controller 12. At step 730, a carrier signal is generated by touch controller 12 and transmitted to active stylus 20. At step 740, the carrier signal is modulated by active stylus 20 to include the sensor data so that the sensor data may be

communicated from active stylus 20 to touch controller 12. At step 750, the modulated carrier signal including the sensor data is transmitted from active stylus 20 to touch controller 12. In particular embodiments, steps 710, 720, 740, and 750 may occur in controller 50 of active stylus 20. At step 760, touch controller 12 receives the modulated carrier signal including the sensor data. At step 770, touch controller 12 demodulates the carrier signal and extracts the sensor data. In particular embodiments, the steps illustrated in FIGURE 7A may be repeated any number of times (e.g., any number of iterations). For example, during a second iteration, a second carrier signal may be modulated with sensor data (whether the same sensor data or different sensor data). This second signal may then be transmitted at step 750. Although this disclosure describes and illustrates particular steps of the method of FIGURE 7A as occurring in a particular order, this disclosure contemplates any suitable steps of the method of FIGURE 7A occurring in any suitable order. Furthermore, although this disclosure describes and illustrates particular components, devices, or systems carrying out particular steps of the method of FIGURE 7A, this disclosure contemplates any suitable combination of any suitable components, devices, or systems carrying out any suitable steps of the method of FIGURE 7A.

[52] FIGURE 7B illustrates another example method for communicating modulated data between active stylus 20 and device 52, including touch controller 12. The method may start at step 715, where active stylus 20 receives sensor data from sensors 42. At step 725, active stylus 20 generates a carrier signal. At step 735, the carrier signal is modulated by active stylus 20 to include the sensor data so that the sensor data may be communicated from active stylus 20 to touch controller 12. At step 745, the modulated carrier signal including the sensor data is transmitted from active stylus 20 to touch controller 12. In particular embodiments, steps 715-745 may occur in controller 50 of active stylus 20. At step 755, touch controller 12 receives the modulated carrier signal including the sensor data. At step 765, touch controller 12 demodulates the carrier signal and extracts the sensor data. In particular embodiments, the steps illustrated in FIGURE 7B may be repeated any number of times (e.g., any number of iterations). For example, during a second iteration, a second carrier signal may be modulated with sensor data (whether the same sensor data or different sensor data). This second signal may then be transmitted at step 745. Although this disclosure describes and illustrates particular steps of the

method of FIGURE 7B as occurring in a particular order, this disclosure contemplates any suitable steps of the method of FIGURE 7B occurring in any suitable order. Furthermore, although this disclosure describes and illustrates particular components, devices, or systems carrying out particular steps of the method of FIGURE 7B, this disclosure contemplates any suitable combination of any suitable components, devices, or systems carrying out any suitable steps of the method of FIGURE 7B.

[53] In particular embodiments, modulated data may also be communicated from device 52, including touch controller 12, to active stylus 20. As an example, touch controller 12 may gather data (e.g., control data or command data) from device 52 (including, for example, touch-sensitive area 500), modulate a carrier signal to include the data, and transmit the data to active stylus 20. In particular embodiments, the carrier signal may be generated by active stylus 20 and transmitted to touch controller 12 for modulation by touch controller 12. In other embodiments, the carrier signal may be generated by touch controller 12 and modulated by touch controller 12. In yet other embodiments, both active stylus 20 and touch controller 12 may generate the carrier signal for modulation. Additionally, active stylus 20 may receive the modulated carrier signal, demodulate the carrier signal, and extract the data in the signal. The carrier signal may, in particular embodiments, be modulated by active stylus 20, touch controller 12, or both. In yet other embodiments, two or more carrier signals may be generated or modulated by both active stylus 20 and touch controller 12, either simultaneously or at different times, providing for implementations of frequency or phase modulation. Any or all of the variations or example embodiments discussed with respect to the transmission of modulated data from active stylus 20 to touch controller 12 (including, for example, the type of modulation scheme) may be applied to the transmission of modulated data from touch controller 12 to active stylus 20, and vice versa.

[54] In particular embodiments, active stylus 20 works in synchronization with touch controller 12. In these embodiments, active stylus 20 may detect a drive signal from the drive lines of touch-sensitive area 500 and reply back to touch controller 12 within a touch-sensing time window of the touch controller 12. Touch controller 12 may scan the touch-sensitive area 500 until it detects active stylus 20, and once it has detected active stylus 20, it may use a

"handshake" to confirm before transmitting data to active stylus 20. Touch controller 12 may detect the stylus or synchronize with the stylus based on the nature of the stylus response signal (including, for example, side lobes of the stylus response due to non-linear gain at the stylus). Once active stylus 20 is detected, touch controller 12 may transmit a variable number of extra pulses down one or more drive lines (e.g., the X lines illustrated in FIGURE 5) of touch-sensitive area 500. Active stylus 20 may, upon seeing these extra pulses, respond in a pre-determined fashion (e.g., a signature or code). After this handshake, touch controller 12 may cease to drive any X lines and may continue to listen for transmissions from active stylus 20. Active stylus 20 may then transmit data using any of the data communication schemes described. The stylus may maintain a counter with data about past pulses it has received from device 52 (including touch-sensitive area 500 or touch controller 12) or pulses it has transmitted. Once active stylus 20 has completed its data transmission, it may send a stop bit to let touch controller 12 know that it may restart its normal scanning or driving of touch-sensitive area 500.

[55] Herein, reference to a computer-readable non-transitory storage medium encompasses a semiconductor-based or other integrated circuit (IC) (such, as for example, a field-programmable gate array (FPGA) or an application-specific IC (ASIC)), a hard disk, an HDD, a hybrid hard drive (HHD), an optical disc, an optical disc drive (ODD), a magneto-optical disc, a magneto-optical drive, a floppy disk, a floppy disk drive (FDD), magnetic tape, a holographic storage medium, a solid-state drive (SSD), a RAM-drive, a SECURE DIGITAL card, a SECURE DIGITAL drive, or another suitable computer-readable non-transitory storage medium or a combination of two or more of these, where appropriate. A computer-readable non-transitory storage medium may be volatile, non-volatile, or a combination of volatile and non-volatile, where appropriate.

[56] Herein, "or" is inclusive and not exclusive, unless expressly indicated otherwise or indicated otherwise by context. Therefore, herein, "A or B" means "A, B, or both," unless expressly indicated otherwise or indicated otherwise by context. Moreover, "and" is both joint and several, unless expressly indicated otherwise or indicated otherwise by context. Therefore, herein, "A and B" means "A and B, jointly or severally," unless expressly indicated otherwise or indicated otherwise by context.

[57] This disclosure encompasses all changes, substitutions, variations, alterations, and modifications to the example embodiments herein that a person having ordinary skill in the art would comprehend. Moreover, reference in the appended claims to an apparatus or system or a component of an apparatus or system being adapted to, arranged to, capable of, configured to, enabled to, operable to, or operative to perform a particular function encompasses that apparatus, system, component, whether or not it or that particular function is activated, turned on, or unlocked, as long as that apparatus, system, or component is so adapted, arranged, capable, configured, enabled, operable, or operative.

WHAT IS CLAIMED IS:

1. A method comprising:

receiving sensor data from one or more sensors in or on a stylus, the stylus comprising one or more electrodes and one or more computer-readable non-transitory storage media embodying logic for wirelessly transmitting signals to a device through a touch sensor of the device;

generating a carrier signal;

modulating the carrier signal to communicate the sensor data; and

wirelessly transmitting from the stylus to the device the carrier signal as modulated through the touch sensor of the device.

2. The method of Claim 1, wherein the logic is operable to modulate the carrier signal to communicate the sensor data using:

amplitude modulation;

frequency modulation; or

phase modulation.

3. The method of Claim 1, wherein the carrier signal is generated by either the stylus or a controller of the device.

4. The method of Claim 1, wherein the carrier signal is modulated by either the stylus or a controller of the device.

5. The method of Claim 1, wherein the sensor data is analog.

6. The method of Claim 1, wherein the sensor data is digital.

7. The method of Claim 1, wherein the carrier signal as modulated is transmitted in a single electric pulse.

8. The method of Claim 1, wherein the carrier signal as modulated is transmitted in a plurality of electric pulses.

9. The method of Claim 1, further comprising:

comparing the carrier signal as modulated to a second modulated carrier signal to obtain the sensor data.

10. The method of Claim 1, wherein the carrier signal is modulated by both the stylus and the controller of the device.

11. One or more computer-readable non-transitory storage media embodying logic that is operable when executed to:

receive sensor data from one or more sensors in or on a stylus, the stylus comprising one or more electrodes and the media;

generate a carrier signal;

modulate the carrier signal to communicate the sensor data; and

wirelessly transmit from the stylus to a device the carrier signal as modulated through a touch sensor of the device.

12. The media of Claim 11, wherein the logic is operable when executed to modulate the carrier signal to communicate the sensor data using:

amplitude modulation;

frequency modulation; or

phase modulation.

13. The media of Claim 11, wherein the carrier signal is generated by either the stylus or a controller of the device.

14. The media of Claim 11, wherein the carrier signal is modulated by either the stylus or a controller of the device.

15. The media of Claim 11, wherein the sensor data is analog.

16. The media of Claim 11, wherein the sensor data is digital.

17. The media of Claim 11, wherein the carrier signal as modulated is transmitted in a single electric pulse.

18. The media of Claim 11, wherein the carrier signal as modulated is transmitted in a plurality of electric pulses.

19. The media of Claim 11, the device further comprising one or more computer-readable non-transitory storage media embodying second logic that is operable when executed to compare the carrier signal as modulated to a second modulated carrier signal to obtain the sensor data.

20. The method of Claim 11, wherein the carrier signal is modulated by both the stylus and the controller of the device.

ABSTRACT

In one embodiment, a method includes receiving sensor data from one or more sensors in or on a stylus, the stylus including one or more electrodes and one or more computer-readable non-transitory storage media embodying logic for wirelessly transmitting signals to a device through a touch sensor of the device. The method includes generating a carrier signal and modulating the carrier signal to communicate the sensor data and wirelessly transmitting from the stylus to the device the carrier signal as modulated through the touch sensor of the device.

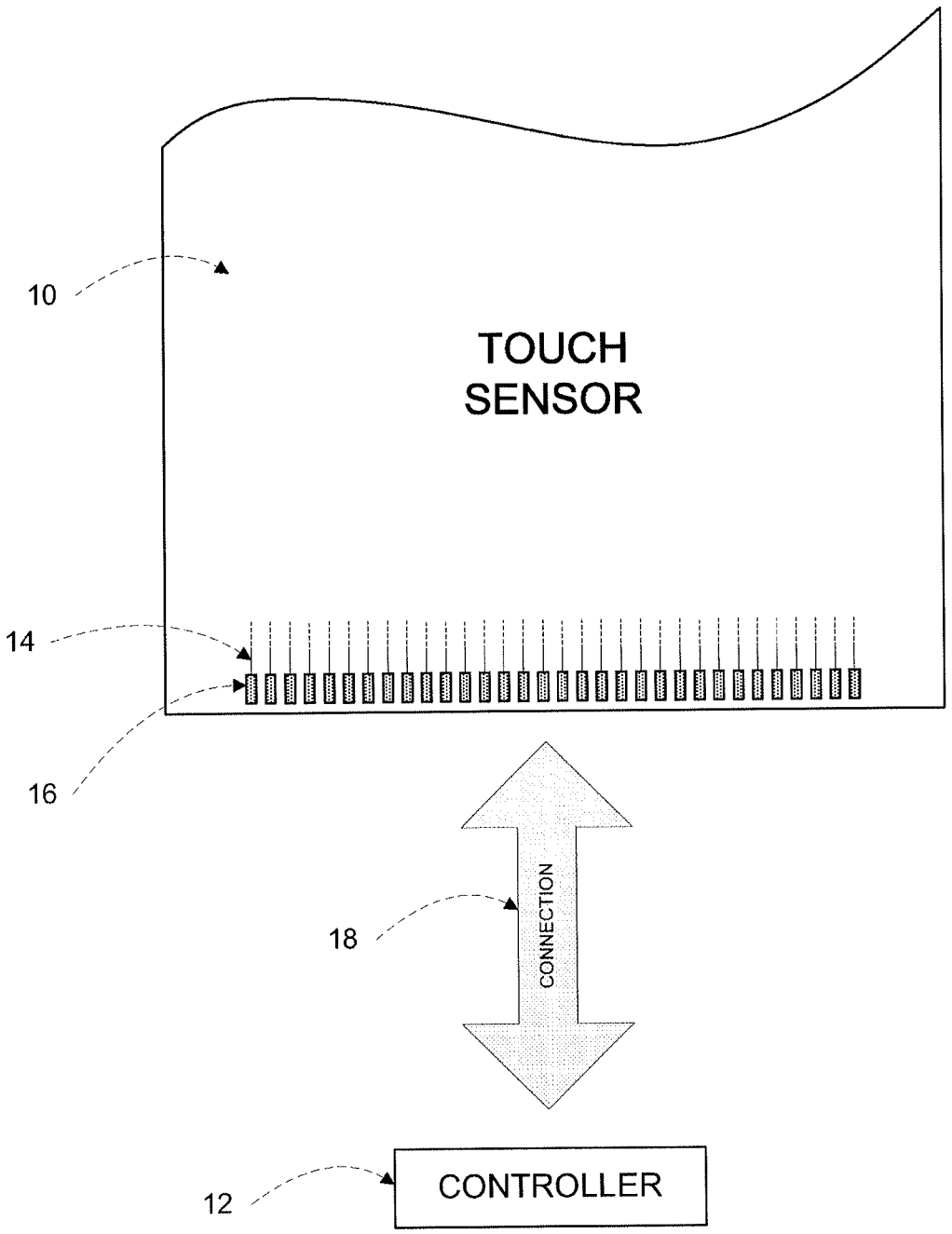

Figure 1

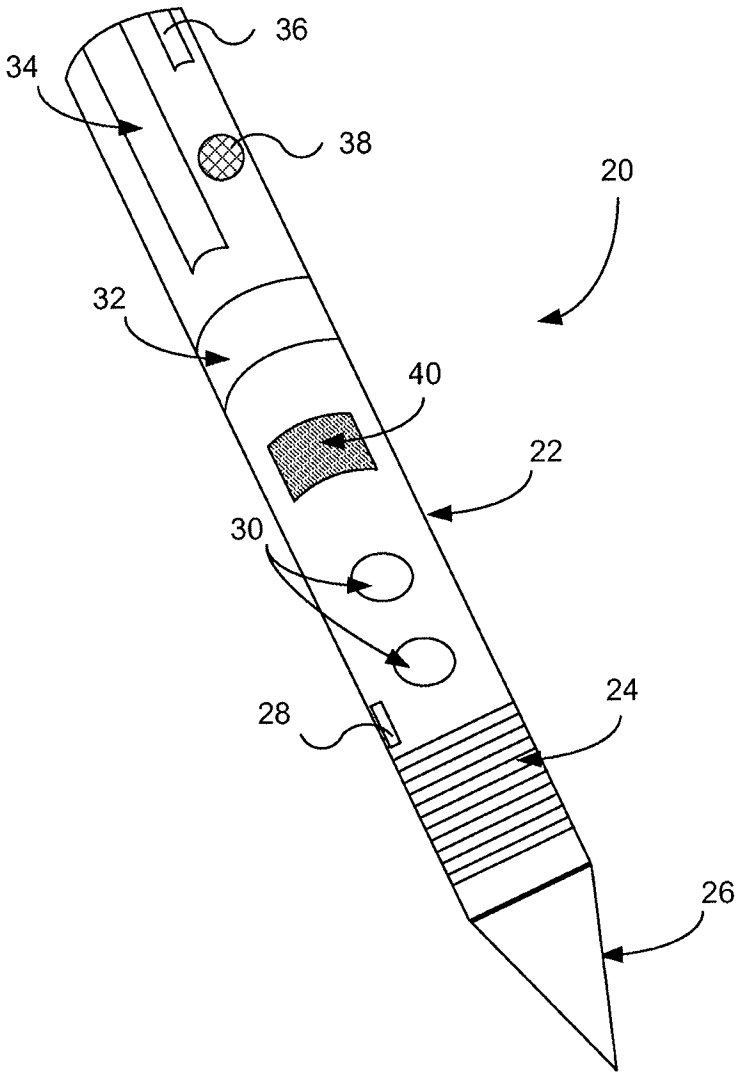

Figure 2

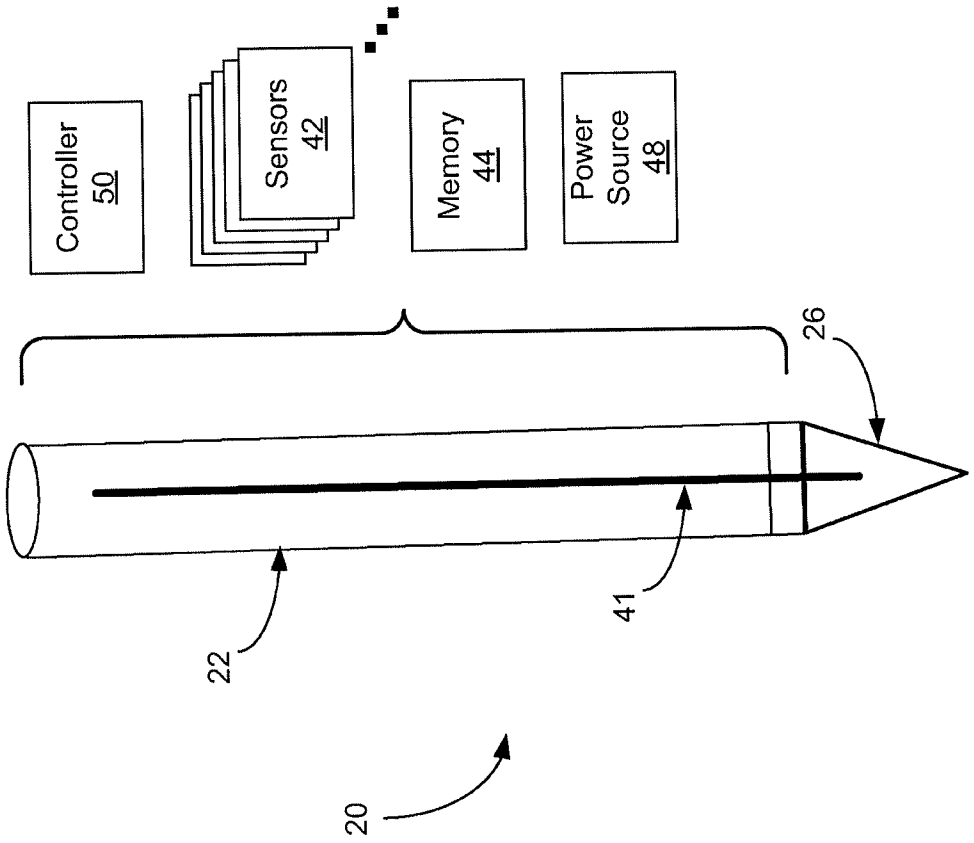
Controller
50
Sensors
42
Memory
44
Power
Source
48
26
22
41
20

Figure 3

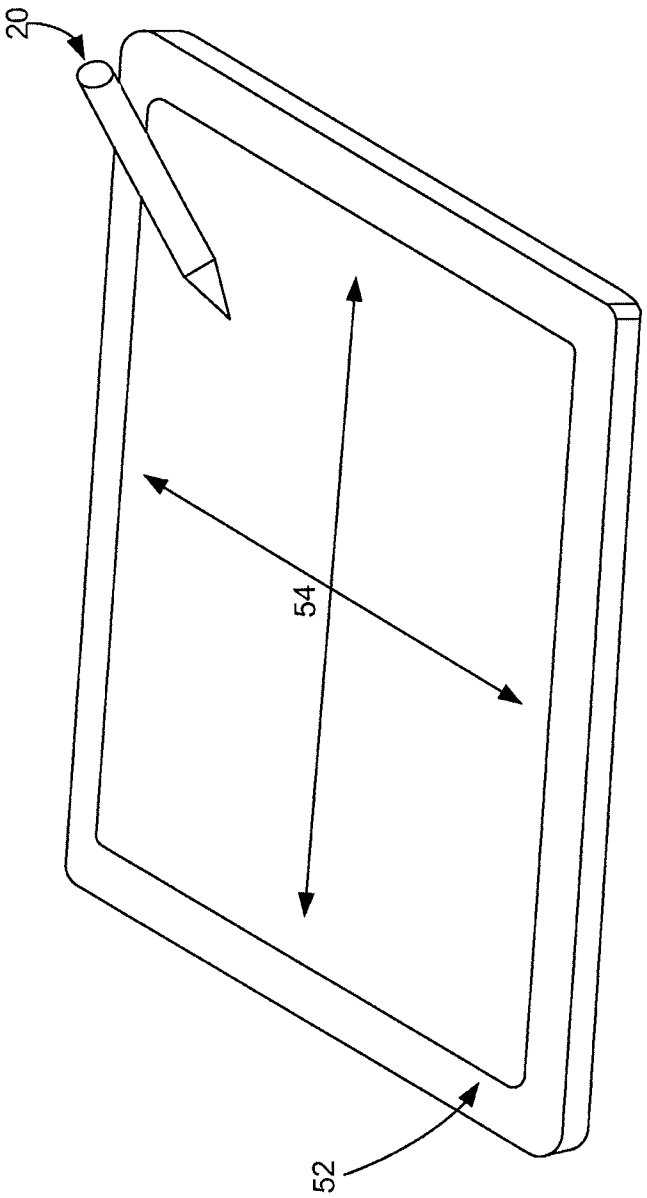

Figure 4

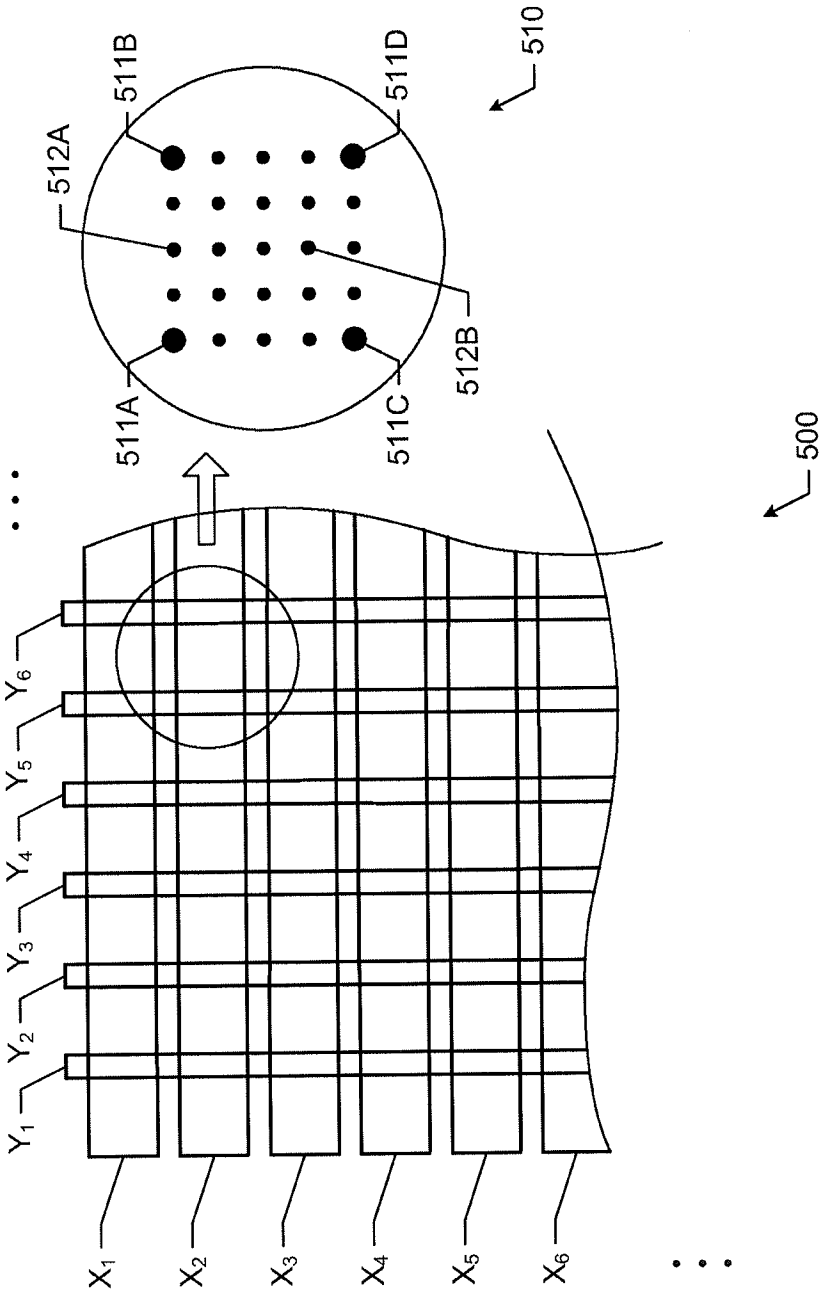
510
511B
511D
512A
512B
511A
511C
500
Y6
Y5
Y4
Y3
Y2
Y1
X1
X2
X3
X4
X5
X6

Figure 5

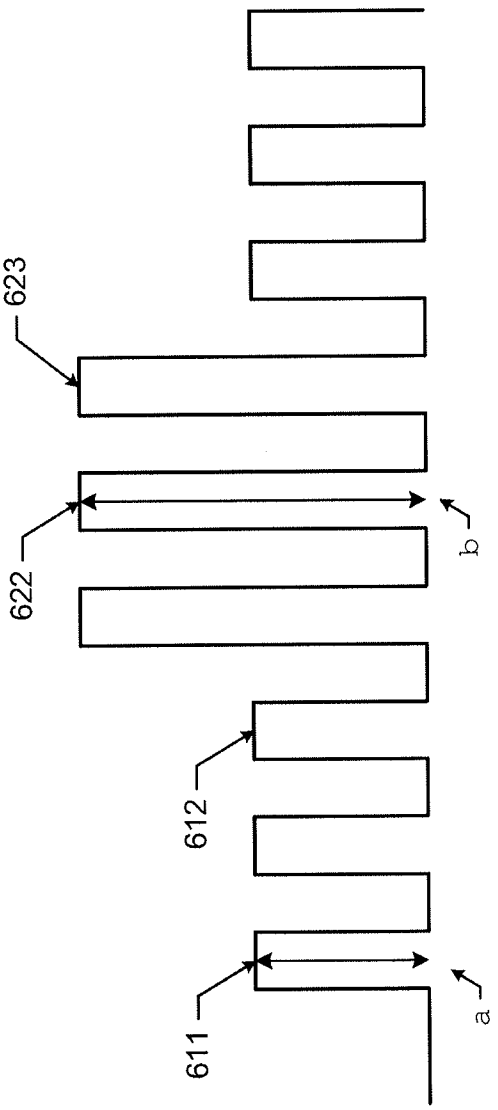

Figure 6

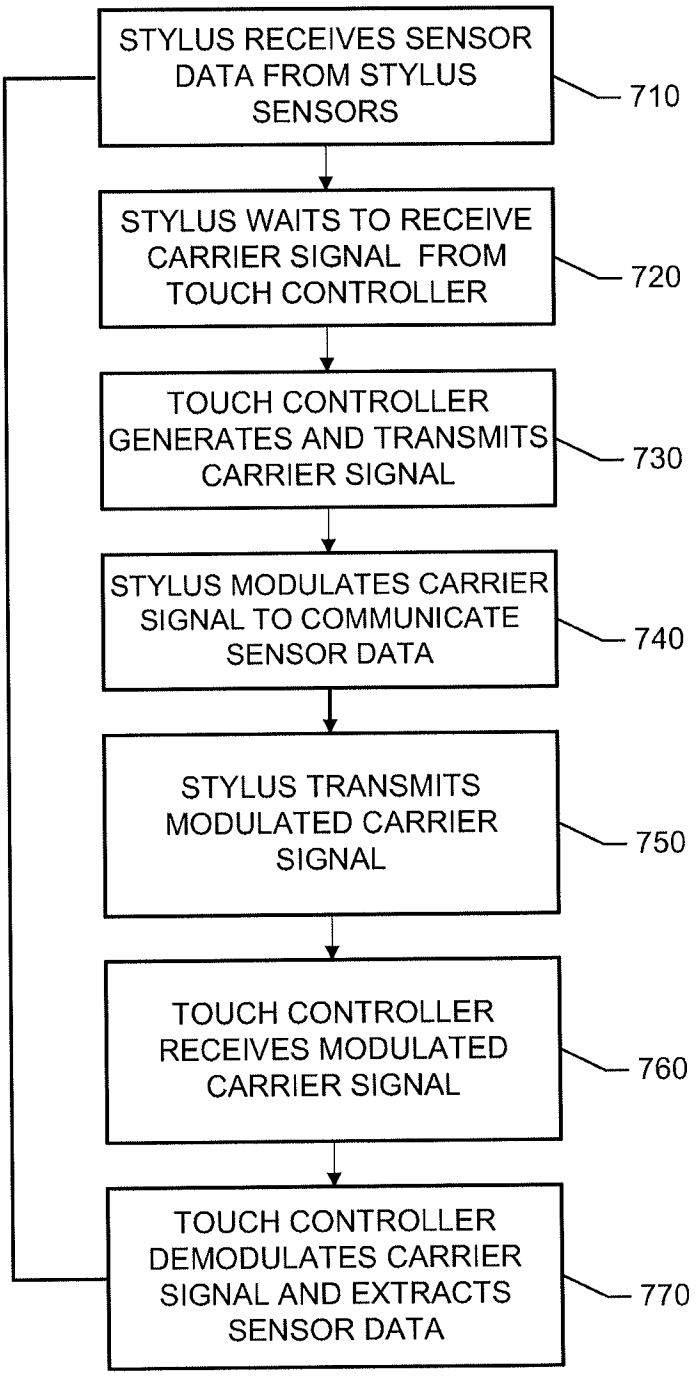
STYLUS RECEIVES SENSOR DATA FROM STYLUS SENSORS
710
STYLUS WAITS TO RECEIVE CARRIER SIGNAL FROM TOUCH CONTROLLER
720
TOUCH CONTROLLER GENERATES AND TRANSMITS CARRIER SIGNAL
730
STYLUS MODULATES CARRIER SIGNAL TO COMMUNICATE SENSOR DATA
740
STYLUS TRANSMITS MODULATED CARRIER SIGNAL
750
TOUCH CONTROLLER RECEIVES MODULATED CARRIER SIGNAL
760
TOUCH CONTROLLER DEMODULATES CARRIER SIGNAL AND EXTRACTS SENSOR DATA
770

Figure 7A

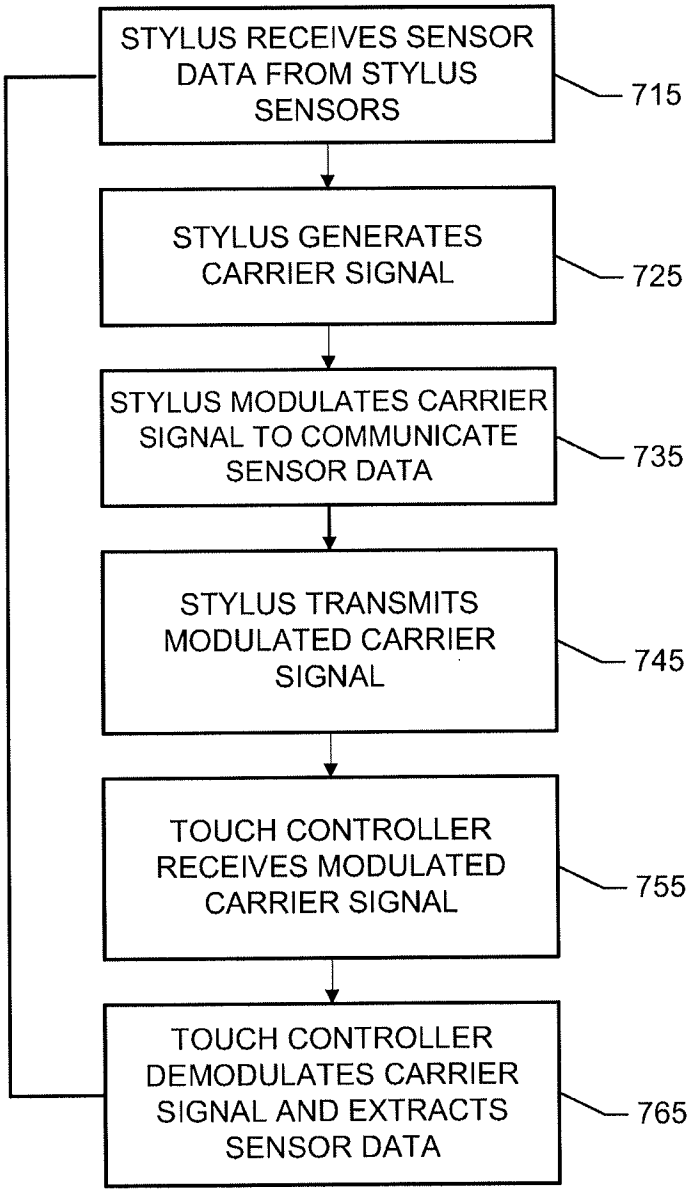
STYLUS RECEIVES SENSOR DATA FROM STYLUS SENSORS
715
STYLUS GENERATES CARRIER SIGNAL
725
STYLUS MODULATES CARRIER SIGNAL TO COMMUNICATE SENSOR DATA
735
STYLUS TRANSMITS MODULATED CARRIER SIGNAL
745
TOUCH CONTROLLER RECEIVES MODULATED CARRIER SIGNAL
755
TOUCH CONTROLLER DEMODULATES CARRIER SIGNAL AND EXTRACTS SENSOR DATA
765

Figure 7B

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Shahrooz Shahparnia, et al
Application No.	Unassigned
Filing Date:	Herewith
Group Art Unit:	Unassigned
Examiner:	Unassigned
Title:	*Pulse- or Frame-Based Communication Using Active Stylus*

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313.1450

Dear Sir:

Information Disclosure Statement

Applicants submit this IDS under 37 C.F.R. § 1.97(b)(3). Applicants respectfully request, pursuant to 37 C.F.R. §§1.56, 1.97, and 1.98, that the references listed on the attached PTO/SB/08 form be considered and cited in the examination of the above-identified continuation patent application. This application is a continuing application under 35 U.S.C. § 120 of U.S. Application Serial No. **13/363,043**, filed **January 31, 2012,** by Applicants and entitled "*Pulse- or Frame-Based Communication Using Active Stylus.*" Pursuant to 37 C.F.R. § 1.98(d), Applicants have not provided copies of references previously submitted to or cited by the Office in U.S. Patent Application No. **13/363,043**.

Moreover, under 37 C.F.R. § 1.98(a)(2)(ii), Applicants have not provided copies of U.S. patents and U.S. patent application publications. To the extent applicable, under 37 C.F.R. §1.98(a)(2)(ii), references other than U.S. patents and U.S. patent application publications are enclosed for the Examiner's convenience, if not previously submitted to or cited by the Office in U.S. Patent Application No. **13/363,043**. Furthermore, pursuant to 37 C.F.R. §§1.97(g) and (h), Applicants make no representation that a search has been made, that these references are material to patentability of the present application, or that these documents qualify as prior art.

Applicants believe no fees are due. However, the Commissioner is authorized to charge any necessary fees and credit any overpayments to Deposit Account No. 02-0384 of Baker Botts L.L.P.

Respectfully submitted,
BAKER BOTTS L.L.P.
Attorneys for Applicants

Brian D. Johnston
Registration No. 69,041

Dated: 1-9-2015

Correspondence Address:

Customer No. 12323

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	Unassigned
Filing Date	Herewith
First Named Inventor	Shahrooz SHAHPARNIA
Art Unit	Unassigned
Examiner Name	Unassigned
Attorney Docket Number	080900.2781

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	8278571		2012-10-02	Orsley	
	2	7875814		2011-01-25	CHEN	
	3	8040326		2011-10-18	Hotelling	
	4	8179381		2012-05-15	Frey	
	5	4695680		1987-09-22	Kable	
	6	5973677		1999-10-26	Gibbons	
	7	7612767		2009-11-03	Griffin	
	8	7663607		2010-02-16	Hotelling	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	Unassigned
	Filing Date	Herewith
	First Named Inventor	Shahrooz SHAHPARNIA
	Art Unit	Unassigned
	Examiner Name	Unassigned
	Attorney Docket Number	080900.2781

	9	7920129		2011-04-05	Hotelling	
	10	8031094		2011-10-04	Hotelling	
	11	8031174		2011-10-04	Hamblin	
	12	8049732		2011-11-01	Hotelling	

If you wish to add additional U.S. Patent citation information please click the Add button.

U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20120050231		2012-03-01	Westhues	
	2	20100155153		2010-06-24	Zachut	
	3	20120105362		2012-05-03	Kremin	
	4	20080158165		2008-07-03	Geaghan	
	5	20090315854		2009-12-24	Matsuo	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	Unassigned
	Filing Date	Herewith
	First Named Inventor	Shahrooz SHAHPARNIA
	Art Unit	Unassigned
	Examiner Name	Unassigned
	Attorney Docket Number	080900.2781

	6	20120242588		2012-09-27	Myers	
	7	20120242592		2012-09-27	Rothkopf	
	8	20120243151		2012-09-27	Lynch	
	9	20120243719		2012-09-27	Franklin	
	10	20120327041		2012-12-27	Harley	
	11	20080238885		2008-10-02	Zachut	
	12	20090095540		2009-04-16	Zachut	
	13	20090115725		2009-05-07	Shemesh	
	14	20090127005		2009-05-21	Zachut	
	15	20090153152		2009-06-18	Maharyta	
	16	20090184939		2009-07-23	Wohlstadter	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	Unassigned
	Filing Date	Herewith
	First Named Inventor	Shahrooz SHAHPARNIA
	Art Unit	Unassigned
	Examiner Name	Unassigned
	Attorney Docket Number	080900.2781

	17	20090251434		2009-10-08	Rimon	
	18	20100006350		2010-01-14	Elias	
	19	20100155153		2010-06-24	Zachut	
	20	20100292945		2010-11-18	REYNOLDS	
	21	20100315384		2010-12-16	Hargreaves	
	22	20110007029		2011-01-13	Ben-David	

If you wish to add additional U.S. Published Application citation information please click the Add button.

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2012129247	WO		2012-09-27	Apple Inc.		☐

If you wish to add additional Foreign Patent Document citation information please click the Add button

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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	Unassigned
	Filing Date	Herewith
	First Named Inventor	Shahrooz SHAHPARNIA
	Art Unit	Unassigned
	Examiner Name	Unassigned
	Attorney Docket Number	080900.2781

	1	U.S. Provisional Application No. 61/454936, filing date: March 21, 2011; Applicant: Myers	☐
	2	U.S. Provisional Application No. 61/454950, filing date: March 21, 2011; Applicant: Lynch	☐
	3	U.S. Provisional Application No. 61/454894, filing date: March 21, 2011; Applicant: Rothkopf	☐
	4	KYUNG, KI-UK et al., "wUbi-Pen : Windows Graphical User Interface Interacting with Haptic Feedback Stylus," SIGGRAPH,, Los Angeles, California (August 2008)	☐
	5	LEE, JOHNNY C. et al., "Haptic Pen: A Tactile Feedback Stylus for Touch Screens," UIST '04, Vol. 6, Issue 2, Santa Fe, New Mexico (October 2004)	☐
	6	SONG, HYUNYOUNG et al., "Grips and Gestures on a Multi-Touch Pen," CHI 2011, Session: Flexible Grips & Gestures, Vancouver, BC, Canada (May 2011)	☐
	7	TAN, ENG CHONG et al., "Application of Capacitive Coupling to the Design of an Absolute-Coordinate Pointing Device," IEEE Transactions on Instrumentation and Measurement, Vol. 54, No. 5 (October 2005)	☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	Pulse- or Frame-Based Communication Using Active Stylus
First Named Inventor/Applicant Name:	Shahrooz Shahparnia
Filer:	David Gerald Wille/Sue LeRoy
Attorney Docket Number:	080900.2781

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	280	280
Utility Search Fee	1111	1	600	600
Utility Examination Fee	1311	1	720	720
Pages:				
Claims:				
Miscellaneous-Filing:				
Late Filing Fee for Oath or Declaration	1051	1	140	140
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1740**

Electronic Acknowledgement Receipt

EFS ID:	21170012
Application Number:	14593349
International Application Number:	
Confirmation Number:	2295
Title of Invention:	Pulse- or Frame-Based Communication Using Active Stylus
First Named Inventor/Applicant Name:	Shahrooz Shahparnia
Customer Number:	12323
Filer:	David Gerald Wille/Sue LeRoy
Filer Authorized By:	David Gerald Wille
Attorney Docket Number:	080900.2781
Receipt Date:	09-JAN-2015
Filing Date:	
Time Stamp:	14:57:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1740
RAM confirmation Number	1204
Deposit Account	020384
Authorized User	

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)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 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	Application Data Sheet	2781ADS.PDF	505613 d40fc1a3c1bace4678bf2a6176d49b908c6c4036	no	8
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
2		2781Prelim.PDF	58361 e93ec2b6b50597a5a71cef7e7cd8d3b1a0453fc0	yes	3

Multipart Description/PDF files in .zip description

Document Description	Start	End
Preliminary Amendment	1	1
Specification	2	2
Applicant Arguments/Remarks Made in an Amendment	3	3

Warnings:					
Information:					
3		2781ContAppl.PDF	1555030 6071302e0062233a1b72f6680e26ecc3a8bf86c8	yes	29

Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	25
Claims	26	28
Abstract	29	29

Warnings:					
Information:					
4	Drawings-only black and white line drawings	2781Draws.PDF	108470 61b6ab78748b2737ccdc1b03e2ac90e63156627b	no	8

Warnings:					
Information:					
5		2781ids.PDF	282722 673a7d7a489478d32b9be586294ce482f1fe1299	yes	7
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Transmittal Letter		1	2	
	Information Disclosure Statement (IDS) Form (SB08)		3	7	
Warnings:					
Information:					
6	Fee Worksheet (SB06)	fee-info.pdf	36845 d2f6af1d657bb4f35888b8274a4e814940d39c51	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	2547041		

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/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

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
	Shahrooz		Shahparnia	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Monte Sereno	Country of Residence [i]	CA

Mailing Address of Inventor:

Address 1	17730 Vista Avenue
Address 2	

City	Monte Sereno	State/Province	CA
Postal Code	95030	Country [i]	

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Vivek		Pant	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	San Jose	State/Province	CA	Country of Residence [i]	

Mailing Address of Inventor:

Address 1	1600 Technology Drive
Address 2	

City	San Jose	State/Province	CA
Postal Code	95110-1382	Country [i]	

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Esat		Yilmaz	

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

Residence Information (Select One) (•) US Residency ( ) Non US Residency ( ) Active US Military Service

City	Santa Cruz	State/Province	CA	Country of Residence	

Mailing Address of Inventor:

Address 1	1600 Technology Drive		
Address 2			
City	San Jose	State/Province	CA
Postal Code	95110-1382	Country	

Remove

Inventor 4

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Vemund	Kval	Bakken	

Residence Information (Select One) ( ) US Residency (•) Non US Residency ( ) Active US Military Service

City	Tiller	Country of Residence	NO

Mailing Address of Inventor:

Address 1	Fossestuv. 62		
Address 2			
City	Tiller	State/Province	
Postal Code	7075	Country	NO

Remove

Inventor 5

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Kishore		Sundara-Rajan	

Residence Information (Select One) (•) US Residency ( ) Non US Residency ( ) Active US Military Service

City	San Jose	State/Province	CA	Country of Residence	

Mailing Address of Inventor:

Address 1	1600 Technology Drive		
Address 2			
City	San Jose	State/Province	CA
Postal Code	95110-1382	Country	

Remove

Inventor 6

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	John	Stanley	Dubery	

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Basingstoke, Hants	Country of Residence i	GB

Mailing Address of Inventor:

Address 1	1560 Parkway		
Address 2	Solent Business Park		
City	Whiteley, Fareham, Hampshire	State/Province	
Postal Code	PO15 7AG	Country i	GB

Remove

Inventor 7

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Martin	John	Simmons	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Whiteley, Hampshire	Country of Residence i	GB

Mailing Address of Inventor:

Address 1	1560 Parkway		
Address 2	Solent Business Park		
City	Whiteley, Fareham, Hampshire	State/Province	
Postal Code	PO15 7AG	Country i	GB

Remove

Inventor 8

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Sherif		Hanna	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Foster City	State/Province	CA	Country of Residence i	

Mailing Address of Inventor:

Address 1	1600 Technology Drive		
Address 2			
City	San Jose	State/Province	CA
Postal Code	95110-1382	Country i	

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

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	12323		
Email Address	ptomail1@bakerbotts.com	Add Email	Remove Email

Application Information:

Title of the Invention	Pulse- or Frame-Based Communication Using Active Stylus		
Attorney Docket Number	080900.2781	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	8	**Suggested Figure for Publication (if any)**	

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	12323		

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.
When referring to the current application, please leave the application number blank.

Prior Application Status			Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	13/363043	2012-01-31

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

Prior Application Status		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13/363043	Claims benefit of provisional	61/553114	2011-10-28
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.			

Foreign Priority Information:

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

			Remove
Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.			

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

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

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 o f 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. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

Mailing Address Information For Applicant:			
Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

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

Assignee Information including 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 if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication . An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:			
Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	080900.2781
	Application Number	
Title of Invention	Pulse- or Frame-Based Communication Using Active Stylus	

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)	2015-01-09
First Name	Brian D.	Last Name	Johnston	Registration Number	69041
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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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/593,349	Filing Date 01/09/2015	☐ 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	01/09/2015	(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))	* 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.

LDRC
/CARMEN WILLIAMS/