AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Eastern District of Texas, Marshall Division on the following ☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
2:19-cv-00126	4/16/2019	Eastern District of Texas, Marshall Division

PLAINTIFF	DEFENDANT
UNILOC 2017 LLC	SAMSUNG ELECTRONICS AMERICA, INC. and SAMSUNG ELECTRONICS CO. LTD.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	7,136,999	11/14/2006	Uniloc 2017 LLC
2			
3			
4			
5			

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1			
2			
3			
4			
5			

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director **Copy 3—Upon termination of action, mail this copy to Director**
Copy 2—Upon filing document adding patent(s), mail this copy to Director **Copy 4—Case file copy**

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Western District of Texas, Austin Division on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
1:18-cv-990-LY	11/17/2018	Western District of Texas, Austin Division

PLAINTIFF	DEFENDANT
UNILOC 2017 LLC	APPLE INC.

PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 ~~SEE ATTACHED~~		
2 7136999		
3		
4		
5		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
JEANNETTE J. CLACK	Amanda Deichert	NOV 19 2018

Copy 1—Upon initiation of action, mail this copy to Director **Copy 3—Upon termination of action, mail this copy to Director**
Copy 2—Upon filing document adding patent(s), mail this copy to Director **Copy 4—Case file copy**

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)

7590 07/25/2006

Philips Intellectual Property & Standards
PO BOX 3001
Briarcliff Manor, NY 10610

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.
09/597,198	06/20/2000	Jonathan C. Griffiths	US 000136	6017

TITLE OF INVENTION: METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1400	$0	$0	$1400	10/25/2006

EXAMINER	ART UNIT	CLASS-SUBCLASS
ZAND, KAMBIZ	2132	713-168000

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 LARRY LIBERCHUK

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: KONINKLIJKE PHILIPS ELECTRONCIS N.V.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): EINDHOVEN, THE NETHERLANDS

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

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

☒ Issue Fee

☐ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies

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

☐ A check is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 14-1270 (enclose an extra copy of this form).

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

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

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

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

Authorized Signature /LARRY LIBERCHUK/ Date OCTOBER 10, 2006

Typed or printed name LARRY LIBERCHUK Registration No. 40,352

This collection of information 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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	:	GRIFFITHS, Jonathan C.
Serial No.	:	09/597,198
Filed	:	June 20, 2000
Atty. Docket	:	US000136
Examiner	:	KAMBIZ ZAND
Group Art Unit	:	2132
Confirmation No.	:	6017

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

COMMENTS ON STATEMENT OF REASONS FOR ALLOWANCE

Sir:

In the Notice of Allowability, the Examiner set forth various reasons for allowance and made certain allegations pertaining to claims and/or references.

It is hereby submitted that Applicant does not concede, acquiesce or admit the positions taken in the examiner's statement of reasons for allowance.

It is further submitted that the record of the prosecution *as a whole* makes clear the reasons for allowing a claim or claims. Namely, the examiner's actions and the applicant's replies during the prosecution made evident the reasons for allowance, satisfying the "record as a whole" proviso of the rule. The examiner's actions clearly pointed out the reasons for rejection and the applicant's reply explicitly presented reasons why claims are patentable over the reference. Hence, it is believed that the reasons for allowance were evident from the record, and no statement was necessary.

As further explicitly stated in MPEP 1302.14, it is improper to use a statement of reasons for allowance to attempt to narrow a claim by providing a special definition to a claim limitation which is argued by Applicant, but not supported by a special definition in the description in cases where the ordinary meaning of the term in the prior art demonstrates that the claim remains unpatentable for the reasons of record, and where such claim narrowing is only tangential to patentability. Cf. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co*., 535 U.S. 722, 741, 62 USPQ2d 1705, 1714 (2002).

Still further according to MPEP 1302.14, the examiner's statement of reasons for allowance is the personal opinion of the examiner as to why the claims are allowable. In accordance with the Festo court, the examiner's statement should not create an estoppel, and only applicant's statements can create an estoppel. The failure of applicant to comment on the examiner's statement of reasons for allowance should not be treated as acquiescence to the examiner's statement. Any inferences or presumption are to be determined on a case-by-case basis by a court reviewing the patent, the USPTO examining the patent in a reissue application or a reexamination proceeding, the Board of Patent Appeals and Interferences reviewing the patent in an interference proceeding, etc.

Respectfully submitted,

October 10, 2006

By /LARRY LIBERCHUK/
Larry Liberchuk, Reg. No. 40,352
Senior IP Counsel
Philips Electronics N.A. Corporation
914-333-9602

Electronic Patent Application Fee Transmittal

Application Number:	09597198
Filing Date:	20-Jun-2000
Title of Invention:	METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION
First Named Inventor:	Jonathan C. Griffiths
Filer:	Michael E. Marion/NOEMI CHAPA
Attorney Docket Number:	US 000136

Filed as Large Entity

Utility Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	1501	1	1400	1400
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**1400**

Electronic Acknowledgement Receipt

EFS ID:	1243553
Application Number:	09597198
Confirmation Number:	6017
Title of Invention:	METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION
First Named Inventor:	Jonathan C. Griffiths
Correspondence Address:	Philips Intellectual Property & Standards - PO BOX 3001 - Briarcliff Manor NY 10610 US - -
Filer:	Michael E. Marion/NOEMI CHAPA
Filer Authorized By:	Michael E. Marion
Attorney Docket Number:	US 000136
Receipt Date:	10-OCT-2006
Filing Date:	20-JUN-2000
Time Stamp:	09:39:45
Application Type:	Utility
International Application Number:	

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	$1400

RAM confirmation Number	1682
Deposit Account	141270
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 and 1.17	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part	Pages
1	Issue Fee Payment Recorded	US000136_IF.pdf	727425	no	1
Warnings:					
Information:					
2	Post Allowance Communication - Incoming	US000136_reason-for-allowance.pdf	111334	no	2
Warnings:					
Information:					
3	Fee Worksheet (PTO-875)	fee-info.pdf	8168	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	846927		

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.

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.
09/597,198	06/20/2000	Jonathan C. Griffiths	US 000136	6017

7590 09/21/2006

Philips Intellectual Property & Standards
PO BOX 3001
Briarcliff Manor, NY 10610

EXAMINER	
ZAND, KAMBIZ	
ART UNIT	PAPER NUMBER
2132	

DATE MAILED: 09/21/2006

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

UNITED STATES DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
09/597,198			

EXAMINER	
ART UNIT	PAPER
	20060915

DATE MAILED:

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

Commissioner for Patents

IDS filed on 06/20/2000 was considered on 02/26/2006 and it is being re-mailed in order to complete the records.

KAMBIZ ZAND
PRIMARY EXAMINER

Kambiz Zand
Examiner
Art Unit: 2132

PTO-90C (Rev.04-03)

Re-mailing

Sheet 1 of 1

JC836 U.S. PTO
09/697198
06/20/00

Form PTO-1449 (REV. 7-80) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	Atty. Docket No. US 000136	Serial No.
	Applicant JONATHAN C. GRIFFITHS	
INFORMATION DISCLOSURE CITATION (Use several sheets if necessary)	Filing Date CONCURRENTLY	Group

U.S. PATENT DOCUMENTS

Ex. Int.		Document Number	Date	Name	Class	Sub-class	Filing Date If Approp.
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Sub-class	Trans. Yes	Trans. No
	AG							
	AH							
	AI							
	AJ							
	AK							

OTHER (Including Author, Title, Date, Pertinent Pages, Etc.)

/RA/	AL		"SPECIFICATION OF BLUETOOTH SYSTEM - CORE" v. 1. OA, July 26th 1999, pp. 18-19, 95, 149-154, 169-170, 194-200, 226, 319, 537, 1029 and 1031.
	AM		
	AN		

Examiner /RA/ Date Considered 02/25/06

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

\\SERVER0\SYS2\WPDOCS\MK\miscelns\mv20mkc0.ma0.doc

UNITED STATES PATENT AND TRADEMARK OFFICE

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

7590 07/25/2006

Philips Intellectual Property & Standards
PO BOX 3001
Briarcliff Manor, NY 10610

EXAMINER	
ZAND, KAMBIZ	
ART UNIT	PAPER NUMBER
2132	

DATE MAILED: 07/25/2006

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/597,198	06/20/2000	Jonathan C. Griffiths	US 000136	6017

TITLE OF INVENTION: METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1400	$0	$0	$1400	10/25/2006

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

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

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

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

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

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

If the SMALL ENTITY is shown as NO:

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

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

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

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

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

PTOL-85 (Rev. 07/06) Approved for use through 04/30/2007.

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

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

7590 07/25/2006

Philips Intellectual Property & Standards
PO BOX 3001
Briarcliff Manor, NY 10610

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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.
09/597,198	06/20/2000	Jonathan C. Griffiths	US 000136	6017

TITLE OF INVENTION: METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1400	$0	$0	$1400	10/25/2006

EXAMINER	ART UNIT	CLASS-SUBCLASS
ZAND, KAMBIZ	2132	713-168000

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 credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

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

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information 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.

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.
09/597,198	06/20/2000	Jonathan C. Griffiths	US 000136	6017

7590 07/25/2006

Philips Intellectual Property & Standards
PO BOX 3001
Briarcliff Manor, NY 10610

EXAMINER	
ZAND, KAMBIZ	
ART UNIT	PAPER NUMBER
2132	

DATE MAILED: 07/25/2006

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

The Patent Term Adjustment to date is 588 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 588 day(s).

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

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

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

Notice of Allowability	Application No.	Applicant(s)	
	09/597,198	GRIFFITHS, JONATHAN C.	
	Examiner	Art Unit	
	Kambiz Zand	2132	

-- 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 *Appeal brief filed on 05/15/2006*.

2. ☒ The allowed claim(s) is/are *1-17*.

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

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

KAMBIZ ZAND
PRIMARY EXAMINER

DETAILED ACTION

1. The text of those sections of Title 35,U.S.Code not included in this section can be found in the prior office action.
2. The prior office actions are incorporated herein by reference. In particular, the observations with respect to claim language, and response to previously presented arguments.
3. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.
4. Claims 1-17 are pending.

Response to Arguments

5. Applicant's Appeal Brief arguments filed 05/15/2006 have been fully considered in an Appeal conference and they are persuasive.

Allowable Subject Matter

6. Claims 1-17 are allowed.
7. The following is an examiner's statement of reasons for allowance:
   Applicant's arguments in appeal brief filed on 05/12/2006 on pages 10-13 have been found persuasive since the prior art method and system and apparatus single or in combination are in contrast with specific steps of applicant's invention

limitation " when the first and second electronic devices are beyond the short-range wireless link, executing the authentication protocol by exchanging the authentication information between the first and second electronic devices over an alternate communication link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated" in light of other limitation in claim 1; and the same reasons for allowance for other independent claims that contain similar limitations and in view of the specification.

Conclusion

8. Any comments considered necessary by the 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 submission should be clearly labeled "comments on statement of reasons for allowance."

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kambiz Zand whose telephone number is 571-272-3811. The examiner can normally reached on Monday-Thursday (8:00-5:00). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on 571-272-3799. The fax phone numbers for the organization where this application or proceeding is assigned as 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).

KAMBIZ ZAND
PRIMARY EXAMINER

07/20/2006

AU 2132

Issue Classification	Application/Control No. 09/597,198	Applicant(s)/Patent under Reexamination GRIFFITHS, JONATHAN C.
	Examiner Kambiz Zand	Art Unit 2132

ISSUE CLASSIFICATION

ORIGINAL		INTERNATIONAL CLASSIFICATION											
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED						
713	168	H	04	L	9	/00					/		
CROSS REFERENCES		H	04	K	1	/00					/		
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)												
713	169					/					/		
380	270					/					/		
						/					/		
						/					/		
						/					/		

****

(Assistant Examiner) (Date)

Kim W. Saunders 7/24/06

(Legal Instruments Examiner) (Date)

KAMBIZ ZAND 07/20/06
PRIMARY EXAMINER

(Primary Examiner) (Date)

Total Claims Allowed: 17

O.G. Print Claim(s)	O.G. Print Fig.
1	1

☒ 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
	1		31		61		91		121		151		181
	2		32		62		92		122		152		182
	3		33		63		93		123		153		183
	4		34		64		94		124		154		184
	5		35		65		95		125		155		185
	6		36		66		96		126		156		186
	7		37		67		97		127		157		187
	8		38		68		98		128		158		188
	9		39		69		99		129		159		189
	10		40		70		100		130		160		190
	11		41		71		101		131		161		191
	12		42		72		102		132		162		192
	13		43		73		103		133		163		193
	14		44		74		104		134		164		194
	15		45		75		105		135		165		195
	16		46		76		106		136		166		196
	17		47		77		107		137		167		197
	18		48		78		108		138		168		198
	19		49		79		109		139		169		199
	20		50		80		110		140		170		200
	21		51		81		111		141		171		201
	22		52		82		112		142		172		202
	23		53		83		113		143		173		203
	24		54		84		114		144		174		204
	25		55		85		115		145		175		205
	26		56		86		116		146		176		206
	27		57		87		117		147		177		207
	28		58		88		118		148		178		208
	29		59		89		119		149		179		209
	30		60		90		120		150		180		210

Search Notes	Application/Control No.	Applicant(s)/Patent under Reexamination	
	09/597,198	GRIFFITHS, JONATHAN C.	
	Examiner	Art Unit	
	Kambiz Zand	2132	

SEARCHED			
Class	Subclass	Date	Examiner

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner
Please see interference search report		7/20/2006	

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
search updated	7/20/2006	

Interference Search & updated Serp

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	0	wireless.clm. and devices.clm. and protocol.clm. and authentication. clm. and link.clm. and ("short-range".clm. or "short range".clm.) and exchange.clm. and communication.clm.	US-PGPUB; USPAT	OR	OFF	2006/07/20 13:47
L2	0	wireless.clm. and devices.clm. and protocol.clm. and authentication. clm. and link.clm. and "short-range".clm. and exchange. clm. and communication.clm.	US-PGPUB; USPAT	OR	OFF	2006/07/20 13:48
L3	714	wireless and devices and protocol and authentication and link and "short-range" and exchange and communication	US-PGPUB; USPAT	OR	OFF	2006/07/20 13:49
L4	0	3 and blutooth	US-PGPUB; USPAT	OR	OFF	2006/07/20 13:49

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PATENT
Serial No. 09/597,198
Appeal Brief in Reply to Advisory Action of March 6, 2006

TO THE UNITED STATES PATENT AND TRADEMARK OFFICE

(571) 273-8300

I certify that this document consisting of 26 pages (including 23 sheets of Appeal Brief and 1 sheet of Authorization to charge credit card) is being transmitted via facsimile to the United States Patent and Trademark Office at the telephone number set forth above on May 15, 2006.

By _____
(Signature) Dicran Halajian

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

JONATHAN C. GRIFFITHS — US 000136
Confirmation No. 6017
Serial No. 09/597,198 — Group Art Unit: 2132
Filed: JUNE 20, 2000 — Examiner: ZAND, KAMBIZ

Title: METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION

Mail Stop Appeal Brief-Patents
Board of Patent Appeals and Interferences
United States Patent and Trademark Office
PO Box 1450
Alexandria, VA 22313-1450

Sir:

Enclosed is an Appeal Brief in the above-identified patent application.

Please charge the Appeal Brief fee of $500 to the credit card as noted in the enclosed authorization to charge credit card form.

It is believed that no additional fees or charges are

currently due beyond the fee for the Appeal Brief to be charged to the credit card as noted by the enclosed authorization. However, in the event that any additional fees or charges are required for entrance of the present Appeal Brief, they may be charged to Appellant's representatives Deposit Account No. 50-3649.

In addition, please credit any overpayments related to any fees paid in connection with the present Appeal Brief to Deposit Account No. 50-3649.

Respectfully submitted,

By _____
Dicran Halajian, Reg. 39,703
Attorney for Appellant
May 15, 2006

Enclosure: Appeal Brief (23 pages)
Authorization to charge credit card $500 for Appeal Brief fee

THORNE & HALAJIAN, LLP
Applied Technology Center
111 West Main Street
Bay Shore, NY 11706
Tel: (631) 665-5139
Fax: (631) 665-5101

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

JONATHAN C. GRIFFITHS — US 000136

Confirmation No. 6017

Serial No. 09/597,198 — Group Art Unit: 2132

Filed: JUNE 20, 2000 — Examiner: ZAND, KAMBIZ

Title: METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION

Mail Stop Appeal Brief-Patents
Board of Patent Appeals and Interferences
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Sir:

Appellant herewith respectfully presents a Brief on Appeal as follows, having filed a Notice of Appeal on March 15, 2006:

REAL PARTY IN INTEREST

The real party in interest in this appeal is the assignee of record Koninklijke Philips Electronics N.V., a corporation of The Netherlands having an office and a place of business at Groenewoudseweg 1, Eindhoven, Netherlands 5621 BA.

RELATED APPEALS AND INTERFERENCES

Appellant and the undersigned attorney are not aware of any other appeals or interferences which will directly affect or be directly affected by or having a bearing on the Board's decision in the pending appeal.

STATUS OF CLAIMS

Claims 1-17 are pending in this application. Claims 1-17 are rejected in the Final Office Action mailed January 18, 2006. Claims 1-17 are the subject of this appeal.

STATUS OF AMENDMENTS

Appellant filed an after final request for reconsideration of claims 1-17 in response to a Final Office Action dated January 18, 2006. No amendments to the claims were made in the request for reconsideration. This Appeal Brief is in response to the Final Office Action mailed January 18, 2006 that rejected claims 1-17, which remain finally rejected in the Advisory Action mailed on March 6, 2006.

SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention, for example, as claimed in independent Claims 1, 13-14 and 17, include a method of authentication and a system, where an illustrative embodiment is shown in FIGs 1-2.

As shown in FIG 1 and described on page 6, line 18 to page 8, line 33 of the specification, for example, to enhance security, a system and method of authenticating a first electronic device 102 (102') and a second electronic device 111 include the following:

Upon link set-up over a short-range wireless link 107, such as a Bluetooth link, an authentication protocol is executed by exchanging authentication information between the first and second electronic devices 102', 111 to initially authenticate communication between the first and second devices. Security is enhanced by the requirement that the two devices 102', 111 are in physical proximity, as described on page 9, lines 5-6 of the specification, for example.

Later, when the first electronic device 102'/102 is moved (as shown by dashed lines 117 in FIG 1 and described on page 7, lines 13-15) such that the first and second electronic devices 102, 111

are beyond the short-range wireless link 107, the authentication protocol is executed by exchanging the authentication information between the first and second electronic devices 102, 111 over an alternate communications link 109 (as described on page 7, lines 29-34), then only allowing communication between the first and second devices 102, 111 if the first and second devices had initially been successfully authenticated over the short-range wireless link 107.

In addition, as shown in FIG 2 and described on page 5, lines 25-29, an embodiment of the electronic device 102 has a processor 104 and memory 105. As described above, including beginning on page 6, line 8 of the specification, for example, the memory 106 includes a software routine 110 executed by the processor 104 for generating authentication information useful in initially authenticating the electronic device 102' (102) to another electronic device 111 over the short-range wireless link 107, shown in FIG 1. Later, the processor 104 is configured for supplying the authentication information for later authentication of the electronic device 102 (102') to the other electronic device 111 over the alternate communications link 109, such as through the

Internet 120 for example, when the devices 102, 111 are beyond the short-range wireless link 107, and then only allowing communication between the devices 102, 111 if the devices 102, 111 had initially been successfully authenticated.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1-17 of U.S. Patent Application Serial No. 09/597,198 are anticipated under 35 U.S.C. §102(e) by U.S. Patent No. 6,772,331 (Hind).

The Appellant respectfully requests the Board to address the patentability of independent claims 1, 13-14 and 17, and of further claims 2-12 and 15-16 as depending from claims 1 and 14, based on the requirements of independent claims 1 and 14. This position is provided for the specific and stated purpose of simplifying the current issue on appeal. However, the Appellant herein specifically reserves the right to argue and address the patentability of 2-12 and 15-16 at a later date should the separately patentable subject matter of 2-12 and 15-16 later become an issue. Accordingly, this limitation of the subject matter presented for appeal herein, specifically limited to discussions of the patentability of independent claims 1, 13-14 and 17 is not intended as a waiver of Appellant's right to argue the patentability of the further claims and claim elements at that later time.

ARGUMENT

I. Claims 1-17 are said to be anticipated by Hind.

As correctly noted by the Examiner, Hind discloses the Bluetooth standard for communicating between two devices. (See column 1, lines 51-52). Hind also discloses that two devices are paired when both devices are provided with the same PIN. (See column 2, lines 60-61). According to the Examiner, this feature and other features recited on column 2, lines 51-67:

> meets the limitation of "upon link set-up over a short-range wireless link, executing an authentication protocol by exchanging authentication information between the first and second electronic devices to initially authenticate communication between the first and second devices." (Pages 2-3 and page 4, first paragraph of the Final Office Action Emphasis added)

It is respectfully submitted that there is no teaching or suggestion in column 2, lines 51-67 of using a short-range wireless link. In fact, this section of Hind implies a long-range wireless link, as column 2, lines 50-54 refers to "unobserved" eavesdropper and RF penetrating buildings and wall, reciting:

> In all these scenarios, the third party could even impersonate or eavesdrop unobserved, since radio frequency communication in the intended RF spectrum can penetrate sight-barriers such as buildings and walls. (Emphasis added)

Further, on Page 3, item 4 and page 4, item 8 of the Final Office Action, it is alleged that:

> Hind teaches that the PIN is reused whenever communication with the same partner (Hind: column 3, lines 25-26). This meets the limitation of "later, when the first and second electronic devices are beyond the short-range wireless link, executing the authentication protocol by exchanging the authentication information between the first and second electronic devices over an alternate communications link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated." (Emphasis added)

It is respectfully submitted that there is no teaching or suggestion in column 3, lines 25-26 of two devices communicating "beyond the short-range wireless link," as recited in independent claims 1, 13-14 and 17.

Even assuming, arguendo, that Hind suggests that the two devices communicate over an alternate communications link when beyond the short-range wireless link, Hind simply does not teach or suggest the present invention as recited in independent claim 1,

and similarly recited in independent claims 13-14 and 17 which, amongst other patentable elements, requires:

> upon link set-up over a short-range wireless link, executing an authentication protocol...
> later, when the first and second electronic devices are beyond the short-range wireless link, executing the authentication protocol by exchanging the authentication information between the first and second electronic devices over an alternate communications link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated. (emphasis added)

Claim 17 further requires:

> wherein said first communications link and said second communications link are **different types of links**. (emphasis added)

According to page 4, item 9 of the Final Office Action, in FIG 1A of Hind, items 1050 and 1030 teach "different types of communications links." It is respectfully submitted that the noted Hind items 1050 and 1030 in FIG 1A, assuming arguendo that they are different types of communications links, are nevertheless NOT between the very same TWO devices. Rather, FIG 1A of Hind shows one communication link between a first device 1003 and a second device 1001, and a second communication link between the second

device 1001 and a third device 1005. Hence, even if one assumes that these two Hind communication links are different, this still does not meet the features recited in claim 17 that requires different links between the very same two devices.

Hind simply does not teach or suggest only allowing communication between two devices if the two devices had initially been successfully authenticated upon link set-up over a short-range wireless or a first link, as recited in independent claims 1, 13-14 and 17, e.g., when the two devices are in physical proximity, as recited in claim 7.

Accordingly, it is respectfully submitted that independent claims 1, 13-14 and 17 are allowable, and allowance thereof is respectfully requested. In addition, it is respectfully submitted that claims 2-12 and 15-16 should also be allowed at least based on their dependence from independent claims 1 and 14.

In addition, Appellant denies any statement, position or averment of the Examiner that is not specifically addressed by the foregoing argument and response. Any rejections and/or points of argument not addressed would appear to be moot in view of the presented remarks. However, the Appellant reserves the right to

submit further arguments in support of the above stated position, should that become necessary. No arguments are waived and none of the Examiner's statements are conceded.

CONCLUSION

Claims 1-17 are patentable over Hind. Thus, the rejection of claims 1-17 should be reversed.

In view of the above, it is respectfully submitted that the present application is in condition for allowance, and a Notice of Allowance is earnestly solicited.

Respectfully submitted,

By _____
Dicran Halajian, Reg. 39,703
Attorney for Appellant
May 15, 2006

THORNE & HALAJIAN, LLP
Applied Technology Center
111 West Main Street
Bay Shore, NY 11706
Tel: (631) 665-5139
Fax: (631) 665-5101

CLAIMS APPENDIX

1.(Original) A method of authenticating first and second electronic devices, comprising:

upon link set-up over a short-range wireless link, executing an authentication protocol by exchanging authentication information between the first and second electronic devices to initially authenticate communication between the first and second devices;

later, when the first and second electronic devices are beyond the short-range wireless link, executing the authentication protocol by exchanging the authentication information between the first and second electronic devices over an alternate communications link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated.

2.(Original) The method of Claim 1, wherein the authentication information is an authentication key.

3.(Original) The method of Claim 1, wherein the

authentication information a password.

4.(Original) The method of Claim 1, wherein the first device is a master device and the second device is a slave device.

5.(Original) The method of Claim 1, wherein the short-range wireless link is a radio link.

6.(Original) The method of Claim 1, wherein the short-range wireless link is an infra-red link.

7.(Original) The method of Claim 1, wherein the link set-up occurs when the first and second devices are in physical proximity.

8.(Original) The method of Claim 1, wherein the short-range wireless link conforms to a given RF protocol.

9.(Previously Presented) The method of Claim 8, wherein the given RF protocol is Bluetooth.

10. (Original) The method of Claim 1 wherein the link set-up step includes entry of a given personal identification number into each of the first and second electronic devices.

11. (Original) The method of Claim 1, wherein the alternate communications link is a computer network.

12. (Original) The method of Claim 1, wherein the first electronic device is a client and the second electronic device is a server.

13. (Original) A method of authenticating first and second electronic devices, comprising:

upon link set-up over a first link, executing an authentication protocol by exchanging authentication information between the first and second electronic devices to initially authenticate communication between the first and second devices;

later, when the first and second electronic devices are connected using a second link, exchanging the authentication information between the first and second electronic devices over

the second link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated.

14. (Previously Presented) An electronic device, comprising:

a processor;

and

a memory loaded with a software routine executed by the processor (a) for generating authentication information useful in initially authenticating the electronic device to a another electronic device over a short-range wireless link, and (b) for later supplying the authentication information for later authentication of the electronic device to the other electronic device over an alternate communications link when the devices are beyond the short-range wireless link, then only allowing communication between the devices if the devices had initially been successfully authenticated.

15. (Original) The electronic device of Claim 14, wherein the link set-up step includes entry of a given personal identification

number into each of the first and second electronic devices.

16.(Original) The electronic device of Claim 14, wherein the electronic device is a client and the second electronic device is a server.

17.(Previously Presented) A communications system, comprising:

a first electronic device;

a second electronic device;

a first communications link over which the first and second electronic devices authenticate each other using a given protocol that includes a link set-up and the exchange of authentication information following the link set-up, the authentication information being used to initially authenticate communication between the first and second electronic devices; and

a second communications link over which the first and second electronic devices later authenticate each other using the exchange of the authentication information, then only allowing communication between the first and second devices if the first and second

devices had initially been successfully authenticated, wherein said first communications link and said second communications link are different types of links.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of JONATHAN C. GRIFFITHS		Atty. Docket US000136	
Serial No.:	09/597,198	Group Art Unit:	2132
Filed:	June 20, 2000	Examiner:	Kambiz Zand
Title:	METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION		

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

NOTICE OF APPEAL

Sir:

Applicant hereby appeals to the Board of Patent Appeals and Interferences from the January 18, 2006 decision of the Examiner, which finally rejected claims 1-17.

[X] Please charge the fee of $500.00 to Deposit Account No. 14-1270.
[ ] No additional fee is required, because the fee was paid in a prior appeal.

Respectfully submitted,

03/16/2006 HTECKLU1 00000041 141270 09597198
01 FC:1401 500.00 DA

Steven R. Petersen, Reg. No. 31,287
Attorney
(914) 333-9640

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that, on the date set forth below, this correspondence, and all correspondence referred to herein as being transmitted or the like herewith, is being:

[X] transmitted to the United States Patent and Trademark Office, Fax No. 571-273-8300 (1 page)

[ ] deposited with the U.S. Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner For Patents, PO Box 1450, Alexandria, VA 22313-1450.

By: Steven R. Petersen Date: March 15, 2006

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/597,198	06/20/2000	Jonathan C. Griffiths	US 000136	6017

7590 03/06/2006

Philips Intellectual Property & Standards
PO BOX 3001
Briarcliff Manor, NY 10610

EXAMINER	
ZAND, KAMBIZ	
ART UNIT	PAPER NUMBER
2132	

DATE MAILED: 03/06/2006

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

PTO-90C (Rev. 10/03)

Advisory Action Before the Filing of an Appeal Brief	Application No. 09/597,198	Applicant(s) GRIFFITHS, JONATHAN C.	
	Examiner Kambiz Zand	Art Unit 2132	

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

THE REPLY FILED 16 February 2006 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:
   a) ☐ The period for reply expires _____ months from the mailing date of the final rejection.
   b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
   Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   (a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
   (b) ☐ They raise the issue of new matter (see NOTE below);
   (c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   (d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.
   NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).
4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☒ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.
   The status of the claim(s) is (or will be) as follows:
   Claim(s) allowed: _____.
   Claim(s) objected to: _____.
   Claim(s) rejected: *1-17*.
   Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: See Continuation Sheet.
12. ☒ Note the attached Information Disclosure Statement(s). (PTO/SB/08 or PTO-1449) Paper No(s). 06/20/00 & 03/29/04
13. ☐ Other: _____.

KAMBIZ ZAND
PRIMARY EXAMINER

Kambiz Zand
Examiner
Art Unit: 2132

Continuation of 11. does NOT place the application in condition for allowance because: Applicant's arguments are not persuasive for the following reasons:
a) applicant's specification on pages 1 and 2 describes short-range authentication of devices such as Bluetooth technology as prior art which corresponds with the first part of independent claims where two devices are authenticated over a communication link including short range wireless link.
b) Previous Examiner also rightfuly indicated that Hind also disclose the authentication of the two device over the short range communication link (see col.1, lines 50-67; col.2, lines 1-9; also see the final-rejection rendered by the previous examiner.
c) authentication of the two devices beyond the previous range already authenticated as disclosed in a and b above also disclosed by Hind on col.2, lines 17-34; col.13
d) Also the authentication of the two devices through network such as between a mobile cell phone and the mobile authentication device authorizing the cell phone from one area to another (roaming between two carriers) are well known in the art of wireless telecommunication which corresponds to the second part of Applicant's independent claims where the two device authenticate each other over the second communication link beyond the earlier short range link.
Examiner however would reconsider if Applicant's inventive steps or novel steps are clearly be presented in the claim language that would overcome the prior art of the records and Applicant's admittance of the prior art on page 1 and 2 of Applicant's specification in a manner that do not require further search and/or consideration..

KAMBIZ ZAND
PRIMARY EXAMINER

Sheet 1 of 1

JC036 U.S. PTO
09/597198
06/20/00

Form PTO-1449 (REV. 7-80) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	Atty. Docket No. US 000136	Serial No.
	Applicant JONATHAN C. GRIFFITHS	
INFORMATION DISCLOSURE CITATION (Use several sheets if necessary)	Filing Date CONCURRENTLY	Group

U.S. PATENT DOCUMENTS

Ex. Int.		Document Number	Date	Name	Class	Sub-class	Filing Date If Approp.
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Sub-class	Trans. Yes	Trans. No
	AG							
	AH							
	AI							
	AJ							
	AK							

OTHER (Including Author, Title, Date, Pertinent Pages, Etc.)

VT	AL		"SPECIFICATION OF BLUETOOTH SYSTEM - CORE" v. 1. OA, July 26th 1999, pp. 18-19, 95, 149-154, 169-170, 194-200, 226, 319, 537, 1029 and 1031.
	AM		
	AN		

Examiner [signature] Date Considered 02/25/06

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

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Form PTO-1449 (REV. 7-80) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	Atty. Docket No. US000136	Serial No. 09/597,198
	Applicant JONATHAN C. GRIFFITHS	
	Filing Date JUNE 20, 2000	Group 2132

INFORMATION DISCLOSURE CITATION
(Use several sheets if necessary)

U.S. PATENT DOCUMENTS

Ex. Int.		Document Number	Date	Name	Class	Sub-class	Filing Date If Approp.
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Sub-class	Trans. Yes	Trans. No
VZ	AG	0 8 8 3 3 1 8 A 1	09.12.1998	EUROPE	H04Q	7/38		
	AH							
	AI							
	AJ							
	AK							

OTHER (Including Author, Title, Date, Pertinent Pages, Etc.)

	AL	
	AM	
	AN	

Examiner [signature] Date Considered 02/25/06

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

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By Dicran Halajian
(Signature) Dicran Halajian

RESPONSE UNDER 37 CFR 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP 2132

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	Atty. Docket
JONATHAN C. GRIFFITHS	US 000136 Confirmation No. 6017
Serial No. 09/597,198	Group Art Unit: 2132
Filed: JUNE 20, 2000	Examiner: GURSHMAN, GRIGORY

Title: METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION

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

AMENDMENT UNDER §1.116

Sir:

In response to the Final Office Action mailed on January 18, 2006, the following remarks are presented:

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PATENT
Serial No. 09/597,198
Amendment in Reply to Office Action of January 18, 2006

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(Signature) Dicran Halajian

RESPONSE UNDER 37 CFR 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP 2132

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	Atty. Docket
JONATHAN C. GRIFFITHS	US 000136 Confirmation No. 6017
Serial No. 09/597,198	Group Art Unit: 2132
Filed: JUNE 20, 2000	Examiner: GURSHMAN, GRIGORY

Title: METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION

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

AMENDMENT UNDER §1.116

Sir:

In response to the Final Office Action mailed on January 18, 2006, the following remarks are presented:

REMARKS

Reconsideration of the present application in view of the following remarks is respectfully requested.

In the Office Action, claims 1-17 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,772,331 (Hind). In response, the following remarks are presented. It is respectfully submitted that claims 1-17 are patentable over Hind for at least the following reasons.

As correctly noted by the Examiner, Hind discloses the Bluetooth standard for communicating between two devices. (See column 1, lines 51-52). Hind also discloses that two devices are paired when both devices are provided with the same PIN. (See column 2, lines 60-61). According to the Examiner, this feature and other features recited on column 2, lines 51-67:

> meets the limitation of "upon link set-up over a short-range wireless link, executing an authentication protocol by exchanging authentication information between the first and second electronic devices to initially authenticate communication between the first and second devices." (Pages 2-3 and page 4, first paragraph of the Final Office Action Emphasis added)

It is respectfully submitted that there is no teaching or suggestion in column 2, lines 51-67 of using a short-range wireless link. In fact, this section of Hind implies a long-range wireless link, as column 2, lines 50-54 refers to "unobserved" eavesdropper and RF penetrating buildings and wall, reciting:

> In all these scenarios, the third party could even impersonate or eavesdrop unobserved, since radio frequency communication in the intended RF spectrum can penetrate sight-barriers such as buildings and walls. (Emphasis added)

Further, on Page 3, item 4 and page 4, item 8 of the Final Office Action, it is alleged that:

> Hind teaches that the PIN is reused whenever communication with the same partner (Hind: column 3, lines 25-26). This meets the limitation of "later, when the first and second electronic devices are beyond the short-range wireless link, executing the authentication protocol by exchanging the authentication information between the first and second electronic devices over an alternate communications link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated." (Emphasis added)

It is respectfully submitted that there is no teaching or suggestion in column 3, lines 25-26 of two devices communicating

"beyond the short-range wireless link," as recited in independent claims 1, 13-14 and 17.

Even assuming, arguendo, that Hind suggests that the two devices communicate over an alternate communications link when beyond the short-range wireless link, Hind simply does not teach or suggest the present invention as recited in independent claim 1, and similarly recited in independent claims 13-14 and 17 which, amongst other patentable elements, requires:

> upon link set-up over a short-range wireless link, executing an authentication protocol...
> later, when the first and second electronic devices are beyond the short-range wireless link, executing the authentication protocol by exchanging the authentication information between the first and second electronic devices over an alternate communications link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated. (emphasis added)

Claim 17 further requires:

> wherein said first communications link and said second communications link are **different types of links**. (emphasis added)

According to page 4, item 9 of the Final Office Action, in FIG 1A of Hind, items 1050 and 1030 teach "different types of

communications links." It is respectfully submitted that the noted Hind items 1050 and 1030 in FIG 1A, assuming arguendo that they are different types of communications links, are nevertheless NOT between the very same TWO devices. Rather, FIG 1A of Hind shows one communication link between a first device 1003 and a second device 1001, and a second communication link between the second device 1001 and a third device 1005. Hence, even if one assumes that these two Hind communication links are different, this still does not meet the features recited in claim 17 that requires different links between the very same two devices.

Hind simply does not teach or suggest only allowing communication between two devices if the two devices had initially been successfully authenticated upon link set-up over a short-range wireless or a first link, as recited in independent claims 1, 13-14 and 17, e.g., when the two devices are in physical proximity, as recited in claim 7.

Accordingly, it is respectfully submitted that independent claims 1, 13-14 and 17 are allowable, and allowance thereof is respectfully requested. In addition, it is respectfully submitted that claims 2-12 and 15-16 should also be allowed at least based on

their dependence from independent claims 1 and 14.

In addition, Applicant denies any statement, position or averment of the Examiner that is not specifically addressed by the foregoing argument and response. Any rejections and/or points of argument not addressed would appear to be moot in view of the presented remarks. However, the Applicant reserves the right to submit further arguments in support of the above stated position, should that become necessary. No arguments are waived and none of the Examiner's statements are conceded.

It is believed that no additional fees or charges are currently due. However, in the event that any additional fees or charges are required for entrance of the accompanying amendment, they may be charged to applicant's representatives Deposit Account No. 50-3649. In addition, please credit any overpayments related to any fees paid in connection with the accompanying amendment to Deposit Account No. 50-3649.

In view of the above, it is respectfully submitted that the present application is in condition for allowance, and a Notice of Allowance is earnestly solicited.

Respectfully submitted,

By _____
Dicran Halajian, Reg. 39,703
Attorney for Applicant(s)
February 16, 2006

THORNE & HALAJIAN, LLP
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Fax: (631) 665-5101

PTO/SB/06 (08-03)
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 09/544,148

CLAIMS 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))				$	OR		$
TOTAL CLAIMS (37 CFR 1.16(c))	17 minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(b))	1 minus 3 =	*	X $ =		OR	X $ =	
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(d))			+ $ =		OR	+ $ =	
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL		OR	TOTAL	

CLAIMS AS AMENDED – PART II

2/16/06

AMENDMENT A

	(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
Total (37 CFR 1.16(c))	*	Minus	**	*	X $ 25		OR	X $ 50	
Independent (37 CFR 1.16(b))	*	Minus	***	*	X $ 100		OR	X 200	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(d))					+ $ 180		OR	+ $ 360	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE	ADDITIONAL FEE	OR	RATE	ADDITIONAL FEE
Total (37 CFR 1.16(c))	*	Minus	**	*	X $ 25		OR	X $ 50	
Independent (37 CFR 1.16(b))	*	Minus	***	*	X 100		OR	X $ 100	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(d))					+ $ 180		OR	+ $ 360	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

AMENDMENT C

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE	ADDITIONAL FEE	OR	RATE	ADDITIONAL FEE
Total (37 CFR 1.16(c))	*	Minus	**	*	X 25		OR	X $ 50	
Independent (37 CFR 1.16(b))	*	Minus	***	*	X $ 100		OR	X $ 100	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(d))					+ $ 180		OR	+ $ 360	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

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

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

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

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/597,198	06/20/2000	Jonathan C. Griffiths	US 000136	6017

7590 01/18/2006

Philips Intellectual Property & Standards
PO BOX 3001
Briarcliff Manor, NY 10610

EXAMINER	
GURSHMAN, GRIGORY	
ART UNIT	PAPER NUMBER
2132	

DATE MAILED: 01/18/2006

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

Office Action Summary	Application No.	Applicant(s)	
	09/597,198	GRIFFITHS, JONATHAN C.	
	Examiner	Art Unit	
	Grigory Gurshman	2132	

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

Period for Reply

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

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

Status

1)☒ Responsive to communication(s) filed on *11 November 2005*.

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

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

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

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

Application Papers

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

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

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

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

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

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

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

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

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's amendment of claim 17 reflects the limitation "first communication link and the second communication link are different types of links". This limitation is addressed in the rejections herein.

2. With respect to claims 1-17, Applicant argues that Hind is only concerned with communication over such a short range line like Bluetooth. Examiner agrees, but point out that Applicant's claims recite communication over short-range wireless, which does not distinguish Applicant's invention from Bluetooth system of Hint. Further more, the Bluetooth protocol is recited in claims 9. Thus Applicant' arguments that the independent claims 1, 13-14 and 17 are not anticipated by Hint are found not substantiated. The case anticipation has been established based on the fact that features of Hint read on features recited in the independent claims as stated in the previous Office Action and repeated herein. For example:

3. In regards to claims 1, 13, 14, and 17, Hind discloses the Bluetooth standard for communicating between two selected devices and/or multiple selected devices (Hind: column 1, lines 50-54). Hind also teaches that in order for two devices to be paired with one another entry of the same sting called a "PIN" at each device is required (Hind: column 2, lines 51-67). This meets the limitation of "upon link set-up over a short-range wireless link, executing an authentication protocol by exchanging authentication

information between the first and second electronic devices to initially authenticate communication between the first and second devices."

4. Hind teaches that the PIN is reused whenever communicating with the same partner (Hind: column 3, lines 25-26). This meets the limitation of "later, when the first and second electronic devices are beyond the short-range wireless link, executing the authentication protocol by exchanging the authentication information between the first and second electronic devices over an alternate communications link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated."

Claim Rejections - 35 USC § 102

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

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-17 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,772,331 B1 to Hind.

7. In regards to claims 1, 13, 14, and 17, Hind discloses the Bluetooth standard for communicating between two selected devices and/or multiple selected devices (Hind:

column 1, lines 50-54). Hind also discloses that in order for two devices to be paired with one another entry of the same sting called a "PIN" at each device is required (Hind: column 2, lines 51-67). This meets the limitation of "upon link set-up over a short-range wireless link, executing an authentication protocol by exchanging authentication information between the first and second electronic devices to initially authenticate communication between the first and second devices."

8. Hind discloses that the PIN is reused whenever communicating with the same partner (Hind: column 3, lines 25-26). This meets the limitation of "later, when the first and second electronic devices are beyond the short-range wireless link, executing the authentication protocol by exchanging the authentication information between the first and second electronic devices over an alternate communications link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated."

9. With regard to the independent claim 17, Hint teaches different types of communication links (see Fig. 1 A connections 1050 and 1030).

10. In regards to claims 2, and 3, Hind discloses a PIN (Hind: column 2, lines 60-61).

11. In regards to claims 4, 11-12 and 16, Hind discloses a wide-area or local area network (Hind: column 1, lines 34-37).

12. In regards to claim 5, Hind discloses a cellular radio link (Hind: column 1, line 66).

13. In regards to claim 6 and 7, Hind discloses the devices are in the vicinity of the Bluetooth enabled device (Hind: column 1, lines 17-22, 55-67).

14. In regards to claims 8 and 9, Hind discloses Bluetooth (Hind: column 1, lines 38-54).

15. In regards to claims 10 and 15, Hind discloses the same PIN is entered by both users (Hind: column 2, line 62).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Grigory Gurshman whose telephone number is (571)272-3803. The examiner can normally be reached on 9 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on (571)272-3799. 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).

Grigory Gurshman
Examiner
Art Unit 2132

GG

GILBERTO BARRON JR
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

Index of Claims

Application/Control No.	Applicant(s)/Patent under Reexamination
09/597,198	GRIFFITHS, JONATHAN C.
Examiner	**Art Unit**
Grigory Gurshman	2132

√	Rejected	–	(Through numeral) Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

Claim		Date
Final	Original	1 13 06
	1	√
	2	√
	3	√
	4	√
	5	√
	6	√
	7	√
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	9	√
	10	√
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Claim		Date
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Claim		Date
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TO THE UNITED STATES PATENT AND TRADEMARK OFFICE

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I certify that this document consisting of 11 pages is being transmitted via facsimile to the United States Patent and Trademark Office at the telephone number set forth above on November 11, 2005.

By _____
(Signature) Dicran Halajian

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	Atty. Docket
JONATHAN C. GRIFFITHS	US 000136
	Confirmation No. 6017
Serial No. 09/597,198	Group Art Unit: 2132
Filed: JUNE 20, 2000	Examiner: STULBERGER, CAS P

Title: METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION

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

AMENDMENT

Sir:

In response to the Office Action mailed on August 18, 2005, please amend the above-identified application as follows:

IN THE CLAIMS

Please amend claim 17 as follows:

1.(Original) A method of authenticating first and second electronic devices, comprising:

upon link set-up over a short-range wireless link, executing an authentication protocol by exchanging authentication information between the first and second electronic devices to initially authenticate communication between the first and second devices;

later, when the first and second electronic devices are beyond the short-range wireless link, executing the authentication protocol by exchanging the authentication information between the first and second electronic devices over an alternate communications link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated.

2.(Original) The method of Claim 1, wherein the authentication information is an authentication key.

3.(Original) The method of Claim 1, wherein the authentication information a password.

4.(Original) The method of Claim 1, wherein the first device is a master device and the second device is a slave device.

5.(Original) The method of Claim 1, wherein the short-range wireless link is a radio link.

6.(Original) The method of Claim 1, wherein the short-range wireless link is an infra-red link.

7.(Original) The method of Claim 1, wherein the link set-up occurs when the first and second devices are in physical proximity.

8.(Original) The method of Claim 1, wherein the short-range wireless link conforms to a given RF protocol.

9.(Previously Presented) The method of Claim 8, wherein the given RF protocol is Bluetooth.

10.(Original) The method of Claim 1 wherein the link set-up step includes entry of a given personal identification number into each of the first and second electronic devices.

11.(Original) The method of Claim 1, wherein the alternate communications link is a computer network.

12.(Original) The method of Claim 1, wherein the first electronic device is a client and the second electronic device is a server.

13.(Original) A method of authenticating first and second electronic devices, comprising:

upon link set-up over a first link, executing an authentication protocol by exchanging authentication information between the first and second electronic devices to initially authenticate communication between the first and second devices;

later, when the first and second electronic devices are connected using a second link, exchanging the authentication information between the first and second electronic devices over the second link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated.

14. (Previously Presented) An electronic device, comprising:

a processor;

and

a memory loaded with a software routine executed by the processor (a) for generating authentication information useful in initially authenticating the electronic device to a another electronic device over a short-range wireless link, and (b) for later supplying the authentication information for later authentication of the electronic device to the other electronic device over an alternate communications link when the devices are beyond the short-range wireless link, then only allowing communication between the devices if the devices had initially been successfully authenticated.

15. (Original) The electronic device of Claim 14, wherein the link set-up step includes entry of a given personal identification number into each of the first and second electronic devices.

16. (Original) The electronic device of Claim 14, wherein the electronic device is a client and the second electronic device is a server.

17. (Currently Amended) A communications system, comprising:

a first electronic device;

a second electronic device;

a first communications link over which the first and second electronic devices authenticate each other using a given protocol that includes a link set-up and the exchange of authentication information following the link set-up, the authentication information being used to initially authenticate communication between the first and second electronic devices; and

a second communications link over which the first and second electronic devices later authenticate each other using the exchange

of the authentication information, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated, wherein said first communications link and said second communications link are different types of links.

REMARKS

Reconsideration of the present application is respectfully requested.

In the Office Action, claims 1-17 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,772,331 (Hind). In response, independent claim 17 has been amended. It is respectfully submitted that claims 1-17 are patentable over Hind for at least the following reasons.

Hind is directed to a method and apparatus for exclusively pairing wireless devices for operation over a short range link such as Bluetooth. It should be noted that Hind is only concerned with communication over such a short range link like Bluetooth. This is evident throughout Hind, such as column 2, line 24 which refers to "[p]rior art in this case," where 'this case' is Bluetooth discussed prior to column 2, line 24, such as column 1, line 51; and column 2, lines 8 and 20.

Reference to Bluetooth is not limited to the background section of Hind. The rest of Hind is also only related to Bluetooth as evident, for example, from column 7, line 1, and the

following text on column 1. Thus, Hind is merely directed to authentication related to a short-range wireless link. Even if it is assumed that Hind is concerned with more that a single type of communication link, Hind is directed to using certificates and public/private keys for authentication, and does not teach or suggest the present invention as recited in independent claims 1, 13-14 and 17.

In particular, the present invention as recited in independent claim 1, and similarly recited in independent claims 13-14, requires amongst other patentable elements:

> later, when the first and second electronic devices are beyond the short-range wireless link, executing the authentication protocol by exchanging the authentication information between the first and second electronic devices over an alternate communications link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated (emphasis added)

Claim 17 further requires:

> wherein said first communications link and said second communications link are **different types of links**. (emphasis added)

Such features, including exchanging the authentication information over an alternate communications link when the devices are beyond the short-range wireless link, are nowhere taught or suggest in Hind which, as discussed above, is concerned with authentication over a single type of link, such as a Bluetooth short-range communication link.

Accordingly, it is respectfully submitted that independent claims 1, 13-14 and 17 are allowable, and allowance thereof is respectfully requested. In addition, it is respectfully submitted that claims 2-12 and 15-16 should also be allowed at least based on their dependence from independent claims 1 and 14.

In addition, Applicant denies any statement, position or averment of the Examiner that is not specifically addressed by the foregoing argument and response. Any rejections and/or points of argument not addressed would appear to be moot in view of the presented remarks. However, the Applicant reserves the right to submit further arguments in support of the above stated position, should that become necessary. No arguments are waived and none of the Examiner's statements are conceded.

In view of the above, it is respectfully submitted that the present application is in condition for allowance, and a Notice of Allowance is earnestly solicited.

It is believed that no additional fees or charges are currently due. However, in the event that any additional fees or charges are required for entrance of the accompanying amendment, they may be charged to applicant's representatives Deposit Account No. 50-3649. In addition, please credit any overpayments related to any fees paid in connection with the accompanying amendment to Deposit Account No. 50-3649.

Respectfully submitted,

By _____
Dicran Halajian, Reg. 39,703
Attorney for Applicant(s)
November 11, 2005

THORNE & HALAJIAN, LLP
Applied Technology Center
111 West Main Street
Bay Shore, NY 11706
Tel: (631) 665-5139
Fax: (631) 665-5101

PATENT APPLICATION FEE DETERMINATION RECORD
Effective December 29, 1999

Application or Docket Number: 9.597198

CLAIMS AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA
BASIC FEE		
TOTAL CLAIMS	17 minus 20=	*
INDEPENDENT CLAIMS	4 minus 3 =	* 1
MULTIPLE DEPENDENT CLAIM PRESENT		

SMALL ENTITY TYPE ☐			OR	OTHER THAN SMALL ENTITY	
RATE	FEE			RATE	FEE
	345.00	OR			690.00
X$ 9=		OR		X$18=	
X39=		OR		X78=	78.00
+130=		OR		+260=	
TOTAL		OR		TOTAL	108.00

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

CLAIMS AS AMENDED - PART II

5/21/04

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	* 14	Minus	** 17	=
Independent	* 4	Minus	*** 4	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

SMALL ENTITY			OR	OTHER THAN SMALL ENTITY	
RATE	ADDITIONAL FEE			RATE	ADDITIONAL FEE
X$ 9=		OR		X$18=	
X39=		OR		X78=	
+130=		OR		+260=	
TOTAL ADDIT. FEE		OR		TOTAL ADDIT. FEE	

11/11/05

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

RATE	ADDITIONAL FEE			RATE	ADDITIONAL FEE
X$ 9=		OR		X$18=	
X39=		OR		X78=	
+130=		OR		+260=	
TOTAL ADDIT. FEE		OR		TOTAL ADDIT. FEE	

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AMENDMENT C

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

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X39=		OR		X78=	
+130=		OR		+260=	
TOTAL ADDIT. FEE		OR		TOTAL ADDIT. 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.

FORM PTO-875 (Rev. 12/99)

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

*U.S. GPO: 2000-463-433/28044

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/597,198	06/20/2000	Jonathan C. Griffiths	US 000136	6017

7590 08/18/2005

Philips Intellectual Property & Standards
PO BOX 3001
Briarcliff Manor, NY 10610

EXAMINER	
STULBERGER, CAS P	

ART UNIT	PAPER NUMBER
2132	

DATE MAILED: 08/18/2005

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

PTO-90C (Rev. 10/03)

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United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/597,198	06/20/2000	Jonathan C. Griffiths	US 000136	6017

7590 09/21/2004

Corporate Patent Counsel
US Philips Corporation
580 White Plains Road
Tarrytown, NY 10591

EXAMINER	
STULBERGER, CAS P	

ART UNIT	PAPER NUMBER
2132	

DATE MAILED: 09/21/2004

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

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)	
	09/597,198	GRIFFITHS, JONATHAN C.	
	Examiner	Art Unit	
	Cas Stulberger	2132	

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 May 2004*.

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

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

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

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

Application Papers

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

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

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

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

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

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

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

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

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is responsive to communications: application, filed 6/20/2000; amendment filed 5/21/2004.

Claims 1-17 are pending in the case. Claims 1, 13, 14, and 17 are independent claims.

Response to Arguments

2. Applicant's arguments, see amendment, filed 5/21/2004, with respect to the rejection(s)of claim(s) 1-17 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,600,902 B1 to Bell, and in further in view of U.S. Patent No. 5,367,558 to Gillig et al. have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of U.S. Patent No. 6,772,331 B1 to Hind.

Claim Rejections - 35 USC § 102

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

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-17 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,772,331 B1 to Hind.

5. In regards to claims 1, 13, 14, and 17, Hind discloses the Bluetooth standard for communicating between two selected devices and/or multiple selected devices (Hind: column 1, lines 50-54). Hind also discloses that in order for two devices to be paired with one another entry of the same sting called a "PIN" at each device is required (Hind: column 2, lines 51-67). This meets the limitation of "upon link set-up over a short-range wireless link, executing an authentication protocol by exchanging authentication information between the first and second electronic devices to initially authenticate communication between the first and second devices."

6. Hind discloses that the PIN is reused whenever communicating with the same partner (Hind: column 3, lines 25-26). This meets the limitation of "later, when the first and second electronic devices are beyond the short-range wireless link, executing the authentication protocol by exchanging the authentication information between the first and second electronic devices over an alternate communications link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated."

7. In regards to claims 2, and 3, Hind discloses a PIN (Hind: column 2, lines 60-61).

8. In regards to claims 4, 11-12 and 16, Hind discloses a wide-area or local area network (Hind: column 1, lines 34-37).

9. In regards to claim 5, Hind discloses a cellular radio link (Hind: column 1, line 66).

10. In regards to claim 6 and 7, Hind discloses the devices are in the vicinity of the Bluetooth enabled device (Hind: column 1, lines 17-22, 55-67).

11. In regards to claims 8 and 9, Hind discloses Bluetooth (Hind: column 1, lines 38-54).

12. In regards to claims 10 and 15, Hind discloses the same PIN is entered by both users (Hind: column 2, line 62).

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cas Stulberger whose telephone number is (703) 305-8034. The examiner can normally be reached on Monday - Friday, 9:00A.M. - 5:00P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on (703) 305-1830. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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).

CS

Gilberto B

GILBERTO BARRÓN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

Notice of References Cited	Application/Control No. 09/597,198	Applicant(s)/Patent Under Reexamination GRIFFITHS, JONATHAN C.	
	Examiner Cas Stulberger	Art Unit 2132	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,772,331 B1	08-2004	Hind et al.	713/151
	B	US-			
	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

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	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

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

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

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ART UNIT 2132

SERIAL NO. 09/597,198

FROM: Frank J. Keegan

REGISTRATION NUMBER: 50,145

PHILIPS ELECTRONICS NORTH AMERICA CORPORATION
345 SCARBOROUGH ROAD
BRIARCLIFF MANOR, NEW YORK, 10510
TELEPHONE: (914) 333-9607

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Natale A. Manzo

Fax Operator
Natale A. Manzo
Legal Assistant to
Dicran Halajian, Reg. 39,703

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PTO/SB/122 (10-00)
Approved for use through 10/31/2002. OMB 0651-0035
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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Application

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Assistant Commissioner for Patents
Alexandria, VA 22313-1450

Application Number	09/597,198
Filling Date	June 20, 2000
First Named Inventor	Jonathan Griffiths
Group Art Unit	2132
Examiner Name	Ex. Barron
Attorney Docket Number	US000136

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

☒ Customer Number 24737 → 24737 PATENT TRADEMARK OFFICE

Type Customer Number here

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I am the :

☐ Applicant.

☐ Assignee of record of the entire interest.
Certificate under 37 CFR 3.73(b) is enclosed.

☒ Attorney or agent of record, Registration No. 50,145

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

Typed or Printed Name	FRANK J. KEEGAN
Signature	Frank J. Keegan
Date	29 April 2005

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

☐ *Total of 1 forms are submitted.

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Box 1450, Alexandria, VA 22313-1450.

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United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/597,198	06/20/2000	Jonathan C. Griffiths	US 000136	6017

7590 09/21/2004

Corporate Patent Counsel
US Philips Corporation
580 White Plains Road
Tarrytown, NY 10591

EXAMINER	
STULBERGER, CAS P	

ART UNIT	PAPER NUMBER
2132	

DATE MAILED: 09/21/2004

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

Office Action Summary	Application No.	Applicant(s)	
	09/597,198	GRIFFITHS, JONATHAN C.	
	Examiner	Art Unit	
	Cas Stulberger	2132	

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 May 2004*.

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

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

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

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

Application Papers

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

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

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

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

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

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

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

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

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is responsive to communications: application, filed 6/20/2000; amendment filed 5/21/2004.

Claims 1-17 are pending in the case. Claims 1, 13, 14, and 17 are independent claims.

Response to Arguments

2. Applicant's arguments, see amendment, filed 5/21/2004, with respect to the rejection(s)of claim(s) 1-17 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,600,902 B1 to Bell, and in further in view of U.S. Patent No. 5,367,558 to Gillig et al. have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of U.S. Patent No. 6,772,331 B1 to Hind.

Claim Rejections - 35 USC § 102

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

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-17 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,772,331 B1 to Hind.

5. In regards to claims 1, 13, 14, and 17, Hind discloses the Bluetooth standard for communicating between two selected devices and/or multiple selected devices (Hind: column 1, lines 50-54). Hind also discloses that in order for two devices to be paired with one another entry of the same sting called a "PIN" at each device is required (Hind: column 2, lines 51-67). This meets the limitation of "upon link set-up over a short-range wireless link, executing an authentication protocol by exchanging authentication information between the first and second electronic devices to initially authenticate communication between the first and second devices."

6. Hind discloses that the PIN is reused whenever communicating with the same partner (Hind: column 3, lines 25-26). This meets the limitation of "later, when the first and second electronic devices are beyond the short-range wireless link, executing the authentication protocol by exchanging the authentication information between the first and second electronic devices over an alternate communications link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated."

7. In regards to claims 2, and 3, Hind discloses a PIN (Hind: column 2, lines 60-61).

8. In regards to claims 4, 11-12 and 16, Hind discloses a wide-area or local area network (Hind: column 1, lines 34-37).

9. In regards to claim 5, Hind discloses a cellular radio link (Hind: column 1, line 66).

10. In regards to claim 6 and 7, Hind discloses the devices are in the vicinity of the Bluetooth enabled device (Hind: column 1, lines 17-22, 55-67).

11. In regards to claims 8 and 9, Hind discloses Bluetooth (Hind: column 1, lines 38-54).

12. In regards to claims 10 and 15, Hind discloses the same PIN is entered by both users (Hind: column 2, line 62).

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cas Stulberger whose telephone number is (703) 305-8034. The examiner can normally be reached on Monday - Friday, 9:00A.M. - 5:00P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on (703) 305-1830. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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).

CS

Gilberto B

GILBERTO BARRÓN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

Notice of References Cited	Application/Control No. 09/597,198	Applicant(s)/Patent Under Reexamination GRIFFITHS, JONATHAN C.	
	Examiner Cas Stulberger	Art Unit 2132	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,772,331 B1	08-2004	Hind et al.	713/151
	B	US-			
	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	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

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

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
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RLG

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Corporate Patent Counsel
US Philips Corporation
580 White Plains Road
Tarrytown, NY 10591

EXAMINER	
STULBERGER, CAS P	
ART UNIT	**PAPER NUMBER**
2132	

DATE MAILED: 09/21/2004

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PTO-90C (Rev. 10/03)

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	Examiner	Art Unit	
	Cas Stulberger	2132	

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CS

Gilberto B.

GILBERTO BARRÓN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

Notice of References Cited	Application/Control No. 09/597,198	Applicant(s)/Patent Under Reexamination GRIFFITHS, JONATHAN C.	
	Examiner Cas Stulberger	Art Unit 2132	Page 1 of 1

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	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

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	W	
	X	

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Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims

Application No.	Applicant(s)	
09/597,198	GRIFFITHS, JONATHAN C.	
Examiner	**Art Unit**	
Cas Stulberger	2132	

√	Rejected	–	(Through numeral) Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

Claim		Date
Final	Original	9/19/2004
	1	✓
	2	✓
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Claim		Date
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Claim		Date
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Search Notes	Application No.	Applicant(s)	
	09/597,198	GRIFFITHS, JONATHAN C.	
	Examiner	Art Unit	
	Cas Stulberger	2132	

SEARCHED			
Class	Subclass	Date	Examiner
updated		9/10/2004	CS

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
(See attached Printout) EAST search performed	9/10/2004	CS

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Relevance scale

1 On-line e-wallet system with decentralized credential keepers
Stig Frode Mjølsnes, Chunming Rong
February 2003 **Mobile Networks and Applications**, Volume 8 Issue 1
Full text available: pdf(240.23 KB) Additional Information: full citation, abstract, references, index terms

We propose a generalization of the architecture of an electronic wallet, as first developed in the seminal European research project CAFE. With this model you can leave most of the content of your electronic wallet at the security of your residential electronic keeper, while roaming with your favorite mobile terminals. Emerging mobile handsets with both short range Bluetooth and cellular GPRS communications provide a sufficient communication platform for this electronic wallet architecture. Howe ...

Keywords: digital credentials, e-wallet architecture, mobile commerce, payment protocols, privacy

2 Special session on security on SoC: Securing wireless data: system architecture challenges
Srivaths Ravi, Anand Raghunathan, Nachiketh Potlapally
October 2002 **Proceedings of the 15th international symposium on System Synthesis**
Full text available: pdf(172.35 KB) Additional Information: full citation, abstract, references, citings, index terms

Security is critical to a wide range of current and future wireless data applications and services. This paper highlights the challenges posed by the need for security during system architecture design for wireless handsets, and provides an overview of emerging techniques to address them. We focus on the computational requirements for securing wireless data transactions, revealing a gap between these requirements and the trends in processing capabilities of embedded processors used in wireless h ...

Keywords: 3DES, AES, DES, IPSec, RSA, SSL, WTLS, decryption, design methodology, embedded system, encryption, handset, mobile computing, performance, platform, security, security processing, system architecture, wireless communications

Results 1 - 2 of 2

Your search matched **0** of **1071730** documents.
A maximum of **500** results are displayed, **15** to a page, sorted by **Relevance Descending** order.

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You may refine your search by editing the current search expression or enter new one in the text box.

bluetooth security Search

☐ Check to search within this result set

Results Key:
JNL = Journal or Magazine **CNF** = Conference **STD** = Standard

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Results:
No documents matched your query.

L Number	Hits	Search Text	DB	Time stamp
-	876	short$1range adj wireless	USPAT; US-PGPUB; DERWENT	2004/02/18 13:28
-	26	(short$1range adj wireless) same authenticat$3	USPAT; US-PGPUB; DERWENT	2004/02/18 13:28
-	0	((short$1range adj wireless) same authenticat$3) and @ad<=20000620	USPAT; US-PGPUB; DERWENT	2004/02/18 13:29
-	97	(short$1range adj wireless) and @ad<=20000620	USPAT; US-PGPUB; DERWENT	2004/02/18 13:50
-	13	((short$1range adj wireless) and @ad<=20000620) and authenticat$4	USPAT; US-PGPUB; DERWENT	2004/02/18 13:39
-	2	bluetooth and reauthenticat$3	USPAT; US-PGPUB; DERWENT	2004/02/18 13:50
-	0	(bluetooth and re$1authenticat$3) and @ad<=20000620	USPAT; US-PGPUB; DERWENT	2004/09/08 11:54
-	34	bluetooth and re$1authenticat$3	USPAT; US-PGPUB; DERWENT	2004/09/08 16:21
-	28	("5101501" | "5109528" | "5267261" | "5367558" | "5390233" | "5392331" | "5406615" | "5442680" | "5488649" | "5507035" | "5509052" | "5515420" | "5594782" | "5610969" | "5640414" | "5659598" | "5664005" | "5673307" | "5745852" | "5758281" | "5890055" | "5890064" | "5915224" | "5926760" | "5946622" | "6035193" | "6138019" | "6374102" | "2001/0029186").PN.	USPAT	2004/02/18 14:23
-	2	5367558.pn.	USPAT; US-PGPUB; DERWENT	2004/02/18 16:23
-	11961	bluetooth	USPAT; US-PGPUB; DERWENT	2004/09/08 11:50
-	2405	bluetooth and authenticat$3	USPAT; US-PGPUB; DERWENT	2004/09/08 11:54
-	79	(bluetooth and authenticat$3) and @ad<=20000620	USPAT; US-PGPUB; DERWENT	2004/09/08 11:54
-	12	bluetooth same authenticat$3 and @ad<=20000620	USPAT; US-PGPUB; DERWENT	2004/09/08 11:54
-	1	re$1authenticat$3 and short$1range adj wireless and @ad<=20000620	USPAT; US-PGPUB; DERWENT	2004/09/08 16:34
-	4	re$1authenticat$3 same previous$2 adj authenticat$3 and @ad<=20000620	USPAT; US-PGPUB; DERWENT	2004/09/08 17:09
-	135	authenticat$3 same previous$2 adj authenticat$3 and @ad<=20000620	USPAT; US-PGPUB; DERWENT	2004/09/08 17:09
-	27	(bluetooth or wireless) and authenticat$3 same previous$2 adj authenticat$3 and @ad<=20000620	USPAT; US-PGPUB; DERWENT	2004/09/08 17:10

2132

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	Atty. Docket
JONATHAN C. GRIFFITHS	US 000136
	Confirmation No. 6017
Serial No. 09/597,198	Group Art Unit: 2132
Filed: JUNE 20, 2000	Examiner: CAS P. STULBERGER

Title: METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION

Honorable Commissioner for Patents
Alexandria, VA 22313-1450

AMENDMENT

Sir:

In response to the Office Action mailed February 20, 2004, please amend the above-identified application as follows:

IN THE CLAIMS

Please amend claims 9 and 14 as follows:

1. (Original) A method of authenticating first and second electronic devices, comprising:

upon link set-up over a short-range wireless link, executing an authentication protocol by exchanging authentication information between the first and second electronic devices to initially authenticate communication between the first and second devices;

later, when the first and second electronic devices are beyond the short-range wireless link, executing the authentication protocol by exchanging the authentication information between the first and second electronic devices over an alternate communications link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated.

2. (Original) The method of Claim 1, wherein the authentication information is an authentication key.

3.(Original) The method of Claim 1, wherein the authentication information a password.

4.(Original) The method of Claim 1, wherein the first device is a master device and the second device is a slave device.

5.(Original) The method of Claim 1, wherein the short-range wireless link is a radio link.

6.(Original) The method of Claim 1, wherein the short-range wireless link is an infra-red link.

7.(Original) The method of Claim 1, wherein the link set-up occurs when the first and second devices are in physical proximity.

8.(Original) The method of Claim 1, wherein the short-range wireless link conforms to a given RF protocol.

9.(Currently Amended) The method of Claim ~~2~~8, wherein the given RF protocol is Bluetooth.

10.(Original) The method of Claim 1 wherein the link set-up step includes entry of a given personal identification number into each of the first and second electronic devices.

11.(Original) The method of Claim 1, wherein the alternate communications link is a computer network.

12.(Original) The method of Claim 1, wherein the first electronic device is a client and the second electronic device is a server.

13.(Original) A method of authenticating first and second electronic devices, comprising:

upon link set-up over a first link, executing an authentication protocol by exchanging authentication information between the first and second electronic devices to initially authenticate communication between the first and second devices;

later, when the first and second electronic devices are connected using a second link, exchanging the authentication information between the first and second electronic devices over the second link, then only allowing communication between the first and

second devices if the first and second devices had initially been successfully authenticated.

14.(Currently Amended) An electronic device, comprising:

a processor;

and

a memory loaded with a software routine executed by the processor (a) for generating authentication information useful in initially authenticating the electronic device to a another electronic device over a short-range wireless link, and (b) for later supplying the authentication information for later authentication of the electronic device to the other_electronic device over an alternate communications link when the devices are beyond the short-range wireless link, then only allowing communication between the devices if the devices had initially been successfully authenticated.

15.(Original) The electronic device of Claim 14, wherein the link set-up step includes entry of a given personal identification number into each of the first and second electronic devices.

16.(Original) The electronic device of Claim 14, wherein the electronic device is a client and the second electronic device is a server.

17.(Original) A communications system, comprising:

a first electronic device;

a second electronic device;

a first communications link over which the first and second electronic devices authenticate each other using a given protocol that includes a link set-up and the exchange of authentication information following the link set-up, the authentication information being used to initially authenticate communication between the first and second electronic devices; and

a second communications link over which the first and second electronic devices later authenticate each other using the exchange of the authentication information, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated.

REMARKS

Reconsideration of the present application, as amended, is respectfully requested.

By means of the present amendment, claims 9 and 14 have been amended to correct typographical errors.

In the Office Action, claims 1-17 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Number 6,600,902 B1 (Bell) in view of U.S. Patent Number 5,367,558 (Gillig).

It is respectfully submitted that Bell is available as prior art with regard to the present application only under 35 U.S.C. §102(e), and is not available as prior art under §103(a) for the following reasons.

The present application was filed June 2, 2000, and thus has the benefit of the November 29, 1999, changes to 35 U.S.C. §103(c). Under 35 U.S.C. §103(c), (emphasis added) "Subject matter developed by another person, which qualifies as prior art only under one or more subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an

obligation of assignment to the same person."

The subject matter of Bell and the claimed invention are and were, at the time the claimed invention was made, owned by, or subject to an obligation of assignment to, the same person(s) or organization(s). Since, Bell has an issue date of July 29, 2003, Bell is available as prior art with regard to the present application only under 35 U.S.C. §102(e). Accordingly, It is respectfully submitted that Bell is not available as prior art under §103(a). Further, it is respectfully submitted that next Office Action should not be Final.

In view of the above, it is respectfully submitted that the present application is in condition for allowance, and a Notice of Allowance is earnestly solicited.

If any informalities remain, the Examiner is requested to telephone the undersigned in order to expedite allowance.

Please charge any fee deficiencies and credit any overpayments to Deposit Account No. 14-1270.

Respectfully submitted,

By _____
Dicran Halajian, Reg. 39,703
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(914) 333-9607
May 19, 2004

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(Signature)

PATENT APPLICATION FEE DETERMINATION RECORD
Effective December 29, 1999

Application or Docket Number: 9.597198

CLAIMS AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA
BASIC FEE		
TOTAL CLAIMS	17 minus 20=	*
INDEPENDENT CLAIMS	4 minus 3 =	* 1
MULTIPLE DEPENDENT CLAIM PRESENT		

SMALL ENTITY TYPE ☐	RATE	FEE	OR	OTHER THAN SMALL ENTITY	RATE	FEE
		345.00	OR			690.00
X$ 9=			OR	X$18=		
X39=			OR	X78=		78.00
+130=			OR	+260=		
TOTAL			OR	TOTAL		768.00

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

CLAIMS AS AMENDED - PART II

5/21/04

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	* 17	Minus	** 17	=
Independent	* 4	Minus	*** 4	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

SMALL ENTITY	RATE	ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY	RATE	ADDITIONAL FEE
X$ 9=			OR	X$18=		
X39=			OR	X78=		
+130=			OR	+260=		
TOTAL ADDIT. FEE			OR	TOTAL ADDIT. FEE		

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

1111

SMALL ENTITY	RATE	ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY	RATE	ADDITIONAL FEE
X$ 9=			OR	X$18=		
X39=			OR	X78=		
+130=			OR	+260=		
TOTAL ADDIT. FEE			OR	TOTAL ADDIT. FEE		

AMENDMENT C

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

SMALL ENTITY	RATE	ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY	RATE	ADDITIONAL FEE
X$ 9=			OR	X$18=		
X39=			OR	X78=		
+130=			OR	+260=		
TOTAL ADDIT. FEE			OR	TOTAL ADDIT. 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.

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London EC1A 7DH (GB)

(54) User authentication for roaming between mobile telecommunications networks

(57) A dual mode user terminal UT 1 can roam from an IS-41 PLMN 9 to a GSM type network, comprising a satellite network, so that the satellite network can be provided as a roamed, extension of the PLMN. In order to provide end-to-end authentication, an IS-41 challenge is transmitted to the handset through the satellite network, packaged as a GSM, USSD or SMS, the resulting response produced at user terminal UT 1 is packaged as a GSM, USSD or SMS and transmitted through the satellite network to an interworking function unit 32. The AUTHR together with the challenge are transmitted to the authentication centre AC of the PLMN 9, so that end-to-end authentication can be carried out.

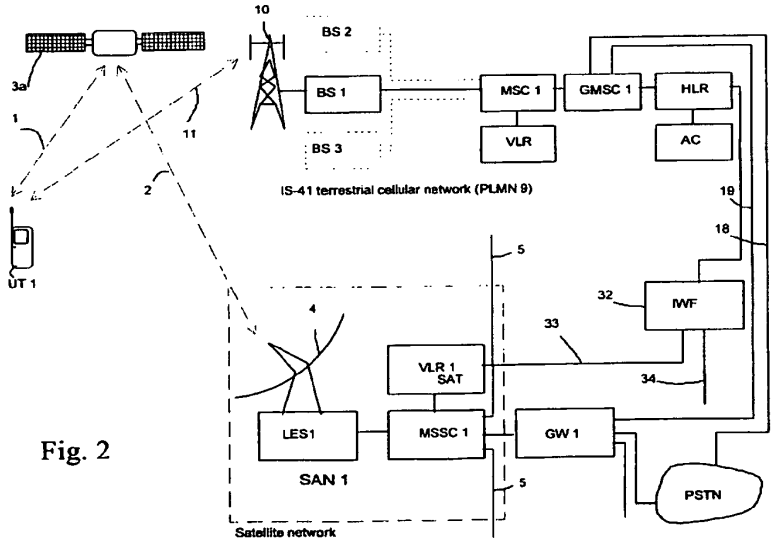

Fig. 2

EP 0 883 318 A1

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Description

This invention relates to authenticating a mobile user terminal that has roamed from one telecommunications network to another and has particular but not exclusive application to authentication when roaming from an IS-41 network such as a DAMPS network, to one which uses GSM authentication techniques, such as a satellite telecommunication network.

Terrestrial mobile telecommunications systems are well known and a number of different systems have developed which operate according to different standards. These public land mobile networks (PLMNs) may operate according to analog or digital standards. In Europe, the Ear East, excluding Japan and elsewhere, the digital Global System Mobile (GSM) network has become popular, whereas in USA, networks which operate according to the IS-41 recommendations such as the Advanced Mobile Phone System (AMPS) and the Digital American Mobile Phone System (DAMPS) are used. In Japan, the Personal Handiphone System (PHS) and the Personal Digital Communication (PDC) network are in use. More recently, proposals have been made for a Universal Mobile Telecommunications System (UMTS). These networks are all cellular and land-based but have differences in architecture and use different signalling protocols and transmission frequency bands.

Considering for example the GSM system, individual cells of the mobile network are served by a series of geographically spaced, terrestrial base transceiver stations (BTSs) which are coupled through base station controllers (BSCs) to a mobile switching centre (MSC) which may provide a gateway out of the network to a conventional public switched telephone network (PSTN). The network includes a home location register (HLR) which stores information about the subscribers to the system and their user terminals. When a user terminal is switched on, it registers with the HLR and an authentication procedure is carried out. Each mobile user terminal is provided with a smart card known as a subscriber identification module (SIM) which stores two unique items of identification in order to identify the subscriber. The first item comprises an international mobile subscriber identity (IMSI) and second item comprises a secret parameter referred to in the GSM specifications as Ki. Associated with the HLR is an authentication centre (AuC) which includes data corresponding to the IMSI and Ki for each subscriber to the network. When the user terminal is switched on, and at other times, the IMSI is transmitted from the user terminal to the HLR, which then refers to the AuC in order to authenticate the user. The IMSI is checked in the memory of the AuC, and a corresponding value of Ki is retrieved. Also, a random number RAND is generated in the AuC. The random number RAND and the value of Ki are applied as inputs to an algorithm referred to in the GSM Specifications as A3 to generate a signed result SRES. The AuC also includes an algorithm referred to in the GSM Specifications as A8 which generates a secret key Kc that is used for encryption/decryption of data transmitted over the air between the user terminal and the land-based network. In practice, the algorithms A3/A8 may be constituted by a single algorithm producing a 96 bit output of which 32 bits constitute SRES and the remaining 64 bits constitute Kc. A triplet of signals comprising RAND, SRES and Kc is fed from the AuC, through the HLR to the MSC, which acts as a checking station in the authentication procedure.

The individual value of RAND is then transmitted on to the user terminal through the network from the MSC. The SIM of the user terminal has the algorithm A3/A8 stored locally, so as to generate a corresponding value of SRES' and Kc at the user terminal, from the received value of the random number RAND and the stored value of Ki in the SIM.

The value of SRES' is transmitted back through the network to the MSC and compared with the originally generated value of SRES. If they are the same, the user terminal is authenticated but otherwise registration of the user terminal with the HLR is barred.

Thereafter, if the user terminal is authenticated the MSC initiates encryption/decryption of data transmitted over the network, using an enciphering/deciphering algorithm referred to in the GSM Specifications as A5, which uses as its inputs the secret key Kc and the frame number of data transmitted through the network. The SIM of the user terminal generates its own value of the secret key Kc using its locally stored copy of the algorithm A8. The local value of Kc at the user terminal can then be used to encrypt/decrypt data transmitted, using a locally held copy of the algorithm A5.

The authentication procedure used in GSM has the advantage that only random numbers are transmitted over the air interface between the user terminal and the BTS, which minimises the risk of fraudulent registration.

For further details of the authentication procedure and subsequent data encryption/decryption, reference is directed to "The GSM System for Mobile Communications" M. Mouly & M-B. Pautet, Cell & Sys.1992 pp 477-492.

If the user terminal roams to a different GSM network, in a different geographical location, it registers with a visitor location register (VLR) of the visited network, which communicates with the HLR of the home network for billing and other purposes.

Considering now the networks which operate according to the IS-41 recommendations, a number of base stations BS are connected to a MSC/VLR, coupled to an HLR in a generally similar configuration to a GSM network. Associated with the HLR is an authentication centre AC. Each mobile hand set includes a numeric address module (NAM) which stores an individual mobile identity number (MIN) together with a secret key known as the A-key. The authentication centre AC maintains a list of the A-keys associated with the MINs for the

user terminals which are registered with the network. Authentication for an IS-41 network makes use of a so-called CAVE algorithm. The CAVE algorithm makes use of so-called shared secret data SSD, which is generated from the A-key and MIN for each user terminal.

To perform authentication, initially, the authentication centre AC transmits to the user terminal, a request that the SSD is updated. The SSD is then updated both at the user terminal and at the authentication centre AC. A feature of the SSD is that it is not possible to obtain details of the A-keys from the SSD.

Then, the MIN is transmitted from the user terminal to the MSC which, in turn generates a challenge in the form of a random number RAND which is transmitted back to the user terminal. The CAVE algorithm is then run at the user terminal using the current value of SSD and RAND to produce an authorization response AUTHR, which is then transmitted back over the network to the MSC. The current value of MIN, RAND and AUTHR are transmitted through the network to the AC and the CAVE algorithm is run, using the local value of SSD and RAND received from the MSC. Thus, the value of AUTHR is produced at the AC, which can be compared with the value of AUTHR received from the user terminal. If they are the same, a successful authentication has been achieved, but if they are different, a response is sent to the MSC to cancel the registration of the user terminal from the VLR. Alternatively, the AC may be entrust the SSD to the MSC, allowing the MSC to run the CAVE algorithm using SSD and RAND and comparing the result to provide AUTHR without referring back to the AC.

Although the authentication procedure is generally similar to the procedure used in GSM, it is different in detail, and the procedures are not compatible.

Mobile telecommunication systems have been proposed that use satellite communication links between mobile user terminals and conventional terrestrial networks such as PSTNs and PLMNs. One network known as the IRIDIUM ™ satellite cellular system is described in EP-A-0365885 and US Patent No. 5 394 561 (Motorola), which makes use of a constellation of so-called low earth orbit (LEO) satellites, that have an orbital radius of 780 km. Mobile user terminals such as telephone handsets establish a link to an overhead orbiting satellite, from which a call can be directed to another satellite in the constellation and then typically to a ground station which is connected to conventional land-based networks.

Alternative schemes which make use of so-called medium earth orbit (MEO) satellite constellations have been proposed with an orbital radius in the range of 10-20,000 km and reference is directed to Walker J.G. "Satellite Patterns for Continuous Multiple Whole Earth Coverage" Royal Aircraft Establishment, pp 119-122 (1977). Reference is directed to the ICO ™ satellite cellular system described for example in GB-A-2 295 296, and to the ODYSSEY ™ satellite cellular system described in EP-A- 0 510 789. With these systems, the satellite communication link does not permit communication between adjacent satellites and instead, a signal from a mobile user terminal such as a mobile handset is directed firstly to the satellite and then directed to a ground station or satellite access node (SAN), connected to conventional land-based telephone network. This has the advantage that many components of the system are compatible with known digital terrestrial cellular technology such as GSM. Also simpler satellite communication techniques can be used than with a LEO network.

In satellite communications networks, ground stations are located at different sites around the world in order to communicate with the orbiting satellites. In the ICO™ system and others, a visitor location register is associated with each of the satellite ground stations, which maintains a record of the individual user terminals that are making use of the particular ground station.

The visitor location registers communicate with a home location register for the satellite network. User terminals are authenticated for use with the satellite network in a similar way to a conventional land based network. For example, the ICO™ system uses an authentication procedure corresponding to GSM authentication used for conventional land based GSM networks.

In certain areas of the world, coverage provided by a conventional terrestrial PLMN and the satellite network will overlap in a common area. It has been proposed that the individual mobile terminals be operable with both the PLMN and the satellite network. The user terminals may include a switch to allow the user to select the network or alternatively, an automatic selection may be made e.g. on the basis of signal strength. It is envisaged that normally, the conventional terrestrial network will be preferred for reasons of cost and signal strength but that the user will roam to the satellite network when outside of the coverage area of the PLMN. Thus, the satellite network service can be offered to subscribers by the operator of the PLMN and billing for use of the satellite service can be carried out through the facilities already in place for the PLMN.

However, a secure authentication procedure is required when the subscriber roams from the PLMN to the satellite network, to ensure that when charges for use of the satellite service are passed to the operator of the PLMN, they are accurately attributed to individual subscribers, without significant risk of fraud. A problem arises in achieving authentication when the two networks use different authentication protocols, and the invention addresses this issue.

In a first aspect, the invention provides a method of authenticating a user terminal which has roamed from a first network that uses a first authentication protocol, to a second network that uses a second, different authentication protocol, comprising: transmitting an authenti-

cation challenge to the user terminal according to the protocol of the first network, through the second network, providing a response at the user terminal to the challenge in accordance with the first authentication protocol, transmitting the response through the second network, to a checking station, and comparing the response at the checking station with corresponding authentication data for the first network according to the first protocol so as to authenticate the user terminal according to the first protocol for use with the first network.

The authentication challenge may be transmitted to the user terminal through the second network, packaged as a message in a data format pertinent to the second network.

The first network may be configured in accordance with IS-41 recommendations, and the second network may be configured in accordance with GSM recommendations in which case, the challenge and the response may be packaged as a USSD or SMS for transmission through the GSM network.

The method according to the invention may include authenticating the roamed user terminal for use with said second network in accordance with the second protocol, and only authenticating the terminal in accordance with the first protocol if the authentication according to the second protocol is successful. The authentication for the second network may include transmitting an initial authentication challenge to the user terminal according to the protocol of the second network, through the second network, providing a response at the user terminal to the challenge according to a predetermined algorithm in accordance with the second authentication protocol, transmitting the response through the second network to a checking station for the second network, and comparing the response at the checking station for the second network with authentication data according to the second protocol to authenticate the user terminal for use with the second network.

The second network may comprise a satellite network.

The invention also includes a user terminal for roaming from a first network that uses a first authentication protocol, to a second network that uses a second, different authentication protocol, comprising: a receiver to receive an authentication challenge according to the protocol of the first network, through the second network, means operative to provide a response to the challenge in accordance with the first authentication protocol, and a transmitter operative to transmit the response through the second network, for permitting the response to be compared at a remote checking station with corresponding authentication data for the first network according to the first protocol, for authenticating the user terminal according to the first protocol, for use with the first network.

The user terminal according to the invention may further include: a receiver to receive an authentication challenge according to the protocol of the second network, through the second network, means operative to provide a response to the challenge in accordance with the second authentication protocol, and a transmitter operative to transmit the response through the second network, for permitting the response to be compared at a remote checking station with corresponding authentication data for the second network according to the second protocol, for authenticating the user terminal according to the second protocol, for use with the second network

The invention further includes a user terminal operative according to GSM recommendations and IS-41 recommendations, and responsive to an IS-41 challenge packaged as a USSD or SMS, to produce a IS-41 response, transmitted as a SMS or USSD.

In accordance with the invention an interworking function unit may be provided for providing interworking between a first and second telecommunications networks operative according to a first and second different sets of recommendations with respective first and second authentication protocols, for use in authenticating a user terminal which has roamed from the first network to the second network, the unit comprising: means for routing an authentication challenge according to the protocol of the first network, towards a user terminal, through the second network; means to receive from the user terminal, through the second network, a response to the challenge in accordance with the first authentication protocol; and means for routing the response in a format in accordance with the recommendations for the first network, towards a checking station at which it is compared with corresponding authentication data for the first network according to the first protocol so as to authenticate the user terminal for use with the first network.

In order that the invention may be more fully understood, an embodiment thereof will now be described by way of example with reference to the accompanying drawings, in which:

Figure 1 is a schematic diagram of a satellite telecommunications system together with a local, land-based mobile telecommunications system, in accordance with the invention;

Figure 2 is a more detailed block diagram of the satellite network in the vicinity of SAN 1 and the associated terrestrial cellular network, for illustrating interworking;

Figure 3 is a schematic block diagram illustrating intercommunication within the satellite network;

Figure 4 is a schematic diagram of a mobile user terminal;

Figure 5 is a schematic block diagram of the circuits of the terminal shown in Figure 4;

Figure 6 is a schematic block diagram of the SIM card shown in Figures 4 and 5;

Figure 7 is a schematic block diagram of the interworking unit 32 shown in Figure 2;

Figure 8 is a schematic flow chart for convention IS-41 authentication for the PLMN 9;

Figure 9 is a flow chart of an alternative authentication procedure for the PLMN 9;

Figure 10 is a schematic flow chart of GSM-type authentication in the satellite network;

Figure 11 is a schematic general flow chart of the authentication procedure when the user terminal roams for the IS-41 network 9, to the satellite network;

Figure 12 is a schematic flow diagram of a SSD update performed in the authentication shown in Figure 11

Figure 13 is a schematic flow diagram for end-to-end authentication, performed after the SSD update of Figure 12, in accordance with the invention;

Figure 14 is a flow chart of a modified end-to-end authentication; and

Figure 15 is a schematic diagram of a USSD including an IS-41 challenge.

Satellite Network

Referring to Figure 1, a schematic block diagram of a satellite mobile telecommunication network is shown corresponding generally to the ICO™ network. A mobile user terminal UT 1 in the form of a mobile telephone handset can communicate on a radio channel over a communication path 1, 2 via an earth orbiting satellite 3a with a land-based satellite access node SAN 1. As shown schematically in Figure 1, SAN 1 is provided with an antenna 4 which can track the orbiting satellite.

A number of the satellite access nodes SAN 1, 2, 3, etc are connected together to form a backbone network 5, which is connected through a number of gateways GW 1, 2, 3, etc to conventional land-based telephone networks. For example, considering the gateway GW1, it is connected to a land-based public switch telephone network (PSTN) 6, which permits connection to be made to a conventional telephone set 7. The gateway GW1 is additionally connected to a public switch data network (PSTN) 8 and a public local mobile network (PLMN) 9. Each of the gateways GW 1,2,3 may comprise commercially available mobile switching centres (MSCs) of the type used in GSM networks.

For a fuller understanding of GSM, reference is directed to the various GSM Recommendations issued by the European Telecommunications Institute (ETSI). Also reference is directed to "The GSM System for Mobile Communications" by M. Mouly and M-B. Pautet, ***supra***, for a more easily understandable synopsis

As shown in Figure 1, the handset UT 1 can also communicate with the conventional land-based mobile network PLMN 9, which is shown schematically to include a transceiver station 10 that establishes a duplex link 11 with the user terminal UT 1. In this example, the PLMN 9 is a IS-41 based network such as a D-AMPS network..

The satellite network is designed to provide worldwide coverage and the satellites 3a, 3b form part of a constellation of satellites, which may be arranged in several orbits. In one example, two orbits of five satellites are used, which can be shown to provide coverage of a major part of the surface of the earth, in which for a 10° satellite elevation angle, one satellite can be accessed by the mobile handset all of the time and two satellites can be accessed for at least 80% of the time, thereby providing system diversity. Further satellites may be included in the constellation in order to provide additional redundancy and diversity.

The satellites are typically arranged in a MEO constellation, for example with an orbital radius of 10,355 km, although the invention is not restricted to a particular orbital radius. In this embodiment, satellites 3a, 3b are shown in a common orbit and the satellites are tracked by the antenna arrangement of each SAN. Typically, each SAN includes five antennas for tracking individual satellites of the constellation. The SANs are spaced around the earth in order to provide continuous coverage. In the example shown, SAN 1 may be located in Europe whereas SAN 2 may be located in Africa, SAN 3 in America and other SANs may be located elsewhere. In Figure 1, the SAN 2 is shown communicating with user terminal UT 2 via satellite 3b. For further details of the satellite network, reference is directed to GB-A-2 295 296.

The satellites 3a, 3b are in non-geostationary orbits and comprise generally conventional satellites such as the Hughes HS 601 and may include features disclosed in GB-A-2 288 913. Each satellite 3a, 3b is arranged to generate an array of beams covering a footprint on the earth beneath the satellite, each beam including a number of different frequency channels and time slots as described in GB-A-2 293 725. The beams thus provide adjacent cellular areas which correspond to the cells of a conventional land-based mobile telephone network. The satellites are controlled by means of a satellite control centre (SSC) 12 and a tracking telemetry and control station (TT&C) 13, which are connected to a network management centre 14 through a digital network 15 that is coupled to the backbone network 5. The SSC 12 and the TT&C 13 control operation of the satellites 3a, 3b, e.g. for setting the transmission power levels and transponder input tuning, as directed by the NMC 14. Telemetry signals for the satellites 3a, 3b are received by the TT&C 13 and processed by the SSC 12 to ensure that the satellites are functioning correctly.

During a telephone call, the handset UT 1, 2 communicates with the satellite 3a, 3b via a full duplex channel comprising a down link channel and an up link channel. The channels include TDMA time slots on frequencies allocated on initiation of the call.

Referring to Figure 2, the configuration of SAN 1

and the local PLMN 9 is shown in more detail. SAN 1 consists of a land earth station LES 1 which is coupled to the five dish antennas 4 for tracking the satellites, the LES 1 including transmitter and receiver circuits with amplifiers, multiplexers, demultiplexer and codecs. A mobile satellite switching centre MSSC 1 is coupled to LES1 and to a satellite visitor location register $VLR_{SAT}1$. MSSC 1 couples communication signals (voice and packet data) to the backbone network 5 and to the LES 1, so as to allow individual telephone calls to be established through the backbone network 5 and the duplex communication link 1, 2 via the satellite 3a, to the mobile terminal UT 1. The MSSC 1 responds to addresses on incoming communication signals from the antenna 4 to route the signals appropriately to their destinations.

The $VLR_{SAT}1$ maintains a record of each of the subscribers, namely the IMSIs of each of the user terminals UT that are making use of the SAN 1 for signal communication.

The MSSC 1 is connected to the gateway GW1 so as to provide an output connection to PLMN 9, together with PSDN 8 and PSTN 6 shown in Figure 1. Thus, typically, the packet data will be fed to and from the PSDN 8 and voice signals will be communicated to and from the network PLMN 9 or PSTN 6. It will be understood that all the SANs are of similar construction with a respective VLR_{SAT} to maintain a record of the subscribers registered.

Referring to Figure 3, the satellite network also includes a database 17 referred to herein as the satellite home location register (HLR_{SAT}) that contains records relating to each mobile user terminal UT. The record includes the terminal's identity, namely, its IMSI, the geographical location of the UT, the home MSSC with which the UT is registered, so as to enable billing and other data to be collected at a single point, and the currently active SAN with which the UT is in communication via a satellite. The HLR_{SAT} 17 may be located at the NMC 14 shown in Figure 1 or may be distributed among the SANs 1, 2, 3 etc. Associated with the HLR_{SAT} 17 is an authentication centre AuC which stores the secret parameter Ki and the associated IMSI for each subscriber to the satellite network, in accordance with the GSM Recommendations in order to authenticate the subscriber for use with the satellite network.

IS-41 Network (PLMN 9)

Referring again to Figure 2, the IS-41 mobile network 9 comprises a DAMPS network and includes a number of base transceiver stations BS 1, 2, 3 etc which are geographically spaced apart in order to support a cellular network in a manner well known ***per se***. Typically, the IS-41 network 9 has a coverage area that overlies a country or state, and thus overlaps with the global coverage of the satellite network. BS 1 is shown with an associated antenna 10, connected by a landline to a mobile switching centre MSC 1 which can route calls within the mobile network and also through a gateway GMSC 1 to a conventional PSTN over line 18, or to the satellite network, over line 19 through the gateway GW 1.

A home location register HLR for the land-based IS-41 network 9 is provided, coupled to the GMSC 1. The HLR, in a conventional manner, keeps a record of the identities of the user terminals registered for use with the network, known in the nomenclature of IS-41 as the module identity number (MIN). The PLMN 9 may also include a visitor location register VLR which maintains a record of subscribers temporarily registered with the network, that have roamed from other IS-41 networks. For example, if the PLMN 9 is sited in one geographic region of the USA e.g. California, subscribers from an IS-41 network in another geographic region e.g. New York State, may be locally registered on a temporary basis whilst in California. In a conventional manner, telephone usage information is relayed from the VLR in California through the PSTN 6 to the New York network for billing purposes.

An authentication centre AC is coupled to the HLR. The AC includes a database of secret keys, known as A keys, that are uniquely associated with the MINs of individual user terminals, together a CAVE algorithm in accordance with the IS-41 recommendations. This stored data is used to authenticate a user terminal, such as the terminal UT 1, as will be explained in more detail hereinafter.

For further details of the IS-41 recommendations, reference is directed to the textbook: Mobile Telecommunications Networking with IS-41, by M.D. Gallagher & R.A. Snyder, McGraw Hill 1997 [ISBN 0-07-063314-2].

Mobile user terminal

Referring to Figures 4 and 5, the mobile user terminal UT 1 is configured to operate with both the local terrestrial cellular network and the satellite network. Thus, in the example shown in Figure 2, the mobile handset UT 1 can operate either according to a land-based IS-41 protocol such as D-AMPS or according to the satellite network protocol, which generally corresponds to a GSM protocol. As shown in Figure 4, the user terminal UT 1 comprises a mobile handset which is capable of dual mode operation. It includes conventional IS-41 circuits for use with the land-based cellular network 9 together with similar, GSM type circuitry for use with the satellite network. The handset comprises a microphone 20, a speaker 21, a battery 22, a keypad 23, antennas 24a, 24b for use with the IS-41 and satellite networks respectively, and a display 25 which can be used amongst other things, for displaying messages transmitted to the terminal over the digital packet data network, via the satellite link. The handheld unit UT 1 also includes a subscriber identification module (SIM) smart

card 26, primarily for use with the satellite network.

The circuit configuration of the handset UT 1 is shown in block diagrammatic form in Figure 5. The SIM card 26 is received in an SIM card reader 27 coupled to a controller 28, typically a microprocessor. The microphone and speaker 20, 21 are coupled to codecs 29a, 29b for use with the IS-41 and satellite networks respectively, coupled to respective conventional radio interfaces 30a, 30b and respective antennas 24a, 24b so as to transmit and receive communication signals, in a manner well known ***per se*** for the IS-41 and the satellite networks.

For the satellite network, the SIM card 26 includes a memory M 1, shown in Figure 6, which stores an individual IMSI together with the secret identification function Ki which is unique to the SIM, and the algorithms A3/A8 and A5 in accordance with the GSM Recommendations, for authentication purposes, as will be described later.

For the IS-41 network, the user terminal includes a numeric address module (NAM) 31 in accordance with the IS-41 recommendations, which stores the individual MIN and A key for the handset. Also, a memory M 2 associated with the controller 28, stores the CAVE algorithm, used for authentication, to be described hereinafter.

Network selection

As described previously, the networks can be selected in a number of different ways, either automatically depending on factors such as signal strength or manually. In this example, for ease of explanation, the networks are described as being selected manually, by the use of a key on the keypad 23.

When the keypad 23 is operated to select the IS-41 network, the controller 28 selects the codec 29a and the radio interface 30a so that UT 1 operates at a frequency and according to a protocol for the land based IS-41 network 9, over the duplex link 11. When the satellite network is selected, the controller 28 selects the codec 29b and the radio interface 30b so that UT 1 operates at a frequency and according to a protocol suitable for the satellite network and communication takes place over the duplex links 1, 2 via the satellite 3a.

Network interworking

When the user terminal roams outside of the coverage area of the PLMN 9 or when it is desired to use services available through the satellite network which are not available through the IS-41 network, calls from the land based mobile network 9 are directed to the user terminal UT 1 through the satellite network. An interworking function unit (IWF) 32 shown in Figure 2 is provided for this purpose, permitting full control over the service provision between the satellite and cellular land-based networks. The IWF 32 is coupled between the HLR of the PLMN 9 and the $VLRs_{SAT}$ of the satellite network, as shown in Figure 2. The IWF 32 is shown in more detail in Figure 7 and comprises a VLR_{IWF} connected to the HLR of PLMN 9, together with a HLR_{IWF} that is coupled to the individual $VLRs_{SAT}$ of the satellite network. In Figure 7, the HLR_{IWF} is shown coupled to VLR_{SAT} 1 on line 33 and a schematic connection to the other $VLRs_{SAT}$ is shown as line 34.

The HLR_{IWF} includes a database of IMSIs for subscribers to the satellite service together with corresponding MINs for the user terminals that can be used with the land-based IS-41 network 9, for use in authentication, as will be described later.

Service Provision

The network configuration permits service providers to offer services to a subscriber in a number of different ways. One way is to provide a conventional PLMN service through the network 9 according to the IS-41 protocol. Another way is to provide a solely satellite based service, provided through the backbone network 5 and the SANs. An alternative way is to provide the satellite based service as an extension of the PLMN 9 so that the user of terminal UT 1 uses the Home PLMN 9 when in range, other PLMNs when roaming in respect of land-based networks, or alternatively the satellite network. Thus, the satellite network can allow the user terminal to be operated worldwide, outside of the range of terrestrial PLMNs, or the satellite service can provide an alternative to the PLMN when within range. These alternatives will now be discussed in more detail:

a) Conventional PLMN service

When the mobile user terminal UT 1 is within the coverage area of the PLMN 9 shown in Figure 1, it can be operated in a conventional manner with the land-based network. The user terminal UT 1 is set, using the keypad 23 (Figure 4) so as to transmit and receive using the codec 29a and the radio interface 30a appropriate for IS-41 communication over the duplex link 11 shown in Figure 1. The user terminal UT 1 is thus registered with VLR1 of the IS-41 network shown in Figure 2. Prior to registration, a conventional IS-41 authentication procedure is carried out, as will be explained later. Calls can then be routed from the telephone set 7 shown in Figure 1, through the PSTN 6 to the PLMN 9 and hence to the user terminal UT 1, over the duplex link 11. The incoming call is routed to the HLR of the network 9 and the MIN corresponding to the telephone number for the incoming call is determined from a look-up table in the HLR. The HLR also includes a table of the user terminals currently registered with the network 9, and from this data, the call can then be routed to the relevant BTS with which the destination user UT is currently registered.

b) Satellite Service Provision

For this mode of operation, a "stand-alone" satellite service is provided through the backbone network 5. Referring to Figure 3, the satellite service provision makes use of the satellite home location register (HLR_{SAT}) that contains records including the IMSI relating to each mobile user.

Referring again to Figure 1, when a call from telephone set 7 is to be routed through PSTN 6 to the satellite service, the satellite service network has a predetermined telephone number prefix, together with a unique telephone number for the user. The call is routed through PSTN 6 and gateway GW1 to SAN 1 in this example. The SAN 1 then queries the satellite home location register HLR_{SAT} for the currently registered location of the user i.e. the VLR_{SAT} with which the IMSI is currently registered. This operates in the same way as a GSM HLR and the IMSI corresponding to the telephone number for the incoming call is determined from a look up table in the HLR_{SAT}. Also the HLR includes a table of the current location of the user terminals currently registered with the network, this information having been fed to the HLR from the $VLRs_{SAT}$ associated with the individual SANs. From this comparison, the call can then be routed to the relevant SAN with which the destination user UT is currently registered. The call is then routed from the SAN through an appropriate satellite link to the user terminal UT 1. Billing information is accumulated in the HLR_{SAT}.

As specific examples of the satellite service, a call made from telephone 7 can be routed to user terminal UT 1 having an IMSI A via PSTN 6, GW 1, SAN 1 and satellite 3a, or a call can be made from UT 2 with IMSI B to UT 1 via SAN 2, backbone network 5 and SAN 1.

A full duplex link is established via the satellite 3a, with the signal formats being generally in accordance with the GSM recommendations. Thus, duplex voice communication channels are provided together with the other signal formats supported by GSM, including the short message service (SMS) and unstructured supplementary service data (USSD). SMS is described in more detail in "The GSM System for Mobile Communications" by M. Mouly and M-B. Pautet, on page 56 and allows short text messages to be transmitted to a mobile user terminal to be displayed on its display, i.e. the display 25 shown in Figure 4. For further details of USSD, reference is directed to GSM Technical Specification GSM 02.90 November 1996, Version 5.0.0, published by ETSI, F-06291, Sophia Antipolis, Cedex, France. Briefly, USSD permits unstructured digital data messages to be transmitted between elements of a network operating according to the GSM protocol.

This form of service provision is attractive for users in remote locations where no PLMN exists.

(c) Satellite service as an extension to existing IS-41 PLMN service

In this m ode of operation, the satellite service is used as a roamed network, so as to provide an extension to the coverage area provided by the IS-41 PLMN 9. As previously explained, in some circumstances, it may be desirable to use the satellite network in preference to the IS-41 network in order to make use of enhanced services not available through the IS-41 network, but which can be accessed through the satellite network. Also, the satellite network can be used in areas where there is no IS-41 service, thus permitting the dual mode handset UT 1 to be used throughout the world, in addition to the coverage area of the IS-41 network 9. For this mode of operation, the satellite network is treated as a roamed network for the PLMN 9 so that calls which are routed through satellite network are billed using the existing facilities of the PLMN 9.

For this mode of operation, the user terminal UT 1 is set for operation at the satellite frequency network, by operation of keypad 23 to select codec 29b and radio interface 30b, for communication via antenna 24b over the duplex link 1, 2 via satellite 3a. The user terminal UT 1 thus registers with one of the $VLRs_{SAT}$ of the satellite network. In this example, it is assumed that it has registered with $VLR1_{SAT}$ shown in Figure 2. This registration information is transferred to the IWF 32, where a record of the IMSI for UT 1 and its registration with VLR_{SAT} is stored. Also, as previously explained, the HLR_{IWF} contains a database of all IMSIs of user terminals which are permitted to interwork with the IS-41 network, together with their corresponding MINs. The registration information is transferred to the VLR_{IWF} shown in Figure 7 and communicated to the HLR of the IS-41 network 9 shown in Figure 2.

When an incoming call from telephone set 7 shown in Figure 1, is routed through PSTN 6, over line 18 (Figure 2) to the PLMN 9, it is initially directed to the HLR of PLMN 9 from which routing information is determined for routing the call over line 19, through the PSTN 6, to the gateway GW 1, and thence through SAN 1 and the duplex link 1, 2 via satellite 3a, to the user terminal UT 1.

Authentication procedure

Different authentication procedures need to be used for these three different service provisions, in order to determine that the user terminal may be permitted to be registered with the networks, as will now be described in detail:

a) Authentication for conventional PLMN service

When service option (a) described above is selected, a conventional IS-41 authentication procedure is carried out prior to registering the user terminal 1 with

VLR 1 of PLMN 9. This conventional authentication procedure will now be described with reference to Figure 8.

In response to an authentication request from user terminal UT 1, the authentication centre AC of PLMN 9 generates at step S8.1 a request for the user terminal UT 1 to generate shared secret data (SSD) in accordance with the conventional IS-41 protocol, the request being transmitted through the network in a conventional manner. As well known to those skilled in the art, the user terminal UT 1 stores a secret or A-key which is unique to the user terminal, together with its unique MIN. The A-key and the corresponding MIN are stored in the network in the secure authentication centre AC. A feature of the IS-41 SSD generation technique is that the A-key cannot be determined from the SSD by reverse engineering techniques.

As step S8.2, the SSD is generated from the A-key, both at the user terminal UT 1 and at the AC.

Then, at step S8.3, the MIN for user terminal UT 1 is transmitted through the network to MSC 1. Then, at step S8.4, a challenge in the form of a random number RAND is generated in MSC 1 and transmitted through the network to user terminal UT 1.

Both the user terminal UT 1 and the authentication centre AC hold a copy of the IS-41 CAVE algorithm. As known in the art, a CAVE algorithm operates the SSD and RAND as inputs to produce an authentication response AUTHR. At step S8.5, the CAVE algorithm is run using the locally generated SSD and the value of RAND received from MSC 1, to produce AUTHR, which is then transmitted to from user terminal UT 1 to MSC 1, step S8.6. Then, at step S8.7, the values of MIN, RAND and AUTHR are transmitted from MSC 1 via the HLR, to the authentication centre AC.

Then, at step S8.8, the CAVE algorithm is run locally at the AC using the locally generated SSD together with the receive value of RAND to produce AUTHR. The AUTHR produced at the AC is then compared with the AUTHR received from UT 1 at step S8.9 and a RESPONSE depending on the outcome, is transmitted to the HLR of PLMN 9. If both versions of AUTHR are the same, the RESPONSE indicates to the HLR that successful authentication has been achieved. However, if the AUTHRs are different, the HLR is instructed to bar registration of UT 1 with VLR 1.

A modified authentication procedure is shown in Figure 9 in which the comparison of the two values of AUTHR is carried out at MSC 1. In this procedure, after transmission of the SSD request at step S9.1, the SSD generated at the AC is communicated to MSC 1. The authentication procedure then proceeds through steps S9.4 to S 9.7, which correspond to steps S8.3 to S8.6 in Figure 8. The CAVE algorithm is then run, at step S9.8, at the MSC 1, rather than at the AC as in Figure 8, to produce a value of AUTHR, which is compared with the value of AUTHR transmitted from handset UT 1 at step S9.7, in order to produce the response at step S9.9.

The modified procedure of Figure 9 has the advantage that it is not necessary to refer back to the AC for each authentication, due to the fact that the SSD has been transmitted to MSC1.

b) Authentication for satellite service provision

When the service provision b) discussed above is used, authentication for user terminal UT 1 is carried out according to an authentication process shown in Figure 10.

As previously mentioned, the user terminal UT 1 includes a SIM smartcard which stores a unique IMSI, a unique identification function Ki and a GSM encryption algorithm A5, according to the GSM Recommendations (Figure 6). The registration and authentication procedure involves transmitting the IMSI to the GSM authentication centre AuC associated with the satellite network (Figure 3) and comparing data from the SIM with data from the authentication centre AuC at MSSC 1.

In a first step S10.1 shown in Figure 10, the IMSI is transmitted from UT 1 via MSSC 1, to the HLR_{SAT}, where it is routed to the authentication centre AuC. As previously mentioned, the authentication centre AuC includes a copy of the identification function Ki associated with each respective IMSI which is valid for use on the GSM network.

At step S10.2, the IMSI is checked in the memory of the AuC, and a corresponding value of Ki is retrieved. Also, a random number RAND is generated in the AuC using a random number generator (not shown). The random number RAND and the value of Ki are applied, in the AuC, as inputs to the GSM algorithm A3 to generate a signed result SRES. The AuC also includes the GSM algorithm A8 which generates a secret key Kc that is used for encryption/decryption of data transmitted over the air between the user terminal and the SAN. In practice, the algorithms A3/A8 may be constituted by a single algorithm producing a 96 bit output of which 32 bits constitute SRES and the remaining 64 bits constitute Kc.

At step S10.3, a triplet of signals comprising RAND, SRES and Kc is fed from the authentication centre AuC, through the HLR_{SAT} to MSSC 1. In practice, n triplets are supplied to MSSC 1 for use in subsequent authentications, for example during a call, but the processing of only one triplet will be considered herein in order to simplify the explanation.

At step S10.4, the individual value of RAND is transmitted on to the user terminal through the network from the MSSC. The SIM of the user terminal UT 1 stores the algorithm A3/A8 so that, at step S10.5, a corresponding value of SRES' is generated at the user terminal UT 1 from the received value of the random number RAND and the stored value of Ki in the SIM.

The value of SRES' is transmitted back at step S10.6 through the network to MSSC 1 and compared at step S10.7 with the originally generated value of SRES. If they are the same, the user terminal is authenticated

but otherwise registration of the user terminal UT 1 with VLR_{SAT} 1 is barred.

If the authentication is successful, MSSC 1 initiates encryption/decryption of data transmitted over the network, using an algorithm referred to in the GSM Specifications as A5, which uses as its inputs, the secret key Kc and the frame number of data transmitted through the network. The SIM of the user terminal UT 1 generates its own value of the secret key Kc using its locally stored copy of the algorithm A8. The local value of Kc at the user terminal UT 1 can then be used to encrypt/decrypt data, using a locally held copy of the algorithm A5.

It will be understood that only essentially random numbers are transmitted over the air interface, which have no relation to one another, which minimises the risk of cloning or unauthenticated use.

Assuming that the authentication procedure is successful, calls can be routed to UT 1 through the satellite network according to service provision option (b) discussed above.

c) Authentication for satellite service when use as a roamed extension to the IS-41 PLMN 9.

When the service provision option (c) discussed above, is used, i e when the satellite service is used as a roamed network for the IS-41 network 9, the service provider for the IS-41 network seeks secure, end-to-end authentication between the authentication centre AC of the network 9 and the user terminal UT 1 in order to provide assurance that the billing information provided from the satellite network to the PLMN 9 is accurate. However, the authentication procedures for the satellite network and the IS-41 network 9 are different, and incompatible The present invention provides a solution to this problem and allows end-to-end authentication to be carried out between the user terminal and the authentication centre of the IS-41 network.

In accordance with the invention, IS-41 authentication signals that are transmitted between the user terminal UT 1 and the IS-41 network 9, through the satellite network, are encoded as GSM USSD and are communicated between the satellite network and the IS-41 network 9, through the interworking function IWF 32.

The overall scheme is shown in schematic form, in Figure 11 As a first stage, the user terminal UT 1 is authenticated for use with a satellite network in the manner described previously with reference to Figure 10. This is shown as step S11.1.

Thereafter at step S11 2, the AC of the IS-41 network 9 instructs the user terminal UT 1 to perform an SSD update and a corresponding update is performed at the AC. This will be described in detail hereinafter, with reference to Figure 12

Then, at step S11.3, an end-to-end authentication is carried out as will be described in detail hereinafter with reference to Figure 13. A modification of the authentication process will also be described with reference to Figure 14.

SSD update

Referring to Figure 12, in order to initiate the authentication process, the authentication centre AC, at step S12.1 sends a SSD update request through the IS-41 network 9 to the VLR_{IWF} of the IWF 32, and thence to the HLR_{IWF} (Figure 7). The update request is in respect of a specific MIN corresponding to the MIN of user terminal UT 1. The HLR_{IWF} from its database of MINs and IMSIs determines the corresponding IMSI for UT 1 and packages the update request as a USSD i.e. an unstructured message suitable for transmission according GSM protocol. The packaging is carried out at step S12.2.

At step S12.3, the USSD is transmitted over the satellite network to the user terminal UT 1 at step S12.4 is decoded by the controller 28 (Figure 6). The message is recognised as a request to update the SSD which is then carried out and the update is stored in the memory M 2 shown in Figure 5.

Also, at step S12.4, the SSD is updated at the AC in the IS-41 network 9.

End-to-end Authentication

Referring now to Figure 13, end-to-end authentication is then carried out to ensure that the user terminal UT 1, when roaming from the IS-41 network 9 to the satellite network, can be validly registered with the VLR_{SAT} of the satellite network.

It will be recalled that during the initial satellite authentication procedure (step S11.1 in Figure 11 and Figure 10) the IMSI of UT 1 was communicated from the user terminal to the satellite network and the IMSI was registered in VLR 1_{SAT}. As part of this process, the IMSI is communicated to HLR_{IWF} of the IWF 32. It will also be recalled that the HLR_{IWF} contains a table of IMSIs and their corresponding MINs. Referring to Figure 13, at step S13.1, the MIN corresponding to the IMSI for UT 1 is transmitted from HLR_{IWF} to the VLR_{IWF}

At step S13.2, the VLR_{IWF} produces a challenge in the form of a random number RAND according to conventional IS-41 protocol, and both RAND and MIN are transmitted back to the HLR_{IWF}. At step S13.3, the HLR_{IWF} determines the IMSI which corresponds to the MIN and forms a USSD containing the challenge RAND, which is then transmitted over the satellite network according to GSM protocol, to the user terminal UT 1. The format of the USSD is shown in more detail in Figure 15 and consists of a header portion 35 and a message portion 36. The controller 28 of the user terminal UT 1 (Figure 6) recognises the header portion 35 as being a challenge, and it takes the challenge as an instruction to run the CAVE algorithm as shown at step S13.4. The CAVE algorithm uses as its inputs the MIN

stored in the NAM 31 of UT 1 shown in Figure 5, together the updated SSD stored in memory M 2 of UT 1, produced as a result of the update process described with reference to Figure 12, at step S12.3.

AUTHR is produced as a result of running the CAVE algorithm, and at step S13.5, the UT 1 packages a USSD, in GSM format, to include AUTHR, which is then transmitted over the satellite network to the HLR_{IWF}.

At step S13.6, the USSD with AUTHR is unwrapped and the MIN, held at the HLR_{IWF} together with AUTHR, is transmitted to the VLR_{IWF} where the initial value of the challenge RAND, is collected and the triplet of signals, MIN, RAND and AUTHR, are transmitted in IS-41 format through the PLMN 9 to the authentication centre AC.

Then, at step S13.8, the CAVE algorithm is run locally at the AC. The CAVE algorithm uses as its inputs the updated SSD, together with RAND as transmitted thereto at step S13.7. The locally produced value of AUTHR is then compared with the value transmitted to the AC at step S13.7, from UT 1. At step S13.9, a signal RESPONSE is produced depending on the outcome of the comparison of the two authorization response AUTHR. If they are the same, successful authentication has been achieved. In this situation, user terminal UT 1 is permitted to register with the satellite network in VLR 1_{SAT}. Otherwise, the registration of the UT 1 is removed from VLR_{SAT}.

From the foregoing, it will be seen that the authentication centre AC operates as a checking station to compare the authentication responses produced by UT 1 and the AC. In a modification shown in Figure 14, the VLR_{IWF} can perform the function of the checking station. In this procedure, the initially produced SSD is transmitted at step 14.1 from the AC to the VLR_{IWF} which, in a similar manner to the modification described with reference to Figure 9, avoids the need to transmit signals back and forth between the AC for successive authentications.

Many other modifications fall within the scope of the invention. For example, whilst the invention is described in relation to the ICO™ satellite network, other satellite networks could be used, e.g. of the types discussed hereinbefore, with different satellite constellation and signal transmission protocols.

Also, the invention can be used to provide authentication for a IS-41 user terminal which roams to a GSM land based network, rather than roaming to a satellite network as previously described.

Also, whilst the signal communication on the paths 1, 2 utilises a TDMA access protocol, others could be used, such as code division multiple access (CDMA) or frequency division multiple access (FDMA).

Although for the sake of convenient explanation, the term "mobile" has been used to denote the user terminals UT, it should be understood that this term is not restricted to hand-held or hand portable terminals, but includes, for example, terminals to be mounted on marine vessels or aircraft, or in terrestrial vehicles. Also, it is possible to practice the invention with some of the terminals being completely or at least partially immobile.

It will be understood that various components of the described examples of the invention may be located in different national jurisdictions. For the avoidance of doubt, the present invention extends to any part of component of the telecommunications apparatus or systems, which contributes to the inventive concept.

Claims

1. A method of authenticating a user terminal which has roamed from a first network that uses a first authentication protocol, to a second network that uses a second, different authentication protocol, comprising:

   transmitting an authentication challenge to the user terminal according to the protocol of the first network, through the second network,
   providing a response at the user terminal to the challenge in accordance with the first authentication protocol,
   transmitting the response through the second network, to a checking station, and
   comparing the response at the checking station with corresponding authentication data for the first network according to the first protocol so as to authenticate the user terminal according to the first protocol for use with the first network.

2. A method according to claim 1 wherein the authentication challenge is transmitted to the user terminal through the second network, packaged as a message in a data format pertinent to the second network.

3. A method according to claim 3 wherein the first network is configured in accordance with IS-41 recommendations, and the second network is configured in accordance with GSM recommendations.

4. A method according to claim 4 including packaging the challenge and the response as a USSD or SMS.

5. A method according to any preceding claim including authenticating the roamed user terminal for use with said second network in accordance with the second protocol, and only authenticating the terminal in accordance with the first protocol if the authentication according to the second protocol is successful.

6. A method according to claim 5 including:

transmitting an initial authentication challenge to the user terminal according to the protocol of the second network, through the second network,
providing a response at the user terminal to the challenge according to a predetermined algorithm in accordance with the second authentication protocol,
transmitting the response through the second network to a checking station for the second network, and
comparing the response at the checking station for the second network with authentication data according to the second protocol to authenticate the user terminal for use with the second network.

7. A method according to any preceding claim wherein the second network is a satellite network.

8. A method of authenticating a user terminal which has roamed from a first network that uses a first authentication protocol, to a second network that uses a second, different authentication protocol, comprising:

receiving an authentication challenge at the user terminal according to the protocol of the first network, transmitted thereto through the second network,
providing a response at the user terminal to the challenge in accordance with the first authentication protocol,
transmitting the response at the user terminal using the second network, towards a checking station whereby to permit the response to be compared with corresponding authentication data for the first network according to the first protocol so as to authenticate the user terminal according to the first protocol for use with the first network.

9. A method according to claim 8 including:

receiving an authentication challenge at the user terminal according to the protocol of the second network, transmitted thereto through the second network,
providing a response at the user terminal to the challenge in accordance with the second authentication protocol,
transmitting the response at the user terminal using the second network, towards a checking station whereby to permit the response to be compared with corresponding authentication data for the second network according to the second protocol so as to authenticate the user terminal according to the second protocol for use with the second network.

10. A user terminal for roaming from a first network that uses a first authentication protocol, to a second network that uses a second, different authentication protocol, comprising:

a receiver to receive an authentication challenge according to the protocol of the first network, through the second network,
means operative to provide a response to the challenge in accordance with the first authentication protocol,
and a transmitter operative to transmit the response through the second network, for permitting the response to be compared at a remote checking station with corresponding authentication data for the first network according to the first protocol, for authenticating the user terminal according to the first protocol, for use with the first network.

11. A user terminal according to claim 10 including:

a receiver to receive an authentication challenge according to the protocol of the second network, through the second network,
means operative to provide a response to the challenge in accordance with the second authentication protocol,
and a transmitter operative to transmit the response through the second network, for permitting the response to be compared at a remote checking station with corresponding authentication data for the second network according to the second protocol, for authenticating the user terminal according to the second protocol, for use with the second network

12. A user terminal operative according to GSM recommendations and IS-41 recommendations, and responsive to an IS-41 challenge packaged as a USSD or SMS, to produce a IS-41 response, transmitted as a SMS or USSD.

13. An interworking function unit for providing interworking between a first and second telecommunications networks operative according to a first and second different sets of recommendations with respective first and second authentication protocols, for use in authenticating a user terminal which has roamed from the first network to the second network, comprising:

means for routing an authentication challenge according to the protocol of the first network,

towards a user terminal, through the second network,

means to receive from the user terminal, through the second network, a response to the challenge in accordance with the first authentication protocol, and

means for routing the response in a format in accordance with the recommendations for the first network, towards a checking station at which it is compared with corresponding authentication data for the first network according to the first protocol so as to authenticate the user terminal for use with the first network.

14. An interworking unit according to claim 13 and including the checking station.

15. An interworking unit according to claim 13 and coupled to the first network, said checking station being in the first network.

16. An interworking unit according to claim 13, 14, or 15 operative to direct the authentication challenge towards the user terminal through the second network, packaged as a message in a data format pertinent to the second network.

17. An interworking unit according to claim 16 wherein the first network is configured in accordance with IS-41 recommendations, and the second network is configured in accordance with GSM recommendations.

18. An interworking unit according to claim 17 including means for packaging the challenge and the response as a USSD or SMS.

19. A system for authenticating a user terminal which has roamed from a first network that uses a first authentication protocol, to a second network that uses a second, different authentication protocol, comprising:

means operative to transmit an authentication challenge to the user terminal according to the protocol of the first network, transmitted thereto through the second network,

means for providing a response at the user terminal to the challenge in accordance with the first authentication protocol,

means for transmitting the response through the second network, to a checking station, and

means for comparing the response at the checking station with corresponding authentication data for the first network according to the first protocol so as to authenticate the user terminal according to the first protocol for use with the first network.

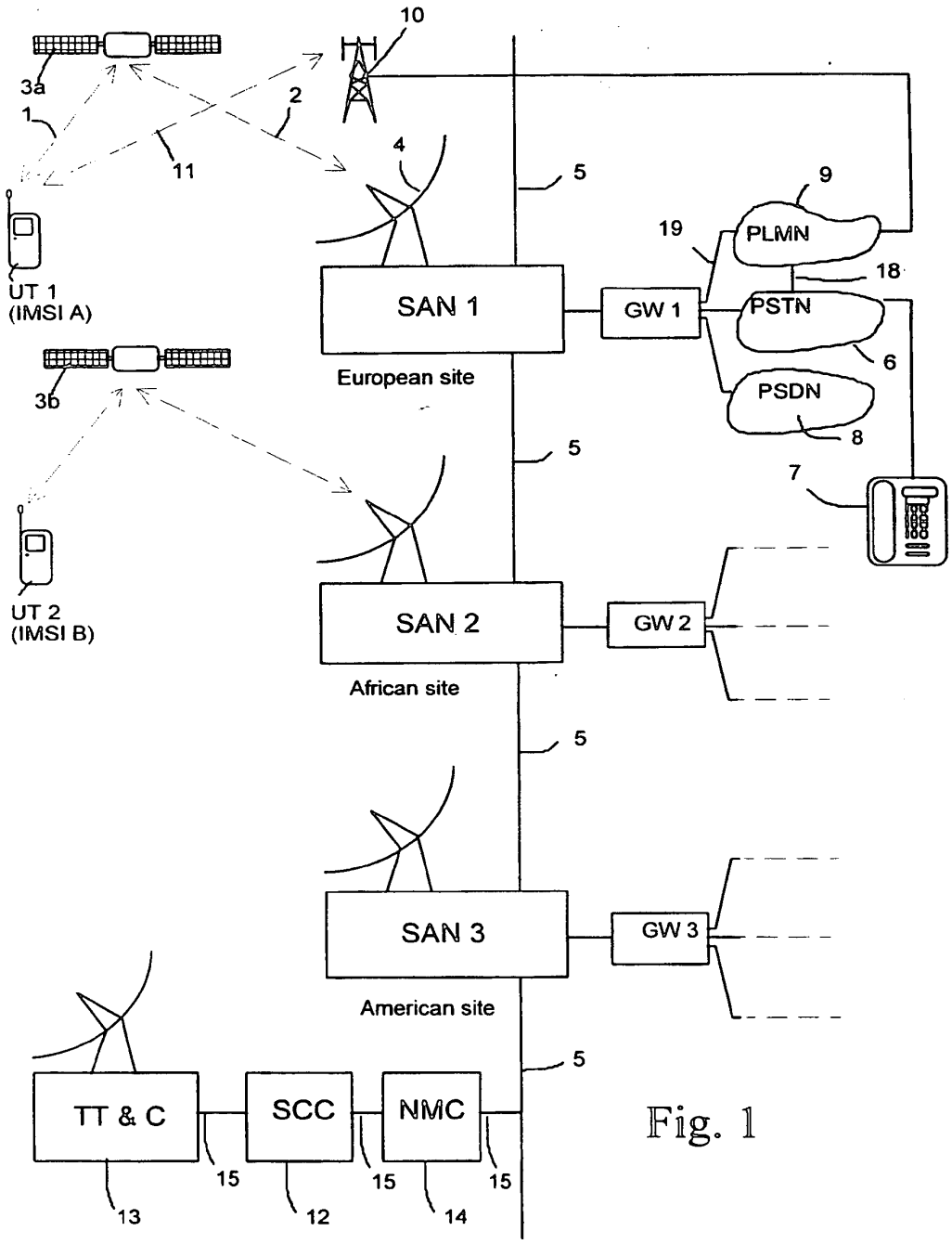


Fig. 1

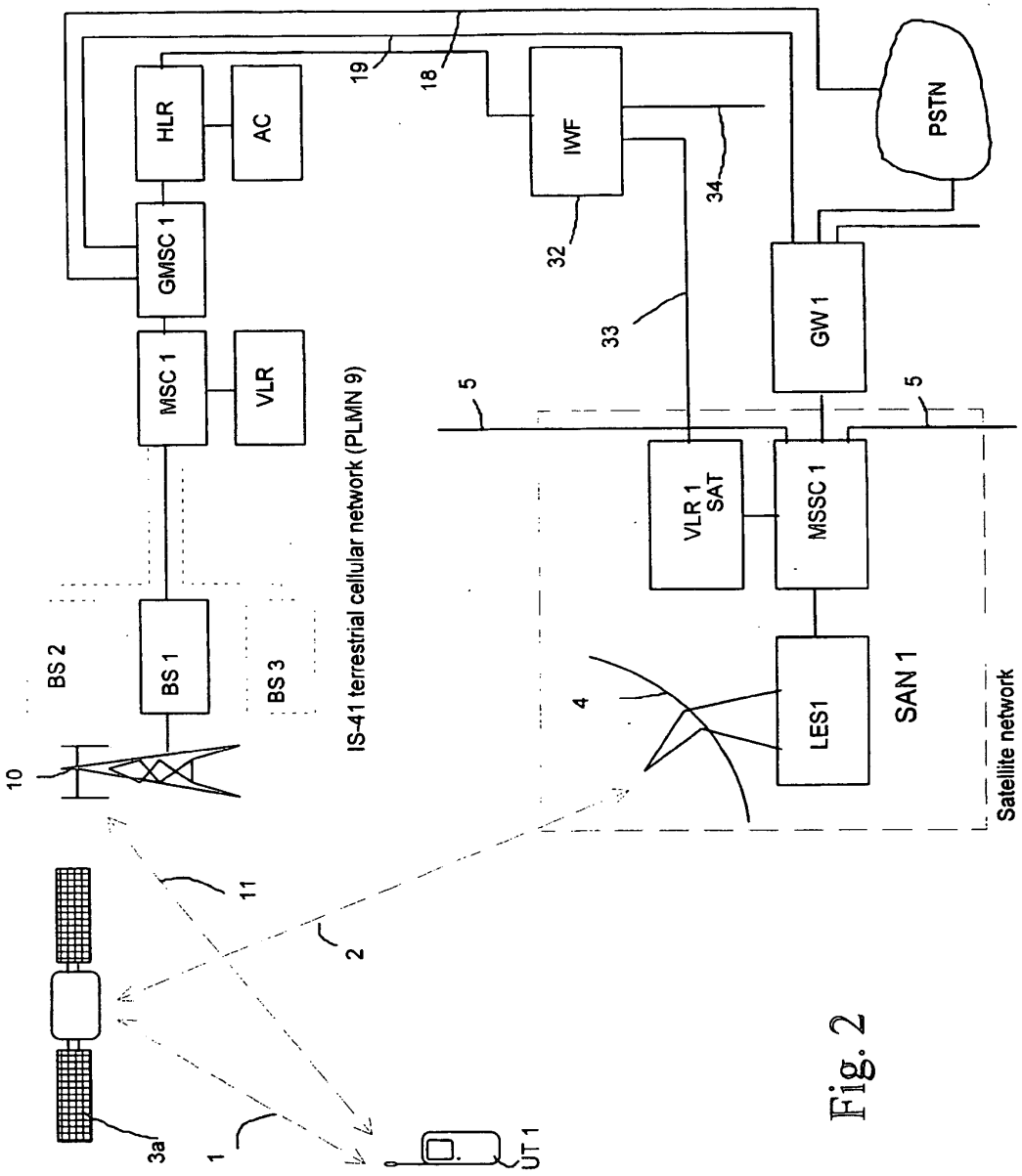


Fig. 2

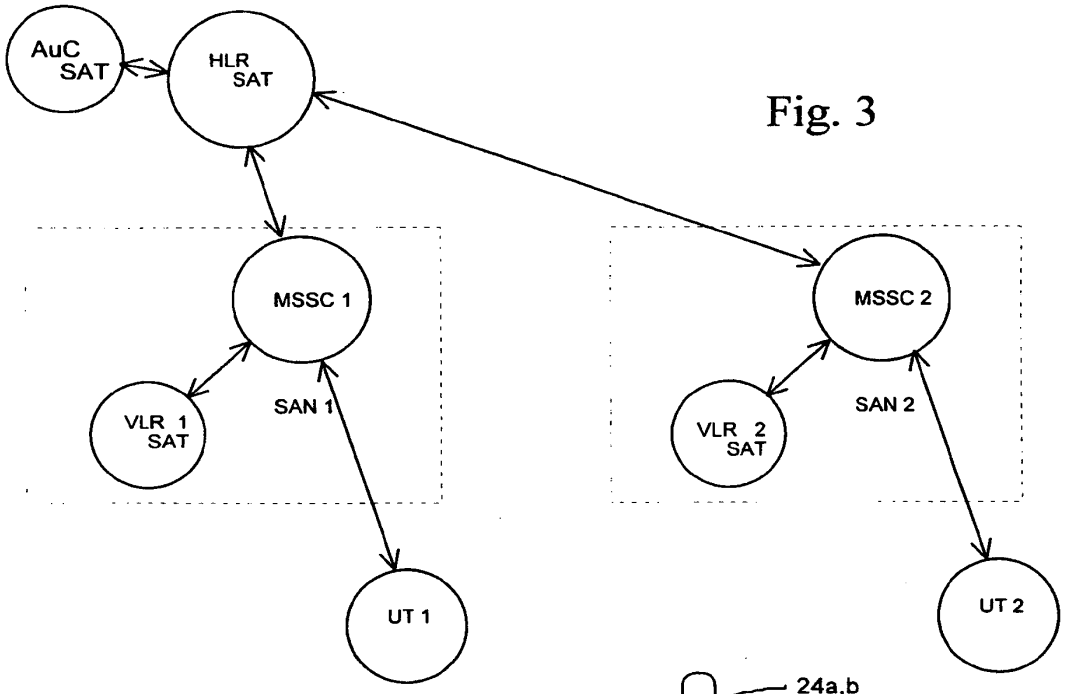
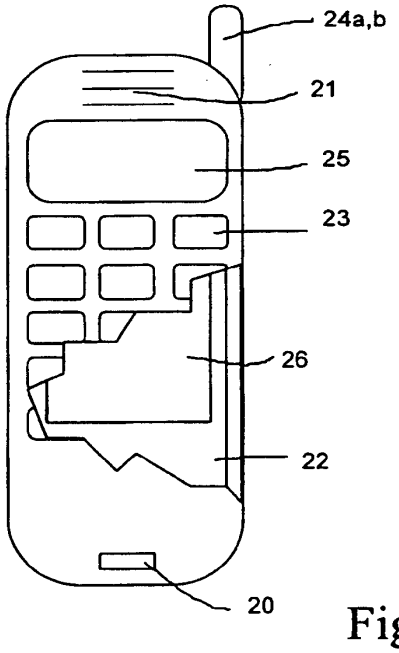


Fig. 3



UT 1

Fig. 4

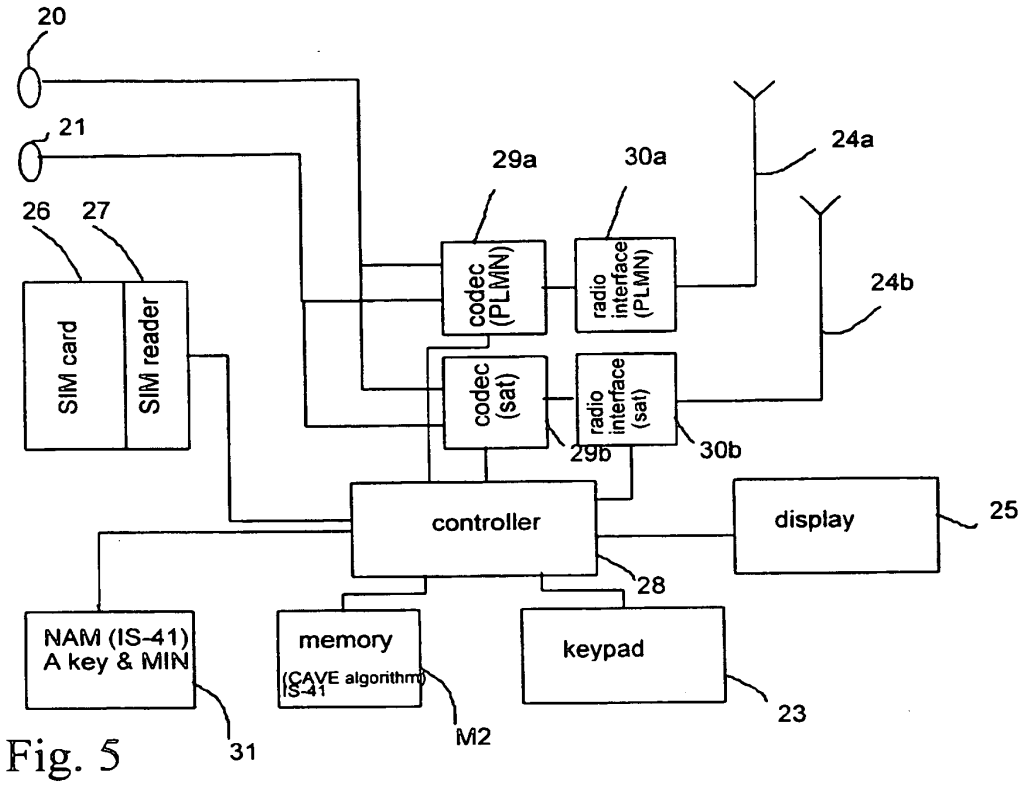


Fig. 5

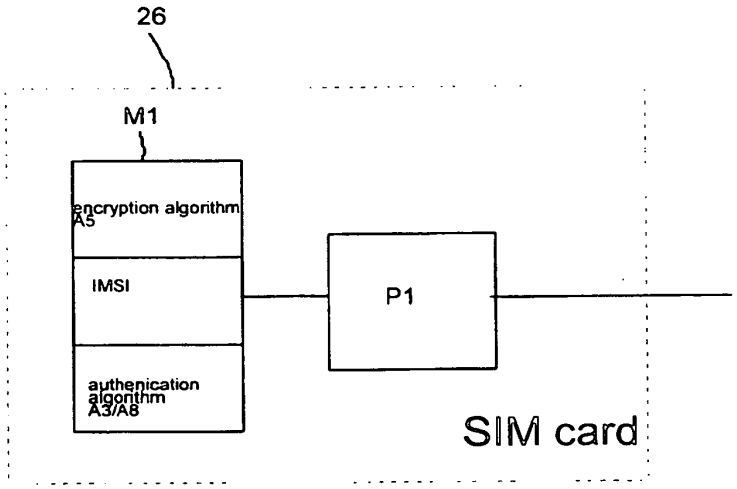


Fig. 6

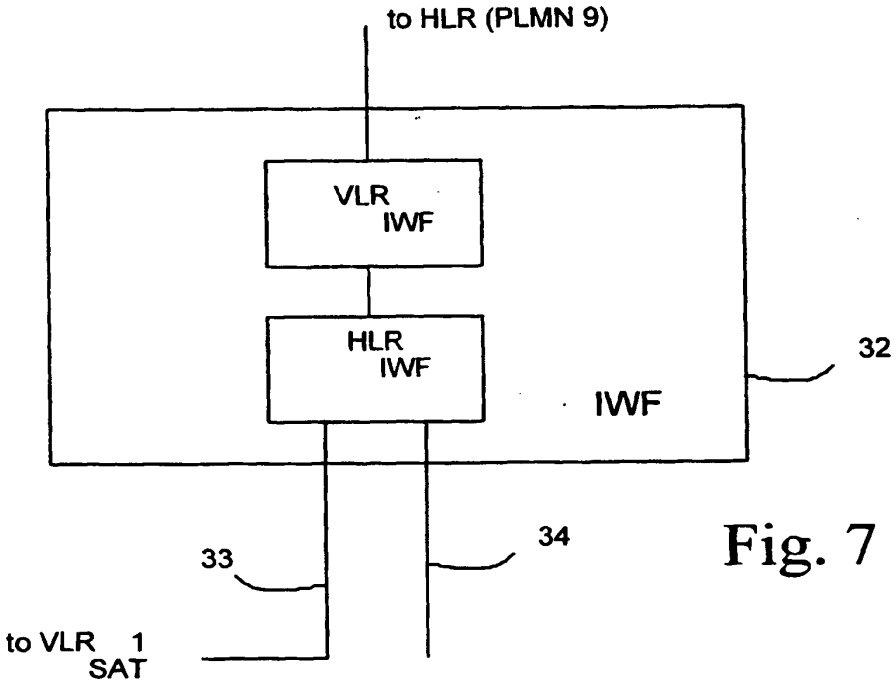
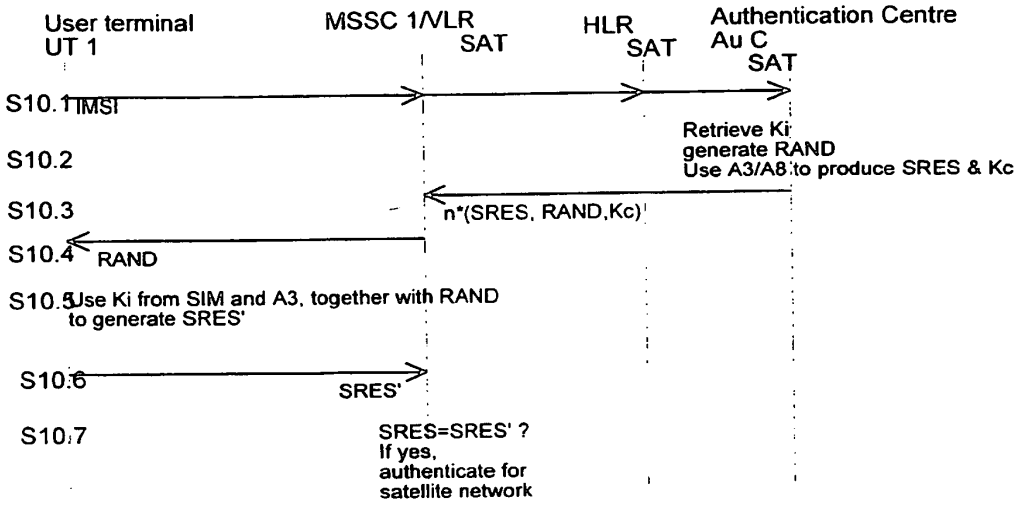
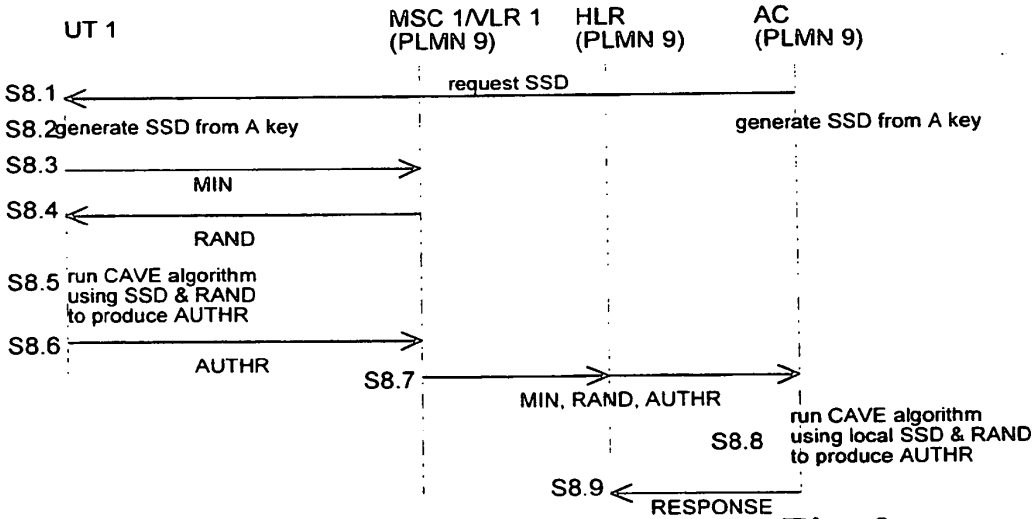


Fig. 7



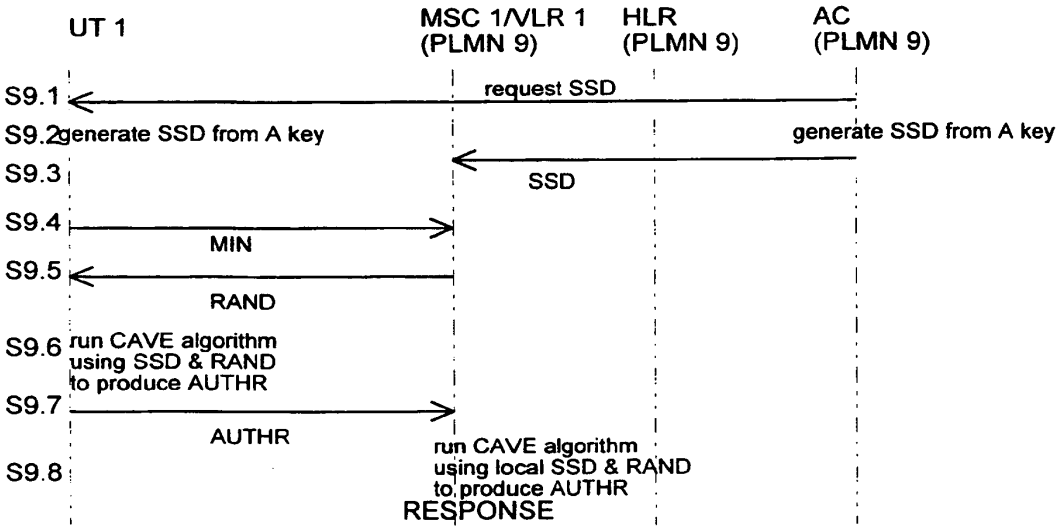
Satellite network authentication (GSM)

Fig. 10



IS 41 authentication for PLMN 9

Fig. 8



Alternative IS-41 authentication for PLMN 9

Fig. 9

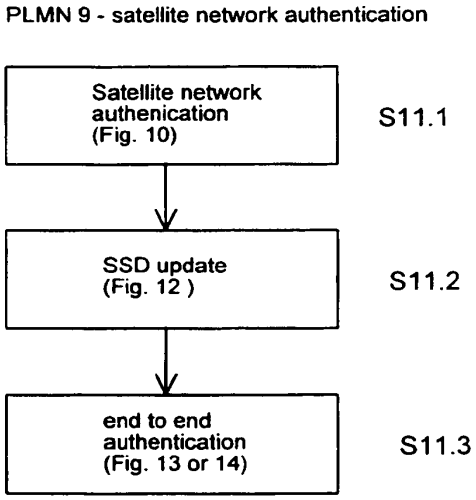


Fig. 11

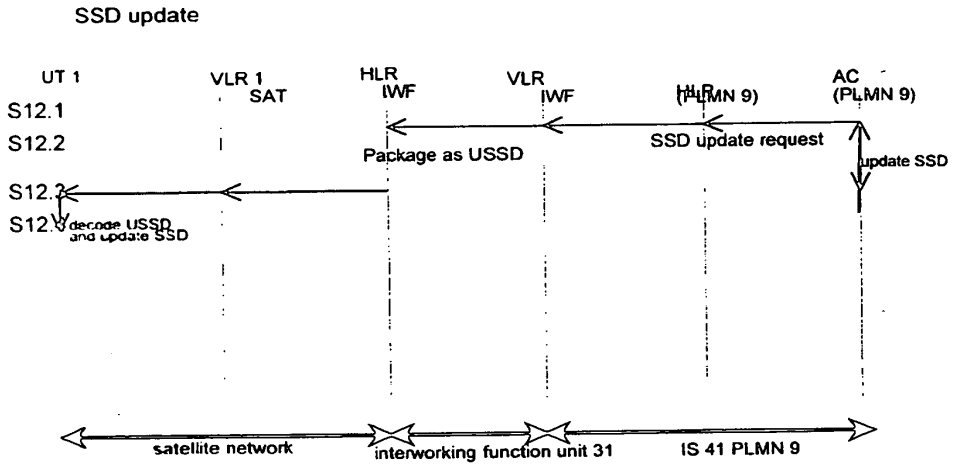


Fig. 12

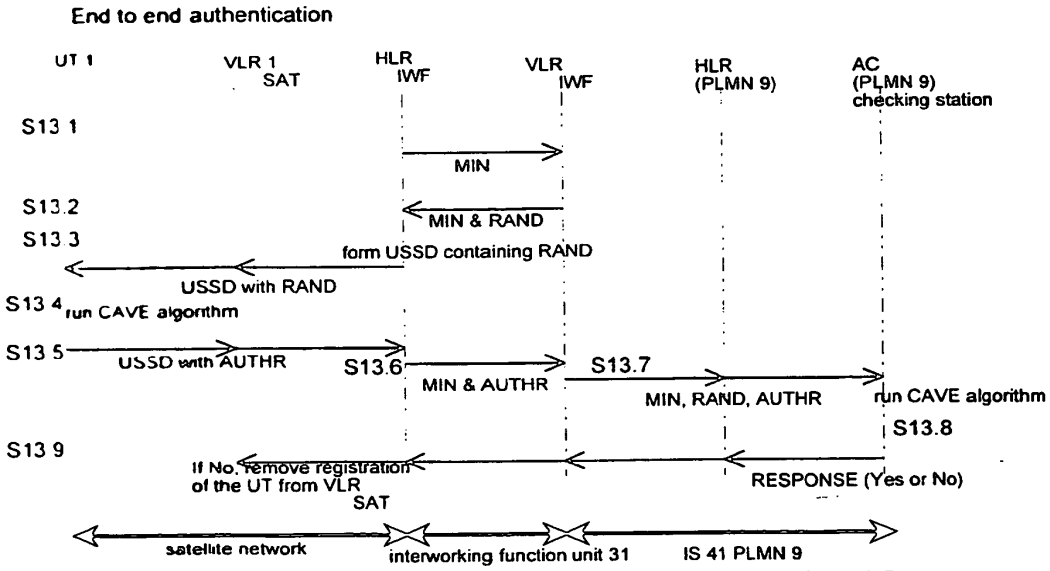
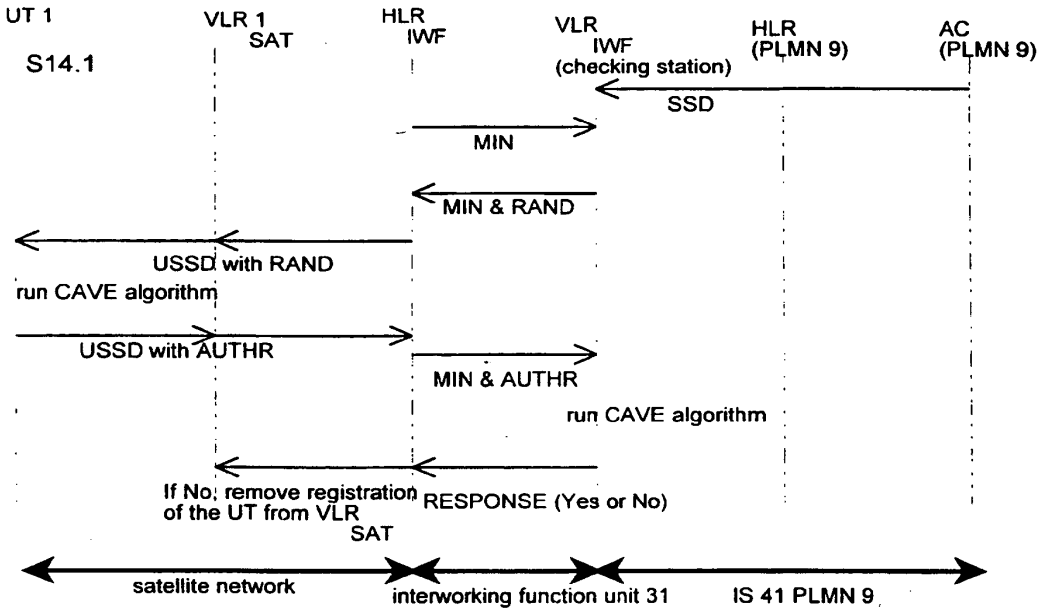


Fig. 13



Modified end to end authentication

Fig. 14

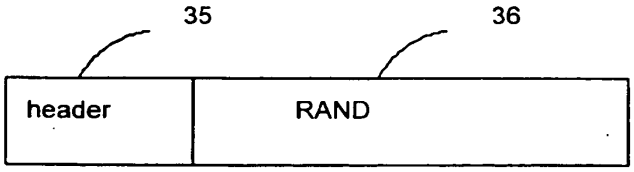


Fig. 15

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 30 3882

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X A	EP 0 673 178 A (KOKUSAI DENSHIN DENWA CO., LTD) 20 September 1995 * column 3, line 13 - line 41 * * column 10, line 52 - column 12, line 48 * ---	1,8,10, 13,14,19 2	H04Q7/38 H04L9/32
X	EP 0 584 725 A (NIPPON TELEGRAPH AND TELEPHONE CORPORATION) 2 March 1994 * column 5, line 23 - column 7, line 40 * * column 11, line 49 - column 13, line 50 * ---	1,8,10, 13,14,19	
A	EP 0 717 578 A (SIEMENS AKTIENGESELLSCHAFT) 19 June 1996 * column 4, line 17 - column 7, line 37 * ---	1,2, 8-11, 13-16,19	
A	WO 96 05702 A (MOTOROLA INC.) 22 February 1996 * page 8, line 15 - page 17, line 11 * -----	1,3,7,8, 10-14,19	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6) H04Q

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	19 January 1998	Behringer, L.V.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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2132
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4-2-04
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INFORMATION DISCLOSURE STATEMENT TRANSMITTAL

To Commissioner For Patents
Enclosed herewith is a Form PTO-1449, any required copies of documents listed thereon, and any concise explanation of their relevance is indicated below per 37 CFR 1.97.

Applicati n Number	09/597,198
Filing Date	JUNE 20, 2000
First Named Inv ntor	Jonathan C. Griffiths
Group Art Unit	2132
Examiner Name	Stulberger, Cas p.
Attorney Docket Number	US000136

☒ Please charge any required fee under §1.17(i) or §1.17(p) or any other required fee (except the issue fee) to Account No. 14-1270.

1. ☐ I certify that these documents were first cited in any communication from a foreign Patent Office in a counterpart foreign application not more than three (3) months ago.

2. ☐ I certify that none of these documents were cited in any communication from a foreign Patent Office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, none of these documents was known to any individual designated in §1.56(c) more than three (3) months ago.

☐ Applicant hereby petitions under §1.97(d) that this IDS be considered after final Action or Notice of Allowance, pays the fee under §1.17(p) as indicated below, and I certify 1. or 2. as indicated above.

☐ A fee under §1.17(p) is not required under §1.97(c), after the first Action on the merits and more than 3 months after the date of application or RCE, because I certify 1. or 2. as indicated above.

☐ A copy of the citations is not required because they were previously submitted or cited in the parent application (or in U.S. patent application Ser. No._____ Filing Date_____ relied on for an earlier effective filing date under 35 U.S.C. 120).

☐ A concise explanation of the relevance of each non-English document, as understood by the individual designated in §1.56(c) most knowledgeable about the contents, is enclosed per §1.98(a)(3).

The concise explanation of the relevance of any non-English document, as understood by the individual designated in §1.56(c) most knowledgeable about the contents, is that the document is/was (check one):

☐ cited in the specification or considered in drafting the specification of this application;

☐ previously submitted or cited in the parent application (or in a related patent application Ser. No._____Filing Date:_____);

☐ cited as an "X" or "Y" document in a foreign Patent Office search report in a foreign counterpart application, a copy of which report is also enclosed.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

Name (Print Type)	Dicran Halajian	Registration No. (Attorney/Agent)	39,703
Signature		Date	3/24/04

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that this is being deposited with the U.S. Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner For Patents, Washington, DC 20231, or facsimile transmitted to the U.S. Patent and Trademark Office tel# :_____on the date below:

Name (Print Type)	Natale A. Manzo		
Signature		Date	3/26/04

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Sheet 1 of 1

Form PTO-1449 U.S. DEPARTMENT OF COMMERCE (REV. 7-80) PATENT AND TRADEMARK OFFICE	Atty. Docket No. US000136	Serial No. 09/597,198
	Applicant JONATHAN C. GRIFFITHS	
	Filing Date JUNE 20, 2000	Group 2132

INFORMATION DISCLOSURE CITATION
(Use several sheets if necessary)

U.S. PATENT DOCUMENTS

Ex. Int.		Document Number	Date	Name	Class	Sub-class	Filing Date If Approp.
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Sub-class	Trans. Yes	Trans. No
	AG	0883731A1	09.12.1998	EUROPE	H04Q	7/38		
	AH							
	AI							
	AJ							
	AK							

OTHER (Including Author, Title, Date, Pertinent Pages, Etc.)

	AL	
	AM	
	AN	

Examiner	Date Considered

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

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PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT - SVL

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION

(PCT Rule 44.1)

To:
INTERNATIONAAL OCTROOIBUREAU B.V.
Attn. White, Andrew G.
Prof. Holstlaan 6
NL-5656 AA Eindhoven
NETHERLANDS

23 JAN 2002

MECB

Date of mailing (day/month/year) 24/01/2002	
Applicant's or agent's file reference PHUS000136WO	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/EP 01/06650	International filing date (day/month/year) 12/06/2001
Applicant KONINKLIJKE PHILIPS ELECTRONICS N.V.	

1. [X] The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:
The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland
Fascimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. [ ] The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. [ ] **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

[ ] the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

[ ] no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

Within **19 months** from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within **20 months** from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Theresia Van Deursen

Form PCT/ISA/220 (July 1998)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION** see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
PHUS000136WO		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/EP 01/06650	12/06/2001	20/06/2000
Applicant		
KONINKLIJKE PHILIPS ELECTRONICS N.V.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a With regard to the **language,** the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

[ ] the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

[ ] contained in the international application in written form.

[ ] filed together with the international application in computer readable form.

[ ] furnished subsequently to this Authority in written form.

[ ] furnished subsequently to this Authority in computer readble form.

[ ] the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

[ ] the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. [ ] **Certain claims were found unsearchable** (See Box I).

3. [ ] **Unity of invention is lacking** (see Box II).

4. With regard to the **title,**

[X] the text is approved as submitted by the applicant.

[ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

[X] the text is approved as submitted by the applicant.

[ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 1

[X] as suggested by the applicant.

[ ] because the applicant failed to suggest a figure.

[ ] because this figure better characterizes the invention.

[ ] None of the figures.

Form PCT/ISA/210 (first sheet) (July 1998)

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 01/06650

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04L12/56 H04L29/06

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04L

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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 883 318 A (ICO SERVICES LTD) 9 December 1998 (1998-12-09) column 4, line 54 -column 5, line 15 ---	1-4,6-12
A	EP 0 584 725 A (NIPPON TELEGRAPH & TELEPHONE) 2 March 1994 (1994-03-02) column 3, line 33 -column 4, line 13 -----	1-12

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

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

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

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

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 January 2002	24/01/2002

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Veen, G

1

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/EP 01/06650

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0883318 A	09-12-1998	EP 0883318 A1	09-12-1998
		JP 11018160 A	22-01-1999
EP 0584725 A	02-03-1994	JP 3105361 B2	30-10-2000
		JP 6069882 A	11-03-1994
		DE 69323016 D1	25-02-1999
		DE 69323016 T2	10-06-1999
		EP 0584725 A1	02-03-1994
		US 5377267 A	27-12-1994

Form PCT/ISA/210 (patent family annex) (July 1992)

ARTIFACT SHEET

Enter artifact number below. Artifact number is application number + artifact type code (see list below) + sequential letter (A, B, C ...). The first artifact folder for an artifact type receives the letter A, the second B, etc..
Examples: 59123456PA, 59123456PB, 59123456ZA, 59123456ZB

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Indicate quantity of a single type of artifact received but not scanned. Create individual artifact folder/box and artifact number for each Artifact Type.

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And/or sequence listing
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Doc Code: Artifact ☐ Artifact Type Code : U

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/597,198	06/20/2000	Jonathan C. Griffiths	US 000136	6017

7590 02/20/2004

Corporate Patent Counsel
US Philips Corporation
580 White Plains Road
Tarrytown, NY 10591

EXAMINER	
STULBERGER, CAS P	

ART UNIT	PAPER NUMBER
2132	3

DATE MAILED: 02/20/2004

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

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)	
	09/597,198	GRIFFITHS, JONATHAN C.	
	Examiner	Art Unit	
	Cas Stulberger	2132	

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

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

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

Disposition of Claims

4)☒ Claim(s) 1-17 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-17 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

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

Application Papers

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

10)☒ The drawing(s) filed on 20 June 2000 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

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

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

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

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

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

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

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

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

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

2. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,600,902 B1 to Bell, and in further in view of U.S. Patent No. 5,367,558 to Gillig et al.

3. In regards to claim 1, 13, 14, and 17, Bell discloses a wireless system comprising a number of wireless stations for communication with each other through short-range wireless links (Bell: Abstract). Bell discloses both users need to authenticate in order to communicate with each other (Bell: column 1, lines 55-64). This meets the limitation of "upon link set-up over a short-range wireless link, executing an authentication protocol by exchanging authentication information between the first and second electronic devices to initially authenticate communication between the first and second devices." Bell however does not disclose "later, when the first and second electronic devices are beyond the short-range wireless link, executing the authentication protocol by exchanging the authentication information between the first and second electronic devices over an alternate communications link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated."

Gillig discloses a cordless telephone which operates with both a cordless base station and a cellular base station and cellular control terminal (Gillig: Abstract). It is determined if the

cellular control terminal is within range of the cellular base station by scanning and selecting the strongest signaling channel from the surrounding cellular base stations. If not the incoming call is connected as a cordless call. If the cellular control terminal is within range of the cellular base station the landline can forward the unanswered incoming call to the cellular system, which is also known as call forwarding (a process which redirects a call from the dialed landline telephone number of cordless base station to the cellular telephone number of the cellular control teminal) (Gillig: column 5, lines 50-67; column 6, lines 1-50). This meets the limitation of "later, when the first and second electronic devices are beyond the short-range wireless link, executing the authentication protocol by exchanging the authentication information between the first and second electronic devices over an alternate communications link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated."

It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the system of a short-range wireless connection between devices as disclosed by Bell with the method of connection long range through a landline system as disclose by Gillig in order to transfer the connection if the cellular device moves out of range of the base station (Gillig: Abstract, last sentence).

4. In regards to claim 2, Bell discloses a passkey (Bell: column 1, lines 58-59).

5. In regards to claim 3, Bell discloses a PIN (Bell: column 1, lines 57-63).

6. In regards to claim 4, Bell discloses a master and a slave (Bell: column 1, lines 38, 40-44).

7. In regards to claim 5, Bell discloses a cellular radio link (Bell: column 1, lines 37).

8. In regards to claim 6, Bell discloses an infrared link (Bell: column 1, lines 10).

9. In regards to claim 7, Bell discloses the devices are in the vicinity of the Bluetooth enabled device (Bell: column 1, lines 66-67).

10. In regards to claims 8 and 9, Bell discloses Bluetooth (Bell: column 1, lines 32-34).

11. In regards to claims 10 and 15, Bell discloses the same PIN is entered by both users (Bell: column 1, lines 56-63).

12. In regards to claim 11, Bell discloses a client/server relationship which meets the limitation of a computer network (Bell: column 1, lines 44-52).

13. In regards to claims 12 and 16, Bell discloses a client and server (Bell: column 1, lines 44-52).

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cas Stulberger whose telephone number is (703) 305-8034. The examiner can normally be reached on Monday - Friday, 9:00A.M. - 5:00P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on (703) 305-1830. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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).

CS

CS

GILBERTO BARRON
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

Notice of References Cited	Application/Control No. 09/597,198	Applicant(s)/Patent Under Reexamination GRIFFITHS, JONATHAN C.	
	Examiner Cas Stulberger	Art Unit 2132	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,600,902 B1	07-2003	Bell, John R.	455/41.2
	B	US-5,367,558	11-1994	Gillig et al.	455/426.1
	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	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.

L Number	Hits	Search Text	DB	Time stamp
1	876	short$1range adj wireless	USPAT; US-PGPUB; DERWENT	2004/02/18 13:28
3	26	(short$1range adj wireless) same authenticat$3	USPAT; US-PGPUB; DERWENT	2004/02/18 13:28
4	0	((short$1range adj wireless) same authenticat$3) and @ad<=20000620	USPAT; US-PGPUB; DERWENT	2004/02/18 13:29
5	97	(short$1range adj wireless) and @ad<=20000620	USPAT; US-PGPUB; DERWENT	2004/02/18 13:50
6	13	((short$1range adj wireless) and @ad<=20000620) and authenticat$4	USPAT; US-PGPUB; DERWENT	2004/02/18 13:39
7	2	bluetooth and reauthenticat$3	USPAT; US-PGPUB; DERWENT	2004/02/18 13:50
10	0	(bluetooth and re$1authenticat$3) and @ad<=20000620	USPAT; US-PGPUB; DERWENT	2004/02/18 13:50
9	34	bluetooth and re$1authenticat$3	USPAT; US-PGPUB; DERWENT	2004/02/18 15:57
11	28	("5101501" | "5109528" | "5267261" | "5367558" | "5390233" | "5392331" | "5406615" | "5442680" | "5488649" | "5507035" | "5509052" | "5515420" | "5594782" | "5610969" | "5640414" | "5659598" | "5664005" | "5673307" | "5745852" | "5758281" | "5890055" | "5890064" | "5915224" | "5926760" | "5946622" | "6035193" | "6138019" | "6374102" | "2001/0029186").PN.	USPAT	2004/02/18 14:23
12	2	5367558.pn.	USPAT; US-PGPUB; DERWENT	2004/02/18 16:23

Your search matched **7** of **1003743** documents.
A maximum of **500** results are displayed, **15** to a page, sorted by **Relevance Descending** order.

Refine This Search:
You may refine your search by editing the current search expression or enter new one in the text box.

authentication <and> bluetooth Search

☐ Check to search within this result set

Results Key:
JNL = Journal or Magazine **CNF** = Conference **STD** = Standard

---

1 **Secure authorization, access control and data integrity in Blueto th**
Nguyen, L.; Safavi-Naini, R.; Susilo, W.; Wysocki, T.;
Networks, 2002. ICON 2002. 10th IEEE International Conference on , 27-30 A 2002
Pages:428 - 433

[Abstract] [PDF Full-Text (430 KB)] **IEEE CNF**

---

2 **Hardware implementation of Bluetooth security**
Kitsos, P.; Sklavos, N.; Papadomanolakis, K.; Koufopavlou, O.;
Pervasive Computing, IEEE , Volume: 2 , Issue: 1 , Jan.-March 2003
Pages:21 - 29

[Abstract] [PDF Full-Text (1743 KB)] **IEEE JNL**

---

3 **Hardware implementation of the SAFER+ encryption algorithm f r t Bluetooth system**
Kitsos, P.; Sklavos, N.; Koufopavlou, O.;
Circuits and Systems, 2002. ISCAS 2002. IEEE International Symposium on , Volume: 4 , 26-29 May 2002
Pages:IV-878 - IV-881 vol.4

[Abstract] [PDF Full-Text (339 KB)] **IEEE CNF**

---

4 **On end-to-end security for Bluetooth/WAP and TCP/IP networks**
Sengodan, S.; Smith, D.; Abou-Rizk, M.;
Personal Wireless Communications, 2000 IEEE International Conference on , Dec. 2000
Pages:399 - 403

[Abstract] [PDF Full-Text (404 KB)] IEEE CNF

5 **Security in wireless residential netw rks**
Krishnamurthy, P.; Kabara, J.; Anusas-Amornkul, T.;
Consumer Electronics, IEEE Transactions on , Volume: 48 , Issue: 1 , Feb. 20
Pages:157 - 166

[Abstract] [PDF Full-Text (792 KB)] IEEE JNL

6 **Design of portable mobile devices based e-payment system and e-ticketing system with digital signature**
Feng Bao; Anantharaman, L.; Deng, R.;
Info-tech and Info-net, 2001. Proceedings. ICII 2001 - Beijing. 2001 Internat Conferences on , Volume: 6 , 29 Oct.-1 Nov. 2001
Pages:7 - 12 vol.6

[Abstract] [PDF Full-Text (229 KB)] IEEE CNF

7 **An analysis of Bluetooth security vulnerabilities**
Hager, C.T.; Midkiff, S.F.;
Wireless Communications and Networking, 2003. WCNC 2003. 2003 IEEE , Volume: 3 , 16-20 March 2003
Pages:1825 - 1831 vol.3

[Abstract] [PDF Full-Text (384 KB)] IEEE CNF

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reauthentication <and> bluetooth Search

☐ Check to search within this result set

Results Key:
JNL = Journal or Magazine **CNF** = Conference **STD** = Standard

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Date: **Before June 19 2000** [Edit this Search]

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Search for "**bluetooth authentication**" using: Lycos, Google, Ask Jeeves

Portions powered by Inktomi

9P2131

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

JONATHAN C. GRIFFITHS

Serial No. 09/597,198

Filed: JUNE 20, 2000

Atty. Docket

US 000136

Group Art Unit 2766

#2 Formal Drawings 2 Sheets 11/00

METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION

Commissioner for Patents
Washington, D.C. 20231

LETTER TO OFFICIAL DRAFTSMAN

Sir:

Enclosed is ONE (1) sheet of formal drawing for filing in the above-identified application.

Respectfully submitted,

By _____
Dicran Halajian, Reg. 39,703
Attorney
(914) 333-9607

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited this date with the United States Postal Service as first-class mail in an envelope addressed to:

COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

On October 18, 2000
(Mailing Date)

By Natalie J. Monzo
(Signature)

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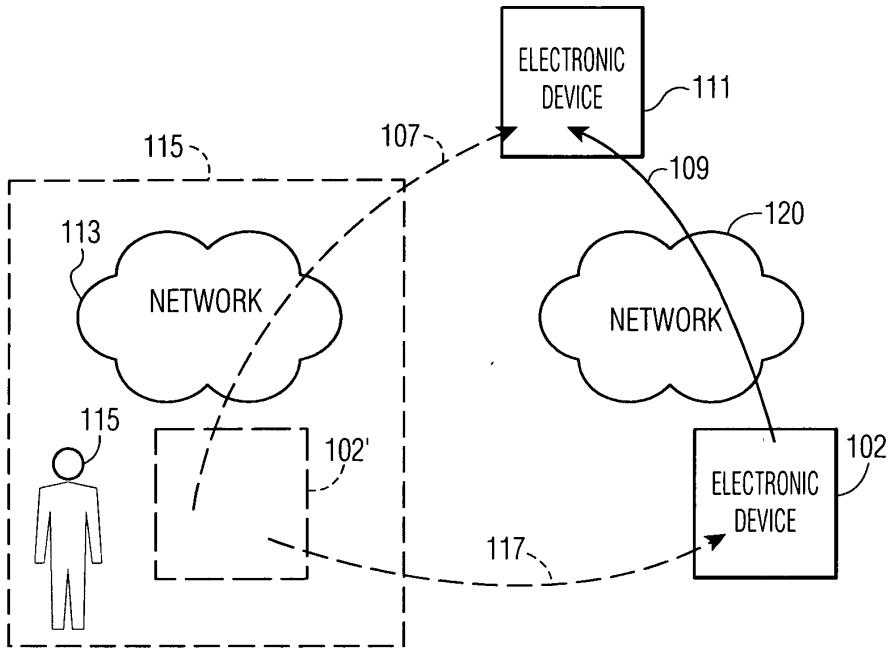
ELECTRONIC DEVICE
111
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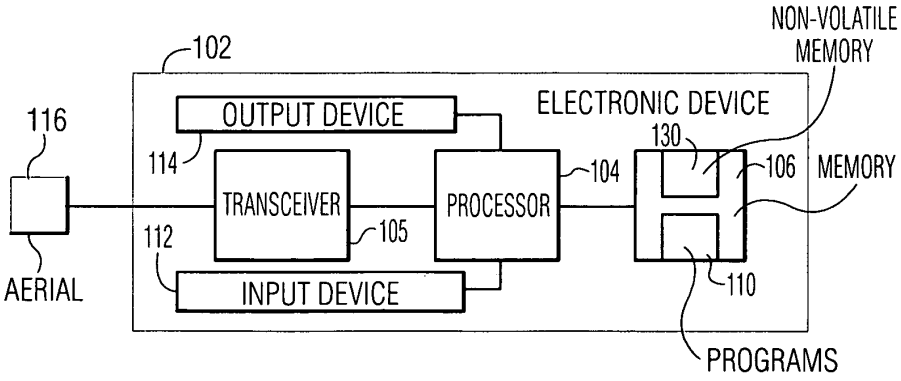
ELECTRONIC DEVICE
117

FIG. 1


NON-VOLATILE MEMORY
102
ELECTRONIC DEVICE
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114
130
106
MEMORY
TRANSCEIVER
PROCESSOR
104
105
112
AERIAL
INPUT DEVICE
110
PROGRAMS

FIG. 2

JC836 U.S. PTO 09/597198 06/20/00

ISSUE CLASSIFICATION	Class	Subclass

PATENT NUMBER

BEST AVAILABLE COPY

U.S. **UTILITY** Patent Application

JC2
JC856

O.I.P.E. SCANNED KW QA CS

PATENT DATE

APPLICATION NO.	CONT/PRIOR	CLASS	SUBCLASS	ART UNIT	EXAMINER
09/597198		713	168	~~2766~~ ~~2131~~ 2132	Hayes

APPLICANTS: Jonathan Griffiths

TITLE: Method and system for electronic device authentication

PTO-2040 12/99

ISSUING CLASSIFICATION

ORIGINAL		CROSS REFERENCE(S)	
CLASS	SUBCLASS	CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)
INTERNATIONAL CLASSIFICATION			

☐ Continued on Issue Slip Inside File Jacket

☐ TERMINAL DISCLAIMER	DRAWINGS			CLAIMS ALLOWED	
	Sheets Drwg.	Figs. Drwg.	Print Fig.	Total Claims	Print Claim for O.G.
☐ The term of this patent subsequent to _____ (date) has been disclaimed.	(Assistant Examiner) (Date)			NOTICE OF ALLOWANCE MAILED	
☐ The term of this patent shall not extend beyond the expiration date of U.S Patent. No. _____	(Primary Examiner) (Date)			ISSUE FEE	
				Amount Due	Date Paid
☐ The terminal ____months of this patent have been disclaimed.	(Legal Instruments Examiner) (Date)			ISSUE BATCH NUMBER	

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The information disclosed herein may be restricted. Unauthorized disclosure may be prohibited by the United States Code Title 35, Sections 122, 181 and 368. Possession outside the U.S. Patent & Trademark Office is restricted to authorized employees and contractors only.

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(FACE)

SEARCHED

Class	Sub.	Date	Exmr.
713	168	2/18/2004	CS
380	270	2/18/2004	CS
713	169	2/18/2004	CS

SEARCH NOTES
(INCLUDING SEARCH STRATEGY)

	Date	Exmr.
EAST search performed (see attached printout)	2/18/2004	CS
Hotbot (see attached printout)	2/18/2004	CS
IEEE (see attached printout)	2/18/2004	CS

INTERFERENCE SEARCHED

Class	Sub.	Date	Exmr.

(RIGHT OUTSIDE)

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8/14

ISSUE SLIP STAPLE AREA (for additional cross references)

POSITION	INITIALS	ID NO.	DATE
FEE DETERMINATION	BA	70385	
O.I.P.E. CLASSIFIER		8	6-30-00
FORMALITY REVIEW	E.H.	7556	08-16-00
RESPONSE FORMALITY REVIEW			

INDEX OF CLAIMS

✔ ..... Rejected
= ..... Allowed
— (Through numeral)... Canceled
÷ ..... Restricted
N ..... Non-elected
I ..... Interference
A ..... Appeal
O ..... Objected

Claim Final	Claim Original	Date 7/18/00
	1	✔
	2	✔
	3	✔
	4	✔
	5	✔
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If more than 150 claims or 10 actions staple additional she t here

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06-21-00 A

Case Docket No. US 000136

THE COMMISSIONER OF PATENTS AND TRADEMARKS, Washington, D.C. 20231

Enclosed for filing is the patent application of Inventor(s):
JONATHAN C. GRIFFITHS

For: METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION

ENCLOSED ARE:

[X] Appointment of Associates;
[X] Information Disclosure Statement, Form PTO-1449 and copies of documents listed therein;
[ ] Preliminary Amendment;
[X] Specification (14 Pages of Specification, Claims, & Abstract);
[X] Declaration and Power of Attorney:
(2 Pages of a [X]fully executed [ ]unsigned Declaration);
[X] Drawing (1 sheets of [X]informal [ ]formal sheets);
[ ] Certified copy of application Serial No. ;
[X] Authorization Pursuant to 37 CFR §1.136(a)(3)
[ ] Other: ;
[X] Assignment to PHILIPS ELECTRONICS NORTH AMERICA CORPORATION.

FEE COMPUTATION

CLAIMS AS FILED				
FOR	NUMBER FILED	NUMBER EXTRA	RATE	BASIC FEE - $690.00
Total Claims	17 - 20 =	0	X $18 =	0.00
Independent Claims	4 - 3 =	1	X $78 =	78.00
Multiple Dependent Claims, if any			$260 =	0.00
TOTAL FILING FEE			=	$768.00

Please charge Deposit Account No. 14-1270 in the amount of the total filing fee indicated above, plus any deficiencies. The Commissioner is also hereby authorized to charge any other fees which may be required, except the issue fee, or credit any overpayment to Account No. 14-1270.

[ ]Amend the specification by inserting before the first line as a centered heading --Cross Reference to Related Applications--; and insert below that as a new paragraph --This is a continuation-in-part of application Serial No. , filed , which is herein incorporated by reference--.

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Natale A. Manzo Natale A. Manzo
Typed Name **Signature**

Dicran Halajian, Reg. 39,703
Attorney
(914) 333-9607
U.S. Philips Corporation
580 White Plains Road
Tarrytown, New York 10591

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of — Atty. Docket

JONATHAN C. GRIFFITHS — US 000136

Serial No. — Group Art Unit

Filed: CONCURRENTLY — Ex.

METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

AUTHORIZATION PURSUANT TO 37 CFR §1.136(a)(3)
AND TO CHARGE DEPOSIT ACCOUNT

Sir:

The Commissioner is hereby requested and authorized to treat any concurrent or future reply in this application requiring a petition for extension of time for its timely submission, as incorporating a petition for extension of time for the appropriate length of time.

Please charge any additional fees which may now or in the future be required in this application, including extension of time fees, but excluding the issue fee unless explicitly requested to do so, and credit any overpayment, to Deposit Account No. 14-1270.

Respectfully submitted,

By _____
Dicran Halajian, Reg. 39,703
Attorney
(914) 333-9607

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06-21-00 A

Case Docket No. US 000136

THE COMMISSIONER OF PATENTS AND TRADEMARKS, Washington, D.C. 20231

Enclosed for filing is the patent application of Inventor(s):
JONATHAN C. GRIFFITHS

For: METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION

ENCLOSED ARE:

[X] Appointment of Associates;
[X] Information Disclosure Statement, Form PTO-1449 and copies of documents listed therein;
[ ] Preliminary Amendment;
[X] Specification (14 Pages of Specification, Claims, & Abstract);
[X] Declaration and Power of Attorney:
(2 Pages of a [X]fully executed [ ]unsigned Declaration);
[X] Drawing (1 sheets of [X]informal [ ]formal sheets);
[ ] Certified copy of application Serial No. ;
[X] Authorization Pursuant to 37 CFR §1.136(a)(3)
[ ] Other: ;
[X] Assignment to PHILIPS ELECTRONICS NORTH AMERICA CORPORATION.

FEE COMPUTATION

CLAIMS AS FILED				
FOR	NUMBER FILED	NUMBER EXTRA	RATE	BASIC FEE - $690.00
Total Claims	17 - 20 =	0	X $18 =	0.00
Independent Claims	4 - 3 =	1	X $78 =	78.00
Multiple Dependent Claims, if any			$260 =	0.00
TOTAL FILING FEE			=	$768.00

Please charge Deposit Account No. 14-1270 in the amount of the total filing fee indicated above, plus any deficiencies. The Commissioner is also hereby authorized to charge any other fees which may be required, except the issue fee, or credit any overpayment to Account No. 14-1270.

[ ]Amend the specification by inserting before the first line as a centered heading --Cross Reference to Related Applications--; and insert below that as a new paragraph --This is a continuation-in-part of application Serial No. , filed , which is herein incorporated by reference--.

CERTIFICATE OF EXPRESS MAILING

Express Mail Mailing Label No. EL335549975US
Date of Deposit June 20, 2000
I hereby certify that this paper and/or fee is being deposited with the United States Postal Service "Express Mail Post ffice to Addressee" service under 37 C.F.R. 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Natale A. Manzo Natale A. Manzo
Typed Name **Signature**

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(914) 333-9607
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580 White Plains Road
Tarrytown, New York 10591

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of | Atty. Docket

JONATHAN C. GRIFFITHS | US 000136

Serial No. | Group Art Unit

Filed: CONCURRENTLY | Ex.

METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

AUTHORIZATION PURSUANT TO 37 CFR §1.136(a)(3)
AND TO CHARGE DEPOSIT ACCOUNT

Sir:

The Commissioner is hereby requested and authorized to treat any concurrent or future reply in this application requiring a petition for extension of time for its timely submission, as incorporating a petition for extension of time for the appropriate length of time.

Please charge any additional fees which may now or in the future be required in this application, including extension of time fees, but excluding the issue fee unless explicitly requested to do so, and credit any overpayment, to Deposit Account No. 14-1270.

Respectfully submitted,

By _____
Dicran Halajian, Reg. 39,703
Attorney
(914) 333-9607

\\SERVER0\SYS2\WPDOCS\MK\miscelns\MV20MKE0.MA0.doc

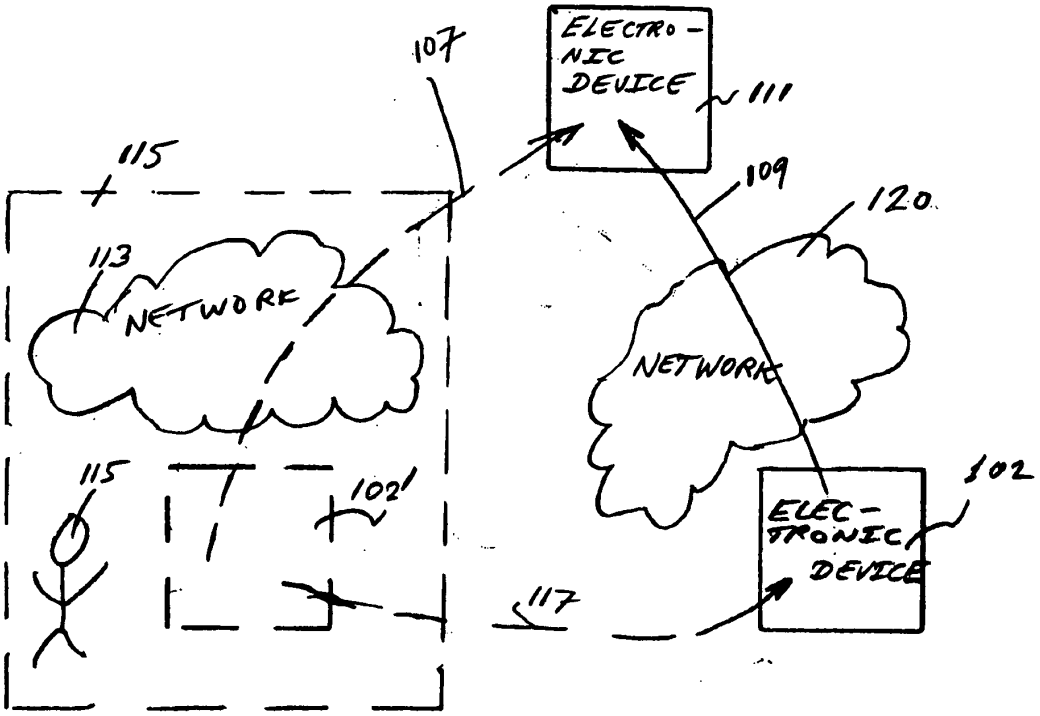

FIG. 1

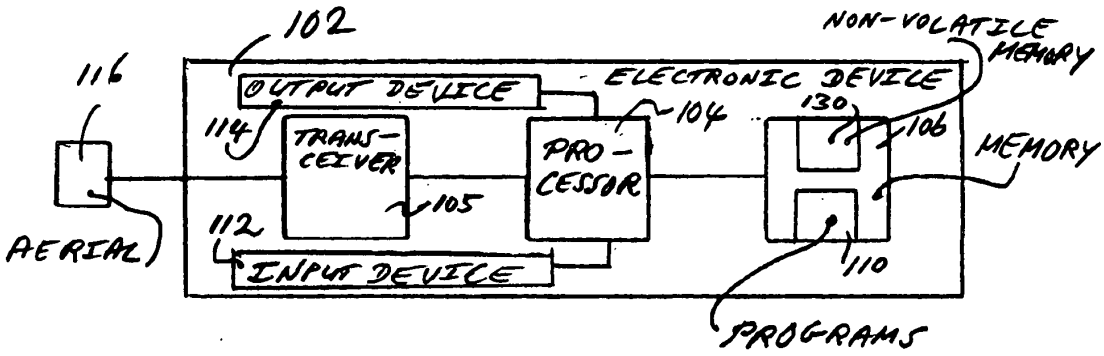

FIG. 2

1-I-700831

METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to electronic device authentication.

2. Description of the Related Art

In the Bluetooth Specification, "Specification of the Bluetooth System - Core", v.1.0A, July 26th 1999, pp. 18-19, 95, 149-154, 169-170, 194-200, 226, 319, 537, 1029, and 1031, the so-called Bluetooth short range radio link between Bluetooth enabled devices is described, particularly, the Bluetooth frequency bands, the concept of master and slave devices, and security using authentication of devices. Bluetooth (BT) is a specification for small form factor, low-cost, short-range radio links between mobile PCs, mobile phones, and other such devices. Bluetooth radio arose out of an initiative among leaders in the telecommunication and computer industries to make a global standard for wireless connectivity. The standard relies on a low power radio link operating at 2.4 Gigahertz. Bluetooth-provisioned devices normally must be physically close to each other (i.e., within 100 meters) to communicate. Bluetooth includes a robust authentication mechanism that ensures that a Bluetooth device only communicates with other devices for which it is authenticated, and not with any random device that comes into its range. Bluetooth radio uses a fast acknowledgement and frequency hopping scheme to make the link robust. Devices avoid interference from other signals by hopping to a new frequency after transmitting or receiving a packet.

Compared with other systems operating in the same frequency band, the Bluetooth radio typically hops faster and uses shorter packets. This makes Bluetooth radio more robust than other systems.

The Bluetooth authentication scheme works generally as follows. A user enters a numerical code (a personal identification number or PIN) in the two devices to establish a Bluetooth link for the first time. The PIN can be any number, but it must be the same on both devices. Once this is done, the devices communicate with each other using Bluetooth transceivers to verify that the PIN numbers match. If so, one device generates unique key information based on a device address, which is unique for each device. This unique key (generated by one of the devices) is stored in both devices and used to authenticate the two devices for any subsequent Bluetooth link between them. In particular, the key exchanged upon link initialization identifies a unique link and can be used reliably for subsequent authentication when the link is re-established.

The feature that ensures security in a Bluetooth system is the need for physical proximity to establish a link, *i.e.*, the user must enter the numerical code on both devices when the devices are in close proximity. If the devices are more than 100 meters apart, the initial Bluetooth link cannot be established.

Wide area networks also use basic authentication to enable electronic devices to communicate with each other. The most common and popular wide area network is the Internet. Internet service providers typically restrict access on their servers to given users. Normally, this is achieved by requiring a prospective user (e.g., a user of a client machine running a web browser) to enter a userid and password combination.

BRIEF SUMMARY OF THE INVENTION

It is an object of the invention to authenticate a device first authenticated on a physically restrained network through another network.

It is a further object of the invention to simplify authentication of a device in a network by re-using a given authentication process in another network.

In accordance with the invention, a method of authenticating first and second electronic devices is provided, the method comprising:

upon link set-up over a short-range wireless link, executing an authentication protocol by exchanging authentication information between the first and second electronic devices to initially authenticate communication between the first and second devices;

later, when the first and second electronic devices are beyond the short-range wireless link, executing the authentication protocol by exchanging the authentication information between the first and second electronic devices over an alternate communications link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated.

The invention is based upon the insight that once devices are authenticated on a restricted network, it is very simple to re-connect the devices through another, unrestricted network. In this respect, restriction can be determined by the way a system works, such as authentication in accordance with said Bluetooth Specification, or can be restricted physical access to premises such as an office.

In a preferred embodiment, the first and second electronic devices each have the capability of

communicating with each other over at least a primary and a secondary communications link. The primary communications link is a given short-range wireless link. Preferably, the short-range wireless link conforms to a given protocol, namely, Bluetooth. The secondary communications link may be any alternative link such as a wide area network (WAN), a local area network (LAN), or the like. The devices are first authenticated over the primary link, with the user entering the same, given PIN code in both devices. After the devices verify that they share the same PIN code, they exchange key information. Later, when the devices are no longer within range to authenticate over the primary communications link using Bluetooth, one of the devices invites the exchange of key information automatically using the secondary communications link. If the other device can provide the key information requested, the devices are then authenticated to each other over the secondary communications link. In addition thereto a user may be requested to enter login data, such as a user name or a password. The foregoing has outlined some of the more pertinent objects and features of the present invention. These objects and features should be construed to be merely illustrative of some of the more prominent features and applications of the invention. Many other beneficial results can be attained by applying the disclosed invention in a different manner or by modifying the invention as will be described. Accordingly, a fuller understanding of the invention may be had by referring to the following Detailed Description of the Preferred Embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and the advantages thereof, reference should be made to the following Detailed Description taken in connection with the accompanying drawings in which:

Figure 1 is a block diagram illustrating an embodiment of the invention; and

Figure 2 is a block diagram of an electronic device according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Figure 1 is a block diagram illustrating an embodiment of the invention. As used herein, an "electronic device" should be broadly construed to mean a computer (or a set of computers) of any type including, without limitation, a desktop computer, a workstation or server platform, a notebook computer, a diskless computer, a handheld computing device (e.g., personal digital assistant, business organizer, or the like), a communications device (e.g., cellular phone, smartphone, or the like) provisioned to include computing power, in-vehicle computing devices, or the like. Thus, as is well known, a given electronic device 102, as shown in more detail in Figure 2, typically includes a processor 104, a memory 106 (e.g., RAM and ROM) for storing programs 110 executable by the processor 104, at least one input device 112 such as a keyboard or mouse, at least one output device 114 such as a monitor or display. Typically, each of the electronic devices includes hardware and software resources (not shown) to enable the devices to communicate with each other over a network 120 such as the Internet, an intranet, a local area

network, a mobile radio network, or the like. The electronic device 102 can be a mobile phone, a personal digital assistent (PDA), a laptop computer, or any other suitable device. In Figure 1, another electronic device 111 is shown. The electronic device 111 can be a web-server, an e-mail server, or some other database-like device.

When the device 102, e.g., a laptop, connects to the network 120, e.g. the Internet, its internet protocol address is determined and services such as a printer service and a calendar service are set up automatically. But before such services are set up the device 102 needs to be authenticated. Upon device authentication, the user may login to a service by providing a user name and password, for instance. The invention is mainly concerned with device authentication whereby authentication information is exchanged between devices.

According to the invention, each of the devices also includes a transceiver 105 to enable the devices to communicate over a communications link 107. Preferably, the communications link 107 is a short-range wireless link that conforms to a given radio protocol, e.g., Bluetooth. This is not a limitation of the present invention, however, as the alternative communications link 107 may be an infrared link, an acoustic link, or the like. In the preferred embodiment, the alternative communications link 107 is a "primary" link in the sense that the devices initially authenticate to each other over the link 107 link and then, later, authenticate to each other over a secondary link 109 such as the Internet, an intranet, or some other link. Thus, according to the preferred embodiment of the invention, the pair of electronic devices first authenticate using Bluetooth over a first link, the link 107 and then later

authenticate (e.g., when the devices are out-of-range of the original wireless connection) over some alternative link, the link 109. In Figure 1, such a successive device authentication at different locations is indicated by the electronic device 102 having been moved from a network 113 to which the device 102 has restrained access, to the unconstrained network 120. The network 113 is a so-called Bluetooth network, for instance, to which a user 115 has constrained access. When accessing the network 113, with the device 102' within network boundary 115, the user 115 needs to initially set-up the link 107 while the devices 102' and 111 are authenticated. Later, the device 102' moves to another location outside the constrained network, indicated with the device 102 and a dashed arrow 117. The device 102 may have an aerial 116 when the link 107 is a radio link. Instead of an aerial, an infrared transmitter/receiver may be used, when the link 107 is an infrared link.

In terms of Bluetooth, the devices 102'/102 and 111 may be so-called Bluetooth enabled devices, the device 102'/102 being a slave device and the device 111 being a master device. The concept of master and slave is defined on page 95 of said Bluetooth Specification. Authentication of Bluetooth enabled devices is described on pages 149-154 of said Bluetooth Specification. When the master and slave are out-of-range of the wireless or "primary" data link 107, however, they may still communicate with each other following authentication according to the present invention. In particular, slave device 102 first establishes a link to the master device 111 over the alternate or "secondary" link 109, which, as noted above, may be any convenient communications link such as the Internet, an intranet, a local area network, or the like. To establish this connection, as noted

above, each of the devices 102 and 111 must include appropriate hardware and software resources (e.g., a modem, a TCP/IP stack, and the like) that are used for this purpose, as is well known. Once this connection is established, the master device 111 offers to use the authentication protocol of the primary data link 107 to facilitate device authentication. The primary data link authentication protocol may be one of several protocols offered during the attempt to establish a connection between the two devices 102'/102 and 111. The offer issued from the master device 111 invites the exchange of key information according to the authentication protocol of the primary data link, in the example given a Bluetooth protocol. If upon exchange the keys match, the devices 102'/102 are authenticated to communicate with each other.

In summary, an initial Bluetooth link setup and authentication procedure is carried out between a pair of electronic devices. Thus, for example, the BT-devices can be a home/office Internet server and a mobile phone, or any other suitable pair of devices. When the user of the mobile phone, for example, later wants to make a remote connection to the other device of the BT-enabled link, e.g., through another network such as the Internet, the same BT authentication protocol is used as with the initial BT-link setup so that communication by unauthenticated devices may be prevented. Thus, once the remote connection is secured by the initial BT-link setup procedure, i.e., devices other than legitimate authenticated devices can never use the mobile phone network to connect to the home server or network for remote re-connection of the BT-link if the user of the device had not first initiated the BT-link locally.

Security is enhanced with the invention by exchanging link key information because the link key information is established in a secure system. In the described example, security is assured by the requirement that the two devices be in physical proximity when establishing the link key. Userids or passwords need not be exchanged on subsequent logins, depending on the level of additional security required. An additional PIN may be used to access some services, possibly in a corporate environment.

Although specific embodiments of the present invention are described herein, they are not to be construed as limiting the scope of the invention. Many embodiments of the invention will become apparent to those skilled in the art in light of the teachings of this specification. For example, although the described embodiments use a wireless link to establish the link key, other similarly secure connection means such as infrared links or closed networks may be advantageously used. Also, although the described embodiments show authentication between two devices on two networks, authentication can be achieved on any number of networks between the two devices. The scope of the invention is only limited by the claims appended hereto.

The word "comprising" does not exclude the presence of other elements or steps than those listed in a claim.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is set forth in the following claims.

WHAT IS CLAIMED IS:

1. A method of authenticating first and second electronic devices, comprising:

upon link set-up over a short-range wireless link, executing an authentication protocol by exchanging authentication information between the first and second electronic devices to initially authenticate communication between the first and second devices;

later, when the first and second electronic devices are beyond the short-range wireless link, executing the authentication protocol by exchanging the authentication information between the first and second electronic devices over an alternate communications link, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated.

2. The method of Claim 1, wherein the authentication information is an authentication key.

3. The method of Claim 1, wherein the authentication information a password.

4. The method of Claim 1, wherein the first device is a master device and the second device is a slave device.

5. The method of Claim 1, wherein the short-range wireless link is a radio link.

6. The method of Claim 1, wherein the short-range wireless link is an infra-red link.

7. The method of Claim 1, wherein the link set-up occurs when the first and second devices are in physical proximity.

8. The method of Claim 1, wherein the short-range wireless link conforms to a given RF protocol.

9. The method of Claim 2, wherein the given RF protocol is Bluetooth.

10. The method of Claim 1 wherein the link set-up step includes entry of a given personal identification number into each of the first and second electronic devices.

11. The method of Claim 1, wherein the alternate communications link is a computer network.

12. The method of Claim 1, wherein the first electronic device is a client and the second electronic device is a server.

13. A method of authenticating first and second electronic devices, comprising:

upon link set-up over a first link, executing an authentication protocol by exchanging authentication information between the first and second electronic devices to initially authenticate communication between the first and second devices;

later, when the first and second electronic devices are connected using a second link, exchanging the authentication information between the first and second electronic devices over the second link, then only allowing communication between the first and second

devices if the first and second devices had initially been successfully authenticated.

14. An electronic device, comprising:

a processor;

and

a memory loaded with a software routine executed by the processor (a) for generating authentication information useful in initially authenticating the electronic device to a another electronic device over a short-range wireless link, and (b) for later supplying the authentication information for later authentication of the electronic device to the otherelectronic device over an alternate communications link when the devices are beyond the short-range wireless link, then only allowing communication between the devices if the devices had initially been successfully authenticated.

15. The electronic device of Claim 14, wherein the link set-up step includes entry of a given personal identification number into each of the first and second electronic devices.

16. The electronic device of Claim 14, wherein the electronic device is a client and the second electronic device is a server.

17. A communications system, comprising:

a first electronic device;

a second electronic device;

a first communications link over which the first and second electronic devices authenticate each other using a given protocol that includes a link set-up and the exchange of authentication information following the link

set-up, the authentication information being used to initially authenticate communication between the first and second electronic devices; and

a second communications link over which the first and second electronic devices later authenticate each other using the exchange of the authentication information, then only allowing communication between the first and second devices if the first and second devices had initially been successfully authenticated.

ABSTRACT OF THE DISCLOSURE

Electronic devices are authenticated to each other initially over a short-range wireless link. In particular, a user first enters a given authentication information in each device. Later, when the devices are out-of-range of the wireless link, they may be authenticated to each other without subsequent user input when one of the devices invites the other to exchange authentication information over an alternative communications link. If the authentication is successful, the devices may then communicate over the alternative communications link as if they were within range of the original wireless link.

DECLARATION and POWER OF ATTORNEY

Attorney's Docket No.
US 000136

As a below named inventor, I hereby declare that:

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

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled **"METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION"** the specification of which (check one)

_X_ is attached hereto.

___ was filed on _____ as Application Serial No. _____ and was amended on_____ _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by the amendment(s) referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulation, ∋1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, ∋ 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

PRIOR FOREIGN APPLICATION(S)

COUNTRY	APPLICATION NUMBER	DATE OF FILING (DAY, MONTH, YEAR)	PRIORITY CLAIMED UNDER 35 U.S.C. 119

I hereby claim the benefit under Title 35, United States Code, ∋120 of any United States application (s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35 United States Code, ∋112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, ∋1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

PRIOR UNITED STATES APPLICATION(S)

APPLICATION SERIAL NUMBER	FILING DATE	STATUS (PATENTED, PENDING, ABANDONED)

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

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

Algy Tamoshunas, Reg. No. 27,677
Jack E. Haken, Reg. No. 26,902
Michael E. Marion, Reg. No. 32,266
Edward Blocker, Reg. No. 30,245

SEND CORRESPONDENCE TO:	DIRECT TELEPHONE CALLS TO:
Corporate Patent Counsel; U.S. Philips Corporation; 580 White Plains Road; Tarrytown, NY 10591	Dicran Halajian, Reg. No.39,703 (914) 333-9607

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Dated: 6/15/2000		INVENTOR'S SIGNATURE:		
Full Name of Inventor	Last Name GRIFFITHS	FIRST NAME JONATHAN	Middle Name C.	
Residence & Citizenship	City FREMONT	STATE OR FOREIGN COUNTRY CALIFORNIA	Country of Citizenship BRITISH	
Post Office Address	Street 187 Lloyd Avenue	CITY FREMONT	State or Country CA	Zip Code 94536

Dated:		INVENTOR'S SIGNATURE:		
Full Name of Inventor	Last Name	FIRST NAME	Middle Name	
Residence & Citizenship	City	STATE OR FOREIGN COUNTRY	Country of Citizenship	
Post Office Address	Street	CITY	State or Country	Zip Code

Dated:		INVENTOR'S SIGNATURE:		
Full Name of Inventor	Last Name	FIRST NAME	Middle Name	
Residence & Citizenship	City	STATE OR FOREIGN COUNTRY	Country of Citizenship	
Post Office Address	Street	CITY	State or Country	Zip Code

Dated:		INVENTOR'S SIGNATURE:		
Full Name of Inventor	Last Name	FIRST NAME	Middle Name	
Residence & Citizenship	City	STATE OR FOREIGN COUNTRY	Country of Citizenship	
Post Office Address	Street	CITY	State or Country	Zip Code

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of — Atty. Docket

JONATHAN C. GRIFFITHS — US 000136

Serial No. — Group Art Unit

Filed: CONCURRENTLY — Examiner:

Title: METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

APPOINTMENT OF ASSOCIATES

Sir:

The undersigned Attorney of Record hereby revokes all prior appointments (if any) of Associate Attorney(s) or Agent(s) in the above-captioned case and appoints:

DICRAN HALAJIAN **(Registration No. 39,703)** and

JACK D. SLOBOD **(Registration No. 26,236)**

c/o U.S. PHILIPS CORPORATION, Intellectual Property Department, 580 White Plains Road, Tarrytown, New York 10591, his Associate Attorney(s)/Agent(s) with all the usual powers to prosecute the above-identified application and any division or continuation thereof, to make alterations and amendments therein, and to transact all business in the Patent and Trademark Office connected therewith.

ALL CORRESPONDENCE CONCERNING THIS APPLICATION AND THE LETTERS PATENT WHEN GRANTED SHOULD BE ADDRESSED TO THE UNDERSIGNED ATTORNEY OF RECORD.

Respectfully,

Jack E. Haken, Reg. 26,902
Attorney of Record

Dated at Tarrytown, New York
this 20TH day of June, 2000.
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PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

06/28/2000 BALEXAND 00000006 141270 09597198

01 FC:101 690.00 CH
02 FC:102 78.00 CH

PTO-1556
(5/87)

*U.S. GPO: 1999-459-082/19144

PATENT APPLICATION FEE DETERMINATION RECORD Effective December 29, 1999	Application or Docket Number

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
FOR	NUMBER FILED	NUMBER EXTRA
BASIC FEE		
TOTAL CLAIMS	17 minus 20=	*
INDEPENDENT CLAIMS	4 minus 3 =	* 1
MULTIPLE DEPENDENT CLAIM PRESENT		

SMALL ENTITY TYPE ☐		OR	OTHER THAN SMALL ENTITY	
RATE	FEE		RATE	FEE
	345.00	OR		690.00
X$ 9=		OR	X$18=	
X39=		OR	X78=	78.00
+130=		OR	+260=	
TOTAL		OR	TOTAL	768.00

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

CLAIMS AS AMENDED - PART II

AMENDMENT A

	(Column 1)		(Column 2)	(Column 3)
	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X39=		OR	X78=	
+130=		OR	+260=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT B

	(Column 1)		(Column 2)	(Column 3)
	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X39=		OR	X78=	
+130=		OR	+260=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

1111

AMENDMENT C

	(Column 1)		(Column 2)	(Column 3)
	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X39=		OR	X78=	
+130=		OR	+260=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. 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.

FORM PTO-875
(Rev. 12/99)

Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE
*U.S. GPO: 2000-463-433/29044

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of | Atty. Docket

JONATHAN C. GRIFFITHS | US 000136

Serial No: | Group Art Unit:

Filed: CONCURRENTLY | Ex.

METHOD AND SYSTEM FOR ELECTRONIC DEVICE AUTHENTICATION
Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. 1.97

Sir:

Enclosed is a Form PTO-1449 and copies of documents listed thereon. These documents are considered to be relevant in that they have been:

[ ] considered in drafting the specification of the above-referenced application;

[X] cited in the specification of the above-referenced application; or

[ ] cited as an "X" or "Y" document in a foreign Patent Office search report on a foreign counterpart application a copy of which report is also enclosed.

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If readily available, English-language counterparts have been substituted for foreign-language patent documents. This disclosure is not an admission that any of these documents is material to or even prior art with respect to the above-referenced application.

Respectfully submitted,

PTO-1449
References: (1)

By _____
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Form PTO-1449 (REV. 7-80) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	Atty. Docket No. US 000136	Serial No.
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	AG							
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OTHER (Including Author, Title, Date, Pertinent Pages, Etc.)

	AL		"SPECIFICATION OF BLUETOOTH SYSTEM - CORE" v. 1. OA, July 26th 1999, pp. 18-19, 95, 149-154, 169-170, 194-200, 226, 319, 537, 1029 and 1031.
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