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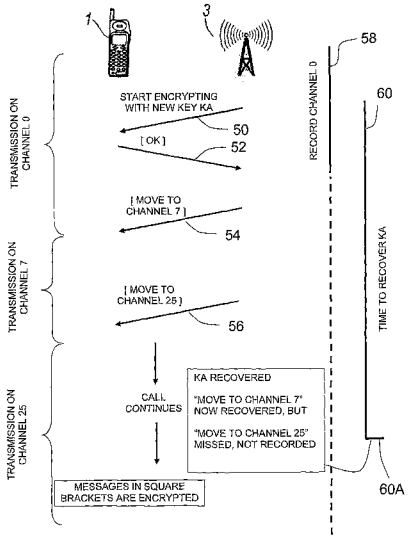
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— *with international search report (Art. 21(3))*

[Continued on next page]

(54) Title: IMPROVING SECURITY IN TELECOMMUNICATIONS SYSTEMS

Fig 2



(57) Abstract: Security of communications between a mobile terminal 1 and a cellular network node (base station 3) is enhanced. A communication session transmitted on a first traffic channel '0' is encrypted using a key 'KA'. The security is enhanced by causing the communication channel to change to a second communication channel '7' after a predetermined time, preferably very quickly after establishing the key. In one embodiment the communication channel then changes to a third communication channel '25' after a predetermined time. In another embodiment the communication session is encrypted using a second key 'KB' after causing the communication channel to change to the second communication channel '7'.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:
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INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. H04W12/02 H04W76/02 H04L29/06 H04W12/00
ADD. H04W84/04 H04W84/12

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)
H04K H04L H04M H04W

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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2004/098112 A (BARKAN ELAD [IL]) 11 November 2004 (2004-11-11) page 2, paragraph 1 page 7, paragraph 10 page 20, paragraph 4	1-21
A	WEN-PING YING: "Key Hopping? ? A Security Enhancement Scheme for IEEE 802.11 WEP Standards" NEXTCOMM, February 2002 (2002-02), XP002547177 Retrieved from the Internet: URL:http://www.thehackademy.net/madchat/reseau/wireless/Key_Hopping.pdf> pages 3-5 figure 3	1-21

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

[X] See patent family annex.

* Special categories of cited documents :

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

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

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

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

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"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
23 November 2009	01/12/2009

Name and mailing address of the ISA/	Authorized officer
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Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2009/050034

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2005/152281 A1 (WARY JEAN-PHILIPPE [FR] ET AL) 14 July 2005 (2005-07-14) paragraphs [0013], [0028] figure 1	22-26
A	US 2005/102517 A1 (PADDON MICHAEL [AU] ET AL) 12 May 2005 (2005-05-12) paragraphs [0009], [0010], [0074] figure 1	22-26
A	EP 1 835 656 A (CRYPT INC N [JP]) 19 September 2007 (2007-09-19) paragraphs [0019], [0098]	22-26

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2009/050034

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-21

Avoiding tracking of a channel on which a call is on

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2. claims: 22-26

Avoiding signalling interception when a call is established

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/GB2009/050034

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