Title: SECURE TRANSMISSION OF AUDIO SIGNALS

Abstract: In a headset (14) audio speech signals are picked up by the microphone (25), where they are digitally sampled before being encoded by a vocoder (26). The coded speech data is then provided to a CRC module (27), where error correction data is added before the resulting data is encrypted by an encryption module (22). The resulting encrypted data is transmitting using a Bluetooth radio interface (24), by which the headset is connected wirelessly to a mobile telephone. Received data is decrypted by a decryption module (23), error corrected by an error correction module (28) and decoded by a decoder (29), with the resulting audio signals then being reproduced at a speaker (30). When a user wants to instigate a telephone call with another telephone, the headset (14) is caused to send a control signal to the mobile telephone instructing it to enter a data mode. A data call is then set up and, once established, the CPU (20) controls the setting up of a 128 bit encryption key which is subsequently used for communications between the headset (14) and a corresponding device associated with the recipient of the call. Encryption and decryption are performed only at the headset (14). This provides increased security since even if the call can be intercepted, the interceptor will need to decrypt the signals before being able to reproduce the audio signals.
before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(88) Date of publication of the international search report:

16 September 2004
### INTERNATIONAL SEARCH REPORT

**International Application No**

PCT/EP 03/51073

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC 7 H04L29/06  H04Q7/38

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  H04Q

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**

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<td>Y</td>
<td>the whole document</td>
<td>6,10</td>
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<td>Y</td>
<td>US 5 912 972 A (BARTON JAMES M) 15 June 1999 (1999-06-15) column 7, line 27 - line 32 column 8, line 7 - line 8</td>
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</tr>
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** Further documents are listed in the continuation of box C.**

** Patent family members are listed in annex.**

**Date of the actual completion of the international search**

22 April 2004

**Date of mailing of the international search report**

19.07.2004

**Name and mailing address of the ISA**

European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV RIjswijk
Tel. (+31-70) 340-2040, Tx. 31 651 apo nl, Fax: (+31-70) 340-3018

**Authorized officer**

Figiel, B

Form PCT/ISA/210 (second sheet) (January 2004)
<table>
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Form PCT/ISA/19 (continuation of second sheet) (January 2004)
## INTERNATIONAL SEARCH REPORT

**Box I  Observations where certain claims were found unsearchable (Continuation of Item 1 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 crafted in accordance with the second and third sentences of Rule 6.4(a).

**Box II  Observations where unity of invention is lacking (Continuation of Item 2 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 fee, this Authority did not invite payment of any additional fee.

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.:

   1-19, 24-26

**Remark on Protest**

☐ The additional search fees were accompanied by the applicant’s protest.

☐ No protest accompanied the payment of additional search fees.
This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-19, 24-26
   
   adding error correction data to the signals before transmission

2. claims: 20-23, 27-30
   
   sending a further encrypted session key
<table>
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