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D E C I S I O N
of 29 September 1998

Case Number: T 0295/98 - 3.5.1

Application Number: 91307131.2

Publication Number: 0473297

IPC: H04B 7/26

Language of the proceedings: EN

Title of invention:
Mobile data telephone

Applicant:
AT&T Corp.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 52(1), 56

Keyword:
"Inventive step (no)"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0295/98 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 29 September 1998

Appellant: AT&T Corp.
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Representative: Buckley, Christopher Simon Thirsk
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 18 November 1997 refusing European patent application No. 91 307 131.2 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: P. K. J. van den Berg
Members: A. S. Clelland
V. Di Cerbo

Summary of Facts and Submissions

i. This appeal is against the decision of the examining division to refuse European patent application No. 91 307 131.2 on the ground that the subject-matter of independent claim 5 lacked an inventive step (Articles 52(1) and 56 EPC). Inter alia the following documents were cited in the decision:

D1: US-A-4 697 281

D4: EP-A-0 344 539

II. In the notice of appeal the appellant (applicant) requested that the decision under appeal be set aside and a patent granted; with the subsequently filed statement of grounds of appeal the appellant filed a revised set of claims.

III. On 7 July 1998 the appellant was summoned to oral proceedings before the Board. The summons was accompanied by a communication from the rapporteur discussing the issue of inventive step. The oral proceedings took place on 29 September 1998 in the absence of the appellant, who had informed the Board on the previous day that he would not be attending.

IV. The appellant had requested that a patent be granted on the basis of the following documents:

Claims: Claim 1 as filed on 17 August 1988,
Claims 2 to 5 as filed on 14 March 1998

Description: page 1a as filed on 27 June 1997;
pages 1 and 2 as filed on 21 July 1995;
page 8 as filed on 17 August 1998; and
pages 3 to 7 as originally filed

Drawings Figures 1 to 5 as originally filed

V. Claim 1, an independent claim directed to a mobile data telephone, reads as follows:

"A mobile data telephone for transmitting and receiving voice and data signals over communication channels using an air interface, including

a radio transceiver (101, 103) including an audio processor (108) for processing voice and data signals, a message processor (106) for processing system message signals, and first control means (111) connected to said audio and message processors, the first control means including channel condition monitoring means for detection of communication channel conditions;

a data modem (102) connected to the transceiver and having a data port (120); and

CHARACTERIZED BY:

the first control means being coupled to measure received radio signal strength (RSSI);

a data protocol processor (118), second control means (117) connected to the data protocol processor and the data port (120) connected to supply data, via the second control means, to the audio processor during good communication channel conditions;

means for coupling the first control means and the second control means so that the transceiver and the data modem are linked to achieve control of data therebetween; and

means for coupling the channel condition monitoring means to the second control means;

the second control means being responsive to the channel condition monitoring means for determining an adverse communication channel condition and responding by interrupting direct data flow from the second control means to the audio processor and, instead,

controlling data flow to flow between the data port and the data protocol processor, the data protocol processor including signal coding means and interleaving means for adding data protective coding and transmission integrity to the data, and, after such addition, via the second control means to the audio processor."

VI. Claim 4, an independent claim directed to a wireless data transmission system, reads as follows:

"A wireless data transmission system for operation with mobile radiotelephones in a transmission environment subject to frequently occurring fading conditions including signal level attenuations and mobile movement-related signal degradations, including

a transceiver apparatus (101) including a voice and data processor (108), a transceiver controller (111) for controlling throughput of the voice and data processing unit, and channel condition monitoring means for detecting substandard channel conditions;

data modem apparatus (102) including a data input/output port (120);

and CHARACTERIZED BY:

the channel condition monitoring means being connected to measure received radio signal strength (RSSI);

a data processing circuit including a modulator/demodulator (117), and a data modem controller (117) for constructing frames of data

signals for transmission, and a data protocol processor (118) connected to the controller; and

the data modem controller being responsive to the channel condition monitoring means for coupling the data input/output port to the voice and data processor via a direct connection between the data modem controller and the voice and data processor during acceptable signal conditions, or for coupling the data input/output port to the voice and data processor via the data protocol processor for encoding the signal to enhance its accuracy during adverse signal conditions, and from thence via the data modem controller to the voice and data processor."

Reasons for the Decision

1. *Background to the invention*

1.1 A problem arises in the well-known cellular telephone system when it is desired to transmit data. Because of interruptions caused by system signalling events or by movement of the mobile unit an unacceptably high data error rate can occur. The present application is concerned with the provision of robust data transfer for mobile units.

2. *Inventive step*

2.1 Although the application was rejected on the basis of a combination of D1 and D4, the Board takes the view that the skilled person would have no good reason to read these two documents together. Both are concerned with the problem of error reduction during data transfer in the mobile environment; apart from the fact that

neither refers to the other, the skilled person would have no good reason to make a combination of features taken from one document with features taken from the other.

2.2 Since claim 4 is apparently the claim of broadest scope the Board has considered it first.

2.3 In the Board's view the single most relevant document is D4. This document discloses, using the terminology of claim 4, a wireless data transmission system for operation with mobile radiotelephones in a transmission environment subject to frequently occurring fading conditions including signal level attenuations and mobile movement-related signal degradations, see D4 at page 2, lines 10 to 54 and page 9, lines 18 to 24. D4 relates to a standard cellular phone system, see page 3, lines 49 to 56 and page 4, lines 2 to 40, in which both the mobile unit and base station conventionally comprise a transceiver, "base radio equipment" 132 in Figure 1B of D4, having an audio or voice processor for processing voice and data signals, a message processor for processing system message signals and a transceiver controller. The use of the D4 system for data communication is apparent from the passage at page 2, lines 49 to 52. Although not explicitly disclosed in D4 the skilled person would understand from his common general knowledge that data transmission to/from a mobile transceiver requires certain features in both the mobile and base stations: a data modem connected to the system by way of a port and a means for controlling data flow to/from the modem (i.e. a modem controller). The D4 system also provides channel condition monitoring means in the form of interference detection circuit 135.

2.4 From Figure 1C of D4 and the description at page 4, lines 33 to 46, and page 7, lines 54 to 58, it can be seen that interference detection circuit 135 is coupled to measure signal strength, i.e. to provide an RSSI signal. A microcomputer 138, operating in accordance with the flow chart shown in Figures 4a and b, is connected between the transceiver and the data source and processes the data in accordance with a selected error correcting protocol, (i.e. constructing frames of data signals for transmission). The channel condition monitoring circuit 135 is coupled to the microcomputer 138 by way of an A/D converter 134 and an interface 136 so that data flow to or from the transceiver is controlled by the microcomputer in response to communication channel conditions. It can be seen from Figure 4b that in the event of an output from the circuit 135 suggesting the likelihood of data errors the microcomputer reduces the data rate ("lower effective bit rate" 470). If the output of unit 135 is satisfactory it attempts to improve the data rate (branch 475 and process 495) based on conventional considerations, see page 10 lines 7 to 15. In accordance with page 10, lines 16 to 21 of D4 the changes to the effective bit rate on the one hand involve a direct change in bit rate and on the other hand involve changing the amount of error correction coding in the signal. It is thus apparent that the microcomputer 138 of D4 serves the functions of a data modem controller and data protocol processor as specified in claim 4 of the application.

2.5 The subject-matter of claim 4 is arguably distinguished from the teaching of D4 by two features:

(a) The claim specifies that the data modem controller couples the port to the voice and data processor "via a direct connection" during acceptable signal conditions and "via the data protocol processor" during adverse signal conditions.

(b) The channel condition monitoring circuit and the features of the characterising part are by implication in the mobile unit rather than in the base station.

2.6 Dealing first with the latter point, there is no clear teaching in claim 4 which limits the claim to a mobile unit; any such limitation can only be derived by reading the claim in the light of the description. Even if for the sake of argument such a limitation is imported into the claim, in the Board's view no inventive step is involved in providing the channel condition monitoring circuit in the mobile unit. D4 indeed notes at page 4, lines 19 and 20 that the block diagram of Figure 1B can represent both the base site equipment and the mobile unit; the following passage at lines 23 to 25 indicates that alternatively the mobile unit can determine the level of error correction provided. Given that the transceiver and interfacing circuitry are largely common to both the mobile and base station units, no invention would appear to be involved in choosing one unit rather than the other as the source of control in response to signal conditions.

2.7 As for the former point, in the statement of grounds of appeal and the submission subsequent to the invitation to oral proceedings the appellant has argued that the claimed invention teaches "coupling" and "interruption" actions in that in the event of good channel conditions

there is a direct connection between the data port and the voice and data processor, but when the conditions deteriorate the direct path is interrupted and the data protocol processor inserted to provide error correcting coding. In D4 on the other hand data flow is constant by way of the modem and the coding is merely altered in accordance with signal strength. The Board sees no merit in this argument. Even in the application at page 3 lines 31 to 34 it is stated that "the data protocol processor ... may be implemented either in a hardware form or in a software mode or in a combination of these two forms". This suggests that the data protocol processor may in practice constitute a different data path within the controller if error correction is required, rather than a separate device the use of which requires an explicit "interruption" of data flow and a separate "coupling". D4 moreover explicitly envisages the situation where no error correction is initially required but is subsequently switched in as a result of signal degradation, see page 10, lines 16 to 21. Moreover, D4 discloses the software routines necessary to implement the data controller. It is thus apparent that no technical distinction can be made between the D4 system and that of the application.

2.8 The subject-matter of claim 4 accordingly lacks an inventive step.

2.9 Turning now to claim 1, this claim is explicitly directed to a mobile data telephone, i.e. the mobile unit, but otherwise includes substantially the same features as claim 4. The above analysis of claim 4 applies, *mutatis mutandis*, to claim 1. The subject-matter of claim 1 accordingly also lacks an inventive

step.

2.10 There being no other requests, it follows that the appeal must be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. Kiehl P. K. J. van den Berg