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Datasheet for the decision of 16 June 2009

Case Number: T 1349/06 - 3.5.02

Application Number: 01301975.7

Publication Number: 1134897

IPC: H03L 7/10

Language of the proceedings: EN

Title of invention:
Intelligent software controlled correction of frequency tracking for a local oscillator of a receiver of a wireless device

Applicant:
LUCENT TECHNOLOGIES INC.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 54

Relevant legal provisions (EPC 1973):
-

Keyword:
"Cancellation of oral proceedings and continuation in writing - (no)"
"Novelty - (no)"

Decisions cited:
-

Catchword:
See reasons of the decision, point 2.

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 1349/06 - 3.5.02

D E C I S I O N
of the Technical Board of Appeal 3.5.02
of 16 June 2009

Appellant: LUCENT TECHNOLOGIES INC.
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 28 March 2006 refusing European application No. 01301975.7 pursuant to Article 97(1) EPC 1973.**

Composition of the Board:

Chairman: M. Ruggiu
Members: J.-M. Cannard
H. Preglau

Summary of Facts and Submissions

I. The appellant contests the decision of the examining division to refuse European patent application No. 01 301 975.7. The reason for the refusal was that the claims of the request then on file did not meet the requirements of Article 84 and Rule 29(2) EPC and the subject-matter of claims 1, 4, 7, 11, 14 and 16 of said request was not new (Article 54(1),(2) EPC).

II. The prior art document:

D3: EP-A-0 818 911,

considered in the first instance, remains relevant to the present appeal.

III. With the statement of grounds of appeal dated 26 July 2006, the applicant filed a replacement set of seventeen claims comprising a method claim 1 and an independent apparatus claim 11, whereby claim 11 reads as follows:

"Apparatus for frequency tracking a local oscillator (130) of a first wireless device (100) with a clock signal of a second wireless device (150), comprising:

means for determining a number of clock cycles (1004) during a length of a data symbol transmitted from said second wireless device (150) to said first wireless device (150);

means for comparing said determined number of clock cycles during said length of said transmitted symbol to

an expected number of clock cycles during said transmitted symbol (1014); and

means for adjusting a frequency of said local oscillator (130) only when said comparison (1018) of said number of clock cycles between boundaries of said transmitted symbol differ by more than a predetermined threshold."

IV. With a communication dated 18 March 2009 annexed to summons to oral proceedings, the Board pointed out, *inter alia*, that, having regard to the broad meaning of the term "data symbol" and the frequency tracking device disclosed in document D3, the subject-matter of claim 11 of the current request appeared to lack novelty.

V. As announced with a letter faxed on 18 May 2009, the appellant did not attend the oral proceedings before the Board held on 16 June 2009. The appellant requested in writing that the decision under appeal be set aside and that a patent be granted on the basis of claims 1 to 17 filed with the letter dated 26 July 2006. The appellant further requested in writing that the oral proceedings of 16 June 2009 be cancelled and the procedure be continued in writing.

VI. The written applicant's arguments can be summarized as follows:

Although the data symbol shown in figure 4 of the application in suit appeared to correspond to a frame of data, a skilled person would recognize that the length of a data symbol could also be more or less than a frame of data. A data symbol according to the application could be any data pattern having any data length that

was pre-arranged between two wireless devices and could be compared to a known number of clock cycles to determine clock variations between the two devices.

Document D3, for instance at column 4, lines 21 to 26, disclosed continuous frequency adjustments occurring sooner or later, i.e. postponement, even when frequency errors were small. D3 teaching thus was not adjusting a frequency of a local oscillator only when a comparison of a number of clock cycles between boundaries of a transmitted symbol differed by more than a predetermined threshold, as recited in the claims. Moreover, D3 corrected a clock by counting the number of clock pulses between two sync words, more specifically between the end boundary of a first sync word and a start boundary of a second sync word, to detect clocking errors. D3 thus failed to use the boundaries of a transmitted symbol as a basis to detect clocking errors, as recited by claims 1 to 17.

A frequency difference between two wireless devices might be greater than zero and still provide clear communication between the devices. Frequency tracking could be time consuming and require power. In wireless devices that relied on batteries, correcting a frequency difference between the devices might not be desirable if sufficiently clear communication was established with a small amount of frequency difference there between. By performing a conditional correction based on a predetermined threshold as claimed, battery consumption could be reduced and time between battery charging be increased. The subject-matter of the claims was novel and involved an inventive step.

Reasons for the Decision

1. The appeal is admissible.

Procedural matters

2. In reply to the communication of the Board, no amended claims were filed and the appellant has in substance maintained the arguments provided with the statement of grounds of appeal. The appellant did not attend the oral proceedings as announced. However, the case was in a position to be decided on grounds and evidence on which the applicant had had an opportunity to present its comments. Moreover, according to Article 15(3) of the Rules of Procedure of the Boards of Appeal (OJ EPO 2007, 536 to 547), "The Board shall not be obliged to delay any step in the proceedings, including its decision, by reason only of the absence at the oral proceedings of any party duly summoned who may then be treated as relying only on its written case". Accordingly, the Board decides not to grant the appellant's requests to cancel the oral proceedings and continue the procedure in writing.

Lack of novelty

3. The term "data symbol" specified in the claims has per se such a broad meaning in the relevant field that it can refer to any signal shape representing information. Claim 11 neither specifies more precisely the meaning of a "data symbol" transmitted from the second wireless device (i.e. a base station), nor exemplifies the

length of a data symbol during which a number of clock cycles of the first wireless device (i.e. a handset) is determined. However, it appears from the application as a whole that a data symbol used for frequency tracking may correspond to a data frame, or to any signal waveform limited by predetermined boundaries in the digital signal (for instance within a frame) and having a predetermined length (see application as published, figures 4A, 4B, 6A and 6B; column 9, lines 1 to 31; column 12, lines 14 to 19; column 12, line 55 to column 13, line 2; column 13, lines 28 to 33; claims 10 and 11). The appellant does not dispute in its letter of reply dated 18 May 2009 that a data symbol can be any data pattern having any data length that is pre-arranged between two wireless devices that can be compared to a known number of clock cycles to determine clock variations between the two wireless devices.

4. Document D3 discloses an apparatus for frequency tracking a local oscillator 24 of a first wireless device (portable part 20) with a clock signal of a second wireless device (fixed station 10). The apparatus according to the embodiment described in D3 with reference to the figure comprises all the features of claim 11 of the current request:

- means (counter 26) for determining a number of clock cycles of the local oscillator 24 of a first wireless device (portable part 20) during a length of a data symbol transmitted from a second wireless device (fixed station 10) (according to D3, claim 1 and column 3, line 54 to column 4, line 7, the counter 26 counts clock signals from the detection of a SYNC word in a first multiframe to the detection of a SYNC word in the

next multiframe, namely between the detection of two predetermined parts or predetermined boundaries of a signal waveform),

- means for comparing said determined number of clock cycles during said length with an expected number of clock cycles during said length (according to column 4, lines 7 to 10 of D3, the difference between the actual value and the expected value of the counter 26 is calculated in the microcontroller unit 23),

- means (MCU 23, DAC 27) for adjusting a frequency of the local oscillator 24 only when the comparison of said number of clock cycles between said boundaries of the transmitted symbol differ by more than a predetermined threshold (according to D3, column 4, lines 10 to 15, the calculated difference is used to tune the clock 24 and a difference of one count in the counter 26 is implicitly necessary for adjusting the frequency of the local oscillator; in D3, a frequency adjustment thus occurs only when the comparison of the number of clock cycles between boundaries of the symbol differ by more than a predetermined threshold in term of clock frequency, which is what is explained in the published specification of the present application, paragraphs [0069], [0091] and [0103]).

5. Accordingly, taking in account the broad meaning which should be given to the term "data symbol" in the claims, the subject-matter of claim 11 of the current request is considered to lack novelty having regard to the apparatus disclosed in D3 (Article 54 EPC).

6. Since the claims according to the current request on file do not meet the requirement of novelty of the EPC, the appeal has to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. Patin M. Ruggiu