

**Internal distribution code:**

- (A)  Publication in OJ  
(B)  To Chairmen and Members  
(C)  To Chairmen  
(D)  No distribution

**Datasheet for the decision  
of 16 October 2008**

**Case Number:** T 1684/07 - 3.5.03

**Application Number:** 99110958.8

**Publication Number:** 0964596

**IPC:** H04Q 7/38

**Language of the proceedings:** EN

**Title of invention:**

Method of assigning frequency using propagation loss

**Applicant:**

NEC CORPORATION

**Opponent:**

-

**Headword:**

Method of assigning frequency/NEC

**Relevant legal provisions:**

EPC Art. 84, 111(4)

**Keyword:**

"Clarity - main request (yes)"

"Remittal (yes)"

**Decisions cited:**

-

**Catchword:**

-



Case Number: T 1684/07 - 3.5.03

**D E C I S I O N**  
of the Technical Board of Appeal 3.5.03  
of 16 October 2008

**Appellant:**

NEC CORPORATION  
7-1, Shiba 5-chome  
Minato-ku  
Tokyo (JP)

**Representative:**

Vossius & Partner  
Siebertstrasse 3  
D-81675 München (DE)

**Decision under appeal:**

Decision of the examining division of the  
European Patent Office posted 13 April 2007  
refusing European application No. 99110958.8  
pursuant to Article 97(1) EPC 1973.

**Composition of the Board:**

**Chairman:** A. S. Clelland  
**Members:** F. van der Voort  
M.-B. Tardo-Dino

## Summary of Facts and Submissions

- I. This appeal is against the decision of the examining division refusing European patent application No. 99110958.8 (publication number EP 0 964 596 A).
- II. The reasons given for the refusal were that the independent claims of each one of a main request and four auxiliary requests lacked clarity, Article 84 EPC.

More specifically, it was held that the feature of "assigning a frequency channel ... to a mobile station" was not clear in the context of CDMA (code division multiple access) systems, since in CDMA the resource which was assigned to a mobile station was a spreading code, not a frequency channel (see the decision under appeal, points 2.d. and 2.e.). Further, since the claims did not specify the CDMA systems, it had to be assumed that "only plain CDMA communication by assigning a code is envisioned". In such a CDMA system it was however unclear how a mobile station was assigned a frequency channel, since a base station which selected a frequency channel to be used and assigned it to a mobile station rather described an FDMA (frequency division multiple access)-type allocation scheme (see the decision, point 2.e.).

In relation to the disclosure of the application as filed, the examining division stated, *inter alia*, the following (see the decision, points 2.g., 2.i., and 2.j.):

"Figure 1 of the application, labelled as "prior art" shows a number of frequency bands adjacent to each other

which are assigned to different operators. Within these frequency bands a subdivision into four frequency channels in each band is drawn. However there is no assignment of codes apparent from this figure, no users or mobile stations are apparent in this figure. There is no statement in the application that this setup from the prior art is also basis of the current application."

"Some implementations of existing CDMA systems have chosen to split the available frequency band assigned to a system by applying frequency-division on top of the code-division. ... The originally filed application documents however fail to disclose such a relation of codes to subbands nor do they disclose that the claimed CDMA communication system applies such frequency division into subbands." and

"Even if one would assume that the CDMA system in question splits its assigned frequency band into a number of subbands (by applying codes which spread the signal to a spectral width which is smaller than the overall system frequency band width) such system design would require that the base station assigns to the mobile station both, a code and a corresponding subband. An [*sic*] management scheme tracking down which codes have been assigned per frequency channel is needed to prevent double assignment. Neither the assignment of code and subband, the subdividing of the frequency band assigned to the system nor the selection and management of matching codes to the subbands or the code/subband management is disclosed in the application."

The examining division also held that an objection raised during the written procedure and "relating to

unclear use of the term "frequency" with respect to "frequency bands" and "adjacent frequency channel" had not been overcome. It was also held that "The claim comprises "a channel" and "a frequency channel" without allowing to learn if these are identical or if they are different". Further, the feature that frequency bands were assigned to each CDMA communication system and the feature that frequency channels were assigned to the CDMA communication system were contradictory. The terminology of the independent claims was therefore unclear and, hence, violated Article 84 EPC (see the decision, points 2.m., 2.n., 2.s., and 2.t.).

- III. With the statement of grounds of appeal the appellant filed a main request and six auxiliary requests and submitted arguments in support. The appellant requests that the decision under appeal be set aside and that a patent be granted on the basis of the main request. It is further requested that, if the board cannot agree to the main request, "the auxiliary requests be considered" and oral proceedings be held.
- IV. The main request is identical to the main request as decided on by the examining division and includes four independent claims 1, 4, 5 and 8.

Claim 1 of the main request reads as follows:

"A method of assigning frequencies in CDMA communication systems providing services in the same area when different frequency bands are assigned to each CDMA communication system in which a base station (20, 21) of one of the CDMA communication systems selects a frequency channel to be used from the assigned frequency

band and assigns the selected frequency channel to a mobile station, comprising the steps of:

measuring a propagation loss over a channel between said base station (20, 21) and a mobile station (10) present in a cell of said base station;

assigning a frequency channel which is not adjacent to the frequency band assigned to another CDMA communication systems [sic] from among the frequency channels assigned to said CDMA communication systems [sic] to a mobile station whose propagation loss is greater than a first value; and

assigning a frequency channel which is adjacent to the frequency band assigned to another CDMA communication systems [sic] from among the frequency channels assigned to said CDMA communication systems [sic] to a mobile station whose propagation loss is equal to or smaller than a second value."

Claim 4 of the main request reads as follows:

"A method of assigning frequencies in CDMA communication systems providing services in the same area when different frequency bands are assigned to each CDMA communication system in which a base station of one of the CDMA communication systems selects a frequency channel to be used from the assigned frequency band and assigns the selected frequency channel to a mobile station (10), comprising the steps of:

indicating the transmission power level of each mobile station from the mobile station (10) to a base station (20, 21) respectively;

assigning a frequency channel which is not adjacent to the frequency band assigned to another CDMA communication systems [sic] from among the frequency

channels assigned to said CDMA communication system, to a mobile station (10) whose transmission power level is greater than a first value; and

assigning a frequency channel which is adjacent to the frequency band assigned to another CDMA communication system from among the frequency channels assigned to said CDMA communication system to a mobile station (10) whose transmission power level is equal to or smaller than a second value."

Claim 5 of the main request reads as follows:

"A CDMA communication system comprising:

at least one mobile station (10); and  
a plurality of base stations (20, 21) for measuring a propagation loss over a channel with a mobile station present in a cell thereof, assigning a frequency channel which is not adjacent to the frequency band assigned to another CDMA communication system which provides services in the same area as the CDMA communication system from among the frequency channels assigned to said CDMA communication system to a mobile station (10) whose propagation loss is greater than a first value, and assigning a frequency channel which is adjacent to the frequency band assigned to the other CDMA communication systems from among the frequency channels assigned to said CDMA communication system, to a mobile station (10) whose propagation loss is equal to or smaller than a second value."

Claim 8 of the main request reads as follows:

"A CDMA communication system comprising:

at least one mobile station (10) for indicating a

transmission power level to a base station; and  
a plurality of base stations (20, 21) for assigning a frequency channel which is not adjacent to the frequency band assigned to another CDMA communication system which provides services in the same area as the CDMA communication system from among frequency channels assigned to the CDMA communication system to a mobile station (10) whose transmission power level is greater than a first value, and assigning a frequency channel which is adjacent to the frequency band assigned to the other CDMA communication system from among the frequency channels assigned to said CDMA communication system to a mobile station (10) whose transmission power level is equal to or smaller than a second value."

In view of the board's decision it is not necessary to give details of the auxiliary requests.

## **Reasons for the Decision**

1. *Article 123(2) EPC (main request)*
  - 1.1 The claims of the main request are identical to the claims as originally filed, apart from the insertion of reference signs and the deletion of "preferentially" in "preferentially assigning" in the last feature of each of the independent claims 1, 4, 5 and 8.
  - 1.2 The board is therefore satisfied that the amendments according to the main request do not give rise to objections under Article 123(2) EPC.



2. *Rule 29(2) EPC 1973 (main request)*

2.1 The board notes that the examining division initially raised an objection under Rule 29(2) EPC 1973 as to the number of independent claims but withdrew it in the course of the examination proceedings (see the decision under appeal, points 1.a. and 1.g.).

2.2 In the board's view, the claims indeed complied with Rule 29(2) EPC 1973 and comply with Rule 43(2) EPC, since the application involves alternative solutions (see also point 3.6 below) to a particular problem, where it would be inappropriate to cover these alternatives by a single claim in the same category (cf. Rule 29(2) (c) EPC 1973 and Rule 43(2) (c) EPC).

3. *Article 84 EPC (main request)*

3.1 The board does not concur with the objections under Article 84 EPC raised by the examining division for the following reasons:

3.2 In the board's view, on construing claim 1 by a mind willing to understand the claim and by giving the words the meaning and scope they normally have in the relevant art, claim 1 defines a method of assigning a frequency channel to a mobile station by a base station of a CDMA communication system in a situation in which several CDMA communication systems are operating in parallel, each within a different frequency band. The frequency channel assignment is based on a measurement of the propagation loss over a frequency channel between the base station and the mobile station in question. More specifically, if the measured propagation loss is

greater than a first value, a frequency channel is assigned which is not adjacent to any of the frequency bands used by the other CDMA communication systems, whereas, if the propagation loss is equal to or smaller than a second value, a frequency channel is assigned which is adjacent to a frequency band of any one of the other CDMA communication systems.

The method thereby permits that a situation be avoided in which a mobile station, which is transmitting a signal at a relatively high power in order to compensate for a high propagation loss, would be transmitting the signal at a frequency close to and, hence, easily interfering with frequencies used by the other CDMA communication systems.

3.3 The above interpretation is also fully in line with and supported by the description:

More specifically, Fig. 1 shows the assignment of four frequency channels (fa1 to fa4, fb1 to fb4, and fc1 to fc4) to each of three network operators A, B and C, respectively. As follows from Fig. 2, col. 2, lines 34 to 46, and col. 4, lines 50 to 54 (reference is made to the application as published), at least network operators A and B each operate a CDMA communication system. Figs 1, 2 and 3a-c relate to what is referred to in the application as "conventional CDMA communication systems". However, the description of the present method, which is illustrated by reference to Figs 4 to 8, is explicitly disclosed in connection with these prior art figures. In particular, the present method uses the same frequency channels fa1 to fa4, the same cells A1, B1 and A4, and the same positions  $\alpha$ ,  $\beta$  and  $\gamma$  of the base

stations as shown in Fig. 1 (see col. 6, lines 38 to 46, and Figs 4, 6 and 7). Further, a direct comparison of interference power is made (see paragraph [0032] and Figs 3 and 7).

- 3.4 The passage at col. 6, lines 38 to 46, also makes it clear that one frequency channel may be assigned to a plurality of mobile stations. Further, it is implicit that in a CDMA system each mobile station is assigned a unique spreading code which enables the base station to distinguish the mobile stations.
- 3.5 As to the objections raised by the examining division, the board notes that neither claim 1 nor the description excludes a combination of spreading code and frequency channel assignment (see points 3.2 and 3.3 above). Hence, there is no reason to assume that "only plain CDMA communication by assigning a code" (see point 2.e. of the decision under appeal) was envisaged. Further, the inclusion of specific means in claim 1, for example, a management scheme for tracking down which codes have been assigned per frequency channel, is not necessary in order to be able to understand the subject-matter for which protection is sought. As to the use of the terms "frequency band" and "frequency channel" the board notes that claim 1 clearly specifies that a frequency channel is selected from the frequency band. Whether or not the channel used for measuring the propagation loss is the same as the frequency channel assigned to the mobile station is not specified in the claim, but does not render the claim unclear; it merely means that both possibilities are covered by the claim. The board further notes that claim 1 does not specify when exactly a frequency channel is to be considered as being

"adjacent to" the frequency band assigned to another CDMA communication system. However, since the claim clearly defines that one of two mutually excluding frequency channels is assigned dependent on whether the measured propagation value is greater than the first value or is equal to or smaller than the second value, the absence of a more specific definition does not give rise to a clarity objection.

3.6 The above reasoning applies *mutatis mutandis* to the independent claims 4, 5 and 8. It is noted that claim 4 relates to an alternative solution in which, instead of measuring the propagation loss, the transmission power level of the mobile station is indicated to the base station and subsequently used in the frequency channel assignment. Claims 5 and 8 each define a system in terms of constructional features corresponding to the method features of claims 1 and 4, respectively.

3.7 Since no other objections under Article 84 EPC are apparent to the board, the board concludes that the claims of the main request meet the requirements of Article 84 EPC. The decision under appeal is therefore to be set aside.

4. Since the main request is found allowable to the extent that the decision is to be set aside, it has not proved necessary to consider the auxiliary requests.

5. The board notes that the decision under appeal only dealt with lack of clarity of the claims. It is therefore considered appropriate, in accordance with Article 111(1) EPC, to remit the case to the department

of first instance for further prosecution on the basis of the claims of the main request.

## **Order**

### **For these reasons it is decided that:**

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance for further prosecution on the basis of the claims of the main request.

The Registrar:

The Chairman:

D. Magliano

A. S. Clelland