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**Datasheet for the decision  
of 12 December 2012**

**Case Number:** T 0445/10 - 3.5.03

**Application Number:** 07003231.3

**Publication Number:** 1791386

**IPC:** H04Q 7/38

**Language of the proceedings:** EN

**Title of invention:**

Method for cancelling an ongoing handover in a broadband wireless communication system

**Applicant:**

Samsung Electronics Co., Ltd.

**Headword:**

Cancelling an ongoing handover/SAMSUNG

**Relevant legal provisions:**

EPC Art. 56

**Relevant legal provisions (EPC 1973):**

-

**Keyword:**

"Inventive step (yes)"

**Decisions cited:**

-

**Catchword:**

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Case Number: T 0445/10 - 3.5.03

**D E C I S I O N**  
of the Technical Board of Appeal 3.5.03  
of 12 December 2012

**Appellant:**  
(applicant)

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**Decision under appeal:**

Decision of the examining division of the  
European Patent Office posted 14 October 2009  
refusing European patent application  
No. 07003231.3 pursuant to Article 97(2) EPC.

**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. 07003231.3 (publication number EP 1 791 386 A), which was filed as a divisional application relating to earlier European patent application No. 04021156.7 (EP 1 513 364 A).

The reason given for the refusal was that the subject-matter of claim 1 of each one of a main request and first and second auxiliary requests did not involve an inventive step (Article 56 EPC). The subject-matter of claim 1 of a third auxiliary request was held to contravene Rule 137(4) EPC (as in force on the date of the oral proceedings before the examining division, i.e. on 17 September 2009).

II. The following documents were cited in the search report for the present application:

Patent Abstracts of Japan, Vol. 2000, No. 22, 9 March 2001 & JP 2001 128209 A (hereinafter referred to as D1\*); and

D1: US 6 778 830 B.

In the course of the examination procedure the following document was additionally referred to:

D2: US 5 267 261 A.

III. In the notice of appeal the appellant requested that the decision be set aside and a patent be granted on the

basis of (one of) the requests on file. Oral proceedings were conditionally requested.

- IV. With the statement of grounds of appeal the appellant filed claims of a new main request and first to third auxiliary requests and submitted arguments in support.
- V. The appellant was summoned to oral proceedings. In a communication accompanying the summons the board drew attention to issues to be discussed at the oral proceedings.
- VI. In preparation for the oral proceedings, the appellant filed claims of a new main request and first to fifth auxiliary requests, replacing all requests on file, and presented arguments in support of these requests.
- VII. Oral proceedings were held on 12 December 2012 in the course of which the appellant withdrew all requests on file and filed claims 1 to 8 of a new main request.

The appellant requested that the decision under appeal be set aside and a patent be granted on the basis of the claims of the new main request as filed during the oral proceedings.

At the end of the oral proceedings, after deliberation, the board's decision was announced.

- VIII. Claim 1 of the main request reads as follows:

"A method of cancelling a handover by a mobile station (900) in cooperation with a serving base station in a broadband wireless communication system, the method

comprising:

transmitting (921) by the mobile station a handover request message to the serving base station (940) when it is detected by the mobile station that a handover is necessary;

receiving (921) at the serving base station the handover request message from the mobile station (900);

after transmitting (921) the handover request message, deciding by the mobile station (929; 1219; 1315) to cancel the handover while the handover is being performed between the serving base station and one of target base stations (960, 980);

transmitting (932; 1221; 1317) by the mobile station to the serving base station a handover indication message including handover cancellation information indicating that the mobile station cancels the handover;

in response to receiving by the serving base station the handover indication message including handover cancellation information, cancelling (934) the handover for the mobile station; and

maintaining a connection between the mobile station and the serving base station."

The remaining claims of the main request, i.e. claims 2 to 8, are dependent claims which read as follows:

- "2. The method as claimed in Claim 1, wherein the handover indication message includes a handover indicator type field including the handover cancellation information represented by two bits.
3. The method as claimed in Claim 1, wherein it is detected that the handover is necessary when a carrier to interference and noise ratio CINR of

the serving base station is less than a first threshold value.

4. The method as claimed in Claim 1 wherein, it is detected that the handover is necessary when a carrier to interference and noise ratio CINR of the serving base station is less than a carrier to interference and noise ratio CINR of a selected one of the target base stations.
5. The method as claimed in Claim 1, wherein the mobile station decides to cancel the handover when a carrier to interference and noise ratio CINR of the serving base station is more than a second threshold value during the handover.
6. The method as claimed in Claim 1, wherein the mobile station decides to cancel (1315; 1415) the handover when a carrier to interference and noise ratio CINR of the serving base station is more than a carrier to interference and noise ratio CINR of a selected one of the target base stations during the handover.
7. The method as claimed in Claim 1, further comprising transmitting a handover cancellation message (933) to the one of target base stations after having sent previously a handover confirm message (931) to the one of target base stations.
8. The method as claimed in Claim 7, wherein the handover cancellation message (933) is represented by a predetermined field included in a handover notification confirm message, that field having a

value of 1 to represent the cancellation of the handover and wherein the handover confirm message (931) is represented by the predetermined field included in a handover notification confirm message, said field having a value of 0 in the predetermined field to inform and enable the target base station to prepare the handover of the mobile station."

### **Reasons for the Decision**

#### 1. *Amendments*

- 1.1 Claim 1 is based on a combination of all features of independent method claims 1 and 8 as originally filed, thereby combining in a single claim the steps carried by the mobile station and those by the serving base station, in order to define the method such that the handover cancellation aimed at is actually achieved. Further, the wording "broadband wireless" in "in a broadband wireless communication system" was added, which is based on paragraphs [0084] and [0085] of the description (reference is made to the application as published).
- 1.2 Claims 2 to 6 respectively correspond to claims 3 to 7 as originally filed. The additional features as defined in claim 7 are based on claim 11 as filed and paragraph [0141] of the description. The additional features as defined in claim 8 are based on paragraphs [0114] to [0117] and [0142] of the description.
- 1.3 The board is therefore satisfied that the amendments to the claims do not give rise to objections under

Article 123(2) EPC. Neither do the claims, in the board's view, give rise to objections under Article 76(1) or 84 EPC.

2. *Inventive step*

2.1 In the board's judgement, the examining division's decision erroneously referred to document D1 as representing the closest prior art (cf. the decision under appeal, II. Reasons for the decision, point 6.1), since the publication date of D1 is 17 August 2004, whilst the priority date of the present application is earlier, namely 4 September 2003, and at the same time the examining division's opinion as expressed in the communication dated 5 July 2007, point 0.1, seems to imply that the priority was validly claimed. However, elsewhere in the decision under appeal the examining division stated that D1 did not belong to the state of art according to Article 54(2) EPC (cf. I. Facts and submissions, point 2) and used D1 as an English translation of family member document JP 2001 128209 A (i.e. D1\*, see point II above) which did belong to the state of the art according to Article 54(2) EPC. The applicant did not dispute this procedure followed by the examining division and likewise discussed D1 as representing the prior art. Under these circumstances, the board sees no reason to question whether or not D1 represents an accurate English translation of JP 2001 128209 A (D1\*). When discussing the disclosure of D1\* below, specific references to passages of the description or figures will therefore be with reference to D1 rather than D1\*.



2.2 D1\* (cf. D1, col. 1, lines 27 to 48, col. 6, lines 4 to 16, col. 7, line 60 to col. 8, line 2, and Figs 4 and 6) discloses a method of cancelling a handover by a mobile station 1 in cooperation with a serving base station 10 in a wireless communication system 100, 200. The known handover cancelling method includes the steps of:

- transmitting by the mobile station a notice of field reduction to the serving base station 10 when it is detected by the mobile station that the electric-field intensity of the radio signal transmitted from base station 10 has lowered below a call-channel drop threshold (D1, col. 10, lines 29 to 36, and Fig. 6, reference sign C31 ("Notice of Field Reduction"));
- receiving at the serving base station 10 and at a base station controller 12 the notice of field reduction from the mobile station (Fig. 6, reference sign C32);
- after transmitting the notice of field reduction, deciding by the base station controller 12 to cancel the handover (col. 11, lines 28 to 33, and Fig. 6, reference sign C39 ("Cancel. Command")) while the handover is being performed between the serving base station and one of target base stations 20 (Fig. 6, reference signs C33 and C34 ("Reserve Channel"));
- transmitting by the mobile station 1 to the serving base station 10 and the base station controller 12 a notice of field intensification indicating that the electric field restores its intensity to the value above the call-channel add-on threshold (col. 11, lines 9 to 18, and Fig. 6, steps C37 and C38 ("Notice of Field Intensif."));
- in response to receiving by the serving base station the notice of field intensification, judging by the base station controller whether or not the handover is necessary and, if not, cancelling the handover for the

mobile station (col. 11, lines 28 to 33, and Fig. 6, reference signs C39 and C40 ("Cancel. Command")) and maintaining a connection between the mobile station 1 and the serving base station 10 (D1, col. 11, lines 33 to 36).

The board notes that "broadband" as used in claim 1 ("broadband wireless communication system") is a relative term which in the context of the claim does not have a specific meaning. The term is therefore to be broadly interpreted and, hence, a "broadband wireless communication system" reads on the CDMA mobile telecommunication systems 100, 200 as disclosed in D1. Further, in the board's judgement, the notice of field reduction transmitted by the mobile station reads on "a handover request message" as used in present claim 1, since the notice is transmitted when the mobile station reaches "a hard handoff boundary point" (col. 10, lines 29 to 36) and serves to initiate a handoff (which is a synonym for a handover).

- 2.3 The subject-matter of claim 1 differs from the method disclosed in D1\* in that, instead of judging by the base station controller whether or not the handover is necessary after having received the notification of intensification from the mobile station, the mobile station takes the decision that the handover is cancelled and informs the serving base station accordingly by transmitting the handover cancellation information which indicates that the mobile station cancels the handover. A judgement made by the base station controller and the transmission of a cancellation command from the base station controller to the mobile station after having received the notice of

field intensification from the mobile station, as in D1\*, are therefore no longer required. A technical effect achieved by the above-mentioned distinguishing feature is therefore that the amount of traffic necessary between the mobile station and the base station in order to cancel a handover initiated by the mobile station is reduced. The board thus concludes that the invention is not merely about explicitly (instead of implicitly) indicating a handover cancellation, as suggested by the examining division in the decision under appeal (cf. II. Reasons of the decision, point 6.3, 2nd paragraph).

- 2.4 D1\* does not disclose or suggest the above-mentioned distinguishing feature. Further, D2 does not relate to cancelling a handover, but is concerned with the problem of avoiding unnecessary repeated handovers and for that purpose suggests that the mobile station transmits a Pilot Strength Measurement Report Message only if the signal strength has dropped for a predetermined period of time (D2, col. 4, lines 4 to 14, col. 22, Table II, and col. 23, lines 11 to 28 ("T\_TDROP")).

The board notes that in a communication dated 5 July 2007, point 1.3, the examining division expressed the view that, considering that the triggers to initiate and to cancel the handover in both the method claimed in claim 1 (i.e. as pending at the time) and the one disclosed in D1 are the same, i.e. based on measurements taken by the mobile station, and are used for the same purpose, i.e. to initiate and to cancel the handover, it would be just a matter of choice for the skilled person, when allocating the "intelligence" (processing load) in the system, to analyse these triggers either directly within the mobile station or by sending them for

evaluation elsewhere within the network. However, no evidence in support was provided. Nor does the board see any reason to assume that a modification of the system of D1 by the introduction of the above-mentioned distinguishing feature (see point 2.3) could be based merely on the common general knowledge of the person skilled in the art.

2.5 The board therefore concludes that the subject-matter of claim 1 involves an inventive step having regard to the disclosure of the prior art documents on file and the common general knowledge of a person skilled in the art (Articles 52(1) and 56 EPC).

2.6 Since claims 2 to 8 are dependent claims, it follows that the subject-matter of these claims also involves an inventive step.

3. For the above reasons and since, except that the description and drawings are still to be adapted to the present claims, the board sees no other reasons to object to the application in its present form, the appeal is to be allowed.

**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 with the order to grant a patent on the basis of claims 1 to 8 of the main request as filed during the oral proceedings and a description and drawings to be adapted.

The Registrar:

The Chairman:

G. Rauh

A. S. Clelland