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**Datasheet for the decision  
of 1 September 2008**

**Case Number:** T 0650/06 - 3.5.03

**Application Number:** 97931333.5

**Publication Number:** 0909522

**IPC:** H04Q 7/32

**Language of the proceedings:** EN

**Title of invention:**

Method and apparatus for geographic based control in a communication system

**Applicant:**

MOTOROLA, INC.

**Opponent:**

-

**Headword:**

Geographic based control in a communication system/MOTOROLA

**Relevant legal provisions:**

EPC Art. 56

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

-

**Keyword:**

"Inventive step (yes, following amendment)"

**Decisions cited:**

-

**Catchword:**

-



Case Number: T 0650/06 - 3.5.03

**D E C I S I O N**  
of the Technical Board of Appeal 3.5.03  
of 1 September 2008

**Appellant:**

MOTOROLA, INC.  
1303 East Algonquin Road  
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IL 60196 (US)

**Representative:**

Cross, Rupert Edward Blount  
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**Decision under appeal:**

Decision of the Examining Division of the  
European Patent Office posted 17 February 2006  
refusing European application No. 97931333.5  
pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** A. S. Clelland  
**Members:** T. Snell  
M-B. Tardo-Dino

## Summary of Facts and Submissions

I. This appeal is against the decision of the examining division refusing European patent application number 97931333.5, published under the PCT with publication number WO-A-98/02009. The application was refused on the grounds that the subject-matter of the independent claims 1 and 7 did not meet the requirement of inventive step having regard to the disclosures of the following documents:

D1: US-A-5442805

D2: EP-A-0683570

II. In the notice of appeal the appellant requested "grant of the application on the basis of the claims currently on file". A set of claims 1-10 was filed with the notice of appeal, which the board understood to be the claims currently on file. Oral proceedings were requested should the board not allow the grant on the basis of the written submissions. A statement of grounds was included with the notice of appeal.

III. In a communication accompanying a summons to oral proceedings the board gave a preliminary opinion in respect of claims 1-10 filed with the notice of appeal. The board raised *inter alia* an objection under Article 52(1) in combination with Article 56 EPC.

In the above communication, the board made reference *inter alia* to documents D1 and D2, and, making use of its power under Article 114(1) EPC, to the following document cited in the European search report:

D5: US-A-5235633

IV. In response to the board's communication, the appellant on 05.06.08 filed claims of a new main request to replace the previous set of claims on file, and also claims of first to third auxiliary requests.

V. In a further submission on 17.06.08, a new main request was filed intended to replace the existing main and first auxiliary requests.

The appellant submitted that the oral proceedings should be cancelled and the application be allowed to proceed to grant. However, it was requested that oral proceedings be maintained should the board [be minded to] dismiss the appeal.

VI. With a fax communication sent on 18.06.08 (although dated 20.06.08) the board informed the appellant that the oral proceedings were cancelled and that the procedure would be continued in writing.

VII. The board therefore understands that the appellant requests the grant of a patent on the basis of the following documents:

(a) *Main request:*

Claims:

1-8 received on 17.06.08.

Description:

Pages 1, 3-9 as published; pages 2a (incorrectly numbered page 3) and 11 received on 05.04.02; pages 2 and 10 received on 23.12.02.

Drawings:

Sheets 1/4 - 4/4 as published.

(b) *First auxiliary request:*

Claims 1-8 received on 05.06.08, and entitled "second auxiliary request".

Description and drawings as for the main request.

(c) *Second auxiliary request:*

Claims 1-8 received on 05.06.08, and entitled "third auxiliary request".

Description and drawings as for the main request.

VIII. Claim 1 of the appellant's main request reads as follows:

"A selective call transceiver (20) for use in a communication system having a plurality of transmitters (17, 18), the selective call transceiver comprising a receiver module (26), a transmitter module (22) coupled to the receiver module, a controller (28) coupled to the receiver module and the transmitter module for controlling the operation of the selective call

transceiver, and a GPS receiver (24) for receiving GPS information and coupled to the controller, wherein the controller is operable to use the GPS information provided by the GPS receiver to assist in the control of a communication function, characterized in that the controller (28) is operable to compare location information provided by the GPS receiver with site co-ordinates of one or more transmitters in the communication system to provide a signal for adjusting the power of one of the plurality of transmitters (17, 18) to allow adjustment of the power of the transmitter when transmitting to the selective call transceiver."

Independent claim 6 reads as follows:

"A method of operation of a two-way selective call subscriber device (20) having a transceiver and a GPS receiver (24) and operable within a messaging system (10) having a plurality of transmitters (17, 18) having known site co-ordinates, the method comprising acquiring from the GPS receiver location information (208) and characterized by comparing transmitter site co-ordinates of the one or more transmitters in the communication system with the information acquired from the GPS receiver to provide a signal for controlling the transmission power level of one of the plurality of transmitters (17, 18) to allow adjustment of the power of the transmitter when transmitting to the selective call subscriber device (20)."

## Reasons for the Decision

1. *Main request - Article 123(2) EPC*
  - 1.1 Claim 1 is based on a combination of original claims 1 and 3. Claim 1 differs from the version valid at the time of the impugned decision only in that the feature "when transmitting to the selective call transmitter" has been added to the claim. This feature was part of original claim 3, except for the addition of the term "when" which in the board's view does not change the meaning of the phrase.
  - 1.2 Claim 6 is a method claim corresponding essentially to apparatus claim 1, the only difference of substance being that the "selective call transceiver" is termed a "two-way selective call subscriber device". This term is used in the application as filed, for example in original independent claim 8.
  - 1.3 The board is therefore satisfied that no subject-matter has been added; hence the claims meet the requirements of Article 123(2) EPC.
2. *Main request - clarity (Article 84 EPC)*
  - 2.1 The board notes that claim 6 includes the expression "by comparing transmitter site co-ordinates of the one or more transmitters ..." (board's underlining), which, to be consistent with the preceding text of the claim, should in fact read: "by comparing transmitter site co-ordinates of one or more transmitters ...".

2.2 For the sake of consistency with claim 6, in the view of the board, an improved formulation of claim 1 would read: "to provide a signal for controlling the power of one of the plurality of transmitters ...".

2.3 Apart from these minor points, the board considers that independent claims 1 and 6 now clearly define the matter for which protection is sought. It is noted that claim 6 has been amended to remove unclear features and to be rendered consistent with claim 1.

### 3. *Claim interpretation*

3.1 Claim 1 was amended during appeal proceedings to include the feature "to allow adjustment of the power of the transmitter **when transmitting to the selective call transceiver**". Claim 6 includes the corresponding feature "to allow adjustment of the power of the transmitter **when transmitting to the selective call subscriber device**". The board considers that a skilled reader would understand from these expressions that the transmitter concerned is targeting a transmission at the selective call transceiver/subscriber device rather than being, for example, a potentially interfering transmitter, merely transmitting within the range of the selective call device.

3.2 In the view of the board, the references in claims 1 and 6 to "a signal for adjusting/controlling the power of one of the plurality of transmitters to allow adjustment of the power of the transmitter when transmitting to the selective call transceiver/subscriber device" should be interpreted as relating to a signal for adjusting the power of a transmitter



currently in communication with the selective call transceiver/subscriber device, in line with the normal meaning of transmitter power adjustment in the art of radio communications. Although a literal interpretation of the references to transmitter power "adjustment" in another context might arguably include the mere switching on or off of a transmitter which could occur indirectly following a handoff decision, the board notes that "zero power" transmission either before or after a handoff is not consistent with the feature "when transmitting to the selective call transceiver/subscriber device". This interpretation is supported by the description, which distinguishes throughout between transmitter power control and transmission site selection decisions (cf. page 1, lines 22-26; page 3, lines 20-23).

4. *Claim 1 (main request) - novelty and inventive step (Articles 52(1), 54 and 56 EPC)*

4.1 The invention concerns generally a "selective call transceiver" (claim 1), and "a method of operation of a two-way selective call subscriber device" (claim 6) for use in a communication system having a plurality of transmitters (eg base stations). "Selective call" is a conventional term applied to two-way radios with paging functionality. The terms "selective call transceiver", and "two-way selective call subscriber device" are used interchangeably in the application and are regarded by the board as technical equivalents.

Furthermore, since cellular telephone systems such as GSM or the IS-95 CDMA system were known which included a messaging facility (eg SMS functionality in GSM) at

the priority date of the application, the board considers that the term "selective call transceiver" encompasses transceivers of cellular subscriber systems of the type referred to in documents D2 and D5.

- 4.2 The invention concerns power control of the signal transmitted from a transmitter of the system, such as a base station, to the selective call transceiver. In this respect, it is conventional in the art to carry out power control on the basis of signal strength or quality measurements at the transceiver. The basic concept underlying the present invention is to base power adjustment at least partly on GPS location information provided by the selective call transceiver.

More particularly, the invention solves the problem of implementing power control by means of a GPS receiver in the selective call transceiver. The location information provided by the GPS receiver is compared in the selective call transceiver with site co-ordinates of other transmitters in the system for providing a power adjusting signal for one of the transmitters when transmitting to the selective call transceiver.

- 4.3 *Novelty - Articles 52(1) and 54 EPC*

- 4.3.1 D5, which the board considers as the document representing the closest prior art (see point 4.4.1 below), discloses a mobile transceiver equipped with a GPS receiver for obtaining location information of the mobile transceiver. The location information is transmitted to the cell site in communication with the mobile transceiver, where it is compared with the site co-ordinates of other cell sites in the system in order

to make "call management decisions" based on location information rather than received signal strength information.

4.3.2 Using the language of claim 1, D5 discloses a selective call transceiver (fig. 7: "mobile unit") for use in a communications system having a plurality of transmitters ("base antenna"), the selective call transceiver comprising a receiver module ("receiver"), a transmitter module ("transmitter") coupled to the receiver module, a controller ("control logic") coupled to the receiver module and the transmitter module for controlling the operation of the call transceiver, and a GPS receiver (24) for receiving GPS information and coupled to the controller, wherein the controller is operable to use the GPS information to assist in the control of a communication function (col. 6, lines 28-31), there being means (in a mobile telecommunications switching office MTSO) for comparing location information provided by the GPS receiver with site coordinates of one or more transmitters in the communication system for providing a signal for controlling the one or more of the plurality of transmitters (col. 6, lines 27-36; by controlling selection of the most appropriate cell site for a call transceiver, the base station transmitters are inherently also controlled).

4.3.3 The subject-matter of claim 1 therefore differs from the disclosure of D5 in that according to claim 1 the controller of the transceiver (instead of the MTSO of D5) is operable to compare location information provided by the GPS receiver with site co-ordinates of one or more transmitters in the communication system,

and in that the comparison step is used to provide a signal for adjusting the power of one of the plurality of transmitters of the communication system to allow adjustment of the power of the transmitter when transmitting to the transceiver (instead of providing a signal to control cell site selection).

Consequently, the subject-matter of claim 1 is novel with respect to D5.

- 4.3.4 D1, on which the examining division relied as closest prior art, discloses a mobile radio system in which a mobile transceiver is equipped with a GPS receiver for providing location information of the transceiver. Based on this information, the transceiver operates on either the 800 MHz band (UHF) at low power, or on the 30 MHz band (HF) at high power.
- 4.3.5 Using the language of claim 1, D1 discloses a selective call transceiver (fig. 3: 310) for use in a communications system having a plurality of transmitters (304, 310), the call transceiver comprising a receiver module (implicit), a transmitter module coupled to the receiver module (implicit), a controller (fig. 2) coupled to the receiver module and the transmitter module for controlling the operation of the call transceiver, and a GPS receiver (fig. 1: 101) for receiving GPS information (col. 2, lines 50-51) and coupled to the controller, wherein the controller is operable to use the GPS information to assist in the control of a communication function (col. 3, lines 6-12), whereby the controller is operable to use the location information provided by the GPS receiver for providing a signal for adjusting a transmitter power

(in this case the power of the selective call transceiver itself, cf. col. 2, lines 64-68).

4.3.6 The subject-matter of claim 1 therefore essentially differs from the disclosure of D1 in the following features:

- (i) The controller is operable to compare location information with site co-ordinates of one or more transmitters in the communication system.
- (ii) The power adjusted is the transmitter power of a transmitter of the communication system when transmitting to the selective call transceiver.

4.3.7 In the impugned decision, the examining division came to the conclusion that distinguishing feature (i) was disclosed in D1.

The board does not agree that distinguishing feature (i) is disclosed in D1. In this respect, column 3, lines 9-12 of D1 (the passage referred to by the examining division) indicates that the location determining device (101) is capable of determining whether the radio is located in either an urban location A or a rural location B. This determination might imply a comparison between the co-ordinates of the mobile radio and a Cartesian representation of the areas A and B, but not between the co-ordinates of the mobile radio and the co-ordinates of another transmitter in areas A and B.

Hence the board concludes that the subject-matter of claim 1 is novel with respect to D1.

4.3.8 D2, on which the examining division also relied in its impugned decision, relates to power control in a CDMA-based cellular radio system.

More particularly, D2 discloses a transceiver for use in a communication system having a plurality of transmitters, wherein the transceiver is adapted to provide a signal for adjusting the power of the transmitter when transmitting to the transceiver. According to D2 (cf. col. 2, lines 19-53), a power control bit is produced by the mobile transceiver in response to a measurement of the signal-to-interference ratio SIR. This power control bit is received by a base station, which adjusts its transmission power accordingly. In fact this is a conventional power control loop used in CDMA systems.

The remainder of document D2 is concerned with refinements to ensure reliable transmission of the power control bit. These aspects are not relevant to the present discussion.

The subject-matter of claim 1 therefore differs from the disclosure of D2 in that the transceiver of D2 is not equipped with a GPS receiver and hence not with a controller operable to compare location information provided by the GPS receiver with site co-ordinates of one or more transmitters for providing a power adjusting signal.

Hence the subject-matter of claim 1 is novel with respect to the disclosure of D2.

4.4 *Inventive step - Articles 52(1) and 56 EPC*

4.4.1 As noted above, the board regards D5 as representing the closest prior art with respect to the present invention. D5 concerns a similar type of radio communications system to that described in the present application, in that it makes use of the principle of computing a distance to one or more transmitters of the system, and already anticipates one of the applications of this principle described in the application, namely to control handoff. It is therefore a more plausible starting point than D1, which although including several features in common with the independent claims, is regarded by the board as a specialised system having characteristics making it implausible as starting point for the invention.

4.4.2 As stated above, the subject-matter of claim 1 differs from the disclosure of D5 in that the controller of the transceiver is operable to compare location information provided by the GPS receiver with site co-ordinates of one or more transmitters in the communication system to provide a signal for adjusting the power of one of the plurality of transmitters of the communication system to allow adjustment of the power of the transmitter when transmitting to the transceiver.

In contrast to this, the controller of the transceiver of D5 relays GPS location information to a mobile telecommunications switching office (MTSO), which compares the GPS data with the site co-ordinates of transmitters in order to take "call management decisions", in particular those related to which cell

- site will initially handle a call (cf. claim 15) as well as switching decisions to allocate a new base station to handle the call (ie handoff, cf. claim 12).
- 4.4.3 The board sees the objective problem starting from document D5 as being to further reduce the potential for interference caused by a signal transmitted from a base station when transmitting to a mobile transceiver.
- 4.4.4 D5 describes the principal problem to be solved as that, due to idiosyncrasies in terrain and environment, a mobile unit may use a cell that is located far from the mobile unit rather than a cell located immediately adjacent to that mobile unit, which leads to difficulty in the cellular company being able to assess long distance charges (col. 2, lines 55-66). By ensuring that the serving base station is located in the proximity of the mobile unit, such anomalies do not arise. However, D5 also mentions that basing call management decisions on position reduces or eliminates the provision of cellular service beyond an authorised area, reduces the interference to and from neighbouring cellular carriers (reduction of inter-system interference) and more precisely defines the inter-system service boundaries and handoff parameters (col. 4, lines 26-33). All of the problems referred to apparently result from the transceiver device being served by a base station other than one located in proximity to the transceiver.
- 4.4.5 D5 states also the following (cf. col. 3, lines 3-5):  
"Other problems that have been experienced in such cellular systems include the inability to completely control the cell site transmit signal (board's



underlining), crosstalk noise interference, dropped calls, overlap and an inability to adequately service areas without infringing the borders of other cellular territories."

Although the reference to the cell site transmit signal might here imply the power of the cell site transmit signal, the board considers this reference not unambiguous. In any case, this paragraph seems merely to list further problems resulting from using an "incorrect" base station to serve a mobile station.

4.4.6 In order to solve the above-mentioned problems, D5 provides for the use of location data for taking "call management decisions". However, under call management decisions the document specifically refers only to deciding which cell site will initially handle a call (cf. claim 15) as well as switching decisions to allocate a new base station to handle the call (ie handoff, cf. claim 12).

4.4.7 In fact, it appears to the board that D5 offers only one solution to solve all the above-mentioned problems, namely the determination of the appropriate cell site to serve a mobile station based on location information.

In the view of the board D5 gives no hint at all to a skilled person to make transmitter power also dependent on location, D5 being completely silent on issues of transmit power adjustment. In this respect, it is noted that the above-mentioned problem of the "inability to completely control the cell site transmit signal", insofar as it might mean the transmitter power, is not mentioned or discussed at any other point in D5. D5

itself therefore gives no obvious pointer to the claimed solution.

4.4.8 The board considers that D5 cannot be combined with D1 to solve the objective problem. Although D1 describes a transceiver with a GPS receiver and means for effecting power adjustments to the transceiver based on location information furnished by the GPS receiver, the board regards D1 as a specialised system incompatible with a cellular system such as D5. Cellular telephone systems of the type to which D5 relates conventionally operate on a particular allocated UHF band, or higher frequency band. Transceivers in such systems would not incorporate switching to high power HF transmission as required by D1, because the relatively small size of cells, the propagation characteristics, and the low power requirements of the mobile transceivers would lead the skilled person away from the use of high power HF transmission in the context of cellular systems. The skilled person would therefore have no reason to extract the power control features from D1, and use them in a quite different context.

4.4.9 In order to solve the objective technical problem, and in the light of a skilled person's common general knowledge of power control methods, for example as illustrated in the context of CDMA systems by D2, the board in fact considers that a skilled person would be led to implement a conventional method of power control based on received signal measurements at the transceiver, all the more so as the board is not aware of any conventional cellular system at the priority date of the application which made use of GPS location data to implement power control. In CDMA systems such

as D2, power control based on received signal strength measurements is provided on the downlink to minimise the potential for interference in neighbouring cells, by avoiding excessive transmission power, but at a level sufficient to maintain signal quality (col. 3, lines 13-16). Hence D2 provides an alternative solution to the objective problem. If D5 were combined with document D2 to solve the objective problem, in the view of the board, a system would result with handoff based on location data and transmitter power based on signal strength measurements.

4.4.10 Hence in the view of board, the subject-matter of claim 1 involves an inventive step starting from prior art document D5.

4.4.11 The examining division argued principally on the basis of D1 as closest prior art.

The board notes however that according to D1, location information is not used to obtain the distance to another transmitter of the system, but to classify the location as urban or rural. As a result of this classification, the transceiver is operated either on the HF band at high power (in a rural location), or on the UHF band at low power (in an urban location). The stated concept behind this choice is that in a rural location with few other users, transmitting power can be increased to achieve greater range without interfering with neighbouring users (cf. col. 1, lines 37-46).

Hence the location of a base station transmitter is not a factor considered in the system of D1. There is also

no hint in D1 that might lead a skilled person to consider basing the change of power on the computed distance to a base station transmitter. In any case, even were this to be contemplated, account would plausibly have to be taken of the fact that there are likely to be two different types of base station transmitter providing respectively UHF and HF coverage. Hence the principle of using distance as a criterion would not be immediately applicable to the system of D1 without further refinements. Such considerations would lead the skilled person away from modifying the system of D1 from the concept of area classification to one based on distance to the serving transmitter.

4.4.12 In the impugned decision, D1 is combined with D2 to arrive at a conclusion of lack of inventive step. However, for similar reasons as discussed above with respect to a combination of D1 and D5, the board considers D1 and D2 incompatible, D2, like D5, being a cellular system. Moreover, D1 is a system with coarse control of the call transceiver having only two power settings which are changed infrequently, whereas D2 describes closed-loop control in a CDMA system which requires fast incremental power control; it is not clear how a skilled person might implement fast closed-loop power control in D1, as this would interfere with the basic concept of D1 which is to provide a set power output for a particular area.

4.4.13 The examining division also alleged in the impugned decision that it would be obvious to improve the power control method disclosed in D2 to incorporate more precise location information provided by GPS (eg as

known from D1), as a normal and straightforward technical development.

The board does not agree. GPS receivers at the priority date of the application were not conventionally used in mobile transceivers for controlling communication parameters. Moreover, in CDMA systems such as D2, power control based on received signal strength measurements is provided on the downlink to minimise the potential for interference in neighbouring cells, by avoiding excessive transmission power, but at a level sufficient to maintain signal quality (col. 3, lines 13-16). The board sees no potential for improvement in such a system by using more precise location information to control transmit power, since the effects of hilly terrain or tall buildings would not be accounted for, making it more likely that the received signal will either be too weak or the transmit power unnecessarily high. The skilled person therefore has no incentive to modify D2 in this fashion.

4.5 In the light of the above, the board concludes that the subject-matter of claim 1 involves an inventive step (Articles 52(1) and 56 EPC).

5. *Claim 6 (main request) - novelty and inventive step (Articles 52(1), 54 and 56 EPC)*

The board's comments regarding claim 1 with respect to novelty and inventive step apply *mutatis mutandis* to method claim 6.

6. *Further prosecution*

6.1 Since the board concludes that the independent claims of the main request meet the requirements of the EPC (subject to the minor clarity issues mentioned above in points 2.1 and 2.2 being overcome), there is no need to consider the auxiliary requests.

6.2 As the board has not decided to dismiss the appeal, it is not necessary to hold oral proceedings, requested conditionally by the appellant.

6.3 It appears that the examining division has not yet examined the dependent claims for clarity and consistency with the independent claims, or finally determined whether they fulfil the requirements of Article 123(2) EPC.

Moreover, it appears to the board that the description should be adapted to the claims and include a reference to D5, which in the view of the board represents the closest prior art.

Therefore, in order that these issues as well as the minor clarity objections mentioned above in points 2.1 and 2.2 can be dealt with, the board considers it appropriate to remit the case to the examining division.

**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 claims 1-8 of the main request filed on 17.06.08.

The Registrar:

The Chairman:

D. Magliano

A. S. Clelland