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**Datasheet for the decision  
of 6 September 2017**

**Case Number:** T 1978/13 - 3.5.03

**Application Number:** 07761212.5

**Publication Number:** 2011251

**IPC:** H04B7/06

**Language of the proceedings:** EN

**Title of invention:**

REDUCED COMPLEXITY BEAM-STEERED MIMO OFDM SYSTEM

**Applicant:**

QUALCOMM Incorporated

**Headword:**

MIMO OFDM System/QUALCOMM

**Relevant legal provisions:**

EPC Art. 123(2)

**Keyword:**

Added subject-matter (yes; both requests)

**Decisions cited:**

**Catchword:**



**Beschwerdekammern**  
**Boards of Appeal**  
**Chambres de recours**

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Case Number: T 1978/13 - 3.5.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.5.03**  
**of 6 September 2017**

**Appellant:** QUALCOMM Incorporated  
(Applicant) International IP Administration  
5775 Morehouse Drive  
San Diego, California 92121 (US)

**Representative:** Carstens, Dirk Wilhelm  
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Gewürzmühlstraße 5  
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**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted on 20 February  
2013 refusing European patent application No.  
07761212.5 pursuant to Article 97(2) EPC.

**Composition of the Board:**

**Chairman** F. van der Voort  
**Members:** T. Snell  
S. Fernández de Córdoba

## **Summary of Facts and Submissions**

- I. This appeal is against the decision of the examining division refusing European patent application No. 07761212.5, with international publication number WO 2007/127744 A.

The refusal was based on the ground that the subject-matter of inter alia claim 1 respectively of a main request and an auxiliary request did not involve an inventive step.

- II. The appellant filed an appeal against the above decision. In the statement of grounds of appeal, the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims 1 to 11 of a main request or, in the alternative, on the basis of claims 1 to 11 of an auxiliary request, both requests as filed with the statement of grounds of appeal. The requests were said to correspond to those refused by the examining division. The appellant also conditionally requested oral proceedings (cf. Article 116 EPC).

- III. In a communication accompanying a summons to oral proceedings, the board gave a preliminary view inter alia that claim 1 of respectively the main request and the auxiliary request was not clear (Article 84 EPC) and did not comply with Article 123(2) EPC. The board also gave a preliminary opinion that the subject-matter of claim 1 of the main request did not involve an inventive step.

- IV. With a letter dated 30 June 2017, the appellant informed the board that it would not be attending the oral proceedings. With a letter dated 17 July 2017, the

appellant indicated that it had rescinded its decision to not attend the oral proceedings, and requested postponement of the oral proceedings. With a letter dated 20 July 2017, the appellant wrote "Appellant has rescinded his decision to rescind his decision to not attend oral proceedings", and withdrew the request for postponement of the oral proceedings. None of these letters included any substantive comments in response to the objections set out in the board's communication.

- V. Oral proceedings were held on 6 September 2017 in the absence of the appellant. On the basis of the written submissions, the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of claims 1 to 11 of the main request or, in the alternative, on the basis of claims 1 to 11 of the auxiliary request, both requests as filed with the statement of grounds of appeal.

At the end of the oral proceedings, the chairman announced the board's decision.

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

"A method (700) comprising:

receiving (710) channel information for at least one subcarrier that is a subset of multiple subcarriers used for data transmission, said channel information characterizing a wireless channel;

obtaining (722) transmit steering matrices for the multiple subcarriers based on the channel information for the at least one subcarrier;

obtaining at least one transmit steering matrix for the at least one subcarrier from the channel information, determining (724) a transmit steering matrix for each of the multiple subcarriers based on the at least one transmit steering matrix, and performing transmit steering for each of the multiple subcarriers with the transmit steering matrix determined for the subcarrier,

wherein the determining the *[sic]* transmit steering matrix for each of the multiple subcarriers comprises setting the transmit steering matrix for each of the multiple subcarriers equal to a transmit steering matrix obtained for a closest one of the at least one subcarrier based at least in part on a frequency selectivity determination associated with the wireless channel; and

processing (730) data for the multiple subcarriers with the transmit steering matrices to send the data from multiple transmit antennas to multiple receive antennas."

VII. Claim 1 of the **auxiliary request** reads as follows:

"A method (700) comprising:

receiving (710) channel information for at least one subcarrier that is a subset of multiple subcarriers used for data transmission, said channel information characterizing a wireless channel, wherein the number of the at least one subcarrier is based on a frequency selectivity determination associated with the wireless channel, and wherein different subcarriers are selected for the at least one subcarrier in different time intervals based on a known predetermined pattern or a known pseudo-random sequence;

obtaining (722) transmit steering matrices for the multiple subcarriers based on the channel information for the at least one subcarrier;

obtaining at least one transmit steering matrix for the at least one subcarrier from the channel information, determining (724) a transmit steering matrix for each of the multiple subcarriers based on the at least one transmit steering matrix, and performing transmit steering for each of the multiple subcarriers with the transmit steering matrix determined for the subcarrier,

wherein the determining the [sic] transmit steering matrix for each of the multiple subcarriers comprises setting the transmit steering matrix for each of the multiple subcarriers equal to a transmit steering matrix obtained for a closest one of the at least one subcarrier; and

processing (730) data for the multiple subcarriers with the transmit steering matrices to send the data from multiple transmit antennas to multiple receive antennas."

## **Reasons for the Decision**

1. *Main request - claim 1 - added subject-matter (Article 123(2) EPC*
- 1.1 Claim 1 includes the feature: "wherein the determining [of] the transmit steering matrix for each of the multiple subcarriers comprises setting the transmit steering matrix for each of the multiple subcarriers equal to a transmit steering matrix obtained for a closest one of the at least one subcarrier based at

least in part on a frequency selectivity determination associated with the wireless channel" (board's underlining).

1.2 This feature concerns an embodiment referred to in the description, paragraphs [0050] and [0082], and in claim 29 as filed; however, these references are more specific. In this respect, it is disclosed there that the frequency selectivity is determined by the receiving station (cf. paragraphs [0050] and [0082]) or by the [receiving] apparatus (cf. claim 29 combined with claim 19 on which it depends) to select/determine either a value L implicitly representing the number of subcarriers using the same channel information (cf. paragraphs [0046] and [0050]) or, put another way, the number of subcarriers to send channel information [for] (cf. paragraph [0082] and claim 29 in combination with claim 19). As claim 1 omits the underlined features, it is based on an unallowable intermediate generalisation.

1.3 The appellant has not replied to this objection, which was raised by the board in its communication accompanying the summons to oral proceedings.

1.4 The board concludes that claim 1 does not comply with Article 123(2) EPC.

2. *Auxiliary request - claim 1 - added subject-matter (Article 123(2) EPC)*

2.1 Claim 1 of the auxiliary request includes the feature:

"receiving (710) channel information for at least one subcarrier that is a subset of multiple subcarriers used for data transmission, said channel information characterizing a wireless channel, wherein the number



of the at least one subcarrier is based on a frequency selectivity determination associated with the wireless channel" (board's underlining).

2.2 This formulation still omits the feature that the frequency selectivity is determined by the receiver station (cf. paragraphs [0050] and [0082]) or by the [receiving] apparatus (cf. claim 29 combined with claim 19 on which it depends) and is thus still based on an unallowable intermediate generalisation with respect to the application as filed.

2.3 Further, claim 1 of the auxiliary request includes the feature:

"wherein different subcarriers are selected for the at least one subcarrier in different time intervals based on a known predetermined pattern or a known pseudo-random sequence".

2.4 The only mention of this feature in the application as filed is in paragraph [0047] of the description in combination with Fig. 3. In the example shown there,  $L = 3$ , three sets of designated subcarriers are formed, and the subcarriers in each set are staggered with respect to the subcarriers in the other two sets. It is stated that "In general, different designated subcarriers may be selected in different time intervals, e.g. based on a predetermined pattern or a pseudo-random sequence that is known to both transmitter and receiver".

2.5 However, it is not *directly and unambiguously* disclosed that this embodiment may be combined with the embodiment in which the value  $L$  is determined based on the amount of frequency selectivity, as disclosed in

paragraph [0050]. Paragraph [0050] reads: "In an embodiment L is configurable and determined based on channel conditions ... In an embodiment, receiver station 150 determines frequency selectivity of the wireless channel and selects L based on the amount of frequency selectivity" (board's underlining). It follows that these embodiments are not directly linked to the earlier embodiment of paragraph [0047]. Rather, the skilled person would first have to consider whether and how these two different methods for overcoming frequency selective fading could usefully be combined, which would then be his own idea and not something directly and unambiguously taught in the application as filed.

The appellant did not respond to this objection either, which was raised in the board's communication.

2.6 The board concludes that claim 1 of the first auxiliary request does not comply with Article 123(2) EPC either.

3. *Conclusion*

As neither request is allowable, the appeal is to be dismissed.

**Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:



G. Rauh

F. van der Voort

Decision electronically authenticated