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**Datasheet for the decision  
of 7 August 2018**

**Case Number:** T 1966/15 - 3.5.03

**Application Number:** 01939932.8

**Publication Number:** 1282951

**IPC:** H04J11/00, H04B1/00, H04L1/00,  
H04L1/04, H04L27/26, H03M13/29

**Language of the proceedings:** EN

**Title of invention:**  
FRAME CONTROL ENCODER/DECODER FOR ROBUST OFDM FRAME  
TRANSMISSIONS

**Applicant:**  
Qualcomm Incorporated

**Headword:**  
Frame control encoder/decoder/QUALCOMM

**Relevant legal provisions:**  
EPC Art. 123(2)

**Keyword:**  
Added subject-matter (yes) - all requests - intermediate  
generalisation

**Decisions cited:**  
T 0284/94

**Catchword:**



**Beschwerdekammern**  
**Boards of Appeal**  
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Case Number: T 1966/15 - 3.5.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.5.03**  
**of 7 August 2018**

**Appellant:** Qualcomm Incorporated  
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**Representative:** Wegner, Hans  
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**Decision under appeal:** **Decision of the Examining Division of the  
European Patent Office posted on 8 May 2015  
refusing European patent application No.  
01939932.8 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chairman** F. van der Voort  
**Members:** T. Snell  
O. Loizou

## **Summary of Facts and Submissions**

- I. This appeal is against the decision of the examining division refusing European patent application No. 01939932.8, publication number WO 01/89124 A1. The refusal was based on non-compliance with Rule 137(5) EPC, i.e. lack of unity in relation to the search in respect of the claims of a main request and two auxiliary requests.
- 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 a main request or, in the alternative, on the basis of either auxiliary request I or II, all requests being implicitly the requests on file and 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 that although it agreed that none of the requests should have been refused because of non-compliance with Rule 137(5) EPC, claim 1 of respectively the main request and each of the auxiliary requests did not comply with Article 123(2) EPC.
- IV. With a letter dated 3 July 2018, the appellant filed a new main request and new first and second auxiliary requests to replace all requests on file. The appellant submitted arguments as to why the claims of each request complied with Article 123(2) EPC.

- V. With a letter dated 31 July 2018, the appellant stated that it would not attend the oral proceedings and "requested a decision on the state of the file".
- VI. Oral proceedings were held on 7 August 2018 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 the main request or, in the alternative, on the basis of either the first or second auxiliary request, all three requests as filed with the letter dated 3 July 2018.

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

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

"A method of encoding frame data for an OFDM frame (80) transmission, comprising:

producing a code block of elements from frame data to be modulated onto carriers of OFDM symbols in an OFDM frame (80); and

interleaving (104) elements of the code block so that the elements are modulated onto the carriers of the OFDM symbols in groupings along diagonals (128,129,130,131,132) were [sic] the elements to be organized as a matrix, wherein the frame data comprises PHY layer frame control information to support a medium access control protocol, characterized in that

the OFDM frame (80) includes a body, a first delimiter and a second delimiter, wherein the first delimiter is

a start delimiter (83) that precedes the body, and wherein the second delimiter is an end delimiter (83) that follows the body, wherein the start delimiter (83) comprises a first preamble (85) and a first frame control field (88), and wherein the end delimiter (84) comprises a second preamble (89) and a second frame control field (92), and wherein the PHY layer frame control information comprises first frame control information located in the first frame control field of the first delimiter and second frame control information located in the second frame control field of the second delimiter, and

the second frame control field (92) includes information included in the first frame control field (88)."

- VIII. Claim 1 of the first auxiliary request is the same as claim 1 of the main request except that the following wording is inserted following the feature "and wherein the end delimiter (84) comprises a second preamble (89) and a second frame control field (92),":

"and wherein the first preamble (89) comprises a first automatic gain control element (86) and a first synchronization element (87), and wherein the second preamble (89) comprises a second synchronization element (91),".

- IX. Claim 1 of the second auxiliary request is the same as claim 1 of the first auxiliary request except that immediately following the wording added in accordance with point VIII, the following wording is inserted:

"and wherein the first and second frame control fields comprise information allowing synchronization of nodes

receiving the encoded OFDM frame, and wherein the first frame control field identifies the first delimiter as start delimiter and [sic] second frame control field identifies the second delimiter as end delimiter".

### **Reasons for the Decision**

1. *Main request - claim 1 - Article 123(2) EPC*

1.1 The present application concerns a method of encoding frame data for an OFDM frame.

1.2 Claim 1 is based on claims 1 to 5 as filed together with a number of features taken from the passage of the description from page 15, line 18, to page 17, line 1. In particular, claim 1 refers to first and second frame control fields and states that "the second frame control field (92) includes information included in the first frame control field (88)". The board notes that none of the claims as originally filed refers to "frame control fields".

1.3 The aforementioned passage consists of a single paragraph which describes in detail a frame format, illustrated in Fig. 3. This is the only passage of the description which mentions the claimed feature that "the second frame control field includes information included in the first frame control field". This paragraph contains a large number of features representing a complete solution for encoding frame data for an OFDM frame, with various options. From this complete solution, in the board's view, the skilled person would not be in a position to extract, directly and unambiguously, the combination of features of claim 1.

- 1.4 In this respect, the description states that the frame control fields comprise the following features which are apparently non-optional (other features are introduced by the terms "may", "can", "e.g." etc, so can be regarded as optional): (i) symbols containing information necessary for network protocol operation and transmitter/receiver path characterisation (cf. page 16, lines 3 to 5); (ii) the minimum information that must be heard by every node in the network so that proper synchronisation of nodes across the network is maintained (cf. page 16, lines 5 to 9); and (iii) a delimiter type and other information appropriate to the delimiter type (cf. page 16, lines 9 to 11).
- 1.5 Claim 1 does not contain all of these apparently non-optional features. In particular, it does not include symbols containing information necessary for transmitter path characterisation (part of feature (i)) or either of features (ii) and (iii). Consequently, by including the features "first control field", "second control field", and "the second control field includes information included in the first frame control field" an intermediate generalisation has resulted.
- 1.6 In accordance with established case law, an intermediate generalisation may be allowable where the skilled person would directly and unambiguously recognise that there is no functional or structural relationship between the extracted features and the omitted features. That is however not the case here, since there is clearly a functional and structural relationship between the frame control fields and the minimum information that they must contain (i.e. features (i) to (iii)). It follows that claim 1 is not directly and unambiguously derivable from the application as filed, contrary to Article 123(2) EPC.



- 1.7 The appellant argued essentially that it was clear from the description that the application aimed to find a robust mechanism for transmitting frame control information, i.e. was concerned with avoiding the occurrence of errors. To this end it was suggested to use redundant frame control information within an OFDM frame. Since bursts usually were interfering signals of very short duration, such redundancy could improve the error resilience. The appellant was convinced that the skilled person would directly and unambiguously identify this technical problem and, implicitly, the claimed solution from the description.
- 1.8 The board however considers that even if the skilled person recognised that the application generally relates to solving the problem of finding a robust mechanism for transmitting frame control information, there is no direct and unambiguous basis for concluding that this problem could be solved by the combination of features of claim 1, in particular because, as explained above, the skilled person would not recognise from the description, even using common knowledge, that the feature "the second frame control information includes information included in the first frame control information" could be extracted independently of the other features (i) to (iii). Furthermore, there is no mention at all in the description of the problem of burst errors being the reason as to why the second frame control information includes information included in the first frame control information. Instead, the description mentions other features not relevant to claim 1 as solving this problem, cf., e.g., page 6, lines 4 to 9: *"Consequently, because the code word bits are grouped along diagonals and these diagonal groupings are distributed across consecutive carriers*

*within a single symbol as well as across consecutive symbols for a single carrier, the level of protection against burst transmission errors is greatly improved."* There is also no suggestion that the claimed "solution" may have a more general application than in the specific context described on pages 15 to 17.

- 1.9 The appellant further referred to decision T 284/94 (OJ EPO 1999, 464) which was said to state: "An amendment of a claim by the introduction of a technical feature taken in isolation from the description of a specific embodiment is not allowable under Article 123(2) EPC if it is not clear beyond any doubt for a skilled reader from the application documents as filed that the subject-matter of the claim thus amended provides a complete solution to a technical problem unambiguously recognisable from the application." (appellant's emphasis). The appellant argued that claim 1 provided a complete solution.
- 1.10 The board however considers, as explained above (points 1.3 and 1.4), that the cited passage of the description on pages 15 to 17 represents a "complete solution". There is no clear disclosure that the intermediate generalisation consisting of the features of present claim 1 provides in itself a complete solution. Consequently, the board finds that T 284/94 does not support the appellant's case.
- 1.11 The board therefore concludes that the subject-matter of claim 1 does not comply with Article 123(2) EPC
2. *First and second auxiliary requests - claim 1 - Article 123(2) EPC*

2.1 Claim 1 of each of these requests includes more features taken from the passage of the description on pages 15 to 17. However, neither of these claims includes at least the features "symbols containing information necessary for transmitter/receiver path characterisation" (cf. point 1.4 above, feature (i)) and "other information appropriate to the delimiter type" (cf. feature (iii)). Consequently, these claims respectively also concern an unallowable intermediate generalisation.

2.2 The board concludes that claim 1 respectively of the first and second auxiliary requests does not comply with Article 123(2) EPC either.

3. *Conclusion*

The appellant chose not to attend oral proceedings but instead requested a decision on the state of the file. As none of the requests complies with Article 123(2) EPC, it follows that the appeal must 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