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**Datasheet for the decision
of 3 December 2019**

Case Number: T 1217/14 - 3.5.03

Application Number: 10006369.2

Publication Number: 2265048

IPC: H04W4/06

Language of the proceedings: EN

Title of invention:

Method and apparatus for handling MBMS dynamic scheduling information

Applicant:

Innovative Sonic Corporation

Headword:

Handling MBMS dynamic scheduling information/INNOVATIVE SONIC

Relevant legal provisions:

EPC Art. 52(1), 56

Keyword:

Inventive step - (no)



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Case Number: T 1217/14 - 3.5.03

D E C I S I O N
of Technical Board of Appeal 3.5.03
of 3 December 2019

Appellant: Innovative Sonic Corporation
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 18 December
2013 refusing European patent application No.
10006369.2 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman J. Geschwind
Members: J. Eraso Helguera
K. Peirs

Summary of Facts and Submissions

- I. An appeal was lodged by the applicant against the decision of the examining division refusing European patent application No. 10006369.2 with publication number EP 2 265 048 A1.
- II. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims of either of the requests on which the decision under appeal was based, i.e. the claims as originally filed (main request) or, in the alternative, the claims of an auxiliary request which was resubmitted with the statement of grounds of appeal.
- III. In a communication accompanying a summons to oral proceedings, the board gave its preliminary opinion that the subject-matter of the independent claims of the main and auxiliary requests lacked inventive step (Articles 52(1) and 56 EPC). Reference was made to the following documents:
- D1: Huawei: "MBMS Dynamic Scheduling", R2-092962, 3GPP TSG-RAN WG2 Meeting #66, 4 - 8 May 2009, San Francisco, USA, XP050340756
- D2: Huawei: "MBMS baseline for Rel-9", R2-093533, 3GPP TSG-RAN WG2 Meeting #66, 4 - 8 May 2009, San Francisco, USA, XP050340483
- D3: "3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2 (Release 9)", 3GPP TS 36.300 V9.0.0 (2009-06), XP050377586

D4: Alcatel-Lucent Shanghai Bell, Alcatel-Lucent: "MAC PDU design for eMBMS scheduling", 3GPP TSG-RAN WG2 Meeting #66, 4 - 8 May 2009, San Francisco, USA, XP050340837

IV. With its submission dated 5 November 2019, the appellant filed a second auxiliary request including a set of claims 1-15 and arguments in support of the allowability of all three requests.

V. Oral proceedings were held on 3 December 2019.

The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims of the main request or, in the alternative, the claims of either of the first and the second auxiliary requests.

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 for handling MBMS dynamic scheduling information in a network terminal of a wireless communication system, the method comprising:

generating an *[sic]* MAC Control Element for carrying an MBMS dynamic scheduling information (402); and

characterized by applying a Multicast Control Channel, named MCCH hereinafter, specific Modulation and Coding Scheme, named MCS hereinafter, for transmitting the MAC Control Element on a corresponding Physical Multicast Channel, named PMCH hereinafter (404).".

VII. Claim 1 of the **first auxiliary request** is the same as claim 1 of the main request except that the following feature has been added to the end of the claim:

" , no matter whether the MBMS dynamic scheduling information is transmitted together with the MCCH in the same sub-frame."

VIII. Claim 1 of the **second auxiliary request** is the same as claim 1 of the first auxiliary request except that the following feature has been added to the end of the claim:

"; and
receiving data of one or multiple MTCHs on the PMCH according to the MBMS dynamic scheduling information during the scheduling period (504) with an MCS or MCSs different from the MCCH specific MCS."

Reasons for the Decision

1. *Main request - claim 1 - inventive step*

1.1 The subject-matter of claim 1 of the main request does not involve an inventive step (Articles 52(1) and 56 EPC) when starting out from any of D1, D2, D3 and D4.

1.2 Each of D1, D2, D3 and D4 discloses the preamble of claim 1, i.e:

A method for handling MBMS dynamic scheduling information in a network terminal of a wireless communication system, the method comprising generating a MAC Control Element for carrying an MBMS dynamic scheduling information (see D1: "*Proposal 3: Dynamic*

scheduling information is transmitted with a MAC control element"; see D2, page 2: "19) Dynamic scheduling information (MSCH or MAC CE) is generated by the eNB"; see D2 and D3, point 15.3.3: "Dynamic scheduling information can be provided per MCH to indicate which subframes are used by each MTCH in the MSAP occasion ... it is FFS how the scheduling information is carried (e.g. in a MAC control element"; see D4, point 3: "one new type of MAC Control Element should be defined for dynamic scheduling information transmission which can be called as "MBMS scheduling info MAC Control Element"").

1.3 The board further notes that D2 and D4 were cited in paragraphs [0006] and [0009], respectively, of the application in suit in order to illustrate the ongoing work on enhanced Multimedia Broadcast Multicast Service, eMBMS, introduced by 3GPP in the specification of long term evolution (LTE) Release-9. As explained in the application, only two types of logical channels are defined in eMBMS: Multicast Control Channel, MCCH, and Multicast Traffic Channel, MTCH. Both MCCH and MTCH are mapped on a Multicast Channel, MCH, for point-to-multipoint, p-t-m, transmission.

1.4 The subject-matter of claim 1 therefore differs from each of the known methods in that it includes the step of:

applying a Multicast Control Channel, MCCH, specific Modulation and Coding Scheme, MCS, for transmitting the MAC Control Element on a corresponding Physical Multicast Channel, PMCH.

1.5 The board understands "MCCH specific MCS" as "the same MCS used for transmitting the MCCH" rather than "an MCS

which is used exclusively for transmitting the MCCH". The appellant agreed with this interpretation.

The technical effect associated with this feature is discussed in the application, in particular in paragraph [0012]. Hence, the technical problem underlying the claimed subject-matter can be defined as being how to ensure that the dynamic scheduling information is successfully received (decoded) by the user equipment, UE.

1.6 The subject-matter of claim 1 does not involve an inventive step when starting out from any of D1, D2, D3 and D4, for the following reasons:

1.6.1 Firstly, the board notes that the MAC control element disclosed in D1, D2, D3 and D4 is meant to be multiplexed with the MTCHs to which the dynamic scheduling information refers and with the MCCH in the same MCH/PMCH. This means that, since multiplexing is done at the MAC layer, it is not necessary to reserve physical resources exclusively for the MAC control element in the MCH/PMCH, and there could be situations where no assumptions can be made as to which information, whether MCCH or MTCH, is being sent in the same sub-frame together with the MAC control element, as observed in paragraph [0013] of the application in suit ("it is still not clear how to determine the MCS for receiving the dynamic scheduling information when the MCCH is not present in the same subframe").

1.6.2 Secondly, the description acknowledges in paragraph [0010] that "3GPP also proposed to have a logical channel specific MCS to support different QoS for each logical channel transmitted on the same MCH". Indeed, the information about the MCS to be applied to each

MTCH may be transmitted in the MCCH as part of the configuration of a MBMS service (see D1, point 1: *"Transmission pattern info: indicates all the possible transmission configurations of MBMS services (e.g. MCS, logical channel ID)"*; see D4, point 2: *"MCE would also determine the transmission order and MCS for each service according to their QoS requirement"*), whereas the MCS to be applied to the MCCH itself is transmitted on the Broadcast Control Channel, BCCH (see D2 and D3, point 15.3.6: *"BCCH indicates an MCS. It is FFS if this MCS applies only for the MCH transporting MCCH or apply to all the MCHs"*).

1.6.3 It follows that, at least for those cases where the MCS used by the MCCH is not necessarily the same as the MCS used by the MTCHs, it should be determined which MCS is to be applied to the MAC control element. From the many options available to the skilled person, selecting the same MCS used for the MTCH would be the most straightforward one, given that:

1) the scheduling information shows characteristics which are typical for control information, such as small size, e.g. a few octets, and high importance, which requires robust transmission, and

2) the MCS to be used by the MCCH must be signaled by the enhanced Node B, eNB, before any transmission in the PMCH takes place, typically in the BCCH, for the UE to be able to decode it, whereas the information about other MCSs, e.g. those used by the MTCHs, is more cumbersome to obtain, because it requires that at least the MCCH is decoded first.

1.6.4 Hence, the skilled person wishing to ensure that the MAC control element comprising dynamic scheduling

information in accordance with any of D1, D2, D3 and D4 is successfully decoded by the UE would consider for this purpose applying to the MAC control element the same MCS applied to the MTCH, in view of the affinity of the types of information and of its ease of obtention, without inventive skill, and irrespective of which other information is sent in the same sub-frame where the MAC control element is transmitted.

- 1.7 The appellant submitted that the only straightforward option for the skilled person is to also use an MSCH specific MCS for transmitting the dynamic scheduling information in the MAC control element, since this can be considered to be a kind of MSCH information, and the skilled person would also apply an MSCH specific MCS when the dynamic scheduling information is transmitted on an MSCH in eUTRAN, since in this respect no change is made between UTRAN and eUTRAN.
- 1.8 The board is not convinced by this argument. The proposals made in D1, D2 and D3 present the use of either an MSCH or a MAC control element as alternatives, i.e. if a MAC control element is used, there is no requirement to additionally use an MSCH in eUTRAN, much less to rely on parameters sent for a different release (UTRAN), which might or might not co-exist with eUTRAN. D4 does not even mention MSCH.
- 1.9 The appellant further submitted that the skilled person would be aware that the dynamic scheduling information is sent more often than the MCCH, and therefore would try to use as less bandwidth as possible by choosing an MCS less robust but allowing a higher data rate than the MCCH specific MCS.

1.10 The board is not convinced by this argument either. The skilled person is well aware of the trade-offs involved in the selection of MCS, and, in particular, of the fact that a high bitrate is obtained at the expense of robustness in the transmission. In this particular case, the skilled person would know that a correct reception of the dynamic scheduling information is critical, since otherwise the MTCHs will not be received at all, and therefore the increase in robustness would outweigh the possible loss of bandwidth that could result from choosing the same MCS as used for the MCCH instead of other available MCSs.

2. *First auxiliary request - claim 1 - inventive step*

2.1 Claim 1 of the first auxiliary request is the same as claim 1 of the main request, except that it explicitly specifies that the step of

applying a Multicast Control Channel, MCCH, specific Modulation and Coding Scheme, MCS, for transmitting the MAC Control Element on a corresponding Physical Multicast Channel, PMCH

is carried out

no matter whether the MBMS dynamic scheduling information is transmitted together with the MCCH in the same sub-frame.

2.2 This addition was meant to explicitly include a limitation that the appellant considered was already implicit in claim 1 of the main request, i.e. that the MCCH specific MCS should be used irrespectively from where the MBMS DSI is transmitted, and therefore, claim 1 does not encompass embodiments where the MCCH

specific MCS is applied to a MAC control element which is sent *always and only* together with the MCCH. It was made in reaction to the objection raised by the examining division, later maintained in the preliminary opinion of the board, that the subject-matter of claim 1 lacked an inventive step in view of the statements appearing in paragraph [0011] of the application in suit ("Thus, it is straightforward to apply the MCS of the MCCH for encoding or decoding the PMCH when the dynamic scheduling information is transmitted together with the MCCH in the sub-frame"). The appellant further argued that this statement teaches away from the claimed invention, in the sense that the skilled person would *only* apply the MCS of the MCCH in this specific situation, and not when the dynamic scheduling information may be transmitted together with other information in the same sub-frame.

- 2.3 In the preceding reasoning concerning claim 1 of the main request (see pt. 1.6. above), the board has already considered the more general scenario in which the dynamic scheduling information is not necessarily transmitted together with the MCCH in the same subframe, arriving at the conclusion that, even under those circumstances, and without regard to the assertions made in paragraph [0011] of the application, applying to the MAC control element the same MCS used for the MTCH would be the most straightforward option for the skilled person starting out from any of D1, D2, D3 and D4. Furthermore, the board considers that the skilled person would have no reservations in applying the MCS of the MCCH in sub-frames which do not contain MCCH information, as is evidenced by D2 and D3, paragraph 15.3.6: "*BCCH indicates an MCS. It is FFS if this MCS applies only for the MCH transporting MCCH or apply [sic] to all the MCHs.*"

2.4 Therefore, the subject-matter of claim 1 of the first auxiliary request does not involve an inventive step for the same reasons set out above for the main request.

3. *Second auxiliary request - claim 1 - inventive step*

3.1 Claim 1 of the second auxiliary request is the same as claim 1 of the first auxiliary request with the addition of the following feature:

receiving data of one or multiple MTCHs on the PMCH according to the MBMS dynamic scheduling information during the scheduling period (504) with an MCS or MCSs different from the MCCH specific MCS.

3.2 With the introduction of this feature, the appellant intended to overcome the objection set out in the preliminary opinion of the board, according to which the feature:

"applying a Multicast Control Channel, MCCH, specific Modulation and Coding Scheme, MCS, for transmitting the MAC Control Element on a corresponding Physical Multicast Channel, PMCH, no matter whether the MBMS dynamic scheduling information is transmitted together with the MCCH in the same sub-frame"

should be understood as:

"when transmitting the MAC CE in a corresponding PMCH, the same MCS used for transmitting the MCCH is applied, even if the MCCH is not transmitted in the same sub-frame as the MAC CE" *[sic]*,

and was already suggested in D2, paragraph 15.3.6, concerning MBMS signalling on BCCH: "- BCCH indicates an MCS. It is FFS if this MCS applies only for the MCH transporting MCCH or apply [*sic*] to **all** MCHs" (bold type added by the board).

3.3 The applicant further objected that in the situation referred to in D2, if the same MCS is applied to all MCHs it cannot be a "MCCH specific MCS" but rather a general one, and that, in view of the added feature, D2 cannot suggest the teaching of the invention, as the case of applying the MCS indicated in the BCCH to all MCHs is excluded.

3.4 In the preceding reasoning concerning claim 1 of the main request (see pt. 1.6. above), the board has also considered the situation in which different MCSs are applied within the same MCH, still arriving at the same conclusion that, even under those circumstances, applying to the MAC control element the same MCS used for the MTCH would be the most straightforward option for the skilled person starting out from any of D1, D2, D3 and D4.

3.5 Therefore, the subject-matter of claim 1 of the second auxiliary request does not involve an inventive step for the same reasons set out above for the main request.

4. *Conclusion*

As there is no allowable request, it follows that the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



G. Rauh

J. Geschwind

Decision electronically authenticated