Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 2 September 2014

Case Number: T 0014/13 - 3.5.02

Application Number: 10012823.0

Publication Number: 2288038

IPC: H03M13/29, H04L1/00, H03M13/39

Language of the proceedings: EN

Title of invention:
Channel encoding/decoding device and method

Applicant:
Samsung Electronics Co., Ltd.

Relevant legal provisions:
EPC Art. 54, 56

Keyword:
Novelty - main request (no)
Inventive step - auxiliary request (no)

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern
Boards of Appeal
Chambres de recours

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 0014/13 - 3.5.02

D E C I S I O N
of Technical Board of Appeal 3.5.02
of 2 September 2014

Appellant: (Applicant)	Samsung Electronics Co., Ltd. 129, Samsung-ro Yeongtong-gu Suwon-si, Gyeonggi-do, 443-742 (KR)
Representative:	Grünecker, Kinkeldey, Stockmair & Schwanhäusser Leopoldstrasse 4 80802 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 26 July 2012 refusing European patent application No. 10012823.0 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	M. Ruggiu
Members:	R. Lord
	W. Ungler

Summary of Facts and Submissions

I. This is an appeal of the applicant against the decision of the examining division to refuse European patent application No. 10 012 823.0. That application was filed as a divisional application of European patent application No. 99 912 146.0, which was the subject of appeal decision T 2263/09 of 15 January 2014 taken by the present board in the same composition. The reason given for the refusal of the present divisional application was that the subject-matter of the claims filed with letter dated 18 June 2012 did not involve an inventive step.

II. The following document of the prior art cited during the procedure before the examining division is relevant for this decision:

D4: T. Hindelang et al, "Using Powerful "Turbo" Codes For 14.4 kbit/s Data Service in GSM or PCS Systems", IEEE 1997, pages 649 to 653.

III. In a letter dated 3 February 2014 the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims filed with letter dated 18 June 2012 (main request) or on the basis of the claims filed with the letter dated 3 February 2014 (auxiliary request).

In a communication accompanying a summons to oral proceedings dated 22 May 2014 the board informed the appellant *inter alia* of its preliminary opinion that the conclusions of decision T 2263/09 concerning the disclosure of document D4 applied correspondingly to the present main request, and that the appellant's

arguments concerning inventive step with respect to the auxiliary request were not convincing.

Oral proceedings before the board took place on 2 September 2014, at which, as indicated in the letter of 10 July 2014, the appellant was not represented.

IV. The independent claims according to the appellant's main request read as follows:

"1. A channel encoding method of a channel encoding device of a mobile communication system, said channel encoding device including a controller, a convolutional encoder, and a turbo encoder, the channel encoding method comprising the steps of:

identifying, by the controller, at least one of a service type and a size of each data to be transmitted;

adaptively selecting, by the controller, one of a convolutional encoding scheme and a turbo encoding scheme according to at least one of the identified service type and the identified size of data to be transmitted;

encoding, by the convolutional encoder, the data to be transmitted, when the controller selects the convolutional encoding scheme;

encoding, by the turbo encoder, the data to be transmitted, when the controller selects the turbo encoding scheme; and

transmitting the encoded data on a transmission channel."

"3. A channel decoding method of a channel decoding device of a mobile communication system, said channel encoding [sic] device including a controller, a Viterbi decoder, and a turbo decoder, the channel decoding method comprising the steps of:

identifying, by the controller, at least one of a service type and a data rate of each received encoded frame data;

adaptively selecting, by the controller, one of a Viterbi decoding scheme and a turbo decoding scheme according to at least one of the identified service type and the identified data rate of the received encoded frame data;

decoding, by the Viterbi decoder, the received encoded frame data, when the controller selects the Viterbi decoding scheme; and

decoding, by the turbo decoder, the received encoded frame data, when the controller selects the turbo decoding scheme."

"4. A channel encoding device of a mobile communication system, comprising:

a controller for identifying at least one of a service type and a data rate of each data to be transmitted, and adaptively selecting one of a convolutional encoding scheme and a turbo encoding scheme according to at least one of the identified service type and the identified data rate of data to be transmitted;

a convolutional encoder for convolutionally encoding the data to be transmitted under control of the controller, when the controller selects the convolutional encoding scheme; and

a turbo encoder for turbo encoding the data to be transmitted under control of the controller, when the controller selects the turbo encoding scheme."

"12. A channel decoding device of a mobile communication system, comprising:

a controller for identifying at least one of a service type and a data rate of each received data, and

adaptively selecting one of a Viterbi decoding scheme and a turbo decoding scheme according to at least one of the identified service type and the identified data rate of the received data;

a Viterbi decoder for decoding the received data under control of the controller, when the controller selects the Viterbi decoding scheme; and

a turbo decoder for turbo decoding the received data under control of the controller, when the controller selects the turbo decoding scheme."

V. Claim 1 according to the appellant's auxiliary request differs from that of the main request in that the paragraph commencing with "identifying" is replaced by the following two paragraphs:

"receiving, by the controller, from a message transmitter an information message representing both of a service type and a size of each data to be transmitted;

reading, by the controller, from a memory a control command corresponding to the received information message, the control command including a coding mode depending on both of the service type and the size of said each data to be transmitted;"

and in that in the following paragraph the phrase "at least one of the identified service type and the identified size of data" is replaced by:

"the coding mode included in the read control command for selection of an encoding scheme depending on both of the service type and the size of said each data".

Each of claims 3, 4 and 12 of the appellant's auxiliary request differs in a corresponding manner from the respective claim of the main request.

VI. The appellant essentially argued as follows:

The subject-matter of the independent claims of the main request was new with respect to the cited prior art. In particular D4 did not disclose the claimed invention because it described only simulations comparing different coding schemes and data rates, and thus did not disclose the adaptive selection of coding scheme defined in the claims. Moreover, the last paragraph of the left-hand column of page 653 indicated that only one decoder was used.

The subject-matter of the claims of the auxiliary request was new with respect to D4 for similar reasons, and in particular because the simulation results in Figure 5 of D4 indicated that signals at a data rate of 14.4 kbit/s were transmitted using both coding schemes, thus also suggesting that no adaptive selection of the coding scheme was involved. D4 also contained no teaching concerning the information message and control command defined in these claims.

Reasons for the Decision

1. The appeal is admissible.

2. *Main request - Novelty (Article 54 EPC)*

2.1 The board notes initially that in the communication accompanying the summons to oral proceedings objections to claim 1 were raised under Articles 76(1) and 84 EPC

concerning the expressions "size of data" and "size of each data". However, given the conclusions below concerning novelty, together with the facts that these expressions relate to only one of two alternatives in that claim, and that they do not appear in the other independent claims, the board considers it unnecessary to discuss these objections further here.

2.2 As was indicated in the communication accompanying the summons to oral proceedings, the present board in the same composition in its decision T 2263/09 of 15 January 2014 has already decided that the subject-matter of claim 1 of the main request in that case was not new with respect to document D4. Insofar as the subject-matter of the present claim 1 is the same as that of the claim addressed in that decision, the arguments presented by the appellant in the present case in the statement of grounds of appeal of 4 December 2012 and the letter of 3 February 2014 are substantially the same as those already discussed in T 2263/09. Thus, in the present case, although it is not bound by that earlier decision, the board sees no reason to deviate from the conclusion reached there, specifically that the document D4 discloses a development of the GSM mobile telephone communication system in which an adaptive selection of the encoding and decoding scheme is made dependent on the service type, with convolutional encoding (and thus Viterbi decoding) being used for the voice service, and turbo encoding and decoding being used for the data service. In this context the board notes that all of the independent claims of the appellant's main request include service type as one of the two options on the basis of which the encoding or decoding scheme is selected. The board observes also that the other options, whether based on frame size or data rate, can

be seen as being merely proxies for that more fundamental selection criterion.

2.3 The independent method claim 1 of the present main request differs from that addressed in decision T 2263/09 in that it specifies that the device which carries out the method comprises a controller and the two encoders. These features are however also present in the system proposed by D4, the two encoders being depicted explicitly in particular in Figure 4 of that document. This applies also correspondingly with respect to the decoding method of the present claim 3 and to the devices of claims 4 and 12. In the context of claims 3 and 12 the board notes that it can be assumed that the component labelled "GSM encoder" is a convolutional encoder and the component labelled "GSM decoder" is a Viterbi decoder. That the overall devices carrying out the methods of claims 1 and 3 are defined as being channel encoding or decoding devices is merely a matter of nomenclature, with no further technical content. The switching elements depicted in Figure 4 of D4 can then be considered to be "controllers" within the meaning of the present claims, since the switching operation which they perform is equivalent to the selection function defined in these claims. Moreover, since the switching operation in D4 is carried out on the basis of the service type, it is implicit that the service type must be identified in order to carry out this switching, and defining that both the element carrying out this identification and that carrying out the selection are part of a "controller" is again merely a matter of nomenclature.

2.4 The only arguments relating to patentability of the main request in the appellant's statement of grounds of appeal which extend beyond those addressed in decision

T 2263/09 concern a different prior art document (D1: H. Koorapathy et al, "Performance of Turbo Codes with Short Frame Sizes", IEEE 1997, pages 329 to 333), and are therefore not relevant to the above objection. The only additional argument in this context in the appellant's letter of 3 February 2014 was that the results presented in Figure 5 of D4 implied that signals with the same data rate or block size were encoded and decoded using both the convolutional and turbo schemes, which taught away from the claimed invention. The board does not find this argument convincing, because the skilled reader would have understood that the reason why simulation results were presented there for transmission at a data rate of 14.4 kbit/s for both coding schemes was only to demonstrate the superiority of the proposed turbo coding scheme in terms of significantly reduced bit error rate compared to the convolutional coding scheme, and not to suggest that both coding schemes be used in that manner in practice.

2.5 The board therefore concludes that the subject-matter of the independent claims of the appellant's main request is not new according to Article 54 EPC.

3. *Auxiliary request - Inventive step (Article 56 EPC)*

3.1 Considering the straightforward technical nature of the amendments introduced in the independent claims of this request, the board considers it to be expedient to exercise its discretion under Article 13(1) of the Rules of Procedure of the Boards of Appeal to admit it into the proceedings.

3.2 Although at first glance the amendments introduced in the independent claims as indicated in section V above

might seem to be of a relatively complex technological nature, the board is of the opinion that in fact they define nothing more than the trivial concept that the message includes information indicating whether it comprises voice or data, and that the controller receives this information and uses it in order to select the appropriate encoding or decoding scheme. The board notes moreover that neither the application nor the appellant's letter of 3 February 2014 contains any indication as to why this concept might involve an inventive step. Indeed, the board is of the opinion that the skilled person would view this technique as being the only realistically practicable means for implementing the proposal of D4, so that it would be obvious for him to implement the teaching of that document in the manner defined in the independent claims of this request. The further limitation that the information message represents not only the service type also the "size of data" or data rate is of no technical significance, because once the service type is specified, the further information is superfluous as far as the selection of coding scheme is concerned.

3.3 The board therefore concludes that the subject-matter of the independent claims of the appellant's auxiliary request does not involve an inventive step according to Article 56 EPC. In this respect the board notes also that the comments concerning inventive step for this request on page 4 of the appellant's letter of 3 February 2014 do not relate to the added features of the claims (other then pointing out that they are not disclosed in D4), but to features already defined in the independent claims of the main request, which have therefore been considered in that context.

4. For the above reasons neither of the appellant's requests is allowable, so that the appeal has to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

U. Bultmann M. Ruggiu

Decision electronically authenticated