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**Datasheet for the decision
of 17 February 2022**

Case Number: T 0013/20 - 3.5.03

Application Number: 05775250.3

Publication Number: 1787397

IPC: H03M13/00

Language of the proceedings: EN

Title of invention:

LDPC encoding methods and apparatus

Applicant:

QUALCOMM Incorporated

Headword:

Proof of the publication date/QUALCOMM

Relevant legal provisions:

EPC Art. 54(2), 111(1)

EPC R. 103(1)(a), 111(2)

RPBA 2020 Art. 11, 12(8)

Keyword:

Decision in written proceedings - (yes): no oral proceedings
necessary or appropriate

Internet citation - publication date convincingly ascertained
(no)

Substantial procedural violation - (yes): appealed decision
not sufficiently reasoned

Remittal - (yes)

Reimbursement of the appeal fee - (yes): ex officio

Decisions cited:

T 0750/94, T 1123/04, T 0655/13, T 3071/19



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Case Number: T 0013/20 - 3.5.03

D E C I S I O N
of Technical Board of Appeal 3.5.03
of 17 February 2022

Appellant: QUALCOMM Incorporated
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 17 June 2019
refusing European patent application
No. 05775250.3 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair K. Bengi-Akyürek
Members: K. Peirs
C. Heath

Summary of Facts and Submissions

I. The appeal is against the decision of the examining division refusing the present European patent application for lack of inventive step (Article 56 EPC) and lack of clarity (Article 84 EPC) having regard to the following document:

D2: W.E. Ryan: "An Introduction to LDPC Codes", XP002336953, pp. 1-23, the date "August 19, 2003" indicated on the first page.

II. The appellant requests 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 one of **two auxiliary requests**. The main request and the first auxiliary request are identical to the corresponding requests underlying the decision under appeal, whereas the second auxiliary request was filed for the first time with the statement of grounds of appeal. Oral proceedings are requested in the event that the board is minded not to grant any of the appellant's claim requests.

With the statement of grounds of appeal, the appellant provided, amongst others, the following evidence:

Annex E: P. Trifonov: "Design of Structured Irregular LDPC Codes";

Annex F: M.K. Cheng et al.: "Integrated Performance of Next Generation High Data Rate Receiver and AR4JA LDPC Codec for Space Communications".

III. Claim 1 of the **main request** reads as follows (board's labelling):

- (a) "A Low Density Parity Check (LDPC) encoder, comprising:
 - (b) a memory module including at least $N \times L \times K$ storage locations, where N and L are positive integers and K is an integer >1 ;
 - (c) a controllable permuter configured to perform element re-ordering operations on at least N elements, wherein said controllable permuter is coupled to said memory module;
 - (d) a vector accumulator module including N accumulators arranged in parallel, said vector accumulator module including:
 - i) a first input at least N bits wide, wherein said first input is coupled to an output of said controllable permuter,
 - ii) a second input at least N bits wide, and
 - iii) a vector accumulator output at least N bits wide;
 - (e) a controllable storage device including:
 - i) $N \times K$ storage locations;
 - ii) a block select control signal input configured to receive a signal indicating a block of at least N storage locations to be accessed; and
 - iii) a storage device output at least N bits wide, wherein said storage device output is configured to output values read from said controllable storage device;
- and
- (f) a block selection module coupled to said controllable storage device, wherein said block selection module is configured to supply a block selection control signal to said controllable storage device".

Reasons for the Decision

1. *Decision in written proceedings*

1.1 The appellant requests oral proceedings in the event that the board is minded not to grant any of their claim requests (cf. point II above).

1.2 When compared to the appellant's requests, the board's decision to set aside the decision under appeal and to remit the case to the examining division (cf. point 4 below) is not to be considered as being adverse in substance to the appellant, so that no oral proceedings before the board need to be appointed. Therefore, the decision may be handed down in written proceedings (Article 12(8) RPBA 2020).

2. *Decision under appeal: inventive step and clarity*

2.1 The examining division's reasons to refuse the present application concerned lack of inventive step and lack of clarity (cf. point I above). From points A2 and A3 of the reasons of the appealed decision, the central role of document **D2** becomes immediately apparent, not only for the examining division's inventive-step analysis, but also regarding their objection as to lack of clarity.

In particular as to the latter objection, the examining division started in point A3.1 of the reasons of the decision under appeal from the observation that a "single accumulator" is disclosed in Figure 2 of D2 and noted that the "vector accumulator module" of **feature (d)** comprised two inputs and one output. This

led the examining division to conclude that it

- "is not apparent nor defined which data is input, nor how the two inputs and one output match the constituent single accumulators"

and that it

- "can therefore not be established how and/or which parallelism is achieved regarding the accumulator function".

The examining division's objection as to lack of clarity therefore does not arise from any of the **features (a) to (f)** *taken by themselves*, but rather seems to relate to how the vector accumulator module of feature (d) could be matched with the single accumulator of D2 in the framework of an inventive-step analysis. The board refers in this respect also to the last sentence of page 5 of the decision under appeal.

2.2 The examining division's statements in point A1.5 of the reasons of the appealed decision that

- D2 would be merely of "*a tutorial nature, disclosing common general knowledge of mainly LDPC and IRA codes*"

and that

- the "*content of it, particularly Fig. 2, is rather trivial and therefore would not indicate a later publication date*"

have been challenged by the appellant.

In the absence of any evidence supporting the examining division's statements, the board shares the appellant's doubts in that the content of D2 might indeed not have been part of the common general knowledge of the skilled person at the priority date of the present application, because it relates to highly specialised subject-matter which was not necessarily known to persons of ordinary skill in the art. This is illustrated, for instance, in the section "Introduction" (second and fourth sentence) of D2 itself, namely

- (i) by the indication that "*LDPC codes were first proposed by Gallager in his 1960 doctoral dissertation [1] and was scarcely considered in the 35 years that followed*"

and

- (ii) by the fact that the study groups which were involved when the "*study of LDPC codes was resurrected in the mid-1990's*" merely seem to concern a handful of people (see the references [3] to [5] of D2).

2.3 The board thus observes that even if made publicly available, document D2 may not necessarily be considered "common general knowledge" in light of the above observations. In addition and perhaps more importantly, document D2 may not even be state of the art within the meaning of Article 54(2) EPC.

3. *Document D2: publication date*

3.1 The examining division introduced D2 into the examination proceedings when issuing a summons to oral

proceedings and did so *without* an explanation as to how it was retrieved, in particular as to how D2's publication date was actually determined.

3.2 From point A1.1 of the reasons of the decision under appeal, it appears that the examining division retrieved D2 as an Internet citation but did not record any information as to *when* this citation was made publicly available. The examining division considered the "nominal" date of "August 19, 2003", indicated on the first page of D2 (cf. point I above), to be indeed this document's publication date. When questioned by the applicant, the examining division conducted a search for D2 by means of the *Google search engine* (cf. Reasons A1.4 of the appealed decision). Moreover, as reflected in the minutes of the oral proceedings before the examining division, they maintained their position even after having revisited the issue of D2's publication date. This even seems to have been the major point of debate during the oral proceedings (conducted *in absentia*).

3.3 In that context, the board acknowledges that the Guidelines for Examination of November 2018, G-IV, 7.5.2 state the following (emphasis by the board):

"In many cases, internet disclosures contain an explicit publication date which is generally considered reliable. Such dates are accepted at face value, and the burden of proof will be on the applicant to show otherwise."

However, the "nominal" date as indicated on the first page of D2 may bear no relation with this document's publication date within the meaning of Article 54(2) EPC: it could, for instance, refer to the point in time

when a particular internal draft of D2 was started or finalised. In any case, it cannot be regarded as an "explicit publication date" in the sense of the above Guidelines.

- 3.4 For disclosures which have no (reliable) date, the Guidelines for Examination of November 2018, G-IV, 7.5.4 further mention several options of how an examiner could proceed. The examining division's search conducted using the *Google search engine* (cf. point 3.2 above) is not listed as any of these options. In particular, the use of a search engine as in option (d) of these Guidelines relates to the retrieval of indexing dates. Instead, the examining division focused on the references resulting from the search itself (cf. point A1.4 of the reasons of the decision under appeal).

The board of course acknowledges that due to an advance in technological means of search and recovery of documents, it may at times be necessary or useful to explore possibilities not mentioned in the Guidelines. Yet the appellant's concern regarding the ability of a commercial tool such as the *Google search engine* used by the examining division to provide a reliable proof of a publication date is legitimate, given the lack of verifiability of the tool's functioning and its associated collection of search results. *Google's PageRank algorithm* (or any of the other algorithms used by this search engine) could very well have stacked the search results such that results relating to a publication date in 2003 would have been ranked higher than those with a later publication date, e.g. because the former results happened to correspond to websites that have a better search engine optimisation. In this case, the examining division could have missed the

latter results, thereby ruling out references that may have potentially cast doubt on what the examining division believed to be D2's actual publication date.

- 3.5 More importantly, the references provided in point A1.4 of the reasons of the decision under appeal are mostly no longer functional or, at least, do no longer seem to lead to the content which was intended by the examining division.

In this regard, the board could only confirm the aspects that

- (i) the referenced document "A brief study on LDPC codes" by "R.CR et al." indeed contains a reference [6] to D2 including the expression "The University of Arizona, Australia, 2003"

and that

- (ii) point A1.4 of the reasons of the decision under appeal accurately reflects the information provided in the section "Tutorials" of the web page associated with the "ICC 2003 conference".

Concerning **aspect (i)**, the appellant rightly questions the thoroughness and reliability of reference [6], the lack of which is illustrated already by the indication of the name "Australia" as the country of residence of the "University of Arizona". After all, there is no such university in Australia. Such an unreliable indication cannot be given any weight in the assessment of D2's publication date.

Regarding **aspect (ii)**, the appellant correctly observes that the author of D2, Mr Ryan, was mentioned only as one of the instructors involved in the ICC 2003 conference tutorial referred to in point A1.4 of the reasons of the decision under appeal, which somehow contradicts the assumption that he is the sole author of D2. Assuming that Mr Ryan indeed took part in the presentation of the tutorial, the board agrees with the appellant that it cannot be taken at face value that the information presented at the ICC 2003 conference would at all correspond to what is described in D2, at least not without some confirmation in this respect by a trustworthy source.

3.6 The examining division itself acknowledges in its decision that "[f]urther information on the then publishing web site indicated indeed availability of the document in the year 2003 which, however, were at the time not recorded in the written proceedings." It may very well be that this additional information led the examining division to the conclusion that document D2 was indeed publicly available *before* the priority date. However, no tangible proof thereof exists that could be contested by the applicant, examined by the board or verified by any member of the public.

3.7 It follows from points 3.3 to 3.6 above that the evidence provided in the decision under appeal to support the examining division's assessment of D2's publication date is inadequate, which led the board to conduct its own investigations to assess whether or not D2 could be taken into account as a prior-art document. These investigations could only confirm the appellant's doubts regarding D2's publication date based on their **annexes E and F** (cf. point II above), where D2 was

referred to with a publication date in the year "2004" and "2005", respectively.

3.8 Given that the publication date of D2 cannot be convincingly determined to lie *before* the priority date of the present application, at least not based on the evidence provided in the decision under appeal, this document cannot be considered to be part of the state of the art within the meaning of Article 54(2) EPC.

4. *Substantial procedural violation - remittal to the examining division - reimbursement of the appeal fee*

4.1 In reviewing the decision under appeal, the board is thus faced with a case whose factual basis, in particular the publicly available prior art, cannot or can no longer be objectively assessed or verified, as the examining division relied on evidence that is contested by the appellant and that appears no longer available. However, a decision refusing the present application could not be based solely on a document for which there was no reliable confirmation of the publication date (cf. **T 750/94**, Headnote I).

4.2 From points 3.5 to 3.7 above, it follows that the decision under appeal is not fully reasoned within the meaning of Rule 111(2) EPC.

This is generally considered to be a *substantial procedural violation* (cf. **T 1123/04**, Reasons 3.3, relating to Rule 68(2) EPC 1973; **T 655/13**, Reasons 2.2; **T 3071/19**, Reasons 8). It is not sufficient in this regard that the examining division was subjectively convinced of D2's publication date. Rather, the examining division's decision, by the very fact that it is open to appeal, must enable the board to review its

correctness (cf. T 3071/19, Catchword).

- 4.3 Should the examining division upon remittal further wish to rely on document D2, it should provide an annex with appropriate print-outs or screenshots of the further "information on the then publishing web site" (cf. point A1.1 of the reasons of the decision under appeal). Alternatively, the division may inquire with the executive committee of the ICC 2003 conference, for instance with the "Tutorial Co-Chairs" as indicated in the section "Committees" of the conference's web page (cf. aspect (ii) of point 3.5 above), to determine whether any material reflecting the content of Mr Ryan's presentation at this conference is still available. If this is the case and if the assembled material presents a sufficient degree of similarity with D2, this could be an objectively verifiable basis for confirming the public availability of D2.
- 4.4 The case is thus remitted to the examining division for further prosecution in accordance with Article 11 RPBA 2020.
- 4.5 The board further deems it equitable to reimburse the appeal fee under Rule 103(1)(a) EPC for the present appeal case.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the examining division for further prosecution.
3. The appeal fee is reimbursed in full.

The Registrar:

The Chair:



B. Brückner

K. Bengi-Akyürek

Decision electronically authenticated