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Datasheet for the decision
of 9 November 2006

Case Number: T 0940/03 - 3.5.03

Application Number: 01202036.8

Publication Number: 1132912

IPC: G11B 20/10

Language of the proceedings: EN

Title of invention:
Combined DVD/CD data processor

Applicant:
SAMSUNG ELECTRONICS CO. LTD.

Opponent:
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Headword:
Combined DVD/CD ECC decoder/SAMSUNG

Relevant legal provisions:
EPC Art. 83

Keyword:
"Res judicata - not decided"
"Disclosure - sufficiency - (no)"

Decisions cited:
T 0622/02

Catchword:
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Case Number: T 0940/03 **-** 3.5.03

D E C I S I O N
of the Technical Board of Appeal 3.5.03
of 9 November 2006

Appellant:	SAMSUNG ELECTRONICS CO. LTD. 41-Maetan-dong Kwonsun-gu Suwon-city Kyungki-do (KR)
Representative:	Chugg, David John Appleyard Lees 15 Clare Road Halifax West Yorkshire HX1 2HY (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted 17 March 2003 refusing European application No. 01202036.8 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman:	A. S. Clelland
Members:	D. H. Rees
	R. Moufang

Summary of Facts and Submissions

I.　　　This is an appeal against the decision of the examining
　　　　division to refuse the European patent application
　　　　01 202 036.8, with publication number 1 132 912, an
　　　　application divided from European patent application
　　　　98 305 559.1, with publication number 0 899 734, which
　　　　was the subject of appeal case T 0622/02. The
　　　　application was refused in a decision of the examining
　　　　division announced at oral proceedings held on 5 March
　　　　2003. Written reasons were dispatched on 17 March 2003.

　　　　The application was held not to meet the requirements
　　　　of Article 83 EPC, i.e. not to disclose the invention
　　　　in a manner sufficiently clear and complete for it to
　　　　be carried out by a person skilled in the art.

II.　　The applicant filed a notice of appeal and paid the
　　　　appropriate fee with a letter dated 15 and received
　　　　19 May 2003. The grounds of appeal were submitted on
　　　　17 July 2003. The grounds referred to a statement from
　　　　the inventor which had been filed during examination
　　　　and to submissions made during examination of the
　　　　parent application, which were annexed. Reference was
　　　　also made to the arguments put forward in the appeal
　　　　relating to the parent application. This appeal had
　　　　been heard, and finally dismissed, by the board in the
　　　　same composition.

III.　In response to the communication accompanying the
　　　　summons to oral proceedings the appellant filed a new
　　　　set of claims and two documents:

　　　　D4: US 5 602 857 A

D5: US 5 996 105 A

In the course of the appeal proceedings the following
document originally cited during examination of the
parent application was introduced by the appellant in
its submission on 9 May 2006:

D3: M.A. Hasan et al, "Algorithms and Architectures for
the Design of a VLSI Reed-Solomon Codec," in S. Wicker
ed., "Reed-Solomon Codes and their Applications," 1994,
pages 60-107.

IV.   At the oral proceedings the appellant requested that
        the decision under appeal be set aside and a patent
        granted on the basis of claims 1 to 4 submitted on
        9 October 2006.

V.   The single independent claim 1 reads as follows:

        "A data processor apparatus for common use in a DVD
        (Digital Video Disk) and a CD (Compact Disk) apparatus
        using mode setting information provided according to
        whether a disk is a DVD or a CD, comprising:

        a PLL for generating a clock from a pulse stream read
        from a disk and a demodulator for performing
        demodulation according to the mode setting information;

        a memory unit for storing data demodulated by the
        demodulator in a corresponding format of EFM + for DVD
        and EFM for CD according to the mode setting
        information; and

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an ECC decoder for reading and correcting the data
stored in the memory unit according to the mode setting
information which is stored in a mode setting unit."

VI.   At the end of the oral proceedings the board announced
       its decision.

Reasons for the Decision

1.   The invention

1.1   The application describes as prior art a combined
       DVD/CD player in which the data processing is
       implemented separately for each mode (e.g. Fig. 2). It
       proposes a combined data processor which can deal with
       both modes (Paragraph [0009] of the published
       application). As part of this combined data processor,
       it proposes a common ECC (error checking and correction)
       decoder (the term "demodulator" is also used in the
       application as a synonym) - see e.g. Paragraph [0031]
       and Fig. 3. This ECC decoder is included as one of the
       features specified in present claim 1. Hence the
       question whether it is sufficiently described is
       potentially decisive for the appeal.

2.   *Res judicata*

2.1   Arguably, this question has already been decided by the
       board in T 0622/02 in the same *ex parte* context and it
       might therefore be considered to be *res judicata*, in
       which case the board would be bound by its previous
       decision in this respect, even if presented with new
       evidence.

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2.2   The issue of whether a question decided with respect to
        a parent application can be reconsidered for a
        divisional of that parent could in some circumstances
        be critical to the outcome of an appeal. However, on
        the facts of the present case and in the light of the
        conclusions arrived at below this is not true of the
        present appeal and so need not be decided.

3.   Sufficiency of the description of the ECC decoder

3.1   The application points out that both CDs and DVDs use
        Reed Solomon (RS) codes for ECC (Paragraphs [0006] and
        [0007]) and that the codes have the same primitive
        polynomial (Paragraphs [0034] and [0035]) which as the
        skilled person would understand follows from the fact
        that in both cases the basic symbol length is taken to
        be eight bits, so that in both cases the RS coding is
        generated using the Galois Field over 256 elements,
        $GF(2^8)$. It states further that, since they share this
        polynomial, "merely, the code lengths and correction
        ranges of the DVD and CD data to be error-corrected are
        different from each other. Therefore, by simply
        controlling the code length and the correction range of
        the input data according to the set mode, it is
        possible to correct errors of the DVD and CD data with
        use of the single ECC decoder 62." A block diagram of
        modules making up the ECC decoder is shown in Fig. 6,
        and the functions carried out by these modules on the
        data are described in Paragraph [0033].

3.2   The skilled person would undoubtedly be aware that, as
        stated in the application at Paragraph [0033], DVDs use
        two RS codes called PI, which is a (182, 172) code, i.e.

a block of 172 symbols is provided with 10 ECC symbols, and PO, which is a (208, 192) code. Equally, CDs use a (32, 28) ("C1") and a (28, 24) ("C2") code. It is therefore clear that a shared ECC decoder as claimed must be able to carry out decoding for more than one RS code. This is what is apparently meant by "controlling the code length and correction range according to the set mode" in the above cited passage of the application.

3.3   However, the application does not give any instruction how such a decoder might be constructed. It is merely stated that it is possible. The only details of the structure of the decoder given are in Fig. 6 and the accompanying text at Paragraphs [0032] and [0033], but these details simply relate to an apparently conventional device for ECC decoding a single code (the functions described correspond to what is called "algebraic decoding" in D3 - see page 81, line 25 to page 82, line 26). The only feature shown which relates to decoding more than one code is the "mode setting information" input, but there is no disclosure whatsoever of how the modules 66, 68, 72 and 74 are to be constructed so as each to be able to cope with more than one code.

3.4   Thus, if the provisions of Article 83 EPC are to be considered satisfied, the board must come to the conclusion that the implementation of a shared ECC decoder using algebraic decoding would have been within the reach of the skilled person using common general knowledge in the field.

3.5   The statements in Paragraphs [0034] and [0035], to the effect that the fact that the primitive polynomials for

the codes are the same makes a shared ECC decoder possible, may be taken as a hint to the skilled person as to the direction to be taken in developing a shared decoder. Indeed, although the application does not explain further, the documents available to the board make it clear that decoding any RS code requires (many) multiplications which are carried out modulo a certain value, this value being directly derived from the primitive polynomial. It is therefore true that the multiplier units required for the DVD RS decoder (Fig. 2, 34) will have the same structure as those required for the CD CIRC decoder (48). The board is further willing to accept that this would be a matter of common general knowledge to the person skilled in the art. However, the application still leaves the skilled person completely in the dark as to how to make use of this fact. The various modules of the decoder evaluate different polynomials, as illustrated in Annex 1 of the statement of grounds of appeal, and these polynomials depend on the specific code. The fact that individual multiplications for the different codes in the present case require the same logic structure does not give the skilled person any indication how to share the higher-level structures which evaluate the polynomials.

3.6   Given such an evident and major gap in the disclosure of the claimed invention it was appropriate for the examining division (and later the board) to ask the appellant to explain how the skilled person would realise the missing details and why the skilled person would be able to supply them from common general knowledge of the field.

3.7   In response to the first question the appellant
       provided two explanations annexed to the grounds of
       appeal. These were originally supplied at different
       times during the examination of the parent application.
       The first, "Annex 1", includes: (1) a diagram of the
       structure of an ECC decoder of the same general form as
       Fig. 6 of the application, but nonetheless with
       apparently significant differences; and (2) a
       mathematical example of the various polynomials and
       algorithms shown in that diagram. It is explained with
       relation to the syndrome generator 66 of Fig. 6 that
       "cells" would be used and that, since the generator
       polynomials of the RS codes used have factors in common,
       varying numbers of the cells could be used for
       different RS codes. There is a further statement to the
       effect that the remaining blocks in the submitted
       diagram may be implemented in a similar way. In the
       alternative explanation given in Annex 2 of the grounds
       of appeal there is reference to an "error location
       polynomial", which is presumably "$\sigma(x)$" on the diagram
       in Annex 1. Two generator polynomials are given, again
       in a form which shows their common factors, and there
       is reference not to "cells" but to "iterations". How
       the common factors of the generator polynomials
       influence the structure of the units which generate and
       apply the error location polynomial (the "Modified
       Euclidean Algorithm" unit and the "Chien search" unit)
       is not explained.

3.8   In response to the second question the appellant
       originally supplied, in a submission dated 9 and
       received 12 October 2002, a declaration by the inventor
       stating his belief that the skilled person would have
       been able to implement the invention on the basis of

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the information in the application. In the course of
the appeal two documents, D4 and D5, were also
submitted. It was argued that these, and their
references to a number of co-pending and previous
applications, illustrated that the field was very
active and that the skilled person would be well
acquainted with the techniques necessary for decoding
RS codes. When asked to identify passages of direct
relevance the appellant pointed to D4 Fig. 4 and the
corresponding text at column 10 lines 37 to 45.

3.9   The question of how the skilled person would realise
        the missing details has not been answered adequately.
        The appellant has pointed to the fact that the
        generator polynomials of the different RS codes have
        common factors and asserted that in some unexplained
        way this would lead to a structure of the component
        units comprising cells (or "iterations") varying
        numbers of which would be used for the processing
        carried out. The structure of a cell has not been given,
        nor has the alleged relationship between the cells and
        the factors of the generator polynomial been explained.
        Critically the appellant has given no explanation of
        how cells should be employed in the evaluation and
        application of the polynomials actually mentioned in
        the application, namely the syndrome polynomial $S(X)$,
        the Forney syndrome polynomial $T(X)$, the erasure
        locator polynomial $E(X)$, the errata locator polynomial
        $W(X)$ and the errata evaluator polynomial $\ddot{E}(X)$
        (Paragraph [0033] of the published application). The
        only document available to the board which mentions
        cells is D3 (page 77 lines 25 to 36, page 78 Figure 5-6,
        page 93 lines 32 to 35 and page 100 lines 8 to 13). It
        identifies two implementations where cells are used,

but in neither does the hardware structure reflect in any way the factors of the generator polynomial pointed to by the appellant. In fact the cell structure given in D3, Figure 5-6, page 78, is directly derived from a completely different formulation of the generator and syndrome polynomials, see page 77 equation (33) and page 93 equation (85). The second implementation is a "time domain decoder" (D3, page 100, lines 8 to 17), whereas the structure shown in Fig. 6 of the present application is that of an "algebraic decoder".

3.10   Since the appellant has not given an adequate explanation of how the skilled person would fill in the evident large gaps in the disclosure of the application, it is clear that the second step of establishing that the requisite information was common knowledge in the field also has not been satisfied. However, the board will discuss the evidence that has been provided.

3.11   The board does not consider the inventor's statement to be persuasive as to what the skilled person would have known. Primarily it consists of a declaration that the inventor believes that there is sufficient information in the description and drawings for a person skilled in the relevant technological field to build a combined DVD/CD data processor as described in the specification. Passages of the description are cited and there is a further reference to an implementation using "cells". In this the statement merely repeats arguments that have already been put forward during examination of the parent application and are discussed above. The board does not consider that the inventor's belief that the invention is sufficiently disclosed has any evidential value. In the first place the inventor, an employee of

the appellant, is clearly an interested party, and would therefore find it difficult to look at the disclosure of the application in a non-partisan way. In the second place, the inventor, having been intimately acquainted with the invention over a long time, is not in a position to put himself in the position of a skilled person whose only knowledge of the invention must be derived from the application (which may of course be interpreted in the light of his background knowledge).

3.12   Documents D4 and D5 do not appear to have any evidential value in establishing what was common knowledge in the field at the priority date. The appellant stated that they were introduced to show that the field was very active and that the skilled person would be well acquainted with the techniques necessary for decoding RS codes. For this purpose they are unnecessary; document D3, which comes from a book entitled "Reed-Solomon Codes and their Applications" clearly demonstrates that the field was of considerable interest and that the skilled person would have known a number of decoding techniques. Beyond that these documents do not appear to provide any evidence. They belong to a single family of patents and patent applications; according to long-standing case law the disclosure of a patent is only in exceptional circumstances to be considered part of common general knowledge. No such exceptional circumstances have been argued or are evident in this case. Document D5 does not even qualify as prior art; indeed its filing date (14 November 1997) is after the present priority date (30 August 1997). Thus the contents of D4 and D5 are not to be considered to be common general knowledge.

Neither does the specific material pointed out to the board (D4 Fig. 4 and the corresponding text at column 10 lines 37 to 45) make any contribution to answering the question of what was common knowledge; it merely discusses part of the structure of an ECC/syndrome generator subsystem, without there being any indication that this is considered to be common knowledge.

3.13   The appellant has argued that evidence that there is sufficient information in the application as filed has been provided, whereas the examining division provided no evidence to support its view that the person skilled in the art would need more information. The board does not agree. Firstly the only evidence as to the state of common knowledge to which the board attaches any weight, document D3, was in fact originally introduced by the examining division. It tends to support the view that the skilled person would not have known how to implement the ECC decoder sketched out in the application. The several different possible architectures of an RS decoder put forward and the very lack of mention of the cell structure which the appellant suggests would have been the skilled person's choice make the appellant's assertion less credible. Secondly the board has explained above why it considers it reasonable in the present case for the examining division and the board to ask for supporting arguments and/or evidence. Given the clear lack of disclosure in the application itself it was incumbent on the appellant to demonstrate that the skilled person could have filled the gaps; this it failed to do. The board is not required to provide evidence of what the person skilled in the art did not know.

3.14   The board concludes that the application does not
        disclose the invention in a manner sufficiently clear
        and complete for it to be carried out by a person
        skilled in the art, in violation of Article 83 EPC. The
        appeal must therefore be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar   The Chairman

D. Magliano   A. S. Clelland