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Datasheet for the decision of 8 November 2022

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Application Number: 13738936.7

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Language of the proceedings: EN

Title of invention:
CHROMA QUANTIZATION PARAMETER EXTENSION

Applicant:
Sony Group Corporation

Headword:

Relevant legal provisions:
EPC Art. 54, 56, 87(1)
RPBA 2020 Art. 13(2)

Keyword:
All requests - priority (no)
Main request and first auxiliary request - novelty (no)
Second auxiliary request -
admittance under Article 13(2) RPBA 2020 (no)
Third auxiliary request - inventive step (no)

Decisions cited:
T 0409/90

Catchword:

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Case Number: T 1513/19 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 8 November 2022

Appellant: (Applicant)	Sony Group Corporation 1-7-1 Konan, Minato-Ku, Tokyo, 108-0075 (JP)
Representative:	D Young & Co LLP 120 Holborn London EC1N 2DY (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 13 December 2018 refusing European patent application No. 13738936.7 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairwoman	B. Willems
Members:	F. Sanahuja
	G. Decker

Summary of Facts and Submissions

I. The appeal is against the examining division's decision to refuse European patent application No. 13 738 936.7. This application is a Euro-PCT application within the meaning of Article 153(2) EPC. The underlying international application with publication number WO 2013/109838 Al was accorded 18 January 2013 as filing date.

II. The application claims priority of the following US provisional application for a patent:

PRIO1 US 61/589,191

PRIO1 was accorded 20 January 2012 as filing date.

III. The documents cited in the decision under appeal included the following:

D3 Jun Xu et al., "Chroma QP extension", Joint Collaboration Team on Video coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, 8th JCT-VC Meeting, San José, CA, USA, 1 to 10 February 2012, document no. JCTVC-H0400, server date: 21 January 2012, XP030111427

D4 Shan Liu et al., "Support of ChromaQPOffset in HEVC", Joint Collaboration Team on Video coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, 7th JCT-VC Meeting, Geneva, CH, 21 to 30 November 2011, document

no. JCTVC-G509, server date: 9 November 2011, XP030110493

IV. To the letter dated 7 November 2018, the appellant annexed two versions of the ITU-T H.264 recommendation. The board refers to the ITU-T H.264 recommendation of May 2003 as **D6** and to the ITU-T H.264 recommendation of January 2012 as **D7**.

V. Document D3 was made available to the public before the filing date of the current application and after the filing date of the previous application PRIO1. The examining division arrived at the conclusion that the claimed priority was not valid for the subject-matter of claim 1 of the main request and auxiliary requests 1 and 2 then on file and, therefore, that document D3 was part of the state of the art within the meaning of Article 54(2) EPC for that subject-matter (see points 9, 14 and 18 of the decision under appeal).

VI. The application was refused on the following grounds.

(a) The main request and auxiliary request 1 were not allowable because the subject-matter of claim 1 of both requests was not new over D3 (Article 54 EPC).

(b) Auxiliary request 2 was not allowable because the subject-matter of claim 1 lacked inventive step over the disclosure of D3 combined with the common general knowledge of the person skilled in the art (Article 56 EPC).

(c) Auxiliary request 3 was not admitted into the proceedings (Rule 137(3) EPC).

VII. The appellant filed notice of appeal. With the statement of grounds of appeal, the appellant maintained the main request and auxiliary requests 1 and 2 filed on 12 October 2018. The appellant provided arguments to support its opinion that the validity of the priority claim PRIO1 was erroneously decided and that the subject-matter of claim 1 of each of the main request and auxiliary requests 1 and 2 was new and involved an inventive step.

VIII. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the set of claims submitted on 12 October 2018 titled "Main Request", "Auxiliary Request 1" (referred to as the "first auxiliary request" in the following) and "Auxiliary Request 2" ("second auxiliary request"), all requests being listed in decreasing order of "relevancy". The appellant also requested that oral proceedings be held if the above requests could not be granted in the written procedure (see page 1 of the statement of grounds, the section entitled "*Requests*").

IX. A summons to oral proceedings scheduled for 8 November 2022 was issued on 9 June 2022. In a communication under Article 15(1) RPBA 2020 (the "board's communication"), the board expressed, *inter alia*, the following preliminary view.

(a) The subject-matter of claim 1 of each of the requests was not disclosed in the previous application PRIO1.

(b) The teaching of document D4 was to be regarded as incorporated in document D3.

(c) The board tended to agree with the examining division that the subject-matter of claim 1 of the main request and of the first auxiliary request lacked novelty over document D3 (Article 54 EPC).

(d) The subject-matter of claim 1 of the second auxiliary request lacked inventive step over the disclosure of document D3 incorporating document D4 and combined with the disclosure of document D6 (Article 56 EPC).

X. By letter of reply dated 6 October 2022 (the "appellant's reply"), the appellant filed claims according to a new second and a third auxiliary request and submitted that the third auxiliary request corresponded to the second auxiliary request filed with the statement of grounds of appeal. The appellant provided, *inter alia*, additional arguments in support of the validity of the priority claim PRIO1, reasons why the second auxiliary request should be admitted into the appeal proceedings, and further arguments why the subject-matter of claim 1 of each of auxiliary requests 2 and 3 was new and involved an inventive step.

The appellant requested that the board consider the main request, the first auxiliary request, the second auxiliary request and the third auxiliary request in that order.

XI. On 8 November 2022, the board held oral proceedings using videoconferencing technology, as requested by the appellant.

XII. The appellant's final requests were that the decision under appeal be set aside and that a European patent be

granted on the basis of the claims of the main request submitted on 12 October 2018 titled "Main Request" as stated in the statement of grounds of appeal or, alternatively, on the basis of the claims of the first auxiliary request submitted on 12 October 2018 titled "Auxiliary Request 1", as stated in the statement of grounds of appeal, or the second or third auxiliary request filed by letter dated 6 October 2022.

XIII. At the end of the oral proceedings, the chair announced the board's decision.

XIV. Claim 1 of the **main request** reads as follows:

An encoding apparatus, comprising circuitry configured to:

- determine chroma quantization parameters for Cb and Cr based on a luma quantization parameter and picture level chroma quantization parameter offsets for Cb and Cr which are added to the luma quantization parameter, said chroma quantization parameters for Cb and Cr having a chroma quantization parameter range which spans a luma quantization parameter range for the luma quantization parameter; and

- perform a quantization on chroma transform coefficients for Cb and Cr using said chroma quantization parameters for Cb and Cr.

XV. Claim 1 of the **first auxiliary request** differs from claim 1 of the main request in that it adds the following text before the full stop:

", wherein said chroma quantization parameter range for Cb and Cr is equal to the luma quantization parameter range from 0 to 51"

XVI. Claim 1 of the **second auxiliary request** differs from claim 1 of the first auxiliary request in that it removes the following text:

" and picture level chroma quantization parameter offsets for Cb and Cr which are added to the luma quantization parameter"

XVII. Claim 1 of the **third auxiliary request** differs from claim 1 of the first auxiliary request in that it adds the following text before the full stop:

", wherein said circuity is configured to determine said chroma quantization parameters for Cb and Cr using the picture level quantization parameters offsets for Cb and Cr and slice level chroma quantization parameter offsets for Cb and Cr with a mapping table"

XVIII. The appellant's arguments relevant to the present decision may be summarised as follows.

(a) Claim 1 of the main request and of the first auxiliary request validly claimed priority from PRIO1, and document D3 could not be considered prior art under Article 54(2) EPC. The priority claim was valid in view of:
(i) the common general knowledge of the person skilled in the art
(ii) the cross-reference to document D7 in PRIO1
(iii) the contents of PRIO1 as a whole

(b) The second auxiliary request should be admitted into the proceedings under Articles 12(4) and 13(1) RPBA since it was filed within the time limit specified in the board's communication. Article 13(2) RPBA did not apply.

The second auxiliary request was filed in response to the detailed analysis of the validity of the priority claim in the board's communication.

(c) The subject-matter of claim 1 of the third auxiliary request was inventive over document D3 incorporating document D4 and combined with document D6 (Article 56 EPC).

Reasons for the Decision

1. The appeal is admissible.

2. *All requests - validity of the claimed priority PRIO1 (Article 87(1) EPC)*

2.1 Under Article 87(1) EPC, "*[a]ny person who has duly filed, in or for (a) any State party to the Paris Convention for the Protection of Industrial Property or (b) any Member of the World Trade Organization, an application for a patent, a utility model or a utility certificate, or his successor in title, shall enjoy, for the purpose of filing a European patent application in respect of the same invention, a right of priority during a period of twelve months from the date of filing of the first application*".

Priority of a previous application in respect of a claim is to be acknowledged only if the skilled person

can derive the specific combination of features present in the claim directly and unambiguously, using common general knowledge, from the previous application as a whole (see Case Law of the Boards of Appeal of the European Patent Office, 10th edn., 2022, "Case Law", II.D.3.1.1).

The application of common general knowledge can only serve to interpret the meaning of a technical disclosure and place it in context. It cannot be used to complete an otherwise incomplete technical disclosure (see Case Law, II.D.3.1.4).

2.2 The current application claims priority from the previous application PRIO1.

2.3 In the decision under appeal (see points 9, 14 and 18), the examining division concluded that the priority claim PRIO1 was not valid for claim 1 of the main request and auxiliary requests 1 and 2. PRIO1 did not appear to disclose the following feature of claim 1: "*picture level chroma quantization parameter offsets for Cb and Cr which are added to the luma quantization parameter*".

It is undisputed that the previous application PRIO1 does not literally contain the wording of the contested feature (see decision under appeal, point 9.4).

2.4 However, the appellant argued that the contested feature was directly and unambiguously disclosed in the previous application PRIO1 on the basis of three different lines of argument:

(a) common general knowledge
(b) cross-reference in PRIO1

(c) PRIO1 as "a whole"

2.5 *(a) Common general knowledge*

2.5.1 The appellant's arguments on the validity of the priority claim based on the common general knowledge of the person skilled in the art have not convinced the board for the following reasons.

2.5.2 In this first line of argument (see the section entitled "*a) Common general knowledge*" starting on page 3 of the statement of grounds of appeal), the appellant argued that the validity of priority had to be judged according to well-established case law, namely that "*it is on the basis of [the general] knowledge [of the skilled person] ... that he may infer whether or not there is identity of invention*" (Case Law, II.D.3.1.4).

The person skilled in the art would directly and unambiguously understand that the previous application PRIO1 was about improving the derivation process for chroma quantisation parameters, that "*the solution proposed in PRIO1 [was] a chroma quantization parameter derivation process*" with quantisation parameters in the range [0,51], and that the chroma quantisation parameter ("QP") derivation process was "*directly and unambiguously understood to be encompassed by the solution derivable from PRIO1*" (see the statement of grounds of appeal, page 3, last full paragraph to page 5, first full paragraph).

For the chroma QP derivation process, the person skilled in the art would turn to their common general knowledge reflected, according to the appellant, in a series of ITU-T H.264 recommendations, in particular

sections 7.3.2.1 and 8.5.5 of D6 and sections 7.3.2.2 and 8.5.8 of D7 (see the statement of grounds of appeal, page 5, second full paragraph to page 6, fifth paragraph). It had been common general knowledge to add picture parameter chroma QP offsets to the luma quantisation parameter in the chroma QP derivation process (see the statement of grounds of appeal, page 6, third paragraph). In the appellant's view, using this common general knowledge to interpret the meaning of the parameter QP_I in PRIO1 should be permissible. Thus, the person skilled in the art would identify the current or most recent ITU-T H.264 specification - document D7 - as the only way of calculating the parameter QP_I of PRIO1, and they would look up information for deriving it in that document (see also the section entitled "*(a) Common general knowledge*" starting on page 3 of the appellant's reply).

2.5.3 In the board's view, PRIO1 clearly defines the scope of the proposal: "*This proposal extended Chroma QP to the range of [0,51]*" (see the section entitled "*4 Conclusion*").

The proposal does not contemplate or envisage features in addition to the range extension. Offsets are neither suggested nor required to extend a chroma QP range. Thus, the alleged common general knowledge argued by the appellant cannot be used to complete the incomplete technical disclosure of PRIO1 with offsets. Adding a missing feature not implied by the disclosure of PRIO1 would change the character of the invention disclosed. For this reason alone, the appellant's argument is not convincing.

Independent of whether a chroma QP derivation process

may be directly and unambiguously understood to be encompassed by the solution derivable from PRIO1, using picture parameter chroma QP offset**s** (i.e. one offset per each chroma component) cannot be regarded as common general knowledge. General aspects of video coding are disclosed in basic textbooks and reference books. However, deriving chroma quantisation parameters using separate picture level offset**s** for each chroma component appears to be disclosed only in the latest version of a video coding specification, namely D7. A previous version of the ITU-T H.264 specification discloses a single picture level offset "chroma_qp_index_offset" (see D6, section 7.3.2.1). Thus, the board does not regard a specific version - in particular the latest version - of a video coding specification, out of a plurality of video coding specifications, as part of the common general knowledge of the person skilled in the art.

Even if the contested feature were part of the common general knowledge, it would be merely one of a plurality of alternatives in the art as exemplified by documents D6 and D7. Consciously selecting one alternative (e.g. from the current or most recent ITU-T H.264 specification, D7) from the available common general knowledge is at odds with the requirement that priority may only be acknowledged if the subject-matter claimed may be directly and unambiguously derived, using common general knowledge, from the previous application as a whole.

2.6 *(b) Cross-reference in PRIO1*

2.6.1 The board is not convinced by the appellant's arguments on the validity of the priority claim based on a cross-reference to document D7 in PRIO1.

2.6.2 In its second line of argument (see the section entitled "*b) Cross reference in PRIO1*" starting on page 7 of the statement of grounds of appeal), the appellant argued that the contested feature was part of the content of the priority application because of the cross-reference to the current version of the relevant ITU-T H.264 recommendation published in January 2012, i.e. document D7. In the appellant's opinion expressed during the oral proceedings and in the section entitled "*(b) Cross reference in PRIO1*" starting on page 4 of the appellant's reply, the natural meaning of the phrase "*current Chroma QP derivation process in HEVC replicates that of the H.264/AVC specification*" was that the chroma QP derivation process was "*the same as that currently used in H.264/AVC*". Thus, the person skilled in the art would have identified a link to the most recent version of the H.264/AVC specification at the time of filing of PRIO1.

2.6.3 The board agrees with the examining division that PRIO1 fails to refer to a particular, identifiable version of H.264/AVC (see decision under appeal, point 9.12).

PRIO1 recites "*[t]he current Chroma QP derivation process in HEVC replicates that of the H.264/AVC specification as shown in Table 1*" (see section entitled "*1 Problem statement*").

From the phrase "*[t]he current Chroma QP derivation process in HEVC*", it appears that the reference to a current chroma QP derivation process, if any, is to a chroma QP derivation process in HEVC, not to an H.264/AVC specification. Furthermore, the board cannot identify a clear relationship between HEVC and a particular H.264/AVC specification.

Even if the chroma QP derivation process did refer to "*the H.264/AVC specification*" in PRIO1, the board finds that there is no clear link between the "*the H.264/AVC specification*" and a particular version of the ITU-T H.264 specification, let alone the one used at the time of filing the priority document PRIO1.

Similarly, noting that HEVC replicates a chroma QP derivation process of "*the H.264/AVC specification as shown in Table 1*" does not identify a cross-referenced document. That is, it does not clearly specify a particular version of the H.264/AVC specification. Furthermore, all information required from the H.264/AVC specification was already included in the previous application PRIO1 as Table 1.

In view of the above, the board concludes that the previous application PRIO1 does not cross reference to a specific version of the H.264/AVC specification and, consequently, the contested feature is not disclosed in a cross-referenced document.

2.7 *(c) PRIO1 as "a whole"*

2.7.1 The appellant's arguments on the validity of the priority claim based on the contents of the priority document PRIO1 as a whole have not convinced the board for the following reasons.

2.7.2 In its last line of argument (see the section entitled "*c) PRIO1 as 'a whole'*" starting on page 12 of the statement of grounds of appeal and the section entitled "*(c) PRIO1 as 'a whole'*" starting on page 6 of its reply), the appellant submitted that the priority claim was valid when judged according to "*what could be*

deduced from the priority document as a whole by a person skilled in the art", citing decision T 409/90. The person skilled in the art would have considered cross-referenced document JCTVC-G509 (see PRIO1, reference [1] in the section entitled "5 Reference") to comprehend the expression "*current Chroma QP derivation process in HEVC*" since it was clear that this document was referenced in connection with the chroma derivation process. The appellant then argued why the person skilled in the art would have concluded that the proposal in JCTVC-G509 corresponded to the "*current Chroma QP derivation process in HEVC*" and why adopting the extended chroma QP range of PRIO1 in the "*current Chroma QP derivation process in HEVC*" rendered the priority claim valid.

2.7.3 In the board's view, the content of JCTVC-G509 is not to be regarded as part of the previous application PRIO1.

There is no indication in the priority document PRIO1 why document JCTVC-G509 is referenced and what it should be used for. It is not referenced in connection with any feature or aspect of the invention. Thus, PRIO1 makes no mention of why the document is referenced.

The board could not identify a clear indication in PRIO1 that left the person skilled in the art in no doubt that protection may be sought for features disclosed in JCTVC-G509. Therefore, in applying the well-established approach for determining whether features disclosed only in a cross-referenced document are part of the content of the referencing document (see Case Law, II.E.1.2.4, second paragraph), the board

concludes that the conditions for regarding features disclosed in JCTVC-G509 as part of PRIO1 are not met.

2.8 In view of the above, priority of PRIO1 in respect of claim 1 of none of the requests can be acknowledged (Article 87(1) EPC). The skilled person could not have derived the specific combination of features present in the claim directly and unambiguously, using common general knowledge, from PRIO1 as a whole. Consequently, document D3 forms part of the state of the art under Article 54(2) EPC.

3. *Main request and first auxiliary request - novelty (Article 54 EPC)*

3.1 An invention is to be considered new if it does not form part of the state of the art (Article 54(1) EPC).

3.2 It is established case law that if a document (the "primary" document) explicitly refers to another document (the "secondary" document) as providing more detailed information on certain features, the teaching of the latter is to be regarded as incorporated in the primary document if the document was available to the public on the publication date of the primary document (see Case Law, I.C.4.2).

This is the case for document D4 (the "secondary" document), which may therefore be regarded as incorporated in document D3 (the "primary" document; see D3, the section entitled "*2 Solution*", reference [1] to document D4 providing more information on the two chroma QP offsets).

3.3 The board agrees with the conclusion of the examining division that claim 1 of the main request and the first

auxiliary request lacked novelty over document D3.

3.4 The board concurs with the examining division's reasoning that document D3 explicitly refers to document D4 (see point 11.3 of the decision under appeal and point 3.2 above, second paragraph). D4, in turn, discloses that the chroma QP offsets of D3 are defined within the picture level structure *pic_parameter_set_rbsp* (see D4, the section entitled "*4 Proposed Change of WD*").

3.5 The appellant did not provide further arguments supporting novelty and/or inventive step for these requests when considering document D3 to represent the state of the art under Article 54(2) EPC.

3.6 In view of the above, the board concludes that the subject-matter of claim 1 of each of the main request and the first auxiliary request is not new over the disclosure of document D3 incorporating D4 (Article 54 EPC).

4. *Second auxiliary request – admittance (Article 13(2) RPBA 2020)*

4.1 The second auxiliary request was filed by the appellant's letter dated 6 October 2022, i.e. after notification of the summons to oral proceedings.

4.2 Under Article 13(2) RPBA 2020, "*[a]ny amendment to a party's appeal case made after the expiry of a period specified by the Board in a communication under Rule 100, paragraph 2, EPC or, where such a communication is not issued, after notification of a summons to oral proceedings shall, in principle, not be taken into account unless there are exceptional*

circumstances, which have been justified with cogent reasons by the party concerned".

The basic principle of the third level of the convergent approach implemented in Article 13(2) RPBA 2020 is that, at such an advanced stage of the appeal proceedings, amendments to a party's appeal case are not to be taken into consideration. However, a limited exception is provided for when a party can present compelling reasons which clearly justify why the circumstances leading to the amendment are exceptional in the appeal (see Supplementary publication 2, OJ 2020, explanatory remarks on Article 13(2) RPBA 2020).

The explanatory remarks on Article 15(1) RPBA 2020 shed light on when a communication under Article 15(1) RPBA 2020 is to be regarded as a communication under Rule 100(2) EPC: "*To be noted is that in the communication a period for response can be set. Only where the communication expressly invites a party to file observations within a period specified by the board can it be regarded as a communication within the meaning of Rule 100(2) EPC and, in such a case, proposed new paragraph 2 of Article 13 is applicable. If the board merely refers parties to the possibility of filing written submissions by a certain date, without expressly inviting them to do so, this is not a communication within the meaning of proposed new paragraph 2 of Article 13*" (see Supplementary publication 2, OJ 2020, explanatory remarks on Article 15(1) RPBA 2020).

4.3 The appellant's arguments regarding the admittance of the second auxiliary request (see point XVIII.(b)

above) have not convinced the board for the following reasons.

4.3.1 In its reply, the appellant stated that "*the specific provisions of Article 13(2) RPBA do not apply to this amendment*", i.e. the second auxiliary request, since "*the amendment has been made within the period specified by the Board in section 5.1 of the Communication*" (see page 11, the section entitled "*Admissibility of the Request*", fourth paragraph of the reply). The relevant part of the board's communication recites "*[a]ny amendment to the appellant's case should be made as early as possible, at the latest one month before the appointed date of oral proceedings*".

4.3.2 The board's communication under Article 15(1) RPBA 2020 did not expressly invite the appellant to make amendments or file observations within a specified time period. Thus, under established case law (see Case Law, V.A.4.5.6 a)) and the explanatory notes to Article 15(1) RPBA 2020, the board's communication in this appeal case cannot be considered a communication under Rule 100(2) EPC.

As the board did not issue any communication under Rule 100(2) EPC in this appeal case and did not expressly invite the appellant to file observations within a period specified by the board in its communication, the requirements of Article 13(2) RPBA 2020 apply to the admittance of the second auxiliary request.

4.3.3 According to the appellant, the second auxiliary request "*has been made in response to the reasoning provided by the Board in the Communication and has been made in an attempt to address the outstanding issues*

concerning the validity of the priority claim and the status of D3 as prior art under Article 54(2) EPC" (see page 11, the section entitled "*Admissibility of the Request*", third paragraph of the appellant's reply). During the oral proceedings, the appellant further submitted that it was the detailed analysis of the priority issues by the board in its communication that allowed the appellant to understand them.

4.3.4 The issues concerning the priority were known to the appellant during the first-instance proceedings, and the board merely agreed with the opinion of the examining division.

In its statement of grounds of appeal, the appellant submitted detailed arguments spanning 14 pages as to why the examining division erred in its finding that the priority claim PRIO1 was not valid (see pages 2 to 15). A board's detailed analysis to justify its preliminary opinion and to rebut detailed arguments of an appellant cannot be considered "exceptional circumstances" within the meaning of Article 13(2) RPBA 2020. If exceptional circumstances were to be acknowledged in a board's rebuttal of an appellant's argument, the board would never be in a position to disagree with the appellant without opening the door to the filing of new requests.

4.4 In view of the above, the board, exercising its discretion under Article 13(2) RPBA 2020, does not admit the second auxiliary request into the appeal proceedings.

5. *Third auxiliary request - inventive step (Article 56 EPC)*

5.1 An invention is to be considered to involve an inventive step if, having regard to the state of the art, it is not obvious to a person skilled in the art (Article 56 EPC).

5.2 The appellant did not dispute that documents D3 and D4 form part of the state of the art under Article 54(2) EPC for the subject-matter of claim 1 of the third auxiliary request (see discussion on the second auxiliary request then on file in the statement of grounds of appeal, page 16, third paragraph).

5.3 The board agrees with the examining division that document D3, incorporating D4 (see point 3.2 above), represents a suitable springboard for the assessment of inventive step of the subject-matter of claim 1 of the third auxiliary request.

5.4 The board shares the appellant's view that it does not suffice to prove that "*slice level chroma quantization parameter offsets*", the sole distinguishing feature from document D3, was known or rendered obvious in the prior art. To demonstrate lack of inventive step, it should be proven that the combined use of this feature, the picture level chroma QP offsets and a mapping table would have been obvious (see statement of grounds of appeal, page 17, first to third paragraphs).

5.5 It is common ground that the technical effect that may be attributed to this combination of features is an improvement in the precision for adjustment of the chroma quantisation parameters and that the technical problem may be formulated as how to improve precision in controlling the chroma quantisation parameters (see decision under appeal, points 19.3 and 19.4 and page 16, first and second paragraphs of the appellant's

reply). The person skilled in the art confronted with this problem would have consulted relevant versions of the ITU-T H.264 standard to find solutions for controlling the precision of quantisation parameters.

In document D6, for the luma component, a *slice_qp_delta* is added to *pic_init_qp_minus26* (see page 64, bottom right page numbering, equation 7-16). The specification defines this parameter as "*specif[ying] an initial value minus 26 of SliceQP$_y$ for each slice*" (see page 57 of the same specification). The expression "*each slice*" refers to each slice in a picture since *pic_init_qp_minus26* is defined for a *pic_parameter_set_id* which is the same for all slices of a coded picture (see D6, page 56, section 7.4.2.2, first paragraph and page 60, section 7.4.3, first paragraph). Thus, *pic_init_qp_minus26* and *slice_qp_delta* are picture and slice level quantisation parameters, respectively.

The examining division "*considered [it] to be an obvious option for the skilled person to use also slice level parameters in the apparatus known from D3/D4*" to improve chrominance performance (see the decision under appeal, point 19.5).

In the board's view, it would have been obvious to use slice level chroma QP offsets in the same manner as a luma slice level QP offset, i.e. to add them to a quantisation parameter defined at the picture level (see D6, page 57, in the paragraph *pic_init_qp_minus26*, "*The initial value is modified at the slice layer when a non-zero value of slice_qp_delta is decoded*" and equation 7-16 on page 64). Document D4 defines these chroma quantisation parameters at the picture level using ChromaQPOffset and ChromaQPOffset2nd (see D4, the

section entitled "*4 Proposed Change of WD*"). In this manner, the person skilled in the art would have arrived at the combination of picture and slice level chroma QP offsets with a mapping table (see D4, the section entitled "*4 Proposed Change of WD*", mapping table *QPCtoQPY*) to determine the chroma quantisation parameters as claimed.

5.6 The appellant's arguments that the subject-matter of claim 1 involves an inventive step did not persuade the board.

5.6.1 In its reply (see page 16, third paragraph to penultimate full paragraph) and during the oral proceedings, the appellant argued that document D6 did not provide any indication of a teaching addressing the objective technical problem. In addition, the person skilled in the art would not have considered the solution of providing more luma quantisation precision and would have kept the chroma QP derivation process described in D6 since in this document there is no teaching of using slice level offsets for components other than luma.

In the board's view, the person skilled in the art in their search for solutions would have looked for similar strategies for deriving quantisation parameters which would provide more precision than the chroma QP derivation process of D3. They would have realised that the luma QP derivation process of D6 improved the luma precision by adding offsets at the slice level to a quantisation parameter defined at the picture level. The board cannot identify any reason why the person skilled in the art would have disregarded the solution disclosed for the luma component for the mere fact that

an improvement was sought for the chroma components.

5.6.2 Moreover, according to the appellant, if the person skilled in the art were to consider the luma slice level offset, they would have first calculated the value of QP_Y using equation 7-16 of D6 and subsequently would have used QP_Y to obtain the chroma quantisation parameters in combination with the picture level offsets of D3, which would have been different from the claimed invention (see page 17, third and fourth full paragraphs, of the appellant's reply). Indeed, the chroma quantisation parameter would still have been calculated using a luma quantisation parameter and picture level chroma QP offsets, as opposed to using slice level chroma offsets between luma and chroma as claimed.

The board is of the opinion that, if the person skilled in the art were to contemplate using the slice level luma quantisation parameter for both luma and chroma components, they would have realised that this did not allow for independently tuning chroma and luma quantisation parameters. Thus, a common slice level quantisation parameter could only be adjusted to improve the precision of the chroma quantisation parameter at the expense of its luma counterpart. The person skilled in the art would have immediately recognised that separate offsets were needed.

5.6.3 In its statement of grounds of appeal (see page 18, third full paragraph to page 19, third full paragraph), the appellant submitted that D6 proposed substituting a picture level parameter QP_Y with a slice level parameter QS_Y, and thus it did not render obvious the claimed combined use.

The board is not convinced by this argument. The choice between QP_Y or QS_Y at the slice level is determined only on the basis of the type of slice (see D6, section 8.5.5, first paragraph on page 136). However, the quantisation parameter QS_Y is defined in a similar manner as $SliceQP_Y$ (QP_Y for a slice). Both $SliceQP_Y$ and QS_Y define slice level quantisation parameters calculated by modifying picture level parameters with slice level QP offset (see D6, page 64, equations 7-16 and 7-17, and page 67 for the reference to *pic_init_qp_minus26 and pic_init_qs_minus26*). Thus, D6 demonstrates that it was well known to apply offsets to modify picture level quantisation parameters.

5.7 In view of the above, the board concludes that the subject-matter of claim 1 of the third auxiliary request lacks inventive step over the disclosure of document D3, incorporating D4, combined with the disclosure of D6 (Article 56 EPC).

6. Conclusion

6.1 Since the main request and the first and third auxiliary requests are not allowable and the second auxiliary request is not admitted into the appeal proceedings, the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairwoman:

K. Boelicke B. Willems

Decision electronically authenticated