Deckblatt Übersetzung

Daten der Übersetzung:

Court/Gericht:	Bundesgerichtshof
Date of Decision / Datum der Entscheidung:	2019-03-19
Docket Number / Aktenzeichen:	X ZR 11/17
Name of Decision / Name der Entscheidung:	Bitratenreduktion

FEDERAL COURT OF JUSTICE

IN THE NAME OF THE PEOPLE

JUDGMENT

X ZR 11/17

Pronounced on:
19 March 2019
Anderer
Judicial Secretary
as Clerk of the
Court Registry

in the patent nullity proceedings

Bitratenreduktion/Bitrate reduction

EPC Art. 54(1), Art. 56; Patent Act Sec. 3(1), Sec. 4

If, in patent nullity proceedings, the anticipation of the invention or a reference to the technical teaching of the patent in suit is derived from a single technical aspect presented in a citation, this single technical aspect may not be considered in isolation when examining the disclosure content of the citation in order to avoid a retrospective approach; rather, the technical meaning which is attributed to it in connection with the entire content of the citation is decisive.

Federal Court of Justice, judgment of 19 March 2019 – X ZR 11/17 – Federal Patent Court

ECLI:DE:BGH:2019:190319UXZR11.17.0

The X. Civil Senate of the Federal Court of Justice, following the oral hearing on 19 March 2019, attended by the presiding judge Prof. Dr. Meier-Beck, the judges Gröning and Hoffmann as well as the judges Dr. Kober-Dehm and Dr. Marx

ruled that:

On appeal by the defendant, the judgment of the 5th Senate (Nullity Senate) of the Federal Patent Court of 30 November 2016 is amended.

European patent 260 748 is declared partially null with effect for the territory of the Federal Republic of Germany by inserting in patent claims 1 and 10 immediately before the characterizing part:

> "wherein the signal is a sequence of coefficients resulting after blockwise cosine transformation of pixels of a video signal followed by quantization, and wherein the determined signal value (A) is the value zero",

claims 4 and 12 are omitted, in claim 8 the words between "characterized in that" and "that a verified Huffman code word ..." are omitted and claims 2, 3, 5 to 9, 11 and 13 to 17 refer back to the amended claims 1 and 10.

The remainder of the action is dismissed.

The plaintiffs shall bear the costs of the legal dispute.

By operation of law

Facts of the case:

1 The defendant was the owner of European patent 260 748 (patent in suit), which was filed on 10 September 1987, claiming three German priorities of 13 September 1986, 8 November 1986, and 23 May 1987, and expired before the action for revocation was filed. The patent in suit comprises 17 claims, claim 1 of which reads as follows:

> "Method for bit rate reduction in the coding of a signal with a sequence of signal values, which contains a particular signal value (A) occurring most frequently in uninterrupted subsequences and from which a sequence of Huffman code words is formed,
>
> characterized in that,
>
> at least one Huffman code word
>
> - either from another signal value and from a subsequent, uninterrupted subsequence of the specific signal value (A), if present,
>
> - or from another signal value and from a preceding, uninterrupted subsequence of the specific signal value (A), if present,
>
> and in that
>
> in the formation of the sequence of code words, only the preceding or only the succeeding partial sequences of the particular signal value (A) with the other signal value are used."

2 The plaintiffs claiming the patent in suit argued that the subject matter of the patent in suit went beyond the content of the original application and was not patentable. The Patent Court initially declared the patent in suit null on the grounds of inadmissible extension. On appeal by the defendant, the Senate reversed this judgment, denied an impermissible extension and referred the remainder of the dispute back to the Patent Court (judgment of 7 July 2015 - X ZR 64/13, GRUR 2015, 1095 - Bitratenreduktion). The Patent Court has now declared the patent in suit null due to the lack of patentability of its subject matter.

3 This is the subject of the defendant's appeal, in which it defends claim 1 in the main claim in a limited manner by inserting before the identifier.

"wherein the signal is a sequence of coefficients resulting after blockwise cosine transformation of pixels of a video signal followed by quantization, and wherein the determined signal value (A) is the value zero."

and claims 4 and 12 are to be omitted. The defendant also defends the patent in suit as amended by nine auxiliary claims. The plaintiffs oppose the appeal.

Grounds of the decision:

4 I. The patent in suit relates to a method for bit rate reduction in the encoding of image or video data.

5 According to the state of the art referred to, video signals are encoded in such a way that video images can be transmitted with the lowest possible bit rate in sufficient quality. The coding is done in several steps. First, equal-sized blocks of samples of the pixels are subjected to a discrete cosine transformation so that a new block of numerical values (coefficients) is created. In this block, usually the majority of the coefficients have the value 0 or close to 0. Because of the frequency of the value 0, the coefficients are Huffman coded, using uninterrupted subsequences of the value 0 as a single "event" for the formation of Huffman code words. In Huffman coding, frequently occurring events are coded with short code words and less frequently occurring events are coded with longer code words. Among the codewords, none is the beginning of another, so despite differences in length, there is no need for a prefix to signal the beginning of a new codeword. Overall, this results in a bit rate reduction.

6 2. The invention is based on the task of specifying an encoding method which leads to a further bit-rate reduction for image data.

7 3. In claim 1 of the last defended version, the patent in suit proposes a method for bit rate reduction with the following features (the numbering follows that of the judgment under appeal):

1. a signal is encoded with a sequence of signal values.

2. in the sequence of signal values there is a certain signal value A, which occurs most frequently and in uninterrupted partial sequences.

4. the signal is a sequence of coefficients resulting after blockwise cosine transformation of pixels of a video signal followed by quantization, where the certain signal value (A) is the value zero.

3. a sequence of Huffman code words is formed from the signal values.

5. at least one Huffman code word is formed

5.1 either from another signal value and from a subsequent uninterrupted subsequence of the particular signal value (A), if present,

5.2 or from another signal value and from a preceding uninterrupted subsequence of the specific signal value (A), if present.

6. during the formation of the sequence of the code words

6.1 only the preceding partial sequences or

6.2 only the following subsequences

of the specified signal value (A) with the other signal value are used.

8 4. For the interpretation of the patent claim, reference is first made to the judgment of the Senate of 7 July 2015; in view of this, two features require further discussion.

9 a) The Patent Court bases feature 4 - when examining inventive step - on an understanding according to which it is sufficient if the method is suitable for an encoding of coefficients resulting from a blockwise cosine transformation of pixels of a video signal.

10 This is not to be agreed with. Feature 4 determines that the method is applied to signals previously obtained from a blockwise cosine transformation of video signals. Thus, the said transformation does not itself belong to the method according to the invention; the method starts with the input of such signals into the sequence of steps for encoding the signals. Nevertheless, it is not sufficient for feature 4 that the method is suitable only for video signals obtained from a blockwise cosine transform, but is used for other signals. Rather, patent claim 1 requires use of signals obtained from a blockwise cosine transform.

11 b) The requirement to form "at least" one Huffman codeword according to features 5.1 or 5.2 is explained by the fact that an additional codeword can be added to a codeword formed in this way if the predetermined length or the assigned other signal value exceeds a predetermined amount (Federal Court of Justice, GRUR 2015, 1095 marginal no. 18 Bitrate reduction). The description of the patent in suit describes this as a relatively rare event and a sharply defined circumstance (sp. 4 line 57 to sp. 5 line 12). Accordingly, there are exceptions in which exactly one Huffman code word is not to be formed in each case according to features 5.1 or 5.2. Consequently, feature 5 determines, in accordance with the essential core of the teaching of the patent in suit, that there is at least one Huffman code word which already in itself corresponds to features 5.1 or 5.2.

12 II. The Patent Court justified the lack of inventive step as follows:

13 The US patent specification 4 420 771 (K14) discloses a method for coding signals in which a value occurs very frequently. The method is particularly suitable for encoding image data. According to the embodiment example of K14, an input signal is encoded from 9-bit words (feature 1), with the value zero occurring most frequently (feature 2). A sequence of Huffman code words is formed from the signal values (feature 3). The skilled person, who is a mathematician or computer scientist with a university degree and several years of experience in the field of video coding, is thus aware that the teachings of K14 are particularly suitable for video signals from a blockwise cosine transformation (feature 4).

14 The K14 teaches the use of an alternative definition of a run as a possible embodiment of its teaching. If, in the embodiment example, a run is assumed to be a consecutive sequence of elements of the same value, a run could alternatively be characterized by comprising a consecutive sequence of words of the same value and the following word of a different value. In this case, the Huffman code word is formed from another signal value and from a preceding uninterrupted subsequence of the particular signal value according to features 5 and 5.2. Insofar as the defendant reaches a different result, it is obviously subject to the misinterpretation that Tables 2 to 4 of the embodiment example are also applied unchanged in the alternative run definition. However, this is in

clear contrast to the teaching of K14, which explicitly points out that in the case of an alternative run definition, the encoder must of course also be adapted. According to the K14, the alternative definition of a run is not an alternative run length coding, because the K14 does not teach coding on the basis of a binary intermediate signal. In fact, it is clear to the skilled person that in the case of the alternative run definition, the entire run (e.g. "000000000 000000000 000011001") is encoded to a Huffman code word.

15 The feature group 6 is not directly apparent from K14. However, it is suggested to the skilled person to use either only preceding or only following partial sequences of the signal value (A) for the formation of the code words, because this reduces the code word lexicon. Thus, the subject matter of patent claim 1 is suggested to the skilled person.

16 The teaching of the patent in suit is also not based on inventive step in one of the versions of the auxiliary requests.

17 III. This does not stand up to scrutiny in the appeal proceedings. The Patent Court has taken from citation K14 a technical teaching which it does not disclose.

18 1. The Patent Court dealt with the technical teaching of K14 only in a very general way and based its decision essentially on the last paragraph of the description, which, according to its introductory sentence, deals with the fact that the previously given definition of a barrel could be modified, if desired, without diminishing the advantages of the invention. Such an approach creates a risk of misinterpretation. Patent specifications and applications frequently contain, and in different concretization, explanations of possible variations of the technical teaching previously described, in particular in an embodiment example. If such a passage of a citation is examined in isolation in patent revocation proceedings to determine whether it contains elements of the technical teaching of the patent in suit, this increases the danger, which can never be ruled out anyway, of a retrospective reading of the teaching of the patent in suit into the state of the art. This is because the context of the citation is, as it were, replaced by the context of the later invention, which determines what is sought in the citation. Even if, as in the interpretation of a patent claim,

it is not a question of grasping its meaning by grasping the content of the description which is intended to explain the claim, in determining the disclosure content of a citation, as in the case of any text, the context of the presentation of a particular technical fact must be taken into account, since even sentences or phrases which are identical in wording can acquire different meanings depending on this context. This applies in particular to the description of modifications of a previously given technical teaching, because the meaning may only become fully apparent through the correct understanding of what has been modified and modifications regularly change only parts of the modified technical instruction.

19 2. The citation K14, as explained at the beginning (Sp. 1 lines 6-10), concerns a method for encoding multivalued signals and in particular a form of run-length encoding of signals in which one of the values occurs far more frequently than all the others, namely, as in the patent in suit, typically the value zero or the "9-bit zero word". According to a description of the state of the art, the writing summarizes the new technical teaching as processing or grouping a series of words representing different-valued signal expressions to form run length code words indicating the sequence of occurrence (first) of words having a first, frequently occurring value (zero) and (second) of words having all other (possible) values. The length of each type of run, i.e. the run with the frequent (zero) words and the run with the other non-zero words, is then preferably coded with a variable length code. Furthermore, the values of the non-frequent words are coded, again preferably with a variable length code. The run length codes and the codes for non-frequent words are then combined in a certain way for the transmission so that they can be decoded again (Sp. 1 Z. 60 Sp. 2 Z. 9). The following detailed description explains by way of introduction the invention described vividly as a "hybrid method" which makes it possible to use the advantages of the run length coding usually used only in connection with binary signals for multivalued signals (Sp. 2 Z. 25-28).

20 The combination of the coding of the run length of zero words on the one hand and non-zero words on the other hand with the coding of the value of the non-zero words presented in general form, which also finds expression in the three subordinate subject claims 1, 4 and 8 and correspondingly in the method

claims following thereupon, is then explained in detail for a video signal consisting of 9-bit words.

21 When one or more 9-bit words with the value zero are input, the number of times these zero words occur in succession is counted, and then the number of zero words corresponding to the length of a sequence of uninterrupted zero values is temporarily stored in a buffer (Sp. 3 lines 21 to 51). The (necessary) following non-zero word can be converted (without loss) into a 4-bit code, since in the typical constellation the non-zero words take only 16 different values. This 4-bit value is then buffered in another buffer (sp. 4 lines 9-13). Finally, an encoder encodes the number (runlength) of zero words that follow uninterruptedly in a sequence called run, the number of non-zero words that follow, and the values of these non-zero words, each in that order, using three different Huffman code tables (see Tables 2, 3, and 4 of K14 below).

TABLE 2

"ZERO" RUNS

Run Length	Code
0	111
1	110
2	000
3	10
4	011
5	0101
.	
.	
.	

TABLE 3

"ONE" RUNS

Run Length	Code
1	000
2	10
3	011
4	0101
5	110
.	
.	
.	

TABLE 4

Value	Code
0001	10
0010	000
0011	011
0100	110
0101	111
0110	0101
0111	00100
1000	00101
1001	01000
1010	01001
1011	00110
1100	001110
1101	00111101
1110	00111110

22 The adjacent Table 1 summarizes the assignments for 19 words selected by way of example. The table contains words with a length of 9 bits each (column 1), the mentioned 4-bit words into which the non-zero words have been converted (column 2), an intermediate binary code for the distinction between zero words and non-zero words, so designated by the appeal, which takes the value 0 for zero words and the value 1 for non-zero words (column 3), so that the result of counter 117, which counts the number of (9-bit) words in a run, can be interpreted and coded as the number of zero

TABLE 1

Input (Line 101)	Output Of ROM 150	Output Of ROM 110	output of Counter 117	Output of Coder 191 Using Table 2	Table 3	Table 4
000000000		0	1	110		
000011001	0010	1				000
000101010	0011	1	2		10	011
000000000		0				
000000000		0				
000000000		0	3	10		
000000101	0001	1				10
000011001	0010	1				000
010110111	1010	1	3		011	01001
000000000		0				
000000000		0	2	000		
000000101	0001	1	1		000	000
000000000		0	1	111		
000000101	0001	1	1		000	10
000000000		0				
000000000		0				
000000000		0				
000000000		0				
000000000		0	5	0101		

words or as the number of non-zero words (column 4), as well as the assignment to the respective Huffman codes according to tables 2 to 4 (columns 5 to 7), where the indicated Huffman codes for the 12th word are word in column 7 and for the 13th word in column 5 are probably due to a spelling error.

23 3. The last three paragraphs of the description then deal with possible deviations from what has been described so far. Thereafter, the order of the code words in line 4 of figure 3 may be deviated from (sp. 10 line 55 sp. 11 line 8). It is further noted that the invention is also useful when multi-valued signals other than signals derived from a predictive video encoder are to be encoded (Sp. 11 lines 9-24). Finally, as noted above, the last paragraph of K14 addresses a possible modification of the definition of a "run" (Sp. 11 lines 25-43).

24 It reads in full as follows (sentence numbering added):

> "[1]The definition of a 'run' stated previously, namely, a series of consecutive inputs having the same value, can also be modified, if desired, without diminishing, the advantages of the present invention. [2]Specifically, an alternative definition of a run may be a series of consecutive words of like value as well as the next (subsequent) word of different value. [3]For example, for a binary input of ONE's and ZERO's, a run of ZERO's would include the ONE bit following any group of successive ZERO's, and a run of ONE bits would include the ZERO bit immediately following the successive ONE's. [4]This alternate definition is to be understood to be within the scope of the present invention, and the means used to determine the length of successive runs including exclusive OR gate 113 and run length counter 117 of FIG. 1 would be modified accordingly. [5]If such a different definition were used, variable length encoder 191 and decoder 203 would also be modified appropriately."

25 Accordingly, the previously stated definition of a run as a series of successive input values having the same value may be modified without diminishing the advantages of the invention (first sentence). Such a modification, the second sentence explains, may in particular consist in defining a run as a series of successive words with the same value and the next (following) word with a different value.

26 4. The assumption of the Patent Court that this teaches to form Huffman codewords by combining an uninterrupted series of zero words

together with the following non-zero word as an event to be coded for the formation of a Huffman codeword finds no support in the two input sentences relied upon. For these do not deal with the definition of an event to be encoded, in particular not with the encoding of a signal value, but with the definition of a run, i.e., as sentence 1 recalls again, in the starting point with the series of successive zero-words or non-zero-words, of which that series combines words of the same value (zero), but this series combines words of different value (non-zero) into a run. Precisely because of this starting point, K14, as explained, teaches not only the encoding of the length of a run (of only two possible run types) but also the encoding of the values of the (comparatively rare) non-zero words. The definition of the run (to be encoded with its length) should be able to be changed by including the following word of other value, in particular the (first) non-zero word (necessary) following a series of zero words; the length of the thus "redefined" run is counted and encoded. This very thing is explained in the third sentence using the "binary example", and it is pointed out that the means used to determine the length of successive runs must be adjusted accordingly (sentence 4), and that the encoding must also take into account the fact that the variable run lengths to be encoded change (sentence 5).

27 By including the encoding of a signal value in the "modified run definition", the Patent Court leaves without sufficient support in the referred last paragraph of the description the fundamentals of the technical solution disclosed in citation K14. A justification for its assumption that it is clear to the skilled person that in the case of the alternative barrel definition the "entire barrel" would be encoded to a Huffman code word is not to be inferred from the contested judgment and in particular does not result from the remark that K14 expressly points out that of course also "the encoder" must be adapted.

28 To the extent that the Patent Court, in disputing the defendant's submission, points out that K14 consistently and uniformly distinguishes between the terms run and run length, this is true, but does not justify the conclusion that the discussed modification abandons the principle of distinguishing between two types of run and counting the length of each run, as well as encoding run types, run lengths, and the values (only) of non-zero words. Equally unproductive is the indication that sentence 2 of the discussed passage

defines "the event to be encoded" as a series of consecutive words of corresponding value and the following word of deviating value and thus explicitly addresses sense-bearing words, which is why the reduction to a mere number is prohibited. The Patent Court thus neglects the very characteristic of the technical teaching of K14, namely to provide a "hybrid method" which allows to encode the signal value only for the relatively few "sense-bearing" non-zero words and to be content with "mere counting" of run lengths for the rest and thus to be able to use the advantages of run length encoding for multivalued signals, which is usually used only in connection with binary signals (K14 Sp. 2 Z. 25-28).

29 Finally, the consideration that the skilled person would recognize that a mere run length coding in the context of the last paragraph of the description of K14 would not lead to any advantage compared to the previously taught embodiment example is legally erroneous, and therefore he would not interpret the text passage in such a way. Already according to the location of the explanations at the end of the description after the above discussed explanations in column 10 line 55 to column 11 line 24, it is far-fetched to expect now an advantageous variant of the invention compared to the detailed embodiment example. The text passage also says nothing of the kind, but notes in sentence 4 that the alternative barrel definition is to be understood as being included in the scope of protection of the invention. This rather indicates a safeguard against possible circumventions of the running definition in claim 1 of the citation and cannot justify interpreting the description with a view to an unclaimed advantage.

30 IV. The decision of the Patent Court does not prove to be correct in the result for other reasons either. The last defended subject matter of the patent in suit is patentable.

31 1. A further development of the teaching of K14, in particular also of the text passage in the last paragraph of the description of K14, to the subject matter of the patent in suit with the feature groups 5 and 6 did not result in an obvious way from further state of the art or the general knowledge of the skilled person. In this respect, there is no indication, suggestion or other reason to include the following (or the preceding) non-zero word in the coding of multi-

valued signal sequences such as a video signal not only when determining the length of a run of zero words, but to subject the signal values represented by a sequence of zero words and a following non-zero word to a Huffman coding as one (total) event.

32 a) The K14 itself does not contain any hints or suggestions in this direction, because it exclusively describes the concept of using different Huffman code tables to code the values of non-zero words separately from the run lengths with different Huffman codes.

33 b) Neither does the paper "Scene Adaptive Coder" by Wen-Hsiung Chen and William K. Pratt in IEEE Transactions on Communications, March 1984, p. 225 (K8) contain a suggestion for an appropriate coding according to feature group 5.

34 Like K14, K8 describes a coding method for compressing image signals that have been transformed, among other things, in a blockwise cosine transform. In terms of a Huffman coding, it shows the use of two code tables, one for the length of uninterrupted sequences of zero words and one for the values of non-zero words. In order to distinguish which of the two code tables a code has been taken from, a runlength prefix code is encoded at the end of a sequence of non-zero words, preceding the code representing the number of uninterruptedly following zero words (K8, p. 227 f.).

35 Thus, the teaching of K8 is essentially the same as that of K14 with respect to the coding scheme. According to the teaching of K8, only a third Huffman code table is not required for coding the number of uninterrupted consecutive non-zero words because, in order to determine the end of an uninterrupted sequence of non-zero words, a prefix code is sent between the code representing the value of such a word and the code representing the number of zero words uninterruptedly following it, which distinguishes the two types of codes. This does not correspond to feature group 5 because a Huffman code word is not formed from a Huffman code event composed of a sequence of zero words and a following or preceding non-zero word.

36 The K8, like the K14, follows the concept of using different Huffmann code tables for encoding the values of non-zero words and the length of a sequence of zero words and taking advantage of the fact that, because of the lower variance of the events to be encoded in each case, the Huffman code words can be shorter. The K8 does not contain any indication to code mixed forms between the two word sequences to be coded. In particular, it does not describe to include the respective following or the respective preceding non-zero word in the sense of a single Huffman code event for the coding of a sequence of zero words.

37 2. The subject matter of patent claim 1 in the last defended version has also not resulted from the further citations in an obvious way.

38 a) The US patent specification 4 092 676 (K16) concerns the coding of a binary image signal which is composed exclusively of black and white dots, as is known, for example, from a telefax transmission.

39 Such a signal does not correspond to feature 4, because in view of the binary structure and valence of the signals, there is no starting point for subjecting them to a blockwise cosine transformation. The K16 shows with its embodiment example to figure 4 a coding in each case with inclusion of the next element of another type after a sequence of elements of the same type according to the feature groups 5 and 6. However, this results from the peculiarity that due to the binary structure of the signals after the transmission of a sequence of signals of the one value (for example 0) according to the logic of this structure only a signal of the respective other value (for example 1) can follow. Therefore, there is no need to code the one following element separately, because this element cannot take any other value in the binary structure. Because of these special features, the skilled person had no reason to use the teaching of K16 for the further development of an encoding method for encoding multivalued signals.

40 b) The US patent specification 3 984 833 (K15) and the paper "Upper Bound, Lower Bound and Run-Length Substitution Coding" in the NTC'77 Conference Record, Volume 3, p. 49:3-1 to 49:3-6 (K20) also concern the coding of a binary image signal. Therefore, for the reasons stated with respect

to K16, a further development to the subject matter of the patent in suit was not suggested.

41 c) The American patent specification 4 494 151 (K18) concerns a coding method for data words consisting of four bits. The method does not show any Huffman coding and thus does not correspond to feature group 5. For this reason, the skilled person also does not take from it any suggestion to combine several data words of different types for the formation of a Huffman code event.

42 d) The further citations are even further removed from the subject matter of the patent in suit.

43 3. The subject matters of claim 9 and the further claims of the last defended version are also patentable for the reasons stated, because they each provide for the application of a method according to claim 1 or concern a circuit arrangement suitable for carrying out such a method.

44 V. The decision on costs is based on Sec. 121(2) Patent Act, Sec. 92(2) No. 1 Code of Civil Procedure.

Meier-Beck Gröning Hoffmann

Kober-Dehm Marx

Previous instance:
Federal Patent Court, judgment of 30 November 2016 – 5 Ni 58/11 (EP) –