United States District Court,
E.D. Texas, Texarkana Division.

LG ELECTRONICS, INC,
Plaintiff.
v.
HITACHI, LTD., et al,
Defendants.

Civil Action No. 5:07-CV-90 (DF)

Dec. 8, 2008.

Background: Holder of patents relating to digital audio systems brought action against competitor, alleging infringement.

Holding: The District Court, Folsom, J., held that terms relating to patent for digital data player and associated processing and storage methods would be construed.

So ordered.

6,721,709. Construed.

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CLAIM CONSTRUCTION ORDER (3 OF 4) REGARDING U.S. PATENT NO. 6,721,709

DAVID FOLSOM**, District Judge.**

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I. Introduction

Please see Dkt. No.90 for the claim-construction introduction and claim-construction legal principles. This order construes the third of four asserted patents. For brevity purposes, the introductory material and legal principles are included only in the first order, which construes the disputed terms of U.S. Patent No. 6,404,418.

II. U.S. Patent No. 6,721,709

The '709 Patent entitled, "Digital Data Player, and Data Processing Method and Data Storage Medium for the Same," issued on April 13, 2004 to Jae-ha Yoo and Myeong-Joon Kang, from Application 09/556,438, filed on April 24, 2000, that claims priority to a Korean application filed April 24, 1999. On its face, the '709 Patent is assigned to LG Inc.

A. Overview

The '709 Patent "relates in general to enhancing the memory utilization efficiency of a digital data player such as an MP3 player, and more particularly to a digital data player, and a data processing method and a data storage medium for the same, in which information with a relatively small unit-capacity such as a voice or text is stored for reproduction in memory space remaining after files with relatively large unit-capacities such as a music file are assigned." '709 Patent, col. 1, lines 8-15. According to the abstract:

In the digital player, a decoder, having at least first and second decoding functions, identifies a type of digital data output from a data storage medium. Based on the identification, the decoder selects one of the first and second decoding functions, and decodes the output digital data using the selected decoding function. A converter converts the decoded digital data to analog. To store digital data on the data storage medium, an encoder encodes a first type of digital data at a first compression rate, and stores the encoded first type of digital data on the data storage medium, which stores digital data of a second type encoded at a second compression rate. The first compression rate is higher than the second compression rate. A selector, having at least a first and second input for the first type of digital data, selectively outputs the first type of digital data received at one of the first and second inputs to the encoder.

1. Background

The '709 Patent, by way of background, points to an MP3 player as an example of a "digital data player * * * capable of readily downloading and reproducing desired music from a computer communication network." '709 Patent, col. 1, lines 17-20. According to the '709 Patent, an MP3 player "reproduces audio from an MP3 file," and, as said to be shown in the prior art device of Figure 1:

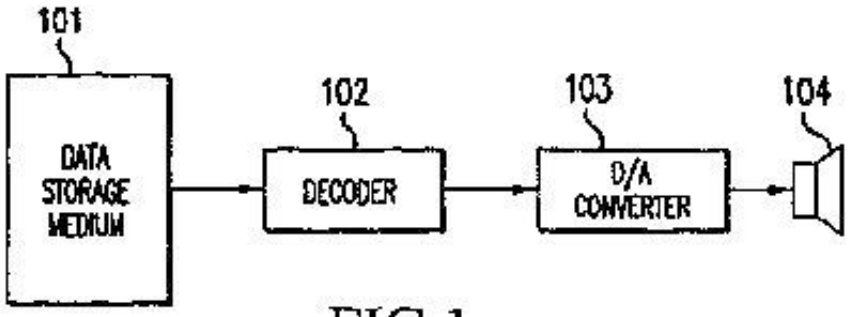


FIG.1
PRIOR ART

Figure 1 "includes a data storage medium 101 for storing an MP3 file (i.e., compressed according to an MPEG1 Layer3 coding technique), a decoder 102 for decoding an MP3 bit stream from the data storage medium 101 according to a predetermined decoding algorithm to output a sound signal in a digital form, and a digital/analog (D/A) converter 103 for converting the digital sound signal from the decoder 102 into an analog sound signal and for outputting the converted analog sound signal to a loudspeaker 104." '709 Patent, col. 1, lines 31-40. The '709 Patent explains that "[t]he data storage medium 101 provides an MP3 bit stream to the decoder 102" for decoding "to output a digital sound signal." A "D/A converter 103" then "converts the digital sound signal * * * into an analog sound signal," which is output "to the loudspeaker 104." '709 Patent, col. 1, lines 48-54.

Figure 2 is said to "illustrate[ ] an example of the data storage medium 101 in which MP3 files of M music tunes are stored." '709 Patent, col. 1, lines 46-47.



FIG.2
PRIOR ART

According to the specification, "one music tune occupies a 35~-Mbyte memory area," resulting in "an idle area 101A * * * in the data storage medium 101" "even when the capacity to store music tunes has been filled." That is, "[t]he idle area 101A has a capacity of about 3 Mbytes when the music tune capacity of the data storage medium 101 has been filled." The '709 Patent explains that "the conventional MP3 player [thus] has a disadvantage in that the idle area in the high-cost memory 101 remaining after the music files are stored is left unused, resulting in inefficient resource utilization." '709 Patent, col. 1, lines 55-64.

2. Disclosure

The "Summary of the Invention" sets forth three "object[s] of the present invention:" (1) "to provide a digital data player in which use is made of the idle area of a digital data storage medium," (2) "to provide a method for storing additional information in an idle area of a memory used for a digital data player," and (3) "to provide a data storage medium for a digital data player which has a plurality of areas for storing digital data of different compression rates." '709 Patent, col. 2, lines 1-9. The '709 Patent provides a detailed disclosure of two devices said to meet those objects, namely, a "multi-purpose digital data player" said to store MP3 files, text and speech, and a "speech audible digital data player having a recorder and a player portion." The '709 Patent also provides a detailed disclosure of a "data storage medium," and in particular, the "idle area" thereof.

a) Multipurpose Digital Data Player

The '709 Patent illustrates an exemplary "multipurpose digital data player" in Figure 3:

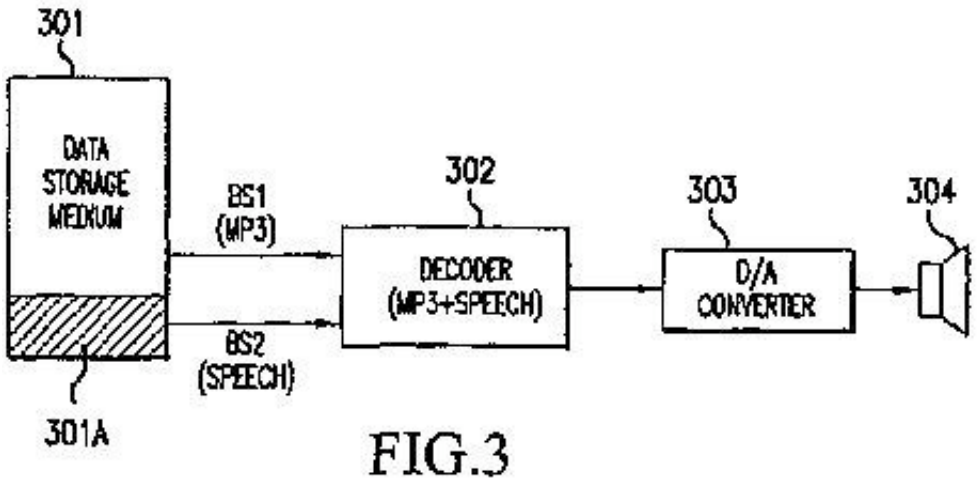


FIG.3

The specification explains that "idle area 301A in the data storage medium 301 signifies the remaining storage area after MP3 file bit streams are stored in the data storage medium 301." In the embodiment of Figure 3, the data storage medium 301 uses the idle area 301A to store "speech bit stream compressed according to any well-known speech signal compression technique," although the specification states that the idle area 301A could be used to store "a variety of signals or information." '709 Patent, col. 3, lines 34-41.

According to the specification, "the decoder 302 checks a header of an output bit stream," and if the header identifies the output bit stream as "an MP3 file bit stream BS1, then the decoder 302 decodes the bit stream BS1 using the MP3 decoding algorithm." Otherwise, if the header identifies the output bit stream as a "speech bit stream BS2, then the decoder 302 decodes the bit stream BS2 using the speech decoding algorithm." Then, "the digital MP3 file signal or digital speech signal from the decoder 302 is D/A-converted by the D/A converter 303 and then output to the loudspeaker 304." '709 Patent, col. 3, lines 42-57.

Apparently, "a speech signal can be output for a relatively long period of time even when using the idle area 301A" because "[t]he field of speech compression [had] made rapid progress" and could provide "relatively good sound quality * * * even in low transmission rate environments of 24~ Kbps." That meant that a "worst case" "compression rate of 4 Kbps" for "about five minutes" of speech required only "about 0.15 Mbyte" of memory space. '709 Patent, col. 3, line 58-col. 4, line 1.

b) Digital Data Recorder/Player

The '709 Patent discloses "a block diagram of a digital data player in accordance with an alternative embodiment" in Figure 4:

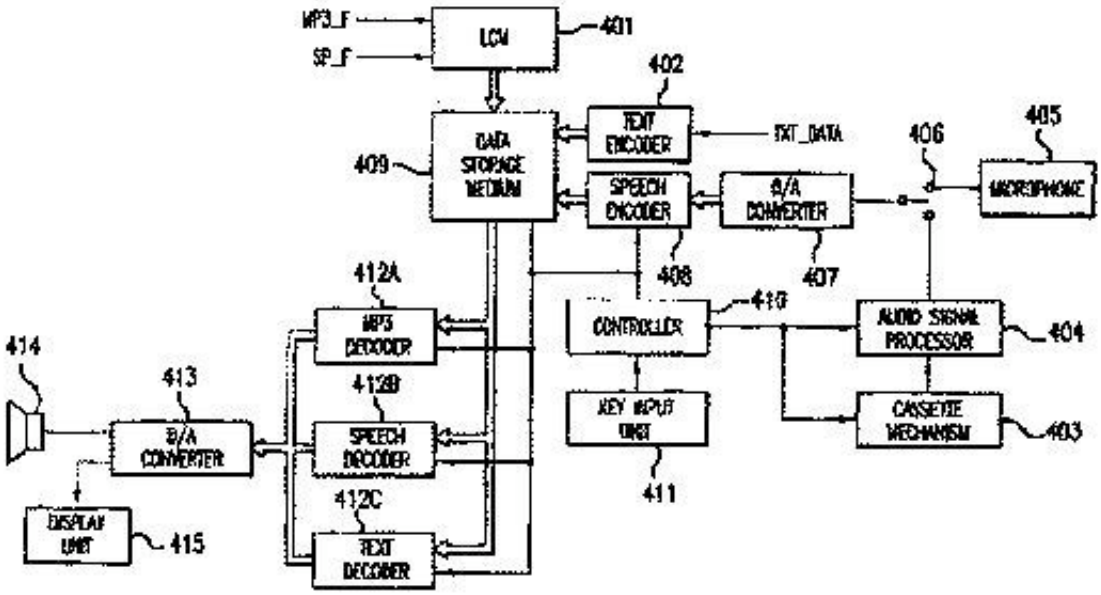


FIG.4

This embodiment is used to explain how "MP3 files MP3_F are recorded and reproduced." According to the '709 Patent, the "LCM 401 receives the MP3 files MP3_F from the Internet * * * and downloads the received MP3 files to the data storage medium 409," which is controlled by "controller 410" "in response to a control command inputted through the key input unit 411 to read a corresponding MP3 file from the data storage medium 409." "The MP3 decoder 412A restores an output MP3 file bit stream from the data storage medium 409 to the original digital signal, which is then converted into an analog signal by the D/A converter 413 and outputted to the speaker 414." '709 Patent, col. 4, line 59-col. 5, line 4.

The '709 Patent also explains how the digital data recorder/player is used to (1) receive and play speech files from the Internet, (2) record and play voice files and (3) record and play text data files.

Regarding the "speech file SP_F," "[t]he LCM 401 receives the speech file SP_F from the Internet * * * and downloads the received speech file to the idle area of the data storage medium 409." The specification uses "the contents of a lecture for education" as an exemplary speech file. According to the '709 Patent, the speech file SP_F "becomes much shorter in down-load time than the MP3 file MP3_F because it is transmitted and stored * * * in a compressed form," FN1 although it "may be somewhat degraded in sound quality." "Then, the controller 410 reads the [stored] speech file * * * in response to a user's request and supplies the read speech file to the speech decoder 412B," which "restores the read speech file to the original digital signal." After conversion "into an analog signal by the D/A converter 413," the speech file is "outputted to the speaker 414." ' 709 Patent, col. 5, lines 7-25.

FN1. By comparison, the '709 Patent explains, "it typically takes about 20 minutes to download one MP3 file MP3_F." '709 Patent, col. 5, lines 16-18.

Regarding the "user voice signal from the microphone 405 or the audio signal from the cassette mechanism 403," the specification explains that the "controller 410 controls the cassette mechanism 403 in response to the user's request such that the cassette mechanism 403 reproduces an audio signal. The audio signal

processor 404 processes the audio signal * * * and then applies the processed audio signal to one input terminal of the switch 406, the other input terminal of which is supplied with the user voice signal from the microphone 405." The specification further explains that the switch 406 "performs a switching operation under the control of the controller 410, or manually, to select the cassette audio signal or the microphone audio signal." The selected audio signal is then "A/D-converted by the A/D converter 407, encoded * * * by the speech encoder 408 and stored in the idle area of the data storage medium 409." The stored audio signal may be subsequently "repetitively reproduced" "under the control of the controller 410 along the same path as the speech file." According to the specification, "[a]s a result, such repetitive reproduction can be much more conveniently performed as compared with self-repetitive reproduction of the cassette mechanism 403." '709 Patent, col. 5, lines 26-50.

Finally, regarding "the operation of recording and reproducing the text data TXT_DATA," the specification explains that "external text data TXT_DATA is encoded * * * by the text encoder 402 and stored in the idle area of the data storage medium 409. Then, the controller 410 reads the text data from the idle area of the data storage medium 409 and supplies the read text data to the text decoder 412C. The text decoder 412C restores the read text data to the original digital signal," which is then "converted into an analog signal by the D/A converter 413 and displayed on the display unit 415." According to the '709 Patent, that "text data display function can be utilized in various ways such as an auxiliary display for a lecture." '709 Patent, col. 5, lines 51-63.

c) Data Storage Medium Idle Area

The specification also describes the "idle area" of the "data storage medium" in more detail with reference to Figure 5:

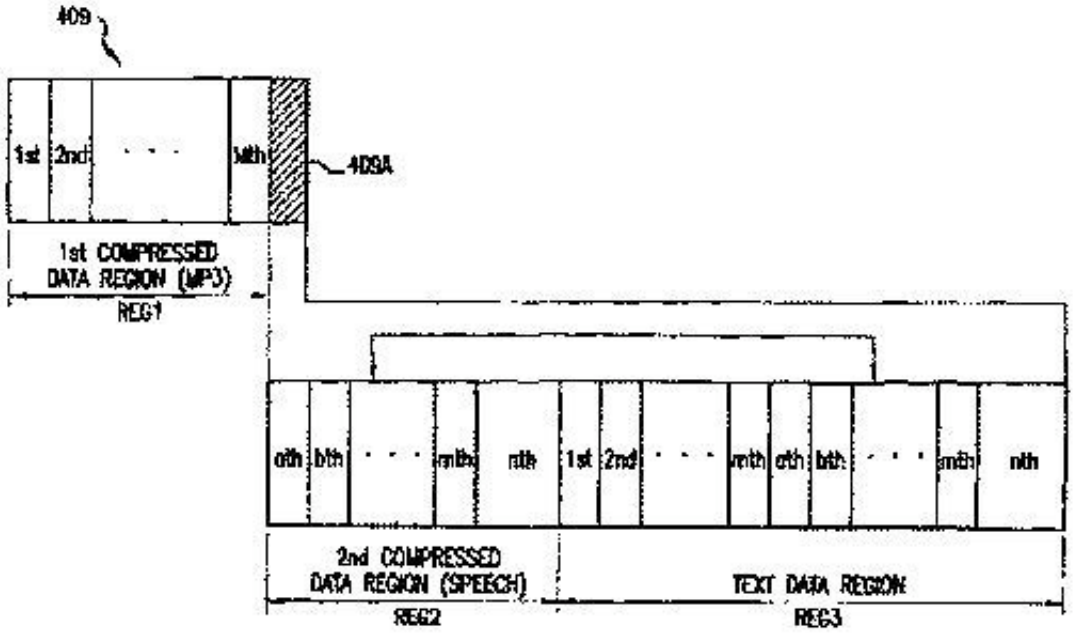


FIG.5

According to the '709 Patent, Figure 5 illustrates "data format of the idle area 409A of the data storage medium 409." The '709 Patent explains that "the data storage medium 409 comprises a first compressed data region REG1 for storing a plurality of MP3 files 1-M in a compressed form, a second compressed data region REG2 in the idle area 409A for storing a plurality of speech data a-m and n in a compressed form, and a text data region REG3 in the idle area 409A for storing a plurality of text data 1-m, a-m and n." '709 Patent, col. 5, line 64-col. 6, line 6.

The '709 Patent further explains that "[b]esides being stored and reproduced independently, the MP3, speech, and text data can be stored in association with one another, and reproduced cooperatively in accordance with that association:"

When two or more types of data are to be stored and reproduced in association, header information in the primary data type (MP3 data or speech data) includes addresses pointing to the associated data (speech and/or text data). After the primary data is stored, the controller 410 identifies the associated data based on header information included therein. The controller 410 then determines the association between specific primary and associated data units based on the address pointers in the header of the primary data, and the corresponding addresses in the headers of the associated data. Then, as the associated data is stored in the idle area 409A, the controller 410 changes the address pointers in the primary data to the memory addresses in the idle area 409A where the corresponding associated data is stored

During reproduction, the headers of the reproduced primary data are accessed. From the headers, the controller 410 determines that the idle area 409A stores associated data. And, from the address pointers, the controller 410 causes the associated data to be output from the data storage medium 409 in synchronization with the output of the primary data.

'709 Patent, col. 6, lines 7-29.

The '709 Patent provides three examples of cooperative reproduction: (1) "when the MP3 file 1 stored in a compressed form in the first compressed data region REG1 is decoded and outputted, the corresponding text data 1 from the text data region REG3 is outputted and displayed;" thus, "the user is able to listen to desired MP3 music while viewing character information such as words or a tune name on the display unit," (2) "when the speech data 'a' stored in a compressed form in the second compressed data region REG2 is decoded and outputted, the corresponding text data 'a' from the text data region REG3 is outputted and displayed;" thus, "the user is able to listen to the contents of a lecture while viewing character information such as the main points of the lecture on the display unit," and (3) "the speech data 'n' from the second compressed data region REG2 is individually outputted as mentioned above and, similarly, the text data 'n' from the text data region REG3 is individually outputted and displayed in association therewith." '709 Patent, col. 6, lines 30-48.

3. The Asserted Claims

LG asserts claims 1, 2 and 3, all of which are reproduced below for reference:

1. A data reproducing device for reproducing data including at least two types of audio data, wherein at least one of said at least two types of audio data is associated with text data for reproduction, said at least two types of audio data including:

a first type of audio data; and

a second type of audio data having been formatted in a different manner from the first type of audio data, wherein a compression rate is one factor causing the difference in formatting manner, the data reproducing device comprising:

a first decoder provided to decode the first type of audio data;

a second decoder provided to decode the second type of audio data in a different decoding manner from the first decoder, wherein the first decoder and the second decoder are functionally separated from each other; and

a selector, having at least a first output and a second output separated from each other, for selectively directing one of said outputs to the corresponding one of the first decoder and the second decoder.

2. The data reproducing device of claim 1, further comprising:

a third decoder, having a third decoding function, and decoding digital data according to said third decoding function.

3. The data reproducing device of claim 2, wherein said first decoder decodes MP3 files; said second decoder decodes speech; and said third decoder decodes text.

'709 Patent, col. 7, lines 2-32.

B. Claim Construction

1. Agreed Terms

The parties agree to constructions for the following terms:

Claim Term	***Agreed Construction***
"first type of audio data"	Digital data comprising formatted audio information where compression rate is one defining factor of the format type.
"second type of audio data"	Digital data comprising formatted audio information formatted differently than said first type of audio data, where compression rate is one defining factors [*sic*] in the differentiation.
"decoder decodes speech"	The decoder decodes audio data including spoken word that is compressed differently than an MP3 file.
"decoder decodes text"	A decoder that decodes character information stored in association with audio data for reproduction.

See Dkt. No. 64, at 17-18, 22.

2. Disputed Terms

a) "audio data is associated with text data for reproduction"

This phrase appears in the preamble of claim 1 (the disputed term is in boldface):

1. A data reproducing device for reproducing data including at least two types of audio data, wherein at least one of said at least two types of **audio data is associated with text data for reproduction,** said at least two types of audio data including: * * * *

'709 Patent, col. 7, lines 2-23 (emphasis added).

(1) The Parties' Positions

The parties propose the following constructions:

LG	***Hitachi***
Text data is stored in association with audio data and reproduced cooperatively in accordance with that association.	Audio data and its related text data are stored in separate regions of a memory, with a header in the audio data that points to the associated text data, the text data being stored in a dedicated, idle region of the memory.

See Dkt. No. 64, at 16.

LG relies on column 6, lines 7-10 of the specification to support its proposed construction:

Besides being stored and reproduced independently, the MP3, speech, and text data can be stored in association with one another, and reproduced cooperatively in accordance with that association.

Dkt. No. 47, at 33. According to LG, Hitachi "seek[s] to add extraneous references to particular 'regions of a memory' where 'audio data' and 'text data' is stored as well as reading in 'header' information." *Id*. LG urges that "none of the asserted claims recite the word 'memory' or 'header,' " and that those "terms are recited in the specification in connection with one preferred embodiment." *Id*. LG further urges that claim 5, which depends from claim 1, recites "read header" and a "data storage medium," and that claim differentiation raises a presumption against Hitachi's proposed construction. *Id*. at 33-34.

Hitachi responds that the patentee defined this phrase in column 6, lines 9-23 of the '709 Patent:

When two or more types of data are to be stored and reproduced in association, header information in the primary data type (MP3 data or speech data) includes addresses pointing to the associated data (speech and/or text data). After the primary data is stored, the controller 410 identifies the associated data based on header information included therein. The controller 410 then determines the association between specific primary and associated data units based on the address pointers in the header of the primary data, and the corresponding addresses in the headers of the associated data. Then, as the associated data is stored in the idle area 409A, the controller 410 changes the address pointers in the primary data to the memory addresses in the idle are 409A where the corresponding associated data is stored.

Dkt. No. 48, at 47. According to Hitachi, "[t]he specification discloses three instances of reproducing data 'in association,' " that "[e]ach require [ ] storing a primary type of data in one memory region while storing its 'associated' data in a separate idle region." *Id*. Hitachi further provides two other reasons this phrase "must be construed to require storing data in the idle region of a memory," namely, (1) "storing data in the idle region is the purported invention, and when the preferred embodiment is described as the invention itself, the claims are not entitled to broader scope than that embodiment," and (2) "it is entirely appropriate to limit

the scope of a claim to an embodiment described in the specification, if that embodiment practices the essential feature of the invention." *Id*. at 47-48. Hitachi cites MBO Labs., Inc. v. Becton, Dickinson & Co., 474 F.3d 1323, 1330 (Fed.Cir.2007) in support and contends "storing text or speech data in the idle memory region" is the essential feature of the invention that makes *MBO Labs*. applicable. *Id*. In support, Hitachi urges that during prosecution of a Korean counterpart application, LG distinguished a cited reference "by arguing that the essential feature of its application was the use of an idle region of memory." According to Hitachi, "LGE's statements to distinguish KR 33061 are particularly relevant in this case because LGE failed to disclose the reference during U.S. prosecution." *Id*. at 48 n. 27.

Hitachi argues that without the limitations "header" and particular "regions of memory," "a device practicing claim 1 would fail to solve any of the identified problems of the prior art and would fail to meet any of the stated objects of the purported invention. Such a broad construction is improper, as claim terms should be interpreted in light of the problems discussed, as well as the solution provided by the patentee." Dkt. No. 48, at 48. Finally, Hitachi contends that claim differentiation does not apply because "[t]here are many differences between claims 1 and 5 that are unrelated to Defendants' construction." *Id*. at 49.

LG replies that Hitachi "attempt[s] to improperly limit the claims reasoning that certain aspects of the one preferred embodiment represents the 'essential element' or 'heart of the invention.' " Dkt. No. 55, at 27. LG cites Allen Eng'g Corp. v. Bartell Indus., Inc., 299 F.3d 1336, 1345 (Fed.Cir.2006), in support, arguing that there is no legally recognized "essential element" of an invention. *Id*. at 27-28. LG further contends, citing *MBO Labs*., that there is no "reference in the disputed claim language which can be associated with 'idle regions of a memory' where 'text data' is stored and there is no reference associated with reading 'header' information." *Id*.

LG further argues that Hitachi's "assert[ion] that without narrowing limitations none of the stated objectives would be satisfied * * * is neither true nor a correct claim construction application." Dkt. No. 55, at 28. According to LG, "it is not a requirement that the claimed invention capture every objective disclosed in the specification," and there was no disclaimer of subject matter. *Id*.

Finally, LG contends Hitachi relies on a "clear misstatement" of the doctrine of claim differentiation. Dkt. No. 55, at 29. In LG's view, "[c]laim 5, depending from independent claim 1, recites a 'read header' and a 'data storage medium,' the two additional limitations Defendants seek to add to independent claim 1. *Id*. Thus, the presumption is that the term 'audio data in association with text data' does not include these additional limitations," and "Defendants have not rebutted this presumption." *Id*.

In reply, Hitachi again argues LG "explicitly defined the 'associated with' limitation of claim 1 in the specification," citing column 6, lines 10-29 and annotating Figure 5 as follows:

For example, when the MP3 file **1** stored in a compressed form in the first compressed data region REG**1** is decoded and outputted, the corresponding text data **1** from the text data region REG**3** is outputted and displayed. As a result, the user is able to listen to desired MP3 music while viewing character information such as words or a tune name on the display unit.

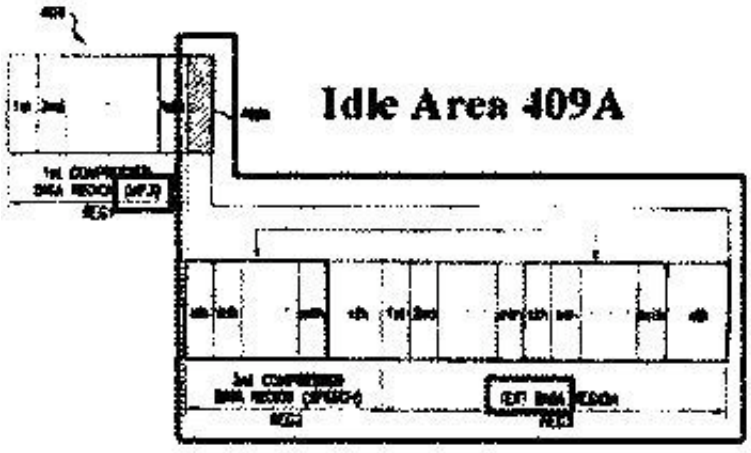


FIG.5

Dkt. No. 63, at 15-16. Hitachi contends "the 'associated with' limitation is clearly defined as encompassing the stated invention (the use of an 'idle area' memory region)," and further urges that "*every* embodiment of the '709 Patent requires the use of the 'idle area' memory region to store data, and *every* storage medium described in the specification has an 'idle area.' " Id. at 17. Hitachi also urges that LG "cannot say that the definition of 'associated with' at Col. 6:7-29 is part of an embodiment not claimed in claim 1, and simultaneously argue that the same portion of the specification discloses the algorithm supporting another part of claim 1." Id.

Next, Hitachi argues that "there are only three stated 'objects of the invention,' and all three support [Hitachi's] construction and the specification's definition of 'associated with.' " Dkt. No. 63, at 17. According to Hitachi, "[t]he first two objects of the invention require the use of the 'idle area', and the third requires 'a plurality of areas for storing digital data of different compression rates.' " *Id*. at 17-18. Hitachi relies on the specification at column 1, line 66 through column 2, line 8:

[I]t is an object of the present invention to provide a digital data player in which use is made of the idle area of a digital data storage medium. It is another object of the present invention to provide a method for storing additional information in an idle area of a memory used for a digital data player. It is yet another object of the present invention to provide a data storage medium for a digital data player which has a plurality of areas for storing digital data of different compression rates.

Id. at 18.

Hitachi urges that LG's "proposed construction would result in a claim that fails to meet any of the 'objects of the invention,' " and that such a result is improper. Dkt. No. 63, at 18. Hitachi also argues that "the 'associated with ... for reproduction' limitation in claim 1 provides the necessary textual reference," as required by *MBO Labs*. *Id*. Finally, Hitachi contends that claim differentiation does not preclude its construction because "the doctrine of claim differentiation cannot focus merely on the presence or absence of a single word or phrase in a claim, nor ignore the relevant issue-the full scope of the two claims at issue ." *Id*. While Hitachi's construction and claim 5 share the single word "header," Hitachi urges that "even a cursory comparison reveals claim 5 does not contain the same limitations as [Hitachi's] construction." *Id*.

(2) Construction

[1] The phrase at issue, *i.e.,* "audio data is associated with text data for reproduction," does not recite or suggest the "header," "memory," "separate regions of memory" or "dedicated, idle region of the memory" elements urged by Hitachi. Nor does claim 1 otherwise indicate the phrase should require those elements.

With respect to LG's claim differentiation argument regarding claims 1 and 5, some of the limitations proposed by Hitachi appear in claim 5, which depends from claim 1:

1. A data reproducing device for reproducing data including at least two types of audio data, wherein at least one of said at least two types of audio data is associated with text data for reproduction, said at least two types of audio data including:

a first type of audio data; and

a second type of audio data having been formatted in a different manner from the first type of audio data, wherein a compression rate is one factor causing the difference in formatting manner, the data reproducing device comprising:

a first decoder provided to decode the first type of audio data;

a second decoder provided to decode the second type of audio data in a different decoding manner from the first decoder, wherein the first decoder and the second decoder are functionally separated from each other; and

a selector, having at least a first output and a second output separated from each other, for selectively directing one of said outputs to the corresponding one of the first decoder and the second decoder.

5. The data reproducing device of claim 1, wherein said controller determines whether at least another type of digital data is associated with said identified type of digital data based on said *read header,* and controls output of said identified type of digital data and said another type of digital data from said data storage medium such that said identified type of digital data and said another type of digital data are supplied to an appropriately different ones of said first and second decoders for decoding.

'709 Patent, col. 7, lines 2-23, col. 7, line 38-col. 8, line 3 (emphasis added). "Under the doctrine of claim differentiation, dependent claims are presumed to be of narrower scope than the independent claims from which they depend." *See* AK Steel Corp. v. Sollac and Ugine, 344 F.3d 1234, 1242 (Fed.Cir.2003). *See also* 35 U.S.C. s. 112, para. 4 (2000) ("[A] claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers."). Presumptively, then, claim 1 does not include the additional limitations recited in claim 5. Of course, "[p]resumptions are rebuttable." Regents of Univ. of Cal. v. Dakocytomation Cal., Inc., 517 F.3d 1364, 1375 (Fed.Cir.2008) ("Here ... the prosecution history overcomes the presumption; the correct construction of 'heterogeneous mixture' is one that excludes repetitive sequences, notwithstanding the presence of certain dependent claims that do not exclude them."). Hitachi further contends those elements are essential to the invention, and thus a required part of the claims.

However, the specification does not require what Hitachi urges. As Hitachi notes, the specification explains that "[t]he present invention relates in general to enhancing the memory utilization efficiency of a digital

data player * * *, and a data processing method and a data storage medium for the same, in which information with a relatively small unit-capacity such as a voice or text is stored for reproduction in memory space remaining after files with relatively large unit-capacities such as a music file are assigned." '709 Patent, col. 1, lines 8-15.

Apparently, "in the MP3 player, one music tune occupies a 35~-Mbyte memory area. As a result, even when the capacity to store music tunes has been filled, an idle area 101A exists in the data storage medium 101. The idle area 101A has a capacity of about 3 Mbytes when the music tune capacity of the data storage medium 101 has been filled." '709 Patent, col. 1, lines 54-5. In other words, the "idle area" was simply the space left over after the memory had been filled with music. Given the apparently high cost of memory at that time, "the conventional MP3 player has a disadvantage in that the idle area in the high-cost memory * * * remaining after the music files are stored is left unused, resulting in inefficient resource utilization." '709 Patent, col. 1, lines 60-63. The "Summary of the Invention" thus explains that "the present invention has been made in view of the above problem," and describes three "object[s] of the present invention:"

[1] "to provide a digital data player in which use is made of the idle area of a digital data storage medium"

[2] "to provide a method for storing additional information in an idle area of a memory used for a digital data player"

[3] "to provide a data storage medium for a digital data player which has a plurality of areas for storing digital data of different compression rates"

'709 Patent, col. 1, line 67-col. 2, line 9 (numbering added). Two of those three "objects," therefore, called for using the memory "idle area," and the third called for using a "plurality of areas" in memory.

But the "digital players" and "digital data recorder" described in the "Summary of the Invention" for achieving those objects do not mention utilizing the "idle area" or storing audio data and related text area in "separate regions of a memory," as Hitachi urges:

These and other objects are achieved by providing a digital player, comprising a decoder, having at least first and second decoding functions, identifying a type of digital data output from a data storage medium, selecting one of said first and second decoding functions based on said identified type, and decoding said output digital data using said selected decoding function and a converter converting said decoded digital data to analog.

These and other objects are further achieved by a digital player, comprising a first decoder, having a first decoding function, and decoding digital data according to said first decoding function, a second decoder, having a second decoding function, and decoding digital data according to said second decoding function, a controller identifying a type of digital data output from a data storage medium, selectively sending said output digital data to one of said first and second decoder based on said identified type, and a converter converting said decoded digital data output from said first and second decoders to analog.

These and other objects are still further achieved by a digital data recorder, comprising a first encoder encoding a first type of digital data at a first compression rate, and storing said encoded first type of digital data on a data storage medium, which stores digital data of a second type encoded at a second compression rate, said first compression rate higher than said second compression rate, and a selector, having at least a

first and second input for said first type of digital data, and selectively outputting said first type of digital data received at one of said first and second inputs to said encoder.

'709 Patent, col. 2, lines 10-37. The asserted claims, of course, recite a "data reproducing device," and similarly do not-as noted above-recite the "idle area" or separate storage in separate "regions" of memory. Rather, those devices include the sorts of things that actually appear in the asserted claims, *i.e.,* "a first decoder," "a second decoder," etc. It is not at all clear, therefore, that the elements urged by Hitachi are "essential" to the invention.

Indeed, those elements do not appear in the "data storage medium," the "method of reproducing digital data" or " method of recording digital data" also described in the "Summary of the Invention," although disclosure of the "data storage medium" does refer to different "regions" thereof:

These and other objects are also achieved by a data storage medium for a digital data player comprising a first compressed data region for storing a first digital data bit stream compressed according to a first compression algorithm, a second compressed data region for storing a second digital data bit stream compressed according to a second compression algorithm having a compression rate higher than that of said first compression algorithm, said second compressed data region forming one region of a specific area on said data storage medium, and a text data region for storing text data, said text data region forming another region of said specific area.

These and other objects are additionally achieved by a method of reproducing digital data, comprising identifying a type of digital data output from a data storage medium, selecting one of a first and second decoding function based on said identified type, decoding said output digital data using said selected decoding function, and converting said decoded digital data to analog.

These and other objects are further achieved a method of recording digital data, comprising selectively outputting a first type of digital data received at one of a first and second input, encoding said output first type of digital data at a first compression rate, storing said encoded first type of digital data on a data storage medium, which stores digital data of a second type encoded at a second compression rate, said first compression rate higher than said second compression rate.

'709 Patent, col. 2, lines 38-64.

Of course, the specification does describe what Hitachi urges:

Besides being stored and reproduced independently, the MP3, speech, and text data can be stored in association with one another, and reproduced cooperatively in accordance with that association. When two or more types of data are to be stored and reproduced in association, header information in the primary data type (MP3 data or speech data) includes addresses pointing to the associated data (speech and/or text data). After the primary data is stored, the controller 410 identifies the associated data based on header information included therein. The controller 410 then determines the association between specific primary and associated data units based on the address pointers in the header of the primary data, and the corresponding addresses in the headers of the associated data. Then, as the associated data is stored in the idle area 409A, the controller 410 changes the address pointers in the primary data to the memory addresses in the idle area 409A where the corresponding associated data is stored.

'709 Patent, col. 6, lines 7-23. In practice, for example, "when the MP3 file 1 stored in a compressed form in the first compressed data region REG1 is decoded and outputted, the corresponding text data 1 from the text data region REG3 is outputted and displayed. As a result, the user is able to listen to desired MP3 music while viewing character information such as words or a tune name on the display unit." '709 Patent, col. 6, lines 30-36. And, it is worth noting, the first sentence of that passage states what LG urges, as well.

However, in disclosing the "Detailed Description of the Preferred Embodiments," the specification describes just that-embodiments-and the claims are not necessarily limited thereby. *See* Phillips v. AWH Corp., 415 F.3d 1303, 1323 (Fed.Cir.2005) ("[A]lthough the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments."). For example, the specification explains that Figure 3 shows "in block form the construction of a multi-purpose digital data player in accordance with *an embodiment* of the present invention." '709 Patent, col. 3, lines 16-18. Additionally, in providing "a detailed description * * * of the operation of the digital data player * * * in accordance with the preferred embodiment of the present invention," the specification explains that "[a]n idle area 301A in the data storage medium 301 signifies the remaining storage area after MP3 file bit streams are stored in the data storage medium 301," and that "*[p]referably,* the idle area 301A may be utilized to store a variety of signals or information." '709 Patent, col. 3, lines 30-38.

Furthermore, nothing in the specification describes the "idle area" as "dedicated." As noted above, the "idle area" is simply leftover memory space. In short, nothing in the intrinsic record compels a conclusion that the elements urged by Hitachi constitute "the invention." *Cf.* Honeywell Intern., Inc. v. ITT Indus., Inc., 452 F.3d 1312, 1318 (Fed.Cir.2006) ("Here, the written description uses language that leads us to the conclusion that a fuel filter is the only 'fuel injection system component' that the claims cover, and that a fuel filter was not merely discussed as a preferred embodiment. On at least four occasions, the written description refers to the fuel filter as 'this invention' or 'the present invention': * * *. The public is entitled to take the patentee at his word and the word was that the invention is a fuel filter. Moreover, the written description does not indicate that a fuel filter is merely a preferred embodiment of the claimed invention."). Thus, Hitachi's proposed construction must be rejected.

With respect to Hitachi's contention that LG's arguments during prosecution of a Korean counterpart application require what Hitachi urges, *see* Dkt. No. 48, at 70 n. 48, Hitachi has provided no explanation of the requirements for patentability in the Korean patent office. It is not clear, therefore, whether the patentees made the following "translated excerpt of LGE's statements during prosecution of Korean counterpart KR 14746" in response to patentability requirements unique to Korean law:

[DESCRIPTION OF OPINION]

The Notice to Submit Opinion of May 30, 2001 regarding patent application No. 14746 filed in 1999 reads as follows:

"Pursuant to the provisions set forth in Section 29 Paragraph 2 of the Patent Law, the subject invention is not patentable because "the invention described in Claims 1 to 9 of this Application can be easily accomplished, prior to the application thereof, by a person having ordinary skill in the art to which the said subject matter pertains, by way of the [prior] art cited below.

The present invention relates to a digital data player such as an MP3 player, in which information such as music or language study is stored for reproduction in memory space remaining after files with relatively

large unit-capacities such as music files are assigned. More particularly, it relates to a digital data player capable of voice hearing, comprising a memory means for storing a first and second digital bit stream or text data compressed by a different method or methods in their own memory space; a decoder for controlling the memory means according to user request and decoding said first and second digital data bit streams or text data in their own decoding manner, D/A converter for converting the digital signal of the digital data file outputted from said decoder to an analogue signal, which is then outputted to a speaker; or a means for outputting text data.

On the other hand, the cited invention published in unexamined patent gazette No.1998-033061 (July 25, 1998) relates to a device for writing and reading moving picture data, still picture data, and/or sound data integrally to and from a memory card, the device having first (129), second (125), and third encoders (135A, 135B) depending on the format of said data; first, second, and third decoders (153, 160, 165A, 165B); a memory controller (126); and a memory card (102).

To compare the present invention and the cited invention, they are identical in that they [both] use respective encoders (first, second, and third encoders), decoders (first, second, and third decoders), memory means (memory controller and memory card) as major elements. Even though the data format of the present invention is different from that of the cited invention, this is just a simple substitution. Also, adding a D/A converter for converting digital signal to analog to output the analog signal to the speaker is a well-known art used commonly while other features such as having a means for outputting text data can be easily conceived by those skilled in art. Therefore, the office cannot acknowledge the technical difficulties of the present invention."

In response to the above grounds for rejection, the opinion of the applicant is set forth in the following paragraphs:

1. We shall first take a look at the unexamined patent publication gazette no.1998-033061 (title: a picture data writing apparatus and method, a picture data reading apparatus and method, a picture data writing and reading apparatus and method and a memory card) (hereinafter referred to as "cited invention" in short).

As described in the scope of claims, the cited invention relates to:

"Claim 1. A picture data writing apparatus for writing fetched picture data into a memory card, comprising: first fetching means for fetching picture data; second fetching means for fetching sound data; identification code application means for applying a first identification code to the fetched picture data when the fetched picture data is moving picture data but applying a second identification code to the fetched picture data when the fetched picture data is still picture data and applying a third identification code to the fetched sound data; and writing means for writing the moving picture data, still picture data and/or sound data into said memory card together with the corresponding identification code or codes.

Claim 10. A picture data reading apparatus for reading out a memory card in which moving picture data, still picture data and/or sound data compressed by a predetermined method or methods are recorded together with a data identification code or codes for identification among the data, comprising: reading means for reading out data from said memory card; first decompression means for decompressing the moving picture data read out by said reading means; second decompression means for decompressing the still picture data read out by said reading means; third decompression means for decompressing the sound data read out by said reading means; and supply means for supplying the read out moving picture data, still picture data

and/or sound data to said first decompression means, second decompression means and/or third decompression means, respectively, in accordance with the identification code or codes.

The descriptions above show that the key technical construction of the cited inventions is different from that of the present invention.

2. More specific comparisons are provided in the following paragraphs.

1) In terms of Object

The object of the present invention is to provide a digital data player capable of voice hearing, in which information of different formats such as a voice or text is stored for reproduction in an idle area of digital data memory used for a digital data player such as an MP3 player. In comparison, the object of the cited invention is to provide a picture data writing apparatus and method, a picture data reading apparatus and method, a picture data writing and reading apparatus and method and a memory card by which moving picture data, still picture data, and/or voice data are selectively reproduced and outputted without having to use a pc by storing moving picture data, still picture data, and/or voice data onto the flash memory added to a digital still camera. Therefore, the object the cited invention strives to accomplish is dissimilar from the object of the present invention.
More specifically, the present invention aims to maximize the memory utilization efficiency of a digital data player, in which information with a relatively small unit-capacity such as a voice or language study (files) is stored for reproduction in memory space remaining after digital data such as MP3 [files] are assigned.

Meanwhile, the cited invention aims to write picture data, still picture data, and/or voice data onto and from the flash memory added to a digital still camera and to read out said data written on the flash memory without having to use "PC to display on a television. As such, the object of the cited invention is completely different from the clear-cut object of the present invention.

2) In terms of technical construction

As indicated in the Scope of Claims of the Amendments submitted on the same date as this Opinion, the key technical construction of the present invention relates to,
"[Claim 1]

A digital data player capable of voice hearing comprising: a storage means for storing compressed data having been received and compressing and storing signals directly entered by the user in some spaces; a plurality of data decompressing devices for decompressing the different types of compressed data stored on the storage device; and a D/A converter for converting the data outputted from said decompressing devices to analog and output the analog signal to a speaker.
[Claim 2]

The digital data player capable of voice hearing of claim 1, wherein the signal directly entered by the user is stored in a different audio compression manner from the compressed data having been received.
[Claim 3]

A digital data player capable of voice hearing, comprising: a storage means for storing different types of data received; a supply means for compressing and supplying the audio signal entered by the user to the storage means; a controller for controlling access to the storage means in accordance with the request of the

user to enable the output of the corresponding signal; and a plurality of decoders, each decoder for decoding corresponding data of different types outputted from the storage means.
[Claim 4]

A digital data player capable of voice hearing of claim 3, wherein the different types of data received are compressed music files and/or text files.
[Claim 5]

A digital data player capable of voice hearing of claim 3, wherein the supply means includes an encoder for encoding a voice signal entered through a microphone or a voice signal outputting from a cassette player.
[Claim 6]

A digital data player capable of voice hearing of claim 3, wherein the controller is constructed to repeatedly reproduce the voice signal stored on said memory means in accordance with user request.
[Claim 7]

A digital data player capable of voice hearing of claim 3, wherein the plurality of decoders includes a MP3 decoder, speech decoder, and text decoder."
However, the key technical construction of the present invention cannot be found in the description of the cited invention.

In the cited invention, still image data received by a CCD 122 are given to a DSP 124, in which an identification code denoting still image data is added to the data, the resulting data are compressed by the JPEG method in a data compression circuit 125 and the compressed data are written in a memory card 102. Moving image data received by the CCD 122 are given to a DSP 128, in which an identification code denoting still image data is added to the data, the resulting data are compressed by the MPEG method in a data compression circuit 129 and the compressed data are written in a memory card 102. Audio data inputted from outside are given to a DSP 134, in which an identification code denoting audio data is added to the data, the resulting data are compressed by the WAVE method in a data compression circuit 135A and the compressed data are written in the memory card 102. In addition, if a user manually operates the operation section 172 to direct it to display indices of data stored in the memory card 102, the CPU 171 accesses the memory card 102 through the memory controller 152 to read out data recorded in the memory card 102. The memory controller 152 can control whether or not to attach the sound data to the still picture data or moving picture data read out, or whether to output still picture data, moving picture data, or audio data separately. As such, the technical construction of the cited invention is completely different from that of the present invention.

More specifically, according to the present invention, a bit stream such as music or language study file is stored for reproduction in the idle area of the flash memory remaining after files with relatively large unit-capacities such as MP3 files are assigned. Either the bit stream of a MP3 file, or the bit stream of a music or language study file stored on the flash memory is decoded in accordance with the user's request. The decoded bit stream can either be reproduced alone or along with lyrics or texts. When reproduced together with lyrics or texts, MP3 music can be heard while lyrics are displayed on the display unit or lecture for education can be heard while text data such as the key points of the lecture are displayed. As a result, the utilization efficiency of the flash memory is maximized without having to use a separate identifying code or a plurality of encoding means.

On the other hand, the cited invention applies unique identification codes to moving picture data, still

picture data, and voice signal data, and compresses that data with unique identification codes to store in the flash memory used for a digital still camera for reproducing/outputting the desired data via an image handler. In the description of the cited invention, a digital data player capable of hearing voice of the present invention cannot be found.

3) In terms of effect

As apparent from the above description, as the technical construction of the present invention is dissimilar to that of the cited invention, the resulting effects of the two inventions are also dissimilar.
More specifically, according to the present invention, a speech file, a user voice signal or an audio signal from a cassette tape player is stored for reproduction in the idle area of memory used by the digital data player such as a MP3 (player) or, as needed, the text information is stored in the idle area of the memory for display on the [device's] display unit. Therefore, it is possible to provide a variety of services without separately increasing the cost. As a result, a high-cost flash memory can be utilized effectively. This has the effect of contributing to efficient resource utilization.

On the other hand, the cited invention applies unique identification codes to moving picture data, still picture data, and audio signal data, and compresses that data with unique identification codes to store in the flash memory of a digital still camera for reproducing/outputting the desired data without having to use a pc. Therefore, the effects of the two inventions are clearly dissimilar.

3. As detailed in the foregoing, the object, key technical construction, and the resulting effects of the present invention are dissimilar to the technical descriptions of the cited invention. Therefore, we believe that the key technical construction of the present invention cannot be accomplished from the technical descriptions of the cited invention. As such, we respectfully request that your office reexamine the present invention according to the Amendments voluntarily submitted on the same date as this Opinion, and grant a patent.

Dkt. No. 49, Exh. 13, at LG A-V 024988-96. In such circumstances, "statements made during prosecution of foreign counterparts * * * are irrelevant to claim construction." *Pfizer,* 457 F.3d at 1290 ("Third, we agree with the district court's conclusion that the statements made during prosecution of foreign counterparts to the '893 patent are irrelevant to claim construction because they were made in response to patentability requirements unique to Danish and European law."). *But see Gillette,* 405 F.3d at 1374 ("The defendant itself endorsed an open interpretation of 'comprising' when it argued to the European Patent Office (EPO) that a virtually identical claim in Gillette's European counterpart to the '777 patent would not exclude an arrangement with four or more blades.").
LG's failure to disclose prior art cited against the Korean counterpart to the USPTO, if Hitachi's assertions are true, does not make the previously-discussed statements any more relevant.

Thus, the Court construes the phrase "audio data is associated with text data for reproduction" to mean "that text data is stored in association with audio data and reproduced cooperatively in accordance with that association."

b) "decoder"

This term appears in claim 1, 2 and 3. Claim 1 is representative (the disputed term is in boldface):

1. A data reproducing device for reproducing data including at least two types of audio data, wherein at least one of said at least two types of audio data is associated with text data for reproduction, said at least two

types of audio data including:

a first type of audio data; and

a second type of audio data * * *, the data reproducing device comprising:

first **decoder** provided to decode the first type of audio data;

a second **decoder** provided to decode the second type of audio data in a different decoding manner from the first **decoder,** wherein the first **decoder** and the second **decoder** are functionally separated from each other; and

a selector, having at least a first output and a second output separated from each other, for selectively directing one of said outputs to the corresponding one of the first **decoder** and the second **decoder.**

'709 Patent, col. 7, lines 2-23.

(1) The Parties' Positions

The parties propose the following constructions. Hitachi's proposed construction changed during briefing:

LG	***Hitachi***
Hardware and/or software that converts a coded signal back to its original digital signal.	Hardware that converts a coded signal back to its original digital signal.

See Dkt. No. 64, at 19.

LG urges that "[i]t is well known that a decoder can be implemented as hardware and/or software, and the '709 patent specifically contemplates this technical point." Dkt. No. 47, at 35. According to LG, "[t]he basic concept of a decoder is disclosed * * * with reference to Figure 3," in which "MP3 audio data and Speech audio data, are retrieved from a data storage medium 301 (computer memory) and selectively directed to the corresponding decoder whose function it is to decode that particular type of data. In this example, the decoder 302 comprises two functionally separate decoders to decode the two different types of audio data-the MP3 audio data and the speech audio data (e.g., '(MP3+SPEECH)')." *Id*. at 35-36. LG points to column 3, lines 51-54 as "mak[ing] clear that the decoders may be implemented in software:"

Consequently, the decoder 302 includes the speech decoding algorithm in addition to the typical MP3 decoding function. In this connection, the use of a processor with an appropriate arithmetic capability makes it possible to implement the decoder 302 with no further hardware.

Id. at 36. Finally, LG contends a dictionary definition of this term states that a decoder may be implemented in hardware or software. *Id*.

Hitachi responds that LG's proposed construction is "wrong because it is purely functional" and "allows for a decoder to be purely software." Dkt. No. 48, at 55. According to Hitachi, "the '709 patent discloses no decoder software, and certainly provides no algorithm for any such software decoder." Id. In Hitachi's view, LG would "broaden these claims to cover a single decoder structure than can perform multiple decoding functions implemented in software," and "incorrectly conflates the decoder structures with their decoding

functions." Id.

Furthermore, Hitachi contends, LG "canceled, and thus abandoned, all claims directed to a single decoder structure." Dkt. No. 48, at 55. According to Hitachi, "[t]he prosecution history establishes that the (disclaimed) embodiment shown in Figure 3[1] contains a single decoder structure, unlike the asserted claims, which require two or three decoder structures," and (2) "was already known and unpatentable." *Id*. at 55-56. Hitachi urges that "[t]he Examiner rejected, and LGE withdrew, all pending claims directed to the single decoder embodiment of Figure 3. LGE then filed new claims requiring multiple decoder structures. By doing so, LGE clearly disclaimed the scope that it now seeks through its construction of 'decoder,' and LGE is precluded from reclaiming that scope through the process of claim construction." *Id*. at 56. Accordingly, Hitachi argues, "proper constructions need not cover every embodiment in the specification, and it is improper to include all embodiments when one or more has been disclaimed during prosecution." *Id*.

LG replies that the "specification is unambiguous" in "specifically contemplate[ing] the implementation of a hardware and/or software decoder," and that Hitachi "revert[s] to convoluted disclaimer arguments in an attempt to improperly limit the decoder to hardware alone." Dkt. No. 55, at 30. According to LG, "interpreting claims to exclude embodiments of the patent requires the embodiment be clearly and unambiguously disclaimed." *Id*. at 31. In LG's view, Hitachi's disclaimer argument is "baseless." *Id*. LG urges that "[d]uring prosecution, the Examiner rejected several claims as obvious over U.S. Patent No. 6,134,695 (Sasaki), in view of an IEEE signal processing magazine reference (Noll)," and that "[n]either reference discloses a single decoder having functionally separate decoding functions." Id. In the first office action, according to LG, the examiner stated:

"Sasaki fails to expressly disclose a separate 'decoder.' However, the examiner contends that the concept of providing a decoder for a coding system was well known, as taught be Noll.

In addition, comparing claim 1, the examiner further takes official notice of the fact that it was well known in the art to provide the separated decoders with individual decoding function, which has an equivalent functionality to a decoder with multiple decoding functions in claim l, based on the disclosure in the specification. Particularly, in software/hardware interchangeable implementation, it is well known that one module with multiple coding functions is functionally equivalent to multiple modules with individual coding functions."

Id. LG had apparently amended claim 1 and replied:

While not conceding the appropriateness of the rejections, but merely to advance prosecution of the instant application, apparatus claim 1 is amended to recite a digital player having a combination of elements, including a decoder having at least first and second decoding functions ...

Sasaki et al. does not teach or suggest a decoder having at least first and second decoding functions ...

In rejecting claims 8-13 as being obvious over Sasaki et al. in view of Noll and alleged 'well known prior art,' official notice is taken that it is well known in the art to provide separated decoders with individualized decoding function which, the Office Action contends, is equivalent in function to the decoder with multiple decoding functions recited in claim 1.

While the Office Action cite M.P.E.P. 52144.03 as support for this rejection, Applicants respectfully point out that M.P.E.P. 52143.03 states that to 'establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.' Accordingly, the Examiner is courteously requested to supply one or more references that teach or suggest the above-noted features of the presently claimed invention. It is respectfully submitted that until such references are supplied, the rejection of the, claims based on what is 'well known prior art' is improper and should be withdrawn. [LG's alterations]

Dkt. No. 55, at 32. According to LG, "in the second office action, the Examiner rejected amended claim 1, making the exact same (almost verbatim) argument as made in the first office action," and LG responded by "cancel[ling] claims 1-8 and add[ing] claims 24 and 25, which issued as claims 1 and 7 respectively, and, in doing so, specifically refuted the Examiner's rejection." *Id*. LG thus urges that "[t]hese statements, while describing functionality of single and multiple decoders, do not exclude use of a single decoder having functionally separate decoding functions," and further urges that "the Examiner specifically noted the software/hardware interchangeable implementation as proposed by LGE." *Id*.

Hitachi replies that "[t]he clear and unambiguous language of claim 1 requires two decoders ('a ***first*** decoder' and 'a ***second*** decoder'), but [LGE's] reply brief argues that a device with a single decoder is within the scope of the claim 1." Dkt. No. 63, at 22. Hitachi again urges that "[d]uring prosecution, [LGE] tried, but failed, to obtain claims directed to the single-decoder embodiment described in Figure 3 of the patent" and only overcame the rejection by adding a new claim which "recited both a first and second decoder." *Id*. at 22-23. With respect to the prior art at issue during prosecution, Hitachi argues, "[t]he Noll reference discloses a single decoder (a 'full MPEG-1 decoder') that performs three functionally-separate decoding functions: (i) MPEG-1 Layer I (a.k.a.MP1), (ii) MPEG-1 Layer II (a.k .a.MP2), and (iii) MPEG-1 Layer III (a.k.a.MP3)." *Id*. at 23. As such, Hitachi urges that the prior art disclosed "a single decoder having functionally separate decoding functions," and LG disclaimed the same through its amendment. *Id*.

(2) Construction

[2] The parties do not dispute that a "decoder" converts a coded signal back to its original digital signal. The particular issue here is whether a decoder may be implemented in software.FN2 According to the specification, it can be. The specification expressly discloses in Figure 3 FN3 a single processor-based decoder programmed with two decoder algorithms. According to the specification, the decoder 302 both (1) "decodes an output MP3 file bit stream BS1 from the data storage medium 301 *according to an MP3 decoding algorithm*" and (2) "decodes an output speech bit stream BS2 from the data storage medium 301 *according to a speech decoding algorithm*." ' 709 Patent, col. 3, lines 22-26. The specification further explains that "the decoder 302 includes the speech decoding algorithm in addition to the typical MP3 decoding function. In this connection, *the use of a processor with an appropriate arithmetic capability makes it possible to implement the decoder 302 with no further hardware*." ' 709 Patent, col. 3, lines 50-54 (emphasis added). *See also* ' 709 Patent, col. 1, lines 29-40 ("With reference to FIG. 1, there is shown in block form the construction of a conventional MP3 player. As shown in this drawing, the MP3 player includes a data storage medium 101 for storing an MP3 file (i.e., compressed according to an MPEG1 Layer3 coding technique), *a decoder 102 for decoding an MP3 bit stream from the data storage medium 101 according to a predetermined decoding algorithm* to output a sound signal in a digital form, and a digital/analog (D/A) converter 103 for converting the digital sound signal from the decoder 102 into an analog sound signal and for outputting the converted analog sound signal to a loudspeaker 104." (emphasis added)). Thus, the specification clearly shows a decoder may be implemented with an appropriately-programmed processor, *i.e.,* a processor executing decoder software.

FN2. The argument regarding single v. multiple decoder(s) is addressed in the very next section.

FN3. *See supra* Part II.A for a reproduction of Figure 3.

Figure 4,FN4 on the other hand illustrates three decoders, *i.e.,* "the MP3 decoder 412A, the speech decoder 412B and the text decoder 412C." However, the specification does not explain whether those decoders are implemented in hardware or software (or both). Certainly, the specification does not foreclose that possibility.

FN4. *See supra* Part II.A for a reproduction of Figure 4.

Hitachi does not dispute that Figure 3 discloses a software-based decoder. Rather, Hitachi urges that LG disclaimed the embodiment of Figure 3 during prosecution, and thus disclaimed a software-implemented decoder.

Hitachi's argument is not persuasive. From the prosecution history record, the examiner clearly viewed hardware and software implementations as equivalent and interchangeable. Claims 1 and 8 of the originally-filed application called for, respectively:

1. A digital player, comprising:

a decoder, having at least first and second decoding functions, identifying a type of digital data output from a data storage medium, selecting one of said first and second decoding functions based on said identified type, and decoding said output digital using said selected decoding functions; and

a converter converting said decoded digital data so analog.

8. A digital player, comprising:

a first decoder, having a first decoding function, and decoding digital data according to said first decoding function;

a second decoder, having a second decoding function, and decoding digital data according to said second decoding function;

a controller identifying a type of digital data output from a data storage medium, selectively sending said output digital data to one of said first and second decoder based on said identified type; and

a converter converting said decoded digital data output from said first and second decoders to analog.

Dkt. No. 68, Exh. '709 Pages 1-75, at HCX AS 0016549-50. Claim 1 recited "a decoder, having at least first and second decoding functions," and claim 8 recited "a first decoder, having a first decoding function" and "a second decoder, having a second decoder function." But that says nothing about whether those decoders

are implemented in hardware or software.

In any event, the examiner rejected those claims as obvious over the prior art, and, after setting out the bases for that rejection, stated that hardware and software decoder implementations were "interchangeable:"

In addition, comparing claim 1, the examiner further takes official notice of the fact that it was well known in the art to provide the separated decoders with individual decoding function, which has an equivalent functionality to a decoder with multiple decoding functions in claim 1, based on the disclosure in the specification. *Particularly, in software/hardware interchangeable implementation, it is well known that one module with multiple coding functions is functionally equivalent to multiple modules with individual coding functions*. It also well know in the art that the detailed function or structure of a coding system is usually describes only one side, either decoder side or decoder side [*sic*], and the other side left as default or omission, when the two sides are based on the same principle and/or shared with a symmetric mechanism.

Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Sasaki by providing multiple decoders with individual decoding function in a coding system, for the purpose of increasing design and application flexibility.

Dkt No. 68, Exh. '709 Pages 1-75, at HCX AS 0016569 (emphasis added). In response, the applicants did not specifically argue that the examiner's assertion was incorrect. Rather, the applicant simply urged that the examiner's "well known" arguments were unsupported and thus improper:

In rejecting claims 8-13 as being obvious over Sasaki et al. in view of Noll and alleged "well known prior art," official notice is taken that it is well known in the art to provide separated decoders with individualized decoding function which, the Office Action contends, is equivalent in function to the decoder with multiple decoding functions recited in claim 1.

While the Office Action cites M.P.E.P. s. 2144.03 as support for this rejection, Applicants respectfully point out that M.P.E.P. s. 2143.03 states that to "establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." Accordingly, the Examiner is courteously requested to supply one or more references that teach or suggest the above-noted features of the presently claimed invention. It is respectfully submitted that until such references are supplied, the rejection of the claims based on what is "well known prior art" is improper and should be withdrawn.

Dkt. No. 68, Exh. '709 Pages 416-475, at HCX AS 0016975.

Thereafter, in the second office action, the examiner provided support for the "well known" remarks, and reiterated the interchangeability of hardware and software in implementing a decoder:

Similarly, the response to applicant's argument regarding the amended claim 8 (amendment: page 10, paragraph 3) (also see the rejection of the claim in the first office action) is based on the same reason as stated above because claim 8 has the same or similar amended limitation as claim 1. In addition, it is noted that regarding claims 8-13, the applicant challenges the "well known prior art" of the official notice and requests to supply more references (amendment: page 12, paragraphs 2-3) (also see the rejection of the claim in the first office action). As an evidence for supporting the official notice, Yamane et al. (U.S. 9,393,196, see reference D of PTO-892 form in the first action) discloses multimedia stream generating method enabling alternative reproduction of video data, and a multimedia optical disk authoring system that

can processes MPEG data (column 2, lines 43-63), wherein the authoring system include an authoring decoder DCD (Fig.3) that comprises difference decoders, such as system decoder 2500, video decoder 3801, subpicture decoder 3100, audio decoder 3200 (column 11, lines 41-49), each of them provides individual decoding functions and decodes specific data. *As a further supporting reference, the international standard ISO/IEC 11172-3 (for MPEG audio) interchangeably uses the structural term "decoder" and functional term "decoding" (page vi, section 0.4), and defines all operations in a software simulation manner, which suggests that, in general, software implementation and hardware structure has equivalent functionality*. For example, Huffman decoder is equivalently treated as a decoding function (or method) in the audio decoder (page 34, section 2.4.3.4.6). Therefore, the obviousness based on the "well known prior" is properly established as stated in the rejection of the claim in the first office action.

Further, the response to applicant's argument regarding the amended claim 22 (amendment: page 11, paragraph 3) (also see the rejection of the claim in the first office action) is based on the same reason as stated for claim 1 (see above), because claim 22 has the same or similar amended limitation as claim 1.

Dkt. No. 68, Exh. '709 Pages 416-475, at HCX AS 0016988-89 (emphasis added). In response, the applicants did not disagree with the examiner's assertion regarding hardware v. software. Instead, the applicants, *inter alia,* cancelled claims 1 and 8, and added new claims, one of which issued thereafter as claim 1.

Whether the applicants disclaimed the embodiment of Figure 3 with respect to implementing multiple decoders in a single device, is discussed below. Regardless of whether the embodiment of Figure 3 was disclaimed, nothing in the prosecution history disclaims software implementation of a decoder. That much, at least, is clear from the foregoing.

Thus, the Court construes the term "decoder" to mean "hardware and/or software that converts a coded signal back to its original digital signal."

c) "the first decoder and the second decoder are functionally separated from each other"

This phrase appears in claims 1, 2 and 3. Claim 1 is representative (the disputed term is in boldface):

1. A data reproducing device for reproducing data including at least two types of audio data, wherein at least one of said at least two types of audio data is associated with text data for reproduction, said at least two types of audio data including:

a first type of audio data; and

a second type of audio data * * *, the data reproducing device comprising:

a first decoder provided to decode the first type of audio data;

a second decoder provided to decode the second type of audio data in a different decoding manner from the first decoder, wherein **the first decoder and the second decoder are functionally separated from each other;** and

a selector, * * *.

'709 Patent, col. 7, lines 2-23 (emphasis added).

(1) The Parties' Positions

The parties propose the following constructions:

LG	***Hitachi***
The first and second decoders perform separate and distinct decoding functions respectively for two different types of audio data.	The first decoder and the second decoder perform different decoding functions.

See Dkt. No. 64, at 20.

According to LG, "[t]he dispute with this claim term appears to surround the 'functionally separated' language and the nature of the decoding functions." Dkt. No. 47, at 37. LG urges that its proposed construction "is more precise, stays truer to the actual language of the claims, and maintains the important feature relating to functional separation and decoding of audio data." *Id*. LG contends, with reference to Figure 3, that "two different types of audio data, in this example, MP3 audio data and speech audio data, are retrieved from a data storage medium 301 (computer memory) and selectively directed to the corresponding decoder whose function it is to decode that particular type of data. In this example, the decoder 302 comprises two functionally separate decoders to decode the two different types of audio data-the MP3 audio data and the speech audio data (e.g., '(MP3+SPEECH)')." *Id*. That "same concept," LG argues, "is disclosed in Figure 4," too, *i.e.,* "the patent specifically contemplates a processor running code relating to different, functionally separate, decoders." *Id*. at 37-38.

Hitachi urges that LG's proposed construction is "unnecessarily complicated," and that Hitachi's "interpretation is explicitly supported by the only references to 'first decoder' and 'second decoder' in the specification," namely, those in column 2, lines 18-22:

These and other objects are further achieved by a digital player, comprising a first decoder, having a first decoding function, and decoding digital data according to said first decoding function, a second decoder, having a second decoding function, and decoding digital data according to said second decoding function, a controller identifying a type of digital data output from a data storage medium * * *.

Dkt. No. 48, at 58. According to Hitachi, LG "relies heavily on the Figure 3 embodiment that was disclaimed during prosecution," and attempts to "recapture an embodiment with a single decoder structure that performs two different decoding functions." *Id*.

Furthermore, Hitachi contends, "[t]he disputed phrase being construed ('The first decoder and the second decoder are functionally separated from each other') says nothing about the types of data being decoded-other language in claim 1 already dictates what type of data is to be decoded, and LGE's construction unnecessarily complicates the issue (and would potentially confuse the jury)." Dkt. No. 48, at 59. Also, Hitachi urges that "[i]f LGE contends that two different decoders that perform separate and different decoding functions are not within the scope of claim 1 unless their functionalities are entirely 'distinct' (i.e., they share no commonality at all and are completely different, rather than simply different in some way), then LGE's construction is too narrow." *Id*.

LG replies that its proposed construction "more clearly captures the language and meaning of the claims, particularly the important phrase 'functionally separated.' " Dkt. No. 55, at 33. LG finds it unclear why Hitachi's Figure 3 disclaimer argument "has any import here." *Id*. LG urges that "the 'first decoder' and 'second decoder' can comprise hardware and/or software that converts a coded signal back to it [sic] original form. The idea of functional separation does not require that the decoders be physically separate." *Id*.

(2) Construction

[3] The primary issue here appears to be whether the "first decoder" and "second decoder" must be physically separate.

Claim 1 plainly calls for the two decoders to be "functionally separated," not "physically separated." The claim language does not require physical separation. *Cf*. Phillips, 415 F.3d at 1314 ("To begin with, the context in which a term is used in the asserted claim can be highly in-structive. To take a simple example, the claim in this case refers to 'steel baffles,' which strongly implies that the term 'baffles' does not inherently mean objects made of steel."). Here, the patentee specified the type of separation required-functional. That does not, of course, foreclose physical separation; rather, the point is that the claims do not require physical separation.

As noted above, the embodiment of Figure 3 discloses a single decoder programmed with multiple decoding algorithms. Hitachi urges that LG disclaimed the single-decoder, multipledecoding-function embodiment of Figure 3 during prosecution, and that, as a result, the "first decoder" and "second decoder" of claim 1 must be physically separate.

Hitachi's argument is, once again, unpersuasive. Turning to the prosecution history of the '709 Patent, the originally-filed patent application contained 23 claims, of which the independent claims and claims 9-13 FN5 are reproduced below:

FN5. As will become apparent below, original dependent claims 9-13 issued as claims 2-6, some of which are at issue (or at least of interest).

1. A digital player, comprising:
a decoder, having at least first and second decoding functions, identifying a type of digital data output from a data storage medium, selecting one of said first and second decoding functions based on said identified type, and decoding said output digital data using said selected decoding function, and

a converter converting said decoded digital data to analog.

8. A digital player, comprising:

a first decoder, having a first decoding function, and decoding digital data according to said first decoding function;

a second decoder, having a second decoding function, and decoding digital data according to said second decoding function;

a controller identifying a type of digital data output from a data storage medium, selectively sending said output digital data to one of said first and second decoder based on said identified type; and

a converter converting said decoded digital data output from said first and second decoders to analog.

9. The digital player of claim 8, further comprising:

a third decoder, having a third decoding function, and decoding digital data according to said third decoding function.

10. The digital player of claim 9; wherein said first decoder decodes MP3 files; said second decoder decodes speech; and said third decoder decodes text.

11. The digital player of claim 8, wherein said controller reads a header of said output digital data, and identifies a type of said digital data based on said read header.

12. The digital player of claim 8, wherein said controller determines whether at least another type of digital data is associated with said identified type of digital data based on said read header, and controls output of said identified type of digital data and said another type of digital data from said data storage medium such that said identified type of digital data and said another-type of digital data are supplied to an appropriately different ones of said first and second decoders for decoding.

13. The digital player of claim 12, wherein said first decoder decodes MP3 files; said second decoder decodes speech; and said controller supplies said identified digital data to said first decoder and said another type of digital data to said second decoder when (i) said identified digital data is identified as an MP3 file and said another type of digital data is speech data and (ii) said read header of said MP3 file indicates an association with said speech data.

14. A digital data recorder, comprising:

a first encoder encoding a first type of digital data at a first compression rate, and storing said encoded first type of digital data on a data storage medium, which stores digital data of a second type encoded at a second compression rate, said first compression rate higher than said second compression rate; and

a selector, having at least a first and second input for said first type of digital data, and selectively outputting said first type of digital data received at one of said first and second inputs to said encoder.

21. A data storage medium for a digital data player comprising:

a first compressed data region for storing a first digital data bit stream compressed according to a first compression algorithm;

a second compressed data region for storing a second digital data bit stream compressed according to a second compression algorithm having a compression rate higher than that of said first compression algorithm, said second compressed data region forming one region of a specific area on said data storage medium; and

a text data region for storing text data, said text data region forming another region of said specific area.

22. A method of reproducing digital data, comprising:

identifying a type of digital data output from a data storage medium, selecting one of a first and second decoding function based on said identified type;

decoding said output digital data using said selected decoding function and function; and

converting said decoded digital data to analog.

23. A method of recording digital data, comprising:

selectively outputting a first type of digital data received at one of a first and second input;

encoding said output first type of digital data at a first compression rate;

storing said encoded first type of digital data on a data storage medium, which stores digital data of a second type encoded at a second compression rate, said first compression rate higher than said second compression rate.

Dkt. No. 68, Exh. '709 Pages 1-75, at HCX AS 0016549-53. Of those claims, only claim 1, drawn to a "digital player," explicitly calls for "a decoder, having at least first and second decoding functions." Figure 3 clearly discloses such a decoder. Claim 22, drawn to a "method of reproducing digital data," suggests the use of Figure 3 decoder. Claim 8, on the other hand, calls for "a first decoder" and a "second decoder." Claim 9, which depends from claim 8, calls for "a third decoder." The remaining independent claims do not call for a "decoder." Thus, claims 1 and 8 are of particular interest here.
In a first office action, the examiner rejected all of the claims as obvious in light of various combinations of prior art references. With respect to claim 1 and its dependent claims, the examiner relied on U.S. Patent No. 6,134,695 to Sasaki et al. ("Sasaki") in view of an IEEE article by Noll ("Noll"):

2. Claims 1-7 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al. (USPN 6,134,695) hereinafter referenced as Sasaki in view of Noll (IEEE signal processing magazine, ISSN 1053-5888, page 59-81).

Regarding claim 1, Sasaki discloses a code image data output apparatus and method for converting multimedia information including audio information such as voice data or music data, image information obtained from a camera or a video device, and digital code data obtained from a personal computer or a word processor into an optically readable code pattern and outputting the code pattern (column 1, lines 5-11). Sasaki further discloses a coding procedure by employing a data input section 18 (Fig.2) for receiving original data and generating multimedia source file (column 9, lines 18 and 31), a compression coding section 20 for selecting compression level and calculating and generating compressed data (column 9, lines 37-56), a code conversion section 22 for generating pre-code and recording final multimedia information code (column 2, lines 39-40, column 9, line 66 to column 11, line 49), and a user setting section 24 for user interactive selection and correction (column 9, line 28). Sasaki also discloses recording medium for storing multimedia information (column 34, lines 58-59). Furthermore, *Sasaki discloses a reproduction means 56, 58 (Fig.2) for decoding the code image data converted by the code conversion means 22 into the original*

multimedia information (including voice data) and outputting the multimedia information (column 3 8, lines 16-19) as a reversed process of the conversion, *in which the reproduction of voice or image data needs use at least one of the decoding function for voice and/or image* (column 11, lines 59-67 and column 2, lines 26-29). In addition, Sasaki discloses using a speaker icon (Fig.60) for outputting voice data (column 27, lines 43-45) and using a "play" button for reproducing voice data (column 26, lines 45-46), which suggests that a D/A converter for voice output is inherently included in the apparatus. This corresponds to the claimed "a digital player, comprising: a decoder, having at least first and second decoding functions, identifying a type of digital data output from a data storage medium, selecting one of said first and second decoding functions based on said identified type, and decoding said output digital data using said selected decoding function; and a converter converting said decoded digital data to analog." *But, Sasaki fails to expressly disclose a separated "decoder." However, the examiner contends that the concept of providing a decoder for a coding system was well known, as taught by Noll.*

In the same field of endeavor, Noll discloses a MPEG digital audio-coding technique and setting the standard for high-quality audio compression. *Noll further discloses a structure of perception-based coder (page 64, left column, paragraph 2) that comprises a separated decoder* (Fig.4), which has a reversed coding function or process corresponding to the encoder.

Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Sasaki by specifically providing a separated decoder for the coding system, as taught by Noll, for the purpose of more clearly defining function of the structured components.

Dkt. No. 68, Exh. '709 Pages 1-75, at HCX AS 0016562-64 (emphasis added). According to the examiner, Sasaki disclosed a decoding function, but not as part of a "separated decoder," which, also according to the examiner, Noll disclosed. In that case, the examiner apparently viewed the "decoder" of claim 1 as physically separate from the "converter."

The examiner similarly rejected claim 8 and its dependent claims over Sasaki in view of Noll, and also in view of "well known prior art." With respect to claim 8, the examiner remarked:

Regarding claim 8, Sasaki discloses a code image data output apparatus and method for converting multimedia information including audio information such as voice data or music data, image information obtained from a camera or a video device, and digital code data obtained from a personal computer or a word processor into an optically readable code pattern and outputting the code pattern (column 1, lines 5-11). Sasaki further discloses a coding procedure by employing a data input section 18 (Fig.2) for receiving original data and generating multimedia source file (column 9, lines 18 and 31), a compression coding section 20 for selecting compression level and calculating and generating compressed data (column 9, lines 37-56), a code conversion section 22 for generating pre-code and recording final multimedia information code (column 2, lines 39-40, column 9, line 66 to column 11, line 49), and the user setting section 24 for user interactive selection and correction. Sasaki also discloses recording medium for storing multimedia information (column 34, lines 58-59). Furthermore, *Sasaki discloses a reproduction means 56, 58 (Fig.2) for decoding the code image data converted by the code conversion means 22 into the original multimedia information (including voice data)* and outputting the multimedia information (column 38, lines 16-19) as a reversed process of the conversion, *in which the reproduction of voice or image data may use at least one of the decoding functions for voice and/or image* (column 11, lines 59-67 and column 2, lines 26-29). In addition, Sasaki discloses using a speaker icon (Fig.60) for outputting voice data (column 27, lines 43-45) and using a "play" button for reproducing voice data (column 26, lines 45-46), which suggests that a D/A

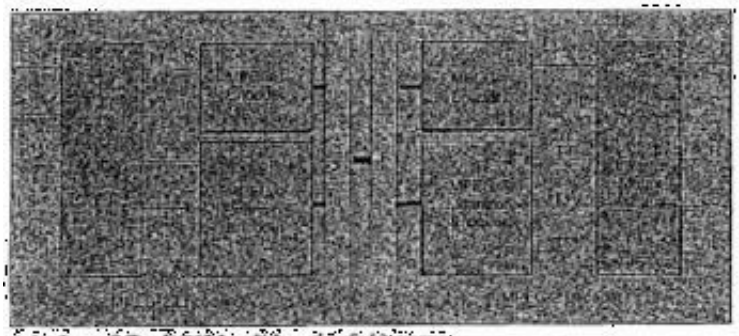
converter for voice output is inherently included in the apparatus. This corresponds to the claimed "a digital play, comprising: a first decoder, having a first decoding function, and decoding digital data according to said first decoding function; a second decoder, having a second deciding function, and decoding digital data according to said second decoding function; a controller identifying a type of digital data output from a data storage medium, selectively sending said output digital data to one of said first and second decoder based on said identified type; and a converter converting said decoded digital data output from said first and second decoders to analog." *But, sasaki fails to expressly disclose multiple decoders with individual decoding function. However, the examiner contends that the concept of using multiple decoders with individual decoding function in a coding system was well known,* as taught by Noll.

In the same field of endeavor, Noll discloses a MPEG digital audio coding technique and setting the standard for high-quality audio compression. Noll further discloses a structure of backwards-compatible MPEG-2 audio coding (page 75, right column, paragraph 4), *which has two decoders* (Fig.20) with the individual coding function, corresponding to the reversed functions if the two encoders, respectively.

Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Sasaki *by specifically providing multiple decoders with individual decoding function* in a coding system, as taught by Noll, for the purpose of increasing design and application flexibility.

Dkt. No. 68, Exh. '709 Pages 1-75, at HCX AS 0016567-69 (emphasis added). Thus, the examiner viewed claim 1 as calling for a single decoder, and claim 8 as calling for multiple decoders. But it is not at all clear the examiner viewed the decoders of claim 8 and Noll as physically separate.

Below is the section of Noll cited by the examiner (best available copy):



A 3/2 configuration of MPEG-2 multichannel audio (in green).

stereophonic presentation, i.e., those that do not contribute to the localization of sound sources, may be identified and reproduced in a monophonic format to further reduce bit rates. State-of-the-art multichannel coding algorithms make use of such effects. However, a careful design is needed, otherwise, such joint coding may produce artifacts.

conferencing, videophony, multimedia services, and electronic cinema. Multichannel systems can also provide multilingual channels or additional channels for visually impaired (a verbal description of the visual scene) and for hearing impaired (dialogue with enhanced intelligibility). ITU-R and other international groups have recommended a five-channel loudspeaker configuration, referred to as 3/2 stereo, with a left and a right channel (L and R), an additional center channel (C), and two side/rear surround channels (LS and RS) augmenting the L and R channels (see Fig. 18) (ITU-R Rec. 775). Such a configuration offers a surround-sound field with a stable frontal sound image and a large listening area. Figure 19 shows four blocks of a five-channel transform audio signal (which is difficult to code).

Multichannel digital audio systems support (a) presentation with 3 front and 2 back channels, and also provide the possibilities of transmitting two independent stereophonic programs and/or a number of commentary or multilingual channels. Typical combinations of channels are given in Table 4.

ITU-R Recommendation 775 provides a set of downwards mixing equations if the number of loudspeakers is to be reduced (*downwards compatibility*). An additional low-frequency enhancement (LFE or subwoofer) channel, particularly useful for HDTV applications, can be optionally added to any of the configurations. The LFE channel extends the low-frequency content between 15 Hz and 120 Hz in terms of both frequency and level. One or more loudspeakers can be positioned freely in the listening room to reproduce the LFE signal. The film industry uses a similar system for their digital sound systems. A 3/2 configuration with five high-quality full-range channels plus a subwoofer channel is often called a 5.1 system.

In order to reduce the overall bit rate of multichannel audio coding systems, redundancies and irrelevancy, such as interchannel dependencies and interchannel masking effects, respectively, may be exploited. In addition, components of the multichannel signal which are irrelevant with respect to the spatial perception of the

MPEG-2/Audio Multichannel Coding

The second phase of MPEG, labeled MPEG-2, includes in its audio part two multichannel audio coding standards, one of which is forward and backward compatible with MPEG-1/Audio [8, 11–14]. *Forward compatibility* means that an MPEG-2 multichannel decoder is able to properly decode MPEG-1 mono- or stereophonic signals; *backward compatibility* means that existing MPEG-1 stereo decoders, which only handle two-channel audio, are able to reproduce a meaningful basic 2/0 stereo signal from a MPEG-2 multichannel bit stream so as to serve the need of users with simple mono- or stereo equipment. Nevertheless, forward multichannel coders will not be able to feed a meaningful bit stream into an MPEG-1 stereo decoder. On the other hand, backwards compatible coders have more freedom in producing a high-quality reproduction of audio signals.

With backward compatibility it is possible to introduce multichannel audio at any time in a smooth way without making existing two-channel stereo decoders obsolete. An important example is the European Digital Audio Broadcast system, which will require MPEG-1 stereo decoders in the first generation but may offer multichannel audio at a later point.

Backwards-Compatible MPEG-2 Audio Coding

Backwards compatibility implies the use of compatibility matrices. A down-mix of the five channels ("matrixing") delivers a correct basic 2/0 stereo signal, consisting of a left and a right channel L0 and R0, respectively. A typical set of equations is:

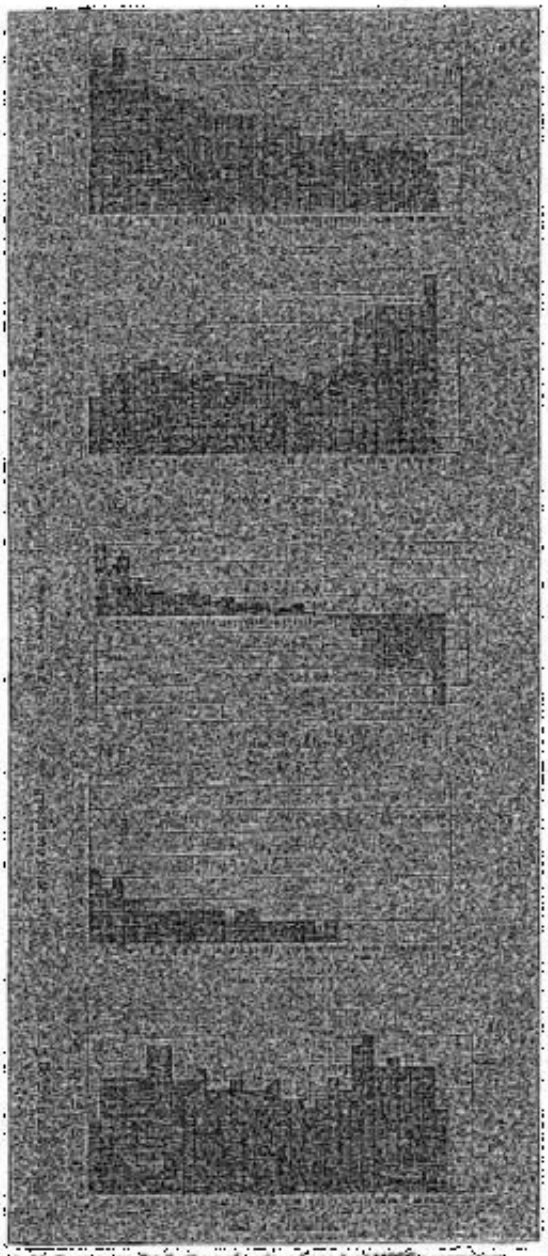
$$L0 = \alpha(L + \beta \cdot C + \delta \cdot LS)$$

$$R0 = \alpha(R + \beta \cdot C + \delta \cdot RS)$$

$$\alpha = \frac{1}{1 + \sqrt{2}}; \quad \beta = \delta = \sqrt{2}$$

Other choices are possible, including L0 = L and R0 = R. The factors α, β, and δ attenuate the signals to avoid overload when calculating the compatible stereo signal.

Dkt. No. 68, Exh. '709 Pages 416-475, at HCX AS 00165957. As noted by Noll, the two decoders process two different channels. *Id*. And, as Hitachi notes, Noll discloses "a single decoder (a 'full MPEG-1 decoder') that performs three functionally-separate decoding functions" (see annotation):



a. 11. frequency distributions of various important MPEG parameters taken from the audio block of Fig. 10 (MPEG-1 Layer II coding with an overall bit rate of 128 kb/s. (a) Sound-pressure level (SPL) of input signal vs. index of subbands (each subband is 750 Hz wide). (b) Global masking threshold vs. frequency. (c) Signal-to-mask ratio vs. frequency. (d) Bit allocation vs. frequency. (e) SPL of reconstruction error vs. frequency.

Dynamic Bit Allocation

Frequency-domain coding significantly gains in performance if the number of bits assigned to each of the quantizers of the transform coefficients is adapted to the short-term spectrum of the audio coding block on a block-by-block basis. In the mid-1970s Zelinski and Noll introduced adaptive bit allocation and demonstrated significant SNR-based and subjective improvements with their adaptive transform coding (ATC) (see Fig. 9) [14, 26]. They proposed a DCT mapping and a dynamic bit allocation algorithm that used the DCT transform coefficients to compute a DCT-based short-term spectral envelope. Parameters of this spectrum were coded and transmitted from which the short-term spectrum was estimated using linear interpolation in the log domain. This estimate was then used to calculate the optimum number of bits for each transform coefficient, both in the encoder and decoder.

ATC had a number of shortcomings, such as block boundary effects, pre-echoes, marginal exploitation of masking, and low subjective quality at low bit rates. Despite these shortcomings we find many of the features of the conventional ATC in more recent frequency-domain coders. Examples of the very sophisticated bit allocation strategies that MPEG audio coding algorithms use will be described in detail in the "Layers 1 and 2" section.

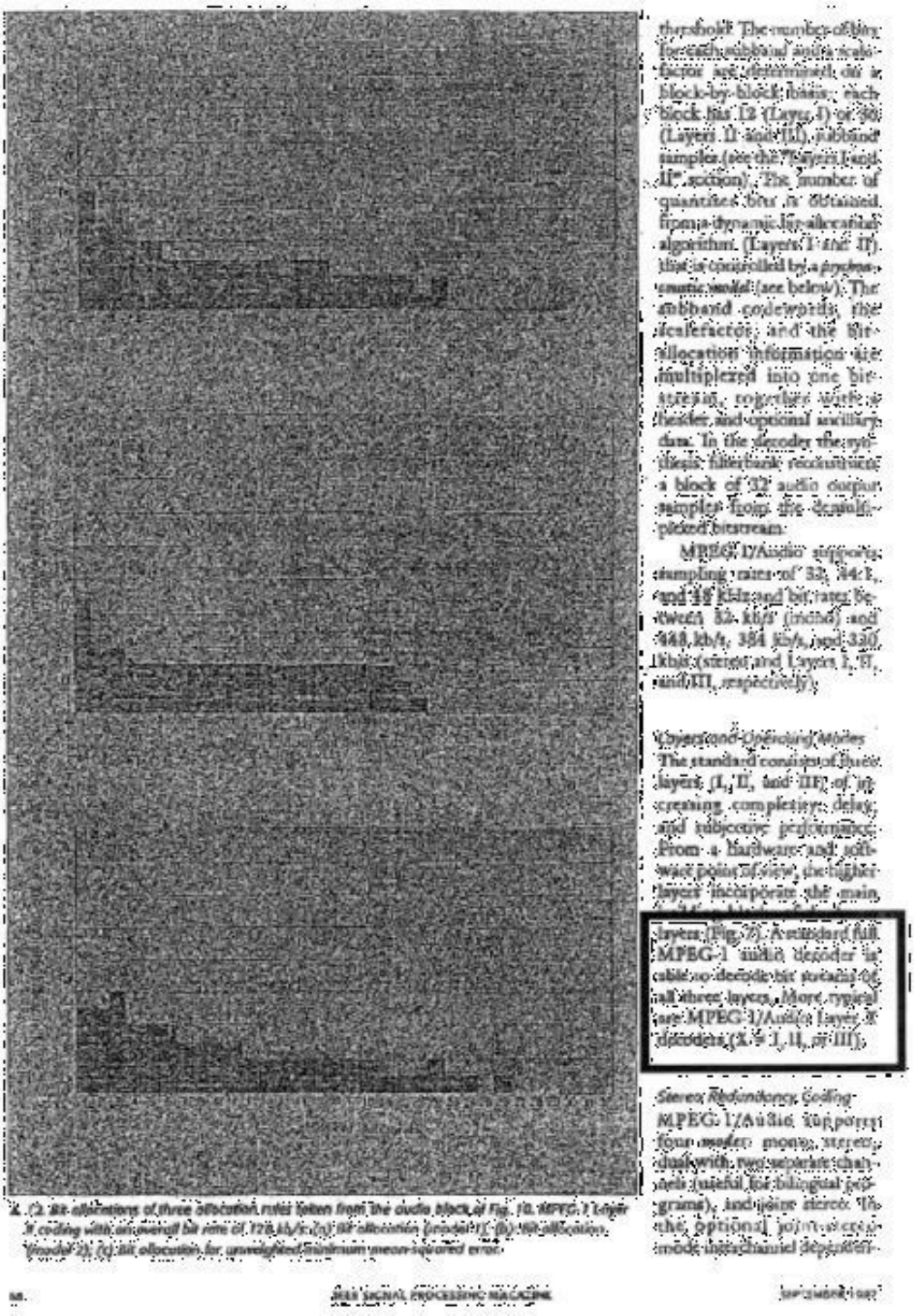
ISO/MPEG-1 Audio Coding

The MPEG audio coding standard [8, 27-29] has already become a universal standard in diverse fields such as consumer electronics, professional audio processing, telecommunications, and broadcasting [30]. The standard combines features of MUSICAM and ASPEC coding algorithms [31-33]. Main steps of development toward the MPEG-1 audio standard have been described in [29, 33]. MPEG-1 audio coding offers a subjective reproduction quality that is equivalent to CD quality (16 bit PCM) at stereo rates given in Table 3 for many types of music. Because of its high dynamic range, MPEG-1 audio has potential to exceed the quality of a CD [30, 34].

The Basics

Structure

The basic structure of MPEG-1 audio coders follows that of perception-based coders (see Fig. 4). In the first step the audio signal is converted into spectral components via its analysis filterbank. Layers I and II make use of a subband filterbank and Layer III employs a hybrid filterbank. Each spectral component is quantized and coded with the goal of keeping the quantization noise below the masking



Dkt. No. 68, Exh. '709 Pages 416-475, at HCX AS 0016949-50. In other words, the examiner used the same reference, Noll, against claims 1 and 8. To further support application of Noll against claim 8, the examiner also stated that, based on the specification's disclosure, separate decoders with individual decoding functions were equivalent to a single decoder with multiple decoding functions:

In addition, comparing claim 1, the examiner further takes official notice of the fact that it was well known in the art to provide the separated decoders with individual decoding function, which has an equivalent functionality to a decoder with multiple decoding functions in claim 1, based on the disclosure in the

specification. Particularly, in software/hardware interchangeable implementation, it is well known that one module with multiple coding functions is functionally equivalent to multiple modules with individual coding functions. It also well known in the art that the detailed function or structure of a coding system is usually describes only one side, either decoder side or decoder side, and the other side left as default or omission, when the two sides are based on the same principle and/or shared with a symmetric mechanism.

Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Sasaki by providing multiple decoders with individual decoding function in a coding system, for the purpose of increasing design and application flexibility.

Dkt. No. 68, Exh. '709 Pages 1-75, at HCX AS 0016569 (emphasis added). In other words, the examiner viewed the "decoder" of claim 1, and the "first" and "second" decoders of claim 8, as "functionally equivalent," and disclosed by Noll.

In response, the applicant amended claims 1 and 8 as follows:

1. (Amended) A digital player, comprising:

a decoder, having at least first and second decoding functions, identifying *at least* a *first* type of digital data *and a second type of digital data associated with said first type of digital data* output from a data storage medium, selecting one of said first and second decoding functions based on said identified type, and decoding said *first and second types of* output digital data using said selected decoding function; and

a converter converting said decoded digital data to *an* analog *signal*.

8. (Amended) A digital player, comprising:

a first decoder, having a first decoding function, and decoding digital data according to said first decoding function, and decoding digital data according to said second decoding function;

a controller identifying *at least* a *first* type of digital data *and a second type of digital data associated with the first type of digital data* output from a data storage medium, selectively sending said [output] *first and second types of* digital data to [one] *different ones* of said first and second [decoder based on said identified type] *decoders;* and

a converter converting said decoded digital data output from said first and second decoders to *an* analog *signal*.

Dkt. No. 68, Exh. '709 Pages 416-475, at HCX AS 0016978-79. In support of those amendments, the applicant argued

While not conceding the appropriateness of the rejections, but merely to advance prosecution of the instant application, apparatus claim 1 is amended to recite a digital player having a combination of elements, including a decoder having at least first and second decoding functions, identifying at least a first type of digital data and a second type of digital data associated with the first type of digital data output from a data storage medium, selecting one of the first and second decoding functions based on the identified type, and decoding the first and second types of output digital data using the selected decoding function.

Claim 8 is amended to recite a digital player having a combination of elements including a controller identifying at least a first type of digital data and a second type of digital data associated with the first type of digital data output from a data storage medium, selectively sending said first and second types of digital data to different ones of said first and second decoders.

Dkt. No. 68, Exh. '709 Pages 416-475, at HCX AS 0016970. The applicant further argued:

It is respectfully submitted that the combinations of elements and steps set forth in independent claims 1, 8, 14, and 21-23 are not anticipated or made obvious by the prior art of record, including Sasaki et al. and No 11.

In contrast to Applicants' claimed invention, Sasaki et al. merely discloses a code image data output apparatus, which includes an input section 18, a compression coding section 20, a code conversion section 22, a user setting section 24, a display section 46, a decoding section 56, and a reproduction section 58, as shown in Fig. 2. The code conversion section 22 further includes a code image data generation section 42, which supplies data to the decoding section 56 and to the reproduction section 58 to reproduce voice or image data. Furthermore, a compressed data generation section 34 includes a selection section 80, a voice data compression section 82, and an image data compression section 34, as shown in Fig. 19.

However, *Sasaki et al. does not teach or suggest a decoder having at least first and second decoding functions,* identifying at least a first type of digital data and a second type of digital data associated with the first type of digital data output from a data storage medium, selecting one of the first and second decoding functions based on the identified type, and decoding the first and second types of output digital data using the selected decoding function, as recited in claim 1.

Sasaki et al. does not teach or suggest a controller identifying at least a first type of digital data and a second type of digital data associated with the first type of digital data output from a data storage medium, selectively sending said first and second types of digital data to different ones of said first and second decoders, as recited in claim 8.

Sasaki et al. does not teach or suggest a first encoder encoding a first type of digital data at a first compression rate, and storing the encoded first type of digital data on a data storage medium, which stores digital data of a second type encoded at a second compression rate, the first compression rate being higher than the second compression rate and the second type of digital data capable of being associated with the first type of digital data, as recited in claim 14.

Sasaki et al. does not teach or suggest a first compressed data region for storing a first digital audio data bit stream compressed according to a first compression algorithm, a second compressed data region for storing a second digital audio data bit stream compressed according to a second compression algorithm having a compression rate higher than that of the first compression algorithm, the second compressed data region forming one region of a specific area on the data storage medium, and a text data region for storing text data, the text data region forming another region of the specific area, as recited in claim 21.

Sasaki et al. does not teach or suggest identifying at least a first type of digital data and a second type of digital data output from a data storage medium, decoding the first and second types of output digital data using the selected decoding function; and converting the decoded digital data to an analog signal, as recited

in claim 22.

Sasaki et al. does not teach or suggest storing the encoded first type of digital data of a second type encoded at a second compression rate, the first compression rate being higher than the second compression rate and the second type of digital data capable of being associated with the first type of digital data, as recited in claim 23.

In rejecting claims 8-13 as being obvious over Sasaki et al. in view of Noll and alleged "well known prior art," official notice is taken that it is well known in the art to provide separated decoders with individualized decoding function which, the Office Action contends, is equivalent in function to the decoder with multiple decoding functions recited in claim 1.

While the Office Action cites M.P.E.P. s. 2144.03 as support for this rejection, Applicants respectfully point out that M.P.E.P. s. 2143.03 states that to "establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." *Accordingly, the Examiner is courteously requested to supply one or more references that teach or suggest the above-noted features of the presently claimed invention*. It is respectfully submitted that until such references are supplied, the rejection of the claims based on what is "well known prior art" is improper and should be withdrawn.

In view of the foregoing, it is respectfully submitted that Sasaki et al. and Noll fail to disclose or render obvious the presently claimed invention, and withdrawal of the rejections based thereon is respectfully requested. Independent claims 1, 8, 14, and 21-23 are in condition for allowance. Since the remaining claims depend directly or indirectly from these allowable independent claims, they are also allowable for at least the same reasons as set forth above, as well as for the additional limitations provided by these claims. Accordingly, all claims should be allowable.

Dkt. No. 68, Exh. '709 Pages 416-475, at HCX AS 0016972-76 (emphasis added). Clearly, the applicants did not disclaim a single decoder having multiple decoding functions any more than the applicant disclaimed multiple decoders with individual decoding functions. Nor did the applicants point out any error in the examiner's view of decoder implementation. Rather, the applicant simply asked the examiner to support his statements regarding what was "well known in the prior art."

In any event, the examiner was not persuaded. In a second office action, the examiner addressed the applicant's arguments and cited additional prior art in support of his "well known in the prior art" basis for rejection:

In response to applicant's argument that the prior art (Sasaki and Noll) "does not teach or suggest a decoder" (amendment: page 9, paragraph 4 through page 10, paragraph 2) with the limitation of the amended claim (claim 1), the examiner respectfully disagrees with applicant and has a different view of the prior art teachings. It is noted that even though the amended claim brings the new issue, under reasonably broad interpretation of the claim language, the disclosure of the prior art still satisfies the claimed limitation (see the rejection of the claim in the first office action), for example the first type of data and the second type of data can be the image information and voice information respectively (Sasaki: column 34, lines 56-57) or can be the MPEG-1 data and the extension MC data respectively (Noll: page 77, Fig. 23).

Similarly, the response to applicant's argument regarding the amended claim 8 (amendment: page 10, paragraph 3) (also see the rejection of the claim in the first office action) is based on the same reason as

stated above because claim 8 has the same or similar amended limitation as claim 1. In addition, it is noted that regarding claims 8-13, the applicant challenges the "well known prior art" of the official notice and requests to supply more references (amendment: page 12, paragraphs 2-3) (also see the rejection of the claim in the first office action). As an evidence for supporting the official notice, Yamene et al. (U.S. 9,393,196, see reference D of PTO0892 form in the first action) discloses multimedia stream generating method enabling alternative reproduction of video data, and a multimedia optical disk authoring system that can processes MPEG data (column 2, lines 43-63), wherein the authoring system include *an authoring decoder DCD (Fig.3) that comprises different decoders, such as system decoder 2500, video decoder 3801, subpicture decoder 3100, audio decoder 3200 (column 11, lines 41-49), each of them provides individual decoding function and decodes specific data*. As a further supporting reference, the international standard ISO/IEC 11172-3 (for MPEG audio) interchangeably uses the structural term "decoder" and functional term "decoding" (page vi, section 0.4), and defines all operations in a software simulation manner, which suggests that, in general, software implementation and hardware structure has equivalent functionality. For example, *Huffman decoder is equivalently treated as a decoding function (or method) in the audio decoder* (page 34, section 2.4.3.4.6). Therefore, the obviousness based on the "well known prior" is properly established as stated in the rejection of the claim in the first office action.

Further, the response to applicant's argument regarding the amended claim 22 (amendment: page 11, paragraph 3) (also see the rejection of the claim in the first office action) is based on the same reason as stated for claim 1 (see above), because claim 22 has the same or similar amended limitation as claim 1.

As this point, the examiner believes that the applicant's argument is not persuasive.

Dkt. No. 68, Exh. '709 Pages 416-475, at HCX AS 0016988-89 (emphasis added). Notably, with respect to claim 8, the examiner relied on disclosure of "an authoring decoder" that included a number of decoders. In other words, multiple decoders that could yet make up a single device.

The applicant responded by canceling both claims 1 and 8,FN6 and adding new claims 24 and 25:

FN6. The applicant also canceled claims 1-8 as well as claims 14 and 17-23.

24. (New) A data reproducing device for reproducing data including at least two types of audio data, wherein at least one of said at least two types of audio data is associated with text data for reproduction, said at least two types of audio data including:
a first type of audio data; and

a second type of audio data having been formatted in a different manner from the first type of audio data, wherein a compression rate is one factor causing the difference in formatting manner, the data reproducing device comprising:

a first decoder provided to decode the first type of audio data;

a second decoder provided to decode the second type of audio data in a different decoding manner from the first decoder, wherein the first decoder and the second decoder are functionally separated from each other; and

a selector, having at least a first output and a second output separated from each other, for selectively directing one of said outputs to the corresponding one of the first decoder and the second decoder.

25. (New) A data recorder for recoding data including at least two types of audio data, wherein at least one of said at least two types of audio data is associated with text data for reproducing, said at least two types of audio data including:

a first type of audio data; and

a second type of audio data formatted in a different manner from the first type of audio data, wherein a compression rate is one factor causing the different in formatting manner, the data reproducing device comprising:

a first formatter provided to format the first type of audio data;

a second formatter provided to format the second type of audio data in a different formatting manner from the first formatter; and

a selector, having at least a first input and a second input separated from each other for the first type of audio data and the second type of audio data, and selectively directing one of the inputs to the corresponding one of the first formatter and the second formatter.

Dkt. No. 68, Exh. '709 Pages 476-559, at HCX AS 0017015-16. Thus, the applicants cancelled the claim calling for "a decoder, having at least first and second decoding functions." The applicant also cancelled the original claim calling for "a first decoder" and a "second decoder," but added a new claim reciting those elements. The applicants also amended dependent claims 9-13 to, *inter alia,* depend from new application claim 24.
In their remarks, the applicants re-urged the responses to the first office action, and further added:

While not conceding the appropriateness of the Examiner's rejection, but merely to advance prosecution of the instant application, Applicants respectfully submit that claims 1-8, 14 and 17-23 are cancelled, thus rendering the rejections of these claim under 35 U.S.C. s. 103 moot. Furthermore, claims 24 and 25 are added and are independent. Claims 9-13, 15 and 16 are amended to depend from claims 24 and 25.

Independent claim 24 recites a *combination of elements* in a data reproducing device for reproducing data including at least two types of audio data, including "a first decoder provided to decode the first type of audio data," "a second decoder provided to decode the second type of audio data in a different decoding manner from the first decoder, wherein the first decoder and the second decoder are functionally separated from each other," and "a selector, having at least a first output and a second output separated from each other, for selectively directing one of said outputs to the corresponding one of the first decoder and the second decoder."

Independent claim 25 recites a combination of elements in a data recorder for re-coding data including at least two types of audio data, including "a first formatter provided to format the first type of audio data," "a second formatter provided to format the second type of audio data in a different formatting manner from the first formatter," and "a selector, having at least a first input and a second input separated from each other for the first type of audio data and the second type of audio data, and selectively directing one of the inputs to

the corresponding one of the first formatter and the second formatter."

It is respectfully submitted that the combinations of elements set forth in independent claims 24 and 25 are not disclosed or made obvious by the prior art of record previously applied in the rejections of claims 1-23, including Sasaki et al. and Noll.

Sasaki et al. discloses a code image data output apparatus, which includes an input section 18, a compression coding section 20, a code conversion section 22, a user setting section 24, a display section 46, a decoding section 56, and a reproduction section 58, as shown in FIG. 2. The code conversion section 22 further includes a code image data generation section 42, which supplies code image data to the decoding section 56 and to the reproduction section 58 to reproduce voice or image data.

The apparatus taught by Sasaki et al. is very different from that disclosed in the presently claimed invention. The input section 18 in Sasaki et al. outputs a single stream of multimedia data to compression coding section 20. The decoding section 56 in Sasaki et al. converts a single stream of print image data from the image data generation section 42 and sends the converted data to the reproduction section 58 to reproduce voice or image data. In the present invention, by contrast, at least a first and second audio data are respectively directed to functionally separate decoders or to functionally separate formatters.

Sasaki et al. does not teach or suggest "a first decoder provided to decode the first type of audio data," "a second decoder provided to decode the second type of audio data in a different decoding manner from the first decoder, wherein the first decoder and the second decoder are functionally separated from each other," and "a selector, having at least a first output and a second output separated from each other, for selectively directing one of said outputs to the corresponding one of the first decoder and the second decoder," as recited in claim 24.

Sasaki et al. does not teach or suggest "a first formatter provided to format the first type of audio data," "a second formatter provided to format the second type of audio data in a different formatting manner from the first formatter," and "a selector, having at least a first input and a second input separated from each other for the first type of audio data and the second type of audio data, and selectively directing one of the inputs to the corresponding one of the first formatter and the second formatter" as recited in claim 25.

The Office Action relies on Noll for teaching a separated decoder for a coding system. However, Noll does not teach or suggest the above-cited limitations of claims 24 and 25, and therefore fails to cure the deficiencies Sasaki et al. with respect to these claims.

As evidence in support of the Official notice in rejecting claims 8-13, the Office Action points to U.S. Patent No. 6,393,196 to Yamane et al. and the International Standard ISO/IEC (for MPEG Audio). However, Yamane et al. and the International Standard ISO/IEC do not teach or suggest the above-cited limitations of claims 24 and 25, and therefore fail to cure the deficiencies of Sasaki et al. and Noll with respect to these claims.

Independent claims 24 and 25 are in condition for allowance. Since the remaining claims depend directly or indirectly from these allowable independent claims, they are also allowable for at least the same reasons as set forth above, as well as for the additional limitations provided by these claims. Accordingly, all claims should be allowable.

Dkt. No. 68, Exh. '709 Pages 476-559, at HCX AS 0017019-22 (emphasis added). The application thereafter issued. Application claim 24 issued as claim 1, and, as noted above, dependent claims 9-13 were renumbered as claims 2-6 upon issuance.FN7

FN7. New application claim 25 issued as independent claim 7.

On the basis of the foregoing amendments, Hitachi urges that the patentees disclaimed the embodiment of Figure 3. The examiner's remarks and literal amendment language taken alone may support such a conclusion. However, the applicants also explained their amendments, and those explanations do not indicate the applicant disclaimed the Figure 3 embodiment. The applicant did not distinguish the new claims on the basis they recited multiple decoders each with a different decoding functions instead of a single decoder with multiple decoding functions, nor did the applicants argue against the examiner's view of those decoder implementations as interchangeable. Rather, the applicants urged that a "combination of elements"-rather than the presence or absence of a particular element-was patentable. Indeed, the patentee maintained the distinction between decoders as functional, not physical. It cannot be said, therefore, the applicants clearly disclaimed the Figure 3 embodiment. *See* Amgen Inc. v. Hoechst Marion Roussel, Inc., 314 F.3d 1313, 1327 (Fed.Cir.2003) ("[T]he prosecution history may not be used to infer the intentional narrowing of a claim absent the applicant's clear disavowal of claim coverage, such as an amendment to overcome a rejection."); Lucent Techs., Inc. v. Gateway, Inc., 525 F.3d 1200, 2008 WL 1970225, at (Fed.Cir.2008) (" '[A] clear and unmistakable disavowal of scope during prosecution' may affect the construction of a claim term." (quoting Purdue Pharma L.P. v. Endo Pharms., Inc., 438 F.3d 1123, 1136 (Fed.Cir.2006); SanDisk Corp. v. Memorex Prods., Inc., 415 F.3d 1278, 1287 (Fed.Cir.2005) ("There is no 'clear and unmistakable' disclaimer if a prosecution argument is subject to more than one reasonable interpretation, one of which is consistent with a proffered meaning of the disputed term .").

As for the meaning of this phrase on its face, claim 1 already calls for the "first decoder" as "provided to decode the first type of audio data," and the "second decoder" as "provided to decode the second type of audio data in a different decoding manner from the first decoder." Thus, there is no need to reiterate that "functional separation" requires "distinct decoding functions," as LG urges," or "different decoding functions," as Hitachi urges. Nor is there a need to call for "two different types of data," as LG also urges-that is already called for in the claims. *See U .S. Surgical,* 103 F.3d at 1568, ("The *Markman* decisions do not hold that the trial judge must repeat or restate every claim term in order to comply with the ruling that claim construction is for the court. * * * It is not an obligatory exercise in redundancy.").

Therefore, the Court construes the phrase "the first decoder and the second decoder are functionally separated from each other" to mean that "the first and second decoders perform separate decoding functions."

d) "a selector, having at least a first output and a second output separated from each other, for selectively directing one of said outputs to the corresponding one of the first decoder and the second decoder"

This phrase appears in claims 1, 2 and 3. Claim 1 is representative (the disputed term is in boldface):

1. A data reproducing device for reproducing data including at least two types of audio data, wherein at least one of said at least two types of audio data is associated with text data for reproduction, said at least two

types of audio data including:

a first type of audio data; and

a second type of audio data * * *, the data reproducing device comprising:

a first decoder provided to decode the first type of audio data;

a second decoder provided to decode the second type of audio data* * *; and

a selector, having at least a first output and a second output separated from each other, for selectively directing one of said outputs to the corresponding one of the first decoder and the second decoder.

'709 Patent, col. 7, lines 2-23 (emphasis added).

(1) The Parties' Positions

The parties propose the following constructions:

LG	***Hitachi***
This element should be construed pursuant to 35 U.S.C. s. 112(6). *Recited Function:* "selectively directing one of said outputs to the corresponding one of the first decoder and the second decoder ." *Corresponding Structure:* a processor, such as a controller which retrieves formatted data from memory and based on this format, selectively directs the data to a corresponding decoder. The claim further requires that the structure corresponding to the "selector" have at least a first output and a second output separated from each other. Should the Court determine that the term cannot be read as a mean-plus function clause, the limitation should be construed as:	
A controller that, based on the identified audio format, selectively directs the audio output stream to a first or second functionally separated decoder assigned to the particular audio format.	A switch with at least two distinct, physically separated outputs corresponding to two distinct, physically separated decoder circuits, where each output is connected to its corresponding separate decoder circuit.

See Dkt. No. 42, Exh. A at 14; Dkt. No. 64, at 21.

According to LG, resolution of the dispute over this phrase "requires an inquiry not only into the proper construction of 'selector' but also the relationship between the first and second decoders." Dkt. No. 47, at 39. LG urges that the first issue is whether 35 U.S.C. s. 112(6) controls, but "[r]egardless of how that issue is resolved, however, the result is the same. The 'selector' language of the claim must be construed to require a processor which retrieves formatted data from memory and based on this format, selectively directs the data

to a corresponding decoder." *Id*. LG contends the term "selector" "relies on functional terms rather than structure or material to describe performance of the claimed function," and "does not have a generally understood meaning in the art," thus rebutting the presumption that s. 112(6) does not apply. *Id*. at 39-40.

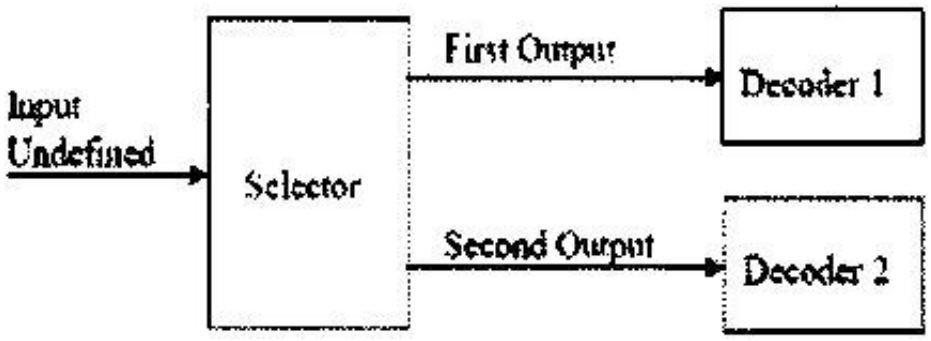
LG urges that the function is "recited in the body of the claim," and that the "corresponding structure" is disclosed in Figure 4 and described in column 2, lines 22-24:

"... decoding function, and decoding digital data according to said second decoding function, a controller identifying a type of digital data output from a data storage medium ..."

Dkt. No. 47, at 40. According to LG, "the patent intended the 'selector' to correspond to this controller, as it is the structure that retrieves the encoded data from memory and selectively sends the particularly formatted output to the correct decoder. The controller 410 also has a 'first output' and a 'second output.' " *Id*. at 41. LG contends "[t]here is no requirement that the 'first output' and the 'second output' be physically separate as urged by Defendants." *Id*.

LG urges that even if s. 112(6) does not apply, "the result is the same." According to LG, the term "selector" "does not have a common ordinary meaning to those skilled in the art," and "[t]he specification expressly defines the 'selector' limitation in the specification." Dkt. No. 47, at 42.

Hitachi responds that "[t]he claims, specification and prosecution history all require the selector to be a switch circuit." Hitachi emphasizes that claim 1 is an apparatus claim and argues that distinct, physically separated outputs are required by the claim language, as illustrated by Hitachi's drawing:



Dkt. No. 48, at 49-50. According to Hitachi, "[r]equiring anything less than *physical separation* between the outputs and the decoders would impermissibly read the limitations 'separated from each other' and 'directing *one of said outputs* to the corresponding *one* of the *first decoder* and *the second decoder*' out of the claim." *Id*. at 50.

Hitachi urges that "[t]he specification discusses a 'selector' on only two occasions: once in the Abstract and once in the Summary of the Invention," and only illustrates the "selector" in Figure 4 (selector switch 406).FN8 Hitachi also urges that "[b]ecause selector switch circuit 406 is used in the encoding circuitry, rather than the decoding circuitry recited in claim 1, the connections are reversed: selector switch circuit 406 in Figure 4 directs two separate inputs (404 and 405) to a common output, whereas claim 1, which relates to a decoder, recites two separate outputs (to two separate decoders)." Dkt. No. 48, at 51. "However, the

selector defined in claim 1 is the same selector switch circuit 406 described in the specification and shown in Figure 4." *Id*. Hitachi annotates Figure 4 and provides a further annotated detail view (shown side by side):

FN8. Hitachi adds in a footnote that "the written description of the '709 Patent provides no disclosure of a selector in the context of any player/decoding circuitry. Instead, the only selector is disclosed as part of the recording/encoding circuitry. As such, claim 1 is invalid under Section 112, and there is no figure in the specification to cite to for this limitation." Hitachi's Response at 50 n. 28.

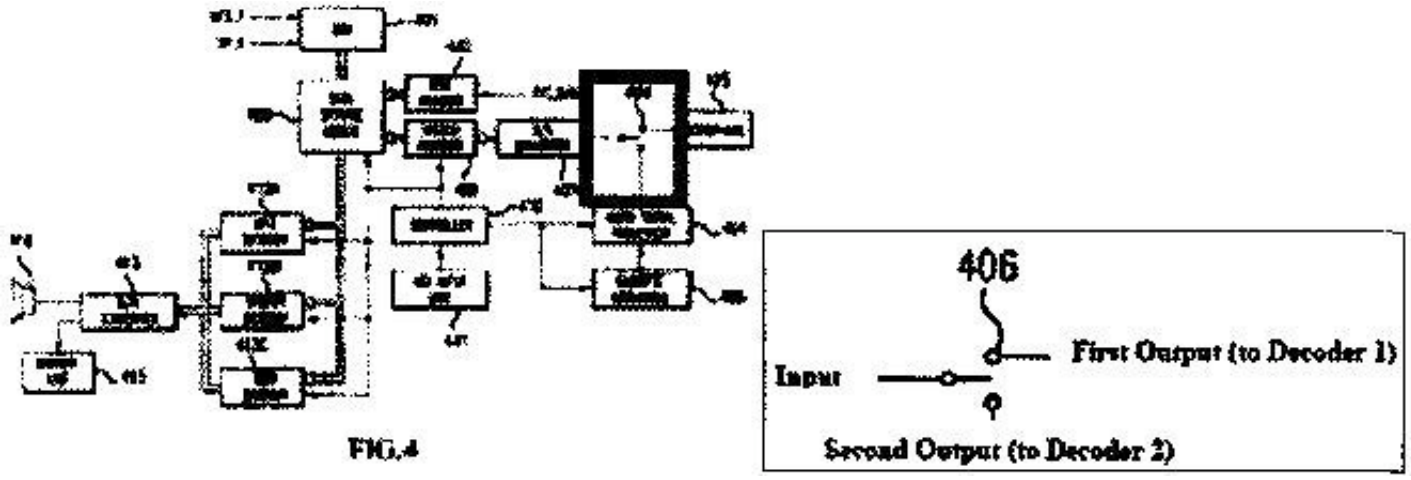


FIG.4

Id. at 51.

Hitachi also argues that cited prior art, U.S. Patent No. 6,393,196 (Yamane), "confirms [Hitachi's] construction" in "teach[ing] 'a selector 3400' which is identical to selector switch circuit 406 of the '709 patent." Dkt. No. 48, at 51. Hitachi further urges (1) that a dictionary definition supports its proposed construction, as well as (2) the Federal Circuit's description of a "selector" in S3 Inc. v. NVIDIA Corp., 259 F.3d 1364, 1371 (Fed.Cir.2001), and (3) "various contemporaneous patents in the field of audio-visual electronics * * * show[ing] that a 'selector' is known to be a switch circuit," namely, "U.S. Patent No. 5,949,407 (Sato) (September 7, 1999) and U.S. Patent No. 5,748,835 (Lee) (May 5, 1998)." Id. at 51-52 & 52 n. 29.

Additionally, Hitachi argues that "[a] selector is not a controller" because: (1) claim differentiation indicates otherwise, *i.e.*, "[c]laims 4 and 5 of the ' 709 patent, which depend from claim 1, each add a 'controller' limitation that is separate and distinct from the 'selector' recited in claim 1"; (2) "Figure 4 shows Controller 410 connected to three decoders (412A, 412B, and 412C) through a *single output,* but claim 1 requires the outputs *are separate from each other* and that the 'selector' 'selectively direct[s] *one* of said outputs to the corresponding one of the first decoder and second decoder' "; (3) "[t]he specification describes selector switch circuit 406 (the only 'selector' in the patent) as something different and distinct from the controller, which is described elsewhere"; (4) "[t]he specification is also clear that a 'selector' can perform its switching operation with or without the controller," citing column 5, lines 36-38; (5) during prosecution, the patentee "disclaimed coverage" by "canceling the claim with the controller limitation and adding a new claim with a narrower and different 'selector' limitation to overcome prior art"; and (6) "[f]rom the very beginning of the

prosecution of the '709 patent, LGE used the terms 'controller' and 'selector' to refer to different structures and concepts." Dkt. No. 48, at 52-53.

Hitachi urges that this phrase cannot be a means-plus-function limitation because "the claim recites structure: a selector, an output, and another output." If the phrase was a means-plus-function limitation, Hitachi contends, the claim would be invalid because if the "selector" was "software on a controller/processor," "neither LGE's construction nor the remainder of claims provide for any algorithm to be performed by the processor," nor does the specification describe "any algorithm for the operation of a selector or controller-not even in flowchart form." Dkt. No. 48, at 54. Hitachi further argues that "LGE cannot fill the gaps in its construction by relying on the knowledge of one skilled in the art." *Id*. at 55 & 55 n. 33.

LG replies that Hitachi "refer[s] to nothing that helps them on this point," and "the fact that the claim recites outputs to the selector does not remove the claim from the ambit of s. 112, para. 6." Dkt. No. 55, at 34. Furthermore, LG argues, "the specification of the '709 patent discloses an exemplary algorithm to program the controller to selectively direct the outputs to their corresponding decoders." *Id*. n. 18. "[R]egardless of whether s. 112, para. 6 applies here," LG urges, "the claim language is appropriately construed to require a controller under normal principles of claim construction." *Id*.

According to LG, switch 406 is "irrelevant." Dkt. No. 55, at 34. In claim 1, LG contends, "the 'selector' has 'a first output and a second output' and the function of the claimed 'selector' is to 'selectively direct' one of these first and second outputs 'to the corresponding one of the first decoder and the second decoder.' " *Id*. The switch 406, LG urges, "is used only for recording and encoding audio data." *Id*. at 35. In LG's view, "[o]ne skilled in the art would understand that the claimed 'selector' refers to the element that retrieves the data from memory and sends it to the appropriate decoder, i.e., the controller 410, and not the device that inputs the encoded data in memory, i.e., switch 406." *Id*. at 35.

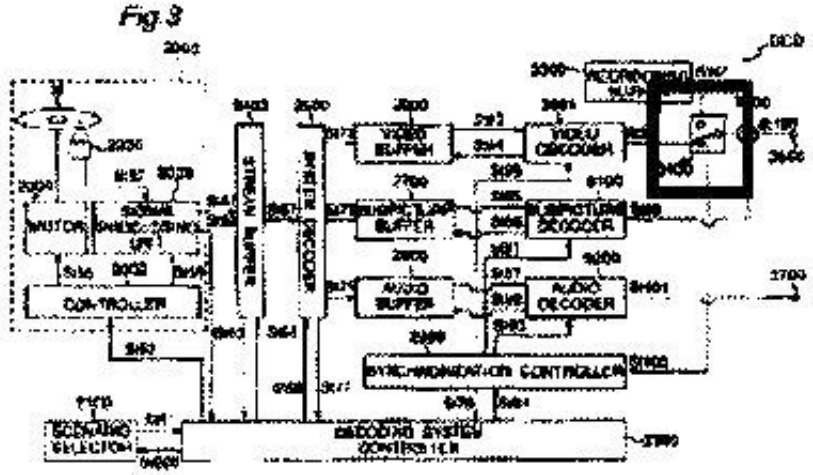
LG urges that Hitachi's "doctored 'switch 406' completely distorts the teachings of the '709 patent" because (1) "[t]he 'input' identified by Defendants is in reality a connection to an A/D converter," (2) "[t]he 'First Output' is not an output 'to Decoder 1,' but rather a connection to microphone 405," and (3) "[t]he 'Second Output' is not an output 'to Decoder 2,' but rather a connection to signal processor 404 which processes and reproduces the audio signal from cassette mechanism 403." Dkt. No. 55, at 35. According to LG, the switch "simply transfers signals from a microphone or cassette to an A/D converter, where these signals are subsequently encoded and stored in memory," whereas the selector "is the structure that subsequently retrieves this information from this memory and selectively directs it to the corresponding decoder." *Id*. "Clearly," LG contends, "reliance on the 'switch' which performs the 'reverse' function cannot be correct." *Id*.

LG further replies that Hitachi "ignores the limitation that the 'first decoder and the second decoder' are 'functionally separated,' rather than physically separated," and would "read[ ] the term 'functionally' out of the phrase 'functionally separated,' which is erroneous." Dkt. No. 55, at 35-36. According to LG, "signals that are time division multiplexed are sent to the functionally separated decoder over just one physical line; there is no requirement of two separate physical lines as urged by Defendants." *Id*. at 36. LG urges that the term "separated" "should be construed to encompass both physical separation as well as functional separation." *Id*. As for Hitachi's dictionary definition, LG argues (1) the definition "does not equate a 'selector' with a switch, but rather states that it can be a 'device that can switch' a signal path," and "the controller disclosed in the specification is such a device that controls the signal path," and (2) "the other

cross-referenced definition of 'channel' is '[a] specialized processor that comprises an information route and associated circuitry to control input and/or output operations,' " which LG says "aligns with LGE's construction." *Id*. at 36-37. LG distinguishes *S3,* contending that the claim in that case "did not recite a 'selector' but rather a 'digital-to-analog converter means ... for selectively receiving,' " for which the "parties agreed that the 'selector' explicitly disclosed in the specification of that patent was the corresponding structure." *Id*. at 37 n. 19. Also, LG argues that "nothing in the *S3* case supports Defendants assertion that the language 'selector' should be construed to be a 'switch.' " *Id*.

Finally, LG argues that "[n]othing in the prosecution history indicates that the applicants amended 'controller' to recite 'selector' to overcome any prior art or other rejection from the Examiner. If relevant at all, it demonstrates that the applicants believed the two terms to be synonymous." Dkt. No. 55, at 37.

Hitachi replies that (1) "the 'selector' limitation is presumptively outside the purview of s. 112, para. 6 because it lacks any 'means' language" (2) "the 'selector' limitation ***does*** recite structure" and (3) "a 'selector' is a well-known structure, as evidenced by the intrinsic evidence, extrinsic evidence, and Federal Circuit law." Dkt. No. 63, at 19. Hitachi also notes that the prior art Yamane reference, cited by the examiner during prosecution of the ' 709 patent, purportedly "teaches 'selector 3400' which is identical to the switch circuit 406 in the '709 patent." Id. Hitachi annotates Figure 3 of the Yamane reference as follows:



Id. at 19.

Furthermore, Hitachi urges that LG's "alternative construction (that the claimed 'selector' is a controller) contradicts the plain language of the claims of the '709 patent, as well as the specification" since "[o]ther claims of the '709 patent expressly recite a 'controller' that is a different structure than the 'selector.' " Dkt. No. 63, at 20. Hitachi also notes that "originally-filed claim 8 was directed to a 'controller' [but] * * * [t]he claim was twice rejected by the Examiner, and [LG] cancelled claim 8 and replaced it with a new claim 24 directed to a 'selector' (which issued as asserted claim 1)." *Id*. Hitachi argues that "[b]y equating the recited 'selector' in issued claim 1 to the rejected 'controller' structure of cancelled claim 8, LGE is improperly seeking to re-capture unpatentable subject matter that was surrendered during prosecution." *Id*. Hitachi urges that "[d]isclaimer can occur by statement **or** amendment, and an amendment to overcome a rejection is, by itself, a clear and unambiguous disclaimer." *Id*.

Hitachi also argues that "switch circuit 406 is a well-known circuit that has been used in the field of electronics for decades" and that "[a]nyone skilled in the art knows that a switch can have any number of inputs and outputs and be used to direct various different types of signals between various different types of components, in any direction." Dkt. No. 63, at 21. Hitachi cites the following prior-art in support of this view: (1) the Yamane reference discloses " 'selector 3400,' which is identical to switch 406. Selector 3400 is used to direct signals between a video **decoder** (3801) and a reordering buffer (3300)"; (2) U.S. Patent No. 5,949,407 (Sato) discloses " 'audio input selector 10,' 'picture input selector 14,' and 'picture switch 15,' each of which is a switch for directing signals unrelated to encoding audio data"; and (3) U.S. Patent No. 5,748,835 (Lee) discloses " 'first switch 211' to direct an input bit stream to two different audio **decoders** and a processor, and an identical 'second switch 215' used to direct the respective outputs (the reverse function) to a D/A converter." Id. at 21.

Finally, Hitachi urges that "[t]here is no mention anywhere in the ' 709 patent of 'time division multiplexing' [and][t]he claim should not be construed to cover undisclosed and undescribed technology." Dkt. No. 63, at 21-22. Hitachi concludes that "[t]he claim 1 requirement of 'selectively directing **one** of said outputs to **the corresponding one of** the **first decoder and** the **second decoder'** cannot be achieved with only one physical output." *Id*. at 22.

(2) Construction

[4] This disputed phrase does not use the word "means," and thus is presumptively not a means-plus-function limitation. *See* CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1369 (Fed.Cir.2002) ("[A] claim term that does not use the word 'means' will trigger the rebuttable presumption that s. 112 para. 6 does not apply."). The parties dispute whether the claim-and the term "selector" in particular-connotes so little structure as to rebut that presumption.

"[T]he presumption flowing from the absence of the term 'means' is a strong one that is not readily overcome." Lighting World, Inc. v. Birchwood Lighting, Inc., 382 F.3d 1354, 1358 (Fed.Cir.2004). Here, the Court finds the presumption is not overcome. "To help determine whether a claim term recites sufficient structure, we examine whether it has an understood meaning in the art." CCS Fitness, 288 F.3d at 1369. The Court finds the term "selector" connotes sufficient structure to keep this phrase from the ambit of 35 U.S.C. s. 112(6).

The claims, for example, describe the "selector" as having a "first output and a second output separated from each other." *See* Mass. Institute of Tech. and Elecs. For Imaging, Inc. v. Abacus Software, 462 F.3d 1344, 1354 (Fed.Cir.2006) ("Claim language that further defines a generic term like 'mechanism' can sometimes add sufficient structure to avoid 112 para. 6.").

The specification also describes the "selector" as having some structure. The term "selector" appears in the "Summary of the Invention" as part of a "digital data recorder:"

These and other objects are still further achieved by a digital data recorder, comprising a first encoder encoding a first type of digital data at a first compression rate, and storing said encoded first type of digital data on a data storage medium, which stores digital data of a second type encoded at a second compression rate, said first compression rate higher than said second compression rate, and a *selector,* having at least a first and second input for said first type of digital data, and selectively outputting said first type of digital

data received at one of said first and second inputs to said encoder.

'709 Patent, col. 2, lines 27-37. *See also* Abstract. In the '709 Patent specification, the "selector" is described as "having at least a first and second input." That is, of course, different from what claim 1 literally states. But the point is that the term "selector" is used in a context connoting structure and the term "means" is not used in the claim language. Accordingly, the Court rejects LG's assertion that the "selector" limitation constitutes a means-plus-function limitation governed by s. 112(6).

Additionally, available technical dictionaries indicate that "selector" connotes structure. *See* Mass. Institute of Tech., 462 F.3d at 1356 ("Here, technical dictionaries supply ample evidence that the claim term designates structure."). For example, the DICTIONARY OF COMPUTING (4th ed.1996) defines a "selector" as "[a] device that can switch a signal path or initiate some other action on receipt of a predetermined signal. The actioning signal can be on the path to be switched or from a separate path." *See* Hitachi's Response, Exh. 15 at HCX AS 0185362. Both the 1994 and 2003 editions of the MCGRAW-HILL DICTIONARY OF SCIENTIFIC & TECHNICAL TERMS, at pages 1786 and 1890, respectively, define a "selector" in the electrical field as "[a]n automatic or other device for making connections to any one of a number of circuits, such as a selector relay selector switch," and in the computer science field as a "[c]omputer device which interrogates a condition and indicates a particular operation dependent upon the report." *See also* THE ILLUSTRATED DICTIONARY OF MICROCOMPUTERS 349 (3d ed.1990) (defining "selector" as "[a] switching operation based on previous processing which allows a logical choice to be made in the program or system. 2. A mechanical multiposition switch.").

That does not, however, resolve the parties' dispute. Essentially, LG says that the "selector" is a "controller" and Hitachi says the "selector" is a "switch."

Returning to the claim language, claim 1 calls for:

a selector, having at least a first *output* and a second *output* separated from each other, for *selectively directing* one of said outputs to the corresponding one of the first *decoder* and the second *decoder*.

'709 Patent, col. 7, lines 20-23 (emphasis added). Claim 7, on the other hand, calls for:

7. A data recorder for recording data including at least two types of audio data, wherein at least one of said at least two types of audio data is associated with text data for reproducing, said at least two types of audio data including:

a first type of audio data; and

a second type of audio data formatted in a different manner from the first type of audio data, wherein a compression rate is one factor causing the different in formatting manner, the data reproducing device comprising:

a first formatter provided to format the first type of audio data;

a second formatter provided to format the second type of audio data in a different formatting manner from the first formatter; and

a *selector,* having at least a first *input* and a second *input* separated from each other for the first type of audio data and the second type of audio data, and *selectively directing* one of the *inputs to* the corresponding one of the first *formatter* and the second *formatter*.

'709 Patent, col. 8, lines 14-35 (emphasis and paragraphing added). In other words, the "selector" of claim 1 sends output to a decoder. Claim 7 sends input to a "formatter," which presumably refers to an encoder. However, in both claims, the "selector" is used for "selectively directing" data to somewhere.

Dependent claims indicate that a "selector" is not a "controller." Claim 5, which depends from claim 1, calls for:

5. The data reproducing device of claim 1, wherein said controller

[1] determines whether at least another type of digital data is associated with said identified type of digital data based on said *read header,* and

[2] controls output of said identified type of digital data and said another type of digital data from said data storage medium such that said identified type of digital data and said another type of digital data are supplied to an appropriately different ones of said first and second decoders for decoding.

'709 Patent, col. 7, lines 38-44-col. 8, lines 1-3 (emphasis, numbering, and paragraphing added). The phrase "said controller" finds no apparent antecedent basis in claim 1,FN9 but that issue aside, the "controller" according to the claim language both determines data association and "controls output * * * from said data storage medium." A "selector" is not a "controller," but that does not mean a "controller" is precluded from functioning in part as a "selector." That is also within the scope of the foregoing definitions of "selector."

FN9. The same is true for other terms of claim 5. Some of that appears to have resulted from canceling and amending claims during prosecution.

The specification uses the term "selector" consistently with that, although the specification uses the term only twice-once in the abstract:

In the digital player, a decoder, having at least first and second decoding functions, identifies a type of digital data output from a data storage medium. Based on the identification, the decoder selects one of the first and second decoding functions, and decodes the output digital data using the selected decoding function. A converter converts the decoded digital data to analog. To store digital data on the data storage medium, an encoder encodes a first type of digital data at a first compression rate, and stores the encoded first type of digital data on the data storage medium, which stores digital data of a second type encoded at a second compression rate. The first compression rate is higher than the second compression rate. *A selector, having at least a first and second input for the first type of digital data, selectively outputs the first type of digital data received at one of the first and second inputs to the encoder*.

'709 Patent, Abstract (57) (emphasis added). The specification also uses the term in the "Summary of the Invention:"

These and other objects are still further achieved by a digital data recorder, comprising a first encoder

encoding a first type of digital data at a first compression rate, and storing said encoded first type of digital data on a data storage medium, which stores digital data of a second type encoded at a second compression rate, said first compression rate higher than said second compression rate, *and a selector, having at least a first and second input for said first type of digital data, and selectively outputting said first type of digital data received at one of said first and second inputs to said encoder*.

'709 Patent, col. 2, lines 27-37 (emphasis added). In both instances, the "selector" is used for selecting among inputs.

The specification also describes a "switch 406" that appears to correspond to the "selector" of claim 7. Consider the embodiment of Figure 4.FN10 Regarding Figure 4, the specification says that "switch 406 selects the audio signal from the audio signal processor 404 or an audio signal from a microphone 405 and transfers the selected audio signal to an analog/digital (A/D) converter 407." ' 709 Patent, col. 4, lines 18-22. According to the specification, "[t]he switch 406 performs a switching operation under the control of the controller 410, or manually, to select the cassette audio signal or the microphone audio signal." ' 709 Patent, col. 5, lines 36-38. The "selector" of claim 7-as well as the "selector" of the abstract and "Summary of the Invention"-thus appear to correspond to the "switch 406" described in the specification. This analysis is consistent with dependent claim 9, as well.

FN10. *See* supra Part II.A for a reproduction of Figure 4.

There is no similar "switch" disclosed in the specification for the decoders that corresponds to the "selector" of claim 1. Rather, the element disclosed in the specification that most closely corresponds to the "selector" in the context of claim 1 is "controller 410" (depicted in Figure 4, above). According to the specification, the controller controls data output from memory to the decoders:

Next, the structure of the digital player portion for reproducing the digital data stored in the data storage medium 409 will be described. The player portion includes an MP3 decoder 412A decoding an output MP3 file from the data storage medium 409. A speech decoder 412B decodes an output speech file from the data storage medium 409. A text decoder 412C decodes an output text from the data storage medium 409. A D/A converter 413 converts digital output signals from the MP3 decoder 412A, the speech decoder 412B and the text decoder 412C into analog signals. A speaker 414 outputs an analog audio signal from the D/A converter 413 externally. A display unit 415 displays text information from the D/A converter 413. *The controller 410 controls the operation of the above components*.

'709 Patent, col. 4, lines 38-50 (emphasis added). *See also* '709 Patent, col. 4, lines 33-37 ("A controller 410 controls the cassette mechanism 403, the data storage medium 409 and other system components in response to the user's control commands inputted through a key input unit 411 to reproduce the MP3 files or various audio signals."). This language is consistent with claim 5.

A "selector," according to the foregoing technical definitions, may be implemented in different physical forms. One such form can be a "device" or "switch" such as a switch 406. But those definitions are also broad enough to encompass a selecting function performed by a controller such as described in the specification.

As for Hitachi's argument that the "outputs" be "distinct" and "physically separated," claim 1 simply

requires the "first output" and "second output" of the "selector" be "separated from each other." The claim does not require physical separation; rather, as suggested elsewhere in the claim, separation may be functional. In other words, the applicant specified the type of separation in some places, but did not do so here. Thus, Hitachi's argument must be rejected. Hitachi's argument regarding physical separation of the "first decoder" and "second decoder" were discussed and rejected above.

The Court concludes that in claims 1, 2 and 3, the term "selector" is not limited to a "switch." Rather, the term "selector" as used in claims 1, 2, and 3 encompasses a controller that performs the claimed "selectively directing" functions.

III. Conclusion

According to the previous discussion, the Court **ORDERS** the claim terms for the '709 Patent construed as indicated herein.

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