IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

U.S. PHILIPS CORPORATION, Plaintiff, v. EASTMAN KODAK COMPANY, Defendant.	Civil Action No. 06-00251-GMS

EASTMAN KODAK COMPANY'S OPENING CLAIM CONSTRUCTION BRIEF

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I. INTRODUCTION

Pursuant to the Court's order dated February 20, 2007, Eastman Kodak Company ("Kodak") submits this opening claim construction brief for U.S. Patent No. 4,901,075 ("'075 Patent").

A. Technical Background.

The '075 Patent discloses a method for coding a video signal. (*See* Ex. A, '075 Patent.)[1] In general terms, coding a video signal reduces the bit rate at which the signal is transmitted, or reduces the number of bits needed to store the video signal, by reducing the total number of bits of information needed to represent the video image. This process is known as compression. Many different types of compression can be used to achieve bit rate reduction. Most of these compression techniques employ a coding process where video signal values are converted from one form to another. Typically, the converted video signal is then encoded into "code words" that require fewer bits than the original video signal values. Because these code words require fewer bits, the signal can be transmitted with fewer bits or stored in a smaller file.

The background of the '075 Patent discusses a prior art video coding technique disclosed in an article entitled "Scene Adaptive Coder" by Wen-Hsuing Chen and William K. Pratt. (Ex. A, at 1:11-57.) That prior art article, which is part of the intrinsic record, describes coding video signals with the goal of transferring video images of sufficient quality with the lowest-possible bit rate. (*See* Ex. B, Chen & Pratt, *Scene Adaptive Coder*, IEEE TRANSACTIONS ON COMMUNICATIONS, March 1984, pp. 225-232 ("Chen Article").)

The coding technique described in the Chen Article occurs in several steps. First, sections of the video image of identical size, represented by blocks of pixels, are subjected to a

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[1] All exhibits cited herein are attached to the Declaration of Nicole Wyll in Support of Eastman Kodak Company's Opening Claim Construction Brief, and will be referred to as "Ex. __."

discrete cosine transformation. The transformation generates a new block of numerical values (coefficients) from the original block of pixels. In the new block of coefficients, a large number of elements (or coefficients) are zero or almost zero. Second, the coefficients in the block are quantized so that most of the coefficients are equal to zero due to the quantization. Because a large number of the coefficients are then equal to zero, the transformed and quantized signal will consist of runs of zeros between non-zero coefficients. The runs can be coded as a single message with a single code word, rather than having a code word for each zero. This results in a significant bitrate reduction.[2] The Chen Article also teaches that a further reduction in the number of bits is achieved by assigning shorter code words to more frequently occurring messages (either runs of zero coefficients or values of the non-zero coefficients). This technique is generally referred to as variable length coding. The particular variable length coding method the Chen Article teaches for assigning shorter code words to more frequently occurring messages is called Huffman coding.

As shown in Tables I and II of the Chen Article, the coding technique encodes run lengths of zero-value coefficients using Huffman code words from a first Huffman code table (Table II), then encodes non-zero coefficients using Huffman code words from a second code table (Table I). Code words from the two tables are combined together to code the video signals.

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[2] For example, if the signal includes a run of four zeros in a row, it takes fewer bits to send a message that says, "here are four zeros in a row" than it does to send a message that says, "here is a zero," followed by a second message that says, "here is a zero," followed by a third message that says "here is a zero," followed by a fourth message that says "here is a zero."

TABLE I
HUFFMAN CODE TABLE FOR COEFFICIENT AMPLITUDE IN ABSOLUTE VALUE

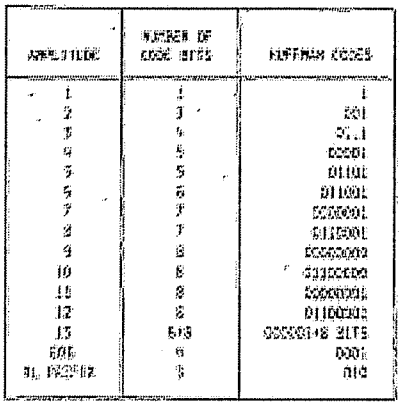
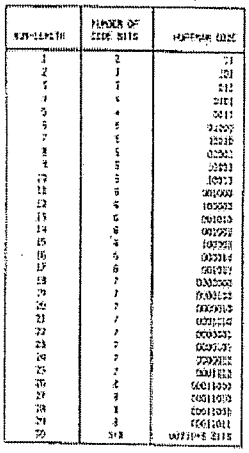


TABLE II
HUFFMAN CODE TABLE FOR THE NUMBER OF CONSECUTIVE ZERO-VALUED COEFFICIENTS



(Ex. B, at p. 228-229.)

Another known coding technique is disclosed in U.S. Patent No. 4,316,222 (the '222 Patent). (*See* Ex. C, '222 Patent.) The '222 patent was cited during prosecution of the '075 Patent. (Ex. A, at [56] References Cited.) The '222 patent teaches that the encoded message can be a run of zeros and the next non-zero signal value. (Ex. C, at fig. 2A.) Again, as an example, it will take fewer bits to send a message that says, "here are 511 zeros followed by a 1," than it does to send a message that says, "here are 511 zeros," followed by a second message that says, "here is a 1." As shown in Figure 2A of the '222 patent, a run of zero values and a "1" are coded together as a single message ("Run Feature") into a variable length code word.

RUN LENGTH	RUN FEATURE	ENCODING SYMBOL	BINARY PROM ADDRESS	VARIABLE LENGTH CODE WORD
01	1,0	8	1000	111
011	1,1	9	1001	011
01111111	1,6	14	1110	1010
011111111	1,7	15	1111	10111
001	2,0	16	10000	01001
00111111	2,6	22	10110	110011
001111111	2,7	23	10111	110000
0001	3,0	24	11000	100111
00···00 11···11 (8, 7)	8,7	71	1000111	100001
00···0 11 (139)	139,1	1113	10001011001	110001100
00···0 1111111 (500, 7)	500,7	4007	11111010011	010101000
000···00 (511)	511,0	4088	11111111000	010111000
0000 1 (511)	511,1	4089	11111111001	010001110
00···0 111111 (511)	511,6	4094	11111111110	001010001
00···00 111111 (511)	511,7	4095	11111111111	001010100

FIG. 2A

(Ex. C, at fig. 2A.) Thus, the '222 patent teaches combining a run of a first value ("0") with a second value ("1") into a single message, then encoding each such message using variable length coding as shown for Run Features (2,0), (3,0), or (511,1) in Figure 2A. (*Id.*)

B. The Alleged Invention of the '075 Patent.

The '075 Patent discloses another technique for encoding transformed and quantized video signals using Huffman variable length encoding. (Ex. A, at 2:49-68.) The '075 Patent's method is based on the method disclosed in the Chen Article. But rather than coding the runs of zero coefficients and the non-zero coefficients as separate messages, the '075 Patent defines the message to be coded as the runs of consecutive zero-valued coefficients together with the amplitude of the next or previous non-zero coefficient. (*Id.* at 2:36-42; 4:55-5:2; figs. 3-5.) The patent specification notes that for a video signal, the probability of a combination of a run of zeros and the following non-zero coefficient is smaller than the product of the probability of zero runs multiplied by the probability of the following non-zero coefficient. (*Id.* at 2:43-3:25.) This means there is a statistical dependency between the run of zero coefficients and the amplitude of the non-zero coefficient that follows such a run. (Ex. D, Declaration of Prof. Touradj Ebrahimi

in Support of Kodak's Opening Claim Construction Brief ("Ebrahimi Decl.") at ¶ 14.) It was well-known before 1986 that where there are statistical dependencies between two types of messages, a Huffman coding of a single message that is a combination of those two types of messages produces a higher compression efficiency than a Huffman coding of each message separately. (*Id.* at ¶ 15.) Hence, the '075 Patent reports gains of 12 percent when coding the combination of zero-runs and non-zero coefficients compared to Huffman coding zero-runs and separately Huffman coding non-zero coefficients in a video signal. (Ex. A, at 3:13-17.)

C. Prosecution History Overview.

The '075 Patent claims priority to three German patent applications. As a result, the specification of the United States application that matured into the '075 Patent was amended significantly in a preliminary amendment. (Ex. E, File Wrapper and Contents of U.S. Patent No. 4,901,075 at KODAK_000048-52.) The earliest German patent application was filed on September 13, 1986. (Ex. A, at [30] Foreign Application Priority Data.) In a first office action issued by the examiner, the examiner rejected the claims over U.S. Patent No. 4,394,774 to Widergren ("the Widergren patent"). (Ex. E, at KODAK_000054-57.) In response to the office action, the applicant amended the claims and argued that the Widergren patent disclosed coding zero coefficient runs, whereas the '075 invention is directed to "encoding of events comprising a run of zero value coefficients and the subsequent or preceding non-zero coefficient." (Ex. E, at KODAK_000110.)

The examiner then issued another office action in which he again rejected the claims as indefinite and as anticipated by U.S. Patent No. 4,101,934 to Fukuoka ("the Fukuoka patent"). (Ex. E, at KODAK_000114.) In response, the applicant amended the claims to overcome the indefiniteness rejection and argued that the Fukuoka patent does not disclose assigning one code

word to an entire event that consists of a run of zero coefficients and a preceding or subsequent non-zero coefficient. (Ex. E, at KODAK_000133-134.) The claims were then allowed.

II. LEGAL STANDARDS FOR CLAIM CONSTRUCTION.

A. Claims Should Be Given a Meaning Consistent With the Intrinsic Record.

Claim construction is a matter of law. *See Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977 (Fed. Cir. 1995) (*en banc*), *aff'd*, 517 U.S. 370 (1996). "The construction of claims is simply a way of elaborating the normally terse claim language in order to understand and explain, but not to change, the scope of the claims." *Embrex, Inc. v. Serv. Eng'g Corp.*, 216 F.3d 1343, 1347 (Fed. Cir. 2000) (internal citations omitted). The Court is to give the claims their ordinary and customary meaning according to the meaning the claim terms would have to a person of ordinary skill in the art when the patent was filed.[3] *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (*en banc*). Accordingly, the Court begins from the baseline of how a person of ordinary skill in the art understands the claims. *Id.* at 1313. "Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Id.*

1. Claim Construction Starts With the Claim Language.

The first step in the claim construction process is to analyze the language of the claims themselves. *Phillips*, 415 F.3d at 1312. "It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" *Id.* (internal citation omitted).

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[3] A person of ordinary skill in the art in the 1989 time frame would have been an engineer having a masters degree in electrical engineering with at least two years of experience in the field of digital signal compression. (Ex. D, at ¶ 11.)

"Quite apart from the written description and the prosecution history, the claims themselves provide substantial guidance as to the meaning of particular claim terms." *Id.* at 1314. In some cases claim construction "involves little more than the application of the widely accepted meaning of commonly understood words." *Id.*; *see also Network Commerce, Inc. v. Microsoft Corp.*, 422 F.3d 1353, 1359 (Fed. Cir. 2005).

2. Claim Terms Must Be Read in View of the Specification.

Although the claims themselves provide substantial guidance as to the meaning of particular claim terms, "the claims must be read in view of the specification, of which they are a part." *Phillips*, 415 F.3d at 1315 (citing *Markman*, 52 F.3d at 979); *see also Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed Cir. 1998) ("the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim").

Importantly, the role of the specification includes presenting a description of the technological subject matter of the invention, while the role of the claims is to point out with particularity the subject matter that is patented. *See Phillips*, 415 F.3d at 1312; *Netword, LLC v. Centraal Corp.,* 242 F.3d 1347, 1352 (Fed. Cir. 2001); *see also* 35 U.S.C. §112, ¶¶ 1, 2. "Usually [the specification] is dispositive; it is the single best guide to the meaning of a disputed term." *Phillips*, 415 F.3d at 1315 (*quoting Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

Accordingly, "[t]he construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." *Id.* at 1316 (*quoting Renishaw PLC*, 158 F.3d at 1250.)

3. The Prosecution History Is Relevant to Claim Construction.

After reviewing the claims and the patent specification, the Court should also consider the final piece of the intrinsic record—the prosecution history. *See Phillips*, 415 F.3d at 1317. The prosecution history includes the complete record of proceedings before the Patent Office and the prior art cited during the examination of the patent. *Id.* "[T]he prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." *Id.*

4. Prior Art References Cited During Prosecution of the Patent Are Part of the Intrinsic Record.

A prior art reference is part of the intrinsic evidence of the '075 Patent. In *Phillips v. AWH Corp.*, the Federal Circuit discussed at length the use of intrinsic and extrinsic evidence in claim construction and held that both the patent's specification and its prosecution history are "intrinsic evidence." *Id.* at 1317. Further, "the prosecution history which we have designated as part of the 'intrinsic evidence' consists of the complete record of the proceedings before the PTO and includes the prior art cited during examination of the patent." *Id.* (internal citation omitted).

B. Reliance on Extrinsic Evidence Is Disfavored.

The Court is permitted to rely on extrinsic evidence in construing the claim, although extrinsic evidence is "less significant than the intrinsic record in determining the legally operative meaning of claim language." *Phillips*, 415 F.3d at 1317 (observing that extrinsic evidence "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises"). The Court may rely on such extrinsic evidence "to provide background on the technology at issue, to explain how an invention works, to ensure that the court's understanding of the technical aspects of the patent is

consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field." *Id.* at 1318. But dictionary definitions and expert testimony should be rejected when they are at odds with the intrinsic record. *Id.*; *see also Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 977 (Fed. Cir. 1999); *Network Commerce*, 422 F.3d at 1361 ("[E]xpert testimony at odds with the intrinsic evidence must be disregarded."). In all cases, the primary consideration for the Court is how one of ordinary skill in the art would understand a claim term at the time of the invention; that is, as of the effective filing date of the patent. *Phillips*, 415 F.3d at 1313.

C. The Preamble of a Claim Can Be Limiting.

Courts must construe claim preambles according to the general principles of claim construction. *See Bell Commc'ns Research, Inc. v. Vitalink Commc'ns Corp.*, 55 F.3d 615, 620 (Fed. Cir. 1995). A preamble that merely states an intended purpose or use of the invention is not limiting. But when language in the preamble is necessary to give meaning to the claim, the preamble must be read as a limitation on the claim. *Id.* at 620-21. "If the claim preamble, when read in the context of the entire claim, recites limitations of the claim, or, if the claim preamble is 'necessary to give life, meaning, and vitality' to the claim, then the claim preamble should be construed as if in the balance of the claim." *Pitney Bowes, Inc. v. Hewlett Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999) (quoting *Kropa v. Robie*, 187 F.2d 150, 152 (CCPA 1951); *see also NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1305 (Fed. Cir. 2005). Thus, "when the claim drafter chooses to use *both* the preamble and the body to define the subject matter of the claimed invention, the invention so defined, and not some other, is the one the patent protects." *Bell Commc'ns*, 55 F.3d at 620.

Similarly, when a preamble provides antecedent basis for terms in the body of the claim, the preamble is limiting because the term in the body cannot be properly understood without

reference to its antecedent in the preamble. *See NTP*, 418 F.3d at 1305-06; *Seachange Int'l, Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1376 (Fed. Cir. 2005).

III. THE PROPER CONSTRUCTION OF THE CLAIMS OF THE '075 PATENT.

A. The Asserted Claims and Terms Requiring Construction.

Philips has asserted claims 3, 4, 7, 8 and 11 in this case. Kodak and Philips have agreed on the appropriate construction of certain claim terms, which will not be discussed further.[4] For the Court's convenience, Kodak sets forth the entire text of the asserted claims with the disputed terms requiring construction underlined the first time they appear in each claim:

> 3. In a method of coding a signal comprising a sequence of coefficients which results after a blockwise transform of pixels of a video signal with subsequent quantization, for transmission at a reduced bit rate, said signal comprising a plurality of zero coefficients, and a plurality of non-zero coefficients said method comprising the steps of:
>
> (a) deriving from said signal, a plurality of events each comprising a run of said zero-coefficients having a respective run length and preceded or followed by at least one non-zero coefficient, and
>
> (b) for each of said events, determining said respective run length and assigning a code word to represent said non-zero coefficient and said run length.
>
> 4. The method of claim 3, wherein said code words are Huffman code words.
>
> 7. A method as claimed in claim 4, characterized in that the Huffman codeword is independent of the sign of that non-zero coefficient which succeeds or precedes the run of zero-coefficients and in that the sign is coded by a separate bit.
>
> 8. A method for coding a signal for transmission at a reduced bandwidth, comprising the steps of:
>
> (a) transforming said signal into a sequence comprising zero coefficients occurring in runs and non-zero coefficients;

---

[4] Kodak and Philips agree that "predetermined run length" in claim 11 means "a run length determined prior to coding"; "pixel" in claim 3 means "a number representing an image at a single point"; and "quantization" in claim 3 means "a process that substitutes a single whole number for a range of signal values."

> (b) deriving from said sequence, a plurality of events each comprised of a run of zero coefficients having a respective run length, which is preceded or followed by at least one non-zero coefficient, and
>
> (c) for each of said events, determining the run length and assigning a code word to represent said run length and said non-zero coefficient.
>
> 11. The method of claim 8, comprising the additional steps of:
>
> determining whether the run length of each event exceeds a predetermined run length and if so, splitting said respective event into a plurality of sections so that each of said sections has a run length below said predetermined run length, and assigning a code word to each section.

(Ex. A, at 7:41-8:39, emphasis added.)

The parties' Joint Claim Construction Statement lists each of the disputed claim terms as they appear in the asserted claims. (D.I. 94.) However, Kodak believes it would be more helpful to the Court to discuss the most important terms first, followed by the remaining terms in sequential order. Kodak has also grouped similar or common terms for discussion. At the end of each discussion, Kodak explains why each term is potentially case dispositive.

B. "Signal" (All Claims) and "Video Signal" (Claims 3, 4 and 7).

Kodak proposes that the terms "signal" and "video signal" both be construed to mean "a sequence of values comprised of sequential and interdependent image frames that when rapidly displayed are capable of depicting movement."

1. The Preambles of Claims 3 and 8 Are Limiting.

The terms "video signal" and "signal" first appear in the preamble of claim 3, and the term "signal" appears in the preamble of claim 8. For at least three reasons, the preamble of claims 3 and 8 are limiting.

First, the preamble of claim 3 recites essential structure or is "necessary to give life, meaning, and vitality" to the claim. *See Pitney Bowes*, 182 F.3d at 1305. The preamble of claim

3 provides important details about the signal, the video signal, the coefficients, non-zero coefficients and zero coefficients that are integral to claim 3. If the preamble of claim 3 were removed, the remaining portions of claim 3 would be meaningless.

Second, the preamble, together with the body of claim 3, defines the subject matter of the claimed invention. *See Bell Commc'ns,* 55 F.3d at 620. Claim 3 would not be completely defined and described without the preamble, because the preamble defines the signal, the video signal, coefficients, zero coefficients and non-zero coefficients, while the body of claim 3 defines a deriving step and a determining step.

Third, the preamble provides antecedent basis for the term "signal" in the body of claims 3 and 8. The first reference to "signal" in the body of claims 3 and 8 are preceded by the article "said," meaning the term is relying on an earlier introduction of the term for its antecedent basis. The same is true of the first reference to "zero coefficient" in the body of claim 3. When a preamble provides antecedent basis for terms in the body of the claim, the preamble is limiting, because the body cannot be properly understood without reference to its antecedent. *See NTP,* 418 F.3d at 1305-06. Therefore, the preambles of claims 3 and 8 are limiting.

2. The Intrinsic Evidence Supports Kodak's Construction of "Signal" and "Video Signal."

The intrinsic evidence supports Kodak's construction of "signal" and "video signal" as meaning the same thing. The claim language does not provide sufficient guidance on the meaning of "video signal." However, the specification reveals:

> It is an object of the invention to provide a coding method for a signal of the kind mentioned in the opening paragraph and comprising in a special case, an intermediate signal resulting from a picture coding operation, leading to a bit rate reduction which is larger than the hitherto known.

(Ex. A, at 1:60-65, emphasis added.) The kind of signal "mentioned in the opening paragraph" is a reference to the Chen Article, which is described there as "a coding process of video signals for the purpose of transmitting video pictures of satisfactory quality at a minimum possible bit rate." (*Id.* at 1:15-17, emphasis added.) Because the patent describes the object of the invention as "the coding process of video signals," one of ordinary skill in the art would understand that the term signal as used in the '075 Patent refers to a video signal.

The Chen Article itself sheds more light on the meaning of the terms "signal" and "video signal." In relevant part, the Chen Article states:

> The scene adaptive coder described herein encodes cosine transform coefficients in a simple manner. The coding process involves only thresholding, normalization, roundoff, and rate buffer equalization. The performance of the coder is quite good in terms of mean square error and subjective evaluation. Because the coding process is dependent upon the instantaneous coefficient content inside the block and the accumulated rate buffer content, it is well suited for intraframe coding of moving images. At Compression Labs, Inc., the coder has been implemented with real-time hardware to code NTSC color video at a channel rate of 1.5 Mbits/s.

(Ex. B, at p. 229.) Thus, the Chen Article teaches "intraframe coding of moving images" used to code NTSC color video—that is, television signals. (Ex. D, at ¶ 17.) Together, the Chen Article and the specification demonstrate that "signal" and "video signal" mean "a sequence of values comprised of sequential and interdependent image frames that when rapidly displayed are capable of depicting movement."

Other portions of the patent specification support this construction. The patent teaches that Figure 1 demonstrates the frequency distribution for the case of a "video signal." (Ex. A, at 2:49-51.) The patent then compares the "video signal" in Figure 1 to the "video signal" in the Chen Article, concluding that the alleged invention provides a 12 percent reduction in bit rate when coding video signals:

> An additional bit rate reduction of 12% is obtained when coding video signals in accordance with the above-mentioned two dimensional coding table [FIG. 1] as compared with the coding method described in the opening paragraph [Chen 1984 article].

(*Id.* at 3:13-17.) The patent teaches encoding of only one type of signal—a video signal. Indeed, the patent repeatedly uses the terms "signal" and "video signal" interchangeably—nowhere does the patent define the two terms differently. Because the two terms are used interchangeably, they must be construed consistently. *See N. Am. Container, Inc. v. Plastipak Packaging, Inc.*, 415 F.3d 1335, 1348 (Fed. Cir. 2005). Therefore, the "video signal" of claim 3 and the "signal" of claim 8 must refer to the same signal as described in the Chen Article—that is, a video signal.

Furthermore, a person of ordinary skill in the art reading the patent would understand that the patent relates to encoding of moving (not still) images, because the patent teaches that "coefficients having values of more than 136 do not occur." (Ex. A, at 4:49-54.) For at least two reasons, a person of ordinary skill would understand this restriction to 136 values as reasonable for coding video signals, but inappropriate for coding still images. (Ex. D, at ¶¶ 18-23.) First, video has a much lower resolution and quality than still images. (*Id.* at ¶ 19.) Second, video systems typically encode just the difference between video frames, not each frame. (*Id.*) The solution to both is to decrease the total number of values coded to a very limited set, which is how video (but not still image) processing works. (*See* Ex. A, at 2:49-54, Fig 1; Ex. D, at ¶ 21.)

On the first point, it is important to understand that video is comprised of multiple frames, displayed rapidly in sequence to depict movement. (Ex. D, at ¶ 20.) The processing hardware circa 1986 did not have the ability to compress high-resolution video frames in real-time, nor did communication systems have the requisite capacity needed to transmit such video. (*Id.*) Therefore, lower quality video frames were used. After converting these video frames to digital data using the DCT transform and quantization methods described in the patent, the result

was a narrow range of whole numbers that were subsequently encoded. (*Id.*) A person of ordinary skill would understand that 136 values would be sufficient to cover those values. (*Id.*)

On the second point, the processing of video signals typically was performed only to the differences between successive video frames (and not to each frame). (*Id.* at ¶ 21.) Because there are 30 video frames per second, there are minimal differences between each frame. For example, if a person were talking, the background might not change at all, and only the area around the person's lips might vary to the extent there was movement during l/30th of a second. (*Id.*) These differences between frames produced a very small range of signal values to be encoded, many of which would be zero or whole numbers close to zero. (*Id.*) This further supports the understanding of a person of skill in the art that a system limited to values of at most 136 would have been appropriate for video signal coding. (*Id.*)

In contrast, still image processing did not need to occur in real-time, nor did still images need to be transmitted in real-time. (*Id.* at ¶ 22.) This allowed higher quality still images to be used. (*Id.*) As a result of starting with higher quality images, and with no restriction for communication purposes on the size of the image, after the conversion of these still images to digital data (as above), the person of ordinary skill would not have expected a range of values that would be limited to the 136 values imposed by the patent. (*Id.*) For example, the JPEG standard that Philips accuses of infringement allows for more than one thousand values. Therefore, a person of ordinary skill in the art would understand that the statement "coefficients having values of more than 136 do not occur" in the '075 Patent to mean that the claimed invention was directed only to the coding of video signals. (*Id.* at ¶ 23.)

Philips will no doubt argue that claim differentiation supports a broader and different construction for "signal" than "video signal." Although claim differentiation can support a

different construction, claim differentiation does not require a different construction: "That the patentee chose several words in drafting a particular limitation of one claim, but fewer (though similar) words in drafting the corresponding limitation in another, does not mandate different interpretations of the two limitations, since 'defining a state of affairs with multiple terms should help, rather than hinder, understanding.'" *Kraft Foods, Inc. v. Int'l Trading Co.*, 203 F.3d 1362, 1368 (Fed. Cir. 2000) (internal citation omitted) (finding that intrinsic evidence overcame any presumption arising from doctrine of claim differentiation); *Tate Access Floors, Inc. v. Maxcess Techs., Inc.*, 222 F.3d 958, 967-68 (Fed. Cir. 2000) (The use of the term 'border' in claim 8, as opposed to 'integral contrasting border' in claim 1, did not mandate different constructions of these limitations.); *see also Nystrom v. TREX Co.*, 424 F.3d 1136, 1143 (Fed. Cir. 2005).

3. Why the Construction of "Signal" and "Video Signal" Is Important.

The proper construction of "video signal" and "signal" is important because it will likely be case-dispositive. Philips claims that Kodak's digital still cameras infringe the '075 Patent. The accused cameras take single image pictures, then encode the still image in the JPEG format. But Philips does not accuse Kodak's digital cameras of infringement based on their ability to encode video in the MPEG format, presumably because Kodak is licensed to the '075 Patent for MPEG video encoding. Thus, if the Court properly construes the claims as being limited to video signals, Kodak's practice of the JPEG standard cannot infringe the claims.

Therefore, the Court should construe "video signal" in claim 3 and "signal" in claim 8 to mean "a sequence of values corresponding to sequential and interdependent moving images that when rapidly displayed are capable of depicting movement."

C. "Event" (All Claims).

Kodak proposes that "event" be construed to mean "a run of zero coefficients and the value of the non-zero coefficient which immediately precedes or follows that run."

1. The Intrinsic Evidence Supports Kodak's Proposed Construction of "Event."

Kodak's proposed construction of "event" is supported by the claim language, the specification and the prosecution history of the '075 Patent.

The claims of the '075 Patent support Kodak's construction. They recite "deriving from said signal, a plurality of events each comprising a run of said zero-coefficients having a respective run length and preceded or followed by at least one non-zero coefficient" (claim 3) and "deriving from said sequence, a plurality of events each comprised of a run of zero coefficients having a respective run length, which is preceded or followed by at least one non-zero coefficient" (claim 8). Thus, Claims 3 and 8 both expressly recite that an event is "a run of zero coefficients preceded or followed by at least one non-zero coefficient."

The specification also supports Kodak's construction of "event." In relevant part, the specification teaches:

> As used in the following description, a run of zero coefficients and the non-zero coefficient which immediately precedes or follows this run, is referred to as an event. Each non-zero coefficient which is not preceded or followed by one or more zero coefficients is also referred to as an event. According to the invention these events are to be coded.

(Ex. A, at 2:36-42, emphasis added.) Furthermore, Figures 3-5 show that the "B" number (corresponding to the non-zero coefficient) can be 0-9, which is the value of the non-zero coefficient that is used to define the event in the single code table.

The prosecution history also supports Kodak's proposed construction of "event." In response to an Office Action rejecting the claims over the Widergren patent, the applicant argued:

> Widergren, however, does not disclose the encoding of events comprising a run of zero value coefficients and the subsequent or

> preceding non-zero coefficient. Therefore, claims 4-17 are patentable under 35 U.S.C. § 102(b) over Widergren.

(Ex. E, at KODAK_000110.) In responding to a later Office Action rejecting the claims in light of the Fukuoka patent, the applicant argued:

> As specifically described in the claims, for example claim 11, the method comprises the step of deriving from said signal a plurality of events each comprising not only a run of zero coefficients but a run of zero coefficients having a respective run length of which is preceded or followed by at least one non-zero coefficient. In other words, we define events, and an event is constituted for example, by a run of zero coefficients and the subsequent or preceding non-zero coefficient.

(Ex. E, at KODAK_000133-134, emphasis added.) Thus, the applicant specifically defined "event" to include the value of the non-zero coefficient.

2. Why the Construction of "Event" Is Important.

As discussed above, Philips has accused Kodak's digital still cameras of infringing the '075 Patent because the cameras practice the JPEG standard. JPEG images are encoded as two types of messages in a DCT transformed and quantized still image signal. The first type of message is the length of a run of zero coefficients along with an indication of how many bits are needed to encode the following non-zero coefficient. This first message is encoded using a Huffman type code.[5] The second type of message is the actual value of the non-zero coefficient. The second type of message is encoded using what is referred to as a variable length PWM code. The size of the PWM code word is what is included with the length of the run of zero coefficients in the first type of message, not the value of the non-zero coefficient. Thus, if the Court properly construes "event" to include the value of the non-zero coefficient, Kodak's practice of the JPEG standard cannot infringe the claims.

Therefore, the Court should construe "event" to mean "a run of zero coefficients and the value of the non-zero coefficient which immediately precedes or follows that run."

D. "Code Word" (All Claims).

Kodak proposes that "code word" be construed to mean "a unique representation for an event in a single code table."

1. The Intrinsic Evidence Supports Kodak's Proposed Construction of "Code Word."

The "code word" of the '075 Patent is a unique representation for an event (a run of zero coefficients and a preceding or subsequent non-zero coefficient) that is selected from a single code table, in contrast to the two code tables shown in the Chen Article discussed above. The specification supports Kodak's proposed construction. The specification teaches:

> FIGS. 3 to 5 show the exact structure of the Huffman codewords used. The first codeword 11 represents the coded signal value for characterizing a block end; at the transmission it succeeds the last codeword which is associated with a coefficient block. The first column of these figures states consecutive numbers, the second column states the values B of the coefficients and the third states the lengths L of the zero runs. The two latter data combined result in the "coordinates" of a codable event according to FIG. 2. In the fourth column of FIGS. 3-5 the code words are shown bitwise. The bit s denotes the sign bit, the positions indicated by "-" are meaningless, and the positions indicated by "+" comprise the coded values of the coefficients in so far as they are larger than eight. The last column once more states the length of the Huffman codewords.

(Ex. A, at 4:55-5:2, Figs. 3-5.) The only code words used in the '075 Patent are generated based on the single code table shown in Figures 3-5. Furthermore, all of the 87 code words that appear in Figures 3-5 are unique for each event, and each event is represented by a combination of the "B" and "L" values in Figures 3-5. (*Id.* at 2:50-57, Figs. 3-5.)

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[5] As discussed below, the codewords used in the JPEG method implemented Kodak's digital still cameras is not a true Huffman code because the statistics of the image being coded are not used in

The prosecution history also supports Kodak's proposed construction. During prosecution, the examiner rejected the claims over the Fukuoka patent. In response to this prior art rejection, the applicant argued:

> However, in accordance with the instant invention, there is assigned only one codeword to the entire event. This codeword depends on the number of zero coefficients (in this case six) and the value of the non-zero coefficient. Different codewords are assigned to events having the same number of zero coefficients but different values of the non-zero coefficient.

(Ex. E, at KODAK_000134.) In distinguishing over the prior art, the applicant argued that different (unique) code words are assigned to each event. Therefore, the term "code word" should be construed to mean "a unique representation for an event in a single code table."

2. Why the Construction of "Code Word" Is Important.

The proper construction of "code word" is important, because the JPEG standard specifies that the first message encoded is the run length along with the size of the PWM code word needed to identify the non-zero coefficient. Because several different non-zero coefficients can be represented by the same sized PWM code word, there is not a unique representation of the claimed event under the JPEG standard. Thus, if the Court properly construes "code word " to mean "a unique representation of an event in a single code table," Kodak's practice of the JPEG standard cannot infringe the claims.

E. "Assigning a Code Word to Represent Said Non-Zero Coefficient and Said Run Length" (Claims 3, 4 and 7) and "Assigning a Code Word to Represent Said Run Length and Said Non-Zero Coefficient" (Claim 8).

Kodak proposes that "assigning a code word to represent said non-zero coefficient and said run length" (claims 3, 4 and 7) and "assigning a code word to represent said run length and said non-zero coefficient" (claim 8) should mean "selecting a unique entry in the single code

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assigning the code words to the first message type.

table for the event." From this code word, the original run length of zero coefficients and the magnitude of the non-zero coefficient can be determined, without any additional information.

1. The Intrinsic Evidence Supports Kodak's Proposed Construction.

These phrases (which must be construed the same way) contain the terms "code word," "non-zero coefficient" and "run length" for which proposed constructions are provided above. The specification offers further support for the above terms. As shown in Figure 3-5, for any particular non-zero coefficient ("B" in Figures 3-5) and a run length ("L" in Figures 3-5), a single code word from Figures 3-5 is selected. (Ex. A, at 4:55-5:2.) Then, for any single code word (code word in Figures 3-5) the run length and the non-zero coefficient can be determined.

Furthermore, the prosecution history supports the above construction in which the applicant, in response to a prior art rejection, made the following statements:

> According to the teaching of Fukuoka there would be assigned a code word to the run of six zeros and a further codeword to the non-zero coefficient. However, in accordance with the instant invention, there is assigned only one codeword to the entire event. This code word depends on the number of zero coefficients (in this case six) and the value of the non-zero coefficient. Different codewords are assigned to events having the same number of zero coefficients but different values of the non-zero coefficient.

(Ex. E, at KODAK_000133-134.) In doing so, the applicant disclaimed using multiple code words for the claimed event and should be estopped from a construction that permits more than one code word to be assigned for an event. Thus, the phrase should be construed to require selecting a unique entry in a single code table.

2. Why This Construction Is Important.

The construction of these phrases is important because the JPEG standard requires two code words, contrary to the argument the applicant made during prosecution. Kodak understands that Philips is asserting that the encoding of the first type of message satisfies the claims, and that

the additional PWM code is irrelevant to the analysis because of the open "comprising" language in the preamble of the claims. Philips' present contention is completely at odds with the arguments made during prosecution to overcome the Patent Office's rejection.

Therefore, if the Court properly construes "assigning a code word to represent said non-zero coefficient and said run length" and "assigning a code word to represent said run length and said non-zero coefficient" (Claim 8) to mean "selecting a unique entry in the single code table for the event," Kodak's practice of the JPEG standard cannot infringe the claims.

F. "Coefficient," "Zero Coefficient" and "Non-Zero Coefficient" (All Claims).

Kodak proposes that "coefficient" be construed to mean "a whole number", that "zero coefficient" be construed to mean "a whole number whose value is zero" and that "non-zero coefficient" be construed to mean "a whole number whose value is not zero."

1. The Intrinsic Evidence Supports Kodak's Proposed Construction of "Coefficient."

The specification and prosecution history of the '075 Patent support the proposed construction. The claim language does not assist in the interpretation of the term "coefficient."

The specification confirms that the coefficients are whole numbers. For example, the specification states that the value of the non-zero coefficients proceeds through the natural numbers. (Ex. A, at 2:52-57.) Natural numbers are positive integers and are whole numbers. In addition, Figures 2-5 of the '075 Patent (and the description that accompanies these figures) support the proposed construction that a coefficient is a whole number. For example, the "B" values in Figure 2 (that represent the value of the subsequent coefficient) range from 0-10 (all whole numbers) and in Figures 3-5 (which are the coding table of the '075 Patent), all of the values of B (0-9) are whole numbers. (*Id.* at 2:52-61, fig. 3-5, 4:55-5:2.) Furthermore, the

example of the coding of coefficients in the '075 Patent only includes whole numbers for the coefficients. (*See e.g. Id.* at 5:39-50.)

The prosecution history also mandates that a coefficient is a whole number. In arguing patentability over a piece of prior art, the applicant argued that, "In the instant invention, the coefficients are not limited to either ones or zeros, i.e., they are not merely binary. They can have any one of the values zero, one, two, three and up to, for example, 256 if eight bits are used to code them." (Ex. E, at KODAK_000133.)

Thus, the intrinsic evidence of the '075 Patent requires that "coefficient" be construed to mean "a whole number" as proposed by Kodak.

2. Nature of Claim Construction Dispute for "Coefficient."

All of the examples of coefficients in the specification and prosecution history are whole numbers. Kodak understands that Phillips may argue that "coefficient" should be construed to be a multiplication factor that results from transform coding. Nothing in the specification or prosecution history clearly supports this overly narrow construction. Thus, the Court should adopt Kodak's proposed construction which is simpler and not overly narrow.

3. "Zero Coefficient" and "Non-Zero Coefficient."

These two terms only add "zero" and "non-zero," respectively, to the term "coefficient." The term "zero" and "non-zero" are easily understood terms and thus should be given their plain meaning which is captured by Kodak's proposed construction of "a whole number whose value is zero" for "zero coefficient" and "a whole number whose value is not zero" for "non-zero coefficient."

G. "Huffman Code Word" (Claim 7).

Kodak proposes that "Huffman codeword" be construed to mean "a variable-length code word that identifies each unique event, where the code word is shorter for more frequently

occurring events and longer for less frequently occurring events, whereby no Huffman code word is the prefix of another Huffman code word."

1. The Intrinsic Evidence Supports Kodak's Proposed Construction of "Huffman Codeword."

The claim language is unambiguous with respect to the term "Huffman codeword" because it is a term that had an ordinary and customary meaning to one of ordinary skill in the art. (Ex. D, at ¶ 39.) At the time the '075 Patent was filed, one of ordinary skill in the art would understand that "Huffman coding" meant "a variable-length code word that identifies each unique event, where the code word is shorter for more frequently occurring events and longer for less frequently occurring events, whereby no Huffman code word is the prefix of another Huffman code word." (*Id.*)

The specification of the '075 Patent supports the proper interpretation of "Huffman code word" and requires the construction proposed by Kodak. The specification of the '075 Patent provides:

> It is known that in a Huffman coding in which the codewords have different lengths, statistic properties of the signal to be coded are utilized. In the present case this particularly implies that the frequency with which zero runs having lengths 1, 2, 3, etc. occur in the above-mentioned intermediate signal is investigated. The shortest Huffman codeword is then assigned to the run that occurs most frequently. The next larger codeword is assigned to the run that occurs less frequently, and so forth.

(Ex. A, at 1:36-45, emphasis added.)

The specification thus supports the proposed construction by affirming that the "Huffman codewords" have different lengths (variable length), shorter code words are assigned to the run (an event) that occurs more frequently and longer code words are assigned to a run (an event) that occurs less frequently. Furthermore, Figures 3-5 also support the proposed construction in that it clearly shows that the 87 Huffman code words in the single code table shown in Figure 3-5

have variable lengths, each Huffman code word identifies a unique event and no Huffman code word is the prefix for any other Huffman code word.

Finally, the prosecution history also supports Kodak's position that Huffman coding was well known to one of skill in the art at the time of the patent. In rejecting pending claims 11 through 17, the Examiner stated that these "broadly written claims merely recite the classical and extremely well known method of Huffman coding ..." (Ex. E, at KODAK_000114,emphasis added.)

For these reasons, the Court should adopt Kodak's construction "Huffman codeword."

2. Nature of Claim Construction Dispute.

The patent teaches, correctly, that Huffman code words use the statistics of the signal being coded. In the JPEG encoding method used by Kodak's digital still cameras, the messages are encoded using Huffman code words developed from preexisting picture image signals and not the signal of the image being processed. This is done to save processing time. While the code words from these preexisting image signals usually provide good compression, they are not necessarily shorter for more frequently occurring events and longer for less frequently occurring events in the signal for the image being processed. They are not Huffman code words for the signal being coded. Philips' construction is attempting to broaden the term to encompass using Huffman code words generated from the statistics of other signals, and not the statistics of the signal being coded as required by the '075 Patent.

H. "Huffman Codeword Is Independent of the Sign of That Non-zero Coefficient" and "The Sign Is Coded By a Separate Bit" (Claim 7).

Kodak proposes that the phrase "Huffman codeword is independent of the sign of that non-zero coefficient" be construed to mean the "Huffman codeword is separate from the single bit that only provides whether the non-zero coefficient is positive or negative."

Kodak proposes that the phrase "codeword is independent of the sign of that non-zero coefficient" should be construed to mean "a single bit that only provides whether the non-zero coefficient is positive or negative."

1. The Intrinsic Evidence Supports Kodak's Proposed Construction of This Phrase.

The meaning of the claim phrases "Huffman code word is independent of the sign of that non-zero coefficient" and "the sign is coded by a separate bit" are best understood by examining the Huffman code words in Figs. 3-5. The "code word" for entry 2 in Fig. 3 is 010s. This "code word" is comprised of the Huffman code word "010" and the sign bit "s." (Ex. A, at 4:66 ("The bit s denotes the sign bit").) Entry 3 is comprised of the Huffman code word 1000 and the sign bit s. This continues through Figs. 3-5.

The non-zero coefficient B values in Figs. 3-5 are always a positive number (e.g., 1, 2, 3, etc.) as discussed previously when construing "non-zero coefficient." This is because the sign (positive or negative) is not coded into the Huffman code word. Instead the sign of the non-zero coefficient resides in bit "s."

Thus, the "Huffman code word" is separate from the sign of the non-zero coefficient. Whether the non-zero coefficient has a value of +2 or -2, the Huffman code word is the same. The positive or negative value of 2 resides in the separate bit "s." Since the bit s can be a 0 bit or 1 bit, it identifies the non-zero coefficient as positive or negative depending on whether it is 0 or 1.

The patent's coding method is reflected in the plain meaning of the claim terms. The ordinary meaning of the phrase "is independent of" should be construed to mean "separate from." Thus the "Huffman codeword" is "separate from" the bit "s" used to provide the sign of the non-zero coefficient.

Similarly, the ordinary meaning of "a separate bit" is a single bit. This is the single bit "s." Since this "separate bit" is for the purpose of providing the sign of the non-zero coefficient, this "separate bit" only provides whether the non-zero coefficient is positive or negative. The single bit "s" has a value of 0 or 1 and this only identifies whether the non-zero coefficient is positive or negative.

The Court should accordingly construe the phrase the "Huffman codeword is independent of the sign of that non-zero coefficient" to mean "the Huffman codeword is separate from the single bit that only provides whether the non-zero coefficient is positive or negative." The Court should construe "the sign is coded by a separate bit" to mean "a single bit that only provides whether the non-zero coefficient is positive or negative."

2. Nature of the Claim Construction Dispute.

As stated above, one of ordinary skill in the art would understand that a sign bit merely conveys whether the coefficient is positive or negative, and nothing else. Similarly, one of ordinary skill would understand that the magnitude (or absolute value) could be determined even if the sign bit was not present. In the JPEG method implemented by Kodak's digital still cameras, the sign of the non-zero coefficient can be determined by the highest order bit. But if this bit is removed from the PWM code word, the actual value of the non-zero coefficient is not determinable. Under Philips' proposed construction, bits that are essential for determining the magnitude of the non-zero coefficients could be considered sign bits in contravention to the understanding of one of ordinary skill in the art.

I. "Run" and "Run Length" (All Claims).

Kodak proposes that "run" be construed to mean "a sequence of equal value coefficients." Kodak proposes that "run length" be construed to mean "the number of equal value coefficients in a sequence."

1. The Intrinsic Evidence Supports Kodak's Proposed Constructions.

The ordinary meaning of "run" can be derived from the claim language itself. Claim 3 requires "a run of said zero-coefficients having a respective run length[.]" (Ex. A, 7:50-52.) The plain meaning of this language requires that the "run" be a sequence (or series) of equal value coefficients, which in this case are zero coefficients. Similarly, the ordinary meaning of "run length" can be derived from the claim language. Claim 3 requires that "a run of said zero-coefficients" has a particular "run length[.]" (*Id.*) In other words, "run length" is simply the number of equal value coefficients occurring in the run.

The '075 Patent specification uses the term "run" to refer to a sequence of equal value coefficients: "a run of zero coefficients and the non-zero coefficient which immediately precedes or follows this run, is referred to as an event." (*Id.* at 2:36-39 (emphasis added); *see also id.* at 1:66-67 ("This object is achieved by assigning a Huffman code word to each run of signals having the value A, where A having length 0, 1, 2 etc.").) The patent also refers to "run length L." (*Id.* at 2:54.) Run length L is included in the events. The patent later provides an example in column 5, denoted as "XX 4005000050000001 XX." Here the "run length" L for the events are: 0 (no zeros), 2 (2 zeros), 4 (4 zeros), and 6 (6 zeros), respectively. (*Id.* at 5:40-50.) These run lengths are equal to the number of consecutive equal value coefficients (here, zero coefficients) in the sequence.

The '075 Patent prosecution history also describes an event consisting of "000000C" and notes that this example contains a "run of six zeros." (Ex. E, at KODAK_000134.) This "run of six zeros" refers to the sequence of six equal value coefficients.

2. Nature of the Claim Construction Dispute.

The parties substantively agree on their definitions for "run" and "run length." Kodak's proposed construction is simpler and accordingly should be adopted.

J. "Transform," "Transforming," "Transforming Said Signal" and "Transforming Said Signal Into a Sequence Comprising Zero Coefficients Occurring in Runs and Non-Zero Coefficients" (All Claims).

Kodak proposes that "transform" be construed to mean "a mathematical operation that converts a signal," that "transforming" be construed to mean "performing a mathematical operation that converts a signal," that "transforming said signal" be construed to mean "performing a mathematical operation that converts a video signal" and that "transforming said signal into a sequence comprising zero coefficients occurring in runs and non-zero coefficients" be construed to mean "performing a mathematical operation that converts video signal frames into a sequence comprising zero coefficients occurring in runs and nonzero coefficients."

1. "Transform" and "Transforming" (All Claims).

The claims support Kodak's proposed construction. Claim 3 recites "a sequence of coefficients which result after a blockwise transform of pixels of a video signal." This language is clear that a mathematical operation occurs that converts a video signal into another form (the coefficients). The claim language does not in any way imply that a transform always creates a sequence or array of values or that the transform is a blockwise transform.

The specification, when discussing the Chen Article, provides:

> First, equally large video picture sections which are represented by blocks of pixels are subjected to a Discrete Cosine Transform. In this transform process, a special two-dimensional Fourier transform is used. By the transform, a new block of values (coefficients) is obtained from the original block.

(Ex. A, at 1:18-23.)

The specification makes it clear that the transform is a mathematical operation that converts a signal and that the Discrete Cosine Transform is a particular type of transform. Furthermore, the transform converts a signal (the original block of pixels) into another form (the new block of coefficients) making it clear that a transform is merely a mathematical operation

that converts a signal which supports Kodak's proposed claim construction for the terms "transform" and "transforming."

2. "Transforming Said Signal" and "Transforming Said Signal Into a Sequence Comprising Zero Coefficients Occurring in Runs and Non-Zero Coefficients" (Claim 8).

The claim language and specification of the '075 Patent dictate Kodak's proposed constructions. Claim 8 provides, in part, "transforming said signal into a sequence comprising zero coefficients occurring in runs and non-zero coefficients" and it should be interpreted based on the constructions of "transforming," "signal," "zero coefficient" and "non-zero coefficient" and associated intrinsic evidence supporting those constructions, as set forth above. Accordingly, the Court should construe "transforming said signal" to mean "performing a mathematical operation that converts a video signal." Similarly, the Court should construe "transforming said signal into a sequence comprising zero coefficients occurring in runs and non-zero coefficients" to mean "performing a mathematical operation that converts video signal frames into a sequence comprising zero coefficients occurring in runs and nonzero coefficients."

K. "A Blockwise Transform of Pixels," "A Sequence of Coefficients Which Results After a Blockwise Transform of Pixels of a Video Signal With Subsequent Quantization" and "Signal Comprising a Sequence of Coefficients Which Result After a Blockwise Transform of Pixels in a Video Signal" (Claim 3).

Kodak proposes that "a blockwise transform of pixels" be construed to mean "a mathematical operation that converts a signal representing a block of pixels," that "a sequence of coefficients which results after a blockwise transform of pixels of a video signal with subsequent quantization" be construed to mean "a mathematical operation that converts video frames to a sequence of whole numbers following a blockwise transformation and quantization" and that "signal comprising a sequence of coefficients which result after a blockwise transform of pixels in a video signal" be construed to mean "a signal resulting from a mathematical operation that

converts video frames to a sequence of whole numbers following a blockwise transformation and quantization."

1. "A Blockwise Transform of Pixels."

The claims and specification support Kodak's proposed construction of this term in the same manner that they support the terms "transform" and "transforming" as set forth above. In addition, the claims require that the mathematical operation converts a video signal that represents a block of pixels.

2. "A Sequence of Coefficients Which Results After a Blockwise Transform of Pixels of a Video Signal With Subsequent Quantization" and "Signal Comprising a Sequence of Coefficients Which Result After a Blockwise Transform of Pixels in a Video Signal."

Claim 3 provides, in part, "signal into a sequence comprising zero coefficients occurring in runs and non-zero coefficients" and the above terms should be interpreted based on the proposed constructions of "signal," "coefficient," "blockwise transform of pixels" and "video signal" and the above proposed constructions are supported by the same intrinsic evidence that supports the proposed constructions of "signal," "coefficient," "blockwise transform of pixels" and "video signal" set forth above.

L. "For Transmission at a Reduced Bit Rate" (Claim 3) and "For Transmission at a Reduced Bandwidth" (Claim 8).

Kodak proposes that the phrase "for the transmission at a reduced bit rate" is indefinite and cannot be properly construed. To the extent the Court determines that a construction is possible in light of the intrinsic evidence, the phrase should be construed to mean "for transmission with 12% fewer bits as compared to the Chen method."

Similarly, Kodak proposes that the phrase "for transmission at a reduced bandwidth" is indefinite and cannot be properly construed. To the extent the Court determines that a

construction is possible in light of the intrinsic evidence, the phrase should be construed to mean "for transmission with 12% less bandwidth as compared to the Chen method."

1. These Phrases Are Indefinite Under 35 U.S.C. § 112.

a. These Phrases Are Limitations.

The phrase "for the transmission at a reduced bit rate" is part of the preamble to claim 3. (Ex. A, at 7:44.) Similarly, the phrase "for transmission at a reduced bandwidth" is part of the preamble to claim 8. (Ex. A, at 8:8-9.) As discussed above, the preambles to these claims provide antecedent basis for terms in the body of the claims, and thus the preambles are claim limitations.

b. These Limitations Are Indefinite Under 35 U.S.C. § 112 ¶ 2.

Despite the Federal Circuit's clear prohibition against drafting claims with ambiguous terms, the application did exactly that in purporting to describe the alleged inventions in the asserted claims. The definiteness requirement can be found in 35 U.S.C. §112, ¶2 of the Patent Act, which states that "[t]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." (emphasis added.) The definiteness inquiry focuses on whether the claims "adequately perform their function of notifying the public of the scope of the patentee's right to exclude." *Honeywell Int'l, Inc. v. Int'l Trade Comm'n*, 341 F.3d 1332, 1338 (Fed. Cir. 2003); *see also Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1217 (Fed. Cir. 1991) ("A decision as to whether a claim is invalid under this provision requires a determination whether those skilled in the art would understand what is claimed.") Claims are only definite when they "clearly distinguish what is claimed from what went before in the art and clearly circumscribe what is foreclosed from future enterprise." *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005) (*citing United Carbon Co. v. Binney & Smith Co.*, 317 U.S. 228, 236

(1942)). If the claim language is "not sufficiently precise to permit a potential competitor to determine whether or not he is infringing," then, as here, the claim is indefinite under §112, ¶ 2. *Morton Int'l, Inc. v. Cardinal Chem. Co.*, 5 F.3d 1464, 1470 (Fed. Cir. 1993) (affirming a finding of invalidity for indefiniteness).

For example, in *Union Pac. Res. Co. v. Chesapeake Energy Corp.*, 236 F.3d 684 (Fed. Cir. 2001), the Federal Circuit affirmed a finding of indefiniteness under §112, ¶ 2. There, the patent related to a method for determining the location in the earth of a drill bit used in horizontal drilling. *Id.* at 688. The last step of the method claim required "comparing said rescaled borehole characterizing information to said offset characterizing information to determine the location of said borehole within said earth." *Id.* The court found the phrase indefinite because the precise meaning of how to compare the information called out in the claim was not disclosed anywhere in the patent specification. *Id.* at 692. Thus, the patent failed to "define the means to 'compare' the two sets of characterizing information." *Id.*

"In the face of an allegation of indefiniteness, general principles of claim construction apply." *Datamize*, 417 F.3d at 1348. However, the specification provides no help in determining the meaning of "for transmission at a reduced bit rate" or "reduced bandwidth." First, the patent describes the bit rate reduction achieved by the Chen method in the prior art Chen Article:

> [Chen] describes a coding process of video signals for the purpose of transmitting video pictures of satisfactory quality at a minimum possible bit rate.

(Ex. A, at 1:15-17, emphasis added.)

> The authors [Chen] of the above-mentioned Article achieve a further bit rate reduction in that the frequent occurrence of zero runs in the intermediate signal in which the coefficients are serially arranged is utilized by means of a Huffman coding.

(*Id.* at 1:30-35, emphasis added.) No mention is made of what the Chen Article's "minimum possible bit rate" is, or what this minimum bit rate is compared against. Furthermore, there is no description of the "further bit rate reduction."

The '075 Patent claims an invention by achieving a greater bit rate reduction than the Chen method and prior art. But, the patent never states how large a bit rate reduction is achieved. The patent doesn't state how much a reduction the Chen Article achieves, and simply alleges a 12% improvement. Only the relative comparison to the Chen method is provided. No mention is made of the size of bit rate reduction over the prior art. The patent does not even state how to measure whether there is a bit rate reduction. The patent does not state when to measure whether there is a bit rate reduction. The patent does not inform the public or competitors when they have achieved a bit rate reduction sufficiently large that they could infringe the claims.

The Summary of the Invention is also of little help in understanding this limitation. The Summary of the Invention states that the claimed invention has a "bit rate reduction which is larger than that hitherto known." (Ex. A, at 1:63-65.) But the patent doesn't state the size of "hitherto known" bit rates, how much "larger" is the claimed reduction, what this reduction is compared against, or the extent to which it must be achieved so "a potential competitor [can] determine whether or not he is infringing[.]" *See Morton Int'l, Inc.*, 5 F.3d at 1470.

The Detailed Description of the Invention also fails to shed any light on what is meant by the claimed "bit rate reduction," and "bandwidth reduction." In this section, it states that "[a]n additional bit rate reduction of 12% is obtained when coding video signals in accordance with the above-mentioned two dimensional coding table as compared with the coding method described in the opening paragraph." (Ex. A, at 3:13-17, emphasis added.) The opening paragraph reads:

> The invention relates to a method of and a circuit arrangement for bit rate reduction. Bit rate reduction is carried out when coding a signal, which comprises a series of digital signal values and has a signal value A, occurring most frequently in runs.

(*Id.* at 1:6-10.)

This opening paragraph merely describes the general field of the invention, and thus is so imprecise that the reader cannot determine the "bit rate reduction" against which the claimed 12% may be measured. To the extent Philips meant to refer to the second paragraph (and not the first paragraph, as explicitly stated), this is the 12% reduction (already discussed) compared to the Chen Article's two-table coding method.

c. To the Extent These Limitations Are Definite, They Should Be Construed as Compared to the Method Disclosed in the Chen Article for Encoding Video Signals.

Because there is no disclosure of a reference coding bit rate, and further because there is no disclosure of the transmitted bit rate produced by the claimed method, it would not have been possible for a person of ordinary skill to determine if the claimed coding method produced a transmission that offered "a reduced bit rate." (Ex. D, at ¶ 31.)

Similarly, there is a lack of disclosure problem for "bandwidth." "Bandwidth" is the actual space in a frequency spectrum through which data is sent. For example, AM radio, FM radio, television and cell phones are all transmitted over the airwaves (through the atmosphere). They can all be transmitted at the same time without interference because they are transmitted at different frequencies. In fact, they are not transmitted at just one frequency, they are transmitted over a "band" of several adjacent frequencies. (*Id.*, at ¶ 32-33.)

In order to determine whether an accused system meets the limitation "for transmission at a reduced bandwidth," the person of ordinary skill in the art must know what size bandwidth qualifies as a "reduced bandwidth." (*Id.* at ¶ 34.)

Because there is no disclosure of any bandwidths in the patent, there is no way to determine when a sufficient reduction in bandwidth is achieved. In fact, there is not even a disclosure of the bandwidth used by the claimed coding method. Nor would a person of ordinary skill in the art be able to determine the bandwidth used or the amount reduced after performing the claimed coding method of the '075 Patent. Thus, there is no disclosure in the '075 Patent sufficient to inform a person of ordinary skill how to effect a reduction in bandwidth using the claimed encoding method. (*Id.* at ¶¶ 35-36.)

Should the Court decide that the phrases "for transmission at a reduced bit rate" and "for transmission at a reduced bandwidth" are not indefinite under 35 U.S.C. §112(2), then they should be construed to cover the only comparison disclosed in the patent.

As noted above, this 12% reduction is the only disclosure in the '075 Patent against which a potential infringer could compare a challenged encoding method, in order to determine if that challenged encoding method infringes:

> An additional bit rate reduction of 12% is obtained when coding video signals in accordance with the above-mentioned two dimensional coding table as compared with the coding method described in the opening paragraph.

(Ex. A, at 3:13-17; Ex. D, at ¶ 37.)

Accordingly, the Court should find the terms "for transmission at a reduced bit rate" and "for transmission at a reduced bandwidth" indefinite under 35 U.S.C. § 112(2). However, if the Court does not, it should construe (1) "for transmission at a reduced bit rate" to mean "for transmission with 12% less bit rate compared to the Chen method" and (2) "for transmission at a reduced bandwidth" to mean "for transmission with 12% less bandwidth compared to the Chen method."

2. Nature of Claim Construction Dispute.

"Reduced bit rate" and "reduced bandwidth" are case dispositive claim terms, as finding these terms indefinite under 35 U.S.C. §112, paragraph 2, would render all the asserted patent claims invalid.

M. "Determining Whether the Run Length of Each Event Exceeds a Predetermined Run Length" (Claim 11).

Kodak proposes that "determining whether the run length of each event exceeds a predetermined run length" be construed to mean "selecting an event and then determining whether the number of consecutive equal value coefficients exceeds the predetermined run length."

1. The Intrinsic Evidence Supports Kodak's Proposed Construction.

Both the claim language itself and the specification support Kodak's proposed construction. Nothing in the prosecution history dictates a different construction for "determining whether the run length of each event exceeds a predetermined run length."

The language of claim 11 supports Kodak's proposed construction. The claim language provides for each event, determining if the run length exceeds a predetermined length. Then when an event is selected, the run length is compared to a predetermined length to determine whether the run length exceeds that predetermined run length.

The specification also supports Kodak's proposed construction. As set forth in the specification, "... given events are split into sub-events—to improve the method described so far—such that codewords whose length is at most 16 bits are sufficient for coding all events and sub-events." (Ex. A, at 3:57-61.) The given event referred to in the specification is an event that is selected. The specification also states, "If the run length L in the signal to be coded exceeds a predetermined length Lmax, the associated event cannot be encoded and is split into codable

events." (Ex. A, at 6:28-32.) Thus, the run length L of zero coefficients, that are a sequence of equal value coefficients, are determined whether they exceed a predetermined run length.

2. Nature of Claim Construction Dispute.

The parties' constructions for this term are similar, except that Philips incorporates its improper construction of "run length" into its proposed construction and therefore Kodak's proposed construction for this term should be adopted by the Court.

N. "Splitting Said Respective Event Into a Plurality of Sections" (Claim 11).

Kodak proposes that "splitting said respective event into a plurality of sections" be construed to mean "dividing a single event into two or more sub-events." The claim language of claim 11 does not assist in interpreting this term.

1. The Intrinsic Evidence Supports Kodak's Proposed Construction.

Both the claim language and the specification support Kodak's proposed construction. Claim 11 recites "splitting said respective event" which means dividing a single event. Claim 11 further recites "...into a plurality of sections" which means into two or more sections. But each section is defined in the specification as a sub-event.

The specification also supports Kodak's proposed construction. The specification provides that, "The Huffman codewords defined in this sense may be up to 30 bits long. Since the processing of codewords which are at most 16 bits long does not require any special arrangements, but is possible, for example with a 16-bit microprocessor, given events are split into sub-events—to improve the method described so far—such that codewords whose length is at most 16 bits are sufficient for coding all events and sub-events" (Ex. A, at 3:53-60, emphasis added) and "To reduce the overall number of the events to be coded the starting point is that, for example a run of 19 zeros with subsequent coefficient of the value 7 can be split up into sections, the first of which represents a run of 16 zeros, the second of which represents a run of 3 zeros

and the third of which is a run without a zero and subsequent coefficient of the value 7. Each of these sections is now considered as a sub-event which is coded by a Huffman codeword." (*Id.* at 4:3-11, emphasis added.) Thus, the specification equates each section to a sub-event and therefore "...into a plurality of sections" means into two or more sub-events as set forth in Kodak's proposed construction.

2. Nature of Claim Construction Dispute.

The parties substantively agree on the definition for "splitting said respective event into a plurality of sections." However, Kodak's proposed construction is simpler and accordingly should be adopted.

O. "Assigning a Code Word to Each Section" (Claim 11).

Kodak proposes that "assigning a code word to each section" be construed to mean "selecting a unique entry in the single code table for each sub-event." The claim language of claim 11 does not assist in interpreting this term.

1. The Intrinsic Evidence Supports Kodak's Proposed Construction.

The specification and prosecution history support Kodak's proposed construction. The specification cited above for the construction of "code word" and "splitting said respective event into a plurality of sections" also support the proposed construction of "assigning a code word to each section" in that "code word" and "section" should have the proposed constructions set forth above and therefore the proposed construction for "assigning a code word to each section" should be adopted by the Court.

The prosecution history of the '075 Patent, for the same reasons that it supports the construction for "code word," also supports Kodak's proposed construction for "assigning a code word to each section."

2. Nature of Claim Construction Dispute.

The parties substantively agree on the definition for "assigning a code word to each section" with the exception of the dispute related to code word described above. Because Kodak's proposed construction of code word is the proper construction, the Court should adopt Kodak's construction of this phrase as well.

IV. CONCLUSION

Kodak respectfully requests that the Court issue an Order adopting the proposed constructions presented above.

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CERTIFICATE OF SERVICE

I, Kristen H. Cramer, hereby certify that on October 9, 2007, I caused to be electronically filed a true and correct copy of the foregoing document with the Clerk of the Court using CM/ECF, which will send notification that such filing is available for viewing and downloading to registered counsel of record via e-mail.

I further certify that on October 9, 2007, I caused a copy of the foregoing document to be served on the following counsel of record by the manner so indicated:

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