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memory. *See id.* at Q&A 342. Specifically, [

]. *See id.*

iv. The Funai [ ] Products

The evidence shows that during video decoding in the MPEG decoder system of each of the Funai [ ] Products, the demultiplexing one or more multimedia data streams from the encoded streams includes accessing multimedia data stream data from the first unified memory. *See* CX-1594C (Acton WS) at Q&A 394. [

]. *See id.*

at Q&A 395. [

]. *See id.*

[ ]

*See id.* Multimedia streams (audio and video) are therefore accessed from the buffers in the unified memory. *See id.*

Dr. Acton testified that during video decoding in the MPEG decoder system of each of the Funai [ ] Products, the performing MPEG decoding on the multimedia data streams includes accessing video frame data from the first unified memory. *See id.* at Q&A 396.

[

]. *See id.* [

]. *See id.*

Dr. Acton also testified that during video decoding in the MPEG decoder system of each of the Funai [ ] Products, the controlling operations includes accessing code and data from the first unified memory. *See id.* at Q&A 397. [

]. *See id.* [

]. *See id.*

[

]. *See id.*

**v. Respondents' Non-Infringement Arguments**

Respondents argue that the “accused products do not have multimedia data stream data because it is unclear and ambiguous and Complainants have not asserted what would meet that limitation.” Resps. Br. at 456. This argument is not supported by the evidence, because Respondents’ expert Dr. Schonfeld was able to understand the meaning of the term in question. *See* RX-2814C (Schonfeld RWS) at Q&A 41 (“the term ‘multimedia data stream data’ means ‘multimedia stream data’”). Furthermore, Respondents do not dispute that Complainants identified specifically where within each of the accused products each and every element of Claim 11 may be found. *See* CX-1594C (Acton WS) at Q&A 224-27, Q&A 305-08, Q&A 339-42, Q&A 394-97.

**9. Claim 16**

The record evidence shows that the accused Funai products satisfy all limitations of asserted independent claim 16 of the ‘087 patent under the claim constructions adopted above.

**a. The Funai [ ] Products**

Claim 16 is directed to a video decoder system, whereas claim 1 is directed to an MPEG decoder system. *See* JX-0001 (‘087 patent) at col. 19, ln. 6 – col. 20, ln. 7. An MPEG decoder is a type of video decoder. *See* CX-1594C (Acton WS) at Q&A 229. In all other respects claims 1 and 16 are the same. *See id.* Accordingly, for the same reasons stated before regarding claim 1, these products infringe claim 16. *See id.*

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### **b. The Funai [ ] Products**

Claim 16 is directed to a video decoder system, whereas claim 1 is directed to an MPEG decoder system. *See* JX-0001 ('087 patent) at col. 19, ln. 6 – col. 20, ln. 7. An MPEG decoder is a type of video decoder. *See* CX-1594C (Acton WS) at Q&A 309. In all other respects claims 1 and 16 are the same. *See id.* Accordingly, for the same reasons stated before regarding claim 1, these products infringe claim 16. *See id.*

### **c. The Funai [ ] Products**

Claim 16 is directed to a video decoder system, whereas claim 1 is directed to an MPEG decoder system. *See* JX-0001 ('087 patent) at col. 19, ln. 6 – col. 20, ln. 7. An MPEG decoder is a type of video decoder. *See* CX-1594C (Acton WS) at Q&A 343. In all other respects claims 1 and 16 are the same. *See id.* Accordingly, for the same reasons stated before regarding claim 1, these products infringe claim 16. *See id.*

### **d. The Funai [ ] Products**

Claim 16 is directed to a video decoder system, whereas claim 1 is directed to an MPEG decoder system. *See* JX-0001 ('087 patent) at col. 19, ln. 6 – col. 20, ln. 7. An MPEG decoder is a type of video decoder. *See* CX-1594C (Acton WS) at Q&A 398. In all other respects claims 1 and 16 are the same. *See id.* Accordingly, for the same reasons stated before regarding claim 1, these products infringe claim 16. *See id.*

## **10. Induced Infringement**

The evidence shows that Funai actively induces the direct infringement of asserted method claims 10 and 11 of the '087 patent. Funai encourages users to use the MPEG decoder systems incorporated in each of the devices. *See* CX-1594C (Acton WS) at Q&A 403. Based on how the devices are constructed, it is not possible to use the video decoder system in each of

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these products without infringing claims 10 and 11 of the '087 patent. *See id.* Funai produces marketing documents and product manuals that describe features of these devices, include detailed instructions on how to use the described devices properly, and provide information on how to contact technical support if additional help or instructions is necessary. *See id.* at Q&A 404. For example, Exhibit CX-0609 ([REDACTED]) states that “[REDACTED]

]” and that it supports “[REDACTED]

]” *See* CX-0609 ([REDACTED])

] at 2-3. Likewise, Exhibit CX-0124 ([REDACTED]) claims features such as “Blu-ray Disc playback” and “BD-Live (Profile 2.0,” and identifies supported compression features such as “MPEG2.” *See* CX-0124 ([REDACTED])).

The evidence shows that Funai also creates and distributes product manuals for the Funai Products that provide instructions as to how to set-up and operate their products. *See* CX-1594C (Acton WS) at Q&A 407. These instructions include details on how to play video streams that utilize the infringing video decoding processes. CX-0046 ([REDACTED]) is the User Manual for [REDACTED] product, and CX-0056 ([REDACTED]) is the User Manual for the [REDACTED] product. *See* CX-0046 ([REDACTED]) and CX-0056 ([REDACTED])

)). These are examples of the documents Funai produces that guide users through the steps needed to operate the video decoder systems, leading to direct infringement of claims 10 and 11. *See* CX-1594C (Acton WS) at Q&A 408. In these manuals, Funai also provides, or arranges for the provision of, technical support to ensure that end users are able to operate all features of the Funai Products, including video playback. *See id.* at Q&A 409. This technical support often is made available through a website, which is accessible in the United States, as



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well as through a U.S. Customer Support Line. *See id.* Funai also provides warranty support for the Funai Products in the event a device is unable to perform an intended feature. *See id.* Again, these activities collectively aid end users in directly infringing the asserted claims of the '087 patent. *See id.*

Funai had actual knowledge of the '087 patent no later than March 2012, when Complainants filed the complaint in this investigation and provided infringement claim charts to Funai. *See* CX-1594C (Acton WS) at Q&A 403. Following the institution of this investigation, Funai continued to provide the materials discussed above to its customers. *See id.* at Q&A 410. Inasmuch as Funai knew its actions would aid end users in directly infringing the '087 patent, it is therefore determined that Funai is liable for inducing infringement of asserted method claims 10 and 11 of the '087 patent.

### **D. Validity**

#### **1. General Principles of Law<sup>20</sup>**

One cannot be held liable for practicing an invalid patent claim. *See Pandrol USA, LP v. AirBoss Railway Prods., Inc.*, 320 F.3d 1354, 1365 (Fed. Cir. 2003). Nevertheless, each claim of a patent is presumed to be valid, even if it depends from a claim found to be invalid. 35 U.S.C. § 282; *DMI Inc. v. Deere & Co.*, 802 F.2d 421 (Fed. Cir. 1986).

A respondent that has raised patent invalidity as an affirmative defense must overcome the presumption of patent validity by "clear and convincing" evidence of invalidity. *Checkpoint Systems, Inc. v. United States Int'l Trade Comm'n*, 54 F.3d 756, 761 (Fed. Cir. 1995).

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<sup>20</sup> The legal principles set forth in this section apply equally to the validity analysis of the other patents asserted in this investigation.

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In this investigation, Respondents raise the following validity defenses: anticipation, obviousness, indefiniteness, lack of a written description, lack of enablement, and lack of patent-eligible subject matter. *See* GR12 Filing.

### a. Anticipation

Anticipation under 35 U.S.C. § 102 is a question of fact. *z4 Techs., Inc. v. Microsoft Corp.*, 507 F.3d 1340, 1347 (Fed. Cir. 2007). Section 102 provides that, depending on the circumstances, a claimed invention may be anticipated by variety of prior art, including publications, earlier-sold products, and patents.<sup>21</sup> *See* 35 U.S.C. § 102 (e.g., section 102(b) provides that one is not entitled to a patent if the claimed invention “was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States”).

The general law of anticipation may be summarized, as follows:

A reference is anticipatory under § 102(b) when it satisfies particular requirements. First, the reference must disclose each and every element of the claimed invention, whether it does so explicitly or inherently. *Eli Lilly & Co. v. Zenith Goldline Pharms., Inc.*, 471 F.3d 1369, 1375 (Fed.Cir.2006). While those elements must be “arranged or combined in the same way as in the claim,” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1370 (Fed.Cir.2008), the reference need not satisfy an *ipsissimis verbis* test, *In re Bond*, 910 F.2d 831, 832-33 (Fed.Cir.1990). Second, the reference must “enable one of ordinary skill in the art to make the invention without undue experimentation.” *Impax Labs., Inc. v. Aventis Pharms. Inc.*, 545 F.3d 1312, 1314 (Fed.Cir.2008); *see In re LeGrice*, 49 C.C.P.A. 1124, 301 F.2d 929, 940-44 (1962). As long as the reference discloses all of the claim limitations and enables the “subject matter that falls within the scope of the claims at issue,” the reference anticipates -- no “actual creation or reduction to practice” is required. *Schering Corp. v. Geneva Pharms., Inc.*, 339 F.3d 1373, 1380-81 (Fed.Cir.2003); *see In re Donohue*, 766 F.2d 531, 533 (Fed.Cir.1985). This is so despite the fact that the description provided in the anticipating reference might not otherwise entitle its author to a patent. *See Vas-Cath*

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<sup>21</sup> Section 102(g)(1) is discussed separately, below.

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*Inc. v. Mahurkar*, 935 F.2d 1555, 1562 (Fed.Cir.1991) (discussing the “distinction between a written description adequate to support a claim under § 112 and a written description sufficient to anticipate its subject matter under § 102(b)”).

*In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009).

### **b. Obviousness**

Under section 103 of the Patent Act, a patent claim is invalid “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.”<sup>22</sup> 35 U.S.C. § 103. While the ultimate determination of whether an invention would have been obvious is a legal conclusion, it is based on “underlying factual inquiries including: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) objective evidence of nonobviousness.” *Eli Lilly and Co. v. Teva Pharmaceuticals USA, Inc.*, 619 F.3d 1329 (Fed. Cir. 2010).

The objective evidence, also known as “secondary considerations,” includes commercial success, long felt need, and failure of others. *Graham v. John Deere Co.*, 383 U.S. 1, 13-17 (1966); *Dystar Textilfarben GmbH v. C.H. Patrick Co.*, 464 F.3d 1356, 1361 (Fed. Cir. 2006). “[E]vidence arising out of the so-called ‘secondary considerations’ must always when present be considered en route to a determination of obviousness.” *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983). Secondary considerations, such as commercial success, will not always dislodge a determination of obviousness based on analysis of the prior art. *See KSR*

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<sup>22</sup> The standard for determining whether a patent or publication is prior art under section 103 is the same as under 35 U.S.C. § 102, which is a legal question. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1568 (Fed. Cir. 1987).

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*Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 426 (2007) (commercial success did not alter conclusion of obviousness).

“One of the ways in which a patent’s subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *KSR*, 550 U.S. at 419-20. “[A]ny need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *Id.*

Specific teachings, suggestions, or motivations to combine prior art may provide helpful insights into the state of the art at the time of the alleged invention. *Id.* at 420. Nevertheless, “an obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents. The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way.” *Id.* “Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *Id.* A “person of ordinary skill is also a person of ordinary creativity.” *Id.* at 421.

Nevertheless, “the burden falls on the patent challenger to show by clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make the composition or device, or carry out the claimed process, and would have had a reasonable expectation of success in doing so.” *PharmaStem Therapeutics, Inc. v. ViaCell, Inc.*, 491 F.3d 1342, 1360 (Fed. Cir. 2007); *see KSR*, 550 U.S. at 416 (a combination of elements must do more

than yield a predictable result; combining elements that work together in an unexpected and fruitful manner would not have been obvious).<sup>23</sup>

**c. Indefiniteness**

The definiteness requirement of 35 U.S.C. § 112 ensures that the patent claims particularly point out and distinctly claim the subject matter that the patentee regards to be the invention. *See* 35 U.S.C. § 112, ¶ 2; *Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354, 1366 (Fed. Cir. 2004). If a claim's legal scope is not clear enough so that a person of ordinary skill in the art could determine whether or not a particular product infringes, the claim is indefinite, and is, therefore, invalid. *Geneva Pharm., Inc. v. GlaxoSmithKline PLC*, 349 F.3d 1373, 1384 (Fed. Cir. 2003).<sup>24</sup>

Thus, it has been found that:

When a proposed construction requires that an artisan make a separate infringement determination for every set of circumstances in which the composition may be used, and when such determinations are likely to result in differing outcomes (sometimes infringing and sometimes not), that construction is likely to be indefinite.

*Halliburton Energy Servs. v. M-I LLC*, 514 F.3d 1244, 1255 (Fed. Cir. 2008).

**d. Lack of a Written Description**

The issue of whether a patent is invalid for failure to meet the written description requirement of 35 U.S.C. § 112, ¶ 1 is a question of fact. *Bard Peripheral Vascular, Inc. v. W.L. Gore & Assocs., Inc.*, 670 F.3d 1171, 1188 (Fed. Cir. 2012). A patent's written description must clearly allow persons of ordinary skill in the art to recognize that the inventor invented what is

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<sup>23</sup> Further, “when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious.” *KSR*, 550 U.S. at 416 (citing *United States v. Adams*, 383 U.S. 39, 52 (1966)).

<sup>24</sup> Indefiniteness is a question of law. *IGT v. Bally Gaming Int'l, Inc.*, 659 F.3d 1109 (Fed. Cir. 2011).

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claimed. The test for sufficiency of a written description is “whether the disclosure of the application relied upon reasonable conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Id.* (quoting *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (*en banc*)).

### **e. Lack of Enablement**

The enablement requirement of 35 U.S.C. § 112, ¶ 1 requires that a patent specification must be enabling such that one skilled in the art would be able to make and use the claimed invention after reading the specification. *See, e.g., In re Vaeck*, 947 F.2d 488, 495 (Fed. Cir. 1991). Whether a specification is enabling is a question of law. *Id.* A specification is enabling when undue experimentation is not required to make and use the invention. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988). A determination of whether undue experimentation is required takes into consideration the following factors: (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. *Id.*

### **f. Patentable Subject Matter**

“A patent is presumed valid and the party asserting invalidity has the burden of persuasion to show the contrary by clear and convincing evidence.” *Research Corp. Techs., Inc. v. Microsoft Corp.*, 627 F.3d 859, 870 (Fed. Cir. 2010). Section 101 of the Patent Act sets forth the general categories of subject matter eligible for patent protection:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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35 U.S.C. § 101. “Section 101 emphasizes that ‘any’ subject matter in the four independent categories and ‘any’ improvement in that subject matter qualify for protection.” *Research Corp.*, 627 F.3d at 867. Indeed, the Supreme Court has articulated only three exceptions to these broad categories: laws of nature, physical phenomena, and abstract ideas. *See Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980).

In order for a patent claim to be held invalid as an “abstract idea,” the Federal Circuit requires that “this disqualifying characteristic should exhibit itself so manifestly as to override the broad statutory categories of eligible subject matter and the statutory context that directs primary attention on the patentability criteria of the rest of the Patent Act.” *Research Corp.*, 627 F.3d at 868. To that end, “inventions with specific applications or improvements to technologies in the marketplace are not likely to be so abstract that they override the statutory language and framework of the Patent Act.” *Id.* at 869; *see also Diamond v. Diehr*, 450 U.S. 175, 187 (1981) (“It is now commonplace that an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.”).

Moreover, in determining the eligibility of a claimed “process” under Section 101, “claims must be considered as a whole.” *Diehr*, 450 U.S. at 188. As such, “[i]t is inappropriate to dissect the claims into old and new elements and then ignore the presence of the old elements in the analysis.” *See id.* “This is particularly true in a process claim because a new combination of steps may be patentable even though all the constituents of the combination were well known and in common use before the combination was made.” *Research Corp.*, 627 F.3d at 869 (*quoting Diehr*, 450 U.S. at 188).

In 2008, the Federal Circuit issued its *en banc* decision in *In re Bilski*, in which the majority held that the “machine-or-transformation test” (“MOTT”) is the definitive inquiry

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governing patentability of a process claim. *In re Bilski*, 545 F.3d 943, at 954-55, 959-60 (Fed. Cir. 2008) (“*Bilski I*”). As articulated by the Supreme Court, the MOTT provides that a process is patent-eligible under Section 101 if:

(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing. A claimed process involving a fundamental principle [such as an equation] that uses a particular machine or apparatus would not preempt uses of the principle that do not also use the specified machine or apparatus in the manner claimed. And a claimed process that transforms a particular article to a specified different state or thing by applying a fundamental principle would not pre-empt the use of the principle to transform any other article, to transform the same article but in a manner not covered by the claim, or to do anything other than transform the specified article.

*Id.* at 954 (citing *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972)). In so holding, the *Bilski I* Court rejected the applicability of other articulations of Section 101 tests: (1) the *Freeman-Walter-Abele* test, which consisted of determining both whether the claim recites an algorithm, and whether that algorithm is applied to a physical element or process step; and (2) the “useful, concrete and tangible result” test, which focused on preventing patents on mathematical or other principles. *Id.* at 958-60. On appeal, the Supreme Court held that the MOTT is not the exclusive test for determining the patent eligibility of a process. *Bilski v. Kappos*, 130 S. Ct. 3218, 3226-27 (2010) (“*Bilski II*”). The MOTT remains, however, “a useful and important clue, an investigative tool, for determining whether some claimed inventions are processes under § 101.” *Id.* at 3227; accord *CLS Bank Int’l v. Alice Corp.*, No. 11-1301 (Fed. Cir. May 10, 2013).

Whether the asserted claims are invalid for failure to claim statutory subject matter is a question of law that may be informed by subsidiary factual issues. See *In re Comiskey*, 554 F.3d 967, 976 (Fed. Cir. 2009) (citations omitted).



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### 2. U.S. Patent No. 5,898,695 (“Fujii”)

U.S. Patent No. 5,898,695 (“the ‘695 patent” or “Fujii”) is entitled: “Decoder for Compressed and Multiplexed Video and Audio Data.” RX-0069 (Fujii ‘695). The named inventors are Yukio Fujii and Masuo Oku; the patent assignee is Hitachi, Ltd. of Tokyo, Japan. The Fujii patent application was filed on March 27, 1996. The Fujii patent claims a priority date of March 29, 1995, from Japanese patents No. 7-071131 and 7-071132. *Id.* Both the Fujii priority date of March 29, 1995 and the Fujii filing date of March 27, 1996 are earlier in time than the ‘087 patent’s November 13, 1996 filing date. Thus, Fujii is prior art to the asserted claims of the ‘087 patent under 35 U.S.C. § 102(e).

#### a. Anticipation Analysis

Respondents argue that Fujii anticipates all asserted claims of the ‘087 patent under 35 U.S.C. § 102. Resps. Br. at 461-91. In general terms, Fujii relates to “a receiver/decoder for receiving video and audio data compression encoded by high efficiency coding means and decoding the received encoded data.” *See* RX-0069 (Fujii ‘695) at col. 1, lns. 5-9. The evidence adduced by Respondents, however, fails to show clearly and convincingly that Fujii anticipates the asserted ‘087 claims.

#### i. Claim 1

The evidence shows that Fujii does not anticipate claim 1 of the ‘087 patent. *See* CX-1640C (Acton RWS) at Q&A 269-74. In particular, the evidence shows that Fujii does not disclose an MPEG decoder system that includes a single memory for use by transport, decode and system controller functions and requires that the transport logic is operable to access the memory to store and retrieve data during demultiplexing operations. *See* CX-1640C (Acton RWS) at Q&A 270. Respondents’ expert Dr. Schonfeld argued that Fujii discloses the use of

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RAM (including RAM and Program Memory) that is accessed by the Channel Demultiplexer (including the Program Packet Filter and Interface Unit) for demultiplexing of multiple programs such as video and audio data, and that the transport logic “in fact does store and retrieve data during demultiplexing operations.” *See* RX-0007C (Schonfeld WS) at Q&A 148. The evidence shows otherwise, however, as Complainants’ expert Dr. Acton testified that the demultiplexer of Fujii cannot retrieve data from the memory during demultiplexing operations. *See* CX-1640C (Acton RWS) at Q&A 273. In fact, Dr. Acton testified that the channel demultiplexer receives data only from the error correction demodulator, and that there is nothing in the specification of Fujii to suggest that the channel multiplexer receives data from the RAM. *See id.*; Acton Tr. 2000-2001.

### ii. Claim 5

Claim 5 of the ‘087 patent depends from claim 1, and the evidence shows that Fujii does not anticipate claim 5 of the ‘087 patent for the same reasons that Fujii does not anticipate claim 1 of the ‘087 Patent. *See* CX-1640C (Acton RWS) at Q&A 276.

### iii. Claim 7

Claim 7 of the ‘087 patent depends from claim 1, and adds the feature that “said memory includes a plurality of memory portions, wherein said memory includes a video frame portion for storing video frames, a system controller portion for storing code and data executable by the system controller, and a transport buffer portion for storing data used by the transport logic.” The evidence shows that Fujii does not anticipate claim 7 of the ‘087 patent for the same reasons that Fujii does not anticipate claim 1 of the ‘087 patent. *See* CX-1640C (Acton RWS) at Q&A 280. In addition, with respect to the specific features recited in claim 7, the evidence shows that Respondents’ argument that the RAM of Fujii includes a video frame portion for storing video

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ignores the specific disclosure of Fujii. *See id.* at Q&A 281. Dr. Acton testified that FIG. 11, for example, depicts the video decode buffer 9 as a component that is completely separate, apart, and not unified with the RAM. *See id.*

Moreover, the evidence shows that, in every embodiment disclosed in Fujii, the video decode buffer is similarly disconnected from the RAM and, thus, Fujii teaches away from including a video frame portion in the RAM. *See id.* at Q&A 282.

Accordingly, it has not been shown that Fujii discloses the additional limitations of claim 7.

### iv. Claim 8

Claim 8 of the '087 patent depends from claims 1 and 7, and the evidence shows that Fujii does not anticipate claim 8 for the same reasons that Fujii does not anticipate claims 1 and 7 of the '087 patent. *See* CX-1640C (Acton RWS) at Q&A 284-85. In addition, the evidence shows that Fujii teaches away from including the video decode buffer in the RAM and, in every embodiment of Fujii, the video decode buffer is completely separate from the RAM. *See id.* at Q&A 286. Therefore, Respondents' arguments that Fujii discloses the use of RAM (including RAM and Program Memory) that includes the "video decode buffer" for storing decoded video data is not supported by the evidence. *See id.* Therefore, it has not been shown that Fujii discloses the additional limitations of claim 8.

### v. Claim 9

Claim 9 of the '087 patent depends from claims 1, 7, and 8, and the evidence shows that Fujii does not anticipate claim 9 for the same reasons that Fujii does not anticipate claims 1, 7, and 8 of the '087 patent. *See* CX-1640C (Acton RWS) at Q&A 288.

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### vi. Claim 10

The evidence also shows that claim 10 of the '087 patent is not anticipated by Fujii. *See* CX-1640C (Acton RWS) at Q&A 289-95. Specifically, the evidence shows that Fujii does not disclose at least an MPEG decoder system which includes a single memory for use by transport, decode and system controller functions and requires that the demultiplexing one or more multimedia data streams from the encoded stream operates using a first unified memory. *See id.* at Q&A 290-93. Respondents' expert Dr. Schonfeld argued that Fujii discloses the use of RAM (including RAM and Program Memory) that is used for all read and write operations by the Channel Demultiplexer (including in Program Packet Filter and Interface Unit) for demultiplexing of multiple programs such as video and audio data. *See* RX-0007C (Schonfeld WS) at Q&A 164. The evidence shows, however, that the demultiplexer of Fujii cannot retrieve data from the memory during demultiplexing operations. *See* CX-1640C (Acton RWS) at Q&A 294. In addition, the evidence shows that in FIG. 17 of Fujii, the channel demultiplexer receives data only from the error correction demodulator, and that nothing in FIG. 17 or the specification of Fujii suggests that the channel multiplexer receives data from the RAM. *See id.*; Acton Tr. 2000-2001. Therefore, it has not been shown that Fujii discloses the additional limitations of claim 9.

### vii. Claim 11

The evidence shows that Fujii does not anticipate claim 11 of the '087 patent. *See* CX-1640C (Acton RWS) at Q&A 296-99. In particular, because claim 11 of the '087 patent depends from claim 10, Fujii does not anticipate claim 11 for the same reasons that Fujii does not anticipate claim 10 of the '087 patent. *See id.* at Q&A 297.

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Claim 11 also requires that demultiplexing one or more multimedia data streams from the encoded stream includes accessing multimedia data streams from the first unified memory. *See* JX-0001 ('087 patent) at col. 18, lns. 31-34. Respondents' expert Dr. Schonfeld argued that Fujii discloses the use of RAM (including RAM and Program Memory) that is used by the Video Decoder to read and write video frame data. *See* RX-0007C (Schonfeld WS) at Q&A 171. Complainants' expert Dr. Acton testified, however, that the demultiplexer of Fujii cannot access data from the RAM. *See* CX-1640C (Acton RWS) at Q&A 298. Dr. Acton further testified that the channel demultiplexer receives data only from the error correction demodulator and that there is nothing in the specification of Fujii to suggest that the channel multiplexer receives data from the RAM. *See id.*; Acton Tr. 2000-2001. Accordingly, it has not been shown that Fujii satisfies the additional limitations of claim 11.

### **viii. Claim 16**

Independent claim 16 is very similar to independent claim 1, except that claim 16 is directed to a video decoder system instead of an MPEG decoder system. The evidence shows that Fujii does not anticipate claim 16 for the same reasons that Fujii does not anticipate claim 1 of the '087 patent. *See* CX-1640C (Acton RWS) at Q&A 300.

### **b. Obviousness Analysis**

Respondents allege that Fujii alone renders obvious each and every asserted claim of the '087 patent, but Respondents' position is not supported by the record evidence. *See* Resps. Br. at 495-501.

As set forth above, Fujii does not disclose transport logic that "is operable to access the memory to store and retrieve data during demultiplexing operations" as recited in asserted claims 1 and 16. Respondents argue that such a feature would have been obvious to one of ordinary

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skill in the art. Resps. Br. at 496. In support of this position, Respondents cite to the testimony of Dr. Schonfeld, and in particular to Dr. Schonfeld's answers to questions 303 to 314 in Dr. Schonfeld's direct witness statement. *See id.* Dr. Schonfeld addresses the alleged obviousness of claim 1 in his answer to question 303. RX-0007C (Schonfeld WS) at Q&A 303. In Dr. Schonfeld's opinion, claim 1 is obvious because "it would have been obvious to a person of ordinary skill in the art to use the Compressed and Multiplexed Video and Audio Decoder disclosed by Fujii to include a single memory used to store all code and data used by the system controller to perform control functions within the MPEG decoder system."<sup>25</sup> *Id.* Dr. Schonfeld does not discuss the channel demultiplexer or provide any analysis as to why one of ordinary skill in the art would have had any reason to modify the disclosure of Fujii so that the channel demultiplexer could receive data from the memory during demultiplexing operations. Respondents have therefore failed to provide clear and convincing evidence showing that Fujii renders the asserted '087 claims obvious.

### 3. Fujii in Combination with U.S. Patent No. 5,874,995 ("Naimpally")

U.S. Patent No. 5,874,995 to Naimpally and Inoue (RX-0056) ("Naimpally" or "the '995 patent") is titled, "MPEG Video Decoder Having a High Bandwidth Memory for Use in Decoding Interlaced and Progressive Signals," and has an effective filing date of November 23, 1994. Thus, Naimpally is prior art to the asserted '087 claims.

Respondents assert that it would have been obvious to a person of ordinary skill in the art to combine the structure of memory disclosed in Naimpally with the memory structure disclosed

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<sup>25</sup> Dr. Schonfeld's analysis of independent claims 10 and 16 is substantially the same as his analysis of claim 1. *See* RX-0007C (Schonfeld WS) Q&A 308, Q&A 314. Thus, for the same reasons Fujii does not render obvious independent claim 1, it also does not render obvious independent claims 10 and 16.

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in Fujii, and that the resulting combination renders obvious claims 7-9 of the '087 patent. Resps. Br. at 505-06. The evidence, however, does not support this position.

As Complainants' expert Dr. Acton testified, even if it were proper to combine Fujii and Naimpally, the resulting combination still would not teach or suggest all of the features recited in independent claim 1, from which claim 7 depends. CX-1640C (Acton RWS) at Q&A 660. For instance, there is no disclosure in Naimpally of transport logic that demultiplexes one or more multimedia data streams from an encoded stream. Thus, even if Respondents were able to combine Fujii and Naimpally as they propose, the resulting combination still would not include the required transport logic that demultiplexes one or more multimedia data streams from an encoded stream. For this reason alone, the combination of Fujii with Naimpally fails to render obvious claims 7-9 of the '087 patent.

### **a. Claim 7**

In addition to not disclosing transport logic that is operable to access memory to store and retrieve data during demultiplexing operations, Naimpally also does not disclose that the memory includes a system controller portion for storing code and data executable by the system controller, as required by claim 7 of the '087 patent. See CX-1640C (Acton RWS) at Q&A 661-62. Respondents assert that Figure 2 and col. 5, lines 51-53 of Naimpally provide the necessary disclosure. Resps. Br. at 507. Dr. Acton's testimony shows otherwise: "[t]his portion of Naimpally [] does not disclose that code is stored in a buffer. Figure 2 also does not depict the storage of code executable by the system controller. In fact, nowhere in Naimpally is there such disclosure." CX-1640C (Acton RWS) at Q&A 662. Accordingly, for this additional reason, Respondents have not shown clearly and convincingly that the combination of Fujii and Naimpally renders obvious claim 7 of the '087 patent.

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### **b. Claim 8**

Claim 8 depends from claims 1 and 7. Thus, for all the reasons that the combination of Fujii with Naimpally does not render obvious claims 1 and 7, the combination also does not render obvious claim 8. CX-1640C (Acton RWS) at Q&A 665. In addition to those reasons, claim 8 is not rendered obvious because Naimpally does not disclose the video synch buffer recited in claim 8. Respondents do not allege Naimpally discloses a video synch buffer, but instead argue that the buffer is inherent. Resps. Br. at 509. Complainants' expert Dr. Acton testified, however, that a video sync buffer is not "required by Naimpally, much less required to exist in the memory. For example, a buffer could exist separate and apart from the unified memory of the decoder or even be part of the display." CX-1640C (Acton RWS) at Q&A 667. Accordingly, Respondents have failed to show clearly and convincingly that the combination of Fujii and Naimpally renders obvious claim 8 of the '087 patent.

### **c. Claim 9**

Claim 9 of the '087 patent depends from claims 1, 7, and 8. Thus, for all the reasons that the combination of Fujii with Naimpally does not render obvious any of Claims 1, 7, and 8, the combination does not render obvious Claim 9. CX-1640C (Acton RWS) at Q&A 670.

## **4. Secondary Considerations of Nonobviousness**

Complainants argue that secondary considerations demonstrate that the asserted claims of the '087 patent are not obvious. *See* Compls. Br. at 198-99. Specifically, Complainants argue that evidence of commercial success, long felt but unmet need, failure of others, copying, and praise for the claimed invention weighs against a finding of obviousness. *Id.* The evidence cited by Complainants, however, does not support their argument. In particular, Complainants have not shown the requisite nexus between the alleged secondary considerations and the '087 patent.



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Moreover, inasmuch as Respondents have not shown by clear and convincing evidence that the asserted claims are anticipated or rendered obvious in light of the cited prior art references, the secondary considerations play only a minor role in the validity analysis of the '087 patent.

### 5. Indefiniteness

Respondents argue that claims 7-9 of the '087 patent are indefinite because a person of ordinary skill in the art at the time of the invention would not have understood the distinction between the "video frame" memory portion of claim 7 and the "video decode buffer" of claim 8. Resps. Br. at 514-16. The evidence, however, shows that these claim terms are definite. For instance, Complainants' expert Dr. Acton testified that, contrary to Respondents' arguments, there is no requirement, implied or otherwise, that the video frame portion only holds decoded data. CX-1640C (Acton RWS) at Q&A 767. Dr. Acton also testified that one of ordinary skill in the art would understand that the video frame portion recited in claim 7 could hold the encoded video frame data, while the video decode buffer portion recited in claim 8 could hold decoded frame data. *Id.* In other words, the evidence shows that these claim terms are not insolubly ambiguous and are amenable to construction. *Id.* at Q&A 765.

Respondents' indefiniteness arguments are undercut by their own positions with respect to the alleged obviousness of claims 7-9. In particular, Respondents have argued that each of the elements recited in claims 7-9 of the '087 Patent "is a conventional element of prior art decoder." See Resps. Br. at 502. In view of Dr. Acton's testimony that claims 7-9 "are not at all ambiguous and are readily amenable to construction," plus Respondents' assertions that the features of claims 7-9 are "conventional," the record evidence does not show clearly and convincingly that claims 7-9 are insolubly ambiguous or not amenable to construction. See

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CX-1640C (Acton RWS) at Q&A 767; RIB at 502. It is therefore determined that claims 7-9 of the '087 patent are not invalid for indefiniteness.

### VI. The '663 Patent

#### A. The Asserted Claims and Accused Products

Asserted U.S. Patent No. 6,982,663 ("the '663 patent") is titled, "Method and System for Symbol Binarization." JX-0007 ('663 patent). The '663 patent issued on January 3, 2006, and the named inventor is Lowell Winger. *Id.* The '663 patent relates generally to a "method for the binarization of data in an MPEG data stream." *Id.* at Abstract.

LSI asserts independent claims 1 and 11, and dependent claims 2-9 against Funai. These claims read as follows:

1. A method for generating an index value from a codeword for digital video decoding, comprising the steps of:
  - (A) setting said index value to a threshold in response to a first portion of said codeword having a first pattern;
  - (B) adding an offset to said index value based on a second pattern in a second portion of said codeword following said first portion in response to said first portion having said first pattern; and
  - (C) adding a value to said index value based on a third pattern in a third portion of said codeword following said second portion in response to said first portion having said first pattern.
2. The method according to claim 1, further comprising the step of:

generating said index value based on a fourth pattern in said first portion in response to said fourth pattern being other than said first pattern.
3. The method according to claim 2, wherein said first pattern is a predetermined pattern unique from all possible representations of said fourth pattern.

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4. The method according to claim 2, wherein said fourth pattern comprises (i) between zero and a plurality of first bits having a first state and (ii) a second bit having a second state opposite said first state.
5. The method according to claim 4, wherein said second bit follows said first bits.
6. The method according to claim 1, wherein said first pattern comprises a plurality of bits each having a first state.
7. The method according to claim 1, wherein said second pattern comprises between zero and a plurality of first bits having a first state and (ii) a second bit having a second state opposite said first state.
8. The method according to claim 1, wherein said third pattern comprises a binary number.
9. The method according to claim 1, wherein said codeword is compatible with at least one of an International Organization for Standardization/International Electrotechnical Commission 14496-10 standard and an International Telecommunication Union-Telecommunications Standardization Sector Recommendation H.264.
11. A system comprising:
  - a decoder configured to generate a codeword; and
  - a circuit configured to (i) set an index value to a threshold in response to a first portion of said codeword having a first pattern, (ii) add an offset to said index value based on a second pattern in a second portion of said codeword following said first portion in response to said first portion having said first pattern and (iii) add a value to said index value based on a third pattern in a third portion of said codeword following said second portion in response to said first portion having said first pattern.

JX-0007 at col. 7, ln. 31 – col. 8, ln. 2; col. 8, lns. 14-25.

Complainants accused the following Funai products, identified by buyer model number, of infringing one or more asserted claims of the '663 Patent: [

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] (collectively, the “Accused Funai H.264 Products”). Compls. Br. at 43 (citing CX-1597C (Reinman WS) at 9, Q&A 38-39).

Exhibit CX-0500C (Reinman Report Ex. D)<sup>26</sup> purports to identify for each Accused Funai H.264 Product, *inter alia*, the internal accused Funai product code, the buyer product code, the supplier of the video decoder, and the part number associated with the video decoder. The information from CX-0500C is summarized in CDX-0800C (Reinman 001) and CDX-0801C (Reinman 002):

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<sup>26</sup> The information in CX-0500C (Reinman Report Ex. D) was derived from the following: CX-0555C ([ ] to P&F), which is a spreadsheet from [ ] containing information on products supplied by [ ] to Respondent P&F USA, Inc.; Funai discovery responses; and service manuals produced by Funai marked as CX-0824C (Funai 3rd Response to 2nd Rog Set, Nov. 30, 2012), CX-0141C ([ ]), CX-0556C ([ ]), CX-0557C ([ ]), CX-0560C ([ ]), CX-0558C ([ ]), and CX-0554C ([ ]). CX-1597C (Reinman WS) at Q&A 46.

[

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## B. Claim Construction

### 1. Level of Ordinary Skill

A person of ordinary skill in the art relating to the '663 patent would be a person with a degree in electrical engineering, computer engineering, computer science, or the equivalent, and would have at least 2-3 years of experience in developing or implementing data processing software or hardware such as video decoders. CX-1644C (Richardson RWS at Q&A 27; CX-1597C (Reinman WS) at Q&A 47-48. This would necessarily include some specific experience with video decoders.<sup>27</sup> CX-1597C (Reinman WS) at Q&A 48.

### 2. “setting said index value to a threshold” / “set an index value to a threshold”

Claim Term/Phrase	Complainants' Construction	Respondents' Construction
“setting said index value to a threshold” “set an index value to a threshold”	No construction needed. Alternatively, “setting the index value to an initial number representing the point at which unary to exp-Golomb switching occurs”	“assigning the index value to a predetermined constant”

The claim terms “setting said index value to a threshold” and “set an index value to a threshold” appear in claims 1 and 11 of the '663 patent. Complainants take the position that no construction is necessary, but propose the following alternate construction in the event it is determined that these terms should be construed: “setting the index value to an initial number

<sup>27</sup> Respondents propose that a person of ordinary skill in the art would have three years of work experience in the area of multimedia compression including the binary encoding and decoding of digital signals such as digital image and digital video. Resps. Br. at 269 (citing RX-0007C (Schonfeld WS) at Q&A 13). The parties have not identified any way in which differences in their proposed definitions of the level of ordinary skill in the art affect issues in this investigation. *See id.* at 271.

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representing the point at which unary to exp-Golomb switching occurs.” *See* Compls. Br. at 200-03. Respondents argue that these claim terms should be construed to mean “assigning the index value to a predetermined constant.” Resps. Br. at 339-44.

As proposed by Complainants, the claim terms “setting said index value to a threshold” and “set an index value to a threshold” are construed to mean “setting the index value to an initial number representing the point at which unary to exp-Golomb switching occurs.”

Claim 1 of the ‘663 patent is directed to “generating an index value from a codeword.” JX-0007 (‘663 patent) at col. 7, lns. 31-32; Schonfeld Tr. 1593, 1596.<sup>28</sup> As a conditional part of this process, element A of claim 1 describes “setting said index value to a threshold.” JX-0007 (‘663 patent) at col. 7, lns. 33-34. In subsequent elements B and C, the index value is increased by “adding an offset to said index value” and “adding a value to said index value,” respectively. *Id.* at col. 7, lns. 35-42. Thus, at the end of this entire process, the index value has been generated from a given codeword. As such, the claim language “setting said index value to a threshold,” including the constituent “said index value,” speaks for itself concerning what happens to the index value in element A of claim 1.

The claim language of Claim 1 specifies that the “index value” is set to an initial “threshold” in element A, as subsequent claim elements B and C increase this initial “index value” by an “offset” and by an additional “value” in order to finish “generating an index value from a codeword.” JX-0007 at col. 7, lns. 31-43; CX-1644C (Richardson RWS) at Q&A 65-66. Further, the specification of the ‘663 patent designates that the claimed “threshold” represents the point “at which unary to exp-Golomb occurs.” JX-0007 at col. 6, lns. 45-47; CX-1644C (Richardson RWS) at Q&A 65-66. Moreover, the constituent term “said index value” refers

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<sup>28</sup> This discussion applies equally to claim 11.

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back to the preamble of claim 1, which indicates that the claim is directed to “generating an index value from a codeword.” JX-0007 (‘663 patent) at col. 7, lns. 31-32; Schonfeld Tr. 1593, 1596. Thus, Complainants’ proposed construction is consistent with the intrinsic evidence.

In contrast, the ‘663 specification does not support Respondents’ proposed construction. Respondents’ proposed construction is wrong to the extent Respondents contend that the claimed “index value” never changes after being set to a “threshold” in element A of claim 1. Claim 1 explicitly discloses that the final “index value” is the end result “generat[ed] from a codeword” after *all* processing of the codeword is completed, including the conditional portions of elements B and C that add both “an offset” and an additional “value” to the initial “threshold” value. *See* CX-1644C (Richardson RWS) at Q&A 90-91. Respondents’ argument that the “index value” can never change once set to a “threshold” in element A, or can only change once in either element B or C, would render one or both elements B and C of claim 1 superfluous. *Id.*

Therefore, the claim terms “setting said index value to a threshold” and “set an index value to a threshold” are construed to mean “setting the index value to an initial number representing the point at which unary to exp-Golomb switching occurs.”

### 3. “adding an offset to said index value” / “add an offset to said index value”

Claim Term/Phrase	Complainants’ Construction	Respondents’ Construction
“adding an offset to said index value” “add an offset to said index value”	No construction necessary. Alternatively, “increasing the initial index value by a discrete amount”	Indefinite.

The claim terms “adding an offset to said index value” and “add an offset to said index value” appear in claims 1 and 11 of the ‘663 patent. Complainants take the position that no



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construction is necessary, but propose the following alternate construction in the event it is determined that these terms should be construed: “increasing the initial index value by a discrete amount.” *See* Compls. Br. at 203-10. Respondents argue that these claim terms are indefinite. Resps. Br. at 344-46.

As proposed by Complainants, it is determined that the claim terms “adding an offset to said index value” and “add an offset to said index value” are not indefinite, and they are construed to mean “increasing the initial index value by a discrete amount.”

As discussed previously, the entirety of claim 1 is directed to “generating an index value from a codeword.” JX-0007 (‘663 patent) at col. 7, lns. 31-32; Schonfeld Tr. 1593, 1596.<sup>29</sup> As essential portions of this claimed process, element B of claim 1 describes “adding an offset to said index value” and element C of claim 1 describes “adding a value to said index value.” JX-0007 (‘663 patent) at col. 7, lns. 35-38. Complainants’ proposed construction reflects a succinct restatement of what occurs in element B of claim 1, and thus reflects the plain and ordinary meaning of the term to a person of ordinary skill in the art. *See* CX-1644C (Richardson RWS) at Q&A 70-71.

In contrast, Respondents’ have not shown clearly and convincingly that the terms “adding/add an offset to said index value” and “adding/add a value to said index value” are indefinite. Respondents’ expert Dr. Schonfeld argues that these terms are indefinite because the ‘663 patent specification purportedly “never even uses” the words “offset” and “value” in this context. *See* RX-0007C (Schonfeld WS) at Q&A 371-72. There is no requirement in patent law that the words used in the claims be exactly the same as the words used in the specification. *See, e.g., All Dental Prodx, LLC v. Advantage Dental Prods., Inc.*, 309 F.3d 774, 778-79 (Fed. Cir.

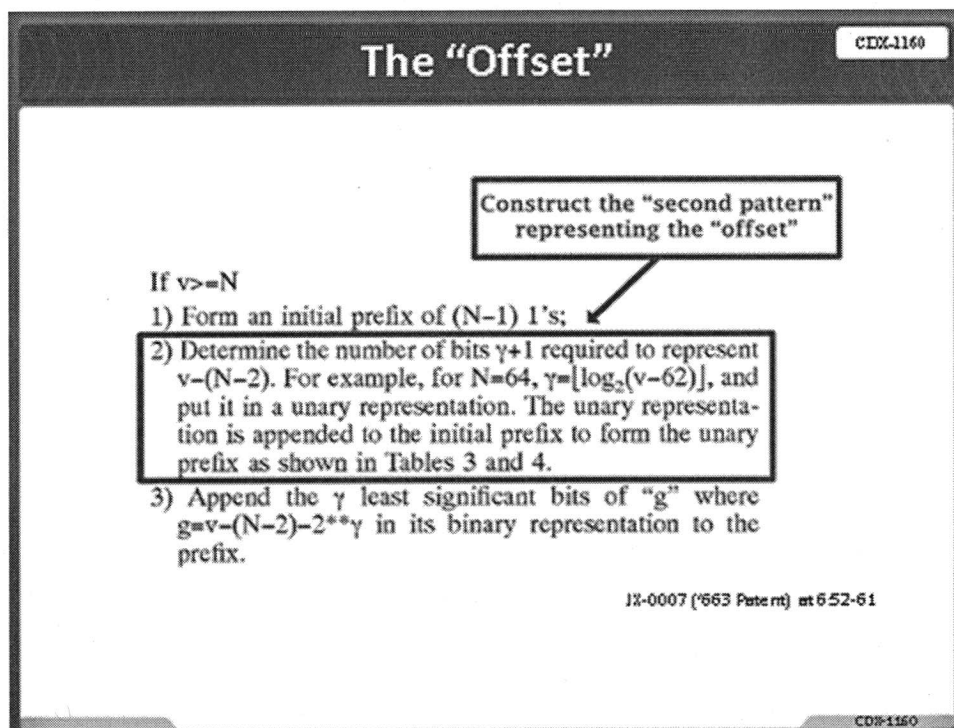
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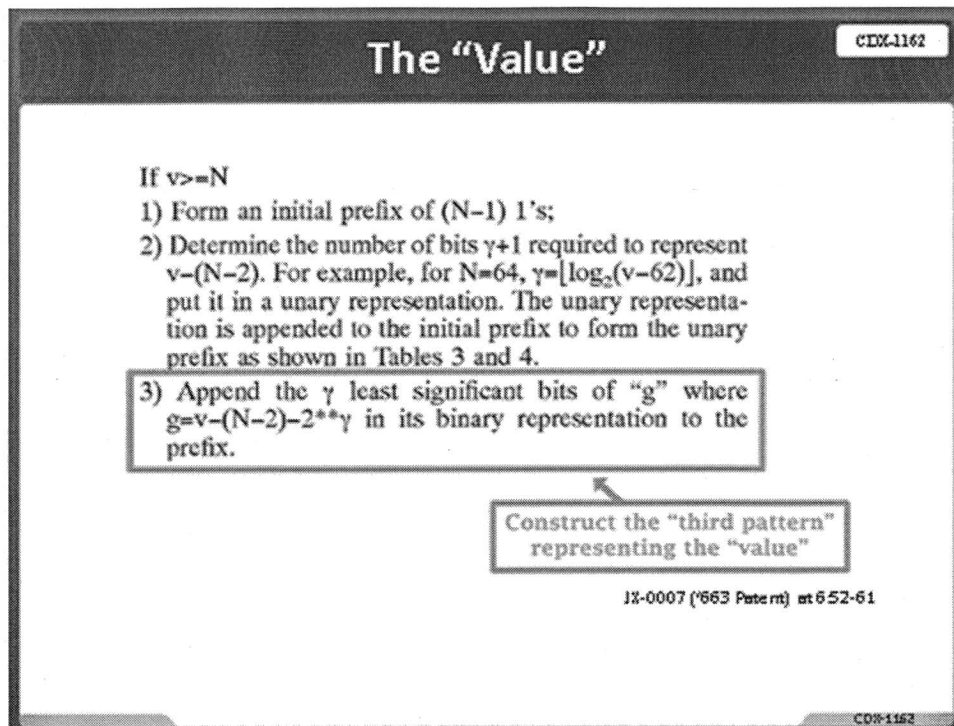
<sup>29</sup> This discussion applies equally to claim 11.

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2002). Therefore, the presence or absence of the specific words “offset” and “value” in the written description portion of the specification is not determinative of the question of whether the terms are indefinite.

Moreover, the ‘663 patent specification includes an embodiment that provides a description of constructing a codeword from three distinct portions of an index value, including a “second pattern” and a “third pattern” described in the claims as representing an “offset” and a “value,” respectively. CX-1644C (Richardson RWS) at 26. This is illustrated, for example, in CDX-1160 (Richardson 011) and CDX-1162 (Richardson 013):





The actual codeword portions generated for the "offset" and "value" portions of a given series of index values pursuant to this embodiment are contained in the tables of Figures 5 and 6 of the '663 patent. Specifically, the second pattern representing the "offset" is represented in Figure 6 of the '663 patent, as illustrated in CDX-1161 (Richardson 012):

**The "Offset"**

CDX-1161

Index	Unary Prefix	exp-Golomb Suffix
0	0	
1	10	
2	110	
...		
15	1...10	
16	1...110	0
17	1...110	1
18	1...1110	00
19	1...1110	01
20	1...1110	10
21	1...1110	11
22	1...11110	000
23	1...11110	001
24	1...11110	010
25	1...11110	011
26	1...11110	100
27	1...11110	101
...		

IX-007 ('663 Patent) at 8

CDX-1161

Therefore, one of ordinary skill in the art would understand that when the decoder “reverses the steps” of this embodiment to generate the index value from the codeword as described in asserted claims 1 and 11, it is the value of this “offset” that is parsed “based on a second pattern in a second portion of said codeword” and is added to the “index value” previously set to a “threshold” value. CX-1644C (Richardson RWS) at Q&A 74.

Similarly, for that same embodiment, the third pattern representing the claimed “value” is represented in Figure 6 of the ‘663 Patent, as illustrated in CDX-1163 (Richardson 014):

CDX-1163

### The "Value"

Index	Unary Prefix	exp-Golomb Suffix
0	0	
1	10	
2	110	
...		
15	1...1 0	
16	1...1 10	0
17	1...1 110	1
18	1...1 1110	00
19	1...1 1110	01
20	1...1 1110	10
21	1...1 1110	11
22	1...1 11110	000
23	1...1 11110	001
24	1...1 11110	010
25	1...1 11110	011
26	1...1 11110	100
27	1...1 11110	101
...		

Binary "third pattern" representing the "value"

IX-007 ('663 Patent) art B

CDX-1163

Therefore, one of ordinary skill in the art also would understand that when the decoder "reverses the steps" of this embodiment to generate the index value from the codeword as described in asserted claims 1 and 11, it is this "value" that is parsed "based on a third pattern in a third portion of said codeword" and is added to the "index value" previously set to a "threshold" value. CX-1644C (Richardson RWS) at Q&A 81-82.

In light of this disclosure in the specification of the '663 patent, the meaning of "adding/add an offset to said index value" and "adding/add a value to said index value" from claims 1 and 11 would be apparent to one of ordinary skill in the art. As such, nothing about these terms, especially when viewed in the context of the specification of the '663 patent, is ambiguous, much less "insolubly ambiguous" as required for a finding of indefiniteness. CX-1644C (Richardson RWS) at Q&A 73; Q&A 79-83.

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Therefore, Respondents have failed to adduce clear and convincing evidence that the terms “adding/add an offset to said index value” and “adding/add a value to said index value” from claims 1 and 11 of the ‘663 patent are indefinite.

### 4. “adding a value to said index value” / “add a value to said index value”

Claim Term/Phrase	Complainants’ Construction	Respondents’ Construction
“adding a value to said index value” / “add a value to said index value”	No construction necessary.	Indefinite.

The terms “adding a value to said index value” and “add a value to said index value” appear in claims 1 and 11 of the ‘663 patent. Complainants take the position that no construction of these terms is needed. *See* Compl. Br. at 203-10. Respondents argue that these terms are indefinite. *See* Resps. Br. at 346.

For the reasons discussed above with respect to the claim terms “adding/add an offset to said index value” and “adding/add a value to said index value,” it is determined that Respondents have not adduced clear and convincing evidence showing that the terms “adding a value to said index value” and “add a value to said index value” are indefinite.

### 5. “said index value”

Claim Term/Phrase	Complainants’ Construction	Respondents’ Construction
“said index value”	No construction necessary. Alternatively, “the value being generated from a codeword”	“the index value assigned to a predetermined constant”

The claim term “said index value” appears in claims 1, 2, 10, and 11 of the ‘663 patent. Complainants take the position that no construction is necessary, but propose the following

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alternate construction in the event it is determined that this term should be construed: “the value being generated from a codeword.” *See* Compls. Br. at 200-03. Respondents argue that this claim term should be construed to mean “the index value assigned to a predetermined constant.” Resps. Br. at 346-48.

For the reasons discussed above with respect to the claim terms “setting said index value to a threshold” and “set an index value to a threshold,” the term “said index value” is construed to mean “the value being generated from a codeword.”

**6. “generating said index value based on a fourth pattern in said first portion in response to said fourth pattern being other than said first pattern”**

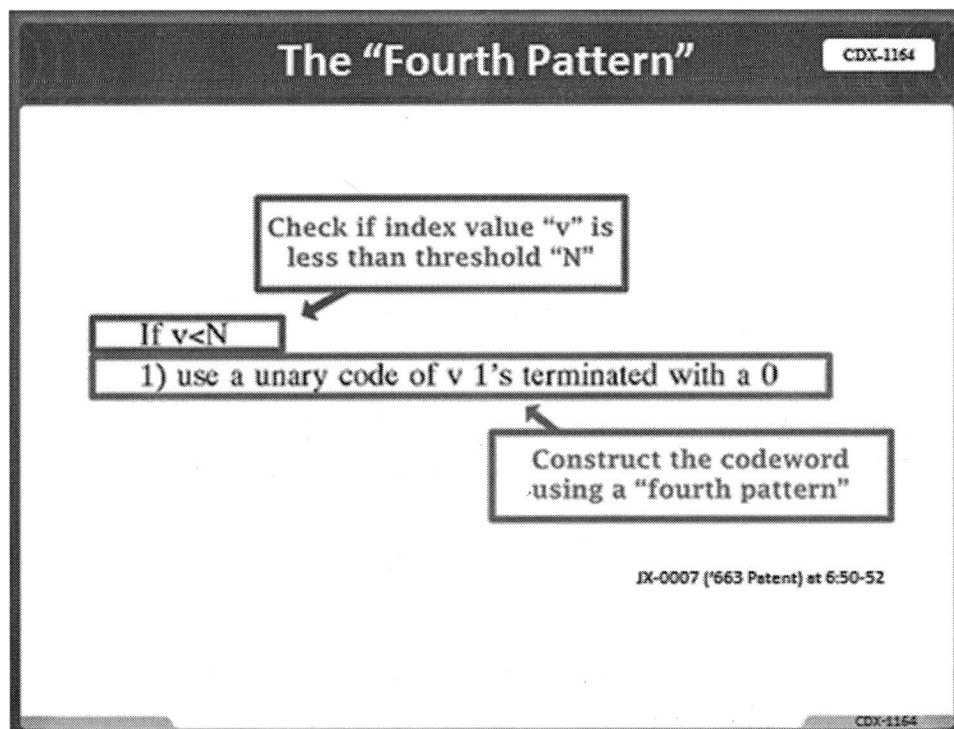
<b>Claim Term/Phrase</b>	<b>Complainants’ Construction</b>	<b>Respondents’ Construction</b>
“generating said index value based on a fourth pattern in said first portion in response to said fourth pattern being other than said first pattern”	No construction needed.  Alternatively, “setting the index value based on detection of a fourth pattern representing the binarization of a number different than the number represented by the first pattern”	Indefinite.

The claim term “generating said index value based on a fourth pattern in said first portion in response to said fourth pattern being other than said first pattern” appears in claim 2 of the ‘663 patent. Complainants take the position that no construction is necessary, but propose the following alternate construction in the event it is determined that this term should be construed: “setting the index value based on detection of a fourth pattern representing the binarization of a number different than the number represented by the first pattern.” *See* Compls. Br. at 210-14. Respondents argue that these claim terms are indefinite. Resps. Br. at 348-51.

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As proposed by Complainants, the claim term “generating said index value based on a fourth pattern in said first portion in response to said fourth pattern being other than said first pattern” is construed to mean “setting the index value based on detection of a fourth pattern representing the binarization of a number different than the number represented by the first pattern.”

As discussed previously, one embodiment in the ‘663 specification shows an example of a process that can be used for constructing a codeword from a given index value. As delineated at column 6, lines 50-63, of the ‘663 patent, the claimed “fourth pattern” is generated in the case of index values with a magnitude below a given threshold. CX-1644C (Richardson RWS) at Q&A 97. This is illustrated below in CDX-1164 (Richardson 015):



Applying the step of this embodiment to the sub-threshold index values from Figure 6 provides an example of the contrast between the “first pattern” and “fourth pattern,” and in



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particular how that the “fourth pattern” is a pattern “other than said first pattern” (claim 2) and how the “first pattern” is “unique from all possible representations of said fourth pattern” (claim 3). See CX-1644C (Richardson RWS) at Q&A 97, Q&A 107-09. This is illustrated below in CDX-1165 (Richardson 016):

**“First” through “Fourth” Patterns** CDX-1165

Index	Unary Prefix	exp-Golomb Suffix
0	0	
1	10	
2	110	
...		
15	1...10	
16	1...110	0
17	1...110	1
18	1...1110	00
19	1...1110	01
20	1...1110	10
21	1...1110	11
22	1...11110	000
23	1...11110	001
24	1...11110	010
25	1...11110	011
26	1...11110	100
27	1...11110	101
...		

Diagram annotations:

- “first pattern”**: Points to the unary prefix of index 21 (1...1110).
- “second pattern”**: Points to the unary prefix of index 22 (1...11110).
- “third pattern”**: Points to the exp-Golomb suffix of index 21 (11).
- “fourth pattern”**: Points to the exp-Golomb suffix of index 16 (0).

IX-0007 ('663 Patent) at 8

CDX-1165

As seen in the embodiment depicted above, the first pattern is a “predetermined pattern” related to the value of the threshold. In contrast, the “fourth pattern” varies depending on the associated index value and always ends in a zero. Thus, the “fourth pattern” is a pattern “other than said first pattern” (claim 2) and the “first pattern” is “unique from all possible representations of said fourth pattern” (claim 3). The adopted construction reflects the understanding of a person of ordinary skill in the art with respect to this teaching of the ‘663 patent. See CX-1644C (Richardson RWS) at Q&A 98-99.

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Respondents' indefiniteness argument is based on the contention that "the '663 patent specification never even uses the word 'pattern,' much less 'fourth pattern,' nor any indication as to how one would decipher the 'fourth pattern.'" *See* RX-0007C (Schonfeld WS) at Q&A 374-75. As discussed earlier there is no legal requirement that the words used in the claims be exactly the same as the words used in the remainder of the specification. *See, e.g., All Dental Prodx*, 309 F.3d at 778-79. As such, the presence or absence of the specific words "fourth pattern" in the specification has no relevance in and of itself to whether or not the term "generating said index value based on a fourth pattern in said first portion in response to said fourth pattern being other than said first pattern" is indefinite.

It is determined that Respondents have not adduced clear and convincing evidence showing that this claim term is indefinite.

7. **"wherein said codeword is compatible with at least one of an International Organization for Standardization/International Electrotechnical Commission 14496-10 standard and an International Telecommunication Union-Telecommunications Standardization Sector Recommendation h./264"**

Claim Term/Phrase	Complainants' Construction	Respondents' Construction
"wherein said codeword is compatible with at least one of an International Organization for Standardization/International Electrotechnical Commission 14496-10 standard and an International Telecommunication Union-Telecommunications Standardization Sector Recommendation h./264"	No construction needed.	Indefinite.

The claim term "wherein said codeword is compatible with at least one of an International Organization for Standardization/International Electrotechnical Commission 14496-10 standard and an International Telecommunication Union-Telecommunications

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Standardization Sector Recommendation h./264” appears in claim 9 of the ‘663 patent.

Complainants take the position that no construction is needed for this term, and that its plain meaning should apply. Compls. Br. at 217-18. Respondents argue that this term is indefinite. Resps. Br. at 351-52.

The H.264 standard, which is the standard referred to in claim 9, provides details about the various codewords that are “compatible” with the standard and how such codewords are used and constructed. CX-1597C (Reinman WS) at Q&A 155. For example, the H.264 standard provides detail regarding codewords created using UEGk binarization that would be “compatible” with the H.264 standard. *Id.*; CX-1644C (Richardson RWS) at Q&A 131; CX-0642 (H.264 Standard, Jan. 2012) at 267-69, 270-71, 274-75; CX-1597C (Reinman WS) at Q&A 165-72. One of ordinary skill in the art would understand such codewords to be “compatible” with the H.264 standard as required in claim 9 without further construction or explanation.

It is therefore determined that Respondents have not adduced clear and convincing evidence to show that the claim term “wherein said codeword is compatible with at least one of an International Organization for Standardization/International Electrotechnical Commission 14496-10 standard and an International Telecommunication Union-Telecommunications Standardization Sector Recommendation h./264” is indefinite.

**C. Infringement**

**1. Complainants' Reliance on the H.264 Reference Software to Show Infringement**

The H.264 Standard<sup>30</sup> is an industry standard for video encoding and decoding. The H.264 Standard utilizes UEGk<sup>31</sup> encoding for specific index values essential to commercial H.264 Standard compliance. Complainants argue:

[T]he asserted claims of the '663 Patent represent the only commercially-viable methodology for decoding the UEGk encoded index values described in the H.264 Standard. As a result, any commercial product that performs decoding of H.264-compliant video streams utilizing UEGk encoded index values necessarily practices the asserted claims of the '663 Patent.

Compls. Br. at 218-19.

In support of this argument, Complainants adduced evidence showing that the H.264 Standard describes specific UEGk index values for compliant video streams. *See* Compls. Br. at 219-20. In particular, the evidence shows that the H.264 Standard describes the process for constructing various types of binary codewords from index values, also called "syntax elements," utilizing UEGk encoding. CX-0642 (H.264 Standard, Jan. 2012) at 270-71, § 9.3.2.3. UEGk encoded index values consist of the concatenation of a fixed unary first part followed by a two-part exp-Golomb portion. CX-1597C (Reinman WS) at Q&A 168. For values below a given threshold, only unary binarization is used for the entire codeword. *Id.*

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<sup>30</sup> For purposes of this Initial Determination, "H.264 Standard" refers to Recommendation ITU-T H.264, International Standard ISO/IEC 14496-10 (01/2012) marked as CX-0642 (H.264 Standard, Jan. 2012). The H.264 Standard has undergone a number of revisions over the years; however, the operative sections of the H.264 Standard are materially identical in earlier revisions of the H.264 Standard. Some of the earlier versions of the H.264 Standard can be found in exhibits CX-0549 (H.264 Standard, Mar. 2010), CX-0646 (H.264 Standard, Nov. 2007), CX-0647 (H.264 Standard, Mar. 2009), and CX-0137 (H.264 Standard, Jun. 2011).

<sup>31</sup> "UEGk" is an acronym for "unary/exp-Golomb."

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The H.264 Standard states that “input to this [UEGk encoding] process is a request for UEGk binarization for a syntax element . . . Output of this process is the UEGk binarization of the syntax element.” CX-0642 (H.264 Standard, Jan. 2012) at 270-71, § 9.3.2.3. With respect to the reverse process, the H.264 Standard describes the decoding of UEGk index values, again also called “syntax elements.” Accordingly, “input to this process is a binarization of the requested syntax element . . . Output of this process is the value of the syntax element.” CX-0642 (H.264 Standard, Jan. 2012) at 274-75, § 9.3.3. In particular, the UEGk decoding process of Section 9.3.3 “specifies how each bit of a bit string is parsed for each syntax element.” *Id.*

UEGk encoding is used for three specific index values described in the H.264 Standard: (1) “mvd\_l0;” (2) “mvd\_l1;” and (3) “coeff\_abs\_level\_minus1.” CX-0642 (H.264 Standard, Jan. 2012) at 267-69, Table 9-34; CX-1597C (Reinman WS) at Q&A 170-71. The index values “mvd\_l0” and “mvd\_l1” each specify the difference between a particular motion vector component to be used and its prediction. CX-0642 (H.264 Standard, Jan. 2012) at § 7.4.5.1; CX-1597C (Reinman WS) at Q&A 172. The index value “coeff\_abs\_level\_minus1” represents the absolute value of a transform coefficient level minus 1. CX-0642 (H.264 Standard, Jan. 2012) at § 7.4.5.3.3; CX-1597C (Reinman WS) at Q&A 172. As such, each of the three UEGk encoded index values described in the H.264 Standard plays an important role in compressing and decompressing frame data associated with digital video. CX-1597C (Reinman WS) at Q&A 172-73.

The record evidence shows that the H.264 Standard itself provides guidance with respect to the actual implementation of a decoder that performs decoding of the UEGk index values described in the H.264 Standard. Specifically, reference software called “H.264.2” is provided in conjunction with the H.264 Standard. *See* CX-0644 (H.264.2 Reference Manual & Software,

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Jan. 2012). This reference software sets forth, among other things, the presumptive method for decoding the UEGk index values described in the H.264 Standard. CX-1597C (Reinman WS) at Q&A 174. The particular source code section of the H.264.2 Reference Software that performs decoding of the UEGk index values from the H.264 Standard is entitled “cabac.c”. *See* CX-0499C (Reinman Report Ex C-1).<sup>32</sup>

In their post-hearing brief, Complainants offer evidence showing that the methodology used for decoding UEGk index values in the H.264.2 Reference Software practices each of the limitations of claims 1-9 of the ‘663 patent, and that a product or system that implements the methodology disclosed in the H.264.2 Reference Software for decoding UEGk index values would satisfy all of the limitations of claim 11 of the ‘663 patent. *See* Compls. Br. at 221-41. Although Complainants do not argue that the accused Funai products infringe the asserted ‘663 claims by virtue of their incorporation of the H.264.2 Reference Software, they do allege the following:

The methods and system described in the asserted claims of the ‘663 Patent represent the only commercially viable methodology for decoding the UEGk index values described in the H.264 Standard. CX-1597C (Reinman Direct Witness Statement) at 77, Q&A 221. Therefore, it is far more likely than not—indeed, almost certain—that the operation of each of the Accused Funai Products infringes Claims 1-9 of the ‘663 Patent, and the Accused Funai Products themselves each infringe Claim 11 of the ‘663 Patent. *Id.*

Compls. Br. at 241-42.

Complainants argue that “[t]he lack of a realistic commercial alternative to the asserted claims of the ‘663 Patent for decoding of H.264-compliant UEGk index values is demonstrated

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<sup>32</sup> CX-0499C is a copy of the cabac.c file from the H.264.2 Reference Software. Line numbers have been added to the left-hand side of CX-0499C (Reinman Report Ex C-1) for reference. Additional copies of all or part of this same code are marked as CX-0550 (cabac.c), CX-0551 (cabac.c), CX-0552 (cabac.c), CX-0553 (cabac.c), and CX-0139 (cabac.c).

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in a number of ways, including by (i) the adoption of the methodology of the asserted claims in the H.264.2 Reference Software; (ii) a comprehensive review of theoretical alternatives to the asserted claims of the ‘663 Patent; and (iii) [

].” Compls. Br. at 242. Based on these arguments, Complainants conclude that, inasmuch as “the methods and system described in the asserted claims of the ‘663 Patent represent the only commercially viable methodology for decoding the UEGk index values described in the H.264 Standard,” it is therefore “far more likely than not that any commercial product employing an H.264 decoder practices Claims 1-9 of the ‘663 Patent, and each such product itself would satisfy all limitations of Claim 11 of the ‘663 Patent.” *Id.* at 248.

Complainants’ analysis of the H.264.2 Reference Software, however, is not dispositive of the question of whether Funai’s products infringe the asserted ‘663 claims. The record evidence shows that the ITU provides the software as an aid to assist in the implementation of decoding syntax elements encoded using UEGk binarization. CX-1644C (Richardson RWS) at Q&A 514. As such, use of the H.264.2 Reference Software is optional, and there is no evidence that [ ]. Complainants have therefore failed to meet their burden to prove infringement by a preponderance of the evidence based on the H.264.2 Reference Software.

### **2. The Accused Funai Products**

With respect to the accused Funai products, Complainants allege the following:

[T]he asserted claims of the ‘663 Patent represent the only commercially viable methodology for decoding H.264-compliant UEGk index values. Each of Accused Funai H.264 Products [

]. As such, Funai directly infringes Claim 11 of the ‘663 Patent, either literally or

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under the doctrine of equivalents, by selling and/or importing the Accused Funai H.264 Products into the United States. In addition, Funai indirectly infringes Claims 1-9 of the '663 Patent by actively inducing others to directly infringe by operating the accused Funai products [ ]. Furthermore, Funai contributorily infringes Claims 1-9 of the '663 Patent.

Compls. Br. at 249.

Further, Complainants argue that “it is far more likely than not” that a company manufacturing decoders that decode bitstreams compliant with the H.264 Standard would use the methodologies described in the H.264.2 Reference Software. Compls. Br. at 243-44. These allegations, however, are not enough to prove infringement by a preponderance of the evidence. The fact that a set of products uses methodology similar to a published reference does not show that those products actually infringe the asserted claims of the '663 patent.

Complainants do provide an infringement analysis of MediaTek decoder source code incorporated into certain Funai products, but do not provide any analysis for Funai products that do not use MediaTek decoders. *See* Compls. Br. 255-77. Accordingly, it is determined that Complainants have not shown that Funai products using non-MediaTek satisfy the elements of the asserted '663 claims.

As for the Funai products that use MediaTek decoders, the following section provides a claim-by-claim infringement analysis.

### **3. Accused Products Containing MediaTek Decoders**

Complainants argue that “the source code for the MediaTek commercial decoders used in a number of the Accused Funai H.264 Products predictably confirms that each such decoder



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practices the asserted claims of the '663 Patent.”<sup>33</sup> Compls. Br. at 255 (citing CX-1597C

(Reinman WS) at Q&A 256. There are [ ] MediaTek decoders used in the accused Funai

H.264 products: [

]. See JX-0019C ([ ] Dep.) at 60-61; CX-1597C

(Reinman WS) at Q&A 259.

### **a. Claim 1**

The record evidence shows that the MediaTek decoders do not satisfy all elements of claim 1.<sup>35</sup>

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<sup>33</sup> The pertinent source code for the MediaTek decoders can be found in CX-0559C (MediaTek Source Code).

<sup>34</sup> The relevant source code for the [ ] is found at CX-0559C (MediaTek Source Code) at 837MEDIATEK\_SC0000384-456; 837MEDIATEK\_SC0001753-1785; 837MEDIATEK\_SC0000611-674; and 837MEDIATEK\_SC0001712-1731, respectively.

<sup>35</sup> Complainants have not adduced evidence to show that the accused Funai products practice the methods of claims 1-9 upon importation into the United States. See *Electronic Devices* at 13-14 (“[I]nfringement, direct or indirect, must be based on the articles as imported to satisfy the requirements of section 337.”). A violation of section 337 with respect to method claims 1-9 may nevertheless be found if it is determined that Complainants are liable for indirect infringement of these claims. Indirect infringement will be discussed in a separate section below.

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- i. **A method for generating an index value from a codeword for digital video decoding, comprising the steps of:**

As indicated by the relevant source code, the [ ] decoders each performs [ ] and thereby generates the corresponding index values. CX-1597C (Reinman WS) at Q&A 262. In particular, [

]. *See id.*

- ii. **(A) setting said index value to a threshold in response to a first portion of said codeword having a first pattern;**

Complainants allege that the MediaTek decoders practice this first step of claim 1.<sup>36</sup> *See* Compls. Br. at 257-78. The evidence shows, however, [

]. CX-1597C (Reinman WS) at Q&A 263. [

]. *Id.*;

CX-0559C (MediaTek Source Code) at 837MEDIATEK\_SC0000394, lines 26967-68

([ ]); 837MEDIATEK\_SC0000618, lines 5761-62 ([ ]).<sup>37</sup>

<sup>36</sup> A similar limitation appears in claim 11. The analysis set forth in this section applies equally to claim 11.

<sup>37</sup> [

CX-1597C

CX-0559C

CX-1597C [ ]

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Complainants argue that [ ] is within the scope of the ‘663 claims, but this argument is not supported by the evidence. *See* Compls. Br. at 283-84. First, [ ]” contradicts Dr. Reinman’s testimony confirming that receiving the first pattern is a “predicate” or prerequisite to performing steps (A), (B), and (C) of claim 1. Reinman Tr. 631. Second, there is no intrinsic support for this argument; neither the ‘663 patent specification nor the ‘663 patent prosecution history mentions [ ]. Third, this argument contradicts the express language of claim 1, which recites performing step (A) “in response to a first portion of said codeword having a first pattern.”

Therefore, it is determined that the MediaTek decoders do not satisfy this claim limitation.

- iii. **(B) adding an offset to said index value based on a second pattern in a second portion of said codeword following said first portion in response to said first portion having said first pattern; and**

[

CX-1597C

CX-0559C

CX-1597C

.]

[

D).

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[

].” *Id.* [

]. *Id.* [

].” *Id.*;

CX-0559C

)).

[

)).

[

].

CX-0559C

)).

[

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].

[

CDX-0828C

]).

Inasmuch as step (B) of claim 1 requires “adding an offset to said index value,” and the evidence summarized above shows that [

], it is determined that Complainants have not shown literal infringement of step (B) of claim 1. RX-2814C (Schonfeld WS) at Q&A 177.

- iv. **(C) adding a value to said index value based on a third pattern in a third portion of said codeword following said second portion in response to said first portion having said first pattern.**

[

]. See CX-1597C

CX-0559C

CX-0559C

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]. *Id.*

[

].

[

]. *See id.*; CX-0559C (

*See CX-*

CX-0559C

]).

[

CX-0559C

CX-0559C

*See CX-1597C*

CDX-0830C

]).

Inasmuch as step (C) of claim 1 requires “adding a value to said index value,” and the evidence summarized above shows that [

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], it is determined that Complainants have not shown literal infringement of step (C) of claim 1. RX-2814C (Schonfeld WS) at Q&A 177.

### v. Doctrine of Equivalents

Complainants also argue that the MediaTek decoders satisfy steps (B) and (C) of claim 1 under the doctrine of equivalents. *See* Compl. Br. at 285-87. In alleging infringement under the doctrine of equivalents, Complainants rely on the associative property of addition and “basic mathematics.” *Id.* In essence, Complainants argue that “based on the associative property of addition, there is no material difference” between the two equations:

“Threshold” + (“Offset” + “Value”)

(“Threshold” + “Offset”) + “Value”

*Id.* at 287.

Complainants’ doctrine of equivalents analysis considers claim 1 as a whole and does not consider each limitation separately. *See Warner-Jenkinson Co., Inc. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 29 (1997) (“Each element contained in a patent claim is deemed material to defining the scope of the patented invention, and thus the doctrine of equivalents must be applied to individual elements of the claim, not to the invention as a whole.”); *accord Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1356 (Fed. Cir. 2012) (“the doctrine of equivalents must be applied to the claims ‘on an element-by-element basis,’ so that every claimed element of the invention—or its equivalent—is present in the accused product”).

For instance, Complainants consider the second and third limitations of claim 1 *together* when asserting that the differences between claim 1 and the accused products are allegedly insubstantial. *See* Compl. Br. at 287. Complainants state: “[the two equations] produce the exact same final result, *i.e.*, the ‘offset’ has been added to the ‘index value’ and the ‘value’ has

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been added to the ‘index value,’ respectively.” *Id.* at 287. When referring to the “final result,” Complainants are referring to the combined result of steps (B) and (C) of claim 1, while ignoring the individual result of each step. This combined limitation differs from the actual limitations set forth in the claim, and it is improper to compare such a combined limitation for purposes of the doctrine of equivalents. *Warner-Jenkinson Co.*, 520 U.S. at 29.

Therefore, it is determined that the MediaTek decoders do not satisfy steps (B) and (C) of claim 1 under the doctrine of equivalents.

**b. Claim 2**

The record evidence shows that the MediaTek decoders do not satisfy all limitations of claim 2.

**i. The method according to claim 1, further comprising the step of:**

As shown above, the MediaTek decoders do not satisfy all limitations of claim 1.

**ii. generating said index value based on a fourth pattern in said first portion in response to said fourth pattern being other than said first pattern.**

[

]”

[

]. See CX-1597C

CX-

].