United States District Court,
W.D. North Carolina.

Asheville Divisio,
Asheville Division.
SUPERGUIDE CORPORATION, a North Carolina Corporation,
Plaintiff.
v.
DIRECTV ENTERPRISES, INC., a Delaware Corporation; DirecTV, Inc., a California Corporation; DirecTV Operations, Inc., a California Corporation; Hughes Electronics Corporation, a Delaware Corporation; Thomson Consumer Electronics, Inc., a Delaware Corporation; Echostar Communications Corporation, a Nevada Corporation; Echostar Satellite Corporation; a Colorado Corporation; and Echostar Technologies Corporation, a Texas Corporation,
Defendants/Third Party Plaintiffs.
v.
Gemstar Development Corporation,
Third-Party Defendant.

No. CIV. 100CV144

Oct. 25, 2001.

Owner of patents for interactive television programming guide technology sued satellite television service providers and manufacturers of satellite receivers for infringement. Construing patents, the District Court, Thornburg, J., held that: (1) "mixer," called for in patent for television programming guide, meant electronics for receiving, converting and mixing television programming information with television video information; (2) patent did not cover receipt of digital television signals; (3) means for receiving, storing, and displaying program information, called for in patent for online television program information system, was limited to structure called for in specification and its equivalents; and (4) television schedule information, converted into event timer information as called for in patent for system to control television program recording device, was not limited to start time, end time, and channel.

Claims construed.

4,751,669. Cited.

A. Ward McKeithen, Everett J. Bowman, Robinson, Bradshaw & Hinson, P.A., Charlotte, NC, John J. Barnhardt, III, Richard M. McDermott, Alston & Bird, LLP, Charlotte, NC, Lawrence M. Hadley, Sean M. Kneafsey, Hennigan, Bennett & Dorman, Los Angeles, CA, for North Carolina Corp.

Michael E. Ray, Charles A Burke, Womble, Carlyle, Sandridge & Rice, Winston-Salem, NC, Darryl E. Towell, Jones Day Reavis & Pogue, Irvine, CA, Michael J. Newton, Jone Day Reavis & Pogue, Dallas, TX, Victor G. Savikas, Jones Day Reavis & Pogue, Los Angeles, CA, Michael J. Newton, Kevin G. McBride, Jones, Day, Reavis & Pogue, Los Angeles, CA, for DirecTV Enterpises, Inc., DirecTV, Inc., DirecTV

Operations, Inc., Hughes Electronics Corp.

Wyatt S. Stevens, Roberts & Stevens, P.A., Asheville, NC, Harold J. McElhinny, Paul J. Riley, Morrison & Foerster LLP, San Francisco, CA, John P. Corrado, Charles C. Carson, Morrison & Foerster LLP, McLean, VA, Mark Danis, Anders T. Aannestad, Morrison & Foerster, LLP, San Diego, CA, for Thomson Consumer Electronics, Inc.

Larry McDevitt, Van Winkle, Buck, Wall, Starnes & Davis, P.A., Asheville, NC, Lawrence K. Nodine, Nagendra Setty, Mitchell G. Weatherly, William F. Long, Needle & Rosenberg, P.C., Atlanta, GA, J. Donald Cowan, Jr., Greensboro, NC, Echostar Communications Corp., Echostar Satellite Corp, Echostar Technologies Corp.

MEMORANDUM OF DECISION

THORNBURG**, District Judge.**

THIS MATTER is before the Court on the parties' motions for the construction of certain claim language used in U.S. Patent No. 4,751,578 to Reiter, *et al*. (Reiter '578), U.S. Patent No. 5,038,211 to Hallenbeck (Hallenbeck '211) and U.S. Patent No. 5,293,357 to Hallenbeck (Hallenbeck '357). FN1

FN1. The term "claim construction" refers to the scope of the patent as construed by a court. A patent contains an abstract with drawings, a summary of the invention, a detailed description of the invention, known as a specification, and the claims thereof.

I. PROCEDURAL HISTORY

In June 2000, SuperGuide Corporation (SuperGuide) brought this action seeking declaratory and injunctive relief against the Defendants for the alleged infringement of the above patents. Each Defendant answered and asserted counterclaims for a declaration of noninfringement and invalidity. In April 2001, Defendants DirecTV Enterprises, Inc., DirecTV, Inc., DirecTV Operations, Inc. (DirecTV) and Hughes Electronics Corporation (Hughes) obtained permission to implead Gemstar Development Corporation (Gemstar). In the third-party complaint, DirecTV and Hughes also sought a declaration of noninfringement and invalidity as well as a declaration of ownership of the patents. Gemstar asserted crossclaims against SuperGuide for breach of contract and declaratory relief. FN2 SuperGuide counterclaimed against Gemstar for a declaration of the field of use reserved in the license agreement between the two. EchoStar then asserted as an affirmative defense the issue of patent misuse by Gemstar.

FN2. These are "downsloping Rule 14(a) claim[s]" for which there does not appear to be a definitive name. 3 *Moore's Federal Practice*, s.s. 14.06 [2], 14.26[1]. Therefore, the Court can find no fault in the designation of the claims as crossclaims.

By Memorandum and Decision issued May 7, 2001, the undersigned disqualified SuperGuide's lead counsel, Roderick Dorman, from continued representation due to his past representation of Gemstar. SuperGuide petitioned the Federal Circuit Court of Appeals for a writ of *mandamus* to compel the undersigned to vacate

that ruling. While that petition was pending, the undersigned conducted a two-day hearing pursuant to *Markman v. Westview Instruments, Inc.,* 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). On August 13, 2001, the Federal Circuit denied SuperGuide's petition.

While this ruling was under advisement, EchoStar moved the United States District Court for the Northern District of Georgia to transfer this action for consolidation with *In re Gemstar Development Corporation Patent Litigation,* Multidistrict Litigation Case No. 1274, which involves issues of antitrust violations. The motion was based on EchoStar's affirmative defense of patent misuse asserted against Gemstar in this action. By Order entered September 6, 2001, the undersigned severed that claim from this action. The Multidistrict Litigation Panel has not yet determined whether to transfer the severed action.

Having heard oral argument and considered the numerous filings of the parties, this matter is ripe for disposition.

II. FACTUAL BACKGROUND

The patents at issue, which are owned by SuperGuide, involve interactive television programming guides. Each of the Defendants manufactures, sells or distributes such guides, which SuperGuide claims infringe its patents. GemStar is the licensee of SuperGuide's patents and has aggressively marketed them. FN3

FN3. Gemstar is owned by Thomson, one of the named Defendants.

An interactive programming guide allows a television viewer to select specific programs for viewing or recording.FN4 In its earliest and most simplistic form, the guide was nothing more than a listing of programs scheduled for broadcast during a particular time frame which scrolled across the television screen. The viewer selected a program by turning to the channel shown for that program or by clicking on the program with a remote control device. The patents at issue describe later inventions with more sophisticated programming, including the selection of programs due to air at future times and the recording thereof. In order to understand how these inventions work, an understanding of basic television technology is necessary.

FN4. Unless otherwise indicated, the factual background has been taken from the oral arguments made during the *Markman* hearing and is in no manner relied on for claim construction.

A television signal is an electrical signal that is created when a video camera captures an image. When a television signal is broadcast, a television receiver picks up and decodes the signal so as to produce pictures on the television screen. A television signal is made up of a series of frames, or still pictures, each one containing an image that varies slightly from the image in the preceding frame. When the frames are displayed by a television in rapid sequence, they create the appearance of smooth, uninterrupted motion to the human eye. A standard American television displays 30 frames per second.
Each frame is made up of 525 horizontal lines. Each set of alternating lines forms two fields: odd and even. A television produces pictures on the screen by using an electronic beam to scan the horizontal lines of a frame across the inside surface of the screen from left to right and top to bottom. To eliminate flicker, the beam first scans the lines that constitute the odd field, and then scans the lines that constitute the even field. A standard American television displays 60 fields per second.

Ampex Corp. v. Mitsubishi Elec. Corp., 966 F.Supp. 263, 265 (D.Del.1997). In other words, the beam moves from left to right and then from top to bottom scanning the surface of the screen 60 times per second and illuminating phosphors on the inside surface of the television screen. Each illuminated spot is called a pixel, which is an acronym for a picture element.FN5 Because it takes some time for the beam to move from its horizontal pattern to the vertical pattern, the beam is turned off during the time it changes position in order to avoid interference with the picture. These times are called blanking intervals, which also are used to transmit certain data not here relevant. Sync pulses are used to synchronize the system.

FN5. A pixel is "a spot on the screen which may be illuminated by directing an electron beam to that spot ...." In re Alappat, 33 F.3d 1526, 1537 (Fed.Cir.1994).

[Images] may be recorded using either analog or digital signals. In an analog recording, [images are] converted into an electrical signal by a device such as a [television camera]. The [camera] generates an electrical signal that varies in proportion to changes in [brightness]. The voltage signal is an analogous replica of the [image] source, thus the name "analog" [signal]. A digital [mechanism] converts the same [image] source into a series of binary numbers, 1s and 0s. This digital signal represents the [image] source. A digital signal is not continuous. Rather, it represents a "sampling"of the [image] source at regular, closely spaced intervals. Each sample is analogous to a digital snapshot of the [image] at a particular point in time. If the sampling is done frequently enough, the digital signal can accurately represent the [image] source. Crystal Semiconductor v. TriTech Microelectronics Int'l, Inc., 246 F.3d 1336, 1343 (Fed.Cir.2001). Thus, an analog signal has its variables represented by continuously measured voltages of other quantities, such as the television picture. The scanned voltages together with the blanking intervals and sync pulses constitute an analog signal called a baseband video signal which cannot be transmitted for any significant distance. Therefore, the baseband video signal is superimposed, or modulated, onto a carrier wave. When that wave is ultimately received in the television, it must be demodulated back to the baseband video signal in order for the television to show the program.

In the early 1990's, technology was developed which allowed the transmission of a digital television signal, a signal in which, as noted above, numbers are expressed as digits based on the binary system. Unlike an analog signal, a digital signal does not transmit a baseband video signal. Instead, it converts the brightness levels in the scanned beam into a digital bit stream which, like an analog signal, also must be transmitted over a carrier wave.

The parties agree that in 1985, the filing date of the Reiter '578 patent, television signals were transmitted from a terrestrial broadcast antenna *via* analog signals modulated onto a carrier wave. These televisions were capable of receiving only analog signals *via* carrier waves from a terrestrial antenna and could not receive carrier waves transmitted by a satellite. However, in 1985, television signals were also transmitted by cable networks by the use of cable set-top boxes which converted the cable signal into analog format so that it could be processed by the television. Moreover, analog direct broadcast satellite systems, such as CNN and HBO, existed in 1985 which required satellite dishes and set-top boxes to convert the analog satellite signals into ones which could be displayed on the television. These entities encrypted their signals so that a television without their set-top box could not decode the signal. The set-top box received their encrypted satellite signal and decoded it so that it could be viewed on the television. The signals transmitted from these satellites, commonly called C-band satellites, were analog signals. *See, e.g.,* IPPV Enter. L.L.C. v. Echostar Communications Corp., 106 F.Supp.2d 595, 606 (D.Del.2000) (**"[T]elevision broadcasting in the early 1980s was conducted solely in an analog format.... [D]igital television signals were not developed until after the date of invention."**). Thus, the parties have agreed that originally all television

signals were analog signals. Nonetheless, in 1985, the technology existed for embedding digital data within an analog signal such as was done for closed captioned television. Again, a decoder was required for conversion of the digital data into analog format which could be processed by the television. However, in 1985 digital cable and satellite systems did not exist. The Defendants and Gemstar claim this technology was developed in 1992 and was first available commercially in 1994. The parties also agree that the analog and digital systems are incompatible.

III. PRINCIPLES OF CLAIM CONSTRUCTION

[1] Although this action is based on allegations of infringement, there must first be a construction of the claims of the patents at issue to determine the scope of each.FN6 Bell Atlantic Network Servs., Inc. v. Covad Communications Group, Inc., 262 F.3d 1258, 1267 (Fed.Cir.2001). This determination, called claim construction, is a question of law for the Court. *Markman, supra*. Once the scope of the claims for each patent has been determined, the jury decides whether the properly construed claims read on the accused device; in other words, infringement is a question of fact for the jury. *Bell Atlantic Network, supra*.

FN6. "The specification must include a written description of the invention ... and of the manner and process of making and using the same, and is required to be in such full, clear, concise and exact terms as to enable any person skilled in the art or science to which the invention [ ] pertains ... to make and use the same." 37 C.F.R. s. 1.71(a). "The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery." 37 C.F.R. s. 1.75(a).

[2] [3] "In construing claims, the analytical focus must begin and remain centered on the language of the claims themselves, for it is that language that the patentee chose to use to 'particularly point[ ] out and distinctly claim[ ] the subject matter which the patentee regards as his invention.' " Interactive Gift Express, Inc. v. Compuserve Inc., 256 F.3d 1323, 1331 (Fed.Cir.2001) (quoting 35 U.S.C. s. 112, para. 2). "It is well-settled that, in interpreting an asserted claim, the court should look first to the intrinsic evidence of record, *i.e.*, the patent itself, including the claims, the specification and, if in evidence, the prosecution history. Such intrinsic evidence is the most significant source of the legally operative meaning of disputed claim language." Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996) (citations omitted). However, not "[a]ll intrinsic evidence is [created] equal." *Interactive Gift Express, supra*. First, the claim language is consulted. *Id*. The claim terms are given their ordinary and accustomed meanings while technical terms are construed as having meanings that a person of ordinary skill in the field of the invention at the time thereof would have given to them. *Bell Atlantic Network, supra*.

[4] If the claim language is clear, the specification is consulted merely to determine if a deviation from that clear language has been specified by the inventor. *Interactive Gift Express, supra*. "The role of the specification includes presenting a description of the technologic subject matter of the invention, while the role of claims is to point out with particularity the subject matter that is patented." Netword, L.L.C. v. Centraal Corp., 242 F.3d 1347, 1352 (Fed.Cir.2001). "The construction that stays true to the claim language and [that] most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." Renishaw P.L.C. v. Marposs Societa' per Azioni, 158 F.3d 1243, 1250 (Fed.Cir.1998).

[5] Where the claim language and specification provide an unambiguous construction, it is unnecessary to consult the prosecution history.FN7 Interactive Gift Express, 256 F.3d at 1334. Otherwise, the prosecution

history should be consulted to ascertain if the inventor made any express representations in obtaining the patent regarding its scope and the meaning of the claims. Bell Atlantic Network, 262 F.3d at 1268. Only as a last resort should extrinsic evidence be consulted. "In those cases where the public record unambiguously describes the scope of the patented invention, reliance on any extrinsic evidence is improper." Vitronics, 90 F.3d at 1583.

FN7. The prosecution history of a patent is the "complete record of all of the proceedings before the Patent and Trademark Office, including any express representations made by the applicant regarding the scope of the claims." Vitronics, 90 F.3d at 1581.

In discussing the claims of the various patents, only those claims for which construction has been requested by the parties will be addressed.

IV. CLAIM CONSTRUCTION

U.S. PATENT NO. 4,751,578 *to REITER, et al.*

[6] In 1985, a patent application was filed for an invention described as an electronically controllable system for viewing on a television up-dateable television programming information and the patent was issued in 1988. The terms which are in dispute in Claim 1 of Reiter '578 are set forth in bold font.

1. A system for electronically controllably viewing updateable information on a television having a screen comprising: FN8

FN8. In their *Markman* briefs, the Defendants took the position that no claim construction was necessary for the language of the preamble. In their proposed judgments, they did not address the preamble. SuperGuide, despite the Defendants' consistent position, urges that a construction of the preamble is necessary, arguing that the language thereof is not limiting. Gemstar simply notes that the preamble is not limiting. The preamble "may limit the scope of the claim, for example when patentability depends on limitations stated in the preamble, or when the preamble contributes to the definition of the claimed invention. In this case, however, the preamble simply states the intended use or purpose of the invention. Such a preamble usually does not limit the scope of the claim." C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340, 1350 (Fed.Cir.1998) (internal citations omitted); Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc., 246 F.3d 1368, 1373 (Fed.Cir.2001). The undersigned therefore finds it unnecessary to construe the language of the preamble.

(a) **a microcontroller** including input/output interfaces, a microprocessor, and an updateable memory comprising at least a RAM FN9, said RAM of said microcontroller being updateable *via* **an electronic medium** and storing updated information including at least television programming information; FN9. Random access memory.

(b) **a mixer** for mixing **a regularly received television signal** with the signal generated by the microcontroller in accord with instructions of said microcontroller;
(c) **an RF** FN10 **section** for receiving instructions from said microcontroller and for receiving **radio frequency information** from the mixer and a television station and properly converting the information into video signals which may be sent to said television for viewing; and

FN10. Radio frequency.

(d) a remote control system, said microcontroller being controllable by said remote control system, for permitting a viewer of said television to direct said microcontroller to **perform a search** on at least said updated television programming information contained in said RAM of said microcontroller, a subset of at least said updated television programming information being output to said mixer so as to provide on the television screen television programming information desired by the viewer in **a desired format.**
Reiter '578, at Col. 8, ll. 8-38.

[7] The first disputed term is "microcontroller." SuperGuide and Gemstar arguethat while the microcontroller must contain input/output interfaces, a microprocessor and an up-dateable memory, the microcontroller need not contain these elements within a single integrated circuit. Defendants FN11 contend the invention claims a single integrated circuit containing each of these elements.

FN11. The Defendants have filed a joint proposed claim construction and therefore are not considered separately with the exception of Third-Party Defendant Gemstar.

The plain language of the claim does not specify that the microcontroller be contained within a single integrated circuit. The Court therefore looks to the specification because "[c]laims must be read in view of the specification, of which they are a part." Advanced Cardiovascular Sys., Inc. v. Scimed Life Sys., Inc., 261 F.3d 1329, 1338 (Fed.Cir.2001) (citations omitted). The specification contains the following:

Microcontroller 60 *comprises* an eight-bit microprocessor, input/output interfaces and an updateable memory which is preferably a 32K random access memory (RAM). *Those skilled in the art will of course appreciate that each element of microcontroller 60 may be separately provided,* and that the microprocessor could be other than eight-bit, while the updateable memory could comprise a RAM, a hard disk, a floppy disk, bubble memory, tape, etc. and could be other than 32K in dimension.

Reiter '578, at Col. 4, ll. 9-18 (emphasis added).

Additional changes to the system may be made by including one or more of the elements in a single piece of hardware, or by dividing a single element into many individual pieces. *Thus, for example, the microcontroller, mixer and RF section could be combined into a single hardware chip. Conversely, the microcontroller could be divided into a microprocessor, a RAM and the various I/O interfaces.* Indeed, various combinations of all the elements could be made to suit various needs.

Reiter '578, at Col. 7, ll. 61-68; Col. 8, ll. 1-2 (emphasis added). The language of the specification clearly anticipates that each element of the microcontroller, *i.e.,* the microprocessor, RAM and I/O interfaces, could be "divided" "into many individual pieces." Moreover, while both the claim language ("including") and the specification language ("comprises") require the microcontroller to have at least these three elements, there is no requirement that the elements be contained within a single integrated circuit. "The claim word 'including' is not construed in a lexicographic vacuum, but in the context of the specification and drawings." Toro Co. v. White Consol. Indus., Inc., 199 F.3d 1295, 1301 (Fed.Cir.1999). "The claim term 'including' is synonymous with 'comprising,' thereby permitting the inclusion of unnamed components." Hewlett-Packard Co. v. Repeat-O-Type Stencil Mfg. Corp., Inc., 123 F.3d 1445, 1451 (Fed.Cir.1997). " 'Comprising' is a

term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim." Dow Chem. Co. v. Sumitomo Chem. Co., Ltd., 257 F.3d 1364, 1381 (Fed.Cir.2001) (quoting Genentech, Inc. v. Chiron Corp., 112 F.3d 495, 501 (Fed.Cir.1997)). And, where "including" or "comprising" is used in conjunction with the indefinite article "a," the article "in patent parlance carries the meaning of 'one or more' in open-ended claims containing the transitional phrase '[including].' " KCJ Corp. v. Kinetic Concepts, Inc., 223 F.3d 1351, 1356 (Fed.Cir.2000). "The written description supplies additionalcontext for understanding whether the claim language limits the patent scope to a single [integrated circuit] or extends to encompass a device with multiple [circuits]." Abtox, Inc. v. Exitron Corp., 122 F.3d 1019, 1024 (Fed.Cir.1997). Here, neither the language of the claim nor that of the specification requires the elements of the microcontroller to be integrated into a single circuit. *Advanced Cardiovascular Sys., Inc., supra*. Therefore, the undersigned will not read such a limitation into the claim.

"Microcontroller" is thus construed as the electronics including input/output interfaces, a microprocessor, and an up-dateable memory comprising at least a random access memory which is capable of being updated *via* an electronic medium and which is capable of storing updated information including at least television programming information. The microcontroller is not limited to a single integrated circuit.

[8] The next term for construction is "an electronic medium" which also is used in Claim 1, Element (a); "said RAM of said microcontroller being updateable via an electronic medium...." SuperGuide contends the term includes any electronically generated signal regardless of its source. Gemstar and Defendants agree that the phrase means any electronic medium that can be used to update the up-dateable memory of the microcontroller, including, as the specification discloses, digital information for the storage of programming information in the RAM. SuperGuide's construction appears to agree with that of the Defendants and Gemstar.

The specification provides:

As indicated in FIG. 2, the random access memory or updateable memory of microcontroller 60 is subject to updating via electronic media. The particular medium chosen could be radio or television subcarrier 67a (via antenna 22 and RF section 64 if desired), telephone link 67b, magnetic cards or floppy disks 67c, or equivalents to any or all of the above. Regardless of the method of updating the RAM of microcontroller 60, the system 10 must additionally include suitable hardware and/or software for the updating task, such as a modem if telephone link 67b is utilized.

Reiter '578, at Col. 4, ll. 29-39. The Court therefore construes the term "electronic medium" as an electronic medium that can be used to update the up-dateable memory of the microcontroller.

[9] However, the parties do not agree on the construction of "a mixer" and "a regularly received television signal" used in Element (b) of Claim 1; "a mixer for mixing a regularly received television signal with the signal generated by the microcontroller in accord with instructions of said microcontroller." Figure 2 attached to the patent shows that the microcontroller sends program data to the mixer while the RF section sends video data to the mixer. The function of the mixer is to combine the two into one signal which is then sent to the RF section which transmits the signal to the television set. The combined information may be viewed, at the viewer's discretion, either on a full screen or as an overlay or window in the television program being watched.

At the hearing, the parties agreed the information generated by the microcontroller would be in digital format. And, it was agreed that the video data was in analog format.FN12 The parties acknowledged that in order for the data from the microcontroller to be mixed with the data from the RF section, they would have to both be modulated; or, if both were unmodulated, both would have to be either analog or digital, *i.e.,* analog data cannot be mixed with digital data. Pointing to the language of the specification, Defendants claim the digital data from the microcontroller is converted by the mixer into an analog format before it is mixed with the video data in the mixer. SuperGuide argues this construction would import a limitation from the specification into the claim. Defendants also urge a construction which would add a description of "RF," *i.e.,* radio frequency, to the mixer.

FN12. In its Proposed Order, SuperGuide asserts, for the first time, that the video data would have been converted in the RF section to a digital format and then sent to the mixer for mixing with the digital data from the microcontroller.

As will be apparent in the discussion of the phrase "regularly received television signals," SuperGuide maintains that once the television signal is received from an outside source into the RF section, it is demodulated or stripped off of the carrier wave and becomes a baseband video signal. This, they argue, is verified by the use of the term "video data" to describe the signal sent to the mixer for mixing with the microcontroller program data. In fact, SuperGuide most recently claims the mixer did not have the capability to mix modulated signals and it was more likely that the video data was converted to digital format in the RF section before being sent for mixing with the digital data from the microcontroller. Moreover, SuperGuide alleges the Defendants' construction would require modulation of the digital data from the microcontroller onto a carrier wave for transmission to the mixer.FN13 Finally, SuperGuide argues that the mixer could also function as a video switch. *See,* Plaintiff's Proposed Memorandum and Order regarding Claim Construction, filed August 16, 2001, at 12-13. Gemstar urges a similar construction.

FN13. This position is inconsistent with SuperGuide's argument that the analog signal is stripped off of the carrier wave in the RF section before being sent to the mixer because it was economically unfeasible for modulated signals to be mixed.

The specification discloses that the RAM of the microcontroller stores the programming information.

In order to receive information, the viewer, in essence, must direct the microcontroller 60 through a series of steps. First the viewer might access the system microcontroller by pressing the # button on his remote control box 32. The viewer might then request that the information that he is about to demand be output on the television screen in a particular format. Thus, different codes could be used for output formats such as a window or overlay format, or a full screen display. Finally, the viewer would then request to see information contained in the RAM. For example, through a set of codes, the viewer might direct the microcontroller to output the television programming schedule for the week. The microcontroller, as a result of the commands, *would direct RF section 64 to send received video signals* to mixer 70. The microcontroller would also then access the RAM, and send the information to mixer 70 which is then receiving *video data from antenna 22 or cable 24 via RF section 64. The mixer 70,* which is also powered by power supply 55, *would take the information from microcontroller 60, convert it into a format which can be viewed in the same way [as] the video data received via RF section 64,* and mix the two in accord with the output format directed by the microcontroller. The mixed signal would then be sent via RF section 64 to

the television 40 for viewing by the viewer.

. . . . .

The invention envisions that additional information other than television scheduling information may be contained within the RAM of microcontroller 60.... An advertiser could arrange to have a message included in information down-loaded into the RAM of microcontroller 60. The message might be accompanied by *digital sound information which could be converted into analog signals in the RF section 64* and which would be perceived as electronic music.

Reiter '578, at Col. 4, ll.57-68; Col. 5, ll. 1-15, 37-39, 47-52 (emphasis added). The language of the specification teaches that the information transmitted by the mixer to the RF section is in analog format: "The mixed signal would then be sent via RF section 64 to the television 40 for viewing by the viewer." The parties agree the television could only process analog signals. In contrast to SuperGuide's argument, there is nothing in the claim language or the specification requiring that the microcontroller's digital data be modulated onto an analog signal before being sent to the mixer. Nor has any party shown this was inherent in the state of the art at the time. Beam Laser Sys., Inc. v. Cox Communications, Inc., 144 F.Supp.2d 475, 487 n. 7 (E.D.Va.2001) (quoting National Recovery Techs., Inc. v. Magnetic Separation Sys., Inc., 166 F.3d 1190, 1196 (Fed.Cir.1999)). Indeed, at oral argument the parties acknowledged that signals generated internally within the system would not be so modulated because they were not to be transmitted over a long distance.

"[T]he specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." Vitronics, 90 F.3d at 1582. In fact, the Federal Circuit has "specifically held that the written description of the preferred embodiments 'can provide guidance as to the meaning of the claims, thereby dictating the manner in which the claims are to be construed, even if the guidance is not provided in explicit definitional format.' In other words, the specification may define claim terms 'by implication' such that the meaning may be 'found in or ascertained by a reading of the patent documents.' " Bell Atlantic Network, 262 F.3d at 1268 (quoting SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc., 242 F.3d 1337, 1344 (Fed.Cir.2001) and Vitronics, 90 F.3d at 1582, 1584 n. 6). The undersigned finds that such is the case here. The claim language is "a mixer for mixing a regularly received television signal with the signal generated by the microcontroller." No one disputes the signal generated by the microcontroller is digital. The specification clarifies that the mixer "would take the information from [the] microcontroller [ ] *convert it into a format which can be viewed in the same way [as] the video data received via RF section* [ ], and mix the two ...." The parties also agree that, at least as it is received in the RF section from the outside, the video data is in analog format. Thus, the mixer converts the digital signal into analog format and then mixes it with the video data. In other words, two analog signals are mixed. This construction is further supported by that portion of the specification describing the use of digital sound information received from the microcontroller but converted into *analog signals* in the RF section. There is nothing in the language of the claim or the specification to support SuperGuide's proposition that the video signal from the RF section is digitalized either prior to being transmitted to the mixer or by the mixer. Kopykake Enterprises, Inc. v. The Lucks Co., 264 F.3d 1377, 1383-84 (Fed.Cir.2001) (Licensee failed to show that from the point of view of one of ordinary skill in the art at the time the application was filed, the construction urged was appropriate.) The claim language and the specification clearly show that the conversion is of the information received from the microcontroller into an analog format which is then mixed with the video data, also in analog format, and finally sent to the RF section.

The focus in construing disputed terms in claim language is not the subjective intent of the parties to the patent contract when they used a particular term. Rather the focus is on the objective test of what one of ordinary skill in the art at the time of the invention would have understood the term to mean.... As [the Federal Circuit has explained], when a claim term understood to have a narrow meaning when the application is filed later acquires a broader definition, the literal scope of the term is limited to what it was understood to mean at the time of filing.

Id., at 1383. Here, one of ordinary skill in the art in 1985 would have understood that the digital data received from the microcontroller would of necessity be converted into analog format. Thus, two analog signals were mixed.

SuperGuide claims the analog television signal was demodulated in the RF section prior to being sent to the mixer.FN14 Accepting this proposition, it is clear that such a demodulated analog signal could be mixed with the unmodulated signal sent from the microcontroller once the digital format has been converted into analog format by the mixer. Indeed, all the parties agreed that demodulated and/or unmodulated signals which were both in analog format could be mixed. And, as noted *infra,* the digital signal coming from the microcontroller was not modulated onto a carrier wave. Thus, once converted in the mixer, it was an unmodulated analog signal which could be mixed with the demodulated analog signal received from the RF section.

FN14. In support of this contention, SuperGuide notes the use of the words "video data" in the specification and drawings. However, as emphasized in the quoted portion of the specification, the patentee used both "video data" and "video signal" interchangeably in the specification. Thus, these terms "mean essentially the same thing." Amhil Enter. Ltd. v. Wawa, Inc., 81 F.3d 1554, 1559 (Fed.Cir.1996); *accord,* Trilogy Communications, Inc. v. Times Fiber Communications, Inc., 109 F.3d 739, 743 (Fed.Cir.1997).

However, there is nothing in the claim language or the specification which would limit the signal received from the RF section to a demodulated analog signal, *i.e.,* a baseband video signal. In fact, there is nothing in the claim language or specification which requires that the analog signal be stripped off of the carrier wave in the RF section before being sent to the mixer, although this is not precluded by the claimed invention. Defendants argue the prosecution history shows that the signal received in the mixer from the RF section would not have been demodulated because a demodulated signal would not have been distinguishable from prior inventions. However, the undersigned's review of that history does not support that conclusion. In response to the patent examiner's rejection of the application, the patentee wrote:

Bourassin *et al.* also does not provide a mixer for mixing a *regularly received television signal* with a signal generated by the microcontroller as is required by the instant invention.... [Bourassin shows] it is *television signals which are being mixed with other television signals, and not television signals with signals generated by a microprocessor* of the unit.... [N]or does Bourassin *et al.* output (and certainly not to a mixer which mixes a television signal with signals generated by a microprocessor ...).

Prosecution History, at E028926 (emphasis added). The applicant also noted that "none of the cited patents appears to mix regular RF television station signals with information stored in the RAM and then overlay them as would be required by claims 10 and 11.... Lindman *et al.* does not have an RF section...." *Id.,* at E028930. Contrary to the Defendants' argument, the patentee's focus is on the mixing of a computer

generated signal with a television signal in order to distinguish the application from prior patents, not the mixing of modulated television signals.

The patent examiner responded to the applicant's comments by noting that Bourassin "includes the function of regular TV receiving." *Id.,* at E028936. Regardless of whether the images included a "regular TV signal" mixed with another TV signal or with information from a computer, "such secondary signal to be mixed obviously is data from the various peripheral units of the microcontroller as claimed." *Id.,* at E028936-37. In response, the applicant noted that the prior patents cited did "not show an overlay of information obtained from a RAM over video information obtained from a TV station.... [T]he image-on-image of Bourassin is regular TV signals over secondary TV signals as opposed to TV signals overlayed by signals being generated by a microprocessor." *Id.,* at E028942.

The Court rejects the Defendants' argument that the prosecution history shows the patentee distinguished his invention from prior ones by claiming the mixing of a modulated signal in the mixer. The distinction was based on the mixing of a digital signal from a microcontroller internal to the invention with an analog television signal. Thus, as will be noted below, while the television signal which is received in the RF section was modulated onto a carrier wave, the claim language, the specification, the drawings and the prosecution history do not disclose whether the signal when received into the mixer has been demodulated.FN15 And, while the applicant argued to distinguish his invention, he did not amend or alter the claim language regarding this aspect of the invention in response to the examiner's rejection. *Kopykake,* at 1382 ("Unless altering claim language to escape an examiner's rejection, a patent applicant only limits claims during prosecution by clearly disavowing claim coverage." (citations omitted)). The Court therefore rejects both the Defendants' position that the mixer mixed modulated signals and SuperGuide's argument that the mixer could only mix demodulated and/or unmodulated signals.

FN15. In fact, at the time of the application, the television set itself had the capability of performing this function. It was "well known in the art that a television set has a RF section that receives UHF, VHF, CATV and radio frequencies if so desired." Prosecution History at E028918. In order for the television program to be viewed, the carrier wave was demodulated in the television set.

Likewise, there is no support for SuperGuide's argument that the digital data must have been modulated onto a carrier wave for transmission from the microcontroller to the mixer. Dow Chem. Co., 257 F.3d at 1379 (The district court "improperly imported a limitation not supported by the claim language or the specification."). The patent makes no such disclosure. Nor it is necessary, as the Defendants claim, to add the description "RF" to the mixer. Gart v. Logitech, Inc., 254 F.3d 1334, 1343 (Fed.Cir.2001). The claim and specification describe a mixer having the capability to convert digital data from the microcontroller into an analog format which is then mixed with an analog signal to generate an analog signal to the RF section. To add the term "RF mixer" would import a limitation not claimed in either the claim languageor the specification; and, as previously noted, not clearly defined by the prosecution history.

The Court also rejects the contention by SuperGuide and Gemstar that the mixer functioned as a video switch.FN16 Nothing in the claim language or the specification supports the addition of such a description. The specification clearly states that the "mixer 70, ... would take the information from microcontroller 60, convert it into a format which can be viewed in the same way as the video data received via RF section 64, *and mix the two in accord with the output format directed by the microcontroller. The mixed signal would then be sent via RF section 64 to the television 40 for viewing by the viewer.*" The forwarding of a mixed

signal does not describe a system which switches back and forth between the video of a television program being shown and the text of the programming information stored in the RAM.

FN16. Gemstar provided no definition for the term "video switch." SuperGuide, while not defining the term, claims the mixer could "alternate [ly] display [ ] the microcontroller signal and the regularly received television signal...." Plaintiff's Proposed Memorandum and Order, at 14. Defendants clarify that the mixer is not a component which simply switches back and forth between the television and text signals. Defendants' Joint Proposed Order, at 10.

The determined information located by the microcontroller is then controllably sent to the mixer which, in accord with instructions from the microcontroller, properly mixes the requested information with the rf video data being received from the antenna or cable. In addition, ... the mixer is told by the viewer, *via* instructions of the microcontroller, *whether to scroll* the desired information, or *whether and when to display new full windows or screens of information*. After the search has been accomplished and displayed, the viewer may then choose at 170 whether to perform an additional search, or *whether to exit the system*." Reiter '578, at Col. 6, ll. 42-54 (emphasis added). There is no language in the specification supporting a "switch" theory; indeed, the specification details the selection of programming information followed by an additional search or an exiting of the system. Such language would be unnecessary if the viewer could simply switch back and forth between the programming information and the television program being viewed. "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. Service Eng'g Corp., 216 F.3d 1343, 1347 (Fed.Cir.2000) (citations omitted).

SuperGuide and Gemstar also argue that "switching" refers to the interleaving of signals in order to display the program guide in the format chosen by the viewer simultaneously with the television program itself. "[T]he mixer 'interleaves' (alternates between) the first and second signal 'on the fly' to generate a combined signal that displays the IPG and the television program in the proper format." Gemstar Development Corporation's *Markman* Brief, at 27.

[A]s the electron beam scans across a row [of pixels] and reaches the left edge of the portion of the screen reserved for the IPG window, the mixer *switches* the signal sent to the television set to the IPG signal from the microcontroller, *i.e.*, the IPG signal.... The location of the window is determined by a control signal sent from the microcontroller to the mixer to indicate the points at which transitions back and forth between the two input signals to the mixer are to occur. By this method, the output signal contains a *combination* of the second signal 'interleaved' within the first signal in a manner that results in the display of an IPG window.

Id., at 28-29 (emphasis added). The undersigned does not construe "interleaving" as equivalent to "switching." The specification clearly describes a "combination" signal resulting from the interleaving process, not an alternating between signals. Gemstar and SuperGuide acknowledge that the technology for interleaving and superimposing signals "was well known and in practice in 1985." *Id.* Thus, the Court rejects an attempt to convert technology well known in the art into a new function not described or claimed in the patent, *i.e.*, switching.

The Court therefore construes the term "mixer" to mean the electronics for (a) receiving and converting an unmodulated digital signal generated by the microcontroller which contains television programming information into an analog format; (b) receiving a regularly received television signal, whether demodulated or unmodulated, which contains television video information; (c) receiving and stripping a modulated

analog signal which contains television video information from the RF section; FN17 and (d) mixing the two compatible signals to produce an analog signal which is then transmitted to the RF section. The mixer does not function as a switch.

FN17. Because the parties conceded at oral argument that the signal generated by the microcontroller was not modulated for transmission to the mixer, the Court does not address the issue of stripping such a signal of the carrier wave in the mixer.

[10] The same principles apply to the construction of the phrase "regularly received television signal." SuperGuide and Gemstar urge a construction that is not limited to a method of broadcast transmission, *i.e.*, the carrier wave may be modulated with either analog or digital data containing the television audio and video information. Defendants argue against this construction because in 1985 a television set could not process digital satellite signals. However, the parties do agree that in 1985 the analog baseband video signal produced by the television camera could not be broadcast without modulation onto a carrier wave and that television signals were broadcast in this manner.

Again, resort to the specification is sufficient. The specification makes it clear that the programming guide was independent of regular television viewing.

Power switch 50 is used for turning the system on or off and may be driven by a standard electrical outlet. When the system is turned on, power supply 55 is used to provide the low voltages necessary to power the microcontroller 60. *When the system is off, television signals received, such as VHF/UHF channels 2-82, or cable channels 2-62, are sent directly through RF section 64 to the television 40 for viewing.*

Reiter '578, at Col. 4, ll. 1-8 (emphasis added). In 1985, only analog signals could be directly processed by the television set.

The apparent reason for the patent's focus on analog signals is that television broadcasting in the early 1980s was conducted solely in an analog format. [The] parties acknowledged during oral argument that digital television signals were not developed until after the date of invention. Because the literal scope of the ['578] patent was fixed at the date of issuance, the claims must be construed to refer to the kinds of television signals that were being [broadcast] at that time.

IPPV Enter., 106 F.Supp.2d at 606. Thus, the phrase "regularly received television signal" means an analog signal modulated onto a carrier wave and transmitted *via* terrestrial antennae or through a cable or satellite system. It does not include a digital television signal as understood in the state of the art in the mid-1990's.

[11] The next portion of Claim 1 which must be construed is Element (c) which provides for "an RF section for receiving instructions from said microcontroller and for receiving radio frequency information from the mixer and a television station and properly converting the information into video signals which may be sent to said television for viewing[.]" SuperGuide's position is that the language of the claim constitutes a definition of "RF section." Defendants cite the specification to support their position that the RF section must include a tuner and converter.

The claim and the specification recite three functions for the RF section. The first function is performed when the programming guide is off: "television signals received, such as VHF/UHF channels 2-82, or cable

channels 2-62, are sent directly through RF section 64 to the television 40 for viewing." Reiter '578, at Col. 4, ll. 1-8. The second function occurs when the viewer uses the programming guide as a remote control system: "The system 10 may therefore function simply as a remote control device which permits the viewer to change channels. In this mode, according to the command of control unit 32, the *microcontroller 60 instructs RF section 64 as to which channel is to be received from antenna 22 or cable 24 and sent to the television 40* for viewing on locally non-used channel 3 or 4." *Id.*, at Col. 4, ll. 21-28 (emphasis added). The third function involves the use of the programming guide by the viewer: "The mixed signal would then be sent *via* RF section 64 to the television 40 for viewing by the viewer." *Id.*, at Col. 5, ll. 13-15.

Because the inventor clearly intended the system to function as a remote control device, the RF section must include a method for selecting one channel from the many being bombarded at the television. " '[A] claim interpretation that would exclude the inventor's device is rarely the correct interpretation.' ..." Interactive Gift Express, 256 F.3d at 1343 (quoting Modine Mfg. Co. v. U.S. Int'l Trade Comm'n, 75 F.3d 1545, 1550 (Fed.Cir.1996)). Thus, it is unlikely that those skilled in the art would read the claim and specification as not including such a device. *Id*. Likewise, the RF section must convert information received from the mixer and the television station into "video signals which may be sent to said television for viewing...." Thus, a conversion device is prescribed by the invention. Reiter '578, *supra*.

The Court finds the term "RF section" to mean the electronics for (1) receiving radio frequency signals from a source external to the invention; (2) receiving instructions from the microcontroller internal to the invention; (3) making a channel selection pursuant to the instructions received from the microcontroller; (4) receiving and converting signals received from the mixer or a television station into video signals capable of being received by the television set; and (5) transmitted the converted signals to the television for viewing.

[12] Element (c) of claim 1 contains the phrase "radio frequency information" which is described as coming from the mixer *and* a television station. SuperGuide argues that "radio frequency information" is either analog or digital information which may be carried or derived from a radio frequency carrier signal. And, SuperGuide notes the information received from the mixer is not modulated but still qualifies as radio frequency information because it can be modulated in the RF section for viewing on a television. Thus, digital television signals also qualify as radio frequency information because they may be modulated onto a carrier wave.

The Court rejects this attempt to bootstrap technology which was not in the state of the art at the time of this invention. The specification provides that when the programming guide is not in use, "television signals received, such as VHF/UHF channels 2-82, or cable channels 2-62, are sent directly through RF section 64 to the television 40 for viewing." Reiter '578, at Col. 4, ll. 5-8. The Court has construed "regularly received television signals" to mean analog signals.

The Federal Circuit has indicated that in certain situations, a narrow written description may constitute a basis for adopting a narrow construction of otherwise-broad claim language. The Federal Circuit has held that the literal meaning of a claim is fixed upon its issuance. Variants of a claimed invention that are based on after-developed technology could not have been disclosed in a patent. When a claim is written sufficiently broadly to cover after-developed technologies, the claims may be construed to limit their scope to those technologies disclosed in the written description of a patent.

IPPV Enter., 106 F.Supp.2d at 605 (quoting Wang Labs., Inc. v. America Online, Inc., 197 F.3d 1377, 1383 (Fed.Cir.1999) ("The only embodiment described in the '699 patent specification is the character-based

protocol, and the claims were correctly interpreted as limited thereto.")) (other internal citations omitted). Such is the case here. The specification limits radio frequency information to the type of television signals being broadcast in 1985 and may not be broadened to encompass the construction urged by SuperGuide and Gemstar. Thus, the phrase is construed to mean modulated or unmodulated analog signals containing television programming and video information received either from the mixer internal to the system or from a television station. It does not include digital television signals.

[13] Element (d) of Claim 1 is also subject to claim construction: "a remote control system ... for permitting a viewer of said television to direct said microcontroller *to perform a search* on at least said updated television programming information contained in said RAM of said microcontroller...." Gemstar and the Defendants agree that the phrase "to perform a search" means that the viewer would direct the microcontroller to retrieve all of the desired programming information of a particular type, *e.g.*, all sports programs or all movies. SuperGuide maintains the phrase means to retrieve at least a subset of the programming, *i.e.*, an examination of less than all the records in RAM. The specification provides:

If the viewer wished to view a subset of the information, *e.g.*, the television program schedule for the day, the viewer, through a different set of code signals which might include the direct keying of the date on the handheld remote control unit 32, could then direct the microcontroller *to output only a part of the information stored in the microcontroller RAM*. Likewise, if the viewer wished to see a listing of the sports events being shown on television on a particular day, the viewer *could direct the microcontroller to search through the information in the RAM and retrieve only the requested information*.

. . . . .

The next command of the viewer at 105 might indicate whether the viewer wished to see *all of the information contained in the RAM, e.g., a complete dump of the RAM,* or whether a subset of that information was desired.... In this manner, the microcontroller would perform the function of a microprocessor in *performing a search on the information contained in the RAM and determining, for example, a listing of all the television movies that are to start between 6 and 11 P.M*. on a particular date.

Reiter '578, at Col. 5. ll. 16-27, 67-68; Col. 6 ll. 1-3, 17-21 (emphasis added). It is clear from the language of the claim and the specification that the search is of all the information contained in the RAM in order to produce the subset of data specified by the viewer. In addition, the invention envisioned the storage of information unrelated to television programming, such as local movie times, in the RAM. *Id.*, at Col. 5 ll. 37-49 ("The invention envisions that additional information other than television scheduling information may be contained within the RAM of microcontroller 60."); Col. 6 ll. 60-68. Thus, the claim provides that the search will be conducted on "at least said updated television programming information." The Defendants' construction is therefore the appropriate one. The phrase "to perform a search" means a user-directed examination by the microcontroller of all the television programming information stored in the random access memory of the system and the retrieval of a subset of that information which meets the criteria specified by the user for display on the television set.

[14] Finally, the last element of Claim 1 is the "desired format" for viewing the television programming information: "a subset of at least said updated television programming information being output to said mixer so as to provide on the television screen television programming information *desired by the viewer in a desired format*." Defendants maintain the format is limited to that chosen by the viewer and may not include preselections determined by the service provider. SuperGuide and Gemstar claim the format

includes selections by the user, the system designer or the service provider. SuperGuide bases this conclusion on the fact that the system is preprogramed for a full screen, window or overlay format. Thus, it argues the system designer has "selected" those formats.

The specification provides the following:

Indeed, if desired, mass media advertising could be accomplished according to the invention. An advertiser could arrange to have a message included in information down-loaded into the RAM of microcontroller 60. The message might be accompanied by digital sound information [ ].... In this manner, a jingle or theme song might accompany the advertising message.

. . . . .

The next command of the viewer at 105 might indicate whether the viewer wished to see all of the information contained in the RAM, *e.g.*, a complete dump of the RAM, or whether a subset of that information was desired. If a complete dump was requested, the microcontroller would direct the viewer to choose a format of display.... [If] the viewer has directed the microcontroller to perform [a] subset search, the viewer is directed to determine the format output of the information found. Thus, at 145, the viewer is asked whether an entire screen format is desired. If not, at 150, the viewer is asked whether a window format is desired. If not, the viewer is supplied at 155 with a television overlay format.... In addition, at 160 and 165, the mixer is told by the viewer, *via* instructions of the microcontroller,whether to scroll the desired information, or whether and when to display new full windows or screens of information.

Id., at Col. 5 ll. 45-54, 67-68; Col. 6 ll. 1-5, 29-36, 48-51. Thus, the invention provides at least three formats: entire screen, window or overlay. The viewer must select one of the first two options or the third "overlay" is provided. Thus, by not selecting one of the first two choices, the viewer in fact selects the "overlay" format. The undersigned does not construe this language so broadly as to encompass other *formats*, as opposed to additional information, preselected by the service provider. The specification clearly states that although additional information may be included in RAM, such as the advertising jingle, the format in which it is viewed is selected by the viewer.

This invention was designed for viewer selection of the format in which he desired to view the television programming information. The choice of formats of necessity is included within the system by the system designer. The fact that the system designer provides certain choices does not mean that it "select" a desired format. The term "desired format" means a user selected format for the display of the results of the search performed by the system. Although additional information may be provided to the system by the service provider, the format for viewing that information is viewer directed.

U.S. PATENT 5,038,211 *to HALLENBECK*

The Reiter '578 invention had two drawbacks: the necessity for random access memory capable of storing voluminous information and the requirement of a high speed processor capable of processing that information. These aspects of the invention presented economic obstacles to its commercialization due to the high cost of microcontrollers and microprocessors capable of performing these functions. Hallenbeck '211, applied for in 1989 and issued in 1991, solved these problems by storing only those television programs meeting predetermined selection criteria thus reducing the necessity for large memory and high speed processors. The invention stores three groups of information: event data, program title and program

description.

The parties agree that Claims 1 and 2 of Hallenbeck '211 are written as "means-plus-function" claims limitations. Title 35, United States Code, s. 112 allows a patentee to write a claim by reciting the function to be performed by the invention instead of by specifying the structure which performs that function.FN18 *Lockheed Martin Corp. v. Space Systems/Loral, Inc.,* 249 F.3d 1314, 1323-24 (Fed.Cir.), *petition for cert. filed* September 21, 2001.

FN18. 35 U.S.C. s. 112, paragraph 6 provides:
An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material or acts described in the specification and equivalents thereof.

In construing means-plus-function claim limitations, a court must first define the particular function claimed. Thereafter, it must identify "the corresponding structure, material, or acts described in the specification." It is not until the structure corresponding to the claimed function in a means-plus-function limitation is identified and considered that the scope of coverage of the limitation can be measured. Whether or not the specification adequately sets forth structure corresponding to the claimed function necessitates consideration of that disclosurefrom the viewpoint of one skilled in the art. Moreover, failure to disclose adequate structure corresponding to the recited function in accordance with 35 U.S.C. s. 112, paragraph 1, results in the claim being of indefinite scope, and thus invalid, under 35 U.S.C. s. 112, paragraph 2.... [A] challenge to a claim containing a means-plus-function limitation as lacking structural support requires a finding, by clear and convincing evidence, that the specification lacks disclosure of structure sufficient to be understood by one skilled in the art as being adequate to perform the recited function.
Budde v. Harley-Davidson, Inc., 250 F.3d 1369, 1376-77 (Fed.Cir.2001) (internal citations omitted). Thus, "the determination of the corresponding structure of a means-plus-function claim is a determination of the meaning of the 'means' term, and is a matter of claim construction" for the court. *Globetrotter Software, Inc. v. Elan Computer Group, Inc.,* 236 F.3d 1363, 1367 (Fed.Cir.2001).

Claim 1 of Hallenbeck '211:

Hallenbeck '211 is described as an online television program information system which extracts from a broadcast data-stream of television program information only that information for shows which meet predetermined selection criteria and stores only that extracted information. The language of Claim 1 which is to be construed is set forth in bold font.

That which is claimed is:

1. An online television program schedule system comprising:

first means for storing at least one of a desired program start time, a desired program end time, a desired program service and a desired program type;

means for receiving television program schedule information, said television program schedule

information comprising at least one of program start time, program end time, program service, and program type for a plurality of television programs;

second storing means connected to said first storing means and said receiving means, **for storing selected portions of received television program schedule information** which meet at least one of the desired program start time, the desired program end time, the desired program service, and the desired program type; and

displaying means, operatively connected to said second storing means, **for displaying at least part of the selected portions of received television program schedule information** to thereby provide an online television program schedule.

Hallenbeck '211, at Col. 8 ll. 4-27.

[15] The phrase "first means for storing" clearly identifies the function of the claim as "storing at least one of a desired program start time, a desired program end time, a desired program service and a desired program type." Lockheed Martin, 249 F.3d at 1324 ("The phrase 'means for' ... is typically followed by the recited *function and claim limitations*."). "The function of a 'means plus function' claim must be construed to include the limitations contained in the claim language." *Id*. Thus, the function cannot be construed as only "first means for storing" without the limitations contained in the claim language.

"Having identified the function of [the] limitation, [the Court] next construe [s] the meaning of the words used to described the claimed function, using ordinary principles of claim construction." *Id*. The parties agree that "program service" means a particular provider of television programming, such as HBO, and that "program type" means a classification of television programming, such as sports, news, movies, *etc*. Start and end times are given their ordinary meaning. Vitronics, 90 F.3d at 1582-83. Thus, the meaning of the remaining language of the limitation is "clear from the plain language of the claim and is consistent with the intrinsic evidence." *Lockheed Martin, supra*. As noted above, the function of storing is directed to and limited by the claim language as "at least one of a desired program start time, a desired program end time, a desired program service and a desired program type." *Id*. ("The function of a 'means plus function' claim must be construed to include the limitations contained in the claim language.").

The next step in construing this means-plus-function limitation is to review "the written description to identify the structure corresponding to the function." *Id*., at 1325. "As a *quid pro quo* for the convenience of employing s. 112, paragraph 6, [the patentee] has a duty to clearly link or associate structure to the claimed function." Budde, 250 F.3d at 1377. The specification language is consulted for that link. *Id*.

Referring now to FIG. 1 a block diagram of a TV schedule reception system according to the present invention will be described. *The system 10 comprises* a microcontroller 11 ... [which] may operate under control of a stored program which may be included in a Read Only Memory 15. Connected to microcontroller 11 is a command/configuration receiver 12 which may [include] ... other known means for enabling a user to provide commands or configuration information to the microcontroller 11.... *Also associated in system 10 is a random access memory 14, for storing TV program information* according to the present invention. In particular, random access memory 14 may include a packet buffer 16 in which a packet of broadcast program information may be stored pending a determination whether to permanently store the information in TV program information memory 18 or [w]hether to discard this information. *Also included in memory 14 is a selection criteria list 17 which includes predetermined selection criteria* for

determining whether the broadcast information in packet buffer 16 should be stored in TV program information memory 18 or discarded. *In one embodiment,* the selection criteria 17 may include a desired service list 17a, a desired types of programming list 17b, desired times of listings 17c and other criteria 17d.

. . . . .

It will be recognized by those having skill in the art that system 10 may be a standalone unit or may be integrated with a cable TV converter, satellite receiver, VCR or other microprocessor controlled electronic unit so that other programs may also reside in random access memory 14. It will also be understood by those having skill in the art that areas 16-19 may be provided in programmable read only memory, electrically erasable memory or other types of memory or may be stored on magnetic or optical storage media according to well known techniques.

Hallenbeck '211, at Col. 3 ll. 58-68; Col. 4 ll. 1-2, 11-26, 62-68; Col. 5 ll. 1-4 (emphasis added).

The parties agree the structure which performs the function of storing is a microcontroller in combination with random access memory. SuperGuide claims the selection criteria list is not a structural element, pointing to the language of "in one embodiment" to support their position. Defendants argue the list is such an element. Gemstar has opted for a position somewhere in between these two, claiming the memory must be capable of storing "at least one of the recited selection criteria."

SuperGuide's position fails to include the claim limitations in the function of this means-plus-function limitation; *i.e.,* "storing at least one of a desired program start time, a desired program end time, a desired program service and a desired program type." Globetrotter Software, Inc., 236 F.3d at 1368 ("The district court properly interpreted the function to be 'storing at least one license.' "). Since the function is the storage of these criteria, area 17 of RAM 14 must be included in the structure of the invention. These criteria are "considered to be [ ] defining characteristic[s] rather than merely [ ] potential content of the [storage]." *Id*. Both the specification and the drawings support this conclusion. *Id.; see, e.g.,* FIG. 4a; Col. 6, ll. 33-37 ("If all the tests (blocks 22-24) pass, then at block 25 the size of the event (*i.e.* the title length and description length) is added to the total memory used and the time, service and show number is stored in the events list of memory 18."). Indeed, failing to include the criteria as structural elements would modify the function, which is improper in the construction of a means-plus-limitation claim. Micro Chem., Inc. v. Great Plains Chem. Co., Inc., 194 F.3d 1250, 1258 (Fed.Cir.1999) ("The statute does not permit limitation of a means-plus-function claim by adopting a function different from that explicitly recited in the claim.").

[16] "[P]roper application of s. 112 para. 6 generally reads the claim element to embrace distinct and alternative described structures for performing the claimed function. Specifically, '[d]isclosed structure includes that which is described in a patent specification, including any alternative structures identified.' " Ishida Co., Ltd. v. Taylor, 221 F.3d 1310, 1316 (Fed.Cir.2000) (quoting Serrano v. Telular Corp., 111 F.3d 1578, 1583 (Fed.Cir.1997)). Likewise, when construing a means-plus-function claim limitation, the preferred embodiment may not limit the claim when other embodiments have been disclosed. *Id*. "Identification of corresponding structure may embrace more than the preferred embodiment. A means-plus-function claim encompasses all structure in the specification corresponding to that element and equivalent structures." Micro Chem., 194 F.3d at 1258. Thus, SuperGuide's argument that the language "in one embodiment" means the selection criteria list is not included in the structure is legally incorrect. *Id*. ([T]he district court erroneously overlooked alternative embodiments of the invention."). "When multiple embodiments in the specification correspond to the claimed function, proper application of s. 112, para. 6

generally reads the claim element to embrace each of those embodiments." *Id*. The structure on which the storing function reads is a microcontroller under the control of a stored program in combination with a random access memory or other area of memory for storing at least one of a desired program start time, a desired program end time, a desired program service and a desired program type, and their structural equivalents.

SuperGuide argues that this construction violates the doctrine of claim differentiation pursuant to which each claim in a patent is presumptively different in scope. *See, e.g.*, Wenger Mfg., Inc. v. Coating Mach. Sys., Inc., 239 F.3d 1225, 1233 (Fed.Cir.2001). Specifically, SuperGuide notes that independent Claims 18, 32, and 33 all include the criteria list and that including it in the structure of Claim 1 will make these claims identical. FN19

FN19. Claims 18 and 33 are "apparatus" claims while Claim 32 is a "method" claim. 35 U.S.C. s. 100(b) defines a process as a method, including a new use of a known process or machine. The words "process" and "method" are interchangeable. 3 *Walker on Patents*, s. 11:4 (3rd ed.1985). An apparatus claim includes the mechanical device or combination of mechanical powers and devices to perform a function and produce an effect; *i.e.*, a machine or elements thereof. *Id.*, at s. 11:5; Hewlett-Packard Co. v. Bausch & Lomb, Inc., 909 F.2d 1464, 1468 (Fed.Cir.1990) ("[A]pparatus claims cover what a device *is*, not what a device *does*."); Amazon.com, Inc. v. Barnesandnoble.com, Inc., 239 F.3d 1343, 1348 (Fed.Cir.2001) ("Independent claims 1 and 11 are method claims directed to placing an order for an item, while independent claim 6 is an apparatus claim directed to a client system for ordering an item ...."). As is typical in patent claims, the claim asserted in Claim 1 is broader in scope and is narrowed by the later independent claims. *Walker, supra*, at s. 11:3.

[T]he concept of claim differentiation ... states that claims should be *presumed* to cover different inventions. This means that an interpretation of a claim should be avoided if it would make the claim read like another one. Claim differentiation is a guide, not a rigid rule. If a claim will bear only one interpretation, similarity will have to be tolerated. Simply stated, the judicially developed guide to claim interpretation known as "claim differentiation" cannot override the statute. A means-plus-function limitation is not made open-ended by the presence of another claim specifically claiming the disclosed structure which underlies the means clause or an equivalent of that structure.... In any event, claims [1, 18, 32 and 33] do not, as [SuperGuide] asserts, thereby have exactly the same scope and, thus, claim differentiation is maintained. Claim [1] remains broader than claim[s] [18, 32 and 33]. *Literally,* claim [1] covers the structure described in the specification *and equivalents* thereof. [Claims 18, 32 and 33] do[ ] not *literally* cover equivalents .... Laitram Corp. v. Rexnord, Inc., 939 F.2d 1533, 1538 (Fed.Cir.1991) (internal quotations and citations omitted). SuperGuide's arguments are therefore rejected.

Defendants urge the addition to the construction of the claim that the microcontroller is under the control of a stored algorithm instead of a stored program. Neither the claim language nor the specification use the word "algorithm." Defendants note that Figure 4a discloses an algorithm and point to the specification description of the selection process and storage. *See,* Hallenbeck '211, at Col. 6, ll. 13-37. It is correct that "a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software." In re Alappat, 33 F.3d at 1545. However, the undersigned declines to import the word "algorithm" into the claim language.

In a means-plus-function claim in which the disclosed structure is a computer, or microprocessor, programmed to carry out an algorithm, the disclosed structure is not the general purpose computer, but

rather the special purpose computer programmed to perform the disclosed algorithm. Accordingly, the structure disclosed for the "means for [storing]" limitation of claim 1 of the [Hallenbeck '211] patent is a [microcontroller] programmed to perform the algorithm illustrated in Figure [4a]. In other words, the disclosed structure is a [microcontroller] programmed to [store at least one of a desired program start time, a desired program end time, a desired program service and a desired program type.]

WMS Gaming, Inc. v. Int'l Game Tech., 184 F.3d 1339, 1349 (Fed.Cir.1999) (internalcitations omitted). As a result, the first element of Claim 1 is construed as follows: (1) the function of the claim is the storage of at least one of a desired program start time, a desired program end time, a desired program service and a desired program type; (2) the structure for that storage is the selection criteria portion of random access memory or other electronic, magnetic or optical memory and their structural equivalents in combination with a microcontroller under the control of a stored program; (3) the structure of the stored program is a microcontroller programmed to store at least one of a desired program start time, a desired program end time, a desired program service and a desired program type in the selection criteria portion of the memory described.

[17] The next phrase for construction is "at least one of" which appears in Claim 1: at least one of a desired program start time, a desired program end time, a desired program service and a desired program type. SuperGuide and Gemstar argue that only one of the four criteria is necessary; Defendants assert that one of each is necessary. The specification provides:

Referring now to FIGS. 3 and 4, the selective storage of TV program information according to the present invention will now be described. In this regard, FIGS. 4a, 4b and 4c described the operations for processing each packet in Groups I, II and III respectively. FIGS. 3a-3e illustrate a memory map for TV program information memory area 18 within random access memory 14 at various steps in FIG. 4.... A Group I packet is received in packet buffer 16[ ]. The day and time field is scanned to determine whether the time is in the desired time range stored in portion 17c of memory 14[ ]. If not, processing returns to get the next Group I packet [ ] and the present Group I packet is not stored. If time is in the desired range, then a test is made [ ] of the service number field, to determine whether the service number is a desired service as stored in portion 17a of memory 14. If yes, a test is made as to the type and subtype of programming desired [ ]. *If all the tests [ ] pass,* then at block 25 the size of the event (*i.e.* the title length and description length) is added to the total memory used and the *time, service and show number is stored in the event list of memory 18.*

Hallenbeck '211, at Col. 6, ll. 13-20, 22-37 (emphasis added). SuperGuide's position that "at least one of" refers only to one category of the criteria instead of to one of each category "would contradict the clear purpose of the invention as described in the written description, depicted in [Figure 4a], and recited in claim 1. Such an assertion would also impermissibly read the preferred embodiment out of claim 1." Crystal Semiconductor, 246 F.3d at 1349; *accord,* Sandisk Corp. v. Lexar Media, Inc., 91 F.Supp.2d 1327, 1330-32 (N.D.Cal.2000) (Claim language "partitioning the memory cells within the individual sectors into at least a user data portion and an overhead portion" meant the memory cells within the individual sectors were partitioned "into at least a user data portion and an overhead portion."). Here, the claim language is "at least one of" followed by the term "a desired," a term which is repeated for each category. Moreover, the final category is introduced by " *and* a desired" which is conjunctive not disjunctive. Thus, the phrase "at least one of" means at least one of each desired criterion; that is, at least one of a desired program start time, a desired program end time, a desired program service and a desired program type.

[18] The next construction issue involves the descriptive word "desired" in Claim 1. Defendants argue that only the system user may make the "desired" selection while SuperGuide and Gemstar claim the service provider or system designer could also make selections. The language of the specification clarifies that the selection includes the user and the system.

The desired service list 17a may be *automatically configured by the system* to include only those services which the particular user may receive. For example, the user may not subscribe to all available pay TV services or may not have the satellite or cable equipment to receive all possible free TV services.

Hallenbeck '211, at Col. 4, ll. 27-29 (emphasis added). Automatic configuration by the system precludes selection by the service provider since the system configuration would prevent receipt of service to nonpaying subscribers. Thus, "desired" means that selection is made by the television user or the system. "Desired" includes a system configuration which automatically selects only those service providers received by the television user. It does not include selection by service providers.

[19] The next element of Claim 1 for construction is "**means for receiving television program schedule information,** said television program schedule information comprising at least one of program start time, program end time, program service, and program type for a plurality of television programs." The parties agree this is a means-plus-function claim limitation and that the function is "receiving." They also agree that the structure is the packet buffer portion of the random access memory or other temporary memory. However, they disagree as to whether the selection criteria; "at least one of program start time, program end time, program service, and program type for a plurality of television programs," are part of the claim construction. For the same reasons as stated in connection with the construction of "means for storing," the undersigned construes this claim language to mean the following: (1) the function of the claim is the receipt of at least one of a desired program start time, a desired program end time, a desired program service and a desired program type; (2) the structure for that receipt is a packet buffer portion of random access memory or other electronic, magnetic or optical memory and their structural equivalents in combination with a microcontroller under the control of a stored program; (3) the structure of the stored program is a microcontroller programmed to receive at least one of a desired program start time, a desired program end time, a desired program service and a desired program type in the packet buffer portion of the memory described. The Court finds nothing in the claim language, the specification or the drawings supporting the Defendants' contention that only information for one television program at a time is received.

The next element of Claim 1 for construction is the following: "**second storing means** connected to said first storing means and said receiving means, **for storing selected portions of received television program schedule information** which meet at least one of the desired program start time, the desired program end time, the desired program service, and the desired program type." Again, the parties agree this is a means-plus-function claim limitation, that the function is the second storage of information and that the structure for storage is TV information memory 18 area of random access memory 14. For the same reasons as stated *infra,* the undersigned construes this claim language to mean the following: (1) the function of the claim is the storage of selected portions of received television program schedule information which meet at least one of each of a desired program start time, a desired program end time, a desired program service and a desired program type; (2) the structure for that storage is a television program information memory portion of random access memory or other electronic, magnetic or optical memory and their structural equivalents in combination with a microcontroller under the control of a stored program; (3) the structure of the stored program is a microcontroller programmed to store selected portions of received television program schedule information which meet at least one of each of a desired program start time, a desired program end time, a

desired program service and a desired program type.

"Meet" in this claim means that the stored selected portions came from the selection criteria list as discussed *infra, i.e.,* "[i]f all the tests [ ] pass, then [ ] the size of the event (*i.e.* the title length and description length) is added to the total memory used and the time, service and show number is stored in the events list of memory 18." Hallenbeck '211, at Col. 6, ll. 33-37. As previously noted, therefore, "meet" means that the information matches or equals at least one of each of the desired criteria, not one or more categories thereof.

[20] The last element of Claim 1 for construction is the following: "**displaying means,** *operatively connected to said second storing means*, **for displaying at least part of the selected portions of received television program schedule information** to thereby provide an online television program schedule." Again, this is a means-plus-function claims limitation. The function is the display of the programming guide information; the structure for that display is the subject of the parties' dispute. SuperGuide claims the means is not limited to the actual television screen; Defendants argue it is so limited to the screen or a monitor.

The specification provides:

The system 10 comprises a microcontroller 11 which may be a MC68000 microprocessor manufactured by Motorola. Microcontroller 11 may operate under control of a stored program which may be included in a Read Only Memory 15. Connected to microcontroller 11 is a command/configuration receiver 12 which may be a receiver for an infrared controller, a keyboard, an IEEE Consumer Electronics bus or other known means for enabling a user to provide commands or configuration information to the microcontroller 11. Similarly, *one or more output devices 13 may be coupled to microcontroller 11. These output devices may be, for example, an IEEE Consumer Electronics bus, a serial port for communicating with other devices, a video signal output and/or infrared output for communicating with a TV screen or monitor.* The design and integration of blocks 11, 12, 13 and 15 are well known and will not be described further.

Id., at Col. 3, ll. 60-68; Col. 4, ll. 1-10 (emphasis added). The language of the claim and the specification therefore provide that TV program information 18 is *operatively connected* to the displaying means, *i.e.,* through the microcontroller and output devices *for communicating with a TV screen or monitor.* The Court rejects the Defendants' position that the displaying means is limited to the actual television screen or monitor. The plain language of the claim and the specification describe the structure as a microcontroller under the control of a stored program in combination with an output device in communication with a TV screen or monitor or equivalent structures. This construction does not limit the claim to the output devices, as argued by the Defendants, but includes the TV screen or monitor.

Claim 2 of Hallenbeck '211:

[21] Although the parties agree that Claim 2 of the patent is also a means-plus-function claim limitation, they dispute the construction of certain terms. Again, the disputed portions are set forth in bold font.

That which is claimed is:

2. The online television program schedule system of claim 1 wherein said receiving means comprises means for **sequentially receiving packets of television program schedule information.**

Hallenbeck '211, at Col. 8, ll. 28-31. The parties also agree that Claim 2 is a dependent claim.FN20 As previously noted, in patents, the "least restrictive claim should be presented as claim number 1, and all dependent claims should be grouped together with the claim or claims to which they refer to the extent practicable." 37 C.F.R. s. 1.75(g). Thus, Claim 2 is dependent on Claim 1 but adds the limitation of "sequentially receiving packets of television program schedule information."

FN20. "One or more claims may be presented in dependent form, referring back to and further limiting another claim or claims in the same application.... Claims in dependent form shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim." 37 C.F.R. s. 1.75(c).

The function is "sequentially receiving packets of television program schedule information." Although the parties do not disagree as to the structure for that function, they disagree on the meaning of "sequentially." SuperGuide argues that television information packets are not transmitted in serial manner but in a data stream with individual packet identifiers which are then sorted by the television receiver. Gemstar argues the packets are received sequentially without qualifying a definition thereof. Defendants argue that the packets are received in chronological order.

Figure 2 discloses that the first packets received contain digital data about the events; *i.e.*, the day and time of the event, the service provider thereof and the type of program involved.FN21 The second packets received narrow the information to provide titles for the programs while the third packets contain descriptions thereof. Thus, three categories of information are contained in the groups or sequences of packets: events, titles and descriptions.

FN21. The parties agree that the term "packets" means a grouping of digital data.

The specification provides:

The TV program information is transmitted and *received in three groups*. All of the Group I data is transmitted followed by all of the Group II data followed by all of the Group III data. *It will be seen that the receiver selectively loads desired information from each group as it is received*. Information loaded from previous groups may affect the information loaded during a subsequent stage.

[E]ach Group I data packet may begin with an indication of group number (*i.e.* Group I) and *a sequence number which identifies sequential packet numbers* within Group I. Then, the day and time of an event may be provided and an identification number for the service may be provided. The service may be, for example, HBO, ABC, or a local TV channel. Next, an indication of the show type, for example movie or sports may be provided, and an indication of the show subtype, for example basketball, baseball or hockey may be provided. A unique show number identifier is provided. This show number identifies a particular program for example, the movie "Ghandi". It will be understood that the number of events far exceeds the number of shows because each show may be broadcast multiple times by multiple services. Thus, for example, a Group I transmission may include 10,000 events but only 2,000 shows having unique titles. Only 800 of those shows may include unique descriptions. An indication of the length of the show title and an indication of the length of the show description are also provided as part of each Group I packet....

Following all the Group I information, the Group II information is provided. The Group II information may

also include an indication of the group number (*i.e.* II) and a sequence number. *The primary information stored in Group II is the title information*. Thus, Group II includes a show number field and includes a complete title of variable length. The description number and description length, as described for Group I is also included. Finally, the Group III information includes group number (III) and sequence number, the description number and the variable length description....

[Thus,] Group I data is transmitted in terms of events. The Group I data is also transmitted *in time sequence with present events being transmitted before future events*. Accordingly, when the system runs out of memory space, *the most present data will have been loaded. As an event is received, the decision to load an event may be based on whether there is room in memory for it, whether it is the type and subtype of event desired and whether the service is a desired service*.... It will also be understood by those having skill in the art that after downloading, the shows and times may be sorted by type, or by other criteria, so that the types of shows desired may be viewed without further subset searches.

Hallenbeck '211, at Col. 5, ll. 13-68; Col. 6, ll. 1, 8-12 (emphasis added). The invention clearly envisions the sequential receipt of the information with the most expansive data received first, then filtered by program titles followed by program descriptions. And, the data "is transmitted in time sequence with present events being transmitted before future events." Thus, the data is received chronologically.

The structure for Claim 2 is a packet buffer portion of random access memory or other electronic, magnetic or optical memory in combination with a microcontroller under the control of a stored program which sequentially receives transmitted packets of television schedule information according to sequence numbers or coded data indicating a separate ordering of packets (1) first according to events, with present events being received before future events; (2) second according to titles; and (3) third, according to descriptions or the equivalents thereto.

Claim 5 of Hallenbeck '211:

The parties also dispute Claim 5, an independent claim which adds limitations not found in Claim 1.FN22 Those portions of the claim which are in dispute are set forth in bold font.

FN22. "More than one claim may be presented provided they differ substantially from each other and are not unduly multiplied." 37 C.F.R. s. 1.75(b).

That which is claimed is:

5. A method for providing an online television program schedule comprising the steps of:

storing at least one of a desired program start time, a desired program end time, a desired program service, and a desired program type;

sequentially receiving packets of television program schedule information comprising at least one of program start time, program end time, program service, and program type for a plurality of television programs;

storing selected portions of the received packets of television program information which meet at least one

of the desired program start time, the desired program end time, the desired program service, and the desired program type; and

displaying at least part of the stored selected portions of the received packets of television program information to thereby provide an online television program schedule.

Hallenbeck '211, at Col. 8, ll. 67-68; Col. 9, ll. 1-17. SuperGuide and Gemstar argue that "sequentially" in this claim means that the packets of information are received one after another. Defendants urge the same construction as given for Claim 2, *i.e.,* receiving packets in chronological order according to a predetermined sequence number in each packet. The Court adopts the same construction as applied to Claim 2.

Claim 6 of Hallenbeck '211:

[22] Claim 6 is dependent from Claim 5 and provides:

That which is claimed is:

6. The method of claim 5 wherein said storing selected portions of the received packets of television information step comprises the steps of: **comparing information in a received packet of television information** with at least one of the desired program start time, the desired program end time, the desired program service, and the desired program type; and

storing information from the received packet of television information which meets at least one of the desired program start time, the desired program end time, the desired program service, and the desired program type.

Hallenbeck '211, at Col. 9, ll. 18-30. SuperGuide and Gemstar would construe "comparing" to mean that at least one received packet is compared with the selection criteria. Defendants maintain each packet must be compared. The specification and drawings clearly show that the events packet, the titles packet and the description packets are compared to the selection criteria, unless memory has been expended. "As an event is received, the decision to load an event may be based on whether there is room in memory for it, whether it is the type and subtype of event desired and whether the service is a desired service ...." Thus, if memory has been used, there may not be a comparison of each grouping. Thus, "comparing" means that to the extent memory is available, each packet or grouping of information is compared with the selection criteria.

U.S. PATENT 5,293,357 *to HALLENBECK:*

The final patent for construction involves the invention of a system designed to control a television program recording device for unattended recording of television programs based on user selections from an on-line television program guide. The patent application was filed in September 1990 and issued in March 1994.

The parties' dispute is limited to Claim 1 of the patent. The disputed terms are set forth in bold font.

That which is claimed:

1. A method for setting an event timer to control **a recording device** for recording television programs, comprising the steps of:

electronically storing television program schedule listings comprising a time, a channel and a title for a plurality of television programs;

accepting user designation of selected ones of the electronically stored television program schedule listings for recording;

automatically electronically converting the selected ones of said television program schedule listings into **event timer information sequences for directly controlling a recording device** to record television programs in response to the user designation of selected ones of the electronically stored television program schedule listings for recording, said event timer information sequences including a television program start time, a television program end time or duration and a television program channel for each of the user selected ones of the television program schedule listings; and

loading the event timer information sequences into **an event timer,** such that the event timer information sequences in the event timer are **used to control a recording device** for recording television programs corresponding to the selected ones of the electronically stored television program schedule listings.

Hallenbeck '357, at Col. 8, ll. 14-42.

The parties agree that "recording device" should be given its ordinary meaning; *i.e.,* a device for recording television programs. They also agree the construction of "electronically storing television program schedule listings comprising a time, a channel and a title for a plurality of television programs" should mean the electronic storage of television program listings including a time, a channel and a title for at least two television programs. SuperGuide and Gemstar agree that "accepting user designation of selected ones of the electronically stored television program schedule listings for recording" means the user selects and designates for recording at least one television program schedule listing. Defendants would add that the selection is made from the stored television program schedule listings. Since this is clear from the plain language of the claim, the Court accepts this construction.

[23] The parties do not agree, however, on the construction of the third element of Claim 1: "**automatically electronically converting** the selected ones of said television program schedule listings into **event timer information sequences for directly controlling a recording device** to record television programs in response to the user designation of selected ones of the electronically stored television program schedule listings for recording, said event timer information sequences including a television program start time, a television program end time or duration and a television program channel for each of the user selected ones of the television program schedule listings."

The specification provides that "[i]t will be understood by those having skill in the art that many techniques for loading event timer information into event timer 21 may be used." Hallenbeck '357, at Col. 5, ll. 51-53. One such technique is noted as the conversion of "the event timer information into appropriate digital electronic signals." Id., at ll. 66-67. Nonetheless, the specification points out that "[i]t will be understood by those having skill in the art that the detailed technique for converting TV schedule information into event timer information will depend upon the particular configuration of the TV schedule information and event timer information." Id., at Col. 7, ll. 51-55. The phrase "automatically electronically converting" thus means a change in form of the selected television program listings by an electronic means without further involvement of the system's user. Conversion is not extraction of information but an actual change in form

of the information.

[24] "System 10 [the invention] operates based on the realization that once TV schedule listings for recording have been designated, they may be converted into event timer information and loaded into an event timer." Id., at Col. 6, ll. 1-4. Therefore, the change or conversion is into event timer information sequences which control, *i.e.,* turn on, the recording device. Of necessity, therefore, the sequences must include the start time, end time or duration of the program and the channel for each selection. The claim language specifically requires: "said event timer information sequences *including* a television program *start time,* a television program *end time or duration and* a television program *channel* for each of the user selected" programs. The specification provides that "event timer information is *limited* to a 'time' and 'channel' for each event. In particular, as shown in FIG. 4, three fields may be included for each event to be recorded. These three fields are a 'start' field, 'stop' field, and 'channel field.' This sequence of start, stop and channel is repeated for all events which are to be recorded." Id., at Col. 7, ll. 4-10. Since the program listings are converted into event timer information sequences, the "start," "stop" and "channel" information must also be converted. The fact that the conversion is accomplished according to the particular configuration of the equipment involved does not change this requirement.

[25] The Defendants and Gemstar agree that the limitation contained in the specification should be construed in the claim; however, SuperGuide argues that the word "including" in the claim language means the sequences may include information other than the start time, end or duration time and channel. In order to resolve the issue, there must be a determination of whether Claim 1 is a step-plus-function claim subject to s. 112, para. 6. "Section 112, para. 6 does not limit all terms in a ... step-plus-function clause to what is disclosed in the written description and equivalents thereof; s. 112 para. 6 applies only to interpretation of the ... step that performs a recited function when a claim recites insufficient ... acts for performing the function." IMS Tech., Inc. v. Haas Automation, Inc., 206 F.3d 1422, 1432 (Fed.Cir.), *cert. dismissed,* 530 U.S. 1299, 121 S.Ct. 24, 147 L.Ed.2d 1047.

[T]he function of the element at issue in this case, namely, [directly controlling a recording device] appears explicitly in the claim language. The preposition "for" introduces this underlying function and links the [controlling] function to the act of [automatically electronically converting]. In other words, the function of [controlling] is the result achieved by performing the claimed act of [converting]. The claim discloses [converting] as an act by using the introductory terms "steps of." The contested element in this case is therefore not in classical step-plus-function form. Moreover, this element recited more than a function, namely the claimed act of [converting]. Accordingly, because this claim limitation is not in explicit step-plus-function form and specifies an act associated with the underlying function, the claim drafter did not invoke s. 112, para. 6.

Seal-Flex, Inc. v. Athletic Track & Court Const., 172 F.3d 836, 850-51 (Fed.Cir.1999). This distinction is important because in a step-plus-function claim, the limitations contained in the specification would be read into the claim. *Id., IMS Tech., supra.* However, that is not the case here. Thus, SuperGuide's position is the accurate one.

The phrase "event timer information sequences" means the information loaded into the event timer which controls, *i.e.,* turns on, the recording device, including but not limited to the program start time, end time or duration thereof and the channel for each selection.

[26] The parties also disagree as to the proper construction of "for directly controlling a recording device."

Defendants maintain that only the event timer information sequences control the recording function; SuperGuide and Gemstar argue that other system information may be used in the recording process.

The parties agree that the event timer information sequences turn on the recording device, which, they also agree, is made of non-volatile memory. In fact, the reason this invention was important was the fact that a large nonvolatile memory was not required, thus making the system commercially viable. The TV program schedule information is stored in volatile memory; the invention provides for the conversion of the selected listings into event timer information which is then loaded into the event timer of the recording device. "[O]nly the event timer need be made of nonvolatile memory. Since the event timer only requires time and channel information for a limited number of events, this nonvolatile memory can be very small." Hallenbeck '357, at Col. 3, ll. 59-63. Thus, the position of SuperGuide and Gemstar would defeat the purpose of the invention; *i.e.,* to provide a commercially viable system by use of a small nonvolatile memory. Therefore, the term "directly controlling" means the event timer sequences are used to turn on or control the recording device; however, only those sequences are so used and stored. For the same reason, "event timer" is construed as limited to nonvolatile memory for storing the event timer information sequences which directly control the recording device.

V. ORDER

IT IS, THEREFORE, ORDERED that the claim terms of U.S. Patent No. 4,751,578 to Reiter, *et al.,* are hereby construed as follows:

A. Claim (1) of the patent is construed:

1. As to Element (a) of Claim (1): "a microcontroller including input/output interfaces, a microprocessor, and an updateable memory comprising at least a RAM, said RAM of said microcontroller being updateable *via* an electronic medium and storing updated information including at least television programming information":

a. "Microcontroller" means the electronics including input/output interfaces, a microprocessor, and an updateable memory comprising at least a random access memory which is capable of being updated *via* an electronic medium and which is capable of storing updated information including at least television programming information. The microcontroller is not limited to a single integrated circuit.

a. "Electronic medium" means any electronic medium that can be used to update the updateable memory of the microcontroller.

2. As to Element (b) of Claim (1): "a mixer for mixing a regularly received television signal with the signal generated by the microcontroller in accord with instructions of said microcontroller":

a. The term "mixer" means the electronics for (a) receiving an unmodulated digital signal generated by the microcontroller which contains television programming information and converting the same into an analog format; (b) receiving from the RF section an analog television signal, whether demodulated or unmodulated, which contains television video information; (c) receiving and stripping a modulated analog signal which contains television video information from the RF section; and (d) mixing the two analog signals to produce an analog signal containing television programming and video information which is then transmitted to the RF section. The mixer does not function as a switch.

a. The phrase "regularly received television signal" means an analog signal modulated onto a carrier wave and transmitted *via* terrestrial antennae or through a cable or satellite system. It does not include a digital television signal as understood in the state of the art in the mid-1990's.

3. As to Element (c) of Claim (1): "an RF section for receiving instructions from said microcontroller and for receiving radio frequency information from the mixer and a television station and properly converting the information into video signals which may be sent to said television for viewing":

a. The term "RF section" means the electronics for (1) receiving radio frequency signals from a source external to the invention; (2) receiving instructions from the microcontroller internal to the invention; (3) making a channel selection pursuant to the instructions received from the microcontroller; (4) receiving and converting signals received from the mixer or a television station into video signals capable of being received by the television set; and (5) transmitting the converted signals to the television for viewing.

b. The phrase "radio frequency information" means modulated or unmodulated analog signals containing television programming and video information received either from the mixer internal to the system or from a television station. It does not include digital television signals.

4. As to Element (d) of Claim (1): "a remote control system, said microcontroller being controllable by said remote control system for permitting a viewer of said television to direct said microcontroller to perform a search on at least said updated television programming information contained in said RAM of said microcontroller, a subset of at least said updated television programming information being output to said mixer so as to provide on the television screen television programming information desired by the viewer in a desired format":

a. The phrase "to perform a search" means a user-directed examination by the microcontroller of all the television programming information stored in the random access memory of the system and the retrieval of a subset of that information which meets the criteria specified by the user for display on the television set.

b. The term "desired format" means a user selected format for the display of the results of the search performed by the system. Although additional information may be provided to the system by the service provider, the format for viewing that information is viewer directed.

IT IS FURTHER ORDERED that the claim terms of U.S. Patent No. 5,038,211 to Hallenbeck are hereby construed as follows:

A. Claim (1) of the patent is construed:

1. As to the first element of Claim (1): "first means for storing at least one of a desired program start time, a desired program end time, a desired program service, and a desired program type":

a. The function of the claim is the storage of at least one of a desired program start time, a desired program end time, a desired program service and a desired program type. The structure for that storage is the selection criteria portion of random access memory or other electronic, magnetic or optical memory and their structural equivalents in combination with a microcontroller under the control of a stored program. The structure of the stored program is a microcontroller programmed to store at least one of a desired program

start time, a desired program end time, a desired program service and a desired program type in the selection criteria portion of the memory described.

b. The phrase "at least one of" means at least one of each desired criterion; that is, at least one of a desired program start time, a desired program end time, a desired program service and a desired program type. The phrase does not mean one or more of the desired criteria but at a minimum one category thereof.

c. The word "desired" means that selection is made by the television user or the system. "Desired" includes a system configuration which automatically selects only those service providers received by the television user. It does not include selection by service providers.

d. The phrases "program start time" and "program end time" are given their ordinary meanings. The phrase "program service" means a particular provider of television programming, such as HBO, CNN, a local network affiliate, *etc*. The phrase "program type" means the type or classification of television programming, such as sports, movies, *etc*.

2. As to the second element of Claim (1): "means for receiving television program schedule information, said television program schedule information comprising at least one of program start time, program end time, program service, and program type for a plurality of television programs:"

a. The function of the claim is the receipt of at least one of a desired program start time, a desired program end time, a desired program service and a desired program type. The structure for that receipt is a packet buffer portion of random access memory or other electronic, magnetic or optical memory and their structural equivalents in combination with a microcontroller under the control of a stored program. The structure of the stored program is a microcontroller programmed to receive at least one of a desired program start time, a desired program end time, a desired program service and a desired program type in the packet buffer portion of the memory described.

3. As to the third element of Claim (1): "second storing means connected to said first storing means and said receiving means, for storing selected portions of received television program schedule information which meet at least one of the desired program start time, the desired program end time, the desired program service, and the desired program type":

a. The function of the claim is the storage of selected portions of received television program schedule information which meet at least one of a desired program start time, a desired program end time, a desired program service and a desired program type. The structure for that storage is a television program information memory portion of random access memory or other electronic, magnetic or optical memory and their structural equivalents in combination with a microcontroller under the control of a stored program. The structure of the stored program is a microcontroller programmed to store selected portions of received television program schedule information which meet at least one of a desired program start time, a desired program end time, a desired program service and a desired program type. The word "meet" means that the information matches or equals at least one of each of the desired criteria, not one or more categories thereof.

4. As to the fourth element of Claim (1): "displaying means, operatively connected to said second storing means, for displaying at least part of the selected portions of received television program schedule information to thereby provide an online television program schedule":

a. The function is the display of the selected portions of television programming guide information. The structure for that display is a microcontroller under the control of a stored program in combination with an output device in communication with a television screen or monitor and their structural equivalents.

B. Claim (2) of the patent is construed: "The online television program schedule system of claim 1 wherein said receiving means comprises means for sequentially receiving packets of television program schedule information."

1. The function of this claim is the sequential receipt of packets or groupings of digital data containing television program schedule information.

2. The structure is a packet buffer portion of random access memory or other electronic, magnetic or optical memory in combination with a microcontroller under the control of a stored program which sequentially receives transmitted packets of television schedule information according to sequence numbers or coded data indicating a separate ordering of packets (1) first according to events, with present events being received before future events; (2) second according to titles; and (3) third, according to descriptions or the equivalents thereto.

C. Claim (5) of the patent is construed: "A method for providing an online television program schedule comprising the steps of: ... Sequentially receiving packets of television program schedule information comprising at least one of program start time, program end time, program service and program type for a plurality of television programs ...":

1. The term "sequentially" in Claim (5) is given the same construction as in Claim (2): the sequential receipt of transmitted packets of television schedule information according to sequence numbers or coded data indicating a separate ordering of packets (1) first according to events, with present events being received before future events; (2) second according to titles; and (3) third, according to descriptions or the equivalents thereto.

D. Claim (6) of the patent is construed: "The method of claim 5 wherein said storing selected portions of the received packets of television information step comprises the steps of: comparing information in a received packet of television information with at least one of the desired program start time, the desired program end time, the desired program service, and the desired program type ...."

1. The word "comparing" means that to the extent memory is available, each packet or grouping of information is compared with the selection criteria.

IT IS FURTHER ORDERED that the claim terms of U.S. Patent No. 5,293,357 to Hallenbeck are hereby construed as follows:

A. The term "recording device" contained within the preamble of claim (1), "A method for setting an event timer to control a recording device for recording television programs, comprising the steps of" is construed according to its ordinary meaning; *i.e.,* a device for recording television programs. The term also appears in Elements (3) and (4) of Claim (1) where it is construed to have the same meaning.

B. The phrase "electronically storing television program schedule listings comprising a time, a channel and a title for a plurality of television programs" in the first element of Claim (1) means the electronic storage of

television program listings including a time, a channel and a title for at least two television programs.

C. The phrase "accepting user designation of selected ones of the electronically stored television program schedule listings for recording" in the second element of Claim (1) means that the user selects and designates for recording at least one television program schedule listing with the selection being made from the stored television program schedule listings.

D. The phrase "automatically electronically converting" in Element (3) of Claim (1) means a change in form of the selected television program listings by an electronic means without further involvement of the system's user. Conversion is not the extraction of information but an actual change in form of the information. The change or conversion results in event timer information sequences which can be processed by the configuration of the particular recording device and television involved.

E. The phrase "event timer information sequences" in Element (3) of Claim (1) means the information loaded into the event timer which controls; *i.e.*, turns on, the recording device, including but not limited to, the program start time, end time or duration of the program and the channel for each selection.

F. The term "event timer" means nonvolatile memory for storing the event timer information sequences used to control directly the recording of the selected television program. It does not include multiple memories.

G. The phrase "for directly controlling a recording device" used in element 3 of claim (1) means the event timer sequences are used to turn on or control the recording device; however, only the those sequences are so used and stored.

H. The term "event timer" used in element 4 of claim (1) means nonvolatile memory for storing the event timer information sequences which directly control the recording device.

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