IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

IPPV ENTERPRISES, LLC, and MAAST, INC.,	)	
Plaintiffs,	)	
v.	)	Civil Action No. 99-577-RRM
ECHOSTAR COMMUNICATIONS CORP.; NAGRAVISION, S.A.; and NAGRASTAR, L.L.C.,	)	
Defendants	)	

OPINION

James D. Heisman, Esquire, Connolly, Bove, Lodge & Hutz LLP, Wilmington, Delaware; Frederick G. Michaud, Jr., Esquire, David M. Schlitz, Esquire, S. Lloyd Smith, Esquire, and Mark R. Kresloff, Esquire, Burns, Doane, Swecker & Mathis, L.L.P., Alexandria, Virginia; counsel for plaintiffs.

Donald F. Parsons, Jr., Esquire and Rodger D. Smith, Esquire, Morris, Nichols, Arsht & Tunnell, Wilmington, Delaware; Philip L. Cohan, Esquire, Piper Marbury Rudnick & Wolfe LLP, Washington, DC; counsel for defendants.

Wilmington, Delaware
July 3, 2001

McKELVIE, District Judge

This is a patent case. Plaintiff IPPV Enterprises, LLC is a Nevada limited liability corporation with its principal place of business in Reno, Nevada. IPPV owns U.S. Patent Nos. 4,163,254 (the '254 patent); 4,225,884 (the '884 patent); 4,528,589 (the '589 patent); and 4,484,217 (the '217 patent). Plaintiff MAAST, Inc. is a Delaware corporation with its principal place of business in Sparks, Nevada. MAAST owns U.S. Patent No. 4,600,942 (the '942 patent). Defendant Echostar Communications Corp. is a Nevada corporation with its principal place of business in Littleton, Colorado. Defendant NagraVision, S.A. is a Swiss corporation with its principal place of business in Cheseaux, Switzerland. Defendant NagraStar is a Colorado corporation with its principal place of business in Englewood, Colorado. The '884, '217 and '942 patents were originally assigned upon issuance to Talease, Inc. before being reassigned to IPPV and MAAST.

The patents in suit relate to the encryption and decryption of pay-per-view television broadcasts. On August 26, 1999, IPPV and MAAST (collectively, "IPPV") filed a complaint in this case, alleging that Echostar Communications's creation and sale of their DISH Network, a direct broadcast satellite subscriber television service, infringes, or induced infringement of, one or more claims of the '254, '884, '589, '217, and '942 patents. IPPV subsequently abandoned its claims based on the '589 patent.

On December 28, 1999, Echostar Communications answered the complaint, denying infringement, and asserting the following affirmative defenses: (1) that plaintiffs failed to state a claim upon which relief could be granted; (2) that the patents in suit are invalid for failing to satisfy the requirements of 35 U.S.C. §§ 102, 103, and 112; (3) that plaintiffs are equitably estopped from asserting their claims; (4) that the patents in suit are invalid because the Patent and Trademark Office ("PTO") failed to duly investigate relevant prior art; and (4) that plaintiffs failed to mark their patented articles.

On July 20, 2000, IPPV amended its complaint to add NagraVision S.A. and NagraStar, L.L.C. as defendants. Echostar Communications, NagraVision S.A. and NagraStar, L.L.C. (collectively, "Echostar") answered the amended complaint and asserted counterclaims on August 24, 2000. A ten day jury trial is scheduled to begin on July 9, 2001.

On June 8, 2001, the parties submitted proposed claim constructions for the asserted claims of the patents in suit. On June 18, 2001, the court held a trial in accordance with Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996), to construe the disputed terms and phrases of the asserted claims.

This is the court's construction of the claims.

I. FACTUAL AND PROCEDURAL BACKGROUND

The court draws the following facts from the file histories and specifications of the '254, '217, '884 and '942 patents and from its previous opinion in this matter.

A. The Patented Technology

The technology at issue in this case relates to the encryption and decryption of pay-per-view television broadcasting and the billing of subscribers that view the broadcasts.[1] Broadcasters of pay-per-view programming employ methods to encrypt and decrypt analog television program signals so that only paying subscribers may view transmitted programs. The program signals usually comprise a video signal, an audio signal and other signals and codes associated with the transmission. Basically, a broadcaster will encrypt and transmit program signals from a remote location. A subscriber to the broadcast attaches equipment with a receiver for decrypting the signals to a television set. The receiver then receives and decrypts the transmitted program signal, allowing the subscriber to view the broadcast program.

By the late 1970s, broadcasters were employing two methods for purchasing subscription television services. One method is known as "tiering." This method involves the grouping of television programs into tiers. The first tier often includes a number of local television channels. A second tier may include all of the local channels, plus a number of special interest channels. Finally, a third tier may include all local and special interest channels, plus one or more premium movie channels. In order to access the programs carried on a certain tier, the subscriber must pay the flat fee associated with that tier whether or not the subscriber actually views any of the programming.

The second method is known as the "per view" method. With this method, a

[1]Unless otherwise noted, the terms "encrypt," "encode" and "scramble" are synonymous, as are "decrypt," "decode" and "unscramble."

subscriber has the ability to purchase programming that is not included in the subscriber's tier. The subscriber is only billed for the programs that the subscriber actually views. The patents in suit primarily relate to the development of the "per view" billing method.

The process of billing subscribers on a "per view" basis presented an early challenge for broadcasters of encrypted signals. In the mid-1970s, inventors Robert Block, John R. Martin and John M. Lull sought to create an effective per view billing method. Their efforts resulted in the '254 patent, which issued on July 31, 1979 to Block and Martin, and the '217 patent, which issued on November 24, 1984 to Talease, as assignee of Block and Lull.

The '254 patent claims a system and method for billing the subscriber for only the specific program viewed. The patent discloses that an identification code is transmitted in the program signal to the subscriber's receiver. When the subscriber decides to view a television program, and takes the necessary steps to do so, the equipment located at the subscriber's location stores the identification code of the broadcast and decodes the encrypted television program signal. The identification signal is then later transferred to a remote location, where it is recorded and used in compiling a bill for the subscriber.

The '217 patent claims methods that allow a pay television operator to limit the per view purchase capability of a subscriber. The patent discloses that an amount of credit is stored in the equipment at the subscriber location, and the subscriber can impulsively purchase broadcast programs or services on a per view basis until the cost of the programs exceeds the subscriber's credit, at which time, the invention prevents the

subscriber from ordering more programming.

Block's interests were not limited to methods for billing and restricting the access of per view subscribers. He also sought to improve the actual methods of encryption and decryption. On September 30, 1980, the '884 patent issued to Talease, as assignee of Block and Martin. The patent involves subscription television where certain programs are viewable, while other programs, that are otherwise available, are not viewable. It discloses a method wherein a television program is identified as being associated with one or more categories and decodes the corresponding program signal based on that association. The categories may be based on program ratings such as the MPAA ratings, which include the G, PG, PG-13, R, NC-17 and X ratings. The categories could also relate to different genres such as drama or comedy.

If a television program that is otherwise accessible through the viewer's subscription is associated with a category that the subscriber has deemed acceptable for viewing, the subscriber's decoding equipment will decode the corresponding program signal. If the television program is associated with a category that the subscriber has deemed to be unacceptable for viewing, the equipment will not decode the corresponding program signal. The method is particularly useful to parents who wish to restrict the television programs viewed by their children.

By the mid-1980s, broadcasters had developed three methods for encrypting program signals. The first method involved the encryption of program signals by modulating the video portion of the signal by a sine wave signal such that the different

phases of the video signal could not be recognized by a normal television receiver. Broadcasters, however, found that this encryption system could be defeated by means that were readily available to average consumers.

The second method resulted from the development of technology for inverting lines or fields of the video signal on some basis that could be reproduced at a subscriber's home. While this technique satisfactorily prevented unauthorized viewing of the signals, viewers found that the reconstituted signal was frequently distorted.

The third method of encryption used by broadcasters was to encode the video signal by delaying parts of the signal relative to other parts in a determinable manner such that the signal could be reconstituted by a paying subscriber's equipment. This method was disclosed in U.S. Patent No. 4,405,942, issued to Block on September 20, 1983. The patent teaches that an analog program signal can be converted into digital samples, which are then scrambled, and subsequently reconverted into analog form for broadcasting. Broadcasters, however, found that the equipment necessary to carry out the analog-to-digital conversion of the signal was relatively expensive. Moreover, broadcasters discovered that the Block method could only encrypt the video signal, and that other components of the signal, such as the synchronization portion or audio signal, could not be encrypted.

In 1984, inventors Robert W. Field, Clarence D. Perr, and Ronald R. Gerlach, set out to develop a secure, cost-effective method of encryption that yields an undistorted picture. The inventors sought to improve upon the Block method by developing

technology to scramble the video signal while in analog format, in order to forego the expenses associated with digitizing the signal for encryption and reconverting it to analog form for transmission. The inventors also sought to ensure a high degree of security for the encrypted video signal to prevent unauthorized viewing. The inventors' efforts resulted in the '942 patent, which issued on July 15, 1986 to Talease, assignee of the inventors. The patent discloses: an apparatus for transmitting an encoded video signal; an apparatus for decoding an encoded video signal; and two methods for enabling only authorized television receivers to display a television program.

B. Prosecution History of the '254 Patent

1. Application of February 14, 1977

On February 14, 1977, Block and Martin applied for a patent for a subscription television system and method in which billing information regarding programs actually viewed by a subscriber of the system is accumulated over non-dedicated phone lines. In the application, the inventors explain that "it is . . . an object of the present invention to obviate the . . . deficiencies of the prior art pay television system billing procedures through the use of a novel method and system for billing on a per program basis with a minimum of complex equipment and a minimum of human intervention." The inventors further explain that "[i]t will be appreciated that the invention provides a relatively simple manner of subscriber billing that allows for the identification of programs actually viewed

and the rapid gathering of this information on a periodic basis long after the program has been viewed."

According to the application, the invention generally comprises central station equipment that supplies program signals in an encrypted form to subscriber station equipment at each of the subscriber stations. The encrypted program signal includes encrypted audio and video signals as well as various synchronizing signals and codes. The audio and video signals from a conventional source such as television camera equipment are applied to a program signal scrambler to produce respective encrypted audio and video signals. The signal scrambler also provides a transmitted encryption code for transmission with the video and audio signals. These signals are then provided to a suitable conventional transmitter for production of the full encrypted program signal that includes the code signals for transmission to subscriber locations.

A program ID code unit synchronized with the encrypted video signal and encrypted code provides a program code for transmission with the signals. The code and the signals are then combined for transmission to the subscriber. The central station equipment may also include a billing data gathering computer.

The encrypted program signal from the central station equipment is received by a program signal receiver at the subscriber station, and the receiver then supplies the signal to both a program signal unscrambler and a control and storage unit. In the unscrambler, a modulator creates a carrier signal of an appropriate carrier frequency with the decrypted audio and video signals and supplies the full decrypted program signal in the form of a

modulated carrier wave to the television antenna terminal for use by the subscriber's television set in a conventional manner.

The control and storage unit detects code signals in the incoming encrypted program signal for decrypting and billing purposes. The transmitted encryption code is detected by the control and storage unit and compared to a received encryption code, which is supplied to the control and storage unit through an access unit. The control and storage unit also detects the transmitted program code in the incoming program signal and stores the program code of a particular program being viewed. The stored program code is then supplied on command to the access unit. The access unit is connected to telephone lines that are connected through conventional switching equipment to the telephone lines leading to the billing data gathering computer. The information is then transmitted to the central station.

As originally submitted, the application for the '254 patent contained ten claims with independent claims 1, 6, 8 and 9. Claim 8 of the application reads as follows:

> 8. A method for billing a subscriber of a pay television system for programs actually viewed by the subscriber at a subscriber station comprising the steps of:
>
> transmitting at a predetermined carrier frequency a scrambled television program signal that includes a program identification code unique to a block of program material being transmitted;
>
> selectively receiving the transmitted program signal at the subscriber station and selectively unscrambling the received signal in response to subscriber action indicating acceptance for viewing of the block of program material;
>
> detecting and storing the program identification code in the program signal received at the subscriber station in

response to the action of the subscriber indicating acceptance for viewing of the block of program material being received;

selectively accessing the subscriber station from a remote location to obtain access to each program identification code stored at the subscriber station; and

billing the subscriber in accordance with the stored program identification accessed from the remote location.

Claim 9 reads as follows:

9. A method for billing a subscriber of a pay television system for programs actually viewed by the subscriber at a subscriber station comprising the steps of:

transmitting at a predetermined carrier frequency a scrambled television program signal that includes a program identification code unique to a block of program material being transmitted;

selectively receiving the transmitted program signal at the subscriber station and selectively unscrambling the received signal in response to subscriber action indicating acceptance for viewing of the block of program material;

detecting and storing the program identification code in the program signal received at the subscriber station in response to the action of the subscriber indicating acceptance for viewing of the block of program material being received;

selectively connecting the subscriber station to a remote location over non-dedicated telephone lines on a periodic basis unrelated to the transmitting of the scrambled program signal;

selectively transmitting each program identification code stored at the subscriber station to the remote location in response to a command signal transmitted from the remote location over the non-dedicated telephone lines; and

billing the subscriber in accordance with the stored program identification codes transmitted to the remote location.

2. Rejection of November 23, 1977

On November 23, 1977, the examiner rejected all ten claims as unpatentable pursuant to 35 U.S.C. § 103 in light of U.S. Patent No. 3,824,332, issued to Horowitz on

July 16, 1974, in view of U.S. Patent No. 4,044,376, issued to Porter on August 23, 1977.

3. Amendment of May 17, 1978

On May 17, 1978, the applicants amended their application by adding claims 11-14. In their remarks, they asked the examiner to reconsider the rejection of claims 1-10 explaining:

> The Horowitz patent relates to a pay television scrambling and unscrambling and unscrambling technique and is relevant in that it admittedly discloses one of a number of such techniques with which the present billing and access system may be used. However, Horowitz does not disclose the use of any particular billing and access system.

They further explained that in the Porter invention, there is no program identifying signal that is broadcast to the receiver with the program material. In sum, the applicants stated that "[i]t should be appreciated that Horowitz and Porter, viewed by themselves or together, do not teach or suggest the combination set forth in the present claims."

4. Rejection of June 8, 1978

On June 8, 1978, the examiner rejected all fourteen claims. Claims 1 and 8-14 were rejected pursuant to 35 U.S.C. § 102 as anticipated by U.S. Patent No. 4,068,264, assigned to Pires on January 10, 1978. The examiner further rejected claims 3-7 as obvious over Pires in view of Porter under 35 U.S.C. § 103. There is no indication in the examiner's remarks as to why claim 2 was rejected.

5. Amendment of December 18, 1978

On December 18, 1978, the applicants amended claims 1, 6, 8, 9 and 10. Claim 8 was amended as follows, with the underlining and brackets indicating added and retracted

language, respectively:

> 8. (Amended) A method for billing a subscriber of a pay television system for programs actually viewed by the subscriber at a subscriber station comprising the steps of:
>
> transmitting at a predetermined carrier frequency a scrambled television program signal that includes an [a program] identification code unique to a block of program material being transmitted;
>
> selectively receiving the transmitted program signal at the subscriber station and selectively unscrambling the received signal in response to subscriber action indicating acceptance for viewing of the block of program material;
>
> detecting and storing the [program] identification code in the program signal received at the subscriber station and temporarily storing a program identification code for billing purposes in response to the action of the subscriber indicating acceptance for viewing of the block of program material being received;
>
> selectively accessing the subscriber station from a remote location to obtain access to each program identification code stored at the subscriber station; and
>
> billing the subscriber in accordance with the stored program identification accessed from the remote location.

Claim 9 was amended as follows, with the underlining and brackets indicating added and retracted language, respectively:

> 9. (Amended) A method for billing a subscriber of a pay television system for programs actually viewed by the subscriber at a subscriber station comprising the steps of:
>
> [transmitting] receiving at a predetermined carrier frequency a scrambled television program signal that includes [a program] an identification code unique to a block of program material [being transmitted];
>
> [selectively receiving the transmitted program signal at the subscriber station and] selectively unscrambling the received signal in response to subscriber action indicating

> acceptance for viewing of the block of program material;
>
> detecting [and storing] and storing the [program] identification code in the program signal received at the subscriber station and storing a program identification code in response to the action of the subscriber indicating acceptance for viewing of the block of program material being received;
>
> selectively connecting the subscriber station to a remote location over non-dedicated telephone lines on a periodic basis unrelated to the [transmitting] receiving of the scrambled program signal;
>
> selectively transmitting each program identification code stored at the subscriber station to the remote location in response to a command signal transmitted from the remote location over the non-dedicated telephone lines; and
>
> billing the subscriber in accordance with the stored program identification codes transmitted to the remote location.

The applicants also explained that their invention "was conceived and actually reduced to practice prior to the Pires patent application filing date and, in fact, before the Pires invention date."

6. Notice of Allowance of January 19, 1979

In response the applicants' amendment, the examiner issued a notice of allowance for claims 1-14 on January 19, 1979.

7. Issuance of the '254 Patent

On July 31, 1979, the PTO issued the '254 patent to Block and Martin. The '254 patent is entitled "Method and System for Subscription Television Billing and Access."

C. Prosecution History of the '217 Patent

1. Application of May 11, 1982

On May 11, 1982, Block and Lull applied for a patent for a method and system for providing subscription services, particularly subscription television services, involving transmissions from a remote location to a subscriber for which payment is required for access. In the application, the inventors explain that:

> A general object of the present invention is to provide a novel method and system for remote reporting, particularly as it relates to billing for services on an impulse basis so that a service such as pay television can be received by a subscriber to the service without pre-paying or arranging in advance to pay any set fee for the service.

According to the application, the invention generally comprises an encoder at a remote location and a decoder at a subscriber location. The equipment are part of the subscriber television system in which non-pay programming and encrypted pay programming are transmitted and received over respective transmitting and receiving antennas or over a cable or other transmission medium. Normal unscrambled programming passes either through or around the encoder and decoder unaffected.

The application further explains that a data generator encrypts data for transmission with the program signal. The data may include decoder addresses, program costs, use codes, credit codes or other data unrelated to the visual appearance of the broadcast. An example in the specification shows that data are combined with a video signal by a suitable combiner and are transmitted with the video signal in a non-program portion of the program signal. The specification points to the vertical interval as an example of a suitable non-program portion. The vertical interval is the portion of the video signal that allows the television to reset before displaying the next image. Data

related to credit and cost are inserted in a non-program portion of the program signal.

When the program signal is received by the subscriber equipment, it is immediately sent to a data evaluator, which separates the signal into different categories. One category is cost. The subscriber equipment also stores a record of the subscriber's credit balance. Through a series of steps, the equipment then compares the cost data from the program signal with previously stored and newly received credit data. If the cost of the program exceeds the subscriber's available credit, the equipment does not decode the video portion of the program signal, and may display an insufficient credit message to the subscriber. If the equipment determines that the subscriber does have sufficient credit, it decodes and displays the program. The equipment also subtracts the cost of the program from the subscriber's stored credit balance.

As originally submitted, the application for the '217 patent contained forty-six claims with independent claims 1, 13, 17, 21, 26, 32, 37 and 46. Claim 1 of the application reads as follows:

> 1. A method for providing subscription services involving transmissions from a remote location and for which payment is required for access, the method comprising the steps of:
>
> (a) transmitting a cost signal containing a charge associated with the transmissions;
>
> (b) storing a credit at the subscriber location;
>
> (c) comparing the magnitude of the charge contained in the cost signal with the magnitude of the stored credit; and,
>
> (d) enabling access by the subscriber to the transmissions associated with the cost signal in response to the relative magnitudes of the charge and stored credit.

Claim 13 reads as follows:

> 13. A method for providing impulse purchase capability in a subscription television system in which access to information transmissions from a remote location to subscriber location is at least limited to subscribers requesting access, comprising the steps of:
>
> (a) transmitting within at least one allocated television channel frequency band, together with the information transmissions a cost signal indicating the magnitude of the charge for access to the information in the transmissions;
>
> (b) storing, at the subscriber location a credit indicating an amount available for future payment of charges for access to information in the transmissions;
>
> (c) comparing the magnitude of the charge contained in the cost signal with the magnitude of the stored credit; and
>
> (d) enabling access by the subscriber to the information in the transmissions associated with the cost signal in response to the relative magnitudes of the charge and the stored credit.

2. Rejection and Allowance of October 4, 1983

On October 4, 1983, the examiner rejected claims 1, 3, 4, 8, 9, 13, 15(13),[2] 17, 21 and 23 pursuant to 35 U.S.C. § 102(b) as anticipated by prior art, namely U.S. Patent No. 2,769,023 issued to Loew on October 30, 1956 and U.S. Patent No. 3,071, 642 issued to Mountjoy on January 1, 1963. The examiner objected to claims 2, 5-7, 10-12, 14, 15(14), 16, 18-20, 22, 24 and 25 because they were dependent upon a rejected base claim. The examiner, however, clarified the objection by noting that these claims would be allowable

[2]Claim 15 was dependent on claim 13 or 14. In rejecting claim 15, the examiner splits claim 15 into "claim 15(13)" and "claim (15)(14)" to distinguish the basis for dependence.

if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The examiner allowed claims 26-46.

3. Amendment of April 18, 1984

On April 18, 1984, the applicants submitted an amendment to the PTO adding independent claim 47. The applicants also explained in the amendment that claim 1 requires that a credit is stored at the subscriber location and a program charge is transmitted with the program signal. The program charge is compared with the stored credit to enable access to the incoming program signal. The applicants further explained that the prior art cited by the examiner involve coin operated systems in which there is no stored credit. Thus, the prior art relate to real time payment systems as opposed to pre-paid or stored credit systems. The applicants distinguished claim 13 on the same basis and requested allowance of all rejected and objected to claims, arguing that all of the claims were patentable over the art of record.

4. Notice of Allowance of May 23, 1984

In response to the applicants' amendment, the examiner issued a notice of allowance for claims 1-47 on May 23, 1984.

5. Issuance of the '217 Patent

On November 20, 1984, the PTO issued the '217 patent to Talease, as assignee of Block and Lull. Talease subsequently assigned the patent to IPPV. The '217 patent is entitled "Method and System for Remote Reporting Particularly for Pay Television Billing." Claims 1 and 13 issued as originally submitted.

D. Prosecution History of the ’884 Patent

1. Application of June 30, 1978

On June 30, 1978, Block and Martin applied for a patent for a subscription television system and method in which billing information regarding programs actually viewed by a subscriber of the system is accumulated over non-dedicated phone lines. This application was a continuation in part of the application that resulted in the issuance of the ’254 patent.

In the application, the inventors explain that a scrambled television program signal containing a block of television program material, a program identification code unique to the block of program material and a program category code is broadcast. The codes are preferably included in the vertical interval of the video signal, and the transmitted program signal is selectively received at a subscriber station. There, the signal is selectively decrypted to permit viewing of the program material when the subscriber takes actions to indicate a desire to view the programming. The received program category code (e.g. G, PG, R or X) is compared with a locally generated program code to determine whether the program is acceptable for viewing. The program identification code is detected and stored for later transmission in response to the subscriber’s action indicating acceptance for viewing of the received block of program material.

The applicants further explain that the program identification code stored at the subscriber station is periodically accessed from a remote location over telephone lines in order to obtain billing information. The information received at the remote location

allows the provider to bill the subscriber for only the programs viewed. The subscriber is then billed on a periodic basis.

As originally submitted, the application for the '884 patent contained thirteen claims with independent claims 1, 4, 6 and 10. Claim 4 of the application reads as follows:

> 4. In a pay television system, a method of providing subscriber control over television programs which can be viewed at the subscriber location comprising the steps of:
> transmitting from a remote location a scrambled television program signal;
> inserting a category identification signal into the scrambled program signal at the remote location for transmission thereof with the program signal;
> receiving the scrambled program signal, including the category identification signal, at the subscriber location;
> generating a signal at a subscriber location identifying at least one category of programs which are acceptable for viewing;
> comparing the received category identification signal with the generated signal; and
> enabling the received program signal to be unscrambled if the compared signals correspond.

2. Rejection of January 25, 1979

On January 25, 1979, the examiner rejected all thirteen claims. Claims 1, 3 and 4 were rejected pursuant to 35 U.S.C. § 102 as unpatentable over Pires. The examiner rejected claims 2 and 5 pursuant to 35 U.S.C. § 103 as unpatentable over Pires in combination with U.S. Patent No. 3,790,700, which was assigned to Callais et al. on February 5, 1974. Finally, the examiner rejected claims 6-13 pursuant to section 103 as unpatentable over Pires in view of Porter.

3. Amendment of June 26, 1979

On June 26, 1979, the applicants amended claims 1, 2, 5, 6 and 10 and added claim 14. In addition, the applicants attached a declaration from Pires in which he explains that he first came into possession of the category selection invention through disclosures by Block. The declaration further indicates that Pires does not consider category selection part of his invention. In light of the declaration, the applicants argued that claims 1-5 are patentable over Pires. The applicants also argued that there are substantial differences between the invention and Porter, and as such, reconsideration of the rejection was appropriate.

4. Allowance and Rejection of August 16, 1979

On August 16, 1979, the examiner allowed claims 6-13, but rejected claims 1-5 and 14. Claims 1, 3, 4 and 14 were rejected as anticipated by Pires pursuant to 35 U.S.C. 102(a) and (e). The examiner stated that the Pires declaration did not "establish proof of reduction to practice of the presently claimed invention before 19 July 1976 or doesn't establish proof of conception before 19 July 1976 followed by due diligence to the time of filing (30 June 1978) or to some earlier time of reduction to practice to establish an earlier date of invention." Finally, the examiner rejected claims 2 and 5 as obvious over Pires in view of Callais et al. under 35 U.S.C. § 103.

5. Request for Reconsideration of November 15, 1979

On November 15, 1979, the applicants requested that the examiner reconsider and withdraw the August 16, 1979 rejection based largely on In re Matthews, 161 USPQ 276

(CCPA 1969) and In re Facius, 161 USPQ 294 (CCPA 1969). The applicants explained that in both cases, a declaration or affidavit by the referenced inventor in combination with the present inventor's oath was sufficient to show that there was no lack of novelty.

6. Notice of Allowance of December 12, 1979

The examiner issued a notice of allowance for claims 1-14 on December 12, 1979. The examiner explained that "[t]he rejection of the present claims over Pires . . . has been withdrawn in view of Pires' affidavit . . . ."

7. Issuance of the '884 patent

On September 30, 1980, the examiner issued the '884 patent to Talease, as assignee of Block and Martin. Claim 4 issued as originally submitted. The patent is entitled "Method and System For Subscription Television Billing and Access."

E. Prosecution History of the '942 Patent

1. Application of November 27, 1984

On November 27, 1984, Field, Perr and Gerlach applied for a patent for a secure coding and decoding system and method for television program signals. In the application, the inventors explain that television signals are comprised of several components, including a "blanking interval," which stores synchronization information, and a "video interval," which stores the picture. An input signal, which comprises a blanking interval and a video interval, is sent to a "code insertion unit," in which several codes are embedded in the signal's blanking interval. The composite video signal then passes to a "cyclic encoder," wherein the video signal is scrambled by means of a pseudo-

random binary sequence generated by the "encoder control unit." The encoded output signal is then transmitted. The patent application discloses a similar mechanism for use by a subscriber, in which the encoded signal is received, the codes are read, and a pseudo-random binary sequence is generated based on the codes received. The pseudo-random binary sequence decrypts the video signal.

The inventors recited a number of objectives of the disclosed technology, including: (1) to provide a novel method for encoding and decoding the television signal "while the signal is still in an analog format;" (2) "to provide a novel system for controlling the encoding and decoding of a television signal with a pseudo-random control signal that is not transmitted with the television signal;" and (3) "to provide a highly secure system for controlling the encoding and decoding of a television signal with a code that is generated independently at both the transmitting and receiving ends of a television system in accordance with a control word that is transmitted in an encrypted form with the television signal."

2. Rejection of November 15, 1983

On November 15, 1983, the examiner rejected claims 1, 13 and 23 pursuant to 35 U.S.C. § 102(a) in light of Block's U.S. Patent No. 4,405,942, and U.S. Patent No. 4,070,693 issued to Shutterly et al. on January 24, 1978. The examiner stated that "Block et al. teaches the delay of the video signal in analog form," and that "[c]laim 13 does not require analog delay so that the teachings of Shutterly are also applicable as they relate to digital delays." The examiner also rejected claims 2-12, 14-33 and 24-35 pursuant to 35

U.S.C. § 103 as being unpatentable over Block in view of U.S. Patent No. 4,333,107 issued to McGuire et al. on June 1, 1982.

3. Amendment of March 15, 1984

On March 15, 1984, the applicants filed a proposed amendment with the PTO. The applicants proposed deleting the word "analog" from claims 1, 11, and 12. The applicants distinguished the claimed invention from the Block patent as follows:

> It is respectfully submitted, however, that the distinctions between the rejected claims and the Block patent do not lie merely in the differences between analog and digital types of delays, as might be implied from the rejection. Rather, the rejected claims are directed to a different type of encoding technique than that which is disclosed in the Block patent.

The applicants stated, moreover, that "[w]hile the present invention is specifically described in connection with its implementation in an analog form to obtain the advantages noted in the introductory paragraph of the specification, this aspect of the invention is not the sole distinguishing feature over the system disclosed in the Block patent." The applicants then described how the use of a pseudo-random binary sequence to encrypt the television signal is superior to the encryption method disclosed in Block.

The applicants also distinguished the McGuire patent stating that it "is not directed to the encryption of video signals to prevent unauthorized viewing thereof. Rather, it is concerned with the transmission of a television signal in a manner which reduces the susceptibility of the signal to jamming." As a result, the applicants submitted that the teaching of the McGuire were not applicable.

The applicants also proposed adding eleven new claims. Claim 38, which

subsequently issued as claim 21 of the ’942 patent, recites a method of “generating a television program signal” and “encrypting said television program signal in accordance with said pseudo-random signal.” Claim 38 as added reads as follows:

> 38. A method for enabling only authorized television receivers to display a television program in an intelligible manner, comprising the steps of:
>
> generating a television program signal;
>
> generating a pseudo-random signal at an encoding station;
>
> encrypting said television program signal in accordance with said pseudo-random signal;
>
> producing a control signal related to the generation of said pseudo-random signal;
>
> transmitting the encrypted television program signal and said control signal to a receiver station;
>
> providing a decode control key and said transmitted control signal to a receiver station;
>
> utilizing said decode control key and said transmitted control signal to generate pseudo-random signal at said receiver station;
>
> decoding the encryption television program signal in accordance with the pseudo-random signal generated at the receiver station; and
>
> applying the decoded program signal to a receiver for display.

4. Rejection of April 27, 1984

On April 27, 1984, the examiner rejected or cancelled all pending claims. The examiner rejected claims 1, 23, and 36 under 35 U.S.C. § 102 as being anticipated by Block, which he found discloses an encryption method employing analog and digital delay devices. The examiner further stated that the remaining claims were unpatentable under 35 U.S.C. § 103 in light of Block and McGuire.

5. Amendment of August 27, 1984

On August 27, 1984, the applicants filed a proposed amendment, which maintained the language of the claims with only typographical changes. The applicants distinguished the claimed invention from the prior art on the basis of the improved security purportedly achieved through the use of the pseudo-random binary sequence.

6. Rejection of September 14, 1984

On September 14, 1984, the examiner allowed claims 1-12, 23-27, 36 and 37, but rejected claims 13, 14, 16, 17, 19, 21, 22, 28-35 and 38-46.

7. Preliminary Amendment of November 27, 1984

On November 27, 1984, the applicants canceled a number of claims of the pending application, and renumbered claim 38 as claim 21. The applicants argued that the encryption method disclosed in the pending application was distinct from that disclosed in Block.

8. Rejection of June 4, 1985

On June 4, 1985, the examiner rejected claim 21 as invalid under 35 U.S.C. § 103 in light of the ’884 patent and U.S. Patent No. 4,388,643, issued to Aminetzah on June 14, 1983. The examiner found that the method of scrambling disclosed in Block and Aminetzah renders the claimed invention obvious.

9. Amendment of December 4, 1985

On December 4, 1985, the applicants filed an amendment in which they argued that the coding technique disclosed in the application is distinct from that used by Block

and Aminetzah by nature of the pseudo-random binary sequence employed.

10. Notice of Allowance of January 10, 1986

On January 10, 1986, the examiner allowed the pending claims, without comment.

11. Issuance of the ’942 patent

On July 15, 1986, the PTO issued the ’942 patent to Field, Perr, and Gerlach. The inventors assigned the patent to Talease, which subsequently assigned the patent to MAAST. With the exception of a typographical correction, claim 21 issued as originally submitted.

F. The Lawsuit

On August 26, 1999, IPPV filed a complaint in this court alleging that Echostar Communication’s creation and sale of its DISH Network, a direct broadcast satellite subscriber television service, infringes, or induced infringement of, one or more claims of the ’254, ’884, ’589, ’217, and ’942 patents. IPPV subsequently abandoned its claims based on the ’589 patent.

The DISH network transmits signals in digital format. To ensure the secure transmission and delivery of the signals, they are encrypted prior to satellite transmission and are subsequently decrypted at the subscriber location.

On December 28, 1999, Echostar Communications answered the complaint denying infringement, and asserting the affirmative defenses that plaintiffs failed to state a claim upon which relief could be granted; that the patents in suit are invalid for failing to satisfy the requirements of 35 U.S.C. §§ 102, 103, and 112; that plaintiffs are equitably

estopped from asserting their claims; that the patents in suit are invalid because the Patent and Trademark Office ("PTO") failed to duly investigate relevant prior art; and that plaintiffs failed to mark their patented articles. Echostar Communications sought a declaratory judgment that the patents are invalid and unenforceable and an award of costs and fees.

On March 16, 2000, the court held a teleconference during which IPPV sought an order compelling production of a third-party document held by Echostar pursuant to a confidentiality agreement. The document purportedly discloses a secret encryption algorithm owned by Irdeto BV and licensed to Echostar Communications. On April 4, 2000, Irdeto moved for a protective order to prevent production of the document disclosing the encryption algorithm. During a May 4, 2000 teleconference, the parties acknowledged that the relevance of the Irdeto document depended on the scope of claim 21 of the '942 patent, and in particular, whether the '942 patent may be construed to cover encryption of digital television signals.

On June 13, 2000, the court held a trial in accordance with Markman to construe claim 21 of the '942 patent. On July 28, 2000, the court determined that the phrase "television program signal" of claim 21 of the '942 patent means "analog television program signal."

On July 20, 2000, IPPV amended its complaint to add NagraVision, S.A. and NagraStar, L.L.C. as defendants. On August 24, 2000, Echostar answered IPPV's amended complaint and submitted counterclaims for declaratory judgments of non-

infringement with regard to all patents in suit. IPPV replied to the counterclaims on September 13, 2000.

On September 19, 2000, Echostar moved for summary judgment that it does not infringe the '942 patent based on the court's construction of "television program signal." IPPV opposed Echostar's motion on October 18, 2000. On December 12, 2000, the court entered an order denying summary judgment of non-infringement, but invited the parties to file motions on potential liability for infringement under the doctrine of equivalents following the Federal Circuit's decision in Festo Corp. v. Shoketsu Kinzokukogyo Kabushiki Co., Ltd. 234 F.3d 558 (Fed. Cir. 2000).

On March 9, 2001, Echostar moved for summary judgment of non-infringement of the expired '254, '884 and '589 patents based on the failure of IPPV and its licensees to mark their products in accordance with 35 U.S.C. § 287. IPPV opposed Echostar's motion on April 11, 2001. On June 11, 2001, the court entered an order denying Echostar's motion for summary judgment.

On March 29, 2001, Echostar moved for summary judgment that it does not infringe the '942 patent based largely on the impact of Festo. IPPV opposed Echostar's motion on April 30, 2001.

On May 18, 2001, Echostar moved for summary judgment that it does not infringe the '217 patent. IPPV opposed Echostar's motion on June 8, 2001.

On May 25, 2001, Echostar moved for summary judgment that the '942 patent is invalid based on the Lee, Guillou and Sechet references.

On May 29, 2001, Echostar moved for summary judgment that the '942 and '884 patents are invalid based on the on-sale bar of 35 U.S.C. § 102(b).

On June 18, 2001, the court held a second trial in accordance with Markman to construe the balance of the asserted claims in the patents in suit.

II. CLAIM CONSTRUCTION

Claims are construed from the vantage point of a person of ordinary skill in the art at the time of the invention. Markman, 52 F.3d at 986. In construing a claim, a court first looks to the intrinsic evidence of record, namely, the claims, the specification and the prosecution history. Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1309 (Fed. Cir. 1999). A court may also look to extrinsic evidence such as inventor testimony, expert testimony, dictionaries and learned treatises to assist in the proper construction of a patent claim. See Vitronics Corp. v. Conceptronics, Inc., 90 F.3d 1576, 1584 (Fed. Cir. 1996)

The starting point in claim construction is the words of the claims themselves. Id. Words in the claims are generally given their ordinary and customary meaning unless a patentee clearly sets forth a different definition in the specification or file history. See Vitronics at 1582. Therefore, the claims must also be read in view of the specification, of which they are a part. Markman, 52 F.3d at 979. As the Federal Circuit has stated:

> The specification contains a written description of the invention which must be clear and complete enough to enable those of ordinary skill in the art to make and use it. Thus, the 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 addition, the prosecution history is often of critical significance in determining the meaning of the claims. See Markman, 52 F.3d at 980 ("The prosecution history limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution.").

Although the Federal Circuit has held that claims should be read in view of the specification and the prosecution history, the court has repeatedly cautioned against limiting the scope of a claim to the preferred embodiment or specific examples disclosed in the specification. See, e.g., Ekchian v. Home Depot, Inc., 104 F.3d 1299, 1303 (Fed. Cir. 1997); Intervet America, Inc. v. Kee-Vet Laboratories, Inc., 887 F.2d 1050, 1053 (Fed. Cir., 1989) ("[L]imitations appearing in the specification will not be read into claims, and . . . interpreting what is meant by a word in a claim 'is not to be confused with adding an extraneous limitation appearing in the specification, which is improper.'") (citation omitted). In this case, IPPV and Echostar disagree over the proper construction of fifteen phrases or terms that are used in the claims of the '254, '217, '884 and '942 patents.

A. The '254 Patent

1. "includes"

The parties dispute the meaning of the term "includes" in the phrase "a scrambled television program signal that includes an identification code" of claim 8. IPPV contends that "includes" requires that the identification code be part of the transmitted program signal and that the identification code not overlap, in time or space, the video signal

portion of the program signal. Echostar, on the other hand, argues that "includes" requires the identification code to be part of the video signal, and as such, in order to not disturb the viewable portion of the signal, it must be placed in the vertical retrace interval.

In support of its position, IPPV refers the court to the plain meaning of "include," which is to take as a part or member. IPPV argues that its proposed construction is supported by this plain meaning and is consistent with the specification, which states that "[t]he codes [including the identification code] are *preferably* included in the vertical retrace interval of the video portion of the program signal," and that "[d]uring the vertical retrace interval, various equalizing and synchronization pulses are provided, and it is in this interval that the scramble and program ID codes are *preferably* combined with the transmitted program signal." (emphasis added). IPPV contends that the inventors' use of the term "preferably" makes clear that while the retrace interval may be the best location, there are other options.

Echostar counters by referring the court to Figures 1, 3 and 4 of the specification. It points out that in each of these figures, the identification code is placed in the vertical retrace interval of the video signal. Echostar therefore contends that claim 8 requires that the identification code be placed in the interval.

After reviewing the parties contentions and the specification, the court finds that claim 8 does not require that the identification code be placed in the vertical retrace interval. The plain language of the claim makes clear that the program signal, and not the specific video signal, includes the identification code. Moreover, the inventors' use of

the term "preferably" in describing the placement of the code shows that the inventors favored the vertical retrace interval, but that there were other less advantageous alternatives. This preference explains why the figures included in the patent place the code in the interval. The preference and the figures, however, do not justify a limitation of the plain language of the claim. Thus, the court will construe "includes" to require that the identification code be part of the transmitted program signal, but the court will not limit the location of the code within the program signal to the retrace interval.

2. "selectively accessing"

The parties disagree about the meaning of the words "selectively accessing" in the phrase "selectively accessing the subscriber location from a remote location to obtain access to each program identification code stored at the subscriber location" of claim 8. Echostar argues that "selectively accessing" requires that the remote location actively connect to the subscriber location, and not *vice versa*, while IPPV contends that "selectively accessing" simply refers to the process of establishing a communication path, regardless of whether the remote location or the subscriber location initiates the contact.

Having reviewed the claim and the specification, the court finds that the plain meaning of "selectively accessing . . . from a remote location" does not require that the remote location have initiated the connection. The subscriber location could initiate the connection and then allow the remote location computer to access its records from the remote location. This scenario is consistent with the language of the claim. Moreover, this interpretation is consistent with the specification, which explains that "[i]n this

connection, the computer [located at the remote location] and access unit [located at the subscriber location] may be connected over the telephone lines through conventional telephone switching equipment as commanded either from the access unit or from the computer." Thus, the court concludes that initiation of the connection can come from either the remote location or the subscriber location, and therefore, "selectively accessing" refers to the process of establishing a communication path, regardless of the origin of the connection.

3. "periodic"

The parties dispute the meaning of the term "periodic" in the phrase "selectively connecting the subscriber location to a remote location over non-dedicated phone lines on a periodic basis unrelated to the receiving of the scrambled program signal" of claim 9, which relates to the transmission of billing data from the subscriber location to the remote location. Echostar argues that "periodic" means at a regular interval, whereas IPPV contends that "periodic" means at a regular interval or intermittently.

In support of its proposed construction, Echostar directs the court to a portion of the specification which refers to "the placement of a call on a monthly basis" as an example of when the subscriber location would contact the remote location. Based on this example, it contends that "periodic" means at a regular interval.

IPPV, on the other hand, argues that "periodic" is defined in other portions of the specification to include contact on an intermittent basis. In describing when money is to be collected in certain prior art devices, the specification states that "the billing entity (the

system operator) must collect the money from the coin boxes on a periodic basis." IPPV contends that the specification is suggesting that the physical collection of the money may be accomplished on an intermittent basis.

The specification also states that "[i]t will be appreciated that the invention provides a relatively simple manner of subscriber billing that allows for the identification of programs actually viewed and the rapid gathering of this information on a periodic basis long after a program has been viewed." IPPV argues that nothing in this passage suggests that "periodic" should be limited to regular predetermined time intervals only.

After reviewing the parties' arguments and the specification, the court concludes that "periodic" is not limited to regular intervals. The "monthly basis" example referenced by Echostar precedes the following statement: "Similarly, when the signal storage device is full and can store no more program codes, the access unit [located at the subscriber location] may place a call to the data gathering unit [located at the remote location] to transfer billing information thereto." When read in conjunction with the "monthly basis" example, this passage indicates that even if the subscriber location normally contacts the remote location to transmit billing information on a set interval, the subscriber location may also contact the remote location when it is full of billing information. If the subscriber location contacts the remote location on a set interval and intermittently, "periodic," which describes the contacts, cannot be limited to set intervals. Thus, the court concludes that "periodic" may include intermittent contacts.

B. The ’217 Patent

1. “subscription services”

The parties disagree about the meaning of the words “subscription services” found in the phrase “[a] method for providing subscription services involving transmissions from a remote location to a subscriber location” of the preamble of claim 1. Echostar argues that “subscription services” is limited to a group, tier or package of television programs purchased for a flat fee, while IPPV contends that “subscription services” includes pay-per-view programming that is purchased on impulse.

In support of its position, Echostar argues that “subscription services” is a limitation on claim 1 even though the term is only found in the claim’s preamble. It then explains that the plain meaning of “subscription” is an arrangement for providing, receiving or making use of something of a continuing or periodic nature on prepayment plan. Echostar also refers the court to the deposition transcript of its expert, Graham Stubbs, where he testified that “[s]ubscription services do not include what are commonly referred to as pay-per-view services, wherein customers pay an amount for each program or event viewed.” In light of its proposed plain meaning and Stubbs’s testimony, Echostar contends that “subscription services” is limited to flat fee arrangements and does not include pay-per-view programming purchased on impulse.

IPPV counters by explaining that “subscription” generally refers to a purchase agreement where the subscriber agrees to purchase a certain number of goods or services to be delivered over a certain period of time. It argues, however, that “subscription” does

not include a particular method of payment, and therefore, "subscription services" should not be limited to flat fee arrangements.

Moreover, IPPV contends that even if "subscription" implies flat fee payments, the specification expressly states that subscription programming may be impulsively purchased. As examples, it cites a portion of the specification stating that the present invention includes "an impulse purchase capability which allows a subscriber to purchase a certain amount of subscription programming outside the subscriber's normal prearranged programming at any time during which special information pertaining to that programming is being transmitted," and another portion stating that "the impulse purchase capability permits a subscriber to view subscription programming . . . for which payment is not predetermined in some ordinary manner such as a flat rate . . . ." IPPV argues that in both instances, the specification makes clear that "subscription services" includes pay-per-view programs.

As a preliminary matter, the court finds that "subscription services" of the preamble is a limitation of claim 1. The court further finds that the plain meaning of "subscription" does not require that a subscriber pay for services on a flat fee basis. The plain meaning only requires that a subscriber pay for services prior to delivery, and that the services be delivered over a period of time.

Prepayment for services is one of the main objects of the invention described in claim 1. When a purchaser chooses to view a program, the invention compares the cost of the purchased program against the purchaser's stored credit and only decrypts the

programming if there is sufficient credit to cover the cost of the program. As a result, there is a prepayment before each program is viewed. It is of no consequence that the payment is made with stored credit rather than cash. Moreover, the pay-per-view programming is provided for a period of time. Thus, each purchase of a pay-per-view program by the method described in claim 1 falls within the plain meaning of "subscription."

In addition, the portions of the specification referenced by IPPV show that the inventors intended "subscription services" to include pay-per-view programming. In light of the plain meaning of the words and the specification, the court concludes that "subscription services" is not limited to arrangements in which a subscriber pays for services on a flat fee basis.

2. "credit"

The parties dispute the meaning of the term "credit" in the phrase "storing a credit at the subscriber location" of claim 1. Echostar argues that "credit" is limited to prepaid credit, whereas IPPV argues that "credit" also includes an amount of value placed by the system operator at the disposal of a subscriber to purchase television programming.

In support of its proposed construction, Echostar points to the prosecution history and in particular, to the April 4, 1984 amendment in which the inventors explained in response to a rejection based on prior art, that the references cited by the examiner were "not . . . pre-paid and stored credit system[s] as in the present invention." Echostar argues that the inventors should have disclosed the advance credit method in their

amendment distinguishing the prior art, and because they did not, the doctrine of prosecution history estoppel limits the meaning of "credit" to prepaid credit.

IPPV argues in response that the plain and ordinary meaning of "credit" includes different forms of credit. It also cites portions of the specification as evidence of the broad meaning of "credit." One passage states that "with the illustrated system, the station operator has the option of allowing the subscriber to continue to purchase . . . programs until the credit is completely used up, an option which may be desirable if the credit is prepaid by the subscriber. On the other hand, if the . . . credit is an advance credit given to the subscriber without prepayment, the operator has other options." Another passage states that "[t]he credit initially may represent an amount actually prepaid by the subscriber or an advance credit provided by the pay television operator against future use by the subscriber."

With regard to Echostar's prosecution history estoppel argument, IPPV argues that the inventors' statement must be read in the context of the entire prosecution history, including the application, the references cited by the examiner and the applicants' whole remarks. Furthermore, it urges the court to not only consider the statement, but why the statement was made.

IPPV explains that the two references cited by the examiner against claim 1, Loew and Mountjoy, disclose systems for controlling the distribution of programming, where prepayment in advance of viewing is required. The examiner rejected claim 1 because it covers an embodiment in which the credit represents an amount of value that is prepaid

by the subscriber. IPPV further explains that in order to overcome the rejection, the applicants distinguished the prepaid credit embodiment covered by claim 1 from the payment systems described in the cited references on the basis that they did not store credit. Instead, the cited references were real time payment systems. Thus, IPPV argues that the examiner's rejection was limited to prepaid systems, and as such the advance credit system was not relevant to the rejection. It therefore contends that the inventors had no reason to include the advance credit system in their response, and as a result, to amendment should not serve to limit the meaning of "credit" to prepaid credit under the doctrine of prosecution history estoppel.

Having reviewed the specification and the prosecution history, the court finds that "credit" includes advanced credit as well as prepaid credit. The court further finds that the advance credit system was not relevant to the examiner's rejection based on Loew and Mountjoy. As such, the doctrine of prosecution history estoppel does not apply in this instance. The court therefore concludes that "credit," as used in claim 1, includes prepaid credit and an amount of value placed by the system operator at the disposal of a subscriber to purchase television programming.

3. "credit"

The parties disagree about the meaning of the term "credit" in the phrase "storing, at the subscriber location a credit indicating an amount for future payment of charges for access to information in the transmission" of claim 13. Echostar again argues that "credit" should be limited to prepaid credit, while IPPV argues that "credit" should not be

limited to any specific type of credit.

In support of its position, Echostar contends that the plain and ordinary meaning of the term "charges" limits the meaning of credit. It explains that a "charge" is a debt or an entity in an account recording a debt. Applying this plain meaning, Echostar argues that "credit" cannot include advanced credit because one cannot pay a debt using credit advanced by the same party. It analogizes an advanced credit system to paying a credit card bill with the same credit card, and therefore contends that the advanced credit system does not make sense. Finally, Echostar points to one of the embodiments of the specification that, it argues, illustrates the prepaid credit method as a limitation on the meaning of "credit."

In response, IPPV argues that the words "future payment of charges" mean payment for charges that occur in the future. Based on this meaning, IPPV contends that there is no reason to limit "credit" to prepaid credit, and that "credit" should therefore be construed to mean credit available for future use, whether prepaid or advanced.

After reviewing the parties' proposed constructions and the specification, the court finds that there is no reason to limit the meaning of "credit" to prepaid credit. The credit card analogy is inaccurate because it does not take into account the fact that in this instance, the credit card bank is providing the service. That is, it is true that a credit card holder would not pay a credit card bill with the same credit card, but a better question is whether the holder would pay for services or goods rendered by the credit card bank with the same credit card. This happens all the time, and the best example is a cash advance.

The bank issues the cash advance and charges the amount against the holder's available credit. In essence, the holder initially satisfies the cash advance charge with credit from the same bank. At a later date, the holder pays the bill reflecting the accumulated charges.

The specification makes clear that the invention contemplates the same system. A program charge is initially satisfied with advanced credit from the program provider, and the subscriber later pays a bill reflecting the charges. Thus, the court construes "credit" in accordance with its plain meaning and does not limit the term to any particular type of credit.

4. "with the information transmissions"

The parties dispute the meaning of the words "with the information transmissions" in the phrase "transmitting within at least one allocated television channel frequency band, together with the information transmissions a cost signal indicating the magnitude of the charge for access to the information in the transmissions." Echostar argues that "with the information transmissions" requires that the cost signal must be placed inside the program signal, while IPPV contends that "with the information transmissions" requires that the cost signal be closely associated in time to the information transmission.

In support of its proposed construction, IPPV refers the court to a portion of the specification stating that "[e]ach scrambled program capable of impulse purchase is transmitted with data including the cost of the program in a part of the television signal, which does not convey program information (e.g., the vertical or horizontal interval or an

unused portion of the audio frequency band)." Based on this statement, it contends that program information is the data transmitted in an "information transmission," and that the cost signal is not transmitted at exactly the same time as the program information. IPPV therefore concludes that the cost signal is not necessarily transmitted at the same time as the "information transmission." Echostar simply responds by arguing that the cost signal must be placed inside the program signal.

The parties are focusing on two different relationships: (1) Echostar wants the court to define the relationship between the cost signal and the program signal; and (2) IPPV wants the court to define the relationship between the cost signal and the information transmission. The court begins with the understanding that the information transmission and the cost signal are components of the continuous program signal. Thus, the cost signal is placed inside the program signal, and due to the continuous nature of the program signal, it is transmitted at the same time. Within the program signal, however, the court finds no reason why the cost signal and the information transmission must be transmitted at the exact same time. As a result, the court concludes that to the extent "with the information transmissions" refers to the relationship between the cost signal and the information transmissions, the words mean closely associated in time.

C. The '884 Patent

1. "inserting . . . into"

The parties disagree about the meaning of the words "inserting . . . into" in the phrase "inserting a category identification signal into the scrambled program signal at the

remote location for transmission thereof with the program signal" of claim 4. IPPV contends that "inserting . . . into" requires that the identification signal be within some time or space limitations of the program signal. Echostar on the other hand, argues that "inserting . . . into" requires the identification signal to be placed inside the program signal.

Having reviewed the language of the claim and the specification, the court concludes that there is no reason to modify the plain meaning of "insert," which means "to set (something) in." Webster's Their New International Dictionary 1168 (3d. ed. 1986). Thus, the court will construe "inserting . . . into" as requiring the identification signal to be placed inside the program signal.

D. The '942 Patent

1. "television program signal"

The parties dispute the meaning of the term "television program signal" of claim 21. IPPV argues that "television program signal" includes video information, while Echostar argues that "television program signal" comprises video information in combination with audio information.

In support of its proposed construction, IPPV points to the term "display" in the preamble of claim 21, and contends that only visual images may be displayed. IPPV argues that because the preamble modifies the rest of the claim, the inventors' use of the term "display" limits the meaning of the term "television program signal" to video information.

IPPV also cites the specification, which states "[t]he present invention relates to the encoding and decoding of video information, and more importantly, to a method and system for secure transmission of television signals for subscription television or similar video services in which only authorized viewers are permitted to view a video program." IPPV argues the references to "video" in this passage limit claim 21 to video information.

Echostar counters that the term "television program signal" describes a signal comprising a video signal and an audio signal. As support for its construction, Echostar cites the Modern Dictionary of Electronics, which defines "television signal" as "the audio signal and the video signal that are broadcast simultaneously to produce the sound and picture portions of a televised scene." Echostar also points to other claims of the '942 patent that refer to "encoded video signals." Claim 13, for example, claims an "[a]pparatus for decoding an encoded video signal." Echostar contends that the inventors' specific reference to a video signal means that they must have intended a different meaning for "television program signal."

Having considered the parties' positions, the court finds that the inventors did not intend to limit the term "television program signal" to video information or signals. They specifically referred to video signals in multiple parts of the patent, including claims 1, 4, 6, and 11-13, making it apparent that "video signal" and "television program signal" are not synonymous. Moreover, the portion of the specification cited by IPPV distinguishes between television signals and video information in stating that "[t]he present invention relates to the encoding and decoding of *video information*, and more importantly, to a

method and system for secure transmission of *television signals*. . . .” (emphasis added). If television program signals were composed of only video information, this passage would be redundant. The court therefore finds no reason to limit the conventional definition of “television program signal,” and concludes that it comprises audio and video signals that are broadcast simultaneously to produce the sound and picture portions of a televised scene.

2. “encrypting”

The parties dispute the meaning of the term “encrypting” in the phrase “encrypting said television signal in accordance with said pseudo-random signal” of claim 21. IPPV argues that “encrypting” includes any and all forms of encryption, while Echostar argues that “encrypting” is limited to a certain form of encryption and does not include a method of encryption called inversion.

In support of its position, Echostar contends that because “encrypting” is sometimes used interchangeably with the terms scrambling and encoding, the plain meaning of “encrypting” is unclear. Thus, the court must look to the specification to determine the proper meaning. Echostar argues that the specification makes clear that “encryption” does not include inversion, a specific type of encryption. Echostar refers the court to a portion of the specification noting that although security tends to be adequate when video information is randomly inverted and a secure code is transmitted with the video so that the decoder can properly reinvert, “difficulties arise with respect to the picture quality.” Echostar then references another portion of the specification that

discusses various methods that have been employed to remedy the problem, but concludes that these measures "only serve to reduce the annoyance, not eliminate it." Based on these passages, Echostar argues that the specification shows that there are problems associated with inversion that cannot be eliminated, and therefore inversion is excluded from the invention.

Echostar further contends that the remainder of the specification and prosecution history are consistent with its proposed construction. Echostar points out that the only forms of scrambling discussed in the specification involve the rearrangement of portions of a television program signal relative to other portions. The inventors stated in the specification that "in accordance with the invention, the normal TV signal is encoded or scrambled such that if the video information contained in the encoded signal were displayed by a standard television receiver without decoding, the resultant picture presented to the viewer would have parts rearranged in sequence relative to their normal positions in the scanning sequence." With regard to the prosecution history, Echostar argues that the inventors limited the meaning of "encrypting" when they distinguished prior art by stating, "[b]oth the system of the Block patent and that of the present invention operate in the same general fashion to encode a television program signal, i.e. by rearranging parts of the signal relative to other parts thereof."

IPPV responds by arguing that "encrypting" should be construed in accordance with its plain meaning, which is to encode or scramble information to prevent unauthorized access. It contends that particular embodiments appearing in the

specification should not be read into the claims, and that the specification does not explicitly provide a definition that is contrary to the plain meaning of the term "encrypting." According to IPPV, the specification describes a preferred embodiment, which describes encryption of a television signal by rearranging portions thereof with a cyclic encoder, and an alternative embodiment, which describes encryption of a program signal by randomly rearranging portions thereof with a non-cyclic encoder. The specification further states that "[a]ny type of encoder that is capable of operating in two or more modes under control of the . . . signal can be successfully employed."

IPPV also argues that the prosecution history does not limit "encrypting." It contends that the inventors' statements distinguishing the prior art do not refer to claim 21, but rather to claims 1, 13 and 23. Moreover, IPPV contends that claims 1,13 and 23 contain terminology that expressly or implicitly limits the process of encrypting to rearranging portions of the television program signal. Specifically, claim 1 refers to a "plurality of delay elements," claim 13 refers to "an encoding device for rearranging parts of the video signal" and claim 23 refers to "a plurality of analog delay elements." IPPV argues that these claims are directed at the "cost savings" aspect of the invention, whereas claim 21 is directed at the security aspect of the invention, which is not concerned with a specific encryption technique.

The essence of the dispute over "encryption" is whether the term includes inversion, a specific method of encryption. As a preliminary matter, the court concludes that there was no established plain meaning for the term "encryption" when the '942

patent was issued. In distinguishing encrypting from scrambling, Robert A. Sherwood, an expert for IPPV, testified at his deposition that encryption is a component of scrambling, but "the term ["encryption"] was used rather loosely in the '80s." Sherwood went on to testify, "I think encryption was used to make it sound a little more high tech than it really was. But, generally, they were used interchangeably in the industry." Thus, even if there is currently an accepted plain meaning for "encryption," it cannot be applied to the term as used in the 1980s or before. The court, therefore, will look to the specification and prosecution history to construe "encryption."

The prosecution history reveals that "encryption" describes a method by which parts of a signal are rearranged relative to other parts. In the March 15, 1984 amendment reference by Echostar, the inventors distinguished their application by stating as follows:

> Claims 1, 13 and 23 were rejected under 35 U.S.C. § 102 as being anticipated by the Block et al. patent. The rejection states that the Block patent teaches the delay of a video signal in analog form and the encryption of an encode signal. It is respectfully submitted, however, that the distinctions between the rejected claims and the Block patent do not lie merely in the differences between analog and digital types of delays, as might be implied from the rejection. Rather the rejected claims are directed to a different type of encoding technique than that which is disclosed in the Block patent.
>
> More specifically, as noted in the introductory portion of the specification, the *present invention* is based upon an improvement to the system disclosed in the Block patent. Both the system of the Block patent and that of the present invention operate in the same general fashion to encode a television program signal, *i.e. by rearranging parts of the signal relative to other parts thereof.*

(emphasis added). IPPV argues that this entire passage refers to claims 1,13 and 23, and not to claim 21. The court, however, finds that in the second paragraph, the inventors are

referring to the invention as a whole and not specific claims. Thus, the court further finds that the inventors defined "encryption" in the present invention as involving the rearranging of parts of the signal relative to other parts.

The specification also reveals that the method of inversion is not included in "encryption." The specification reads as follows:

> Other approaches to television signal scrambling have proven to be more secure . . . . One such approach is to invert lines or fields of video information on some basis that can be reproduced at a subscriber location . . . .
>
> Security tends to be adequate in approaches to video scrambling in which the video information is randomly inverted and a secure code is transmitted with the video so that the decoder can properly reinvert, but difficulties arise with respect to picture quality. . . .
>
> Various measures have been employed to eliminate or at least reduce this problem with varying degrees of success . . . .
>
> It is accordingly a general object of the present invention to provide a novel method and system for scrambling or encoding television signals wherein the difficulties of the prior art systems above are obviated.

From this, the court determines that the inventors intended the invention to be a new method of encryption that obviated the drawbacks of inversion. The court therefore concludes that "encryption" does not include the method of inversion. Thus, the term "encryption" of claim 21 describes a method wherein parts of the signal are rearranged relative to other parts. "Encryption" does not include the method of inversion.

3. "with"

The parties disagree about the meaning of the term "with" in the phrase "transmitting said control signal with said television program signal" of claim 21. Echostar argues that "with" requires that the control signal be transmitted at "the same

time as" the program signal, whereas IPPV contends that "with" requires a close "association in time" between the transmission of the control signal and the "program (i.e. video) signal."

In support of its proposed construction, Echostar initially argues that the meaning of "with" is not clear from the language of the claim. It then turns to the specification, and refers the court to an example that discloses that the control signal modifies the vertical rest interval portion of the continuous program signal. The modification is the change in amplitude that results from the combination of the signals. Based on this example, Echostar asserts that the control signal becomes part of the program signal, and therefore, because the program signal is continuous, the only way for the control signal to be transmitted "with" the program signal is simultaneously. It also argues that if "with" is construed as "near in time to," the claim will be invalid for indefiniteness.

IPPV counters that "with" has several plain and ordinary meanings, and the context of the claim shows that the term means "a close association in time." As further support, IPPV points to a portion of the specification that, in referring to the placement of codes, states that "[t]hey are preferably inserted in the blanking so as not to appear as video." It then refers the court to a portion of the specification stating that "the transmitting end of the encoding system includes a program source . . . which generates a composite video signal comprising video information and synchronizing signals . . . ."

IPPV's argument focuses on the location of the control signal relative to the "program (i.e. video) signal." As previously explained, however, program signals and

video signals are different types of signals. This distinction is evident from the language of the patent where claim 21 refers to "television program signals" and claim 13 concerns "video signals." In light of this difference, the portions of the specification relating to the placement of signals relative to the video signal are irrelevant to the construction of "with," which concerns the relationship between the control signal and the program signal.

The program signal is constant, and as result, any signal that travels with the program signal must have been transmitted at the same time as the program signal. The context of the claim therefore requires that the court construe "with" as meaning "at the same time as."

4. "providing"

The parties dispute the meaning of the term "providing" in the phrase "providing a decode control key to the receiver station" of claim 21. Echostar argues that "providing" includes the process by which a decode control key is permanently stored in a memory of the receiver, while IPPV argues that "providing" describes the act of making something available that was previously unavailable. Thus, IPPV contends that if the receiver station accesses the decode control key after it has been permanently stored in a memory, it has not been "provided" with the key.

In support of its position, Echostar argues that the plain and ordinary meaning of "provide" is to furnish or supply. It contends that in accordance with the plain meaning, "providing" includes permanently storing in a memory at the receiving station. Echostar

also refers the court to the preferred embodiment where a master key is permanently stored in read-only memory. This type of memory is a permanent memory. Finally, Echostar cites the following exchange from Sherwood's deposition testimony:

> Q. So if the decode control key is stored in the receiver, that doesn't meet your definition of the word "provide." Is that correct?
>
> A. It depends upon how it is stored.
> Q. Tell me what kind of storing would meet the definition of "provide" and what kind of storing would not.
>
> A. It could be stored in electronic form.
> Q. Would that meet the definition of provide or not?
> A. Yes.
> * * *
> Q. You answered one question by referring to something being stored in electronic form.
>
> A. Yes.
> Q. Are you referring to memory?
> A. I – yes. I can't think right now of any other method of storing in electronic form.

Echostar argues that Sherwood's deposition testimony that "providing" includes storing in a memory is consistent with its construction.

IPPV counters that the plain meaning of "providing" describes the act of making something available that was previously unavailable. It explains that after the key is stored in a memory, it is available, and therefore, when the receiver station accesses the key, it has not been "provided" with the key. Thus, IPPV argues that in accordance with the plain meaning of "providing," the act of storing the key in a memory does not constitute "providing."

IPPV views "providing" as containing an element or condition of immediate need. The court finds no reason to insert that condition in to the plain meaning of "providing." In the same way that an oil supplier provides heating oil to homes before it is needed to produce heat, the method in claim 21 provides the decode control key to the receiver station before it is needed for decryption. The key is still provided by the method even though the receiver does not need or use the key immediately. As a result, the court concludes that "providing" includes permanently storing in a memory at the receiving station.

5. "control signal" and "decode control key"

The parties disagree about whether the "control signal" and "decode control key" of the phrase "utilizing said decode control key and said transmitted control signal to generate a pseudo-random signal at said receiver station" in claim 21 must generate the pseudo-random signal in a particular way. IPPV argues that the signal and key must initialize the pseudo-random signal independently and separately. That is, it contends that the initialization of the key cannot depend on the signal and *vice versa*. Conversely, Echostar argues that there is no such limitation in the patent, and therefore, the initialization of the key may depend on the signal.

In support of its proposed construction, IPPV points to the plain meaning of the language of the claim, the specification and the prosecution history. First, IPPV argues that the plain meaning of the conjunction "and" requires that the two signals act independently. According to IPPV, "and" precludes combining of the signal and the key,

or manipulating one of the two signals based on the other, to produce one or more additional values, and then using these values to generate the pseudo-random signal.

Second, it contends that the specification is consistent with the independent and separate construction. The specification explains that the STAT word indicates the state of each register in the pseudo-random signal generator. The control signal corresponds to the STAT word. The specification also defines a separate quantity called the TAPS word, which corresponds to the decode control key. IPPV argues that the preferred embodiment of the invention employs the TAPS and STAT word independently, and as such, claim 21 requires that the signal and key always be employed independently.

Third, it contends that the August 27, 1984 amendment during the patent prosecution supports the independent and separate construction. In the amendment, the inventors state that "[i]n order to generate this [pseudo-random] signal, two keys are required: the control signal . . . and a separate decode control key." From this statement, IPPV concludes that the signal and key must act separately and independently.

Echostar counters that claim 21 does not specify how the control signal and the decode control key are to be used to generate the pseudo-random signal. It argues that the plain and ordinary meaning of claim 21 does not include such a limitation. Echostar further argues that there is no support for the separate and independent construction in the specification or prosecution history of the patent.

Finally, Echostar contends that IPPV's experts have set forth conflicting validity and infringement constructions. According to Echostar, Sherwood, in attempting to rebut

its anticipation allegations, stated that claim 21 requires the control signal and decode key to separately and independently initialize the pseudo-random generator, but on another occasion, Roy Griffen, another IPPV expert, posited that the odd/even bit, a decode key found in the headers of the packets used in Echostar's DISH Network, infringes the control signal limitation in claim 21. The odd/even bit, however, is used to select a control word. The control word depends on the odd/even bit, and therefore, the odd/even bit is not used separately and independently from the control word to generate a pseudo-random signal. From these statements, Echostar concludes that IPPV is improperly advocating opposing constructions depending on the ultimate purpose of each construction. Thus, the essence of this dispute is whether the control signal and the decode key must independently and separately initialize the pseudo-random signal.

Having reviewed the parties' arguments, the court will construe the claim in accordance with the plain and ordinary meaning of "and," which requires that both the signal and the key participate in generation of the pseudo-random signal, but does not limit the way in which the signal and key participate in the generation. As such, the court will not construe claim 21 to require that the control signal and decode key separately and independently initialize the pseudo-random signal.

6. "transmitting" or "transmit"

The parties dispute the meaning of the terms "transmitting" of claim 21 and "transmitted" of claim 24. Echostar argues that nothing in the plain and ordinary meaning of "transmit" requires any particular method of transmission, whereas IPPV

argues that "transmitting" is limited to the sending of information by propagating a signal from the first location to the second, and does not include the sending of information by mail.

In support of its construction, IPPV points to a portion of the specification stating that "[w]ith the increased interest and activity in the field of subscription or pay video transmission of all types (e.g. broadcast and cable subscription television, long distance satellite transmission, television transmission of textual information, etc.), there has arisen a need for more secure transmission of high quality video information." IPPV argues that the examples set forth in this passage indicate that the mail service is not a type of "transmission" in the context of the invention.

Echostar argues in response that U.S. Patent No. 4,405,942 and the '217 patent, both Block patents, refer to transmissions and include mail as a method of transmission. IPPV therefore contends that the inventors knew that "transmitting" included use of the mail service, yet failed to expressly exclude mail as a method of transmission in claims 21 and 24.

When viewed in the context of claim 21, it is clear that "transmitting" refers to the transmission of a signal. The claim refers to "transmitting the encrypted television program signal to a receiver station" and "transmitting said control signal with said program signal." Program and control signals cannot be transmitted through the mail. The court also recognizes that the examples provided in the specification, broadcast and cable subscription television, long distance satellite transmission and television

transmission of textual information, are all methods of sending a signal. The court therefore concludes that "transmitting" of claim 21 means the propagation of a signal from the first location to the second, and does not include the sending of information by mail. To be consistent throughout the patent, the court assigns the same meaning to "transmitted" of claim 24.

III. CONCLUSION

With regard to the '254 patent, the term "includes" requires that the identification code be part of the transmitted program signal, but the court will not limit the location of the code within the signal to the retrace interval. The words "selectively accessing" refer to the process of establishing a communication path, regardless of the origin of the connection. The term "periodic" cannot be limited to regular intervals and may include intermittent contacts.

As to the '217 patent, the words "subscription services" are not limited to arrangements in which a subscriber pays for services on a flat fee basis. The term "credit," as used in claim 1, includes prepaid credit and an amount of value placed by the system operator at the disposal of a subscriber to purchase television programming. The term "credit," as used in claim 13, is not limited to any particular type of credit. To the extent "with the information transmissions" refers to the relationship between the cost signal and the information transmissions, the words mean closely associated in time.

With regard to the '884 patent, the words "inserting . . . into" require the identification signal to be placed inside the program signal.

As to the ’942 patent, the words “television program signal” comprise audio and video signals that are broadcast simultaneously to produce the sound and picture portions of a televised scene. The term “encryption” does not include the method of inversion. The term “with” means “at the same time as.” The term “providing” includes permanently storing in a memory at the receiving station. The court will not require that the control signal and decode key separately and independently initialize the pseudo-random signal. Finally, the terms “transmitting” and “transmitted” mean the propagation of a signal from the first location to the second, and do not include the sending of information by mail.