United States District Court,
E.D. Pennsylvania.

COMARK COMMUNICATIONS, INC,
v.
HARRIS CORPORATION.

Feb. 24, 1997.

David G. Concannon, Kohn, Swift & Graf, P.C., Philadelphia, PA, Special Master.

A. Roy Decaro, Raynes, McCarty, Binder, Ross & Mundy, Philadelphia, PA, A. Lee Bentley, III, David V. Snyder, Hogan and Hartson, L.L.P., Washington, DC, Steven P. Hollman, Hogan and Hartson, Washington, DC, Sten A. Jensen, Hogan & Hartson, L.L.P., Washington, DC, David Newmann, David A. Kikel, Hogan & Hartson, L.L.P., Washington, DC, for plaintiff Comark Communications, Inc.

Donald F. Parsons, Jr., Matthew B. Lehr, Justin M. Miller, J. Andrew Huffman, Maryellen Noreika, Morris, Nichols, Arsht And Tunnell, Wilmington, DE David L. Grove, Montgomery, McCracken, Walker & Rhoads, Philadelphia, PA, Frederic W. Neitzke, Melbourne, FL, for defendant Harris corporation.

MEMORANDUM AND ORDER

BECHTLE**, District Judge.**

Presently before the court is the issue of the construction of the asserted claims of United States Patent No. 5,198,904 (the "'904 patent") and motions by Defendant Harris Corporation ("Harris") to strike two legal memoranda filed by Plaintiff Comark Communications, Inc. ("Comark").

For the reasons stated below, the court will construe the disputed claims of the '904 patent as set forth in Part III of this Memorandum, grant Defendant's motion concerning Comark's post-hearing brief to the extent that it seeks to strike the "Revised Definitions," and grant in its entirety Defendant's motion to strike Comark's supplemental memorandum concerning surprise expert testimony.

I. *BACKGROUND*

On April 11, 1995, Comark commenced this civil action alleging that Harris willfully infringed the '904 patent, which claims an "aural carrier correction system and method." This technology will be described below. Harris has denied infringement and asserts that the '904 patent is invalid under 35 U.S.C. s. 102 (lack of novelty), 35 U.S.C. s. 103 (obviousness); and 35 U.S.C. s. 112 (lack of specificity). (Answer to Supp. Compl. para. 5.) Harris also has set forth two affirmative defenses relevant to the issue of claim construction. FN1 The court has subject-matter jurisdiction over this civil action because it arises under federal patent law. 28 U.S.C. s.s. 1331, 1338.

FN1. Specifically, Harris asserts that (1) Comark is estopped from claiming a construction of the claims of the '904 patent that would cover or include an apparatus, device, product, or method made, used or sold by Harris; and (2) by reason of the prior art to the '904 patent, no construction of the claims can validly be applied to or cover any Harris apparatus, device, product, or method. (Answer to Supp. Compl. para.para. 6-7.)

Discovery in the case is complete, and it can be called for trial at any time. However, because the parties are unable to agree on the meaning of several terms in Claims 1 and 14, Harris requested, and the court granted, a hearing to construe the disputed terms pursuant to Markman v. Westview Instruments, Inc., 116 S. Ct. 1384 (1996). At the hearing on October 18 and 21, 1996, Harris presented a tutorial concerning the technology at issue, and the parties offered expert testimony regarding the meaning of the claims in dispute. The parties also submitted a substantial number of briefs, exhibits, and other papers to assist the court in learning about the field of television transmitter circuitry and to persuade it to adopt their construction of the disputed claims. FN2

FN2. The court will grant in part and deny in part Harris' motion to strike Comark's post- *Markman* hearing memorandum. The record is clear that the court wanted proposed findings of fact and conclusions of law. (Tr. 10/21/96 at 61, 196.) The parties properly presented their proposed definition of each disputed term in pre-hearing briefs, and the evidence at the *Markman* hearing was directed toward those proposed definitions. The court did not want "revised definitions" and will not consider them in construing the disputed terms of the '904 patent. Accordingly, the court will grant Harris' request to strike the "revised definitions," and deny its requests to strike Comark's entire post-hearing brief and for permission to file a reply memorandum.

On a related issue, the court will grant Harris' motion to strike Comark's Supplemental Memorandum in Support of its Motion to Strike Surprise Expert Testimony. On October 21, 1996, Comark moved to exclude certain testimony of Harris' expert, Charles W. Rhodes, on the ground that it had not been previously disclosed as required by Federal Rule of Civil Procedure 26(a)(2). (Tr. 10/21/96 at 45-51.) The court instructed the parties to file simultaneous briefs on the issue within 10 days. Id. at 50-51. Because the court did not require or permit a reply brief on the issue, it will strike the document. *See* Local R. Civ. P. 7.1(c). The court has reviewed the evidence and considered the parties' arguments concerning the meaning of the claims at issue. The following comprises the court's findings of fact and conclusions of law.

II. *FINDINGS OF FACT*

Comark is a Maryland corporation with headquarters in Colmar, Pennsylvania, that makes, distributes, and sells television broadcast equipment. (Compl. para. 5.) Harris is a Delaware corporation with headquarters in Florida that makes and sells television and radio transmitters and related components. (Harris Br. para. 4.) FN3

FN3. For purposes of this Memorandum, citations to "Harris Br." refer to Harris' Proposed Findings of Fact and Conclusions [of] Law on Issues of Claim Construction. Citations to "Comark Br." refer to Comark's Proposed Findings of Undisputed Facts.

The subject matter claimed in the patent-in-suit is a circuit used in certain high-power UHF television transmitters that transmit pictures and sound from television stations to audiences. (Comark Br. para. 4;

Harris Br. para. 6.) Typically, cameras and microphones create electrical representations of pictures and sound, known as baseband video and audio signals. (Comark Br. para. 5; Harris Br. para. 7.) The picture input into a television transmitter generally is known as a video signal, and the sound input generally is known as an audio signal. (Comark Br. para. 6; Harris Br. para. 8.) The separate picture and sound electrical signals that emanate from the transmitter often are referred to as visual and aural signals, respectively. (Comark Br. para. 7; Harris Br. para. 10.) To be broadcast, baseband signals must be "modulated" to a much higher frequency, called radio frequency ("RF"), and then radiated from a transmitting antenna. (Comark Br. para. 8; Harris Br. para. 12.) The video information is amplitude modulated ("AM") onto the RF visual carrier signal, and the audio information is frequency modulated ("FM") onto the RF aural carrier signal. (Tr. 10/18/96 at 40.) FN4 Television transmitters typically use an intermediate frequency ("IF") carrier signal between the baseband and RF stages. (Comark Br. para. 9; Harris Br. para. 15.) Using a standard IF frequency permits different transmitters to use uniform signal processing components. (Comark Br. para. 9; Harris Br. para. 15.) A television set receives the signals through a receiving antenna (or by cable, from a receiving antenna located elsewhere), down-converts the signals from RF to IF, and demodulates the aural and visual signals. (Comark Br. para. 10; Harris Br. para. 20.)

FN4. Citations to "Tr." refer to the transcript of the claim construction hearing.

There are two types of broadcast television transmitters: separate amplification, which have separate transmitters for the picture and sound; and common amplification, in which the visual and aural signals are modulated in a single transmitter and amplified by the same amplifying device. (Tr. 10/18/96 at 36-37.) In common amplification transmitters, "signal noise" arises from cross-modulation, in which two signals, such as a visual and aural signal, are commonly amplified through a common amplification transmitter. (Comark Br. para. 11; Harris Br. para. 25.) Intentional pre-distortion or "pre-correction" cancels much of this unwanted distortion, preserving the desired level of signal quality. (Comark Br. para. 12; Harris Br. para. 28.)

The '904 patent is designed to generate "pre-correction" signals that cancel unwanted aural signal noise. The patent, titled "Aural Carrier Correction System and Method," is based on an application filed in the United States Patent and Trademark Office ("PTO") on February 25, 1991. (Comark Br. para. 13; Harris Br. para. 29; Exs. DMX-1, DMX-2.) Hong A. Ta of Montilgnon, France, and Raymond C. Kiesel of Landsdale, Pennsylvania, are named as the inventors. (Ex. DMX-1.) The resulting '904 patent was assigned to Comark. Id. The alleged invention of the '904 patent occurred in November 1990, during the installation of a Comark transmitter for television station WSNS in Chicago. (Comark Br. para. 14; Harris Br. para. 30.)

The '904 patent contains twenty claims. (Ex. DMX-1.) Claim 1 is an independent claim for an aural carrier corrector system. Id. Claims 2 to 13 are dependent on Claim 1. Id. Claim 1 recites:

An aural carrier correction system for a common amplification television transmitter which amplifies both an aural signal and a visual signal simultaneously, the transmitter including at least a IF vision modulator for receiving a video signal and for outputting the visual signal, the system comprising:

a video delay circuit for receiving and delaying the video signal to provide a delayed video signal;

a complimentary non-linear amplifier for receiving the delayed video signal and for separately and controllably generating a non-linear amplitude domain video signal and non-linear phase domain video

signal; and

an amplitude and phase modulator for receiving the aural signal and for amplitude and phase modulating the aural signal using the non-linear amplitude domain video signal and the non-linear phase domain video signal, respectively, to generate a modified aural signal; and

an adder circuit for adding the modified aural signal to the visual signal outputted by the IF vision modulator to reduce unwanted noise appearing at specific frequencies in an output aural signal output from the transmitter.

Id. at col. 6, lines 21-44. Claim 14 is an independent method claim. Id. Claims 15 to 20 are dependent on Claim 14. Claim 14 recites:

A method for reducing unwanted aural carrier modulation caused by a video signal in a common amplification television transmitter which amplifies both an aural signal and a visual signal simultaneously, the method comprising the steps of:

mixing an aural carrier with an amplitude modulated video signal to generate a commonly amplified television transmission signal;

demodulating the commonly amplified television transmission signal to provide a demodulated aural signal;

performing a spectral analysis of the demodulated aural signal to determine the presence and frequency of unwanted aural signal noise resulting from unwanted aural carrier modulation;

generating a non-linear amplitude domain video signal and a non-linear phase domain video signal which respectively having amplitude and phase components that are directly opposite to unwanted amplitude and phase components added to the aural signal by the video signal;

amplitude and phase modulating the aural signal using the non-linear amplitude domain video signal and the non-linear phase domain video signal, respectively, to generate a modified aural signal; and

adding the modified aural signal to the visual signal in the transmitter.

Id. at col. 7 line 47 to col. 8, line 22.)

Comark and Harris dispute the meaning of the terms "video signal," "video delay circuit," and "delayed video signal" in Claim 1. (Comark Br. para. 19; Harris Br. para. 36.) The parties also dispute the meaning of the terms "demodulating ... to provide a demodulated aural signal" and "performing a spectral analysis ... to determine the presence of unwanted aural signal noise" in Claim 14. (Comark Br. para. 19; Harris Br. para. 36.) The parties also disagree about the sequence of steps required by Claim 14 and the meaning of the fourth step, which requires "generating a non-linear amplitude domain video signal and a non-linear phase domain video signal which respectively having amplitude and phase components that are directly opposite to unwanted phase components added to the aural signal by the video signal." (Comark Br. para. 20; Harris Br. para. 37.) Harris also contends that the meaning of the term "non-linear phase domain video signal" in Claims 1 and 14 is ambiguous. (Comark Br. para. 21; Harris Br. para. 38.)

A. ***The Court's Claim Construction Analysis***

The determination of a literal infringement claim requires a two-step analysis. Southwall Techs., Inc. v. Cardinal IG Co., 54 F.3d 1570, 1575 (Fed. Cir.), *cert. denied,* 116 S. Ct. 515 (1995). First, the court must properly construe the asserted claims to determine their scope and meaning. Markman v. Westview Instruments, Inc., 116 S. Ct. 1384, 1387 (1996). Second, the trier of fact must determine whether the properly construed claims cover the accused device or process. *See* id. at 1393; Southwall Techs., 54 F.3d at 1575.

Only the first step, claim construction, is before the court at this time. The United States Court of Appeals for the Federal Circuit has discussed the sources that a court may use to construe the disputed claims. Vitrionics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1581-83 (Fed. Cir. 1996). In interpreting the claims of a patent, the court must initially consider the intrinsic evidence of record. Id. at 1582. Intrinsic evidence "is the most significant source of the legally operative meaning of disputed claim language." *Id.*

Intrinsic evidence comes from three sources. First, the court should look to the words of all the claims in the patent. *Id.* Second, the court must review the specification of the patent -- "the single best guide to the meaning of a disputed term" -- to determine whether the drafter of the patent used any terms in a manner inconsistent with their ordinary meaning. *Id.* Third, the court also may consider as intrinsic evidence the patent's prosecution history, or "file wrapper," which is "often of critical significance in determining the meaning of the claims," because it contains the history of proceedings before the PTO, including the applicant's statements regarding the scope of the claims. *Id.*

The Federal Circuit has observed that, in most cases, the court can resolve a disputed over the meaning of a claim term by the intrinsic evidence alone. *Id.* If it cannot, the court may consider extrinsic evidence, such as expert testimony, only if necessary to determine the meaning of the disputed claim. *Id.* at 1583. Conversely, if the public record unambiguously describes the scope of the patented invention, reliance on any extrinsic evidence is improper. *Id.*

The focus of a claim construction analysis is to determine the meaning given to each disputed term by a person of ordinary skill in the relevant art. Haynes Int'l, Inc. v. Jessop Steel Co., 8 F.3d 1573, 1578 n.4 (Fed. Cir. 1993). The parties have presented the court with extensive background material so that it could become familiar with the pertinent terms and principles in the field of television transmitter circuitry, including a tutorial and testimony as to how an engineer of ordinary skill in the art would define the disputed terms.

B. ***Claim 1***

1. "Video Signal"

Comark argues that the term "video signal" means "a signal containing television picture information which is not modulated on to any carrier." Harris argues that the term means "a signal containing video information that is input to a transmitter's IF vision modulator (as opposed to a signal derived from the output of the IF vision modulator, which is referred to in claim 1 as a 'visual signal.')"

A "video signal" can be used to describe the video signal inputted into the IF vision modulator in the '904 patent. (Tr. 10/21/96 at 137.) In addition, an engineer of ordinary skill in the art would use the term "video signal" to describe a signal that had been derived from the output of an IF vision modulator. (Tr. 10/18/96 at 120.) Engineers of ordinary skill in the art use the term "video signal" to describe all sorts of signals that are

derived from the output of an IF vision modulator. Id. at 132.

The patent, however, does not use the term "video signal" to mean both types of signals. Claim 1 describes an aural carrier correction system for a common amplification television transmitter that includes "at least a[n] IF vision modulator for receiving a video signal and for outputting the visual signal." (Ex. DMX-1 at col. 6, lines 25-26.) The specification describes the term "video signal" as being "inputted to both the IF vision modulator 19 of the transmitter 12 and the video delay circuit 13 of the correction system 11." Id. at col. 3, lines 26-29. Figure 1 is consistent with these descriptions of the term.

The patent is clear that a "video signal" is television picture information that is inputted to the IF vision modulator and the video delay circuit. The term is used in no other context and has no other meaning in the patent. The court will adopt a modified version of Harris' proposed construction. FN5

FN5. The parties agree that the phrases "television picture information" in the Comark definition and "video information" in the Harris definition are interchangeable. (Def.'s Pre-Hr'g Mem. at 8 n.4; Pl.'s Post-Hr'g Mem. at 7 n.5.) The court is persuaded by Comark's suggestion that "television picture information" is more appropriate.

In addition, Harris' definition defines "video signal" as a signal "that is input to a transmitter's IF vision modulator." Because the specification of the '904 patent also provides that the signal also is input to the video delay circuit of the correction system, the court believes that both inputs should be part of the term's definition. The court will modify the definition accordingly.

2. "Video Delay Circuit"

Comark argues that the term "video delay circuit" means "a circuit which provides to the complementary non-linear amplifier a video signal which is delayed in time." Harris argues that the term means "a circuit element with no other purpose or effect than to delay a 'video signal,' to compensate for the large, unintentional delay inherent in a transmitter's IF vision modulator stage."

Claim 1 of the '904 patent describes "a video delay circuit for receiving and delaying the video signal to provide a delayed video signal." (Ex. DMX-1 at col. 6, lines 27-28.) The specification of the patent describes the video delay circuit as follows:

Because the video signal 25 is delayed by the IF vision modulator 19, the video delay circuit 13 is included to provide[] a similar delay of the video signal 25 so that there is a coincidence of the modified IF aural signal 28 with a visual signal 26, outputted by the IF vision modulator, at the adder 21.

Id. at col. 3, lines 29-34. This description appears almost verbatim in Claim 2. Id. at col. 6, lines 45-48. The fact that the "coincidence" requirement is in Claim 2 demonstrates that the "video delay circuit" of Claim 1 is different because it does not have this feature or any other limitation. Therefore, the court concludes that the "video delay circuit" claimed in Claim 1 is broader than the "video delay circuit" claimed in Claim 2. Claim 1 describes a more general delay circuit with no specific elements, functions, or objectives.

Harris' proposed definition is too narrow because the court does not find that the video delay circuit claimed in the '904 patent has only one purpose or effect or that the delay inherent in a transmitter's IF vision modulation stage is large or unintentional. Rather, Comark's definition is appropriate because it accurately describes the function of the circuit in the context of Claim 1: to provide to the complementary non-linear

amplifier a video signal which is delayed in time.

3. "Delayed Video Signal"

Comark and Harris agree that the term "delayed video signal" refers to a "video signal" that has passed through a "video delay circuit." (Pl.'s Proposed Findings of Fact and Conclusions of Law para. 9; Def.'s Pre-Hr'g Mem. at 12.) This definition incorporates the definitions of "delayed video signal" and "video signal."

4. "Non-Linear Phase Domain Video Signal"

Comark argues that the term "non-linear phase domain video signal" means "a video signal which is distorted in a non-linear way and fed to a phase modulator in order to phase modulate another signal." Harris contends that the term means "a video signal that has itself been 'phase modulated' in a non-linear manner, *i.e.,* intentionally distorted in phase."

The term "non-linear phase domain video signal" appears throughout the '904 patent, including Claims 1 and 14. The term "non-linear phase domain video signal" is not commonly used by persons with expertise in the field of television transmitter circuitry. (Tr. 10/18/96 at 87.) Claim 1 is clear that the amplitude and phase modulator receives the aural signal and amplitude and phase modulates that signal using the non-linear amplitude domain video signal and the non-linear phase domain video signal, respectively. (*See* Ex. DMX-1 at col. 6, lines 34-38.) The specification does not define the term. Rather, it describes its function by stating that

[t]he non-linear amplitude domain video signal 29 amplitude modulates the IF aural signal 33. The independently inputted non-linear phase domain video signal 31 then phase modulates the IF aural, to produce the modified IF aural signal 28 added to the visual signal at adder 21.

Id. at col. 3, lines 50-55. The use of the word "modulates" in these two locations suggests that the non-linear video signals generated in the non-linear amplifier are not modulated, but instead modulate the IF aural signal as they are inputted to the amplitude and phase modulator. *See* id. at Fig. 1.

The patent, however, is inconsistent in at least three places. Claim 15 recites: "A method according to Claim 14, wherein the aural signal added to the amplitude modulated non-linear amplitude domain video signal and the phase modulated non-linear phase domain video signal is an IF aural signal." Id. at col. 8, lines 23-27. Similarly, claim 18 describes a non-linear phase domain video signal that is modulated separately from the non-linear amplitude domain video signal. Id. at col. 8, lines 34-37.) Claim 19 describes "[a] method according to Claim 14, wherein the amplitude modulated non-linear amplitude domain video signal and the phase modulated non-linear phase domain video signal are added to the aural signal separately." Id. at col. 8, lines 38-42. The use of the word "modulated" in the past tense is evidence that the non-linear phase domain video signal already has been modulated *before* it is added to the IF aural signal.

Because the court cannot determine the meaning of the term "non-linear phase domain video signal" from the intrinsic evidence, it must examine the extrinsic evidence, such as expert testimony, to construe the term.

Modulation means varying one signal by means of another, so that any device with only one signal as input does not qualify as a modulator. (Tr. 10/21/96 at 83.) The non-linear amplifier has only one signal as input;

there is no second IF signal that could turn the amplifier into a modulator. Id. Therefore, the "non-linear phase domain video signal" that is generated in the complementary non-linear amplifier is not modulated. Rather, the signal is used to modulate the IF aural carrier in the amplitude and phase modulator.

This conclusion is supported by a diagram of the complementary non-linear amplifier. (Ex. DMX-1, Fig. 3.) A person of ordinary skill in the art would recognize the diagram as illustrating a non-linear amplifier that contains twin circuits that are clipping, stretching, and inverting the video signal, and not modulating it. (Tr. 10/21/96 at 86.) If the amplifier were modulating the video signal, there would be a third external unit to indicate what is being modulated. Id. at 85.

If the non-linear amplifier were to modulate the video signal, the invention described in the '904 patent would not work. Id. at 87. This is because it would be unable to compensate a signal that has been phase modulated and then subsequently phase modulate an aural carrier with it. Id. at 88-89. A video signal should not be phase modulated before it is applied as a non-linear signal used to modulate the aural IF carrier. Id. at 56. Thus, if the non-linear phase domain video signal is interpreted as having been phase modulated, then the corrector will not perform the necessary correction. Id.

The court will adopt Comark's proposed construction.

C. *Claim 14*

1. "Spectral Analysis"

Comark argues that the term "spectral analysis" means "analysis of a signal to determine its components over the range of frequencies of the relevant portion of the spectrum of the signal." Harris contends that the term means "analysis of a signal to determine its component frequencies in terms of amplitude and frequency over the range of frequencies for the relevant portion of the spectrum."

Neither the claims of the '904 patent nor its specification address the two issues in dispute: (1) whether spectral analysis requires identification of noise levels at each individual frequency or whether one can perform spectral analysis by looking at a band of frequencies; and (2) whether an oscilloscope is capable of performing a spectral analysis. (Pl.'s Post-Hr'g Mem. at 20; Def.'s Post-Hr'g Mem. at 23-33.)

The third step of the aural carrier correction method recited in Claim 14 requires "performing a spectral analysis of the demodulated aural signal to determine the presence and frequency of unwanted aural signal noise resulting from unwanted aural carrier modulation[.]" (Ex. DMX-1 at col. 8, lines 7-10.) Claim 20 also refers to this spectral analysis. Id. at col. 8, lines 43-50. The patent's specification states that the spectral analysis "determine[s] the presence and frequency of unwanted aural noise." Id. at col. 4, lines 8-11. The '904 patent depicts a flowchart of the method, step three states: "perform spectral analysis of demodulated aural signal to determine presence of unwanted aural signal noise." Id. at Fig. 2. Thus, while the patent describes the function of a spectral analysis, it sheds no light on whether it requires the identification of noise levels at each individual frequency or whether it can be done by looking at a band of frequencies.

Based on the expert testimony offered at the claim construction hearing, the court finds that "spectral analysis" is a process for determining the components of a signal at specific frequencies or at a band of frequencies. (Tr. 10/21/96 at 95.) The court will adopt Comark's proposed construction.

The court will decline to decide, as part of its claim construction analysis, whether the spectral analysis

claimed in the '904 patent can be performed by an oscilloscope. Whether an oscilloscope is capable of performing a spectral analysis has nothing to do with determining the meaning of "spectral analysis," which is the court's only task. The court believes that this is a question of fact to be decided by a jury, not a question of law that the court to be decided by the court in its interpretation of the disputed claims of the patent.

2. "Demodulated Aural Signal"

Comark argues that the term "demodulated aural signal" means "an aural signal that has been amplitude or frequency demodulated." Harris contends that the term means "an aural signal that has been FM demodulated."

Step two of Claim 14 provides for "demodulating the commonly amplified television transmission signal to provide a demodulated aural signal[.]" (Ex. DMX-1 at col. 8, lines 4-6.) Step three of Claim 14 provides for "performing a spectral analysis of the demodulated aural signal to determine the presence and frequency of unwanted aural signal noise resulting from unwanted aural carrier modulation[.]" Id. at col. 8, lines 11-16.)

One of ordinary skill in the art, upon reading the '904 patent, would understand that there are both amplitude and phase components of unwanted noise that have been cross-modulated onto the aural signal. (Tr. 10/21/96 at 106, 127.) To identify the amplitude components of the unwanted noise, one of ordinary skill in the art would perform an amplitude demodulation of the aural signal. Id. at 106, 127. To identify the phase components of the unwanted noise, one of ordinary skill in the art would perform a frequency demodulation of the aural signal. Id. at 106, 127.

The court will adopt Comark's proposed construction.

3. "Non-Linear Phase Domain Video Signal"

In Part II.B.3. *supra,* the court stated that it will adopt Comark's proposed construction. Thus, the term "non-linear phase domain video signal" means a video signal which is distorted in a non-linear way and fed to a phase modulator in order to phase modulate another signal.

4. Sequence of Steps

Comark argues that Steps 4, 5, and 6 "set forth an iterative process of successive adjustments to the correction signals by application of a trial and error process." Comark takes the position that the method is a continuous adjustment of the non-linear amplitude domain and phase domain correction signals, determined by application of those correction signals to the aural signal and observation of the demodulated modified aural signal until the noise levels have been reduced to a minimum.

Harris contends that Step 4 "includes a procedure of attempting to make each correction signal 'directly opposite' to the unwanted components of the aural signal, and is a step that must be performed" before Steps 5 and 6. Harris asserts that the process is not iterative or successive, but rather that the two non-linear amplitude domain correction signals are generated only once, in Step 4 of the process. Harris argues that the proper construction of Claim 14 is that there is no Step 7 that, if the noise level is unacceptable, would require successive generations of non-linear correction signals to reduce the unwanted noise.

Claim 14 describes a six-step "method for reducing unwanted aural carrier modulation caused by a video

signal in a common amplification television transmitter which amplifies both an aural signal and a visual signal simultaneously." (Ex. DMX-1, Col. 7, lines 46-50.) The first three steps in this method describe the mixing of an aural carrier with an amplitude modulated video signal to generate a commonly amplified television transmission signal; the demodulation of this signal to provide a demodulated aural signal; and the performance of a spectral analysis of the demodulated aural signal to determine the presence and frequency of unwanted aural signal noise resulting from unwanted aural carrier modulation. The fourth, fifth, and sixth steps in the process are as follows:

[4] generating a non-linear amplitude domain video signal and a non-linear phase domain video signal which respectively having amplitude and phase components that are directly opposite to unwanted amplitude and phase components added to the aural signal by the video signal;

[5] amplitude and phase modulating the aural signal using the non-linear amplitude domain video signal and the non-linear phase domain video signal, respectively, to generate a modified aural signal; and

[6] adding the modified aural signal to the visual signal in the transmitter.

Id. at col. 8, lines 11-22.

The specification and illustrations in the '904 patent, however, describe a seven-step method. The specification states that the adjustment procedure of step four as "basically performed by a trial and error adjustment of the non-linear amplifier .... so that the unwanted noise in the aural signal is reduced." Id. at col. 4, lines 16-20. The specification, referring to Figure 2, also states: "The unwanted noise in the demodulated aural signal from the television transmitter 12 is then checked for noise in Step 7, i.e., a spectral analysis of the aural signal is performed as in Step 3, and the adjustment procedure, beginning with Step 4, is repeated if the noise level is unacceptable and if the noise level is acceptable, the adjustment procedure is terminated." Id. at col. 4, lines 27-34.

In Figure 2, the first three steps of the process require the mixing of a clean audio carrier with the amplitude modulated video carrier to generate a commonly amplified television signal; the demodulation of the commonly amplified video signal; and the performance of a spectral analysis of the demodulated aural signal to determine the presence of unwanted aural signal noise. Steps 4, 5, and 6 are as follows:

[4] adjust non-linear amplifier to generate two separate non-linear video signals, i.e. one non-linear signal each for both the amplitude and phase domains, which reduce unwanted noise in the aural signal as determined by spectral analysis of the demodulated aural signal[;]

[5] add amplitude modulated non-linear video signal related to amplitude domain and phase modulated non-linear video signal related to phase domain to the aural signal to produce composite signal[;]

[6] add composite aural signal to be modulated by a T.V. visual signal to reduce unwanted noise in aural signal[.]

Id. at Fig. 2. The seventh and final step then asks: "Is noise level of demodulated aural signal acceptable?" Id. If the answer is yes, an arrow points to a box labeled "end." Id. If the answer is no, an arrow points to the box labeled "step 4." Id.

The seven-step procedure is described as the "preferred embodiment" of the invention, not the only embodiment. *See* id. at col. 3, lines 13-14. The method as described in Claim 14 is broader because it requires that there would be at least one pass through the six steps. It does not foreclose the possibility that there could be more than one pass through the adjustment procedure. The specification explicitly teaches that, upon checking the demodulated aural signal for noise, the adjustment process, beginning with Step 4, is "repeated" if the noise level is unacceptable. Therefore, the successive passes through the process contemplated by the specification and Figure 2 are not inconsistent with the method as claimed in Claim 14.

The court will adopt Comark's proposed construction.

III. *CONCLUSIONS OF LAW*

The term "video signal" in Claim 1 means a signal containing television picture information that is input to the transmitter's IF vision modulator and the video delay circuit.

The term "video delay circuit" in Claim 1 means a circuit that provides to the complementary non-linear amplifier a video signal that is delayed in time.

The term "delayed video signal" in Claim 1 means a "video signal" that has passed through a "video delay circuit."

The term "non-linear phase domain video signal" in Claims 1 and 14 means a video signal which is distorted in a non-linear way and fed to a phase modulator in order to phase modulate another signal.

The term "spectral analysis" in Claim 14 means a process for determining the components of a signal at specific frequencies or at a band of frequencies.

The term "demodulated aural signal" in Claim 14 means an aural signal that has been amplitude demodulated or frequency demodulated.

The fourth, fifth, and sixth steps in Claim 14 set forth an iterative process of successive adjustments to the correction signals by application of a trial and error process.

ORDER

AND NOW, TO WIT, this 24th day of February, 1997, upon consideration of Defendant's Motion to Strike Plaintiff Comark's Post-Markman Hearing Memorandum and "Revised Definitions" or in the Alternative for Leave to File a Reply Memorandum, and Plaintiff's opposition thereto, IT IS ORDERED that said motion is GRANTED IN PART AND DENIED IN PART, as follows: (1) the request to strike the "Revised Definitions" is *granted;* (2) the request to strike the entire document is *denied;* and (3) the request to file a reply memorandum is *denied*.

Upon consideration of Defendant's Motion to Strike Comark's Supplemental Memorandum in Support of its Motion to Strike Surprise Expert Testimony or in the Alternative for Leave to File a Reply, and Plaintiff's opposition thereto, IT IS ORDERED that said motion is GRANTED. Plaintiff's Supplemental Memorandum in Support of its Motion to Strike Surprise Expert Testimony (docket # 119) is *stricken*.

E.D.Pa.,1997.

Comark Communications, Inc. v. Harris Corp.