

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LG ELECTRONICS, INC.

Petitioner

v.

MONDIS TECHNOLOGY LTD.

Patent Owner

Case No.: IPR2015-00938

U.S. Patent No. 6,549,970

DECLARATION OF ADAM GOLDBERG

**IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW OF U.S.
PATENT NO. 6,549,970**

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I, Adam Goldberg, declare as follows:

I. INTRODUCTION

1. I have been retained by Mayer Brown, LLP on behalf of Petitioner LG Electronics, Inc. (“LGE” or “Petitioner”) as an independent expert to review U.S. Patent Nos. 6,513,088 (“the ’088 Patent”), 6,549,970 (“the ’970 Patent”), 6,639,588 (“the ’588 Patent”), 7,089,342 (“the ’342 Patent”), and 7,475,180 (“the ’180 Patent”) (collectively “the Mondis Patents”) in connection with the *Inter Partes* reviews and *Ex Parte* Reexamination of these patents (collectively, the “Proceedings”) before the Patent Trial and Appeal Board of the United States Patent and Trademark Office (PTAB). I have been asked by Petitioner to evaluate the disclosure and claims of the Mondis Patents in view of the prior art and to opine as to the validity of Mondis Patents.

2. I understand that claims 3 and 4 of the ’088 Patent, claim 22 of the ’970 Patent, claim 15 of the ’342 Patent, claims 14-16 of the ’180 Patent, and claim 1 of the ’588 Patent have been asserted by Patent Owner Mondis Technology Ltd. (“Mondis”) against Petitioner in the co-pending litigation *Mondis Technology Ltd., v. LG Electronics, Inc. and LG Electronics U.S.A., Inc.*, Civil Action No. 2:14-cv-00702-JRG, in the United States District Court for the Eastern District of Texas, Marshall Division.

3. I also understand that the Mondis Patents have been and/or are currently subject *ex parte* reexaminations and/or *inter partes* reexaminations having

Control Nos. 95/000,459, 90/013,391, 95/000,457, 90/013,388, 95/000,458, 90/013,238, 95/000,480, 90/013,237, 90/013,390, 95/000,455, and 90/013,392.

A. Summary of Opinions Regarding the '970 Patent

4. It is my opinion that all of the features of claims 1-17, 22, 24, 26, and 29 of the '970 Patent are taught or suggested by the prior art discussed below, and that claim 1-17, 22, 24, 26, and 29 of the '970 Patent are invalid under 35 U.S.C. § 102 as anticipated by this prior art, and are further invalid under 35 U.S.C. § 103 as obvious in view of this prior art.

B. Qualifications

5. I am an independent consultant. All of my opinions stated in this declaration are based on my own personal knowledge and professional judgment. I am over 18 years of age and, if I am called upon to do so, I would be competent to testify as to the matters set forth herein.

6. In the following paragraphs I provide a brief overview of some of my experience that is relevant to the matters set forth in this declaration. Full descriptions of my educational background, professional achievements, qualifications, and publications in the past 10 years, including published articles and patents, are set forth in my *curriculum vitae*, which is attached as Exhibit 1031.

7. I have been involved in digital television engineering for more than 20 years. I am a private consultant and principal of AGP, LLC, a firm specializing in engineering consultation on audio/video silicon products, real-time operating system

programming and development, television and set-top box development, audio/video compression systems development and architecture, and the electronic intricacies of television broadcasting, and internet technologies. Additionally, I have extensive experience participating in multi-industry forums, chairing and participating in technical standards committees, including those for the consumer electronics and television broadcasting industries, and policy and strategy-forming groups, including international groups—all relating to the aforementioned technologies.

8. I have been an active participant in ATSC standards activities since 1997, and Consumer Electronics Association (CEA) standards activities since 1998. During that time, I have been an active participant in Advanced Televisions Systems Committee (ATSC) subgroup T3/S8 and am currently the chairman of CEA R4.3 (“Television Data Systems”) and ATSC TG1/S7 and TG3/S36 (which develop standards relating to digital broadcast television). I have previously been elected the vice-chair of the CEA Technology and Standards Committee, which is the committee that directs CEA’s standards activities. In 2007, I was elected to the Board of Directors of the ATSC, which is responsible for the full scope of operations of the ATSC.

9. While Vice President of Government and Industry Affairs at Pioneer North America, I chaired the consumer electronics industry’s negotiations with the cable television industry on compatibility of retail devices with cable networks. I was also Pioneer’s representative on the Consumer Electronics Association’s Video Board,

chaired the Consumer Electronics Association's Television Manufacturer's Caucus (TVMC), and was elected vice-chair of the CEA Technology & Standards Council (2009 term). As I said in the previous paragraph, I was also elected a member of the Advanced Television Systems Committee (ATSC) Board of Directors. While the Director of Television Standards & Policy Development at Sharp Laboratories of America, I was the primary standards representative to ATSC, SCTE, and CEA standards developing committees. I was also Co-Chair of the Copy Protection Technical Working Group (CPTWG), and participant in DVB Copy Protection activities and other international organizations. While a staff engineer at Harmonic, Inc., I was the primary architect and editor of the ATSC Standard for Conditional Access (ATSC A/70) and subsequently, as a consultant and chair of ATSC TG1/S7, oversaw the development of a significant expansion of ATSC A/70. I was also a key member of Harmonic's corporate standards activities. I was the primary delegate to the Digital Video Broadcasting Project (DVB) (and was chair of DVB Simulcrypt committee) and co-founder of OpenCASTTM. I was a technical representative to standards organization, including CEA, the Society of Motion Picture and Television Engineers (SMPTE), the Digital Audio-Visual Industry Council (DAVIC) and TVAnytime. In each of these positions, I participated in standards-setting for digital television technologies.

10. In 2015, I was named to the Federal Communications Commission's (FCC) Downloadable Security Technical Advisory Committee. In 2011, I was named an alternate to the FCC's Video Programming Accessibility Advisory Committee.

11. I received a B.S. in Computer Science from Iowa State University in 1992, where I took courses in software engineering, computer architecture, and related fields. From 1992 to 1995, I worked as a Senior Software Engineer at Microware Systems Corporation in Des Moines, Iowa, as part of a team that developed one of the first "middleware" software products for digital television. From 1995 to 2000, I worked as a Staff Engineer at DiviCom, Inc., which was acquired by C-Cube Microsystems in Milpitas, CA, and the division I worked in was sold to Harmonic Systems Corp. in Sunnyvale, CA. I led a team porting software to new a processor and an operating system. I was also a member of a VLSI silicon design team that was designing a digital set-top box system on chip (STB SOC). I was also a member of a software team successful in bringing a multiple network digital set-top box to production—this set-top box was designed to be a set-top box for multiple different network types, including terrestrial broadcast, satellite and telephone networks. My duties included system design and architecture, portions of network stacks, MPEG decoder driver, MPEG decoder chip microcode specification, DAC controls (analog-digital switching, Macrovision copy protection issues), lab network design, vendor and customer interaction. I was also a key member of the corporate architectural decision making team. I analyzed end-to-end digital and hybrid television

systems (contribution, distribution and emission) including reference model design and critical gap analysis. I also led a team developing architecture of event-based scheduling of equipment reconfiguration feature.

12. From 2000 to 2001, I worked as a Director at Exodus Communications in Santa Clara, CA. I built a technical advisory and architectural team to explore new technologies and develop applications of the technologies to new managed services (and other higher value-add) product offerings. I consulted with product development organization on implementation details. I monitored relevant standards organizations (*e.g.*, IETF) and industry trends.

13. From 2001 to 2006, I worked as Director, Standards and Policy Development at Sharp Laboratories of America and was responsible for digital television standards and technology. In addition to the standards work I mentioned previously, I also coordinated and directed television-related public policy activities, including interaction with the FCC, Federal and State Legislatures, and other government agencies. I coordinated and directed television-related standards activities in the United States, including digital television, cable television and copy protection issues. I also was a liaison between Sharp Corporation world-wide and United States television and related standards activities (including Copy Protection technical, business, legal and public policy matters). I was a significant contributor to the industry "Cable-Ready Plug & Play" technical specifications and negotiations, and to ATSC Enhanced 8-VSB (E-VSB) signaling issues.

14. From 2006 to 2008, I was Vice President, Government and Industry Relations at Pioneer Electronics (USA), Inc. I continued in the extensive standards work mentioned above, and additionally I was head of Pioneer's Washington office. I was the primary Federal representative for Pioneer's home and mobile entertainment divisions, including the division that produced and marketed televisions. I investigated technologies and their impact on public policy, and public policy's impact on products. I coordinated and developed technology policy positions with international and domestic internal clients, including legal, senior executives and operations. I coordinated, directed and implemented regulatory and lobbying activities to implement those policies. I participated in various industry coalitions and trade groups representing Pioneer's interests. I participated in state and federal government workshops, stakeholder meetings and similar forums representing Pioneer's interests. I initiated, developed, planed and implemented technology demonstrations to government decision-makers.

15. From 2008 to the present, I have been the Principal of AGP, LLC, a consultancy company focused on digital television. My clients have included TiVo, Comcast, Mitsubishi, Rovi and NagraVision.

16. During the last ten years, I have authored or co-authored the following publications in the digital television area:

- a) Goldberg, Adam, "CEA Publishes Recommended Practice on A/V Synchronization Implementation in Receivers", NAB TechCheck, August 3, 2009;

- b) B. J. Lechner, R. Chernock, M. K. Eyer, A. Goldberg and M. S. Goldman, "The ATSC Transport Layer, Including Program and System Information Protocol (PSIP)", Proceedings of the IEEE Special Issue on Global Digital Television: Technology and Emerging Services, vol. 94, no. 1, pp. 77-101, Jan. 2006; and
- c) J. G. N. Henderson, M. S. Deiss, A. Goldberg, B. Markwalter, M. Muterspaugh, and A. Touzni, "ATSC DTV Receiver Implementation," Proceedings of the IEEE Special Issue on Global Digital Television: Technology and Emerging Services, vol. 94, no. 1, pp. 119-147, Jan. 2006

17. I am also the named inventor on United States Patent No. 6,097,439, entitled "Omnibus closed captioning decoder for encoded video."

18. I have testified as an expert for the defendants in a deposition in the following case: *Wi-Lan, Inc. v. LG Electronics, Inc. and LG Electronics U.S.A., Inc.*, Southern District of New York, 10 Civ. 432 (LAK) (AJP), which related to v-chip technologies in televisions. I have testified as an expert for the plaintiffs in a deposition and at trial in the following case: *Hitachi Consumer Electronics Co. Ltd, et al. v. Top Victory Electronics (Taiwan) Co., Ltd, et al.*, Eastern District of Texas, 10 Civ. 260 (JRG), which related to television technologies; and by expert report and declarations in *Zenith Electronics LLC, Panasonic Corp., U.S. Philips Corp., and The Trustees of Columbia University in the City of New York v. Craig Electronics Inc.*, Southern District of Florida, 9:13-cv-80567 (DMM) and *Suomen Colorize Oy v. Verizon Services Corp. et al.*, District of Delaware, 12 Civ. 715(CJB). In addition I submitted a declaration for the Plaintiffs in the following case: *Zenith Electronics LLC, et al v. Sceptre, Central District of California*, 2:14-cv-05150-JAK (ADW), which related to television technology.

19. I consider myself to be an expert in the field of televisions, signal transmission, ATSC, on-screen displays, Plug & Play specifications, automatic device recognition techniques, and the subject matter of the Mondis Patents.

20. I am not an employee of Petitioner or any affiliate or subsidiary thereof.

21. I am being compensated for my work on this case at my standard consulting rate of \$425 per hour. I am also being reimbursed for expenses that I incur. My compensation is not contingent upon the results of my study, the substance of my testimony, or the outcome of this case.

C. Basis and Support for My Opinions

22. In forming my opinions, I have considered the specifications, including Abstract, figures, and the claim language, of the Mondis Patents. I have also reviewed the file histories of each of these patents and the file histories of the prior *ex parte* reexaminations and *inter partes* reexaminations of these patents.

23. I have considered the disclosures of these patents and the file histories as would have been understood by a person having ordinary skill in the art.

24. In forming my opinions, I have relied on my personal knowledge and professional experience in designing, developing, deploying, or using television technology including, for example, the Plug & Play feature of televisions. I have also relied on the documents and information referenced in this declaration.

25. This declaration explains, based on facts and information available to me to date, the subject matter and opinions related to the Proceedings. As such, I am

prepared to provide expert testimony regarding opinions formed resulting from my analysis of the issues considered in this declaration if asked about those issues by the Board or by the private parties' attorneys.

26. Additionally, I may discuss my own work, teachings, and knowledge of the state of the art in the relevant time period. I may rely on handbooks, textbooks, technical literature, and the like to demonstrate the state of the art in the relevant period and the evolution of relevant technologies.

27. Throughout this declaration, I refer to specific pages of the patents and other documents. The citations are intended to be exemplary and are not intended to convey that the citations are the only source of evidence to support the propositions for which they are cited.

II. LEGAL UNDERSTANDINGS

28. In this section I describe my understanding of certain legal standards that I have relied upon in forming my opinions set forth in this declaration. I have been informed of these legal standards by Mayer Brown attorneys. I am not an attorney and I have not researched the law on patent invalidity. I am relying only on instructions from Mayer Brown attorneys for these legal standards.

A. Person of Ordinary Skill in the Art

29. I understand that a person having ordinary skill in the art is a hypothetical person who is considered to have the normal skills and knowledge of a person in a certain technical field. A person of ordinary skill in the art is presumed to

be one who thinks along the lines of conventional wisdom in the art and is not one who undertakes to innovate, whether by extraordinary insights or by patient and often expensive systematic research.

B. Claim Construction

30. I have been instructed by counsel that claim construction is a matter of law for the arbiter of law to decide. Further, I have been instructed by counsel that for the purposes of *inter partes* review or *ex parte* reexamination of unexpired patents, claim terms should be given their broadest reasonable construction consistent with the patent in which the terms are used. The '970 Patent is expired. Thus, I have been instructed the claims should be construed in a fashion similar to that used in a district court's review, and should be given their ordinary and custom meaning.

31. I understand that a patent may include two types of claims, independent claims and dependent claims. An independent claim stands alone and includes only the limitations it recites. A dependent claim can depend from an independent claim or another dependent claim. I understand that a dependent claim includes all the limitations that it recites in addition to all of the limitations recited in the claim from which it depends.

C. Legal Standard for Anticipation Under 35 U.S.C. § 102

32. I understand that the following standards govern the determination of whether a patent claim is "anticipated" by the prior art. I have applied these standards

in my analysis of whether claims of the Mondis Patents were anticipated at the time of the invention.

33. I understand that a patent claim is “anticipated” by a single prior art reference if that reference discloses each element of the claim in a single embodiment. A prior art reference may anticipate a claim inherently if an element is not expressly stated, if the prior art necessarily includes the claim limitations.

D. Legal Standard for Obviousness Under 35 U.S.C. § 103

34. I understand that a claim can be invalid in view of prior art if the differences between the subject matter claimed and the prior art are such that the claimed subject matter as a whole would have been “obvious” at the time the invention was made to a person having ordinary skill in the art.

35. I understand that the obviousness standard is defined at 35 U.S.C. § 103(a). I understand that a claim is obvious over a prior art reference if that reference, combined with the knowledge of one skilled in the art or other prior art references, discloses each and every element of the recited claim.

36. I also understand that the relevant inquiry into obviousness requires consideration of four factors:

- a) The scope and content of the prior art;
- b) The differences between the prior art and the claims at issue;
- c) The knowledge of a person of ordinary skill in the pertinent art; and
- d) Objective factors indicating obviousness or non-obviousness may be present in any particular case, such factors including commercial

success of products covered by the patent claims; a long-felt need for the invention; failed attempts by others to make the invention; copying of the invention by others in the field; unexpected results achieved by the invention; praise of the invention by the infringer or others in the field; the taking of licenses under the patent by others; expressions of surprise by experts and those skilled in the art at the making of the invention; and that the patentee proceeded contrary to the accepted wisdom of the prior art.

37. I understand that when combining two or more references, one should consider whether a teaching, suggestion, or motivation to combine the references exists so as to avoid impermissible hindsight. I have been informed that the application of the teaching, suggestion or motivation test should not be rigidly applied, but rather is an expansive and flexible test. For example, I have been informed that the common sense of a person of ordinary skill in the art can serve as motivation for combining references.

38. I understand that the content of a patent or other printed publication should be interpreted the way a person of ordinary skill in the art would have interpreted the reference as of the effective filing date of the patent application for the '053 Patent. I have assumed that the person of ordinary skill is a hypothetical person who is presumed to be aware of all the pertinent information that qualifies as prior art. In addition, the person of ordinary skill in the art makes inferences and creative steps. He or she is not an automaton, but has ordinary creativity.

39. I have been informed that the application that issued as the '970 patent claims priority from several applications, with the earliest application having a filing

date of February 10, 1993. As a result, I will assume the relevant time period for determining what one of ordinary skill in the art knew in the 1992-1993 timeframe.

E. Level of Ordinary Skill in the Art

40. I have been asked to opine on the level of ordinary skill in the art in the 1992-1993 timeframe.

41. It is my opinion that, in the 1992-1993 timeframe, a person of ordinary skill in the art relating to the '970 Patent would be someone with a Bachelor's degree in Electrical Engineering, Computer Science, or someone having equivalent work experience.

42. Based on my experience and knowledge, I consider myself to have been a person with at least ordinary skill in the art with respect to the field of technology found in the '970 Patent in the 1992-1993 timeframe.

III. TECHNOLOGY BACKGROUND

43. Below I have included information that provides a technical background on the state of the art around and before 1993 that can be helpful in understanding technical matters of my analyses and provides an overview of the technology at issue in this case. This overview also provides what I believe to have been the general understanding of a person of ordinary skill in the art around and before 1993, when the foreign priority application on which the '970 Patent is based was filed. While I may not specifically refer back to this section each time I provide my opinions in

Section IV, I am relying on this section and my knowledge while providing my opinions.

A. Video Display Control Circuitry

44. In the period leading up to February 1993 (*i.e.*, in the period prior to the alleged priority date for the '088 Patent, the '970 Patent, the '342 Patent, and the '180 Patent, video display control circuits evolved from analog to digital. As part of this process, serial bus interfaces, including I²C interfaces, were employed to provide connectivity between the internal components of a display. (*See, e.g.*, Philips Semiconductor Application Note AN442 ("AN442"), dated December 1991, and entitled "Specification for a Bus-Controlled Monitor"; VDDP VESA Display Definition Protocol, Draft 5.05, dated July 24, 1992; Japanese Published Patent Application H4-37787 to Takahashi et al. ("Takahashi"); EP 0 456 923 to Sawdon ("Sawdon"); U.S. Patent No. 4,710,917 to Tompkins ("Tompkins"); U.S. Patent No. 5,285,197 to Schmidt ("Schmidt"); and U.S. Patent No. 5,216,504 to Webb ("Webb").)

45. These monitors did away with the need for potentiometer controls for display parameters, such as brightness, position, and contrast. Instead, digital values for such parameters were stored in memory (*e.g.*, in an EEPROM) and accessed by the monitor control circuitry over, *e.g.*, a serial I²C bus. (*See, e.g.*, Ex. 1018 at p. 1.) The stored parameters could also be changed via a "keyboard" located on the display. (*See, e.g.*, Ex. 1017 at pp. 1-3; Ex. 1009 at p. 4.)

46. Once monitor control became digital, persons of ordinary skill in the art recognized quickly that the internal monitor bus could be accessed externally and that changes in monitor parameters could be implemented from an external source, such as a personal computer (PC) or remote control. For example, U.S. Patent No. 6,639,588 also explains that conventional displays prior to 1992 included “a memory in which information relative to display positions and sizes of the picture is stored for each kind of video signals and which is controlled by a microcomputer in that display unit. The information relative to the optimum display position and size of the picture in accordance with an input video signals are read out from the memory and a deflection circuit of the display unit is controlled by the read-out information.” (Ex. 1001 at 1:33-41.) Thus, the '588 Patent recognizes that the state of the art included display devices such that the configuration of the display device including display positions and/or sizes of the picture could be adjusted under the control of a microcomputer and configuration data stored in a memory of the display device.

47. Communication interfaces, including the RS-232 and the I²C interfaces, allowed persons of skill in the art to enable bi-directional communication between display devices (*e.g.*, monitors, televisions) and external computers (*e.g.*, keyboard, PC, remote control) such that a user could adjust or control the display devices by using the external computer. For example, the publication “The I²C-bus and How to Use It,” dated January 1992 (“I²C Specification”) Takahashi indicates that a display computer component could be coupled together via an I²C bus. (*See* Ex. 1017 at pp.

7, 27 (disclosing that the I²C bus is a cheap alternative for the RS-232C protocol for connecting a peripheral device to a host computer).)

48. Takahashi also expressly states that “the screen size, brightness, hue, focus, contrast, distortion, etc., of the display device 10 are adjusted . . . through the signal generator 30 of a personal computer, etc., or remote control unit 40.” (Ex. 1017 at Constitution (emphasis added¹).) Similarly, Sawdon discloses a display adapter, external to the display device, that sends control signals to display device 88 to configure display. (Ex. 1020 at 3:50-4:25.)

B. Evolution of Display Calibration

49. In a related aspect of display system’s development prior to 1993, persons of ordinary skill in the art had also explored ways to use feedback from a display to calibrate the display and set parameters on the display. As far back as 1984, persons of ordinary skill in the art examined this design and its functionality. For example, a paper from the 1984 International Conference on Industrial Electronics Control and Instrumentation entitled “Automatic Evaluation System for CPT Picture Characteristics,” authored by Uno, Douji, Inoue, and Goto, Manufacturing Engineering Lab, Toshiba Corp. (“IECON ’84”) (Ex. 1021, outlined a system, which was used to calibrate display monitors:

More precise inspection or evaluation system for CPT (Color Picture Tube) must be considered to get more beautiful TV picture and displays for computer terminals.

¹ Unless otherwise indicated all emphasis in quotations is added.

The system installed a visual sensor, a high speed image processing unit and minicomputer, has great advantages in an evaluation accuracy and a processing speed compared with conventional manual methods.

(Ex. 1021 at p. 3.)

50. U.S. Patent No. 4,654,706 to Davidson et al. (“Davidson”) (Ex. 1022) also described a system similar to IECON ’84. The system in Davidson was for calibrating monitors: “[t]his invention relates to a structure to automatically adjust the image characteristics of a television set or monitor as one of the final steps in a manufacturing process and a method for effecting the adjustments and tests which can be practiced by the structure.” (Ex. 1022 at Abstract.)

51. In addition, an article from the IEEE 1988 International Conference on Consumer Electronics entitled “Automatic Alignment Techniques for Color Television Manufacturing,” authored by Leonard I. Suckle, Motorola, Inc. (“IEEE 1988”) (Ex. 1023) also described an automated calibration system:

A technique has been proposed to automatically align a color television designed with a new family of integrated circuits which incorporate internal control registers which may be set via a serial bus. By using a video camera as the feedback element, a fast, accurate alignment of nearly all of the parameters adjusted in final test may be obtained.

(Ex. 1023 at p. 6.)

52. These calibration systems offered a variety of advantages including “faster alignment time, less labor costs, and more alignment repeatability.” (Ex. 1023

at p. 3). These advantages are made possible by electronic control of adjustments via a computer interface bus.

53. To achieve these goals while communication interfaces, memory, and processors were still largely inadequate for the task, the systems required were extremely complex. They used cameras and scanners to monitor the image on the display and then used separate computer systems to adjust it. As improvements occurred in communication interfaces, memory, and processors, persons of ordinary skill in the art naturally moved to simpler and less expensive solutions to automatically adjust display settings and parameters, specifically using bi-directional communication interfaces as they became available and common. Once the monitors were being digitally controlled, the next logical step was to couple a controlling computer to the communication interfaces of the display (or to the internal bus of the display) to access the stored parameters and adjust them as needed.

54. Indeed, that was exactly what persons of ordinary skill in the art had accomplished prior to the priority date of the '970 Patent. For example, Takahashi, Webb, and Sawdon disclose external computers that could be coupled to a display device for automatic display alignment, including adjusting the display's contrast, brightness, image position, image size, etc. (*See, e.g.*, Ex. 1017 at pp. 4 and 6; Ex. 1024 at Abstract, Fig. 1; Ex. 1020 at Fig. 1, 4:20-39.) These references also recognize that control parameter inputs could be made by a user through a keyboard. (*See, e.g.*, Ex. 1017 at pp. 4 and 6; Ex. 1024 at Abstract, 1:15-17.)

55. Thus, prior to 1993, one of ordinary skill in the art was aware of using an external computer to send control signals to adjust the image being displayed by the display device.

C. Bi-Directional Interfaces Including Acknowledgement Signals

56. As discussed above, prior to 1993, various interfaces existed that enabled bi-directional communication between, for example, display devices and external computers. One example of a bi-directional exchange includes an external computer sending a signal to a display device and the display device confirming receipt of the signal by sending an acknowledgment signal, reception confirmation signal, and/or a monitor response signal.

57. The publications “The I²C-bus and How to Use It” (“the I²C Specification”) (Ex. 1019), “EIA-232-C” (“the RS-232C Specification”) (Ex. 1025, “IEEE-488” (“the IEEE-488 Specification”) (Ex. 1026), and “Small Computer System Interface” (“the SCSI Specification”) (Ex. 1027) each describe a bi-directional communication standard and interface that utilizes a form of handshake and, in particular provides for the use of the “acknowledge,” “feedback,” or “reception confirmation” signals. (*See, e.g.*, Ex. 1019 at pp. 11-12; Ex. 1025 at p. 18 (“Circuit CF” and “Circuit CG”); Ex. 1026 at pp. 10 (“handshake cycle”), 14 (Section 1.4.3 (“NDAC”)), and 21-29 (Sections 2.3 and 2.4); and Ex. 1027 at p. 37 (“The information transfer phases use one or more REQ/ACK handshakes to control the information transfer. . .”).)

58. The I²C protocol promulgated by Philips and incorporated in the monitor described in AN442, provided for bi-directional data communication and reception confirmation. (*See, e.g.*, Ex. 1019 at p. 11.) The I²C standard expressly provides for the use of acknowledge signals. Such signals are used to confirm receipt of bytes of data and other information by a slave-receiver circuit. A lack of such confirmation signals indicates to the master circuit that, for example, the slave-receiver circuit cannot receive data because it is performing some other real-time function. (*See* Ex. 1019 at p. 11 (“Section 6.2”).) Thus, when a receiver is unavailable or busy, it will not generate an acknowledge signal.

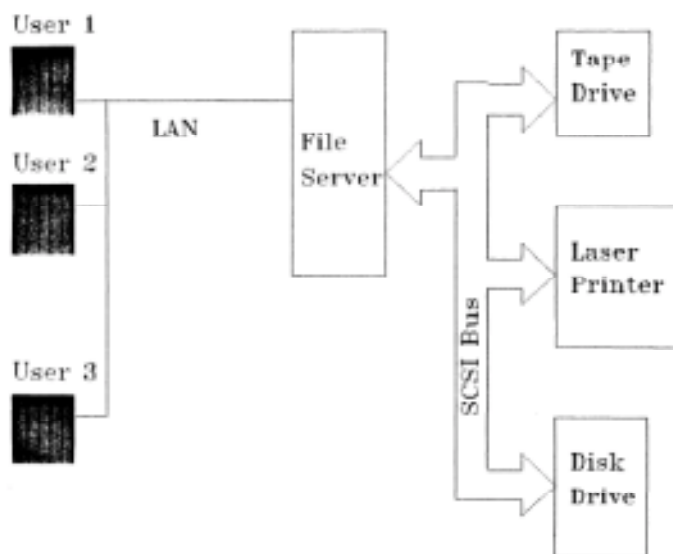
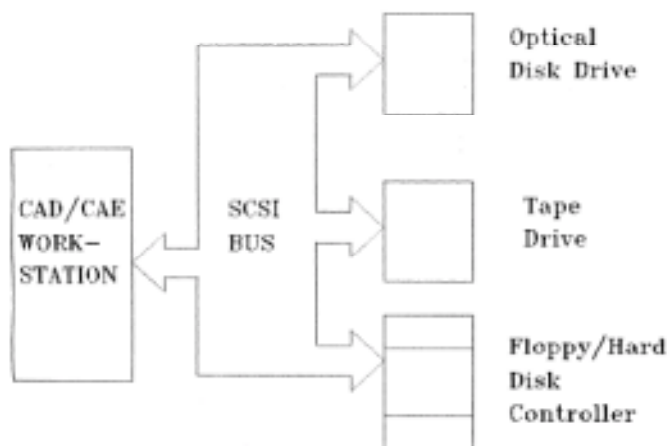
59. The RS-232C protocol is an EIA Standard of an “Interface Between Data Terminal Equipment And Data Communication Equipment Employing Serial Binary Data Interchange.” (Ex. 1025 at 4.) RS-232C identifies a standard that is applicable to an interconnection between two devices such that the devices can exchange data using a data communication link or bus that operates consistent with this standard. (Ex. 1025 at p. 9.) RS-232C identifies a standard that provides data communication between two devices using serial binary data interchange. (Ex. 1025 at p. 6.) RS-232C describes how a device transmits data and receives data to and from another device. (Ex. 1025 at pp.16-18.)

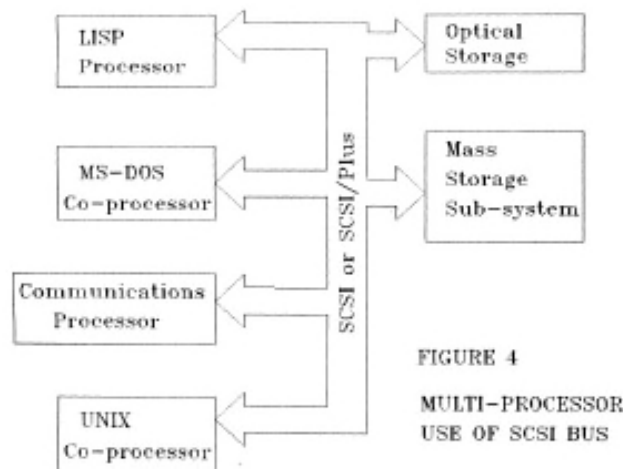
60. RS-232C discloses acknowledgement signals such that a receiving device can send a feedback signal to a sending device to acknowledge the receipt of a signal as part of a handshake protocol that provides an acknowledgment signal. (Ex. 1025 at

p. 18.) For example, the RS-232C protocol has a circuit named “Received Line Signal Detector.” (Ex. 1025 at p. 18.) RS-232C protocol specifies that upon receiving a data signal sent from a data transmission equipment (DTE), a data circuit termination equipment (DCE) sends a signal on the “Received Line Signal Detect” to the DTE to confirm its receipt of the data signal. (Ex. 1025 at p. 18.)

61. RS-232C discloses acknowledgement signals such that a sending device can request the attention of a receiving device, using the “Request to Send” signal, which signals to the receiving device that the sending device has data to send. (Ex. 1025 at p.15.) The receiving device acknowledges the request from the sending device using the “Clear to Send” signal, which indicates that the receiving device is ready to receive data (e.g., for further transmission). (Ex. 1025 at p.16.)

62. The SCSI standard discloses a bi-directional communication protocol that supports the communications between a host computer and a peripheral device such as a display monitor. Communication takes place between an initiator and a target with SCSI. (Ex. 1027 at pp. 14-15.) The initiator sends a command to the target and the target returns a status code. (Ex. 1027 at pp. 38-39 (Section 5.1.8).) The SCSI standard also uses REQ/ACK handshakes to control information transfer during the information transfer phase. (Ex. 1027 at p. 37.) For example, the following Figures from an October 1985 NCR publication titled “SCSI Engineering Notebook” (Ex. 1023) show the use of SCSI busses for bi-directional communication in various configurations. (Ex. 1028 at pp. 33-36.)





63. The SCSI specification describes mechanisms where a command is sent from an initiator to a target, the target acknowledges the command then disconnects from the initiator. Subsequently, when the command operation has completed, the target connects to the initiator, acknowledges that the command has now completed and supplies the result of the operation. (Ex. 1027 at pp. 59-60.)

64. The SCSI specification also describes a mechanism where an initiator makes a request of a target, e.g., for information about the type of device it is or what sort of media it is attached to, and the target responds to the initiator with data. (Ex. 1027 at pp. 68-69.)

65. Similarly, the Serial Communications Instruction Manual for Model 4001, dated February 1986 (Ex. 1029) discloses the use of RS232 and RS422 interfaces for bidirectional communications. For example, the following section from Ex. 1029 discloses a handshake routing that includes using RS232 for bidirectional communication:

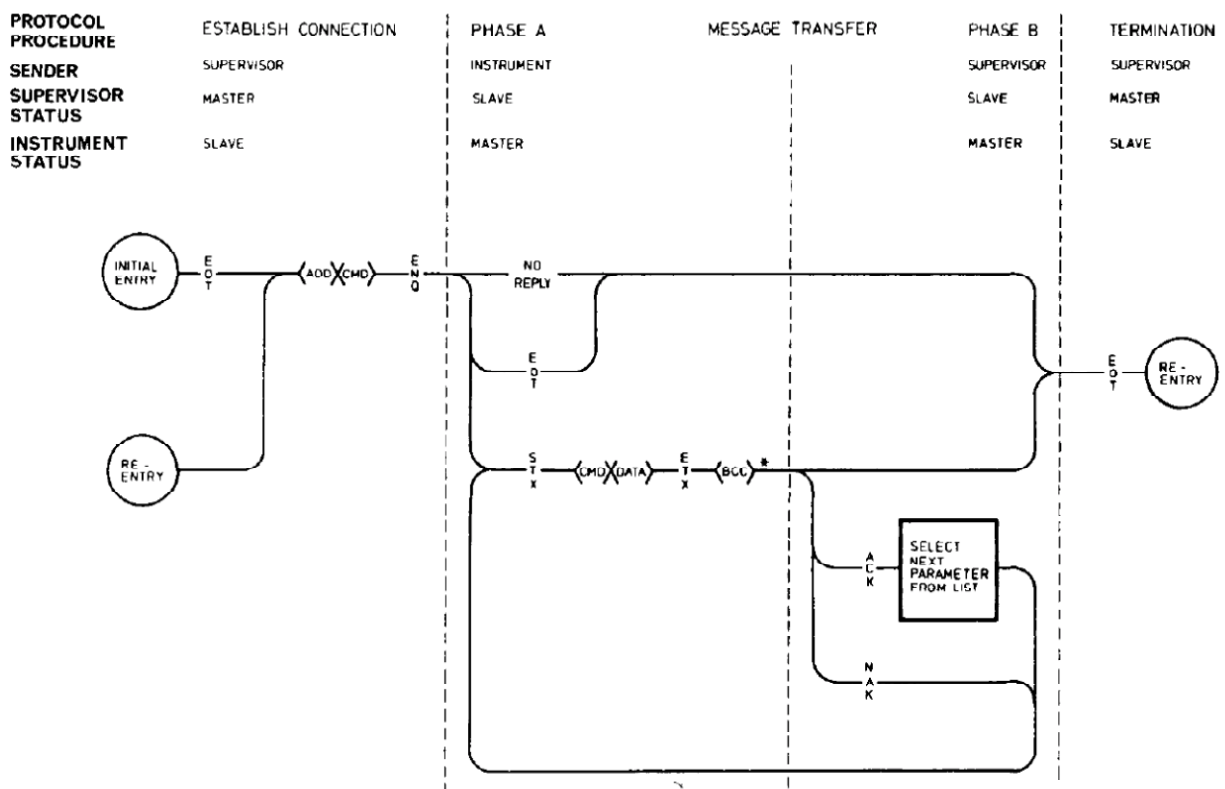
Hardware Handshake

Hardware handshake is a means whereby the host and recorder state whether or not they are available to receive data. To achieve this, four lines of the RS232 link are used:—

- a) CTS (Clear to send.) : Host is ready to receive data.
- b) RTS (Ready to send.) : 4001 is ready to receive data.
- c) DCD (Data carrier detect.) : Host device available.
- d) DTR (Data terminal ready.) : 4001 available.

The above lines are defined as being 'on' when high (positive) and 'off' when low (negative).

(Ex. 1029 at 5). Further, Figure 3-3 of Ex. 1029 (copied below) discloses protocol procedure that involves sending bytes of data and receiving an acknowledgment in response to such a transmission:

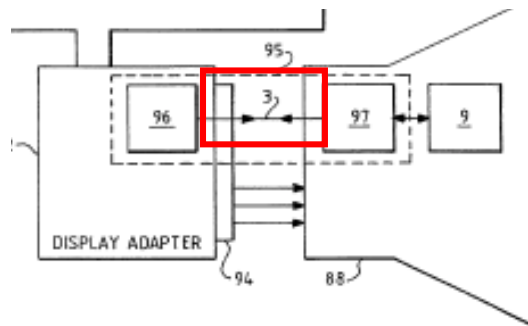


66. In addition, bi-directional communication takes place between a talker and a listener in systems that use an IEEE-488 interface. (Ex. 1026 at p. 12 (Section 1.4.2).) The talker sends data to the listener, and the listener uses a NDAC (Not Data

Accepted) signal to acknowledge the receipt of the sent data. (Ex. 1026 at pp. 13-14 (Sections 1.4.3, 2.3).)

67. U.S. Patent No. 4,710,917 to Tompkins (Ex. 1030) also discloses bi-directional communication include sending an acknowledgment signal. (Ex. 1030 at 42:57-61 (“When the Mate receives the Request for Incoming Call message, the Mate **acknowledges with an Accept response**, turns on the camera, turns off the auxiliary audio and then provides a single ‘Ring’ output to the user, as indicated by a function block 1086.”).)

68. Sawdon discloses a serial link 3 that is also used for bi-directional communication:



Portions of Fig. 1 of Sawdon (annotated).

69. For example, Sawdon explains that “[w]hen the adapter logic 96 issues a read command, the device logic 97 **responds by placing an appropriate response code 23** on the serial link 3.” (Ex. 1020 at 4:40-42.) Sawdon also discloses a “Handshaking” mode where the display device 88 and display adaptor 92 are in bidirectional communication and exchange acknowledgment signals. (Ex. 1020 at

5:12-19 (“In the ‘Handshaking’ mode, the device logic 97 waits for the adaptor logic to place an **acknowledgement code** on the serial link 3 before sending the next byte of the response. In the 75 ‘Data-streaming’ mode, the device logic 97 waits for the adapter logic 96 to **acknowledge** receiving a block of bytes of the response before sending the next block.”).)

70. The ’970 Patent also states that bi-directional communications between the claimed display unit and external computer were known at the time to have been implemented with well known prior art interfaces such as RS-232, SCSI, or GP-IB. (*See* Ex. 1001 at 6:13-16 (“According to this embodiment, RS-232C is used as a communication interface. However, a general-purpose interface such as RS-422, RS-423, SCSI or GP-IB, or network interface may be used.”).)

71. Thus, the disclosure of the ’970 Patent, Tompkins, Sawdon, and the communication protocols discussed above show that bi-directional communications and sending acknowledgement signals was well-known prior to 1993.

D. Unique Identifiers

72. Using identifiers to identify display devices was also well-known in the art prior to 1993. In 1992, multi-scan displays were capable of displaying images in multiple different dimensions and formats. In order to generate suitable video signals, the system needed to identify the type of display device that will be receiving and displaying the video. Thus, it was well-known in the art to store an identifier in the

memory of the display device so that the system can read the identifier and is able to generate and send appropriate video signals based on the identification number.

73. A standards setting organization for an entire industry, the Video Electronics Standards Association (VESA), set about to define a standard governing how data that (1) identifies a display and (2) defines the operating-characteristics of that display should be communicated to the graphics controller of an associated video source, such as a computer. That solution was conceived and distributed to all VESA member companies by at least July 24, 1992, when VESA distributed the VESA Display Definition Protocol Proposal, draft 5.05, dated July 24, 1992 (or “VDDP Proposal”) (Ex. 1016).

74. VESA, its membership, and others had recognized the need for displays to identify themselves and communicate their specifications in machine readable format to the graphics controller of an associated computer. This allowed the graphics controller to adapt dynamically to a wide range of displays without requiring prior detailed knowledge of the specifications or specific operating characteristics of a display. (Ex. 1016 at p. 3.) Persons of ordinary skill in the art recognized that displays had a wide variety of capabilities and, to be optimally utilized, those capabilities had to be communicated to a related computer.

75. In some cases, this was accomplished by storing identification information in the memory (typically an EEPROM) of a display and allowing the computer to interrogate that memory upon system boot up. (*See, e.g.*, U.S. Patent No.

5,262,759, filed by Moriconi et al. on July 27, 1992 (“Moriconi”) (Ex. 1031). Moriconi explains:

In the present embodiment EEPROM 51 is programmed with a unique identity code for the specific type of module. Each type of module offered for the computer has a specific identity code. On initializing, the system BIOS queries the display to ascertain the module type, and loads the correct routines to operate that module.. For the situation where a new type or improved display module is introduced, a simple BIOS upgrade allows previously manufactured computers to use the new display module.

(Ex. 1031 at 5:20-29.)

76. In other cases, and as proposed by VESA, information detailing the specification or capabilities of the display was also stored in memory (*e.g.*, the EEPROM) and retrieved by the computer on system boot up. (Ex. 1016 at pp. 4-10, 36.) U.S. Patent No. 5,285,197, filed by Schmidt et al. on August 28, 1991 (“Schmidt”) (Ex. 1012) also discloses using a unique identifier:

The principal object of the present invention is to provide a method for communicating the performance capabilities of a video display monitor to the graphics controller of a computer system so- as to allow the graphics controller to be automatically configured to the capabilities reported by the video display monitor.

(Ex. 1012 2:33-38.)

77. U.S. Patent No. 4,549,172 to Welk (“Welk”) (Ex. 1015) also discloses storing a terminal identifier in memory 24 of a color display station 13. (Ex. 1015 at 4:37-50, Fig. 1.)

78. EEPROMs utilized by the display industry in 1991 included control logic for implementing the I²C serial data communication protocol promulgated by Philips Semiconductor. The I²C protocol enabled the graphics controller of any computer coupled to the display to query the EEPROM of the display to obtain identification and specification information upon system boot up.

79. Thus, using unique identifiers to identify display devices was also well-known to one of ordinary skill in the art in the 1992-1993 timeframe.

IV. SUMMARY OF THE RELEVANT PRIOR ART REFERENCES

80. I understand that a patent or other publication must first qualify as prior art before it can be used to invalidate a patent claim.

81. I understand that a U.S. or foreign patent qualifies as prior art to a patent claim if the date of application and/or issuance of the prior art patent is prior to the purported date of invention of the patent claim.

82. I further understand that a printed publication, such as an article published in a magazine or trade publication, qualifies as prior art to a patent claim if the date of publication is prior to the purported date of invention of the patent claim.

83. I now turn to the specific references discussed in these proceedings, which I will discuss further following this section.

A. Admitted Prior Art

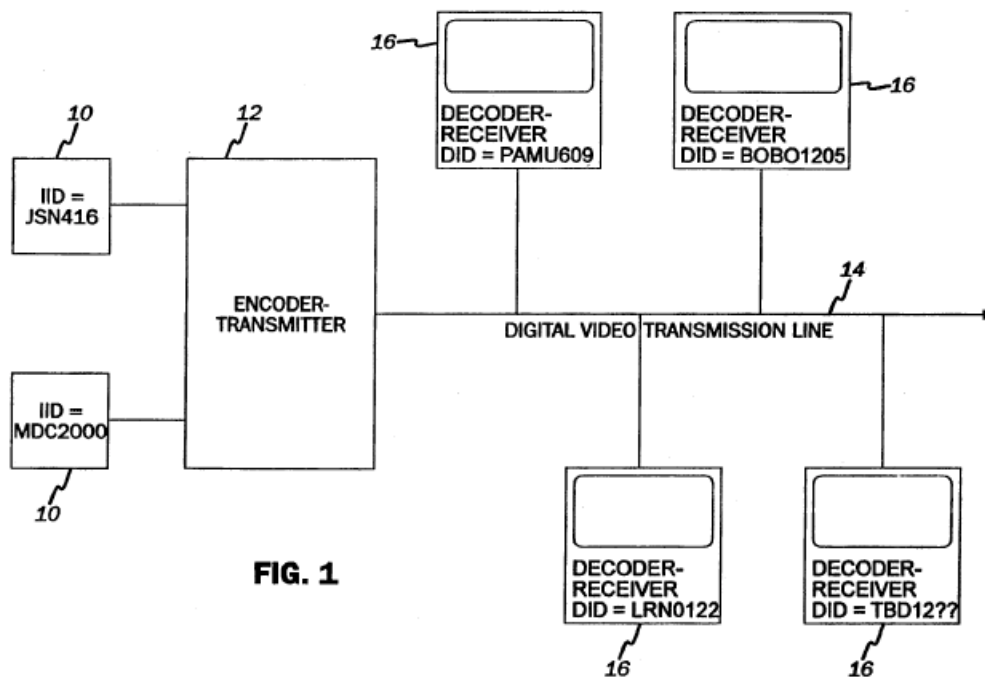
84. The '970 Patent acknowledges some of the well-developed state of the art at the time of filing. Particularly, the '970 Patent admits that all of the following were known at the time of filing:

- a) Manual control of display features such as display size and position. 1:40-59.
- b) Control of display features by a connected computer. 2:10-2:25.

B. U.S. Patent No. 5,321,750 ("Nadan")

85. U.S. Patent No. 5,321,750 ("Nadan") (Ex. 1009) was filed on May 8, 1992. Accordingly, I understand that Nadan is prior art to the '970 Patent.

86. Nadan is directed to a system for networked transmission of video data between an encoder/transmitter and multiple displays, referred to as decoder/receivers, as illustrated in Figure 1.

**FIG. 1 of Nadan.**

87. Nadan discloses that video signals addressed to each decoder/receiver must be accompanied by a unique identifier. The decoder/receivers store video identifiers, and upon receiving video data, compare the unique identifier accompanying the video data with a stored video identifier before using the data.

“Authorized decoders are provided with enable reception keys so that subsequently transmitted data having an information identification code matching a reception key at a decoder-receiver may be received for subsequent display on the video screen.”

(Ex. 1009 at Abstract.)

88. Additionally, Nadan discloses that a unique “polling ID” can be used for communications between the decoder/receivers and a central CPU associated with the encoder.

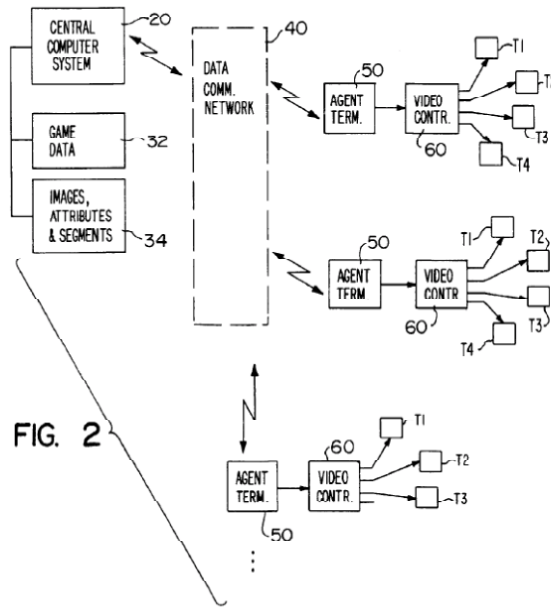
“At installation, the host CPU 425 assigns a unique control bus address to each decoder. This address consists of a strand ID, which identifies the RS-422 or 485 line to which the decoder is connected, and a 5-bit polling ID. The polling scheme allows the host CPU 425 to poll each decoder using a single byte, thus making the most frequently used signal the shortest length.”

(Ex. 1009 at 36:39-45.)

C. European Patent Pub. No. EP 0 525 363 B1 (“Wasti”)

89. European Patent Pub. No. EP 0 525 363 B1 (“Wasti”) (Ex. 1010) was published on February 3, 1993. Accordingly, I understand that Wasti is prior art to the ’970 Patent.

90. Wasti is directed to a networked video system that distributes video from a central controller to one or more terminals. Each of the terminals is connected to a video controller and one or more displays, as illustrated in Figure 2.

**FIG. 2 of Wasti.**

91. The central computer of Wasti transmits unique identifiers to address the agent terminals. These identifiers are used by each terminal to determine if it should process received commands.

“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.”

(Ex. 1010 at 6:26-36.)

92. Wasti also discloses that return communications from the controllers include the controller's unique identifier.

“Alternatively, the identification code can be transmitted to the remote computer together with acknowledgement of a transmission or with other data, allowing the remote computer uniquely to determine the source of a transmission it receives on communication channels open to a plurality of controllers 60. In a network including such identification it is not necessary for all the controllers to be identical or to be operated identically because the remote computer can tailor transmissions to the controller, and interpret transmissions received from the controller, in accordance with data stored at the remote computer relating to the character of the controller or the establishment in which it is located.”

(Ex. 1010 at 6:26-49.)

D. U.S. Patent No. 5,285,197 (“Schmidt”)

93. U.S. Patent No. 5,285,197 (“Schmidt”) (Ex. 1012) was filed on April 28, 1991 and issued February 8, 1994. Accordingly, I understand that Schmidt is prior art to the ‘970 Patent. Schmidt discloses a bidirectional display system where a display sends display-specific information to a graphics controller and the graphics controller configures itself according to the received information so that it can generate signals compatible with the display. (Ex. 1012 at Abstract, 2:60-3:3.)

94. The described monitor 100 includes a CRT display 120, color processor 102, sync signal processor 104, microprocessor 106 (including an I/O interface 108 and monitor processor 110), and read only memory (ROM) 112. (Ex. 1012 at 5:25-

56 and Fig. 1.) The memory 112 stores, among other things, a “plurality of bits used to identify the video display monitor type to the graphics controller 200, with the bits being grouped into a plurality of bytes.” (Ex. 1012 at 8:59-63.) Monitor detection and identification operations according to one embodiment of the described invention are performed during “power up of the computer system.” (Ex. 1012 at 8:15-18.) These features enable the Schmidt system to achieve its principal object:

The principal object of the present invention is to provide a method for communicating the performance capabilities of a video display monitor to the graphics controller of a computer system so as to allow the graphics controller to be automatically configured to the capabilities reported by the video display monitor.

(Ex. 1012 at 2:33-38.)

95. Schmidt also, explains that the communication between the graphics controller 200 of the computer system and the processors 104 and 106 of the monitor 100 is bi-directional. Specifically, signals sent by the graphics controller 200 cause the monitor 100 to enter a Parameter Response Mode (PRM). During PRM, identification and other information may be retrieved from monitor ROM 112 and communicated in a serial fashion to the graphics controller 200. The communicated information is used to automatically configure the graphics controller 200 for optimum interaction with the monitor 100. Ex. 1012 . at 8:40-11:52.

96. During the '457 reexamination (discussed below), the Examiner held, and the board agreed, that Schmidt disclosed all of the limitations of claims 23, 25, and 27. These same limitations are repeated in claim 22.

E. European Patent Pub No. 0 498 995 A2 (“Satoru”)

97. European Patent Pub No. 0 498 995 A2 (“Satoru”) (Ex. 1013) is titled “Data transfer control system,” and was published on August 19, 1992. Accordingly, I understand that Satoru is prior art to the '970 Patent. Satoru discloses a system that allows for the control of multiple displays from a central computer. (Ex. 1013 Abstract.) In the system, each display is equipped with a controller that allow it to receive a unique identification code from a central computer. (Ex. 1013 at 4:2-5:7.) An overview of the system is presented in Figure 1 of Satoru.

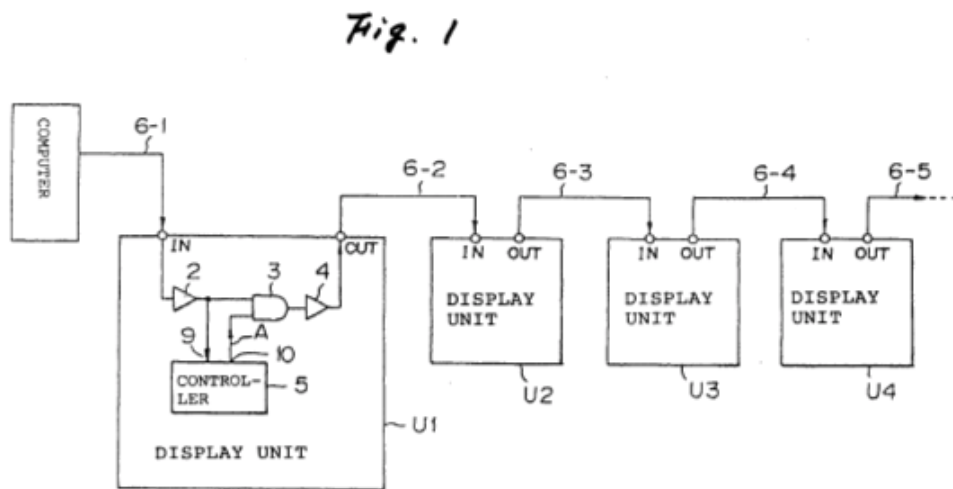


Fig. 1 of Satoru.

98. After each display receives and stores its ID, the controller of the display compares the ID of any incoming commands to the ID code stored in memory. If

the ID in the incoming commands matches the stored ID the command is implemented, if not it is ignored. (Ex. 1013 at 1:26-38, 2:47-48, Fig. 5.)

Fig. 5

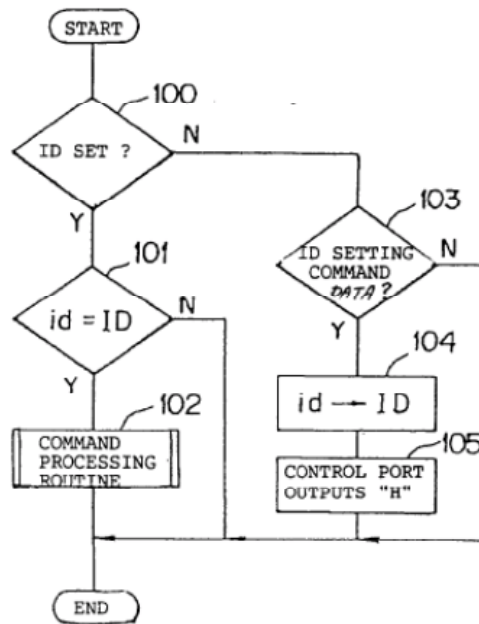


Fig. 5 of Satoru.

99. Such commands include power on, power off, switch input to a video signal, switch input to a Y/C signal, white balance adjustment, and for selecting between an adjustment mode and a normal mode. (Ex. 1013 at 3:51-4:1.)

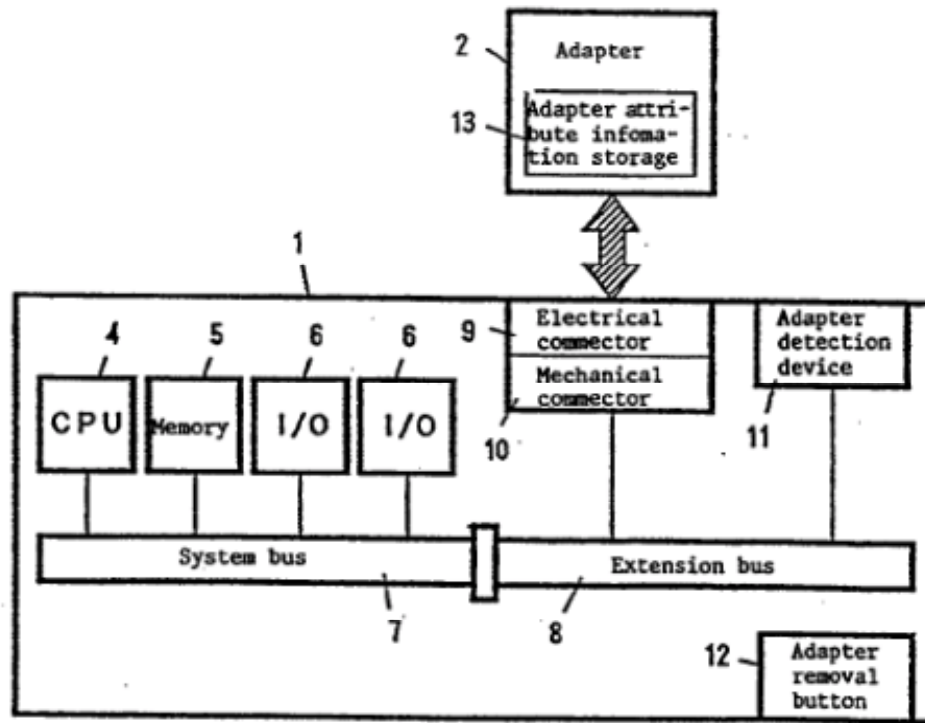
F. U.S. Patent No. 5,386,567 (“Lien”)

100. U.S. Patent No. 5,386,567 (“Lien”) (Ex. 1014) is titled “Hot Removable and Insertion of Attachments on Fully Initialized Computer Systems,” and was filed on October 14, 1992 and issued on January 31, 1995. The filing date of Lien is before the earliest claimed priority dates of the Mondis Patents as listed on the face of the

patents. As a result I understand that Lien is prior art to the Mondis Patents. I also understand that Lien was not cited or considered during the original examination of any of the applications that led to the Mondis Patents. I also understand that Lien has not been cited or considered during any of the reexaminations of the Mondis Patents.

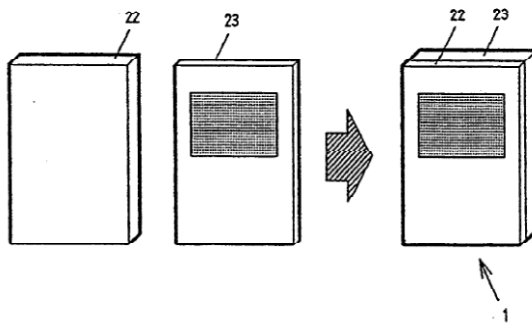
101. Lien addresses the problem of “hot plugging” devices into a computer, where it is desirable for a computer to be able to properly configure and interact with an attached device without the need to power off either the computer or the device, or both. (Ex. 1014 at 1:18-49.) Lien discloses including a memory (in the form of “attribute information storage”) within an adapter of an attached peripheral device that includes an identification number for the device as well as other configuration information (such as driver information). (Ex. 1014 at 3:63-67, 5:17-35.) Lien describes the “attribute information” as including an “identification number” (or “ID”) of the adapter. (Ex. 1014 at 10:11-29.) This ID is used to determine the “type” of the device and whether that type of device is supported by the computer. (Ex. 1014 at 5:17-24.)

[Figure 2]

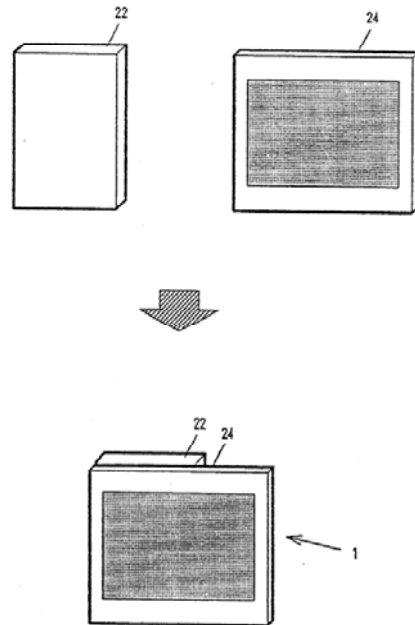
**Figure 2 of Lien.**

102. Lien also discloses that the peripheral device can take the form of an LCD unit, with the *adapter* being integrated into that display. (Ex. 1014 at 6:41-68; Figs. 10, 11 (shown below).)

[Figure 10]



[Figure 11]

***Figures 10 and 11 of Lien.***

103. The computer configures the signals sent to the display based on the attribute information, and can therefore accommodate displays having different dimensions. (Ex. 1014 at 6:61-68; 8:57-60.) In this regard, Lien discloses that the display includes a “display control section” that interfaces between the internal adapter to the display and the display screen. (Ex. 1014 at 10:36-39.)

104. Lien discloses that the adapter of the display has the means to engage in bi-directional communications with the computer system. (*See, e.g.*, Ex. 1014 at 7:41-45, 8:19-25, 9:53-55, 11:16-18, 11:19-21, 11:29-30.)) In particular, Lien discloses that the adapter can access the bi-directional bus within the computer system, to arbitrate access to that bus, and to send interrupt signals to the computer via that bus. (Ex. 1014 at 10:7-10, 10:12-16.).

G. U.S. Patent No. 4,549,172 (“Welk”)

105. U.S. Patent No. 4,549,172 (“Welk”) (Ex. 1015) is titled “Multicolor Display From Monochrome or Multicolor Control Unit,” and was filed on March 13, 1984 and issued on October 22, 1985. The publication date of Welk is before the earliest claimed priority dates of the Mondis Patents as listed on the face of the patents. As a result I understand that Welk is prior art to the Mondis Patents. I also understand that Welk was not cited or considered during the original examination of any of the applications that led to the Mondis Patents. I also understand that Welk has not been cited or considered during any of the reexaminations of the Mondis Patents.

106. Welk addresses the problem of allowing a multicolor display to be used with either a monochrome or a multicolor computer control unit. (Ex. 1015 at 2:25-29, 2:54-60.) Welk discloses a color display (color display station 13) that receives display information from a remote video source (computer control unit 11). (Ex. 1015 at Abstract, 3:15-21.) The color display includes a communication controller in the form of a microprocessor control circuit (MPU) 15, that receives video signal information from the computer control unit, and provides corresponding display and control information to display circuitry. (Ex. 1015 at 3:45-60.) In addition to receiving signals, the MPU 15 is capable of sending information to the computer control unit, and is therefore capable of bi-directional communication with the computer control unit. (See Ex. 1015 at 7:25-27 (“This ID data is supplied by the microprocessor 15 to

the control unit 11.”.) The color display also includes a video circuit in the form a display format controller 18 and a control circuit 33, which together provide video signals to a display screen (cathode ray tube terminal (CRT) 14). (Ex. 1015 at 5:4-36.).

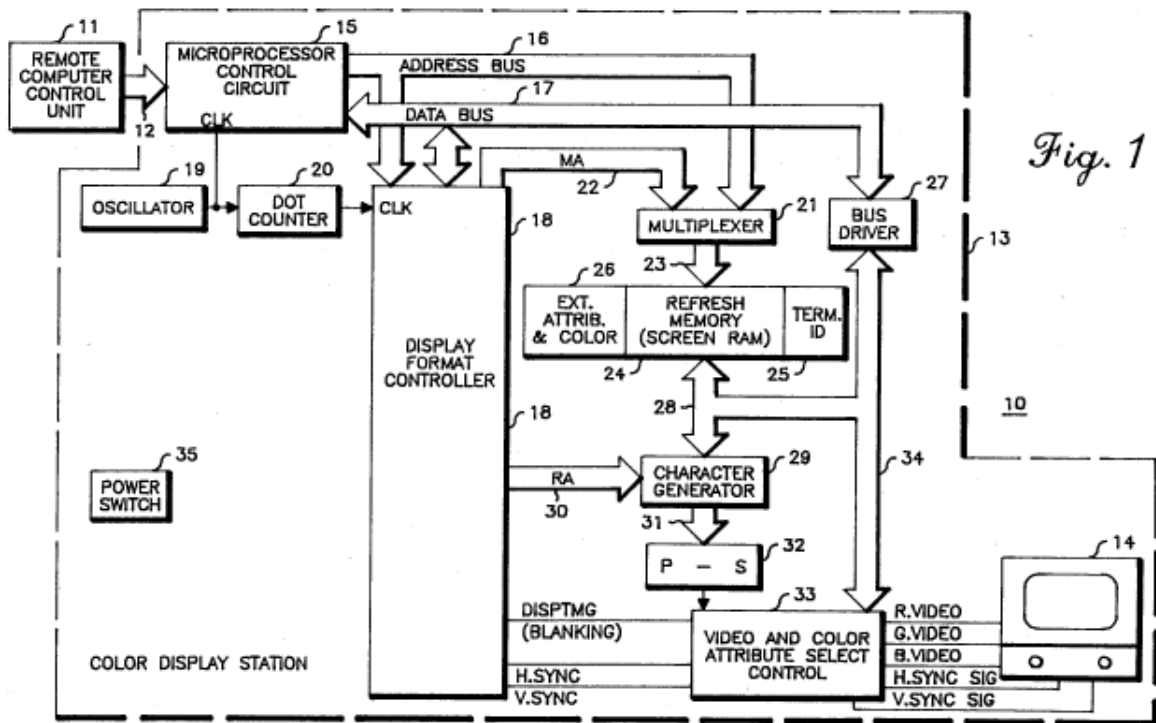


Fig. 1 of Welk.

107. Welk further discloses that the display includes a memory (RAM 24) for storing display information, including “video character control signals.” (Ex. 1015 at 4:16-36.) This memory further includes a location (element 25) for storing a “terminal ID,” that “identifies the type of display station.” (Ex. 1015 at 4:37-44.) The memory also includes an additional location (element 26) for storing “extended attributes” of the display. (Ex. 1015 at 4:44-53.)

108. Welk discloses that the display implements a color selection process that allows it to properly display color and character information regardless of whether the control unit connected to is providing color or monochrome display information. (Ex. 1015 at 6:23-37.) Upon powering on, the MPU 15 in the display sends the display terminal ID information to the control unit. (Ex. 1015 at 7:11-27.) Using this ID information, the control unit is able to determine whether the control unit determines if it is connected to a color display, and modifies its video control signals accordingly. (Ex. 1015 at 7:28-36; 8:2-14; *see also* Ex. 1015 at Figs. 2a, 2b.)

H. Japanese Patent Application Publication No. H4-37787 (“Takahashi”)

109. Japanese Patent Application Publication No. H4-37787 (“Takahashi”) (Ex. 1017) is titled “Digital Image Adjustment and Display Device,” and was published on February 7, 1992 based on an application filed on June 1, 1990, which is before the earliest claimed priority dates of the Mondis Patents as listed on the face of the patents. Accordingly, I understand that Takahashi is prior art to the Mondis Patents.

110. Takahashi is directed to an advanced display that contains circuitry that allows the characteristics of the display to be changed based on digital adjustment signals. (Ex. 1017 at p. 4.) As stated in Takahashi:

In order to achieve the above-stated object, the digital image adjustment and display device of the present invention is characterized by constituting adjustment circuits for screen size, brightness, hue, focus, contrast and

the like with digital circuits, and providing a control circuit that supplies digital adjustment signals to the respective aforementioned digital adjustment circuits based on the aforementioned adjustment request signals for screen size, brightness, hue, focus, contrast and the like that are supplied externally.

(Ex. 1017 at p. 4)

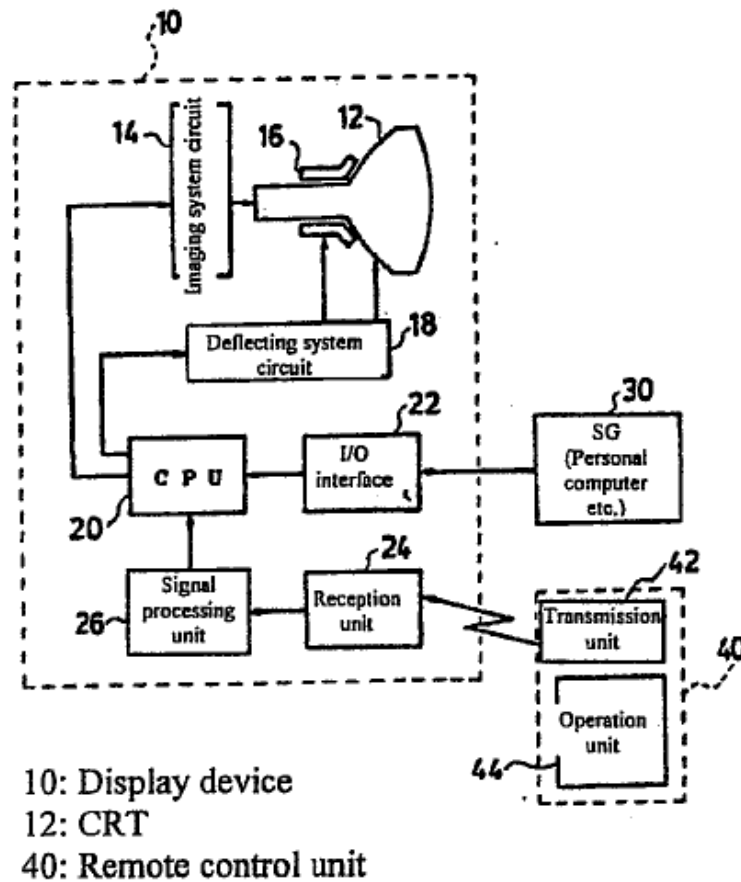
111. As further explained in Takahashi:

Therefore, in the embodiment, the image adjustment circuitry is digitalized, and according to an externally provided adjustment request, the CPU 20, which is the control circuit, outputs a digital adjustment signal to an adjustment circuit for adjusting the screen size, brightness, hue, focus, contrast, distortion and the like so that adjustments can be performed easily and automated adjustment and inspection are possible during the manufacturing process.

(Ex. 1017 at p. 5,)

112. Figure 1 of Takahashi further shows that the processor may receive input from external sources through an I/O interface (22) connected to a computer, or through wireless remote device (4) via a wireless signal reception unit (24).

FIG 1.

**FIG. 1 of Takahashi.****I. U.S. Patent No. 5,027,400 (“Baji”)**

113. U.S. Patent No. 5,027,400 (“Baji”) (Ex. 1011) is titled “Multimedia Bidirectional Broadcast System” and issued on June 25, 1991, which is before the earliest claimed priority dates of the Mondis Patents as listed on the face of the patents. As a result, I understand that Baji qualifies as prior art to the Mondis Patents. I also understand that Baji was not cited or considered during the original examination of any of the of the applications that led to the Mondis Patents. I also understand

that Baji has not been cited or considered during any of the reexaminations of the Mondis Patents.

114. Baji discloses a bidirectional video broadcast system, similar to the “on demand” systems commonly used by today’s cable providers. (Ex. 1011 at Abstract.) Baji’s system sends advertisements or programs to subscribers based on a subscriber’s preferences. (Ex. 1011 at Abstract.) Baji discloses a display unit for displaying an image (subscriber system 116 with television monitor 114) based on video signals inputted from an externally connected video source (broadcast station (head end) 115). (Ex. 1011 at 1:62-68.) A network terminal 111 (shown in FIG. 1-2) on the subscriber side communicates bi-directionally with a head end 115 of a broadcast station. (Ex. 1011 at Abstract, 1:62-64, 3:13-18.)

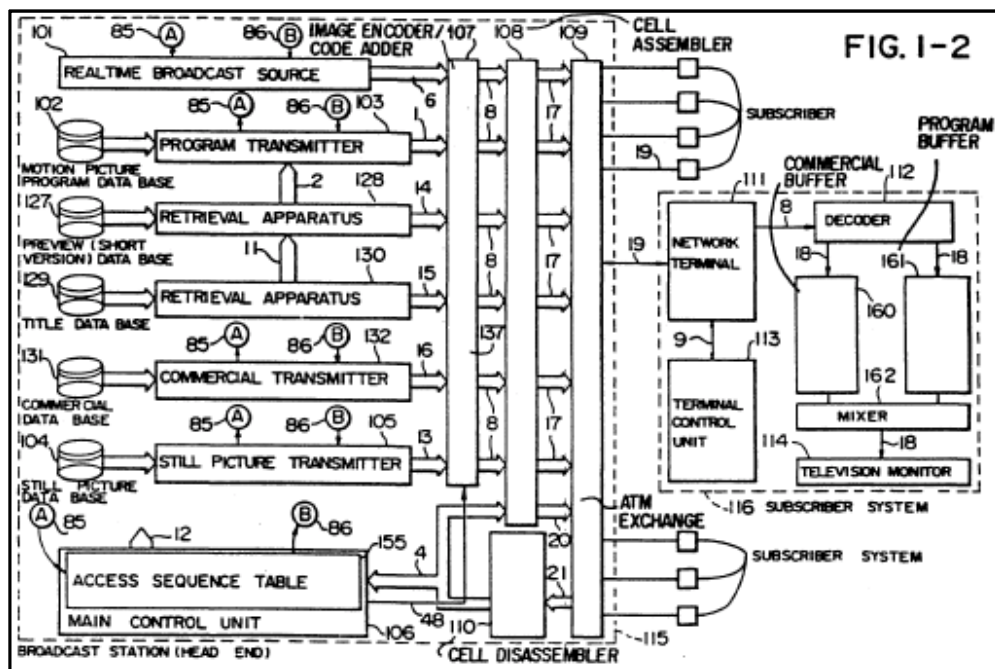


Fig. 1-2 of Baji.

115. Baji discloses that each of the subscriber units contains a number of memories for storing data related to the subscriber unit, including a “Program Memory,” “Data Memory,” “Visual Command Memory,” and “Frame Memory.” (*See* Ex. 1011 at FIG. 1-5.) Baji further discloses that each of the subscribers units has a “subscriber code” to distinguish each subscriber from others. (*See* Ex. 1011 at 3:58-4:52, 9:64-66, FIG. 12.)

V. THE '970 PATENT

A. Overview of the '970 Patent

116. The '970 Patent is directed to a display unit that is capable of receiving control instructions from a connected computer. (Ex. 1001 at 4:58-60.) A microcomputer uses these control instructions to adjust the displayed image. (Ex. 1001 at 4:60-67.) The display can be adjusted in size, position, brightness, contrast, and/or color. (Ex. 1001 at 4:67-5:3.) In addition, the display unit includes a memory which stores information such as user adjustment data, delivery adjustment data, identification (“ID”) numbers, and/or factory preset values. (Ex. 1001 at Fig. 2; 5:15-29.) The display unit also includes a communication controller that facilitates the sending and receiving of data into and out of the display. (Ex. 1001 at Figs. 1, 7, 9, 10, and 11; 4:27-31; 7:53-57.)

117. In addition to receiving control instructions from an external computer, the communication controller can send the contents of the display's memory, including ID numbers, to the computer. (Ex. 1001 at Fig. 1; 3:14-16, 5:64-65.) The

data sent from the display to the computer can include the display's ID number, which the computer can use to uniquely identify a particular display unit among others. (Ex. 1001 at Fig. 5; 5:64-6:7, 7:25-47.) The ability to identify a display can, for example, facilitate security by preventing the display of information on an unauthorized display unit. (Ex. 1001 at 2:35-38, 6:26-29, 10:40-45.)

118. Transmission of the display's ID number to the computer can also inform the computer that the monitor supports certain features, such as being able to receive a communication signal generated by an attached video source based upon display unit information sent by the display to the video source. (Ex. 1001 at 3:12-19, 5:64-6:4.)

B. Prosecution History of the '970 Patent

119. The '970 Patent issued from the '291 Application (U.S. Patent Application No. 09/732,291) filed on December 8, 2000. The Examiner issued a non-final Office action on July 5, 2001, in which original claims 1, 2, 4, 5, 7-10, and 12-16 were rejected under 35 U.S.C. §103(a) over Sawdon (U.S. Patent 5,276,458 A) in view of Nicols (U.S. Patent No. 4,991,023), claims 18-35 were allowed, and claims 3, 6, 11, and 17 were objected to as depending from rejected claims, but containing allowable subject matter.

120. In response to the Examiner's claim rejection, the Patent Owner filed a non-final response on December 5, 2001, in which the Patent Owner amended claims 1, 4, 7, and 12 to recite that the display interface allowed bi-directional

communication. The response also cancelled claims 3, 6, 11, 17 (which recited the bi-directional limitation in dependent claim form), cancelled claims 27-35 and added new claims 36-39, without any particular arguments.

121. The Patent Owner filed a supplemental response on February 4, 2002, in which the Patent Owner amended the specification without any particular arguments.

122. The Examiner issued a Notice of Allowability on April 22, 2002 indicating the prior art in the record did not teach or suggest that a communication control circuit enables bi-directional communication with the display unit and the computer.

123. The Patent Owner filed an Request for Continued Examination (RCE) on June 4, 2002, in which the Patent Owner filed an Information Disclosure Statement (IDS). The Examiner issued a second Notice of Allowability June 28, 2002

124. The Patent Owner filed an Request for Continued Examination (RCE) on August 5, 2002, in which the Patent Owner added new claims 40-42 without any particular arguments. The Examiner issued a third Notice of Allowability on September 30, 2002 referencing the same allowable subject matter that was in the Notice of Allowability issued on April 22, 2002 and recited in claims 1, 2, 4, 5, 7-9, 12-16, 18-26, and 36-42. The '970 Patent issued on April 15 2003.

C. The *Inter Partes* Reexamination of the '970 Patent

125. I understand that on May 7, 2009, InnoLux Display Corp. (“InnoLux”) filed a corrected request for *inter partes* reexamination of the '970 Patent (Reexamination No. 95/000,457 (“the '457 Reexamination”)).

126. At the inception of that proceeding, the USPTO found that the references presented a substantial new question of patentability with respect to, among others, claims 18-21, 23-25, 27, and 28 based on multiple references, including the Schmidt reference relied upon herein.

127. On September 2, 2011, the Office issued an Action Closing Prosecution (“ACP”), rejecting claims 23-25, 27, and 28. On April 23, 2012, the Patent Owner and the Requestor both filed a Notice of Appeal, and subsequently Appeal Briefs and Rebuttal Briefs. On July 9, 2014, the Patent Board issued a decision affirming the Examiner’s decision. On January 23, 2015 the Examiner issued a Notice of Intent to Issue a Reexamination Certificate.

128. Claim 22 was found to be patentable because the prior art allegedly did not disclose a transmission of an identifier “uniquely identifying the display unit” from the display to a connected device. '457 Reexamination History at January 23, 2015 Notice of Intent to Issue Reexam Certificate. “Uniquely identifying” was construed to require an identifier that could identify a specific display as opposed to merely a type of display. '457 Reexamination History at September 2, 2011 Action Closing Prosecution, p. 16. As described below, the Nadan, Wasti, Lien, and Satoru

references disclose the additional subject matter recited in claims 22 and render it unpatentable, either alone or in combination with other references.

D. Request for *Ex Parte* Reexamination of the '970 Patent

129. On November 3, 2014 a request for *ex parte* reexamination was filed (Reexam No. 90/013,388 (“the ’388 Reexamination”)), challenging claims 1-17, 22, 24, 26, and 29 of the ’970 Patent. Reexamination of all challenged claims was instituted on December 24, 2014.

E. Relevant Claims of the '970 Patent

130. I understand that claims 1-17, 22, 24, 26, and 29 of the ’970 Patent are currently at issue. My report focuses on these claims.

131. Claims 1-17 recite, in one form or another, a display capable of bi-directional communication with a connected device such as a computer. In these claims the connected device transmits an identifier to the display. The display compares the received identifier to an identifier stored in the memory of the display. If the two identifiers match, the connected device is permitted to control the display. If they do not match, the computer is not permitted to control the display.

132. Claim 1 is independent and recites as follows:

1. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:

comparing means for comparing a first identification information which is previously stored in said display unit and a second

identification information which is previously stored in said computer and is sent from said computer; and

a communication prohibition means for prohibiting communication between said computer with respect to display control of said display unit, when said first and second identification information do not match as a result of the comparison by said comparing means;

wherein said communication control circuit enables bi-directional communication with said display unit and said computer.

133. Claim 2 depends from claim 1 and recites:

2. A display unit according to claim 1, wherein said first and second identification information include an identification number.

134. Claim 3 is independent and recites as follows:

3. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:

comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and

a reception prohibition means for prohibiting reception of a control command from said computer, for controlling at least one of a display size, a display position, a brightness, and a contrast of said display unit, when said first and second identification information do not match as a result of the comparison by said comparing means;

wherein said communication control circuit enables bi-directional communication with said display unit and said computer.

135. Claim 4 depends from claim 3 and recites:

4. A display unit according to claim 3, wherein said first and second identification information include an identification number.
136. Claim 5 is independent and recites as follows:
5. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:
 - memory means for storing at least data of a frequency range to which said display unit is operable;
 - comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and
 - and a communication permission means for permitting communication between said computer, at least with respect to said data of a frequency range stored in said memory means, when said first and second identification information match as a result of the comparison by said comparing means;
 - wherein said communication control circuit enables bi-directional communication with said display unit and said computer.
137. Claim 6 depends from claim 5 and recites:
6. A display unit according to claim 5, wherein said first identification information is stored in said memory means.
138. Claim 7 depends from claim 5 and recites:
7. A display unit according to claim 5, wherein said data relating at least to a display specification of said display unit stored in said memory means, includes data of a frequency range to which said display unit is operable.
139. Claim 8 depends from claim 5 and recites:

8. A display unit according to claim 5, wherein said first and second identification information include an identification number
140. Claim 9 is independent and recites as follows:
9. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:
- memory means for storing at least data of a frequency range for which said display unit is operable;
- comparing means for comparing a first identification information which is previously stored in said display unit in advance, and a second identification information which is previously stored in said computer and is sent from said computer; and
- a communication prohibition means for prohibiting communication between said computer, at least with respect to said data of a frequency range stored in said memory means, when said first and second identification information do not match as a result of the comparison by said comparing means;
- wherein said communication control circuit enables bi-directional communication with said display unit and said computer.
141. Claim 10 depends from claim 9 and recites:
10. A display unit according to claim 9, wherein the control of said memory means includes rewriting or writing control of said data in said memory means.
142. Claim 11 depends from claim 9 and recites:
11. A display unit according to claim 9, wherein said first identification information is stored in said memory means.
143. Claim 12 depends from claim 9 and recites:

12. A display unit according to claim 9, wherein said data relating at least to a display specification of said display unit stored in said memory means, includes data of a frequency range to which said display unit is operable.
144. Claim 13 depends from claim 9 and recites:
 13. A display unit according to claim 9, wherein said first and second identification information include an identification number.
145. Claim 14 is independent and recites as follows:
 14. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:

comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and

a communication permission means for enabling display control by said computer and permitting communication between said computer and said display unit with respect to display control of said display unit, when said first and second identification information match as a result of the comparison by said comparing means,

wherein said communication control circuit enables bi-directional communication with said display unit and said computer.
146. Claim 15 is independent and recites as follows:
 15. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:

comparing means for comparing a first identification information which is previously stored in said display unit, and a second

identification information which is previously stored in said computer and is sent from said computer; and

a reception permission means for enabling control of a display size/position of said display unit by said computer and permitting reception of a control command from said computer for controlling at least the display size/position of said display unit, when said first and second identification information match as a result of the comparison by said comparing means,

wherein said communication control circuit enables bi-directional communication with said display unit and said computer.

147. Claim 16 is independent and recites as follows:

16. A display unit for displaying an image based upon a digital image information signal, inputting said digital image information signal from an externally connected computer, comprising:

comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and

enabling display control by said computer and permitting communication between said computer and said display unit with respect to display control of said display unit, when said first and second identification information match as a result of the comparison by said comparing means,

further comprising a communication controller which enables bi-directional communication with said display unit and said computer.

148. Claim 17 is independent and recites as follows:

17. A display unit for displaying an image based upon a digital image information signal, inputting said digital image information signal from an externally connected computer, comprising:

comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and

a communication prohibition means for disabling control of said memory means by said computer and prohibiting communication between said computer and said memory means of said display unit, when said first and second identification information do not match as a result of the comparison by said comparing means,

further comprising a communication controller which enables bi-directional communication with said display unit and said computer.

149. Claim 22 recites a display capable of bi-directional communication with a connected device. The display transmits “display unit information” to a connected video source (*e.g.*, a computer), which is used by the video source to identify the display and provide a signal, such as a compatible video signal, in response. Claim 22 generally differs from the other claims at issue in that it additionally recites that the display stores and transmits identification information for “uniquely identifying” the display, which is transmitted to the connected device. I understand that in a prior district court litigation involving the patent, the term “uniquely identifying” was construed to require an identifier that could identify a specific display as opposed to merely a type of display.

150. Claim 22 is independent and recites as follows:

22. A method of communicating between a display unit and a video source from which video signals are sent to the display unit for display, the method comprising the steps of:

communicating display unit information stored in a memory of the display unit from the display unit to the video source, wherein said display unit information includes an identification number for uniquely identifying the display unit; and

sending a signal from the video source to the display unit, wherein said signal is generated based on the display unit information,

wherein information is bi-directionally communicated with the video source and the display unit.

151. Claims 23, 25, and 27 (from which challenged claims 24, 26, and 29 depend), recite a display capable of bi-directional communication with a connected device. These claims additionally recite that the display stores identification information, which is transmitted to the connected device, and used by the connected device to configure video that is transmitted to the display

152. Claim 23 is independent and recites as follows:

23. A display unit for displaying an image based on an image signal inputted from an externally connected computer, comprising:

a processor adapted to control display of the display unit;

a memory which stores an identification number; and

a communication controller which sends the identification number stored in said memory to said computer;

wherein said communication controller enables bi-directional communication between said display and said computer.

153. Claim 24 depends from claim 23 and recites:

24. A display unit according to claim 23, further comprising a deflection circuit, wherein the processor generates control signals for the deflection circuit.

154. Claim 25 is independent and recites as follows:

25. A display unit for displaying an image based on an image signal inputted from an externally connected computer, comprising:

a processor adapted to control display of the display unit;

a memory which stores identification information; and

a communication controller which sends the identification information stored in said memory to said computer in response to power on of at least one of said display unit and said computer;

wherein said communication controller enables bi-directional communication between said display and said computer.

155. Claim 26 depends from claim 25 and recites:

26. A display unit according to claim 25, further comprising a deflection circuit, wherein the processor generates control signals for the deflection circuit.

156. Claim 27 is independent and recites as follows:

27. A display unit for displaying an image based on an image signal inputted from an externally connected video source, comprising:

a processor adapted to control display of the display unit;

a memory in which at least display unit information is stored,
wherein the display unit information includes (sic) an
identification number for identifying the display unit; and

a communication controller capable of bi-directionally
communicating with the video source;

wherein the communication controller communicates the display
unit information from the display unit to the video source
and the display unit receives a signal from the video source
that is generated based on the display unit information.

157. Claim 28 depends from claim 27 and recites:

28. A display unit according to claim 27, wherein the video source is a
computer.

158. Claim 29 depends from claim 28 and recites:

29. A display unit according to claim 28, further comprising a
deflection circuit, wherein the processor generates control signals
for the deflection circuit.

F. Claim Construction

159. I understand that during the prior litigation involving the '970 Patent,
Mondis Technology, Ltd. v. LG Electronics, Inc. et al., Case No. 2:07-cv-0565, filed
December 31, 2007 (the "Prior Litigation"), the parties in that case briefed the Court
on how to construe various claim terms. Of relevance, the Court construed the
disputed terms as follows.

Claim Term	Court's Construction
"display unit"	"an apparatus for displaying video signals"

“control”	“ to direct, regulate, or influence”
“bi-directionally communicating”	The Court held that no special construction was necessary for this term and instead adopted plain and ordinary meaning.
“signal”	a detectable physical quantity or impulse (as a voltage, current, magnetic field strength) by which messages or information can be transmitted” The Court refused to read “signal” to necessarily mean a control signal.
“display unit information”	The Court held that no special construction was necessary for this term and instead adopted plain and ordinary meaning.
“identification information” / “identifying information of the display unit”	“information that can be used to identify a display unit”
“identification number” / “identification number of the display unit” / “identification number for identifying the display unit”	“a number that can be used to identify a display unit”
“identification number for uniquely identifying the display unit”	“a number for identifying a specific display unit from among other display units”
“memory means”	“memory”

(See Ex.1008, Memorandum Opinion and Order in Prior Litigation, Dkt. No. 282

(Jan. 24, 2011.)

160. I also understand that the scope of certain terms have been discussed during previous reexaminations.

Claim Term	Claim Analysis
“communication controller”	The USPTO determined that this term only requires that a structure function to send the identification number to the computer and enable bi-directional communication between the display and the video source. <i>See</i> Control No. 95/000,459, PTAB Decision mailed July 10, 2014, at 7-8.
“identification number”	The USPTO rejected the Patent Owner’s arguments that the identification number cannot relate to the type of display. <i>See</i> Control No. 95/000,459, PTAB Decision mailed July 10, 2014, at 11. The PTAB refused to limit identification number to one that does not relate to type.

161. I have not been asked to opine on the correctness of the above constructions at this time.

162. Without necessarily agreeing to the prior Court and USPTO constructions I have applied these constructions above in my analysis of the claims of the ’970 Patent.

VI. PATENTABILITY ANALYSIS OF THE ’970 PATENT

A. Nadan Teaches Each Limitation of claims 1-4, 14-17 and 22

163. I have reviewed the Nadan reference in view of the claims at issue, and it is my opinion that Nadan discloses each limitation of claims 1-4, 14-17 and 22 of the

'970 Patent. Additional details supporting my opinion are provided in the following paragraphs.

164. Nadan discloses bi-directional communication and a unique identifier that is transmitted from the display to the video source. Nadan is directed to a system for networked transmission of video data between a networked computer called an encoder/transmitter and multiple displays, referred to as decoder-receivers. Nadan discloses that a unique "polling ID" can be used for communication between a CPU associated with the encoder and the decoder/receivers.

At installation, the host CPU 425 assigns a unique control bus address to each decoder. This address consists of a strand ID, which identifies the RS-422 or 485 line to which the decoder is connected, and a 5-bit polling ID. The polling scheme allows the host CPU 425 to poll each decoder using a single byte, thus making the most frequently used signal the shortest length.

(Ex. 1009 at 36:39-45.)

165. Solicitations for video signals from the decoder/receiver to the host CPU include a polling message, which itself includes the polling ID:

Referring to FIG. 24B, each decoder responds to a host CPU 425 signal with either a solicitation message or, if no solicitation is ready, an idle message. Idle messages consist of a Seq element only (message bit=0). Solicitation messages consist of a Seq element (message bit= 1), a poll element, and one or more request frames. A request frame (R-Frame) contains one or more requests from either the host CPU 425 or the decoder 316....As shown in FIG. 24E, bit 7 of the poll message is always set. Since a poll message can originate from either the host CPU 425 or the decoder 316, bit 6 is used to indicate the source of the poll

(0=Host, 1 =decoder). The remaining six bits are the polling ID of the decoder (1 to 63).

(Ex. 1009 at 37:13-57.)

166. These solicitations are used to request video from the CPU or otherwise participate in bi-directional communication between the decoder/receiver and the CPU. (Ex. 1009 at 36:8-38.) Because Nadan utilizes these unique identifiers, which are transmitted from a display to a video source, in bi-directional communication, it anticipates the claims of the '970 Patent.

167. The table below provides a summary of the specific disclosures in Nadan that support my opinions that Nadan discloses each element of claims 1-4, 14-17, and 22 of the '970 Patent. It should be noted that the disclosures cited in the table below are merely exemplary and are in no way limiting, and there may be other portions of Nadan that additionally disclose a given limitation.

'970 Claim Element	Disclosure in Nadan (Ex. 1009)
1. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:	"A system for securely providing restricted display information having an encoder-transmitter for transmitting selected update data using information identification codes as enabling reception keys and a plurality of uniquely identified decoder-receivers for receiving the update data for display on a video screen." Ex. 1009 at Abstract.
[1.a] comparing means for comparing a first identification information which is previously stored in said	"Each of the received DID codes is compared with a unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID code, the individual RK code for the respective portion

'970 Claim Element	Disclosure in Nadan (Ex. 1009)
display unit and a second identification information which is previously stored in said computer and is sent from said computer; and	<p>of information is stored in a memory 66.</p> <p>The output of the receiver 60 is further connected to a data detection gate 67 for receiving the data enable sequences. The individual RK codes in the received data enable sequences are compared in a comparator 68 with the individual RK codes stored in the memory 66. Upon a match of one of these RK codes, the accompanying display coordinates of the update data are loaded into registers 69.” Ex. 1009 at 10:53-66.</p>
[1.b] a communication prohibition means for prohibiting communication between said computer with respect to display control of said display unit, when said first and second identification information do not match as a result of the comparison by said comparing means;	<p>“Authorized decoders are provided with enable reception keys so that subsequently transmitted data having an information identification code matching a reception key at a decoder-receiver may be received for subsequent display on the video screen.” Ex. 1009 at Abstract.</p> <p>“Enable reception messages are used to provide information identification (IID) codes or reception keys (RK) to decoders. The terms "information identification codes" and "reception keys" are used interchangeably. Decoders use reception keys to identify the portions of information that are to be displayed on specifically identified video screens.” Ex. 1009 at 8:59-65.</p> <p>“Each of the received DID codes is compared with a unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID code, the individual RK code for the respective portion of information is stored in a memory 66.</p> <p>The output of the receiver 60 is further connected to a data detection gate 67 for receiving the data enable sequences. The individual RK codes in the received data enable sequences are compared in a comparator 68 with the individual RK codes stored in the memory 66. Upon a match of one of these RK codes, the accompanying display coordinates of the update data are loaded into registers 69.” Ex. 1009 at 10:53-66.</p>
[1.c] wherein said	“Referring now to FIGS. 11 and 26, control bus 318

'970 Claim Element	Disclosure in Nadan (Ex. 1009)
communication control circuit enables bi-directional communication with said display unit and said computer.	controls bi-directional communication between a decoder 316 (or a desk interface unit 321) and the system. Host CPU 425 may issue messages targeted to a specific decoder or to all decoders, or may request information from a specific decoder. A decoder will send a message to the host CPU 425 when requested by the host CPU 425.” Ex. 1009 at 36:8-15.
2. A display unit according to claim 1, wherein said first and second identification information include an identification number.	“The ER sync signal 32 is followed by display identification code (DID) - reception key (RK) sets 34, each of which includes at least one of the <u>unique</u> DID codes and at least one of the liD codes as a reception Skey (RK) for which the video screen identified by the decoder-receiver DID is authorized to display. In the example shown, the sets are the <u>DID/RK pairs TBD12??/MDC2000, B01205/JSN416 and LRN0122/MDC2000</u> and indicate that the video screen 10 connected to the decoder-receiver having the DID code TBD12?? is authorized to display update data for the source information corresponding to RK MDC2000, screen DID BOB01205, RK JSN416; and screen DID LRN0122, RK MDC2000.” Ex. 1009 at 9:2-16.
3. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:	“A system for securely providing restricted display information having an encoder-transmitter for transmitting selected update data using information identification codes as enabling reception keys and a plurality of uniquely identified decoder-receivers for receiving the update data for display on a video screen.” Ex. 1009 at Abstract.
[3.a] comparing means for comparing a first identification information which is previously stored in said display unit, and a	“Each of the received DID codes is compared with a unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID code, the individual RK code for the respective portion of information is stored in a memory 66. The output of the receiver 60 is further connected to a

'970 Claim Element	Disclosure in Nadan (Ex. 1009)
second identification information which is previously stored in said computer and is sent from said computer; and	data detection gate 67 for receiving the data enable sequences. The individual RK codes in the received data enable sequences are compared in a comparator 68 with the individual RK codes stored in the memory 66. Upon a match of one of these RK codes, the accompanying display coordinates of the update data are loaded into registers 69.” Ex. 1009 at 10:53-66.
[3.b] a reception prohibition means for prohibiting reception of a control command from said computer, for controlling at least one of a display size, a display position, a brightness, and a contrast of said display unit, when said first and second identification information do not match as a result of the comparison by said comparing means;	<p>“An encoder for the first embodiment of the invention is shown in FIG. 5. The encoder includes a modem 50 for receiving data from a source of market information. This data may be in the form of entire pages or records of financial information where portions are updated, or the update data itself along with information for the positioning of the update data on the respective display screen. The output of modem 50 is connected to an interface” Ex. 1009 at 10:2-11.</p> <p>“means for providing update data corresponding to changes in particular portions of display information and a display coordinates for positioning the update data in a relevant location in the corresponding particular portion of display information” Ex. 1009 at 60:1-5.</p> <p>“Authorized decoders are provided with enable reception keys so that subsequently transmitted data having an information identification code matching a reception key at a decoder-receiver may be received for subsequent display on the video screen.” Ex. 1009 at Abstract.</p> <p>“Enable reception messages are used to provide information identification (IID) codes or reception keys (RK) to decoders. The terms "information identification codes" and "reception keys" are used interchangeably. Decoders use reception keys to identify the portions of information that are to be displayed on specifically identified video screens.” Ex. 1009 at 8:59-65.</p> <p>“Each of the received DID codes is compared with a</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009)
	<p>unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID code, the individual RK code for the respective portion of information is stored in a memory 66.</p> <p>The output of the receiver 60 is further connected to a data detection gate 67 for receiving the data enable sequences. The individual RK codes in the received data enable sequences are compared in a comparator 68 with the individual RK codes stored in the memory 66. Upon a match of one of these RK codes, the accompanying display coordinates of the update data are loaded into registers 69.” Ex. 1009 at 10:53-66.</p>
[3.c] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.	<p>“Referring now to FIGS. 11 and 26, control bus 318 controls bi-directional communication between a decoder 316 (or a desk interface unit 321) and the system. Host CPU 425 may issue messages targeted to a specific decoder or to all decoders, or may request information from a specific decoder. A decoder will send a message to the host CPU 425 when requested by the host CPU 425.” Ex. 1009 at 36:8-15.</p>
4. A display unit according to claim 3, wherein said first and second identification information include an identification number.	<p>“The ER sync signal 32 is followed by display identification code (DID) - reception key (RK) sets 34, each of which includes at least one of the unique DID codes and at least one of the liD codes as a reception Skey (RK) for which the video screen identified by the decoder-receiver DID is authorized to display. In the example shown, the sets are the <u>DID/RK pairs TBD12??/MDC2000, B01205/JSN416 and LRN0122/MDC2000</u> and indicate that the video screen 10 connected to the decoder-receiver having the DID code TBD12?? is authorized to display update data for the source information corresponding to RK MDC2000, screen DID BOB01205, RK JSN416; and screen DID LRN0122, RK MDC2000.” Ex. 1009 at 9:2-16.</p>
14. A display unit having	<p>“A system for securely providing restricted display</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009)
a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:	information having an encoder-transmitter for transmitting selected update data using information identification codes as enabling reception keys and a plurality of uniquely identified decoder-receivers for receiving the update data for display on a video screen.” Ex. 1009 at Abstract.
[14.a] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and	<p>“Each of the received DID codes is compared with a unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID code, the individual RK code for the respective portion of information is stored in a memory 66.</p> <p>The output of the receiver 60 is further connected to a data detection gate 67 for receiving the data enable sequences. The individual RK codes in the received data enable sequences are compared in a comparator 68 with the individual RK codes stored in the memory 66. Upon a match of one of these RK codes, the accompanying display coordinates of the update data are loaded into registers 69.” Ex. 1009 at 10:53-66.</p>
[14.b] a communication permission means for enabling display control by said computer and permitting communication between said computer and said display unit with respect to display control of said display unit, when said first and second identification information match as a result of the comparison by said comparing means,	<p>“Authorized decoders are provided with enable reception keys so that subsequently transmitted data having an information identification code matching a reception key at a decoder-receiver may be received for subsequent display on the video screen.” Ex. 1009 at Abstract.</p> <p>“Enable reception messages are used to provide information identification (IID) codes or reception keys (RK) to decoders. The terms "information identification codes" and "reception keys" are used interchangeably. Decoders use reception keys to identify the portions of information that are to be displayed on specifically identified video screens.” Ex. 1009 at 8:59-65.</p> <p>“Each of the received DID codes is compared with a unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009)
	<p>code, the individual RK code for the respective portion of information is stored in a memory 66.</p> <p>The output of the receiver 60 is further connected to a data detection gate 67 for receiving the data enable sequences. The individual RK codes in the received data enable sequences are compared in a comparator 68 with the individual RK codes stored in the memory 66. Upon a match of one of these RK codes, the accompanying display coordinates of the update data are loaded into registers 69.” Ex. 1009 at 10:53-66.</p>
[14.c] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.	<p>“Referring now to FIGS. 11 and 26, control bus 318 controls bi-directional communication between a decoder 316 (or a desk interface unit 321) and the system. Host CPU 425 may issue messages targeted to a specific decoder or to all decoders, or may request information from a specific decoder. A decoder will send a message to the host CPU 425 when requested by the host CPU 425.” Ex. 1009 at 36:8-15.</p>
15. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:	<p>“A system for securely providing restricted display information having an encoder-transmitter for transmitting selected update data using information identification codes as enabling reception keys and a plurality of uniquely identified decoder-receivers for receiving the update data for display on a video screen.” Ex. 1009 at Abstract.</p>
[15.a] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent	<p>“Each of the received DID codes is compared with a unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID code, the individual RK code for the respective portion of information is stored in a memory 66.</p> <p>The output of the receiver 60 is further connected to a data detection gate 67 for receiving the data enable sequences. The individual RK codes in the received data enable sequences are compared in a comparator 68 with the individual RK codes stored in the memory 66.</p>

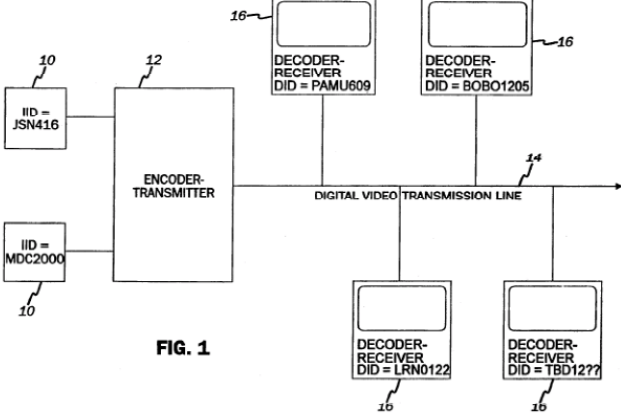
'970 Claim Element	Disclosure in Nadan (Ex. 1009)
from said computer; and	Upon a match of one of these RK codes, the accompanying display coordinates of the update data are loaded into registers 69." Ex. 1009 at 10:53-66.
[15.b] a reception permission means for enabling control of a display size/position of said display unit by said computer and permitting reception of a control command from said computer for controlling at least the display size/position of said display unit, when said first and second identification information match as a result of the comparison by said comparing means,	<p>"An encoder for the first embodiment of the invention is shown in FIG. 5. The encoder includes a modem 50 for receiving data from a source of market information. This data may be in the form of entire pages or records of financial information where portions are updated, or the update data itself along with information for the positioning of the update data on the respective display screen. The output of modem 50 is connected to an interface" Ex. 1009 at 10:2-11.</p> <p>"means for providing update data corresponding to changes in particular portions of display information and a display coordinates for positioning the update data in a relevant location in the corresponding particular portion of display information" Ex. 1009 at 60:1-5.</p> <p>"Authorized decoders are provided with enable reception keys so that subsequently transmitted data having an information identification code matching a reception key at a decoder-receiver may be received for subsequent display on the video screen." Ex. 1009 at Abstract.</p> <p>"Enable reception messages are used to provide information identification (IID) codes or reception keys (RK) to decoders. The terms "information identification codes" and "reception keys" are used interchangeably. Decoders use reception keys to identify the portions of information that are to be displayed on specifically identified video screens." Ex. 1009 at 8:59-65.</p> <p>"Each of the received DID codes is compared with a unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID code, the individual RK code for the respective portion of information is stored in a memory 66.</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009)
	<p>The output of the receiver 60 is further connected to a data detection gate 67 for receiving the data enable sequences. The individual RK codes in the received data enable sequences are compared in a comparator 68 with the individual RK codes stored in the memory 66. Upon a match of one of these RK codes, the accompanying display coordinates of the update data are loaded into registers 69.” Ex. 1009 at 10:53-66.</p>
<p>[15.c] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.</p>	<p>“Referring now to FIGS. 11 and 26, control bus 318 controls bi-directional communication between a decoder 316 (or a desk interface unit 321) and the system. Host CPU 425 may issue messages targeted to a specific decoder or to all decoders, or may request information from a specific decoder. A decoder will send a message to the host CPU 425 when requested by the host CPU 425.” Ex. 1009 at 36:8-15.</p>
<p>16. A display unit for displaying an image based upon a digital image information signal, inputting said digital image information signal from an externally connected computer, comprising:</p>	<p>“A system for securely providing restricted display information having an encoder-transmitter for transmitting selected update data using information identification codes as enabling reception keys and a plurality of uniquely identified decoder-receivers for receiving the update data for display on a video screen.” Ex. 1009 at Abstract.</p>
<p>[16.a] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and</p>	<p>“Each of the received DID codes is compared with a unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID code, the individual RK code for the respective portion of information is stored in a memory 66.</p> <p>The output of the receiver 60 is further connected to a data detection gate 67 for receiving the data enable sequences. The individual RK codes in the received data enable sequences are compared in a comparator 68 with the individual RK codes stored in the memory 66. Upon a match of one of these RK codes, the</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009)
	accompanying display coordinates of the update data are loaded into registers 69.” Ex. 1009 at 10:53-66.
<p>[16.b] a communication permission means for enabling display control by said computer and permitting communication between said computer and said display unit with respect to display control of said display unit, when said first and second identification information match as a result of the comparison by said comparing means,</p>	<p>“Authorized decoders are provided with enable reception keys so that subsequently transmitted data having an information identification code matching a reception key at a decoder-receiver may be received for subsequent display on the video screen.” Ex. 1009 at Abstract.</p> <p>“Enable reception messages are used to provide information identification (IID) codes or reception keys (RK) to decoders. The terms "information identification codes" and "reception keys" are used interchangeably. Decoders use reception keys to identify the portions of information that are to be displayed on specifically identified video screens.” Ex. 1009 at 8:59-65.</p> <p>“Each of the received DID codes is compared with a unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID code, the individual RK code for the respective portion of information is stored in a memory 66.</p> <p>The output of the receiver 60 is further connected to a data detection gate 67 for receiving the data enable sequences. The individual RK codes in the received data enable sequences are compared in a comparator 68 with the individual RK codes stored in the memory 66. Upon a match of one of these RK codes, the accompanying display coordinates of the update data are loaded into registers 69.” Ex. 1009 at 10:53-66.</p>
<p>[16.c] further comprising a communication controller which enables bi-directional communication with said display unit and said computer.</p>	<p>“Referring now to FIGS. 11 and 26, control bus 318 controls bi-directional communication between a decoder 316 (or a desk interface unit 321) and the system. Host CPU 425 may issue messages targeted to a specific decoder or to all decoders, or may request information from a specific decoder. A decoder will send a message to the host CPU 425 when requested by the host CPU 425.” Ex. 1009 at 36:8-15.</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009)
17. A display unit for displaying an image based upon a digital image information signal, inputting said digital image information signal from an externally connected computer, comprising:	“A system for securely providing restricted display information having an encoder-transmitter for transmitting selected update data using information identification codes as enabling reception keys and a plurality of uniquely identified decoder-receivers for receiving the update data for display on a video screen.” Ex. 1009 at Abstract.
[17.a] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and	<p>“Each of the received DID codes is compared with a unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID code, the individual RK code for the respective portion of information is stored in a memory 66.</p> <p>The output of the receiver 60 is further connected to a data detection gate 67 for receiving the data enable sequences. The individual RK codes in the received data enable sequences are compared in a comparator 68 with the individual RK codes stored in the memory 66. Upon a match of one of these RK codes, the accompanying display coordinates of the update data are loaded into registers 69.” Ex. 1009 at 10:53-66.</p>
[17.b] a communication prohibition means for disabling control of said memory means by said computer and prohibiting communication between said computer and said memory means of said display unit, when said first and second identification information do not match as a result of the	<p>“Authorized decoders are provided with enable reception keys so that subsequently transmitted data having an information identification code matching a reception key at a decoder-receiver may be received for subsequent display on the video screen.” Ex. 1009 at Abstract.</p> <p>“Enable reception messages are used to provide information identification (IID) codes or reception keys (RK) to decoders. The terms "information identification codes" and "reception keys" are used interchangeably. Decoders use reception keys to identify the portions of information that are to be displayed on specifically identified video screens.” Ex. 1009 at 8:59-65.</p> <p>“Each of the received DID codes is compared with a</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009)
comparison by said comparing means,	<p>unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID code, the individual RK code for the respective portion of information is stored in a memory 66.</p> <p>The output of the receiver 60 is further connected to a data detection gate 67 for receiving the data enable sequences. The individual RK codes in the received data enable sequences are compared in a comparator 68 with the individual RK codes stored in the memory 66. Upon a match of one of these RK codes, the accompanying display coordinates of the update data are loaded into registers 69.” Ex. 1009 at 10:53-66.</p>
[17.c] further comprising a communication controller which enables bi-directional communication with said display unit and said computer.	<p>“Referring now to FIGS. 11 and 26, control bus 318 controls bi-directional communication between a decoder 316 (or a desk interface unit 321) and the system. Host CPU 425 may issue messages targeted to a specific decoder or to all decoders, or may request information from a specific decoder. A decoder will send a message to the host CPU 425 when requested by the host CPU 425.” Ex. 1009 at 36:8-15.</p>
22. A method of communicating between a display unit and a video source from which video signals are sent to the display unit for display, the method comprising the steps of:	<p>“A system for securely providing restricted display information having an encoder-transmitter for transmitting selected update data using information identification codes as enabling reception keys and a plurality of uniquely identified decoder-receivers for receiving the update data for display on a video screen.” Ex. 1009 at Abstract.</p> <p>Ex. 1009 at Fig. 1.</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009)
	 <p style="text-align: center;">FIG. 1</p>
<p>[22.a] communicating display unit information stored in a memory of the display unit from the display unit to the video source,</p>	<p>“Referring to FIG. 24B, each decoder responds to a host CPU 425 signal with either a solicitation message or, if no solicitation is ready, an idle message. Idle messages consist of a Seq element only (message bit=0). Solicitation messages consist of a Seq element (message bit= 1), a poll element, and one or more request frames. A request frame (R-Frame) contains one or more requests from either the host CPU 425 or the decoder 316....As shown in FIG. 24E, bit 7 of the poll message is always set. Since a poll message can originate from either the host CPU 425 or the decoder 316, bit 6 is used to indicate the source of the poll (0=Host, 1 =decoder). The remaining six bits are the polling ID of the decoder (1 to 63).” Ex. 1009 at 37:13-57.</p>
<p>[22.b] wherein said display unit information includes an identification number for uniquely identifying the display unit; and</p>	<p>“At installation, the host CPU 425 assigns a unique control bus address to each decoder. This address consists of a strand ID, which identifies the RS-422 or 485 line to which the decoder is connected, and a 5-bit polling ID. The polling scheme allows the host CPU 425 to poll each decoder using a single byte, thus making the most frequently used signal the shortest length.” Ex. 1009 at 36:39-45</p>
<p>[22.c] sending a signal from the video source to the display unit, wherein</p>	<p>“Referring now to FIGS. 11 and 26, control bus 318 controls bi-directional communication between a decoder 316 (or a desk interface unit 321) and the</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009)
said signal is generated based on the display unit information,	<p>system. Host CPU 425 may issue messages targeted to a specific decoder or to all decoders, or may request information from a specific decoder. A decoder will send a message to the host CPU 425 when requested by the host CPU 425.</p> <p>Typical uses of the control bus 318 from the host CPU 425 to decoders 316 are to poll a decoder 316 for a message, install a new decoder 316 on the system, update an LED display of a keyboard 319 at a decoder 316 and maintain the control bus protocol. Typical uses of the control bus 318 from the decoder 316 to host CPU 425 are to transmit keyboard and/or mouse data (i.e., user requests for display information, or to define or move tiles), report decoder malfunctions, and request system resources, e.g., DV bus 314 message retransmission due to a detected error in message sequences.” Ex. 1009 at 36:8-26.</p>
[22.d] wherein information is bi-directionally communicated with the video source and the display unit.	<p>“Referring now to FIGS. 11 and 26, control bus 318 controls bi-directional communication between a decoder 316 (or a desk interface unit 321) and the system. Host CPU 425 may issue messages targeted to a specific decoder or to all decoders, or may request information from a specific decoder. A decoder will send a message to the host CPU 425 when requested by the host CPU 425.</p> <p>Typical uses of the control bus 318 from the host CPU 425 to decoders 316 are to poll a decoder 316 for a message, install a new decoder 316 on the system, update an LED display of a keyboard 319 at a decoder 316 and maintain the control bus protocol. Typical uses of the control bus 318 from the decoder 316 to host CPU 425 are to transmit keyboard and/or mouse data(i.e., user requests for display information, or to define or move tiles), report decoder malfunctions, and request system resources, e.g., DV bus 314 message retransmission due to a detected error in message</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009)
	sequences.” Ex. 1009 at 36:8-26

B. Nadan in View of Schmidt Teaches Each Limitation of Claims 5-13

168. As discussed above, it is my opinion that Nadan alone discloses the core bi-directional communication and control features of claims 1-17 of the '970 Patent. I have also reviewed the Schmidt reference in view of the claims at issue, and it is my opinion that Nadan combined with Schmidt discloses each limitation of claims 5-13 of the '970 Patent. Additional details supporting my opinion are provided in the following paragraphs.

169. Claims 5-13 specifically recite the storage of frequency compatibility information and/or other display characteristics. Schmidt discloses a display system where a display monitor sends monitor identification information to a graphics controller and the graphics controller configures itself according to the received information so that it can generate signals compatible with the display monitor. (Ex. 1012 at Abstract, 2:60-3:3.) Schmidt discloses additional specific information, such as compatible frequencies, is stored in the display for transmission to a video source. (*See* Ex. 1012 at Abstract.) It is my opinion that one of ordinary skill in the art would be motivated to combine the frequency information of Schmidt with the features of Nadan. Specifically, by adding this functionality, the system of Nadan would be able to adapt to new displays and utilize them by providing compatible video information.

170. The table below provides a summary of the specific disclosures in Nadan and Schmidt that support my opinions that the combination of these references discloses each element of claims 5-13 of the '970 Patent. It should be noted that the disclosures cited in the table below are merely exemplary and are in no way limiting, and there may be other portions of these references that additionally disclose a given limitation.

'970 Claim Element	Disclosure in Nadan (Ex. 1009) and Schmidt (Ex. 1012)
5. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:	<p><u>Nadan</u></p> <p>“A system for securely providing restricted display information having an encoder-transmitter for transmitting selected update data using information identification codes as enabling reception keys and a plurality of uniquely identified decoder-receivers for receiving the update data for display on a video screen.” Ex. 1009 at Abstract.</p>
[5.a] memory means for storing at least data of a frequency range to which said display unit is operable;	<p><u>Schmidt</u></p> <p>“[a]n apparatus for determining a plurality of video signal characteristics including analog video frequency, horizontal sync frequency and vertical sync frequency produced by a graphics controller providing the video signal to a video display monitor, includes a memory storing bits which correspond to a set of operating characteristics of the video display monitor, a first circuit coupled to the memory for producing voltage fluctuations on a line based on the stored bits in response to a signal which corresponds to a command to set the characteristics of the video signal provided to the video display monitor, and a second circuit for sensing the voltage fluctuations so as to permit determination of the set of operating characteristics.”</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009) and Schmidt (Ex. 1012)
	<p>Ex. 1012 at Abstract.</p> <p>“[B]yte 4 provides a statement of the maximum horizontal sync frequency, in kilohertz (kHz), supported by monitor 100. ...Byte 5 provides the maximum vertical sync frequency, in hertz (Hz), supported by monitor 100.” Ex. 1012 at 11:39-49.</p>
<p>[5.b] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and</p>	<p><u>Nadan</u></p> <p>“Each of the received DID codes is compared with a unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID code, the individual RK code for the respective portion of information is stored in a memory 66.</p> <p>The output of the receiver 60 is further connected to a data detection gate 67 for receiving the data enable sequences. The individual RK codes in the received data enable sequences are compared in a comparator 68 with the individual RK codes stored in the memory 66. Upon a match of one of these RK codes, the accompanying display coordinates of the update data are loaded into registers 69.” Ex. 1009 at 10:53-66.</p>
<p>[5.c] and a communication permission means for permitting communication between said computer, at least with respect to said data of a frequency range stored in said memory means, when said first and second identification information match as a result of the comparison by said comparing</p>	<p><u>Nadan</u></p> <p>“Authorized decoders are provided with enable reception keys so that subsequently transmitted data having an information identification code matching a reception key at a decoder-receiver may be received for subsequent display on the video screen.” Ex. 1009 at Abstract.</p> <p>“Enable reception messages are used to provide information identification (IID) codes or reception keys (RK) to decoders. The terms "information identification codes" and "reception keys" are used interchangeably. Decoders use reception keys to identify the portions of information that are to be displayed on specifically identified video screens.” Ex. 1009 at 8:59-65.</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009) and Schmidt (Ex. 1012)
means;	<p>“Each of the received DID codes is compared with a unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID code, the individual RK code for the respective portion of information is stored in a memory 66.</p> <p>The output of the receiver 60 is further connected to a data detection gate 67 for receiving the data enable sequences. The individual RK codes in the received data enable sequences are compared in a comparator 68 with the individual RK codes stored in the memory 66. Upon a match of one of these RK codes, the accompanying display coordinates of the update data are loaded into registers 69.” Ex. 1009 at 10:53-66.</p> <p><u>Schmidt</u></p> <p>“[B]yte 4 provides a statement of the maximum horizontal sync frequency, in kilohertz (kHz), supported by monitor 100. ...Byte 5 provides the maximum vertical sync frequency, in hertz (Hz), supported by monitor 100.” Ex. 1012 at 11:39-49.</p>
[5.d] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.	<p><u>Nadan</u></p> <p>“Referring now to FIGS. 11 and 26, control bus 318 controls bi-directional communication between a decoder 316 (or a desk interface unit 321) and the system. Host CPU 425 may issue messages targeted to a specific decoder or to all decoders, or may request information from a specific decoder. A decoder will send a message to the host CPU 425 when requested by the host CPU 425.” Ex. 1009 at 36:8-15.</p>
6. A display unit according to claim 5, wherein said first identification information is stored in said memory means.	<p><u>Nadan</u></p> <p>“Each of the received DID codes is compared with a unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID code, the individual RK code for the respective portion of information is stored in a memory 66.</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009) and Schmidt (Ex. 1012)
	<p>The output of the receiver 60 is further connected to a data detection gate 67 for receiving the data enable sequences. The individual RK codes in the received data enable sequences are compared in a comparator 68 with the individual RK codes stored in the memory 66. Upon a match of one of these RK codes, the accompanying display coordinates of the update data are loaded into registers 69.” Ex. 1009 at 10:53-66.</p>
<p>7. A display unit according to claim 5, wherein said data relating at least to a display specification of said display unit stored in said memory means, includes data of a frequency range to which said display unit is operable.</p>	<p><u>Schmidt</u></p> <p>“[B]yte 4 provides a statement of the maximum horizontal sync frequency, in kilohertz (kHz), supported by monitor 100. ...Byte 5 provides the maximum vertical sync frequency, in hertz (Hz), supported by monitor 100.” Ex. 1012 at 11:39-49.</p>
<p>8. A display unit according to claim 5, wherein said first and second identification information include an identification number</p>	<p><u>Nadan</u></p> <p>“The ER sync signal 32 is followed by display identification code (DID) - reception key (RK) sets 34, each of which includes at least one of the <u>unique</u> DID codes and at least one of the liD codes as a reception Skey (RK) for which the video screen identified by the decoder-receiver DID is authorized to display. In the example shown, the sets are the <u>DID/RK pairs TBD12??/MDC2000, B01205/JSN416 and LRN0122/MDC2000</u> and indicate that the video screen 10 connected to the decoder-receiver having the DID code TBD12?? is authorized to display update data for the source information corresponding to RK MDC2000, screen DID BOB01205, RK JSN416; and screen DID LRN0122, RK MDC2000.” Ex. 1009 at 9:2-16.</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009) and Schmidt (Ex. 1012)
9. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:	<p><u>Nadan</u></p> <p>“A system for securely providing restricted display information having an encoder-transmitter for transmitting selected update data using information identification codes as enabling reception keys and a plurality of uniquely identified decoder-receivers for receiving the update data for display on a video screen.” Ex. 1009 at Abstract.</p>
[9.a] memory means for storing at least data of a frequency range for which said display unit is operable;	<p><u>Schmidt</u></p> <p>“[B]yte 4 provides a statement of the maximum horizontal sync frequency, in kilohertz (kHz), supported by monitor 100. ...Byte 5 provides the maximum vertical sync frequency, in hertz (Hz), supported by monitor 100.” Ex. 1012 at 11:39-49.</p>
[9.b] comparing means for comparing a first identification information which is previously stored in said display unit in advance, and a second identification information which is previously stored in said computer and is sent from said computer; and	<p><u>Nadan</u></p> <p>“Each of the received DID codes is compared with a unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID code, the individual RK code for the respective portion of information is stored in a memory 66.</p> <p>The output of the receiver 60 is further connected to a data detection gate 67 for receiving the data enable sequences. The individual RK codes in the received data enable sequences are compared in a comparator 68 with the individual RK codes stored in the memory 66. Upon a match of one of these RK codes, the accompanying display coordinates of the update data are loaded into registers 69.” Ex. 1009 at 10:53-66.</p>
[9.c] a communication prohibition means for prohibiting communication between said computer, at least with respect to said data	<p><u>Nadan</u></p> <p>“Authorized decoders are provided with enable reception keys so that subsequently transmitted data having an information identification code matching a reception key at a decoder-receiver may be received for</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009) and Schmidt (Ex. 1012)
<p>of a frequency range stored in said memory means, when said first and second identification information do not match as a result of the comparison by said comparing means;</p>	<p>subsequent display on the video screen.” Ex. 1009 at Abstract.</p> <p>“Enable reception messages are used to provide information identification (IID) codes or reception keys (RK) to decoders. The terms "information identification codes" and "reception keys" are used interchangeably. Decoders use reception keys to identify the portions of information that are to be displayed on specifically identified video screens.” Ex. 1009 at 8:59-65.</p> <p>“Each of the received DID codes is compared with a unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID code, the individual RK code for the respective portion of information is stored in a memory 66. The output of the receiver 60 is further connected to a data detection gate 67 for receiving the data enable sequences. The individual RK codes in the received data enable sequences are compared in a comparator 68 with the individual RK codes stored in the memory 66. Upon a match of one of these RK codes, the accompanying display coordinates of the update data are loaded into registers 69.” Ex. 1009 at 10:53-66.</p> <p><u>Schmidt</u></p> <p>“[B]yte 4 provides a statement of the maximum horizontal sync frequency, in kilohertz (kHz), supported by monitor 100. ...Byte 5 provides the maximum vertical sync frequency, in hertz (Hz), supported by monitor 100.” Ex. 1012 at 11:39-49.</p>
<p>[9.d] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.</p>	<p><u>Nadan</u></p> <p>“Referring now to FIGS. 11 and 26, control bus 318 controls bi-directional communication between a decoder 316 (or a desk interface unit 321) and the system. Host CPU 425 may issue messages targeted to a specific decoder or to all decoders, or may request information from a specific decoder. A decoder will</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009) and Schmidt (Ex. 1012)
	send a message to the host CPU 425 when requested by the host CPU 425.” Ex. 1009 at 36:8-15.
10. A display unit according to claim 9, wherein the control of said memory means includes rewriting or writing control of said data in said memory means.	<p><u>Nadan</u></p> <p>“Each of the received DID codes is compared with a unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID code, the individual RK code for the respective portion of information is stored in a memory 66.” Ex. 1009 at 10:54-58.</p>
11. A display unit according to claim 9, wherein said first identification information is stored in said memory means.	<p><u>Nadan</u></p> <p>“Each of the received DID codes is compared with a unique display identification code stored in a ROM 64 by a comparator 65. Upon each match of the DID code, the individual RK code for the respective portion of information is stored in a memory 66. The output of the receiver 60 is further connected to a data detection gate 67 for receiving the data enable sequences. The individual RK codes in the received data enable sequences are compared in a comparator 68 with the individual RK codes stored in the memory 66. Upon a match of one of these RK codes, the accompanying display coordinates of the update data are loaded into registers 69.” Ex. 1009 at 10:53-66.</p>
12. A display unit according to claim 9, wherein said data relating at least to a display specification of said display unit stored in said memory means, includes data of a frequency range to which said display unit is	<p><u>Schmidt</u></p> <p>“[a]n apparatus for determining a plurality of video signal characteristics including analog video frequency, horizontal sync frequency and vertical sync frequency produced by a graphics controller providing the video signal to a video display monitor, includes a memory storing bits which correspond to a set of operating characteristics of the video display monitor, a first circuit coupled to the memory for producing voltage fluctuations on a line based on the stored bits in</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009) and Schmidt (Ex. 1012)
operable.	<p>response to a signal which corresponds to a command to set the characteristics of the video signal provided to the video display monitor, and a second circuit for sensing the voltage fluctuations so as to permit determination of the set of operating characteristics.” Ex. 1012 at Abstract.</p> <p>“[B]yte 4 provides a statement of the maximum horizontal sync frequency, in kilohertz (kHz), supported by monitor 100. ...Byte 5 provides the maximum vertical sync frequency, in hertz (Hz), supported by monitor 100.” Ex. 1012 at 11:39-49.</p>
13. A display unit according to claim 9, wherein said first and second identification information include an identification number.	<p><u>Nadan</u></p> <p>“The ER sync signal 32 is followed by display identification code (DID) - reception key (RK) sets 34, each of which includes at least one of the <u>unique</u> DID codes and at least one of the liD codes as a reception Skey (RK) for which the video screen identified by the decoder-receiver DID is authorized to display. In the example shown, the sets are the <u>DID/RK pairs TBD12??/MDC2000, B01205/JSN416 and LRN0122/MDC2000</u> and indicate that the video screen 10 connected to the decoder-receiver having the DID code TBD12?? is authorized to display update data for the source information corresponding to RK MDC2000, screen DID BOB01205, RK JSN416; and screen DID LRN0122, RK MDC2000.” Ex. 1009 at 9:2-16.</p>

C. Nadan in View of Takahashi Teaches Each Limitation of Claims 24, 26, and 29

171. I have also reviewed the Nadan reference in combination with Takahashi in view of the claims at issue, and it is my opinion that Nadan combined with

Takahashi discloses each limitation of claims 24, 26, and 29 of the '970 Patent.

Additional details supporting my opinion are provided in the following paragraphs.

172. Claims 24, 26, and 29 depend from claims 23, 25, and 28, respectively. Claims 23, 25, and 28 include substantially similar subject matter to claim 22. As described above, Nadan discloses each of the limitations of claim 22. Thus, each of the limitations of claims 23, 25, and 28 are disclosed by Nadan for the same reasons that Nadan discloses each of the limitations of claim 22.

173. Claims 24, 26, and 29 additionally recite that the processor of the display can control a “deflection circuit.” As an initial matter, it is my opinion that a deflection circuit is a well known component of CRTs, which can adjust the size and/or position of a CRT image. In addition, the minor limitation of a deflection circuit is also disclosed through the combination of Nadan with Takahashi.

174. Takahashi teaches how to control display parameters using a separate personal computer. In particular, Takahashi teaches that a signal generator 30 of a personal computer may be connected to the CPU 20 of a display 10 using a simple I/O interface 22, and that control signals may be sent from the personal computer to the display to adjust any of a number of display parameters including, but not limited to, screen size, brightness, hue; focus, and contrast. The CPU effects these changes through its control of a “deflecting system circuit.” (Ex. 1017 at p. 3.)

175. It is my opinion that one of ordinary skill in the art would be motivated to combine Takahashi’s use of a deflection circuit to adjust screen size with Nadan’s

bi-directional control system. As described above Nadan, like Takahashi, is concerned with controlling the operational characteristics of a connected computer display. Thus one of ordinary skill would be motivated to combine deflection control functions of Takahashi with the bi-directional communications of Nadan, to enable more complete control of the display of Nadan.

176. The table below provides a summary of the specific disclosures in Nadan and Takahashi that support my opinions that the combination of these references discloses each element of claims 24, 26, and 29 of the '970 Patent. It should be noted that the disclosures cited in the table below are merely exemplary and are in no way limiting, and there may be other portions of these references that additionally disclose a given limitation.

'970 Claim Element	Disclosure in Nadan (Ex. 1009) and Takahashi (Ex. 1017)
23. A display unit for displaying an image based on an image signal inputted from an externally connected computer, comprising:	<p><u>Nadan</u></p> <p>“A system for securely providing restricted display information having an encoder-transmitter for transmitting selected update data using information identification codes as enabling reception keys and a plurality of uniquely identified decoder-receivers for receiving the update data for display on a video screen.” Ex. 1009 at Abstract.</p>
[23.a] a processor adapted to control display of the display unit;	<p>“In one embodiment, a decoder 316 using a 20 MIPS processor 690 can redraw a complete bit-mapped graphics image (2 bits/pixel) in approximately 165 ms. The DV bus 314 can deliver a full screen graphics image in approximately 32 ms. Because the encoder 312 will not repeat a DV bus message until its refresh</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009) and Takahashi (Ex. 1017)
	period (nominally 200 ms) has elapsed, no decoder 316 will lose a message due to overflow even under worst-case conditions.” Ex. 1009 at 53:48-56.
[23.b] a memory which stores an identification number; and	<p>“Referring now to FIGS. 11 and 26, control bus 318 controls bi-directional communication between a decoder 316 (or a desk interface unit 321) and the system. Host CPU 425 may issue messages targeted to a specific decoder or to all decoders, or may request information from a specific decoder. A decoder will send a message to the host CPU 425 when requested by the host CPU 425.” Ex. 1009 at 36:8-15.</p> <p>“Referring to FIG. 24B, each decoder responds to a host CPU 425 signal with either a solicitation message or, if no solicitation is ready, an idle message. Idle messages consist of a Seq element only (message bit=0). Solicitation messages consist of a Seq element (message bit= 1), a poll element, and one or more request frames. A request frame (R-Frame) contains one or more requests from either the host CPU 425 or the decoder 316....As shown in FIG. 24E, bit 7 of the poll message is always set. Since a poll message can originate from either the host CPU 425 or the decoder 316, bit 6 is used to indicate the source of the poll (0=Host, 1 =decoder). The remaining six bits are the polling ID of the decoder (1 to 63).” Ex. 1009 at 37:13-57.</p>
[23.c] a communication controller which sends the identification number stored in said memory to said computer;	<p>“At installation, the host CPU 425 assigns a unique control bus address to each decoder. This address consists of a strand ID, which identifies the RS-422 or 485 line to which the decoder is connected, and a 5-bit polling ID. The polling scheme allows the host CPU 425 to poll each decoder using a single byte, thus making the most frequently used signal the shortest length.” Ex. 1009 at 36:39-45.</p> <p>“Referring to FIG. 24B, each decoder responds to a</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009) and Takahashi (Ex. 1017)
	<p>host CPU 425 signal with either a solicitation message or, if no solicitation is ready, an idle message. Idle messages consist of a Seq element only (message bit=0). Solicitation messages consist of a Seq element (message bit= 1), a poll element, and one or more request frames. A request frame (R-Frame) contains one or more requests from either the host CPU 425 or the decoder 316....As shown in FIG. 24E, bit 7 of the poll message is always set. Since a poll message can originate from either the host CPU 425 or the decoder 316, bit 6 is used to indicate the source of the poll (0=Host, 1 =decoder). The remaining six bits are the polling ID of the decoder (1 to 63)." Ex. 1009 at 37:13-57.</p>
[23.d] wherein said communication controller enables bi-directional communication between said display and said computer.	<p>"At installation, the host CPU 425 assigns a unique control bus address to each decoder. This address consists of a strand ID, which identifies the RS-422 or 485 line to which the decoder is connected, and a 5-bit polling ID. The polling scheme allows the host CPU 425 to poll each decoder using a single byte, thus making the most frequently used signal the shortest length." Ex. 1009 at 36:39-45.</p>
24. A display unit according to claim 23, further comprising a deflection circuit, wherein the processor generates control signals for the deflection circuit.	<p><u>Takahashi</u></p> <p>"In the imaging system circuit 14 and the deflecting system circuit 18, circuits for adjusting the screen size, brightness, hue, focus, contrast and the like of an image are constituted with digital circuits, such as, for example, an amplitude adjustment circuit for brightness signals and an amplitude adjustment circuit for imaging signals)[sic] in the imaging system circuit 14 for adjusting brightness and contrast, and a vertical position adjustment circuit and a horizontal position adjustment circuit in vertical and horizontal deflection circuits for adjusting raster position and a focus adjustment circuit for adjusting the focal point of an electron beam. The</p>

'970 Claim Element	Disclosure in Nadan (Ex. 1009) and Takahashi (Ex. 1017)
	abovementioned digital adjustment circuits in the imaging system circuit 14 and the deflecting system circuit 18 receive adjustment control signals from a CPU 20 acting as a control circuit.” Ex. 1017 at p. 3.
25. A display unit for displaying an image based on an image signal inputted from an externally connected computer, comprising:	<u>Nadan</u> <i>See claim 23, preamble.</i>
[25.a] a processor adapted to control display of the display unit;	<u>Nadan</u> <i>See claim 23, element [23.a].</i>
[25.b] a memory which stores identification information; and	<u>Nadan</u> <i>See claim 23, element [23.b].</i>
[25.c] a communication controller which sends the identification information stored in said memory to said computer in response to power on of at least one of said display unit and said computer;	<u>Nadan</u> <i>See claim 23, element [23.c].</i>

'970 Claim Element	Disclosure in Nadan (Ex. 1009) and Takahashi (Ex. 1017)
[25.d] wherein said communication controller enables bi-directional communication between said display and said computer.	<p><u>Nadan</u> <i>See</i> claim 23, element [23.d].</p>
26. A display unit according to claim 25, further comprising a deflection circuit, wherein the processor generates control signals for the deflection circuit.	<p><u>Takahashi</u> <i>See</i> claim 24.</p>
27. A display unit for displaying an image based on an image signal inputted from an externally connected video source, comprising:	<p><u>Nadan</u> <i>See</i> claim 23, preamble.</p>
[27.a] a processor adapted to control display of the display unit;	<p><u>Nadan</u> <i>See</i> claim 23, element [23.a].</p>
[27.b] a memory in which at least display unit information is stored, wherein the display unit information	<p><u>Nadan</u> <i>See</i> claim 23, element [23.b].</p>

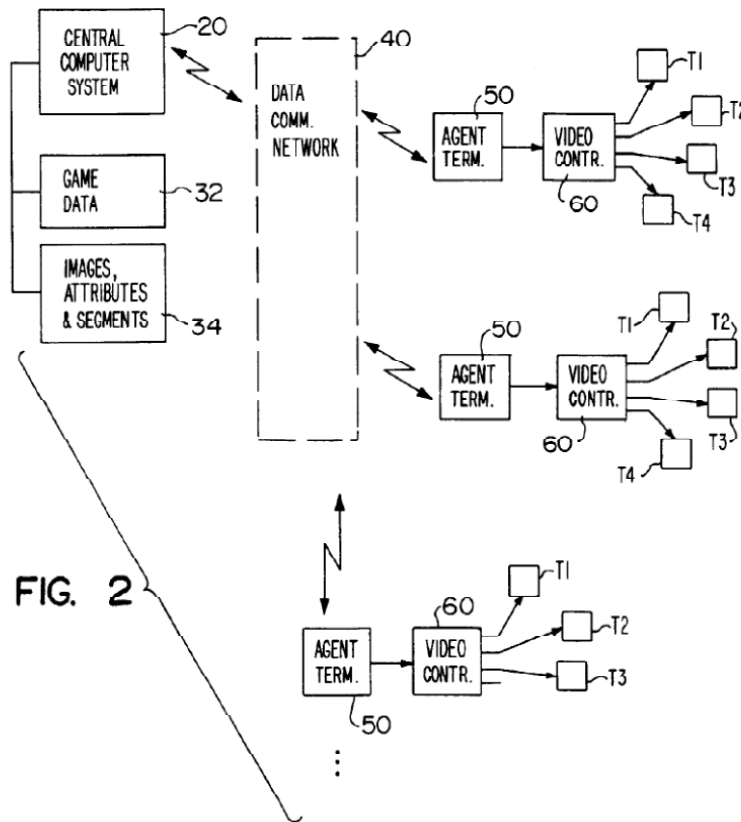
'970 Claim Element	Disclosure in Nadan (Ex. 1009) and Takahashi (Ex. 1017)
includes an identification number for identifying the display unit; and	
[27.c] a communication controller capable of bi-directionally communicating with the video source;	<p><u>Nadan</u> <i>See</i> claim 23, element [23.d].</p>
[27.d] wherein the communication controller communicates the display unit information from the display unit to the video source and the display unit receives a signal from the video source that is generated based on the display unit information.	<p><u>Nadan</u> <i>See</i> claim 23, element [23.c].</p>
28. A display unit according to claim 27, wherein the video source is a computer.	<p><u>Nadan</u> <i>See</i> claim 23, preamble.</p>
29. A display unit according to claim 28, further comprising a deflection circuit, wherein the processor generates control signals for the deflection circuit.	<p><u>Takahashi</u> <i>See</i> claim 24.</p>

D. Wasti Teaches Each Limitation of Claims 1-17 and 22

177. I have reviewed the Wasti reference in view of the claims at issue, and it is my opinion that Wasti discloses each limitation of claims 1-17 and 22 of the '970 Patent. Additional details supporting my opinion are provided in the following paragraphs.

178. Wasti discloses a system in which a display unit communicates bi-directionally with a video source and provides the video source with a unique identifier that is used to generate a signal in response. Wasti also discloses that a video source provides a unique identifier to the display, which the display uses to determine if the transmission is authorized. Accordingly, through this and other disclosure discussed below, Wasti discloses each limitation of claims 1-17 and 22.

179. Wasti discloses a networked system in which video is distributed to one or more connected displays. A central computer system (which acts as the externally connected computer) sends video to agent terminals. Each agent terminal includes a video controller that is connected to one or more displays (the video controller and its connected display acting as the claimed display units).

**FIG. 2 of Wasti.**

180. Wasti discloses that the controllers/displays will only display video received from the central computer after comparing a received identifier with a previously stored identifier and determining that a match exists. (Ex. 1010 at 6:26-36.) This enables the central computer to broadcast commands but only have them implemented by the desired controller/display combination. (Ex. 1010 at 6:26-36.)

181. This communication is bi-directional and allows the controller/display combinations to send their unique identification information to the central computer as well. Particularly these communications include acknowledgements from the controller/display combinations. Accordingly, one of ordinary skill would understand

that the central computer relies on these communications to determine whether to retry or otherwise change its interactions with the controller/display combinations.

(Ex. 1010 at 6:1-18, 6:26-49.)

182. Wasti also discloses that the controller/display combinations include information regarding compatible frequencies:

“The illustrated embodiment is arranged to generate NTSC composite video signals. The timing of NTSC and PAL video signals is different, and the programming of the Xilinx programmable array can be arranged to accommodate either format. The Xilinx coding for operation of programmable array U20 is downloaded from system memory by the CPU U1 upon startup, for example from ROM U4. Jumper E1 on the circuit card sets a particular board for operation in the PAL or NTSC format such that CPU loads programmable array U20 appropriately. The jumper can also to effect other differences in the character and timing of the video signals for producing an NTSC or PAL output.”

(Ex. 1010 at 8:10-22.)

183. Wasti also discloses that based upon the jumper setting, a program for operating the controller at the set field rate is downloaded over the serial link. One of ordinary skill would understand that this program necessarily would include and store the compatible field rate. One of ordinary skill would also understand that this download necessarily includes the unique identifier of the video controller.

“One of the inputs to serial communications controller U7, generated by the presence or absence of jumper E1, selects whether the controller is set for processing images according to the NTSC format or the PAL format, allowing incoming frame information to be decoded accordingly, and prompting CPU

U1 upon initiation to download to the Xilinx programmable array the correct program.”

(Ex. 1010 at 6:59-7:5)

184. I note that the “display unit” of Wasti is the combination of a video controller and television receiver. I understand the plain and ordinary meaning of “display unit” to include combinations of connected components that may not be in the same housing. I do not believe that the ’970 Patent disclosure requires or suggests that the functionality of the display unit must be included within a single housing. Ex. 1001.

185. The table below provides a summary of the specific disclosures in Wasti that support my opinions that Wasti discloses each element of claims 1-17, and 22 of the ’970 Patent. It should be noted that the disclosures cited in the table below are merely exemplary and are in no way limiting, and there may be other portions of Wasti that additionally disclose a given limitation.

’970 Claim Element	Disclosure in Wasti (Ex. 1010)
1. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:	“The video controller 60 of the invention, as shown in Fig. 1, includes a digital processor U1, for example Motorola microcomputer model MC68HC000, in data communication with a communications network via serial communications controller U7, and adapted to control generation of image signals to be displayed on a plurality of unmodified commercial television receivers T1-T4 via their composite video or antenna inputs.” Ex. 1010 at 5:10-17: <i>see also</i> Ex. 1010 at Fig. 1.
[1.a] comparing means	“Communications along the serial communication path

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
for comparing a first identification information which is previously stored in said display unit and a second identification information which is previously stored in said computer and is sent from said computer; and	of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.
[1.b] a communication prohibition means for prohibiting communication between said computer with respect to display control of said display unit, when said first and second identification information do not match as a result of the comparison by said comparing means;	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.
[1.c] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60.” Ex. 1010 at 6:26-31.
2. A display unit according to claim 1, wherein said first and second identification information include an identification number.	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
	received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.
3. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:	“The video controller 60 of the invention, as shown in Fig. 1, includes a digital processor U1, for example Motorola microcomputer model MC68HC000, in data communication with a communications network via serial communications controller U7, and adapted to control generation of image signals to be displayed on a plurality of unmodified commercial television receivers T1-T4 via their composite video or antenna inputs.” Ex. 1010 at 5:10-17. <i>See</i> also Fig. 1.
[3.a] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.
[3.b] a reception prohibition means for prohibiting reception of a control command from said computer, for controlling at least one of a display size, a display position, a brightness, and a contrast of said display unit, when said first and	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
second identification information do not match as a result of the comparison by said comparing means;	<p>“During the six cycles of the video clock wherein the system address bus addresses the video data, the CPU U1 can manipulate the data in video RAM U13 in the same manner as it manipulates the system memory U2, and thus can effect changes in the image to be displayed. For example, image attributes stored in RAM U2, ROM U4 or downloaded along the serial communication path, such as the address or position and nature of lines, figures, alphanumeric characters and the like to be inserted into the display, can be decoded and entered into the video RAM data. Alternatively, a full frame or a segment of a full frame such as a logo or other image segment can be entered into the video RAM under control of CPU U1. Access of CPU U1 to video RAM U13 is quick enough to accomplish at least minimal animation in the image displayed. The particulars of the data entered in video RAM U13 by CPU U1 can be received from the serial communication link of controller U7 and stored in system RAM U2, or can be generated by programmed operations of CPU U1 in response to binary data received, stored routines in ROM U4, etc.”</p> <p>Ex. 1010 at 7:47-8:9.</p>
[3.c] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.	<p>“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60.”</p> <p>Ex. 1010 at 6:26-31.</p>
4. A display unit according to claim 3, wherein said first and second identification information include an identification number.	<p>“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path</p>

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
	can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.
5. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:	“The video controller 60 of the invention, as shown in Fig. 1, includes a digital processor U1, for example Motorola microcomputer model MC68HC000, in data communication with a communications network via serial communications controller U7, and adapted to control generation of image signals to be displayed on a plurality of unmodified commercial television receivers T1-T4 via their composite video or antenna inputs.” Ex. 1010 at 5:10-17. <i>See also</i> Fig. 1.
[5.a] memory means for storing at least data of a frequency range to which said display unit is operable;	<p>“The illustrated embodiment is arranged to generate NTSC composite video signals. The timing of NTSC and PAL video signals is different, and the programming of the Xilinx programmable array can be arranged to accommodate either format. The Xilinx coding for operation of programmable array U20 is downloaded from system memory by the CPU U1 upon startup, for example from ROM U4. Jumper E1 on the circuit card sets a particular board for operation in the PAL or NTSC format such that CPU loads programmable array U20 appropriately. The jumper can also to effect other differences in the character and timing of the video signals for producing an NTSC or PAL output.” Ex 1010 at 8:10-22.</p> <p>“One of the inputs to serial communications controller U7, generated by the presence or absence of jumper E1, selects whether the controller is set for processing images according to the NTSC format or the PAL format, allowing incoming frame information to be decoded accordingly, and prompting CPU U1 upon initiation to download to the Xilinx programmable array the correct program.” Ex. 1010 at 6:59-7:5</p>

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
[5.b] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and	<p>“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.</p>
[5.c] and a communication permission means for permitting communication between said computer, at least with respect to said data of a frequency range stored in said memory means, when said first and second identification information match as a result of the comparison by said comparing means;	<p>“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.</p> <p>“One of the inputs to serial communications controller U7, generated by the presence or absence of jumper E1, selects whether the controller is set for processing images according to the NTSC format or the PAL format, allowing incoming frame information to be decoded accordingly, and prompting CPU U1 upon initiation to download to the Xilinx programmable array the correct program.” Ex. 1010 at 6:59-7:6.</p> <p>“During the six cycles of the video clock wherein the system address bus addresses the video data, the CPU U1 can manipulate the data in video RAM U13 in the same manner as it manipulates the system memory U2, and thus can effect changes in the image to be displayed. For example, image attributes stored in RAM U2, ROM U4 or downloaded along the serial</p>

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
	<p>communication path, such as the address or position and nature of lines, figures, alphanumeric characters and the like to be inserted into the display, can be decoded and entered into the video RAM data. Alternatively, a full frame or a segment of a full frame such as a logo or other image segment can be entered into the video RAM under control of CPU U1. Access of CPU U1 to video RAM U13 is quick enough to accomplish at least minimal animation in the image displayed. The particulars of the data entered in video RAM U13 by CPU U1 can be received from the serial communication link of controller U7 and stored in system RAM U2, or can be generated by programmed operations of CPU U1 in response to binary data received, stored routines in ROM U4, etc.” Ex. 1010 at 7:47-8:9.</p>
<p>[5.d] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.</p>	<p>“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60.” Ex. 1010 at 6:26-31.</p>
<p>6. A display unit according to claim 5, wherein said first identification information is stored in said memory means.</p>	<p>“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.</p>
<p>7. A display unit according to claim 5,</p>	<p>“The illustrated embodiment is arranged to generate NTSC composite video signals. The timing of NTSC</p>

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
<p>wherein said data relating at least to a display specification of said display unit stored in said memory means, includes data of a frequency range to which said display unit is operable.</p>	<p>and PAL video signals is different, and the programming of the Xilinx programmable array can be arranged to accommodate either format. The Xilinx coding for operation of programmable array U20 is downloaded from system memory by the CPU U1 upon startup, for example from ROM U4. Jumper E1 on the circuit card sets a particular board for operation in the PAL or NTSC format such that CPU loads programmable array U20 appropriately. The jumper can also to effect other differences in the character and timing of the video signals for producing an NTSC or PAL output.” Ex. 1010 at 8:10-22.</p> <p>“One of the inputs to serial communications controller U7, generated by the presence or absence of jumper E1, selects whether the controller is set for processing images according to the NTSC format or the PAL format, allowing incoming frame information to be decoded accordingly, and prompting CPU U1 upon initiation to download to the Xilinx programmable array the correct program.” Ex. 1010 at 6:59-7:5</p>
<p>8. A display unit according to claim 5, wherein said first and second identification information include an identification number</p>	<p>“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.</p>
<p>9. A display unit having a communication control circuit for communicating with an</p>	<p>“The video controller 60 of the invention, as shown in Fig. 1, includes a digital processor U1, for example Motorola microcomputer model MC68HC000, in data communication with a communications network via</p>

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
externally connected computer, wherein said communication control circuit comprises:	serial communications controller U7, and adapted to control generation of image signals to be displayed on a plurality of unmodified commercial television receivers T1-T4 via their composite video or antenna inputs.” Ex. 1010 at 5:10-17. <i>See</i> also Fig. 1.
[9.a] memory means for storing at least data of a frequency range for which said display unit is operable;	<p>“The illustrated embodiment is arranged to generate NTSC composite video signals. The timing of NTSC and PAL video signals is different, and the programming of the Xilinx programmable array can be arranged to accommodate either format. The Xilinx coding for operation of programmable array U20 is downloaded from system memory by the CPU U1 upon startup, for example from ROM U4. Jumper E1 on the circuit card sets a particular board for operation in the PAL or NTSC format such that CPU loads programmable array U20 appropriately. The jumper can also to effect other differences in the character and timing of the video signals for producing an NTSC or PAL output.” Ex. 1010 at 8:10-22.</p> <p>“One of the inputs to serial communications controller U7, generated by the presence or absence of jumper E1, selects whether the controller is set for processing images according to the NTSC format or the PAL format, allowing incoming frame information to be decoded accordingly, and prompting CPU U1 upon initiation to download to the Xilinx programmable array the correct program.” Ex. 1010 at 6:59-7:5</p>
[9.b] comparing means for comparing a first identification information which is previously stored in said display unit in advance, and a second identification	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
information which is previously stored in said computer and is sent from said computer; and	comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.
[9.c] a communication prohibition means for prohibiting communication between said computer, at least with respect to said data of a frequency range stored in said memory means, when said first and second identification information do not match as a result of the comparison by said comparing means;	<p>“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.</p> <p>“The illustrated embodiment is arranged to generate NTSC composite video signals. The timing of NTSC and PAL video signals is different, and the programming of the Xilinx programmable array can be arranged to accommodate either format. The Xilinx coding for operation of programmable array U20 is downloaded from system memory by the CPU U1 upon startup, for example from ROM U4. Jumper E1 on the circuit card sets a particular board for operation in the PAL or NTSC format such that CPU loads programmable array U20 appropriately. The jumper can also to effect other differences in the character and timing of the video signals for producing an NTSC or PAL output.” Ex. 1010 at 8:10-22.</p> <p>“One of the inputs to serial communications controller U7, generated by the presence or absence of jumper E1, selects whether the controller is set for processing images according to the NTSC format or the PAL format, allowing incoming frame information to be decoded accordingly, and prompting CPU U1 upon initiation to download to the Xilinx programmable array the correct program.” Ex. 1010 at 6:59-7:5</p>

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
[9.d] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60.” Ex. 1010 at 6:26-31.
10. A display unit according to claim 9, wherein the control of said memory means includes rewriting or writing control of said data in said memory means.	“Preferably, ROM U4 also stores constants to be downloaded into additional elements of video controller 60 upon initiation of the system, for example for programming Xilinx field programmable gate array U20, which generates timing and control signals for operating the video RAM U13, video encoder U21, color palette U 19 and data latch U 17. It is also possible to arrange to have the programming for the Xilinx programmable array U20 varied during operation under control of CPU U 1 and/or to obtain coding for such elements <u>by downloading from a remote location along the serial communications link of serial controller U7, buffer U11 and communications port P1.</u> ” Ex. 1010 at 5:53-6:8.
11. A display unit according to claim 9, wherein said first identification information is stored in said memory means.	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36. “The illustrated embodiment is arranged to generate NTSC composite video signals. The timing of NTSC and PAL video signals is different, and the

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
	<p>programming of the Xilinx programmable array can be arranged to accommodate either format. The Xilinx coding for operation of programmable array U20 is downloaded from system memory by the CPU U1 upon startup, for example from ROM U4. Jumper E1 on the circuit card sets a particular board for operation in the PAL or NTSC format such that CPU loads programmable array U20 appropriately. The jumper can also to effect other differences in the character and timing of the video signals for producing an NTSC or PAL output.” Ex. 1010 at 8:10-22.</p> <p>“One of the inputs to serial communications controller U7, generated by the presence or absence of jumper E1, selects whether the controller is set for processing images according to the NTSC format or the PAL format, allowing incoming frame information to be decoded accordingly, and prompting CPU U1 upon initiation to download to the Xilinx programmable array the correct program.” Ex. 1010 at 6:59-7:5</p>
<p>12. A display unit according to claim 9, wherein said data relating at least to a display specification of said display unit stored in said memory means, includes data of a frequency range to which said display unit is operable.</p>	<p>“The illustrated embodiment is arranged to generate NTSC composite video signals. The timing of NTSC and PAL video signals is different, and the programming of the Xilinx programmable array can be arranged to accommodate either format. The Xilinx coding for operation of programmable array U20 is downloaded from system memory by the CPU U1 upon startup, for example from ROM U4. Jumper E1 on the circuit card sets a particular board for operation in the PAL or NTSC format such that CPU loads programmable array U20 appropriately. The jumper can also to effect other differences in the character and timing of the video signals for producing an NTSC or PAL output.” Ex. 1010 at 8:10-22.</p> <p>“One of the inputs to serial communications controller U7, generated by the presence or absence of jumper E1, selects whether the controller is set for processing</p>

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
	images according to the NTSC format or the PAL format, allowing incoming frame information to be decoded accordingly, and prompting CPU U1 upon initiation to download to the Xilinx programmable array the correct program.” Ex. 1010 at 6:59-7:5
13. A display unit according to claim 9, wherein said first and second identification information include an identification number.	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.
14. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:	“The video controller 60 of the invention, as shown in Fig. 1, includes a digital processor U1, for example Motorola microcomputer model MC68HC000, in data communication with a communications network via serial communications controller U7, and adapted to control generation of image signals to be displayed on a plurality of unmodified commercial television receivers T1-T4 via their composite video or antenna inputs.” Ex. 1010 at 5:10-17. <i>See</i> also Ex. 1010 at Fig. 1.
[14.a] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
from said computer; and	controllers 60 in this manner.” Ex. 1010 at 6:26-36.
[14.b] a communication permission means for enabling display control by said computer and permitting communication between said computer and said display unit with respect to display control of said display unit, when said first and second identification information match as a result of the comparison by said comparing means,	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.
[14.c] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60.” Ex. 1010 at 6:26-31.
15. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:	“The video controller 60 of the invention, as shown in Fig. 1, includes a digital processor U1, for example Motorola microcomputer model MC68HC000, in data communication with a communications network via serial communications controller U7, and adapted to control generation of image signals to be displayed on a plurality of unmodified commercial television receivers T1-T4 via their composite video or antenna inputs.” Ex. 1010 at 5:10-17. <i>See</i> also Ex. 1010 at Fig. 1.
[15.a] comparing means for comparing a first identification	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and	identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.
[15.b] a reception permission means for enabling control of a display size/position of said display unit by said computer and permitting reception of a control command from said computer for controlling at least the display size/position of said display unit, when said first and second identification information match as a result of the comparison by said comparing means,	<p>“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.</p> <p>“During the six cycles of the video clock wherein the system address bus addresses the video data, the CPU U1 can manipulate the data in video RAM U13 in the same manner as it manipulates the system memory U2, and thus can effect changes in the image to be displayed. For example, image attributes stored in RAM U2, ROM U4 or downloaded along the serial communication path, such as the address or position and nature of lines, figures, alphanumeric characters and the like to be inserted into the display, can be decoded and entered into the video RAM data. Alternatively, a full frame or a segment of a full frame such as a logo or other image segment can be entered into the video RAM under control of CPU U1. Access of CPU U1 to video RAM U13 is quick enough to accomplish at least minimal animation in the image displayed. The particulars of the data entered in video RAM U13 by CPU U1 can be received from the serial communication link of controller U7 and</p>

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
	stored in system RAM U2 , or can be generated by programmed operations of CPU U1 in response to binary data received, stored routines in ROM U4, etc.” Ex. 1010 at 7:47-8:9.
[15.c] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60.” Ex. 1010 at 6:26-31.
16. A display unit for displaying an image based upon a digital image information signal, inputting said digital image information signal from an externally connected computer, comprising:	“The video controller 60 of the invention, as shown in Fig. 1, includes a digital processor U1, for example Motorola microcomputer model MC68HC000, in data communication with a communications network via serial communications controller U7, and adapted to control generation of image signals to be displayed on a plurality of unmodified commercial television receivers T1-T4 via their composite video or antenna inputs.” Ex. 1010 at 5:10-17. <i>See</i> also Fig. 1.
[16.a] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.
[16.b] a communication permission means for enabling display control by said computer and permitting	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
communication between said computer and said display unit with respect to display control of said display unit, when said first and second identification information match as a result of the comparison by said comparing means,	computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.
[16.c] further comprising a communication controller which enables bi-directional communication with said display unit and said computer.	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60.” Ex. 1010 at 6:26-31.
17. A display unit for displaying an image based upon a digital image information signal, inputting said digital image information signal from an externally connected computer, comprising:	“The video controller 60 of the invention, as shown in Fig. 1, includes a digital processor U1, for example Motorola microcomputer model MC68HC000, in data communication with a communications network via serial communications controller U7, and adapted to control generation of image signals to be displayed on a plurality of unmodified commercial television receivers T1-T4 via their composite video or antenna inputs.” Ex. 1010 at 5:10-17. <i>See also</i> Ex. 1010 at Fig. 1.
[17.a] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
computer and is sent from said computer; and	allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.
[17.b] a communication prohibition means for disabling control of said memory means by said computer and prohibiting communication between said computer and said memory means of said display unit, when said first and second identification information do not match as a result of the comparison by said comparing means,	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.
[17.c] further comprising a communication controller which enables bi-directional communication with said display unit and said computer.	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60.” Ex. 1010 at 6:26-31.
22. A method of communicating between a display unit and a video source from which video signals are sent to the display unit for display, the method comprising the steps of:	“The video controller 60 of the invention, as shown in Fig. 1, includes a digital processor U1, for example Motorola microcomputer model MC68HC000, in data communication with a communications network via serial communications controller U7, and adapted to control generation of image signals to be displayed on a plurality of unmodified commercial television receivers T1-T4 via their composite video or antenna inputs.” Ex. 1010 at 5:10-17. <i>See</i> also Ex. 1010 at Fig. 1.

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
	<p>FIG. 2</p>
<p>[22.a] communicating display unit information stored in a memory of the display unit from the display unit to the video source,</p>	<p>“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner. Alternatively, the identification code can be transmitted to the remote computer together with acknowledgement of a transmission or with other data, allowing the remote computer uniquely to determine the source of a transmission it receives on communication channels open to a plurality of controllers 60. In a network including such identification it is not necessary for all the controllers to be identical or to be operated identically because the remote computer can tailor transmissions to the controller, and interpret</p>

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
	transmissions received from the controller, in accordance with data stored at the remote computer relating to the character of the controller or the establishment in which it is located.” Ex. 1010 at 6:26-49.
[22.b] wherein said display unit information includes an identification number for uniquely identifying the display unit; and	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner. Alternatively, the identification code can be transmitted to the remote computer together with acknowledgement of a transmission or with other data, allowing the remote computer uniquely to determine the source of a transmission it receives on communication channels open to a plurality of controllers 60. In a network including such identification it is not necessary for all the controllers to be identical or to be operated identically because the remote computer can tailor transmissions to the controller, and interpret transmissions received from the controller, in accordance with data stored at the remote computer relating to the character of the controller or the establishment in which it is located.” Ex. 1010 at 6:26-49.
[22.c] sending a signal from the video source to the display unit, wherein said signal is generated based on the display unit information,	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data

'970 Claim Element	Disclosure in Wasti (Ex. 1010)
	received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner. Alternatively, the identification code can be transmitted to the remote computer together with acknowledgement of a transmission or with other data, allowing the remote computer uniquely to determine the source of a transmission it receives on communication channels open to a plurality of controllers 60. In a network including such identification it is not necessary for all the controllers to be identical or to be operated identically because the remote computer can tailor transmissions to the controller, and interpret transmissions received from the controller, in accordance with data stored at the remote computer relating to the character of the controller or the establishment in which it is located.” Ex. 1010 at 6:26-49.
[22.d] wherein information is bi-directionally communicated with the video source and the display unit.	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60.” Ex. 1010 at 6:26-31.

E. Wasti Also Shows that Claims 1-17 and 22 are Obvious

186. As noted above, it is my opinion that Wasti explicitly discloses each limitation of claims 1-17 and 22. In particular, where the “display unit” limitation in the claims is construed to include combinations of displays and externally connected devices, Wasti explicitly discloses such a feature. However, to the extent that “display

unit” is construed to require a single, *integral* display, it is my opinion that based on the knowledge of a person of ordinary skill in the art at the time of the alleged invention of the '970 Patent, it would have been obvious to combine the video controllers of Wasti with their connected displays to create a display having the functionality of the video controllers and displays in a single, integrated housing for at least the reason that such an arrangement would reduce the need for external connections and/or separate power for each device.

187. With respect to claim 22, as discussed above, it is my opinion that one of ordinary skill in the art would understand that Wasti discloses that its central computer generates a signal based in part on the identifier and information transmitted from the video controllers. However, to the extent this feature is found to not be explicitly disclosed in Wasti, it would have been obvious to modify Wasti to include this feature. Additional details supporting my opinion are provided in the following paragraphs.

188. Wasti discloses that the identification code “can be transmitted to the remote computer together with acknowledgement of a transmission or with other data, allowing the remote computer uniquely to determine the source of transmission it receives on communication channels open to a plurality of controllers 60.” (Ex. 1010 at 6:36-41.) Wasti also discloses that in the remote computer encode the identification code to ***specifically address data sent to certain Display Controllers 60***. (Ex. 1010 at 6:28-36.)

189. Accordingly, to the extent it is found that Wasti does not explicitly disclose that the central computer generates a signal based in part on the identifier and information transmitted from the video controllers, it would have been obvious for one of ordinary skill in the art to modify Wasti's use of unique identification code to first (1) send the code from the Video Controller 60 to the remote central computer 20; and then (2) use the received code to send specific data from the remote central computer 20 to the Video Controller 60. It would have been obvious for one of ordinary skill in the art to make the modification because Wasti discloses both capabilities of using the code, and it would make sense for the central computer 20 to first receive the code ***before*** using it to send data.

190. Further, the motivation to make the modification is found in Wasti itself. As discussed previously, Wasti discloses the need to present different data to different display terminals (*see* Ex. 1010 at 3:2-28) and the identification of those display terminals. One of ordinary skill in the art would understand that the modification above would further this goal to present different data to different display terminals.

F. Wasti Combined with Takahashi Teaches Each Limitation of Claims 24, 26, and 29

191. I have also reviewed the Wasti reference in combination with Takahashi in view of the claims at issue, and it is my opinion that Wasti combined with Takahashi discloses each limitation of claims 24, 26, and 29 of the '970 Patent. Additional details supporting my opinion are provided in the following paragraphs.

192. Claims 24, 26, and 29 depend from claims 23, 25, and 28, respectively. Claims 23, 25, and 28 include substantially similar subject matter to claim 22. As described above, Wasti discloses each of the limitations of claim 22. Thus, each of the limitations of claims 23, 25, and 28 are disclosed by Wasti for the same reasons that Wasti discloses each of the limitations of claim 22.

193. Claims 24, 26, and 29 additionally recite that the processor of the display can control a “deflection circuit.” As an initial matter, it is my opinion that a deflection circuit is a well known component of CRTs, which can adjust the size and/or position of a CRT image. In addition, the minor limitation of a deflection circuit is also disclosed through the combination of Wasti with Takahashi.

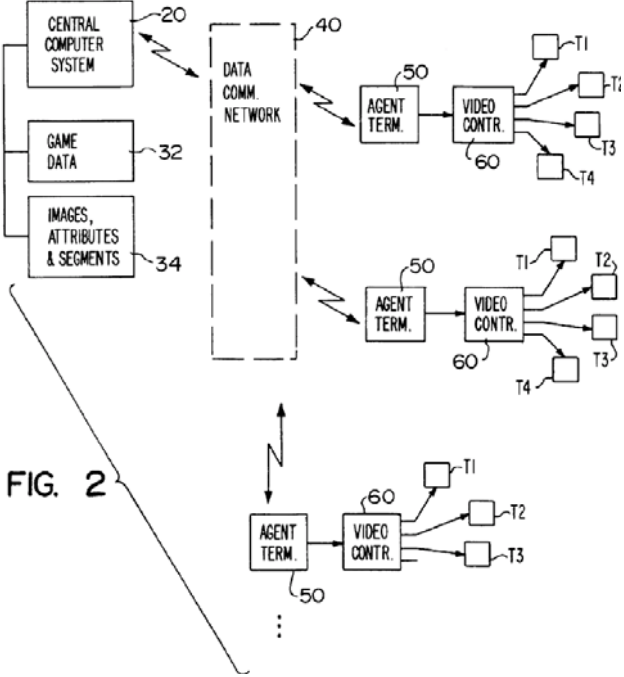
194. Takahashi teaches how to control display parameters using a separate personal computer. Takahashi teaches that a signal generator 30 of a personal computer may be connected to the CPU 20 of a display 10 using a simple I/O interface 22, and that control signals may be sent from the personal computer to the display to adjust any of a number of display parameters including, but not limited to, screen size, brightness, hue; focus, and contrast. The CPU effects these changes through its control of a “deflecting system circuit.” (Ex. 1017 at p. 3.)

195. It is my opinion that one of ordinary skill in the art would be motivated to combine Takahashi’s use of a deflection circuit to adjust screen size with Wasti’s bi-directional control system. As described above Wasti, like Takahashi, is concerned with controlling the operational characteristics of a connected computer display.

Thus one of ordinary skill would be motivated to combine deflection control functions of Takahashi with the bi-directional communications of Wasti, to enable more complete control of the display of Wasti.

196. The table below provides a summary of the specific disclosures in Wasti and Takahashi that support my opinions that the combination of these references discloses each element of claims 24, 26, and 29 of the '970 Patent. It should be noted that the disclosures cited in the table below are merely exemplary and are in no way limiting, and there may be other portions of these references that additionally disclose a given limitation.

'970 Claim Element	Disclosure in Wasti (Ex. 1010) and Takahashi (Ex. 1017)
23. A display unit for displaying an image based on an image signal inputted from an externally connected computer, comprising:	"The video controller 60 of the invention, as shown in Fig. 1, includes a digital processor U1, for example Motorola microcomputer model MC68HC000, in data communication with a communications network via serial communications controller U7, and adapted to control generation of image signals to be displayed on a plurality of unmodified commercial television receivers T1-T4 via their composite video or antenna inputs." Ex. 1010 at 5:10-17. <i>See</i> also Ex. 1010 at Fig. 1.

'970 Claim Element	Disclosure in Wasti (Ex. 1010) and Takahashi (Ex. 1017)
	
[23.a] a processor adapted to control display of the display unit;	<p>“The video controller 60 of the invention, as shown in Fig. 1, includes a digital processor U1, for example Motorola microcomputer model MC68HCOOO, in data communication with a communications network via serial communications controller U7, and adapted to control generation of image signals to be displayed on a plurality of unmodified commercial television receivers T1-T4 via their composite video or antenna inputs. The digital processor or CPU U1 is driven by clock circuit Y1, which has a crystal oscillator defining an instruction cycle of BMHz or 0.121-18. CPU U 1 is coupled to a 23 bit address bus BA and to a 16 bit data bus B0 , for memory addressing and data exchange with a system read only memory U4 and random access memory U2. The controller requires 64K of RAM and 128K of ROM, and is capable of supporting up to 2S6K of RAM and ROM using this number of address bus lines.” Ex. 1010 at 5:10-26.</p>
[23.b] a memory which	“Communications along the serial communication path

'970 Claim Element	Disclosure in Wasti (Ex. 1010) and Takahashi (Ex. 1017)
stores an identification number; and	of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60.” Ex. 1010 at 6:26-31.
[23.c] a communication controller which sends the identification number stored in said memory to said computer;	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller 60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner. Alternatively, the identification code can be transmitted to the remote computer together with acknowledgement of a transmission or with other data, allowing the remote computer uniquely to determine the source of a transmission it receives on communication channels open to a plurality of controllers 60. In a network including such identification it is not necessary for all the controllers to be identical or to be operated identically because the remote computer can tailor transmissions to the controller, and interpret transmissions received from the controller, in accordance with data stored at the remote computer relating to the character of the controller or the establishment in which it is located.” Ex. 1010 at 6:26-49.
[23.d] wherein said communication controller enables bi-directional	“Communications along the serial communication path of serial controller U7, buffer U11 and port P5 are bidirectional. Programmable logic array U8 stores an identification code unique to the particular controller

'970 Claim Element	Disclosure in Wasti (Ex. 1010) and Takahashi (Ex. 1017)
communication between said display and said computer.	60, such as a serial number, for use by a remote central computer communicating with the controller 60. Data received at controller 60 along the communication path can include an encoded identification code for comparison with the code stored in logic array U8, thus allowing the remote computer to address individual controllers 60 in this manner.” Ex. 1010 at 6:26-36.
24. A display unit according to claim 23, further comprising a deflection circuit, wherein the processor generates control signals for the deflection circuit.	<p><u>Takahashi</u></p> <p>“In the imaging system circuit 14 and the deflecting system circuit 18, circuits for adjusting the screen size, brightness, hue, focus, contrast and the like of an image are constituted with digital circuits, such as, for example, an amplitude adjustment circuit for brightness signals and an amplitude adjustment circuit for imaging signals)[sic] in the imaging system circuit 14 for adjusting brightness and contrast, and a vertical position adjustment circuit and a horizontal position adjustment circuit in vertical and horizontal deflection circuits for adjusting raster position and a focus adjustment circuit for adjusting the focal point of an electron beam. The abovementioned digital adjustment circuits in the imaging system circuit 14 and the deflecting system circuit 18 receive adjustment control signals from a CPU 20 acting as a control circuit.” Ex. 1017 at p. 3.</p>
25. A display unit for displaying an image based on an image signal inputted from an externally connected computer, comprising:	<p><u>Wasti</u></p> <p>See claim 23, preamble.</p>
[25.a] a processor adapted to control display of the display	<p><u>Wasti</u></p> <p>See claim 23, element [23.a].</p>

'970 Claim Element	Disclosure in Wasti (Ex. 1010) and Takahashi (Ex. 1017)
unit;	
[25.b] a memory which stores identification information; and	<u>Wasti</u> <i>See claim 23, element [23.b].</i>
[25.c] a communication controller which sends the identification information stored in said memory to said computer in response to power on of at least one of said display unit and said computer;	<u>Wasti</u> <i>See claim 23, element [23.c].</i>
[25.d] wherein said communication controller enables bi-directional communication between said display and said computer.	<u>Wasti</u> <i>See claim 23, element [23.d].</i>
26. A display unit according to claim 25, further comprising a deflection circuit, wherein the processor generates control signals for the deflection circuit.	<u>Takahashi</u> <i>See claim 24.</i>
27. A display unit for	<u>Wasti</u>

'970 Claim Element	Disclosure in Wasti (Ex. 1010) and Takahashi (Ex. 1017)
displaying an image based on an image signal inputted from an externally connected video source, comprising:	<i>See</i> claim 23, preamble.
[27.a] a processor adapted to control display of the display unit;	<u>Wasti</u> <i>See</i> claim 23, element [23.a].
[27.b] a memory in which at least display unit information is stored, wherein the display unit information includes an identification number for identifying the display unit; and	<u>Wasti</u> <i>See</i> claim 23, element [23.b].
[27.c] a communication controller capable of bi-directionally communicating with the video source;	<u>Wasti</u> <i>See</i> claim 23, element [23.d].
[27.d] wherein the communication controller communicates the display unit information from the display unit to the video	<u>Wasti</u> <i>See</i> claim 23, element [23.c].

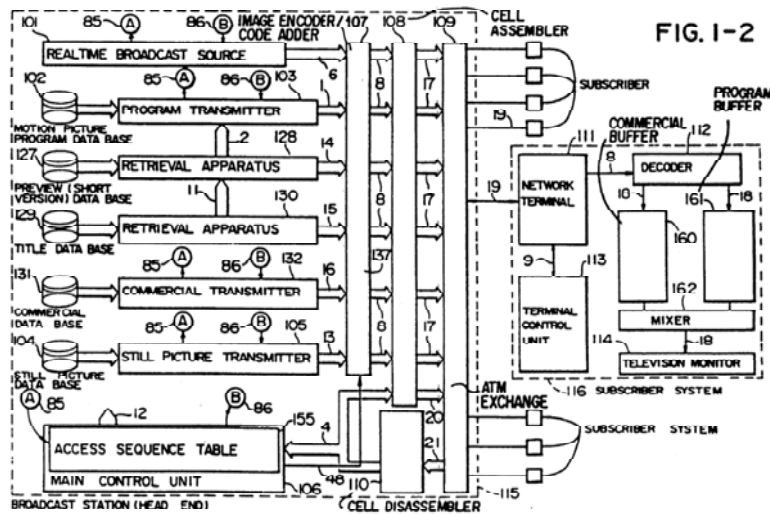
'970 Claim Element	Disclosure in Wasti (Ex. 1010) and Takahashi (Ex. 1017)
source and the display unit receives a signal from the video source that is generated based on the display unit information.	
28. A display unit according to claim 27, wherein the video source is a computer.	<u>Wasti</u> <i>See claim 23, preamble.</i>
29. A display unit according to claim 28, further comprising a deflection circuit, wherein the processor generates control signals for the deflection circuit.	<u>Takahashi</u> <i>See claim 24.</i>

G. Baji Teaches Each Limitation of Claim 22

197. I have reviewed the Baji reference in view of the claims at issue, and it is my opinion that Baji discloses each limitation of claim 22 of the '970 Patent.

Additional details supporting my opinion are provided in the following paragraphs.

198. Baji discloses a display unit in the form of subscriber system 116, as shown in Fig. 1-2 (shown below).

**FIG. 1-2 of Baji.**

199. Baji discloses that subscriber system 116 includes a television monitor 114 for displaying videos and images. (Ex. 1011 at 1:67-68, Fig. 1-2.) Baji also describes a terminal control unit 113 capable of displaying on television monitor 114 video signals sent by head end 115. (Ex. 1011 at 1:62-2:3, 2:37-49; Fig. 1-2, 4.)

200. Baji also discloses a memory containing display unit information. In particular, Baji discloses that the subscriber system 116 contains memory (*e.g.*, memory modules 139, 140, 160, 161, and 166). (Ex. 1011 at 10:20-23, 12:35-46; Fig. 1-2, 15.) Baji further discloses that the subscriber unit transmits requests for desired programs and desired advertisement information to the head-end. (*Id.*, 4:13-18.) As described in Baji these requests include a unique identification code for the subscriber unit. (*Id.*, 14:17-29 ; *see also* Fig. 18B (showing up-link communications—from the subscriber unit to the head end—containing terminal identification codes 96, which must be stored in a memory in the subscriber).) Because the subscriber unit 116

transmits messages that include the subscriber unit's ID code, a person of ordinary skill in the art would understand this information must be stored in a memory on the subscriber system 116.

201. Other disclosures in Baji show that the subscriber ID code is stored in a memory on the subscriber system. For example, Baji discloses a subscriber code used as input to access table 155 of head unit 115. (Ex. 1011 at 9:64-66, Fig. 12; *see also id.*, 4:58-64 (describing different video data sent to three different subscribers).) The subscriber code uniquely identifies each subscriber from the others, because head unit 115 transmits different video data to different subscribers based on their preferences. (*Id.*, 4:58-64; Figs. 10, 12.) Because Baji describes the subscriber code as an input for signal generation in head end 115, (*id.*, 9:64-66), this information must exist in memory on subscriber system 116.

202. Baji further discloses a bi-directional communication controller that communicates the unique identification number to the video source and that the video source creates a return signal based on receipt of the unique identification number. Each of Baji's subscriber systems "includes a network terminal 111 for supervising an interface with the head unit 115." (Ex. 1011 at 1:62-64, Fig. 1-2.) Baji's subscriber systems 116 communicate display unit information (*e.g.*, subscriber codes and desired program/advertisement preferences) to broadcast station 115 via network terminal 111. (*Id.*, 4:13-18, 4:58-64, 8:61-9:2, 9:64-66, Fig. 1-2.) In response, subscriber system 116 receives a signal from broadcast station 115 based on comparing the

subscriber code with an access sequence table 155 stored in main control unit 106 of broadcast station 115. (*Id.*, 8:11-15, 8:61-9:2, 9:64-66; *see id.*, 3:64-4:11, 4:58-64 (describing different video signals sent to three different subscribers based on subscriber code).) Titled a “multimedia bidirectional broadcast system,” Baji expressly describes the claimed bidirectional communication. (*See, e.g., id.* at Abstract, 2:37-41.).

203. The table below provides a summary of the specific disclosures in Baji that support my opinions that Baji discloses each element of claim 22 of the ‘970 Patent. It should be noted that the disclosures cited in the table below are merely exemplary and are in no way limiting, and there may be other portions of Baji that additionally disclose a given limitation.

'970 Claim Element	Disclosure in Baji (Ex. 1011)
22. A method of communicating between a display unit and a video source from which video signals are sent to the display unit for display, the method comprising the steps of:	<p>“A subscriber system 116 disposed for each subscriber includes a network terminal 111 for supervising an interface with the head end 115 so as to achieve the assemble and disassemble operations of cells, a decoder 112 for decoding the encoder or coded video signal 8 (through a bandwidth compression), a television monitor 114, and a terminal controller 113 for controlling the constituent elements above and for communicating control information of the broadcast station with the subscriber.” Ex. 1011 at 1:62-2:3.</p> <p>“On the other side, there are disposed subscriber systems 120 each including a directional filter 121 for transmitting a down-link signal such as the broadcast signal to a receiver 123 and for bidirectionally transmitting a terminal control signal 8, a modulator/demodulator 122 for modulating and for demodulating the terminal control signal 8, a terminal controller 124 for producing control information such</p>

'970 Claim Element	Disclosure in Baji (Ex. 1011)
	<p>as a channel selection and up-link control information (for example, enquiry for a charging state and questionnaire about a program), a receiver 123 for demodulating the broadcast signal to obtain a program video signal of a baseband, and a television monitor 114.” Ex. 1011 at 2:37-49.</p> <p>Ex. 1011 at FIGS. 1-2 and 1-4 (showing subscriber unit 116 and head end system 115)</p> <p><i>See also</i> Ex. 1011 at Fig. 4.</p>
<p>[22.a] communicating display unit information stored in a memory of the display unit from the display unit to the video source,</p>	<p>Ex. 1011 at FIG. 18B (showing up-link communications—from the subscriber unit to the head end—containing terminal identification codes 96, which must be stored in a memory in the subscriber)</p> <p>Ex. 1011 at Fig. 1-4 (showing memory modules 139, 140)</p> <p>“The subscribers transfers a desired program and desired advertisement information via the broadband transmission line 19 to the head end. The transferred information items are received by the main controller 106 of the head end so as to control the program transmitter 103 and the advertisement transmitter 132.” Ex. 1011 at 4:13-18.</p> <p>“On the other side, there are disposed subscriber systems 120 each including a directional filter 121 for transmitting a down-link signal such as the broadcast signal to a receiver 123 and for bidirectionally transmitting a terminal control signal 8, a modulator/demodulator 122 for modulating and for demodulating the terminal control signal 8, a terminal controller 124 for producing control information such as a channel selection and up-link control information (for example, enquiry for a charging state and questionnaire about a program), a receiver 123 for demodulating the broadcast signal to obtain a program video signal of a baseband, and a television monitor 114.” Ex. 1011 at 2:37-49.</p>

'970 Claim Element	Disclosure in Baji (Ex. 1011)
	<p>“This configuration includes a commercial buffer 160 and a program buffer 161 in which each buffer is a 2-port memory capable of independently achieving write and read operations.” Ex. 1011 at 10:20-23</p> <p>“As an input address for the table 155, there is employed a subscriber code and a commercial insertion point serial number.” Ex. 1011 at 9:64-66.</p> <p>Ex. 1011 at Figs. 1-2, 15 (showing bi-directional communication link 19 and communications over link).</p>
<p>[22.b] wherein said display unit information includes an identification number for uniquely identifying the display unit; and</p>	<p>“The channel dedicated to up-link control information is used by a subscriber to transfer a desired program and a desired commercial information item to the broadcast station or head end 117. Based on the information items thus received by means of the main control unit 118, the head end 117 controls a program transmitter 103 and a commercial transmitter 132. FIG. 18B shows the configuration of the information packet, which comprises a terminal identification code 96 and a request information item 97. If necessary, at least the terminal identification code 96 is uniquely and hieroglyphically coded so as to prevent the other viewers from freely issuing a up-link request.” (Ex. 1011 at 14:17-29)</p> <p>Ex. 1011 at FIG. 18B (showing up-link communications—from the subscriber unit to the head end—containing terminal identification codes 96, which must be stored in a memory in the subscriber).)</p> <p>“The subscribers transfers a desired program and desired advertisement information via the broadband transmission line 19 to the head end. The transferred information items are received by the main controller 106 of the head end so as to control the program transmitter 103 and the advertisement transmitter 132.” Ex. 1011 at 4:13-18.</p> <p>“As an input address for the table 155, there is employed a subscriber code and a commercial insertion</p>

'970 Claim Element	Disclosure in Baji (Ex. 1011)
	<p>point serial number.” Ex. 1011 at 9:64-66.</p> <p>“As an input address for the table 155, there is employed a subscriber code and a commercial insertion point serial number. Data to be set include a commercial associated with each commercial insertion point or a classification code of video data, an identification code, a commercial mixing mode, and commercial insertion coordinates.” Ex. 1011 at 9:64-10:2 .</p>
<p>[22.c] sending a signal from the video source to the display unit, wherein said signal is generated based on the display unit information,</p>	<p>“The channel dedicated to up-link control information is used by a subscriber to transfer a desired program and a desired commercial information item to the broadcast station or head end 117. Based on the information items thus received by means of the main control unit 118, the head end 117 controls a program transmitter 103 and a commercial transmitter 132. FIG. 18B shows the configuration of the information packet, which comprises a terminal identification code 96 and a request information item 97. If necessary, at least the terminal identification code 96 is uniquely and hieroglyphically coded so as to prevent the other viewers from freely issuing a up-link request.” Ex. 1011 at 14:17-29 .</p> <p>“The subscribers transfers a desired program and desired advertisement information via the broadband transmission line 19 to the head end. The transferred information items are received by the main controller 106 of the head end so as to control the program transmitter 103 and the advertisement transmitter 132.” Ex. 1011 at 4:13-18.</p> <p>“On the other hand, each commercial is sent, before the insertion thereof, to the pertinent subscriber according to the data base/commercial correspondence table 155. For the subscriber "a", there are transmitted two frames of commercials via the channels 4 and 5, respectively.</p>

'970 Claim Element	Disclosure in Baji (Ex. 1011)
	<p>On receiving these program and commercial cells, the subscriber system 116 decodes the contents thereof by means of a decoder 112 so as to respectively record the resultant signals in the program buffer 161 and the commercial buffer 160.” Ex. 1011 at 8:61-9:2.</p>
<p>[22.d] wherein information is bi-directionally communicated with the video source and the display unit.</p>	<p>“The configuration includes a head end 115, which comprises an advertisement data base 131 for effecting a sophisticated advertisement processing and a program broadcast apparatus 103 for appropriately accessing the data base 131 and a program data base so as to insert an advertisement desired by the subscriber into a program desired by the subscriber, and an advertisement transmit apparatus 132. The desired program and advertisement are transmitted via an ATM exchange 108 to the subscriber.” Ex. 1011 at 3:42-51</p> <p>“The subscribers transfers a desired program and desired advertisement information via the broadband transmission line 19 to the head end. The transferred information items are received by the main controller 106 of the head end so as to control the program transmitter 103 and the advertisement transmitter 132.” Ex. 1011 at 4:13-18.</p> <p>Ex. 1011 at FIG. 18B (showing up-link communications—from the subscriber unit to the head end—containing terminal identification codes 96, which must be stored in a memory in the subscriber)</p> <p>Ex. 1011 at FIG. 18A (showing down-link communications—from the head end to the subscriber unit)</p> <p>Figs. 1-2, 15 (showing bi-directional communication link 19 and communications over link).</p> <p>Ex. 1011 at Abstract (“A multimedia bidirectional broadcast system including a broadcast station and subscriber terminals.”)</p> <p>“On the other side, there are disposed subscriber systems 120 each including a directional filter 121 for</p>

'970 Claim Element	Disclosure in Baji (Ex. 1011)
	transmitting a down-link signal such as the broadcast signal to a receiver 123 and for bidirectionally transmitting a terminal control signal 8” Ex. 1011 at 2:37-41.

H. Lien Teaches Each Limitation of Claim 22

204. I have reviewed the Lien reference in view of the claims at issue, and it is my opinion that Lien discloses each limitation of claim 22 of the '970 Patent.

Additional details supporting my opinion are provided in the following paragraphs.

205. Lien discloses a display unit (*e.g.*, adapter 2 in the form of LCD display units 23, 24) for displaying an image based on video signals inputted from an externally connected video source (*e.g.*, portable computer 1, in the form of system unit 22). (Ex. 1014 at 6:41-50, 7:1-3.) For example, Lien discloses that adapters can take the form of LCD display units (23, 24) for displaying an image based on video signals inputted from an externally connected video source (system unit 22).

206. Lien discloses a memory in the form of attribute information store 13, which stores display unit information such as an adapter identity (ID) information and other “attribute information.” (Ex. 1014 at 3:63-68 (“The adapter contains an attribute information store 13, and a not-shown logical functional block associated with the adapter operations (for example, a memory block in the case of a memory

adapter). Attribute information store 13 stores adapter identity (ID) information and other information”).)

207. In addition, Lien discloses communicating information stored in the memory over a bi-directional communication link, in that Lien specifically discloses bi-directional communications between the adapter in the display and the video source (*i.e.*, the computer) based on transmission of an identifier. In particular, Lien shows in Figure 2 that the adapter and computer engage in bi-directional communication:

[Figure 2]

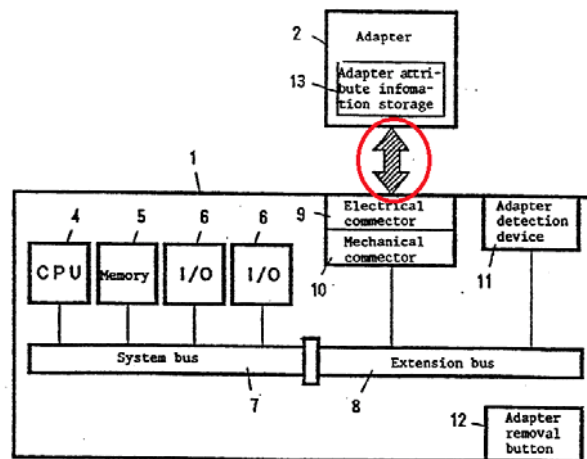


Figure 2 of Lien, annotated.

208. Lien repeatedly discloses that information in the display adapter is sent to the computer. (*See, e.g.*, Ex. 1014 at Abstract (“attribute information stored by the adapter is read out to the computer”); 5:17-24 (noting that the adapter’s ID and attribute information are sent to the computer).) In addition, Lien repeatedly discusses how the display adapter and computer “exchange” signals “between” one another.

(*See, e.g.*, Ex. 1014 at 8:21-33 (“said information signals exchanged with each said inserted adapter . . .”); 9:53-55 (“signal transfer conductors for conveying signals between said respective adapter and said computer via said expansion slot”); 11:16-18 (“connecting said expansion adapter and said slot for interchange of information signals in response to detecting said insertion”); 11:19-21 (“exchanging predetermined information between said inserted adapter and said computer, via said slot, in response to detecting said insertion”).)

209. Lien further discloses that the display unit information that is stored in the memory and is communicated to the video source includes an identification number for uniquely identifying the display unit. In particular, Lien discloses that the “Attribute information store 13 stores adapter identity (ID) information.” (Ex. 1014 at 3:63-68; *see also* Ex. 1014 at 10:11-12.) Lien makes clear that this information is unique to the particular adapter, noting “[a]fter completion of mechanical and electrical connections, **the adapter’s identity ID** is read out (from the adapter’s attribute information, FIG. 2) and checked to determine whether or not the adapter is of a type supported for connection in this manner (steps S4 and S5)” (Ex. 1014 at 5:17-21) and that “said **attribute information stored by each inserted adapter includes an identification number of the respective adapter . . .**” (Ex. 1014 at 8:19-21 .)

210. The table below provides a summary of the specific disclosures in Lien that support my opinions that Lien discloses each element of claim 22 of the ’970

Patent. It should be noted that the disclosures cited in the table below are merely exemplary and are in no way limiting, and there may be other portions of Lien that additionally disclose a given limitation.

'970 Claim Element	Disclosure in Lien (Ex. 1014)
22. A method of communicating between a display unit and a video source from which video signals are sent to the display unit for display, the method comprising the steps of:	“FIGS. 10 and 11 show a portable computer system formed by connecting a system unit 22 with modular LCD (liquid crystal display) units 23, 24 of different sizes; e.g. for displaying images (or portions of images) with various magnifications.” Ex. 1014 at 6:41-45.
[22.a] communicating display unit information stored in a memory of the display unit from the display unit to the video source,	“Thereafter, attribute information stored by the adapter is read out to the computer and the computer conducts a setup process to modify its configuration information to establish proper communication levels and addresses for the adapter commensurate with then active resources of the system.” Ex. 1014 at Abstract.
[22.b] wherein said display unit information includes an identification number for uniquely identifying the display unit; and	<p>“After completion of mechanical and electrical connections, the adapter’s identity ID is read out (from the adapter’s attribute information, FIG. 2) and checked to determine whether or not the adapter is of a type supported for connection in this manner (steps S4 and S5).” Ex. 1014 at 5:17-21.</p> <p>“connecting said expansion adapter and said slot for interchange of information signals in response to detecting said insertion” Ex. 1014 at 11:16-18.</p> <p>“exchanging predetermined information between said inserted adapter and said computer, via said slot, in response to detecting said insertion” Ex. 1014 at 11:19-21.</p> <p>“...directing said computer system to perform a predetermined sequence of reconfiguring functions relative to the system formed by the computer system</p>

'970 Claim Element	Disclosure in Lien (Ex. 1014)
	<p>and expansion adaptors of various types attached to said expansion slots..." Ex. 1014 at 12:13-18.</p> <p><i>See also</i> Ex. 1014 at Abstract, Fig. 7.</p>
<p>[22.c] sending a signal from the video source to the display unit, wherein said signal is generated based on the display unit information,</p>	<p>"After completion of mechanical and electrical connections, the adapter's identity ID is read out (from the adapter's attribute information, FIG. 2) and checked to determine whether or not the adapter is of a type supported for connection in this manner (steps S4 and S5)." Ex. 1014 at 5:17-21.</p> <p>"connecting said expansion adapter and said slot for interchange of information signals in response to detecting said insertion" Ex. 1014 at 11:16-18.</p> <p>"exchanging predetermined information between said inserted adapter and said computer, via said slot, in response to detecting said insertion" Ex. 1014 at 11:19-21.</p> <p>"...directing said computer system to perform a predetermined sequence of reconfiguring functions relative to the system formed by the computer system and expansion adaptors of various types attached to said expansion slots..." Ex. 1014 at 12:13-18.</p> <p><i>See also</i> Ex. 1014 at Abstract, Fig. 7.</p>
<p>[22.d] wherein information is bi-directionally communicated with the video source and the display unit.</p>	<p>"Thereafter, attribute information stored by the adapter is read out to the computer and the computer conducts a setup process to modify its configuration information to establish proper communication levels and addresses for the adapter commensurate with then active resources of the system." Ex. 1014 at Abstract.</p> <p>"means responsive to detection of insertion of a said adapter, into a said formerly empty one of said slots, for controlling the adapter inserted into said formerly empty slot to exchange information signals with said computer system, including information signals representing attribute information stored by said inserted adapter." Ex. 1014 at 7:39-45; <i>see also</i> Ex. 1014</p>

'970 Claim Element	Disclosure in Lien (Ex. 1014)
	at Fig. 2.

I. Lien Also Shows that Claim 22 is Obvious

211. As noted above, it is my opinion that Lien explicitly discloses each limitation of claim 22. However, to the extent it is found that Lien's adapter ID number does not *uniquely* identify the display unit, it would have been obvious to one of ordinary skill in the art to modify Lien's ID number to allow it to uniquely identify the display unit. One of ordinary skill in the art would be motivated to make the modification for the purpose of not only identifying the type/model of adapter for initial configuration and "hot-plugging," but also for the purpose of identifying the specific adapter among similar adapters for repairs, usage, upgrades, replacements. For example, in a situation where multiple adapters are being used (*e.g.*, multiple displays of the same model on a network), a user or manufacturer would be able to determine if a specific adapter needs maintenance, replacement, or additional attention.

212. In addition, it would have been obvious to one of ordinary skill in the art to modify the ID in Lien to uniquely identify the display unit in order to allow the video source to configure its video signals based on the specific display, in order to take into different configuration settings that might be stored on adapters of the same type. Lien discloses that the video source can be used with different displays, which

would include multiple displays of the same type but with different users, and thus different configuration settings. One would have been motivated to modify the ID in Lien in such a manner because uniquely identifying the display itself, as opposed to the type of display, would allow the system greater flexibility and the ability to reconfigure based on individual user settings regardless of whether such users had the same display. Such a motivation is consistent with one of the stated goals of Lien, which is to allow configuration based not on the type of the adapter, but rather the specific “respective” adapter. (*See* Ex. 1014 at 1:66-2:2 (“A further object is to provide such method and means with capabilities for interacting with an adapter being plugged in, so that the adapter attribute information needed by the system for revising its internal configuration is directly derivable from the **respective** adapter.”).)

J. Satoru Combined with Lien Teaches Each Limitation of Claims 1-4, 16, 17, and 22

213. I have also reviewed the Satoru reference in combination with Lien in view of the claims at issue, and it is my opinion that Satoru combined with Lien discloses each limitation of claims 1-4, 16, 17, and 22 of the '970 Patent. Additional details supporting my opinion are provided in the following paragraphs.

214. Satoru discloses a system that allows for the control of multiple displays from a central computer. (Ex. 1013 at Abstract.) In the system, each display is equipped with components that allow it to receive a unique identification code from a central computer. (Ex. 1013 at at 4:2-5:7.)

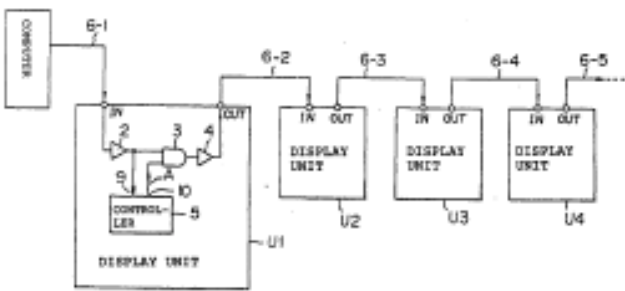
215. After each display receives and stores its unique ID, it can, through use of a controller, thereafter accept and implement control instructions and transmission data from the computer based on whether or not the ID code in the transmission corresponds to the ID code of the display. (Ex. 1013 at 1:26-38, 4:49-57, Fig. 5.) This functionality discloses the “comparison means,” “communication prohibition means,” “reception prohibition means” and “communication permission means” elements recited in the claims below. Such commands include power on, power off, switch input to a video signal, switch input to a Y/C signal, white balance adjustment, and for selecting between an adjustment mode and a normal mode. (Ex. 1013 at 3:51-4:1.)

216. Lien discloses that a system that can communicate bi-directionally with a connected display by requesting and receiving configuration information from a connected adapter such as a display unit. (Ex. 1014 at 6:41-68; Figs. 10-11; *see also* Ex. 1014 at 6:61-68.) Lien describes the “attribute information” as including an “identification number” of the adapter. (Ex. 1014 at 10:11-29.) This ID is used to determine whether the display is of a type supported by the computer. (Ex. 1014 at 5:17-24.) The system of Lien can also communicate bi-directionally with the adapter by resetting or initializing registers within the adapter/display. (Ex. 1014 at 5:25-35.)

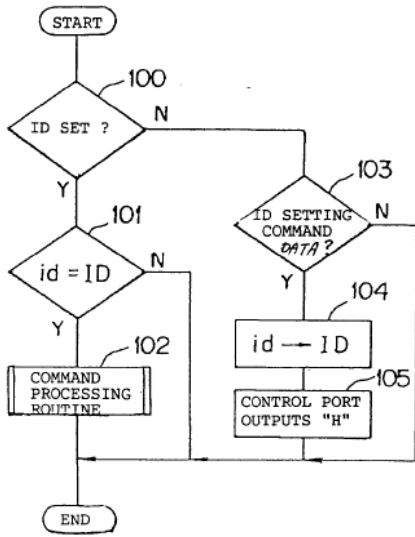
217. It is my opinion that it would be obvious to one of ordinary skill to combine the bi-directional communication and automatic configuration capabilities of Lien with the display system of Satoru. Such a combination would enable the system

of Satoru to automatically obtain configuration and compatibility information for newly connected devices.

218. The table below provides a summary of the specific disclosures in Satoru and Lien that support my opinions that the combination of these references discloses each element of claims 1-4, 16, 17, and 22 of the '970 Patent. It should be noted that the disclosures cited in the table below are merely exemplary and are in no way limiting, and there may be other portions of these references that additionally disclose a given limitation.

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Lien (Ex. 1014)
<p>1. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:</p>	<p><u>Satoru</u></p> <p>See Ex. 1013 at Fig. 1.</p> <p><i>Fig. 1</i></p>  <p>“The display unit U1 includes: a buffer amplifier 2 for amplifying a level of transmission data received via an input terminal IN; a controller 5 in the form of a microprocessor for controlling the entire display unit U1 based on the transmission data provided via an input port 9; an AND gate 3 for controlling transfer of the transmission data output from the buffer amplifier 2 based on a transfer permission signal A output from an control port of the controller 5; and a buffer amplifier 4 for providing, after amplification, the transmission data output from the AND gate 3 to an output terminal</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Lien (Ex. 1014)
	<p>OUT.” Ex. 1013 at 3:14-26.</p> <p><u>Lien</u></p> <p>“FIGS. 10 and 11 show a portable computer system formed by connecting a system unit 22 with modular LCD (liquid crystal display) units 23, 24 of different sizes; e.g. for displaying images (or portions of images) with various modifications.” Ex. 1014 at Figs. 10 and 11. Ex. 1014 at 6:41-45.</p>
<p>[1.a] comparing means for comparing a first identification information which is previously stored in said display unit and a second identification information which is previously stored in said computer and is sent from said computer; and</p>	<p><u>Satoru</u></p> <p>“Specific ID codes are preassigned to the respective display units U1-U4, and an ID code (unique identification code: see claim 1) included in transmission data from the computer 1 is decoded by each display unit....In this example, each of the display units U1-U4 must be provided with setting switches and a memory such as ROM for setting and storing its own ID code, respectively.” Ex. 1013 at 1:28-37.</p> <p>“For example, if the first-sent so command data is "111DS", the controller 5 of the first display unit U1 recognizes that its ID code is to be determined as "11 ", and stores the ID code "11" into a memory of the controller 5. If the ID code "11" is included in any kind of communication data received thereafter, the controller 5 controls the display unit U1 in accordance with the command included in that communication data.” Ex. 1013 at 4:49-57.</p> <p><u>Lien</u></p> <p>“After completion of mechanical and electrical connections, the adapter's identity ID is read out (from the adapter's attribute information, FIG. 2) and checked to determine whether or not the adapter is of a type supported for connection in this manner (steps S4 and S5). If it is so supported, further necessary adapter attribute information is read out from the adapter's attribute information store 13 (step S6).” Ex. 1014 at</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Lien (Ex. 1014)
	5:17-24.
<p>[1.b] a communication prohibition means for prohibiting communication between said computer with respect to display control of said display unit, when said first and second identification information do not match as a result of the comparison by said comparing means;</p>	<p>Satoru</p> <p>“For example, if the first-sent so command data is "111DS", the controller 5 of the first display unit U1 recognizes that its ID code is to be determined as "11 ", and stores the ID code "11" into a memory of the controller 5. If the ID code "11" is included in any kind of communication data received thereafter, the controller 5 controls the display unit U1 in accordance with the command included in that communication data.” Ex. 1013 at 4:49-57.</p> <p>See Ex. 1013 at Fig. 5 #101 and #102.</p> <p><i>Fig. 5</i></p>  <pre> graph TD START([START]) --> 100{ID SET ?} 100 -- Y --> 101{id = ID} 100 -- N --> 103{ID SETTING COMMAND DATA ?} 101 -- Y --> 102[COMMAND PROCESSING ROUTINE] 101 -- N --> 103 102 --> END([END]) 103 -- Y --> 104[id → ID] 103 -- N --> 105[CONTROL PORT OUTPUTS "H"] 104 --> 105 105 --> 103 </pre>
<p>[1.c] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.</p>	<p>Lien</p> <p>“After completion of mechanical and electrical connections, the adapter's identity ID is read out (from the adapter's attribute information, FIG. 2) and checked to determine whether or not the adapter is of a type supported for connection in this manner (steps S4 and S5). If it is so supported, further necessary adapter attribute information is read out from the adapter's</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Lien (Ex. 1014)
	<p>attribute information store 13 (step S6).” Ex. 1014 at 5:17-24.</p> <p>“This attribute information is used by the resource manager to set up configuration information elements tailored to the respective adapter (I/O address, memory address, interrupt level, etc., step S7), to read a device driver (or drivers) 17 from the adapter, that is/are needed for operating the respective adapter (step S8), to install such driver(s) and an appropriate work area therefor into the computer's operating system (step S9), to initialize or reset (a register in) the adapter (step S10), and to set a flag or the like in the adapter activating it for operation relative to the computer (step S11).” Ex. 1014 at 5:25-35.</p>
<p>2. A display unit according to claim 1, wherein said first and second identification information include an identification number.</p>	<p><u>Satoru</u></p> <p>“The ID code is made up of two characters selected from numerals 0 to 9 and alphabetical characters A, B, C, D, E and F, to constitute an ID code for indicating a display unit. The ID code may include one or two asterisks * in certain situations. For example, for an ID code "3A" indicating a certain display unit, valid ID codes are "3A", "*A", "3*" and "***" Ex. 1013 at 3:43-50.</p> <p><u>Lien</u></p> <p>“5. The dynamic reconfiguration arrangement of claim 2 wherein..... said attribute information stored by each said inserted adapter includes an identification number of the respective adapter.” Ex. 1014 at 8:10-22.</p>
<p>3. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:</p>	<p><u>Satoru</u></p> <p><i>See claim 1, preamble.</i></p> <p><u>Lien</u></p> <p><i>See claim 1, preamble.</i></p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Lien (Ex. 1014)
<p>[3.a] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and</p>	<p><u>Satoru</u> <i>See claim 1, element [1.a].</i></p> <p><u>Lien</u> <i>See claim 1, element [1.a].</i></p>
<p>[3.b] a reception prohibition means for prohibiting reception of a control command from said computer, for controlling at least one of a display size, a display position, a brightness, and a contrast of said display unit, when said first and second identification information do not match as a result of the comparison by said comparing means;</p>	<p><u>Satoru</u> <i>See claim 1, element [1b] for “a reception prohibition means for prohibiting reception of a control command from said computer.... when said first and second identification information do not match as a result of the comparison by said comparing means.”</i></p> <p>“The invention is intended to adjust controlling items of individual units or those of a system as a whole. In the case of a display system of the following embodiment, the white balance, brightness, contrast, etc. of respective display units are adjusted individually or those of the display system are adjusted as a whole.” Ex. 1013 at 3:1-7 .</p>
<p>[3.c] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.</p>	<p><u>Lien</u> <i>See claim 1, element [1.c].</i></p>
<p>4. A display unit according to claim 3,</p>	<p><u>Satoru</u></p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Lien (Ex. 1014)
wherein said first and second identification information include an identification number.	<p><i>See</i> claim 2.</p> <p><u>Lien</u></p> <p><i>See</i> claim 2.</p>
16. A display unit for displaying an image based upon a digital image information signal, inputting said digital image information signal from an externally connected computer, comprising:	<p><u>Satoru</u></p> <p><i>See</i> claim 1, preamble.</p> <p><u>Lien</u></p> <p><i>See</i> claim 1, preamble.</p>
[16.a] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and	<p><u>Satoru</u></p> <p><i>See</i> claim 1, element [1.a].</p> <p><u>Lien</u></p> <p><i>See</i> claim 1, element [1.a].</p>
[16.b] a communication permission means for enabling display control by said computer and permitting communication between said computer and said display unit with respect to display control of said display unit, when said first and second identification	<p><u>Satoru</u></p> <p><i>See</i> claim 1, element [1.b].</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Lien (Ex. 1014)
information match as a result of the comparison by said comparing means,	
[16.c] further comprising a communication controller which enables bi-directional communication with said display unit and said computer.	<p><u>Lien</u> <i>See claim 1, element [1.c].</i></p>
17. A display unit for displaying an image based upon a digital image information signal, inputting said digital image information signal from an externally connected computer, comprising:	<p><u>Satoru</u> <i>See claim 1, preamble.</i></p> <p><u>Lien</u> <i>See claim 1, preamble.</i></p>
[17.a] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and	<p><u>Satoru</u> <i>See claim 1, element [1.a].</i></p> <p><u>Lien</u> <i>See claim 1, element [1.a].</i></p>
[17.b] a communication prohibition means for disabling control of said memory means by said computer and	<p><u>Satoru</u> <i>See claim 1, element [1.b].</i></p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Lien (Ex. 1014)
prohibiting communication between said computer and said memory means of said display unit, when said first and second identification information do not match as a result of the comparison by said comparing means,	
[17.c] further comprising a communication controller which enables bi-directional communication with said display unit and said computer.	<p><u>Lien</u> <i>See claim 1, element [1.c].</i></p>
22. A method of communicating between a display unit and a video source from which video signals are sent to the display unit for display, the method comprising the steps of:	<p><u>Satoru</u> <i>See claim 1, preamble.</i></p> <p><u>Lien</u> <i>See claim 1, preamble.</i></p>
[22.a] communicating display unit information stored in a memory of the display unit from the display unit to the video source,	<p><u>Lien</u> “After completion of mechanical and electrical connections, the adapter's identity ID is read out (from the adapter's attribute information, FIG. 2) and checked to determine whether or not the adapter is of a type supported for connection in this manner (steps S4 and S5). If it is so supported, further necessary adapter attribute information is read out from the adapter's attribute information store 13 (step S6).” Ex. 1014 at 5:17-24.</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Lien (Ex. 1014)
	<p>“This attribute information is used by the resource manager to set up configuration information elements tailored to the respective adapter (I/O address, memory address, interrupt level, etc., step S7), to read a device driver (or drivers) 17 from the adapter, that is/are needed for operating the respective adapter (step S8), to install such driver(s) and an appropriate work area therefor into the computer's operating system (step S9), to initialize or reset (a register in) the adapter (step S10), and to set a flag or the like in the adapter activating it for operation relative to the computer (step S11).” Ex. 1014 at 5:25-35</p>
<p>[22.b] wherein said display unit information includes an identification number for uniquely identifying the display unit; and</p>	<p><u>Satoru</u></p> <p>“Specific ID codes are preassigned to the respective display units U1-U4, and an ID code included in transmission data from the computer 1 is decoded by each display unit....In this example, each of the display units U1-U4 must be provided with setting switches and a memory such as ROM for setting and storing its own ID code, respectively.” Ex. 1013 at 1:28-37.</p> <p><u>Lien</u></p> <p>“5. The dynamic reconfiguration arrangement of claim 2 wherein..... said attribute information stored by each said inserted adapter includes an identification number of the respective adapter.” Ex. 1014 at 8:10-22.</p>
<p>[22.c] sending a signal from the video source to the display unit, wherein said signal is generated based on the display unit information,</p>	<p><u>Lien</u></p> <p>“Upon “hot plug” attachment to any of the display units, the resource manager in the system unit shown in these figures would reconfigure as before, using attribute information and display driver information stored by the respective display unit, and the reconfigured system would then form a displayed image having over all dimensions and printed characters sized in accordance with attributes of the respective display unit.” Ex. 1014 at 6:61-68.</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Lien (Ex. 1014)
[22.d] wherein information is bi-directionally communicated with the video source and the display unit.	<p><u>Lien</u></p> <p><i>See</i> claim 1, element [1.c].</p>

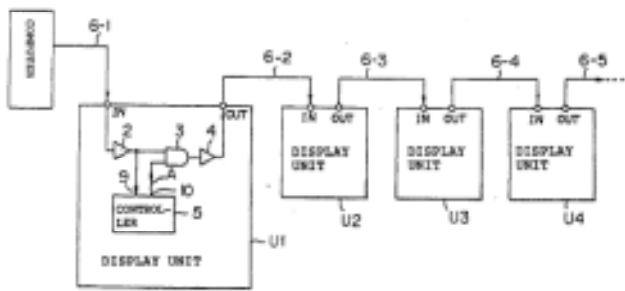
K. Satoru Combined with Lien and Schmidt Teaches Each Limitation of Claims 5-14

219. I have also reviewed the Satoru reference in combination with Lien and Schmidt in view of the claims at issue, and it is my opinion that Satoru combined with Lien and Schmidt discloses each limitation of claims 5-14 of the '970 Patent.

Additional details supporting my opinion are provided in the following paragraphs.

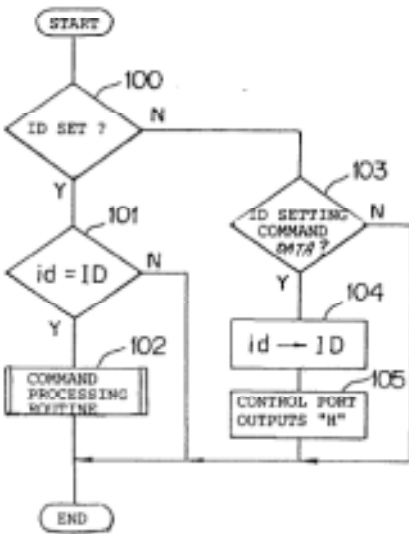
220. Claims 5-14 additionally recite that the display stores compatible frequencies in its memory. As described above, it would be obvious to combine the disclosures of Satoru and Lien. Additionally, as described above, Schmidt discloses the storage of compatible frequencies in memory so that a connected computer can more effectively configure the connected display. (*See* Ex. 1012 at Abstract.) As Lien is also concerned with the automatic configuration of a computer to a connected display and Satoru is concerned with data connections to displays, one of ordinary skill would be motivated to combine the frequency provisioning disclosure of Schmidt with the disclosures of Satoru and Lien to render claims 5-14 obvious.

221. The table below provides a summary of the specific disclosures in Satoru, Lien and Schmidt that support my opinions that the combination of these references discloses each element of claims 5-14 of the '970 Patent. It should be noted that the disclosures cited in the table below are merely exemplary and are in no way limiting, and there may be other portions of these references that additionally disclose a given limitation.

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Schmidt (Ex. 1012)
<p>5. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:</p>	<p><u>Satoru</u></p> <p>See Ex. 1013 at Fig. 1.</p> <p><i>Fig. 1</i></p>  <p>“The display unit U1 includes: a buffer amplifier 2 for amplifying a level of transmission data received via an input terminal IN; a controller 5 in the form of a microprocessor for controlling the entire display unit U1 based on the transmission data provided via an input port 9; an AND gate 3 for controlling transfer of the transmission data output from the buffer amplifier 2 based on a transfer permission signal A output from an control port of the controller 5; and a buffer amplifier 4 for providing, after amplification, the transmission data output from the AND gate 3 to an output terminal OUT.” Ex. 1013 at 3:14-26.</p> <p><u>Lien</u></p>

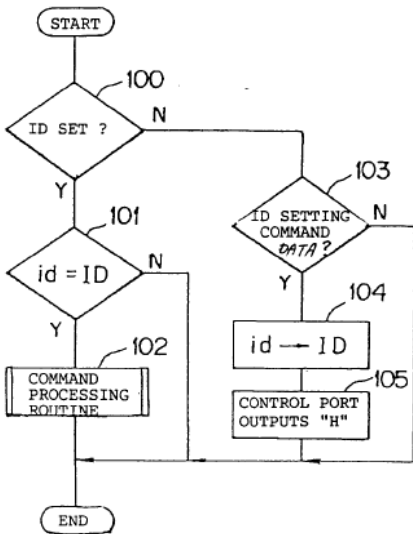
'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Schmidt (Ex. 1012)
	<p>“FIGS. 10 and 11 show a portable computer system formed by connecting a system unit 22 with modular LCD (liquid crystal display) units 23, 24 of different sizes; e.g. for displaying images (or portions of images) with various modifications.” Ex. 1014 at Figs. 10 and 11. Ex. 1014 at 6:41-45.</p>
<p>[5.a] memory means for storing at least data of a frequency range to which said display unit is operable;</p>	<p><u>Schmidt</u></p> <p>Schmidt discloses memory means for storing data of a frequency range to which the display unit is operable. This enables the computer to only change the frequency to acceptable values.</p> <p>Schmidt states “[a]n apparatus for determining a plurality of video signal characteristics including analog video frequency, horizontal sync frequency and vertical sync frequency produced by a graphics controller providing the video signal to a video display monitor, includes a memory storing bits which correspond to a set of operating characteristics of the video display monitor, a first circuit coupled to the memory for producing voltage fluctuations on a line based on the stored bits in response to a signal which corresponds to a command to set the characteristics of the video signal provided to the video display monitor, and a second circuit for sensing the voltage fluctuations so as to permit determination of the set of operating characteristics.” Ex. 1012 at Abstract.</p> <p>Table 2 illustrates an exemplary byte sequence sent by the monitor to identify monitor type. Bit 7 of byte 0 uniquely identifies whether the monitor supports the Parameter Response mode for enhanced resolution. Ex. 1012 at 8:39-43, 11:23-27.</p> <p>“[B]yte 4 provides a statement of the maximum horizontal sync frequency, in kilohertz (kHz), supported by monitor 100. ...Byte 5 provides the maximum vertical sync frequency, in hertz (Hz), supported by</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Schmidt (Ex. 1012)
	monitor 100.” Ex. 1012 at 11:39-49.
<p>[5.b] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and</p>	<p><u>Satoru</u></p> <p>“Specific ID codes are preassigned to the respective display units U1-U4, and an ID code (unique identification code: see claim 1) included in transmission data from the computer 1 is decoded by each display unit....In this example, each of the display units U1-U4 must be provided with setting switches and a memory such as ROM for setting and storing its own ID code, respectively.” Ex. 1013 at 1:28-37.</p> <p>“For example, if the first-sent so command data is "111DS", the controller 5 of the first display unit U1 recognizes that its ID code is to be determined as "11 ", and stores the ID code "11" into a memory of the controller 5. If the ID code "11" is included in any kind of communication data received thereafter, the controller 5 controls the display unit U1 in accordance with the command included in that communication data.” Ex. 1013 at 4:49-57.</p> <p><u>Lien</u></p> <p>“After completion of mechanical and electrical connections, the adapter's identity ID is read out (from the adapter's attribute information, FIG. 2) and checked to determine whether or not the adapter is of a type supported for connection in this manner (steps S4 and S5). If it is so supported, further necessary adapter attribute information is read out from the adapter's attribute information store 13 (step S6).” Ex. 1014 at 5:17-24.</p>
<p>[5.c] and a communication permission means for permitting communication between said computer, at least</p>	<p><u>Satoru</u></p> <p>“For example, if the first-sent so command data is "111DS", the controller 5 of the first display unit U1 recognizes that its ID code is to be determined as "11 ", and stores the ID code "11" into a memory of the</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Schmidt (Ex. 1012)
<p>with respect to said data of a frequency range stored in said memory means, when said first and second identification information match as a result of the comparison by said comparing means;</p>	<p>controller 5. If the ID code "11" is included in any kind of communication data received thereafter, the controller 5 controls the display unit U1 in accordance with the command included in that communication data." Ex. 1013 at 4:49-57.</p> <p>See Ex. 1013 at Fig. 5, elements 101 and 102.</p> <p style="text-align: center;"><i>Fig. 5</i></p>  <pre> graph TD START([START]) --> 100{ID SET ?} 100 -- Y --> 101{id = ID} 100 -- N --> 103{ID SETTING COMMAND DATA ?} 101 -- Y --> 102[COMMAND PROCESSING ROUTINE] 101 -- N --> 103 103 -- Y --> 104[id -> ID] 103 -- N --> 105[CONTROL PORT OUTPUTS "H"] 104 --> 105 102 --> END([END]) 105 --> END </pre>
<p>[5.d] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.</p>	<p><u>Lien</u></p> <p>“After completion of mechanical and electrical connections, the adapter's identity ID is read out (from the adapter's attribute information, FIG. 2) and checked to determine whether or not the adapter is of a type supported for connection in this manner (steps S4 and S5). If it is so supported, further necessary adapter attribute information is read out from the adapter's attribute information store 13 (step S6).” Ex. 1014 at 5:17-24.</p> <p>“This attribute information is used by the resource manager to set up configuration information elements tailored to the respective adapter (I/O address, memory address, interrupt level, etc., step S7), to read a device</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Schmidt (Ex. 1012)
	driver (or drivers) 17 from the adapter, that is/are needed for operating the respective adapter (step S8), to install such driver(s) and an appropriate work area therefor into the computer's operating system (step S9), to initialize or reset (a register in) the adapter (step S10), and to set a flag or the like in the adapter activating it for operation relative to the computer (step S11)." Ex. 1014 at 5:25-35
6. A display unit according to claim 5, wherein said first identification information is stored in said memory means.	<p><u>Schmidt</u></p> <p>As described with respect to claim element 5.a, the same memory means that store the compatible frequency ranges of Schmidt can also be used to store identifying information.</p>
7. A display unit according to claim 5, wherein said data relating at least to a display specification of said display unit stored in said memory means, includes data of a frequency range to which said display unit is operable.	<p><u>Schmidt</u></p> <p>See claim 5, element [5.a].</p>
8. A display unit according to claim 5, wherein said first and second identification information include an identification number	<p><u>Satoru</u></p> <p>"The ID code is made up of two characters selected from numerals 0 to 9 and alphabetical characters A, B, C, D, E and F, to constitute an ID code for indicating a display unit. The ID code may include one or two asterisks * in certain situations.</p> <p>For example, for an ID code "3A" indicating a certain display unit, valid ID codes are "3A", "*A", "3*" and "**" Satoru 3:43-50.</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Schmidt (Ex. 1012)
	<p><u>Lien</u></p> <p>“5. The dynamic reconfiguration arrangement of claim 2 wherein..... said attribute information stored by each said inserted adapter includes an identification number of the respective adapter.” Ex. 1014 at 8:10-22.</p>
<p>9. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:</p>	<p><u>Satoru</u></p> <p>See claim 5, preamble.</p> <p><u>Lien</u></p> <p>See claim 5, preamble.</p>
<p>[9.a] memory means for storing at least data of a frequency range for which said display unit is operable;</p>	<p><u>Schmidt</u></p> <p>See claim 5, element [5.a].</p>
<p>[9.b] comparing means for comparing a first identification information which is previously stored in said display unit in advance, and a second identification information which is previously stored in said computer and is sent from said computer; and</p>	<p><u>Satoru</u></p> <p>See claim 5, element [5.b].</p> <p><u>Lien</u></p> <p>See claim 5, element [5.b].</p>
<p>[9.c] a communication prohibition means for prohibiting communication between</p>	<p><u>Satoru</u></p> <p>“For example, if the first-sent so command data is "111DS", the controller 5 of the first display unit U1 recognizes that its ID code is to be determined as "11 ",</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Schmidt (Ex. 1012)
<p>said computer, at least with respect to said data of a frequency range stored in said memory means, when said first and second identification information do not match as a result of the comparison by said comparing means;</p>	<p>and stores the ID code "11" into a memory of the controller 5. If the ID code "11" is included in any kind of communication data received thereafter, the controller 5 controls the display unit U1 in accordance with the command included in that communication data." Ex. 1013 at 4:49-57.</p> <p>See Ex. 1013 at Fig. 5, elements 101 and 102.</p> <p style="text-align: center;">Fig. 5</p>  <pre> graph TD START([START]) --> 100{ID SET ?} 100 -- Y --> 101{id = ID} 100 -- N --> 103{ID SETTING COMMAND DATA ?} 101 -- Y --> 102[COMMAND PROCESSING ROUTINE] 101 -- N --> 103 103 -- Y --> 104[id -> ID] 103 -- N --> 105[CONTROL PORT OUTPUTS "H"] 104 --> 105 102 --> END([END]) 105 --> END </pre>
<p>[9.d] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.</p>	<p><u>Lien</u></p> <p>See claim 5, element [5.c].</p>
<p>10. A display unit according to claim 9, wherein the control of said memory means includes rewriting or writing control of said</p>	<p><u>Satoru</u></p> <p>“Next, a description is made of communication data according to the invention, which is initialization data used in assigning ID codes to the respective display units U1-U4 when a control system is installed (or</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Schmidt (Ex. 1012)
data in said memory means.	<p>expanded). An exemplary serial data format is shown in Figure 3. In Figure 3, "id" represents an ID code of intended one of the display units U1-U4. For example, if the ID code of the intended display unit U1 is "11 ", "id" should be "11 ". Similarly, if the ID code of the intended display unit U2 is "12", "id" should be "12". In the format of Fig. 3, "command" represents data of an ID code setting instruction, e.g., "IDS" (ID set). Further, to set new ID codes for the respective display units U1-U4, it is necessary that the current ID codes be cleared. A command for such a purpose is, e.g., "IDC" (ID clear)." Ex. 1013 at 4:2-18.</p>
11. A display unit according to claim 9, wherein said first identification information is stored in said memory means.	<p><u>Schmidt</u></p> <p>As described with respect to the second element of claim 5, the same memory means that stores the compatible frequency ranges of Schmidt can also store identifying information.</p>
12. A display unit according to claim 9, wherein said data relating at least to a display specification of said display unit stored in said memory means, includes data of a frequency range to which said display unit is operable.	<p><u>Schmidt</u></p> <p>See claim 5, element [5.a].</p>
13. A display unit according to claim 9, wherein said first and second identification information include an	<p><u>Satoru</u></p> <p>See claim 8.</p> <p><u>Lien</u></p> <p>See claim 8.</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Schmidt (Ex. 1012)
identification number.	
14. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:	<p><u>Satoru</u> <i>See claim 5, preamble.</i></p> <p><u>Lien</u> <i>See claim 5, preamble.</i></p>
[14.a] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and	<p><u>Satoru</u> <i>See claim 5, element [5.b].</i></p> <p><u>Lien</u> <i>See claim 5, element [5.b].</i></p>
[14.b] a communication permission means for enabling display control by said computer and permitting communication between said computer and said display unit with respect to display control of said display unit, when said first and second identification information match as a result of the comparison by said comparing	<p><u>Satoru</u> <i>See claim 5, element [5.c].</i></p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Schmidt (Ex. 1012)
means,	
[14.c] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.	<p><u>Lien</u> <i>See</i> claim 5, element [5.d].</p>

L. Satoru Combined with Lien and Admitted Prior Art Teaches Each Limitation of Claims 15, 24, 26, and 29

222. It is also my opinion that Satoru combined with Lien and the admitted prior art in the '970 Patent discloses each limitation of claims 15, 24, 26, and 29 of the '970 Patent. Additional details supporting my opinion are provided in the following paragraphs. As described above, one of ordinary skill in the art would be motivated to combine the systems of Lien and Satoru. One of ordinary skill would further be motivated to combine the admitted prior art of the '970 Patent with Satoru and Lien.

223. Particularly, the '970 Patent admits that the use of computer commands to change the size and position of a display was known in the prior art. (Ex. 1001 at 2:2-12.) As both Lien and Satoru disclose systems by which a computer transmits configuration commands to a display (Ex. 1013 at 3:51-4:1; Ex. 1014 at 6:61-70), one of ordinary skill in the art would be motivated to add the known capability of

changing display size and position to the previously described combination of Lien and Satoru.

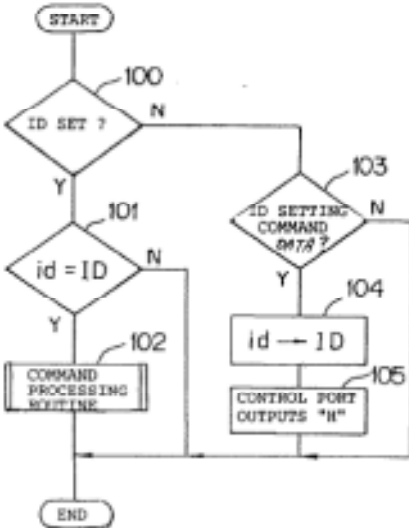
224. With respect to claims 24, 26, and 29, these claims recite control of a deflection circuit by processor within the display. In the admitted CRT prior art systems, the control of size and position would have inherently required control of a deflection circuit. Accordingly these features are disclosed in the admitted prior art as well.

225. The table below provides a summary of the specific disclosures in Satoru, Lien and the admitted prior art of the '970 Patent that support my opinions that the combination of these references discloses each element of claims 15, 24, 26, and 29 of the '970 Patent. It should be noted that the disclosures cited in the table below are merely exemplary and are in no way limiting, and there may be other portions of these references that additionally disclose a given limitation.

<p>'970 Claim Element</p>	<p>Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Admitted Prior Art</p>
<p>15. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:</p>	<p><u>Satoru</u></p> <p><i>See Ex. 1013 at Fig. 1.</i></p> <p><i>Fig. 1</i></p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Admitted Prior Art
	<p>“The display unit U1 includes: a buffer amplifier 2 for amplifying a level of transmission data received via an input terminal IN; a controller 5 in the form of a microprocessor for controlling the entire display unit U1 based on the transmission data provided via an input port 9; an AND gate 3 for controlling transfer of the transmission data output from the buffer amplifier 2 based on a transfer permission signal A output from an control port of the controller 5; and a buffer amplifier 4 for providing, after amplification, the transmission data output from the AND gate 3 to an output terminal OUT.” Ex. 1013 at 3:14-26.</p> <p><u>Lien</u></p> <p>“FIGS. 10 and 11 show a portable computer system formed by connecting a system unit 22 with modular LCD (liquid crystal display) units 23, 24 of different sizes; e.g. for displaying images (or portions of images) with various modifications.” Figs. 10 and 11. Ex. 1014 at 6:41-45.</p>
<p>[15.a] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and</p>	<p><u>Satoru</u></p> <p>“Specific ID codes are preassigned to the respective display units U1-U4, and an ID code (unique identification code: see claim 1) included in transmission data from the computer 1 is decoded by each display unit....In this example, each of the display units U1-U4 must be provided with setting switches and a memory such as ROM for setting and storing its own ID code, respectively.” Ex. 1013 at 1:28-37.</p> <p>“For example, if the first-sent so command data is "111DS", the controller 5 of the first display unit U1 recognizes that its ID code is to be determined as "11 ", and stores the ID code "11" into a memory of the controller 5. If the ID code "11" is included in any kind of communication data received thereafter, the controller 5 controls the display unit U1 in</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Admitted Prior Art
	<p>accordance with the command included in that communication data.” Ex. 1013 at 4:49-57.</p> <p><u>Lien</u></p> <p>“After completion of mechanical and electrical connections, the adapter's identity ID is read out (from the adapter's attribute information, FIG. 2) and checked to determine whether or not the adapter is of a type supported for connection in this manner (steps S4 and S5). If it is so supported, further necessary adapter attribute information is read out from the adapter's attribute information store 13 (step S6).” Ex. 1014 at 5:17-24.</p>
<p>[15.b] a reception permission means for enabling control of a display size/position of said display unit by said computer and permitting reception of a control command from said computer for controlling at least the display size/position of said display unit, when said first and second identification information match as a result of the comparison by said comparing means,</p>	<p><u>Satoru</u></p> <p>“For example, if the first-sent so command data is "111DS", the controller 5 of the first display unit U1 recognizes that its ID code is to be determined as "11 ", and stores the ID code "11" into a memory of the controller 5. If the ID code "11" is included in any kind of communication data received thereafter, the controller 5 controls the display unit U1 in accordance with the command included in that communication data.” Ex. 1013 at 4:49-57.</p> <p><i>See</i> Ex. 1013 at Fig. 5, elements 101 and 102.</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Admitted Prior Art
	<p style="text-align: center;">Fig. 5</p>  <pre> graph TD START([START]) --> 100{ID SET ?} 100 -- Y --> 101{id = ID} 100 -- N --> 103{ID SETTING COMMAND DATA ?} 101 -- Y --> 102[COMMAND PROCESSING ROUTINE] 101 -- N --> 103 102 --> END([END]) 103 -- Y --> 104[id ← ID] 103 -- N --> 105[CONTROL PORT OUTPUTS "H"] 104 --> 105 105 --> 101 </pre> <p>Admitted Prior Art</p> <p>“According to the former prior art among the aforementioned prior arts, the control of the display position and size on the screen is managed by the display device. Therefore, when adjustment is required or requested from the user of display device, it is necessary to perform manual adjustment using the adjustment switch of the display device each time and it is rather troublesome to operate the system. According to the latter prior art among the aforementioned prior arts, the control can be operated by the computer.” Ex. 1001 at 2:2-12.</p>
[15.c] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.	<p>Lien</p> <p>“After completion of mechanical and electrical connections, the adapter's identity ID is read out (from the adapter's attribute information, FIG. 2) and checked to determine whether or not the adapter is of a type supported for connection in this manner (steps S4 and S5). If it is so supported, further necessary adapter</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Admitted Prior Art
	<p>attribute information is read out from the adapter's attribute information store 13 (step S6)." Ex. 1014 at 5:17-24.</p> <p>"This attribute information is used by the resource manager to set up configuration information elements tailored to the respective adapter (I/O address, memory address, interrupt level, etc., step S7), to read a device driver (or drivers) 17 from the adapter, that is/are needed for operating the respective adapter (step S8), to install such driver(s) and an appropriate work area therefor into the computer's operating system (step S9), to initialize or reset (a register in) the adapter (step S10), and to set a flag or the like in the adapter activating it for operation relative to the computer (step S11)." Ex. 1014 at 5:25-35.</p>
<p>23. A display unit for displaying an image based on an image signal inputted from an externally connected computer, comprising:</p>	<p><u>Satoru</u> <i>See claim 15, preamble.</i></p> <p><u>Lien</u> <i>See claim 15, preamble.</i></p>
<p>[23.a] a processor adapted to control display of the display unit;</p>	<p><u>Satoru</u></p> <p>"The display unit U1 includes: a buffer amplifier 2 for amplifying a level of transmission data received via an input terminal IN; a controller 5 in the form of a microprocessor for controlling the entire display unit U1 based on the transmission data provided via an input port 9; an AND gate 3 for controlling transfer of the transmission data output from the buffer amplifier 2 based on a 5 transfer permission signal A output from an control port 10 of the controller 5; and a buffer amplifier 4 for providing, after amplification, the transmission data output from the AND gate 3 to an output terminal OUT." Ex. 1013 at 3:56-4:8</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Admitted Prior Art
[23.b] a memory which stores an identification number; and	<p><u>Lien</u></p> <p>“The adapter contains an attribute information store 13, and a not-shown logical functional block associated with the adapter operations (for example, a memory 65 block in the case of a memory adapter). Attribute information store 13 stores adapter identity (ID) information and other information.” Ex. 1014 at 3:63-68.</p>
[23.c] a communication controller which sends the identification number stored in said memory to said computer;	<p><u>Lien</u></p> <p>“After completion of mechanical and electrical connections, the adapter's identity ID is read out (from the adapter's attribute information, FIG. 2) and checked to determine whether or not the adapter is of a type supported for connection in this manner (steps S4 and S5).</p> <p>If it is so supported, further necessary adapter attribute information is read out from the adapter's attribute information store 13 (step S6).” Ex. 1014 at 5:17-24.</p>
[23.d] wherein said communication controller enables bi-directional communication between said display and said computer.	<p><u>Lien</u></p> <p><i>See</i> claim 15, element [15.c].</p>
24. A display unit according to claim 23, further comprising a deflection circuit, wherein the processor generates control signals for the deflection circuit.	<p><u>Admitted Prior Art</u></p> <p>“According to the former prior art among the aforementioned prior arts, the control of the display position and size on the screen is managed by the display device. Therefore, when adjustment is required or requested from the user of display device, it is necessary to perform manual adjustment using the</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Admitted Prior Art
	adjustment switch of the display device each time and it is rather troublesome to operate the system. According to the latter prior art among the aforementioned prior arts, the control can be operated by the computer. " Ex. 1014 at at 2:2-12.
25. A display unit for displaying an image based on an image signal inputted from an externally connected computer, comprising:	<p><u>Satoru</u> <i>See claim 15, preamble.</i></p> <p><u>Lien</u> <i>See claim 15, preamble.</i></p>
[25.a] a processor adapted to control display of the display unit;	<p><u>Satoru</u> <i>See claim 23, element [23.a].</i></p> <p><u>Lien</u> <i>See claim 23, element [23.a].</i></p>
[25.b] a memory which stores identification information; and	<p><u>Lien</u> <i>See claim 23, element [23.b].</i></p>
[25.c] a communication controller which sends the identification information stored in said memory to said computer in response to power on of at least one of said display unit and said computer;	<p><u>Lien</u> <i>See claim 23, element [23.c].</i></p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Admitted Prior Art
[25.d] wherein said communication controller enables bi-directional communication between said display and said computer.	<p><u>Lien</u> <i>See</i> claim 15, element [15.c].</p>
26. A display unit according to claim 25, further comprising a deflection circuit, wherein the processor generates control signals for the deflection circuit.	<p><u>Admitted Prior Art</u> <i>See</i> claim 24.</p>
27. A display unit for displaying an image based on an image signal inputted from an externally connected video source, comprising:	<p><u>Satoru</u> <i>See</i> claim 15, preamble. <u>Lien</u> <i>See</i> claim 15, preamble.</p>
[27.a] a processor adapted to control display of the display unit;	<p><u>Satoru</u> <i>See</i> claim 23, element [23.a]. <u>Lien</u> <i>See</i> claim 23, element [23.a].</p>
[27.b] a memory in which at least display unit information is stored, wherein the display unit information	<p><u>Lien</u> <i>See</i> claim 23, element [23.b].</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Admitted Prior Art
includes an identification number for identifying the display unit; and	
[27.c] a communication controller capable of bi-directionally communicating with the video source;	<p><u>Lien</u></p> <p><i>See</i> claim 15, element [15.c].</p>
[27.d] wherein the communication controller communicates the display unit information from the display unit to the video source and the display unit receives a signal from the video source that is generated based on the display unit information.	<p><u>Lien</u></p> <p>“After completion of mechanical and electrical connections, the adapter’s identity ID is read out (from the adapter’s attribute information, FIG. 2) and checked to determine whether or not the adapter is of a type supported for connection in this manner (steps S4 and S5).” Ex. 1014 at 5:17-21.</p> <p>“connecting said expansion adapter and said slot for interchange of information signals in response to detecting said insertion” Ex. 1014 at 11:16-18.</p> <p>“exchanging predetermined information between said inserted adapter and said computer, via said slot, in response to detecting said insertion” Ex. 1014 at 11:19-21.</p> <p>“...directing said computer system to perform a predetermined sequence of reconfiguring functions relative to the system formed by the computer system and expansion adaptors of various types attached to said expansion slots...” Ex. 1014 at 12:13-18.</p> <p><i>See also</i> Ex. 1014 at Abstract, Fig. 7.</p>
28. A display unit according to claim 27, wherein the video	<p><u>Satoru</u></p> <p><i>See</i> claim 15, preamble.</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Lien (Ex. 1014), and Admitted Prior Art
source is a computer.	<u>Lien</u> <i>See</i> claim 15, preamble.
29. A display unit according to claim 28, further comprising a deflection circuit, wherein the processor generates control signals for the deflection circuit.	<u>Admitted Prior Art</u> <i>See</i> claim 24.

M. Satoru Combined with Welk Teaches Each Limitation of Claims 1-4, 14, 16-17, and 22

226. I have also reviewed the Welk reference in view of the claims at issue, and it is my opinion that Satoru combined with Welk discloses each limitation of claims 1-4, 14, 16-17, and 22 of the '970 Patent. Additional details supporting my opinion are provided in the following paragraphs.

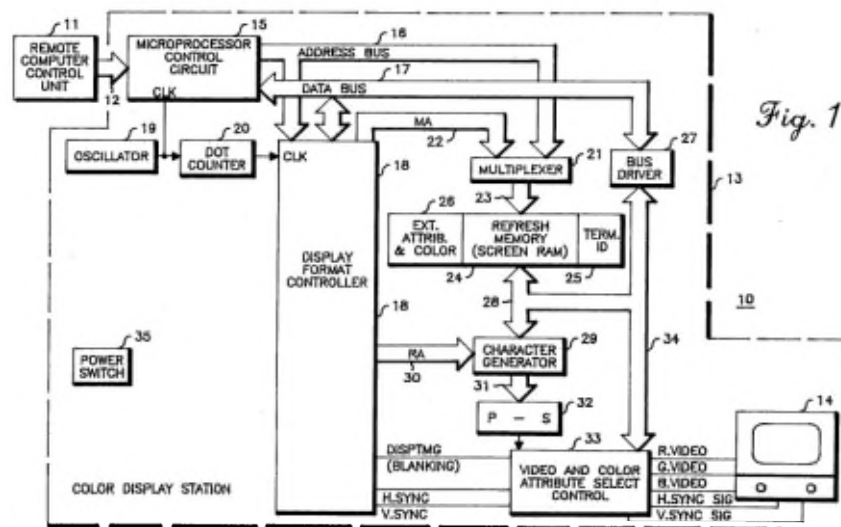
227. Satoru discloses a system that allows for the control of multiple displays from a central computer. (Ex. 1013 at Abstract.) In the system, each display is equipped with components that allow it to receive a unique identification code from a central computer. (Ex. 1013 at 4:2-5:7.)

228. After each display receives and stores its unique ID, it can, through use of a controller, thereafter accept and implement control instructions and transmission data from the computer based on whether or not the ID code in the transmission

corresponds to the ID code of the display. (Ex. 1013 at 1:26-38, 4:49-57, Fig. 5.)

This functionality discloses the “comparison means,” “communication prohibition means,” “reception prohibition means” and “communication permission means” elements recited in the claims below. Such commands include power on, power off, switch input to a video signal, switch input to a Y/C signal, white balance adjustment, and for selecting between an adjustment mode and a normal mode. (Ex. 1013 at 3:51-4:1.)

229. Welk discloses a display that can communicate bi-directionally with a connected controller by providing configuration information in response to a read attempt and additionally receiving video controls in return. (Ex. 1015 at 7:11-28.)



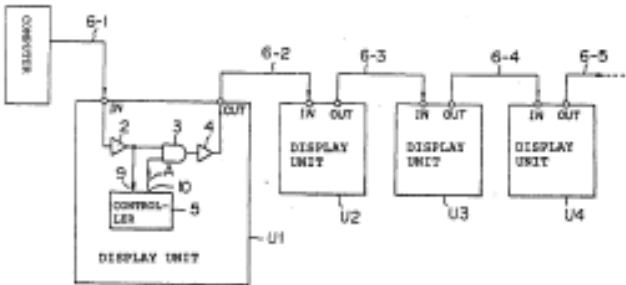
Welk, Fig. 1.

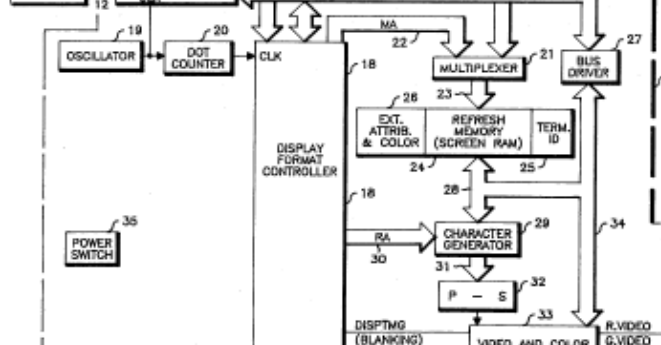
230. Particularly, Welk discloses that the display includes a memory (RAM 24) for storing display information, including “video character control signals.” (Ex. 1015

at 4:16-36.) Welk includes a location (element 25) for storing a “terminal ID,” that “identifies the type of display station.” (Ex. 1015 at 4:37-44.) The memory also includes an additional location (element 26) for storing “extended attributes” of the display. (Ex. 1015 at 4:44-53.) Upon powering on, the MPU 15 in the display sends the display terminal ID information to the control unit. (Ex. 1015 at 7:11-27.) The control unit uses this information and determines if it is connected to a color display, and modifies its video control signals accordingly. (Ex. 1015 at 7:28-36, 8:2-14; *see also* Ex. 1015 at Figs. 2a and 2b.) Accordingly, Welk discloses bi-directional communication between the display and a connected video source.

231. It would be obvious to one of ordinary skill to combine the bi-directional communication and automatic configuration capabilities of Welk with the display system and unique identifiers of Satoru. Such a combination would enable the system of Satoru to automatically obtain configuration and compatibility information for newly connected devices.

232. The table below provides a summary of the specific disclosures in Satoru and Welk that support my opinions that the combination of these references discloses each element of claims 1-4, 14, 16-17, and 22 of the '970 Patent. It should be noted that the disclosures cited in the table below are merely exemplary and are in no way limiting, and there may be other portions of these references that additionally disclose a given limitation.

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Welk (Ex. 1015)
<p>1. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:</p>	<p><u>Satoru</u></p> <p>See Ex. 1013 at Fig. 1.</p> <p style="text-align: center;"><i>Fig. 1</i></p>  <p>“The display unit U1 includes: a buffer amplifier 2 for amplifying a level of transmission data received via an input terminal IN; a controller 5 in the form of a microprocessor for controlling the entire display unit U1 based on the transmission data provided via an input port 9; an AND gate 3 for controlling transfer of the transmission data output from the buffer amplifier 2 based on a transfer permission signal A output from an control port of the controller 5; and a buffer amplifier 4 for providing, after amplification, the transmission data output from the AND gate 3 to an output terminal OUT.” Ex. 1013 at 3:14-26.</p> <p><u>Welk</u></p> <p>“A preconverged color display station is disclosed which is compatible with a computer controlled control unit that provides electrical convergence control signals.” Ex. 1015 at Abstract.</p> <p>“FIG. 1 illustrates a display information system 10 in which a remote computer control unit 11 is contemplated as supplying display information via a coaxial cable 12 to a color display station 13 (shown dashed) which includes a CRT (cathode ray tube terminal) 14 and a programmed microprocessor control circuit (MPU) 15.” Ex. 1015 at 3:15-21.</p> <p>Ex. 1015 at Fig. 1</p>

<p>'970 Claim Element</p>	<p>Disclosure in Satoru (Ex. 1013) and Welk (Ex. 1015)</p>  <p>The diagram, labeled Fig. 1, illustrates a color display station. A remote control unit (11) is connected to a microprocessor control circuit (15) via a data bus (17). The microprocessor (15) is also connected to an address bus (18) and a data bus (17). An oscillator (19) provides a clock signal (CLK) to a dot counter (20) and a display format controller (16). The display format controller (16) is connected to the address bus (18) and the data bus (17). A multiplexer (21) is connected to the address bus (18) and the data bus (17). The multiplexer (21) is connected to a bus driver (27) and a video and color attribute select control (33). The video and color attribute select control (33) is connected to a display unit (14) and provides signals for R.VIDEO, G.VIDEO, B.VIDEO, H.SYNC SIG, and V.SYNC SIG. The display unit (14) is connected to a power switch (35) and a display (14). The display (14) is connected to a display unit (14) and provides signals for DISPTMG (BLANKING), H.SYNC, and V.SYNC. The display unit (14) is connected to a display (14) and provides signals for DISPTMG (BLANKING), H.SYNC, and V.SYNC. The display unit (14) is connected to a display (14) and provides signals for DISPTMG (BLANKING), H.SYNC, and V.SYNC.</p>
<p>[1.a] comparing means for comparing a first identification information which is previously stored in said display unit and a second identification information which is previously stored in said computer and is sent from said computer; and</p>	<p>Satoru</p> <p>“Specific ID codes are preassigned to the respective display units U1-U4, and an ID code (unique identification code: see claim 1) included in transmission data from the computer 1 is decoded by each display unit....In this example, each of the display units U1-U4 must be provided with setting switches and a memory such as ROM for setting and storing its own ID code, respectively.” Ex. 1013 at 1:28-37.</p> <p>“For example, if the first-sent so command data is "111DS", the controller 5 of the first display unit U1 recognizes that its ID code is to be determined as "11", and stores the ID code "11" into a memory of the controller 5. If the ID code "11" is included in any kind of communication data received thereafter, the controller 5 controls the display unit U1 in accordance with the command included in that communication data.” Ex. 1013 at 4:49-57.</p>
<p>[1.b] a communication prohibition means for prohibiting communication between said computer with respect to display</p>	<p>Satoru</p> <p>“For example, if the first-sent so command data is "111DS", the controller 5 of the first display unit U1 recognizes that its ID code is to be determined as "11", and stores the ID code "11" into a memory of the controller 5. If the ID code "11" is included in any</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Welk (Ex. 1015)
<p>control of said display unit, when said first and second identification information do not match as a result of the comparison by said comparing means;</p>	<p>kind of communication data received thereafter, the controller 5 controls the display unit U1 in accordance with the command included in that communication data.” Ex. 1013 at 4:49-57.</p> <p><i>See</i> Ex. 1013 at Fig. 5 #101 and #102.</p> <p>Fig. 5</p>
<p>[1.c] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.</p>	<p>Welk</p> <p>“The above operation for color selection is illustrated by the initializing power on step 50 in the flowchart in FIGS. 2a and 2b which step is then followed by the process step 51. After implementing the process step 51, information flow passes to a process block 52 wherein the display station identification (ID) code is effectively read by the control unit 11. This essentially corresponds to the microprocessor 15 reading out data, in response to a command from the control unit 11, from a designated storage location (location 25) wherein this data identifies to the control unit 11 the type of display station that the control unit 11 is connected to. To insure compatibility with the IBM 3270 system, the ID data stored in location 25 corresponds to data identifying the display station 13 as an IBM 3279 display</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Welk (Ex. 1015)
	station. This ID data is supplied by the microprocessor 15 to the control unit 11." Ex. 1015 at 7:11-28.
2. A display unit according to claim 1, wherein said first and second identification information include an identification number.	<p><u>Satoru</u></p> <p>"The ID code is made up of two characters selected from numerals 0 to 9 and alphabetical characters A, B, C, D, E and F, to constitute an ID code for indicating a display unit. The ID code may include one or two asterisks * in certain situations. For example, for an ID code "3A" indicating a certain display unit, valid ID codes are "3A", "*A", "3*" and "**" Ex. 1013 at 3:43-50.</p>
3. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:	<p><u>Satoru</u></p> <p>See claim 1, preamble.</p> <p><u>Welk</u></p> <p>See claim 1, preamble.</p>
[3.a] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and	<p><u>Satoru</u></p> <p>See claim 1, element [1.a].</p>
[3.b] a reception prohibition means for prohibiting reception of a control command from said computer, for controlling at least one	<p><u>Satoru</u></p> <p>See claim 1, third element regarding "a reception prohibition means for prohibiting reception of a control command from said computer.... when said first and second identification information do not match as a</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Welk (Ex. 1015)
of a display size, a display position, a brightness, and a contrast of said display unit, when said first and second identification information do not match as a result of the comparison by said comparing means;	result of the comparison by said comparing means.” “The invention is intended to adjust controlling items of individual units or those of a system as a whole. In the case of a display system of the following embodiment, the white balance, brightness, contrast, etc. of respective display units are adjusted individually or those of the display system are adjusted as a whole.” Ex. 1013 at 3:1-7 .
[3.c] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.	<u>Welk</u> <i>See</i> claim 1, element [1.c].
4. A display unit according to claim 3, wherein said first and second identification information include an identification number.	<u>Satoru</u> <i>See</i> claim 2.
14. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:	<u>Satoru</u> <i>See</i> claim 1, preamble. <u>Welk</u> <i>See</i> claim 1, preamble.
[14.a] comparing means for comparing a first identification information which is previously stored in said	<u>Satoru</u> <i>See</i> claim 1, element [1.a].

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Welk (Ex. 1015)
display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and	
[14.b] a communication permission means for enabling display control by said computer and permitting communication between said computer and said display unit with respect to display control of said display unit, when said first and second identification information match as a result of the comparison by said comparing means,	<p><u>Satoru</u></p> <p><i>See claim 1, element [1b] regarding “a reception prohibition means for prohibiting reception of a control command from said computer.... when said first and second identification information do not match as a result of the comparison by said comparing means.”</i></p> <p>“The invention is intended to adjust controlling items of individual units or those of a system as a whole. In the case of a display system of the following embodiment, the white balance, brightness, contrast, etc. of respective display units are adjusted individually or those of the display system are adjusted as a whole.”</p> <p>Ex. 1013 at 3:1-7 .</p>
[14.c] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.	<p><u>Welk</u></p> <p><i>See claim 1, element [1.c].</i></p>
16. A display unit for displaying an image based upon a digital image information signal, inputting said digital image information signal from	<p><u>Satoru</u></p> <p><i>See claim 1, preamble.</i></p> <p><u>Welk</u></p> <p><i>See claim 1, preamble.</i></p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Welk (Ex. 1015)
an externally connected computer, comprising:	
[16.a] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and	<p><u>Satoru</u> <i>See</i> claim 1, element [1.a].</p>
[16.b] a communication permission means for enabling display control by said computer and permitting communication between said computer and said display unit with respect to display control of said display unit, when said first and second identification information match as a result of the comparison by said comparing means,	<p><u>Satoru</u> <i>See</i> claim 1, element [1.b].</p>
[16.c] further comprising a communication controller which enables bi-directional communication with said display unit and said computer.	<p><u>Welk</u> <i>See</i> claim 1, element [1.c].</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Welk (Ex. 1015)
<p>17. A display unit for displaying an image based upon a digital image information signal, inputting said digital image information signal from an externally connected computer, comprising:</p>	<p><u>Satoru</u> <i>See claim 1, preamble.</i></p> <p><u>Welk</u> <i>See claim 1, preamble.</i></p>
<p>[17.a] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and</p>	<p><u>Satoru</u> <i>See claim 1, element [1.a].</i></p>
<p>[17.b] a communication prohibition means for disabling control of said memory means by said computer and prohibiting communication between said computer and said memory means of said display unit, when said first and second identification information do not match as a result of the comparison by said comparing means,</p>	<p><u>Satoru</u> <i>See claim 1, element [1.b].</i></p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Welk (Ex. 1015)
[17.c] further comprising a communication controller which enables bi-directional communication with said display unit and said computer.	<p><u>Welk</u> <i>See claim 1, element [1.c].</i></p>
22. A method of communicating between a display unit and a video source from which video signals are sent to the display unit for display, the method comprising the steps of:	<p><u>Satoru</u> <i>See claim 1, preamble.</i></p> <p><u>Welk</u> <i>See claim 1, preamble.</i></p>
[22.a] communicating display unit information stored in a memory of the display unit from the display unit to the video source,	<p><u>Welk</u> “In addition to having the character information storage capabilities described above, the refresh memory screen RAM 24 can also be considered as containing (sic) one fixed storage location 25 which contains data that identifies the type of display station (terminal) corresponding to the display station 13. This terminal ID location 25 could alternatively consist of a storage location contained in the microprocessor control circuit 15. In addition, the refresh memory screen RAM 24 also has additional storage capability locations 26 for storing extended attributes including extended color control signals which would include storing control data for implementing the selection of colors in addition to the basic colors of red, green, blue and white. It should be noted that the extended attributes, in addition to extended color, may comprise underline, reverse video, blinking and programmable symbol selection. It is contemplated that these extended attribute and color select locations 26 contain stored control data only when such extended data is sent by the control unit 11</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Welk (Ex. 1015)
	<p>through the MPU 15 to the screen RAM 24. It should be noted that if the control unit 11 does not identify the color display station 13 as being compatible, no extended color attribute data will be sent to the MPU 15, and therefore no extended color selection will be possible.” Ex. 1015 at 4:37-61.</p> <p>“The above operation for color selection is illustrated by the initializing power on step 50 in the flowchart in FIGS. 2a and 2b which step is then followed by the process step 51. After implementing the process step 51, information flow passes to a process block 52 wherein the display station identification (ID) code is effectively read by the control unit 11. This essentially corresponds to the microprocessor 15 reading out data, in response to a command from the control unit 11, from a designated storage location (location 25) wherein this data identifies to the control unit 11 the type of display station that the control unit 11 is connected to. To insure compatibility with the IBM 3270 system, the ID data stored in location 25 corresponds to data identifying the display station 13 as an IBM 3279 display station. This ID data is supplied by the microprocessor 15 to the control unit 11.” Ex. 1015 at 7:11-28.</p>
[22.b] wherein said display unit information includes an identification number for uniquely identifying the display unit; and	<p><u>Satoru</u></p> <p>“Specific ID codes are preassigned to the respective display units U1-U4, and an ID code included in transmission data from the computer 1 is decoded by each display unit....In this example, each of the display units U1-U4 must be provided with setting switches and a memory such as ROM for setting and storing its own ID code, respectively.” Ex. 1013 at 1:28-37.</p>
[22.c] sending a signal from the video source to the display unit, wherein said signal is generated based on the display unit	<p><u>Welk</u></p> <p>“The above operation for color selection is illustrated by the initializing power on step 50 in the flowchart in FIGS. 2a and 2b which step is then followed by the process step 51. After implementing the process step</p>

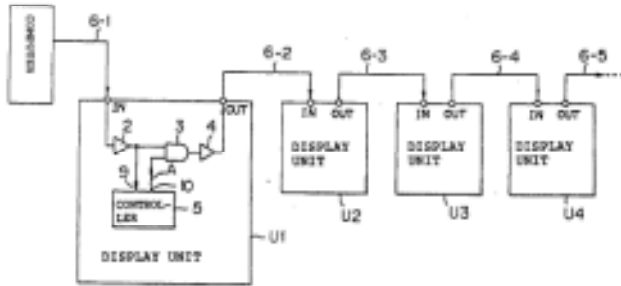
'970 Claim Element	Disclosure in Satoru (Ex. 1013) and Welk (Ex. 1015)
information,	<p>51, information flow passes to a process block 52 wherein the display station identification (ID) code is effectively read by the control unit 11. This essentially corresponds to the microprocessor 15 reading out data, in response to a command from the control unit 11, from a designated storage location (location 25) wherein this data identifies to the control unit 11 the type of display station that the control unit 11 is connected to. To insure compatibility with the IBM 3270 system, the ID data stored in location 25 corresponds to data identifying the display station 13 as an IBM 3279 display station. This ID data is supplied by the microprocessor 15 to the control unit 11. // From the process block 52, information passes to a decision block 53 wherein the computer control unit 11 determines if the control unit 11 is a color control unit and if the control unit is connected to a proper color display station. If either the control unit 11 is not a color control unit, or if the control unit 11 determines that the display station identification does not correspond to a proper color display station ID, then the process flow directly proceeds to a terminal 54. . . . In the present invention, if the decision block 53 determines that the control unit 11 is a color control unit, and that the color control unit is connected to what it believes to be a proper color display station, then information flow passes to a process block 60 which corresponds to the control unit 11 transmitting electrical convergence data via the cable 12 to the display station 13.” Ex. 1015 at 7:11-8:10.</p>
[22.d] wherein information is bi-directionally communicated with the video source and the display unit.	<p><u>Welk</u></p> <p>See claim 1, element [1.c].</p>

N. Satoru Combined with Welk and Schmidt Teaches Each Limitation of Claims 5-13

233. I have also reviewed the Satoru reference in combination with Welk and Schmidt in view of the claims at issue, and it is my opinion that Satoru combined with Lien and Schmidt discloses each limitation of claims 5-13 of the '970 Patent. Additional details supporting my opinion are provided in the following paragraphs.

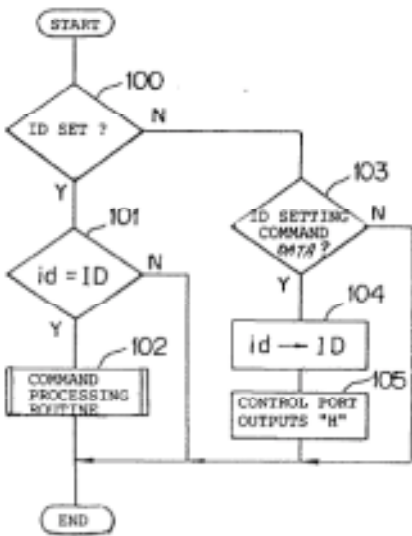
234. Claims 5-13 additionally recite that the display stores compatible frequencies in its memory. As described above, it would be obvious to combine the disclosures of Satoru and Welk. Additionally, as described above, Schmidt discloses the storage of compatible frequencies in memory so that a connected computer can more effectively configure the connected display. As Welk is also concerned with the automatic configuration of a computer to a connected display and Satoru is concerned with data connections to displays, one of ordinary skill would be motivated to combine the frequency provisioning disclosure of Schmidt with the disclosures of Satoru and Welk to render claims 5-13 obvious.

235. The table below provides a summary of the specific disclosures in Satoru, Welk, and Schmidt that support my opinions that the combination of these references discloses each element of claims 5-13 of the '970 Patent. It should be noted that the disclosures cited in the table below are merely exemplary and are in no way limiting, and there may be other portions of these references that additionally disclose a given limitation.

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Schmidt (Ex. 1012)
<p>5. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:</p>	<p><u>Satoru</u></p> <p>See Ex. 1013 at Fig. 1.</p> <p style="text-align: center;"><i>Fig. 1</i></p>  <p>“The display unit U1 includes: a buffer amplifier 2 for amplifying a level of transmission data received via an input terminal IN; a controller 5 in the form of a microprocessor for controlling the entire display unit U1 based on the transmission data provided via an input port 9; an AND gate 3 for controlling transfer of the transmission data output from the buffer amplifier 2 based on a transfer permission signal A output from an control port of the controller 5; and a buffer amplifier 4 for providing, after amplification, the transmission data output from the AND gate 3 to an output terminal OUT.” Ex. 1013 at 3:14-26.</p> <p><u>Welk</u></p> <p>“A preconverged color display station is disclosed which is compatible with a computer controlled control unit that provides electrical convergence control signals.” Ex. 1015 at Abstract.</p> <p>“FIG. 1 illustrates a display information system 10 in which a remote computer control unit 11 is contemplated as supplying display information via a coaxial cable 12 to a color display station 13 (shown dashed) which includes a CRT (cathode ray tube terminal) 14 and a programmed microprocessor control circuit (MPU) 15.” Ex. 1015 at 3:15-21.</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Schmidt (Ex. 1012)
	<p>Ex. 1015 at Fig. 1.</p> <p>Fig. 1</p>
<p>[5.a] memory means for storing at least data of a frequency range to which said display unit is operable;</p>	<p>Schmidt</p> <p>Schmidt discloses memory means for storing data of a frequency range to which the display unit is operable. This enables the computer to only change the frequency to acceptable values.</p> <p>Schmidt states “[a]n apparatus for determining a plurality of video signal characteristics including analog video frequency, horizontal sync frequency and vertical sync frequency produced by a graphics controller providing the video signal to a video display monitor, includes a memory storing bits which correspond to a set of operating characteristics of the video display monitor, a first circuit coupled to the memory for producing voltage fluctuations on a line based on the stored bits in response to a signal which corresponds to a command to set the characteristics of the video signal provided to the video display monitor, and a second circuit for sensing the voltage fluctuations so as to permit determination of the set of operating characteristics.” Ex. 1012 at Abstract.</p> <p>Table 2 illustrates an exemplary byte sequence sent by the monitor to identify monitor type. Bit 7 of byte 0</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Schmidt (Ex. 1012)
	<p>uniquely identifies whether the monitor supports the Parameter Response mode for enhanced resolution. Ex. 1014 at 8:39-43, 11:23-27.</p> <p>“[B]yte 4 provides a statement of the maximum horizontal sync frequency, in kilohertz (kHz), supported by monitor 100. ...Byte 5 provides the maximum vertical sync frequency, in hertz (Hz), supported by monitor 100.” Ex. 1012 at 11:39-49.</p>
<p>[5.b] comparing means for comparing a first identification information which is previously stored in said display unit, and a second identification information which is previously stored in said computer and is sent from said computer; and</p>	<p><u>Satoru</u></p> <p>“Specific ID codes are preassigned to the respective display units U1-U4, and an ID code (unique identification code: see claim 1) included in transmission data from the computer 1 is decoded by each display unit....In this example, each of the display units U1-U4 must be provided with setting switches and a memory such as ROM for setting and storing its own ID code, respectively.” Ex. 1013 at 1:28-37.</p> <p>“For example, if the first-sent so command data is "111DS", the controller 5 of the first display unit U1 recognizes that its ID code is to be determined as "11 ", and stores the ID code "11" into a memory of the controller 5. If the ID code "11" is included in any kind of communication data received thereafter, the controller 5 controls the display unit U1 in accordance with the command included in that communication data.” Ex. 1013 at 4:49-57.</p>
<p>[5.c] and a communication permission means for permitting communication between said computer, at least with respect to said data of a frequency range stored in said memory</p>	<p><u>Satoru</u></p> <p>“For example, if the first-sent so command data is "111DS", the controller 5 of the first display unit U1 recognizes that its ID code is to be determined as "11 ", and stores the ID code "11" into a memory of the controller 5. If the ID code "11" is included in any kind of communication data received thereafter, the controller 5 controls the display unit U1 in accordance with the command included in that</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Schmidt (Ex. 1012)
<p>means, when said first and second identification information match as a result of the comparison by said comparing means;</p>	<p>communication data.” Ex. 1013 at 4:49-57.</p> <p>See Ex. 1013 at Fig. 5 #101 and #102.</p> <p style="text-align: center;"><i>Fig. 5</i></p>  <pre> graph TD START([START]) --> 100{ID SET ?} 100 -- Y --> 101{id = ID} 100 -- N --> 103{ID SETTING COMMAND DATA ?} 101 -- Y --> 102[COMMAND PROCESSING SYSTEM] 101 -- N --> 103 103 -- Y --> 104[id -> ID] 103 -- N --> 105[CONTROL PORT OUTPUTS "H"] 104 --> 105 102 --> END([END]) 105 --> 103 </pre> <p>Schmidt</p> <p>Schmidt states “[a]n apparatus for determining a plurality of video signal characteristics including analog video frequency, horizontal sync frequency and vertical sync frequency produced by a graphics controller providing the video signal to a video display monitor, includes a memory storing bits which correspond to a set of operating characteristics of the video display monitor, a first circuit coupled to the memory for producing voltage fluctuations on a line based on the stored bits in response to a signal which corresponds to a command to set the characteristics of the video signal provided to the video display monitor, and a second circuit for sensing the voltage fluctuations so as to permit determination of the set of operating characteristics.” Ex. 1012 at Abstract.</p> <p>Table 2 illustrates an exemplary byte sequence sent by the monitor to identify monitor type. Bit 7 of byte 0</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Schmidt (Ex. 1012)
	<p>uniquely identifies whether the monitor supports the Parameter Response mode for enhanced resolution. Ex. 1014 at 8:39-43, 11:23-27.</p> <p>“[B]yte 4 provides a statement of the maximum horizontal sync frequency, in kilohertz (kHz), supported by monitor 100. ...Byte 5 provides the maximum vertical sync frequency, in hertz (Hz), supported by monitor 100.” Ex. 1012 at 11:39-49.</p>
<p>[5.d] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.</p>	<p><u>Welk</u></p> <p>“The above operation for color selection is illustrated by the initializing power on step 50 in the flowchart in FIGS. 2a and 2b which step is then followed by the process step 51. After implementing the process step 51, information flow passes to a process block 52 wherein the display station identification (ID) code is effectively read by the control unit 11. This essentially corresponds to the microprocessor 15 reading out data, in response to a command from the control unit 11, from a designated storage location (location 25) wherein this data identifies to the control unit 11 the type of display station that the control unit 11 is connected to. To insure compatibility with the IBM 3270 system, the ID data stored in location 25 corresponds to data identifying the display station 13 as an IBM 3279 display station. This ID data is supplied by the microprocessor 15 to the control unit 11.” Ex. 1015 at 7:11-28.</p>
<p>6. A display unit according to claim 5, wherein said first identification information is stored in said memory means.</p>	<p><u>Schmidt</u></p> <p>As described with respect to claim element [5.a], the same memory means that store the compatible frequency ranges of Schmidt can also be used to store identifying information.</p>
<p>7. A display unit according to claim 5, wherein said data</p>	<p><u>Schmidt</u></p> <p>See claim 5, element [5.a].</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Schmidt (Ex. 1012)
relating at least to a display specification of said display unit stored in said memory means, includes data of a frequency range to which said display unit is operable.	
8. A display unit according to claim 5, wherein said first and second identification information include an identification number	<p><u>Satoru</u></p> <p>"The ID code is made up of two characters selected from numerals 0 to 9 and alphabetical characters A, B, C, D, E and F, to constitute an ID code for indicating a display unit. The ID code may include one or two asterisks * in certain situations.</p> <p>For example, for an ID code "3A" indicating a certain display unit, valid ID codes are "3A", "*A", "3*" and "**." Ex. 1013 at 3:43-50.</p>
9. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:	<p><u>Satoru</u></p> <p>See claim 5, preamble.</p> <p><u>Welk</u></p> <p>See claim 5, preamble.</p>
[9.a] memory means for storing at least data of a frequency range for which said display unit is operable;	<p><u>Schmidt</u></p> <p>See claim 5, element [5.a].</p>
[9.b] comparing means for comparing a first identification information which is	<p><u>Satoru</u></p> <p>See claim 5, element [5.b].</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Schmidt (Ex. 1012)
previously stored in said display unit in advance, and a second identification information which is previously stored in said computer and is sent from said computer; and	
[9.c] a communication prohibition means for prohibiting communication between said computer, at least with respect to said data of a frequency range stored in said memory means, when said first and second identification information do not match as a result of the comparison by said comparing means;	<p><u>Satoru</u> <i>See claim 5, element [5.c].</i></p> <p><u>Schmidt</u> <i>See claim 5, element [5.c].</i></p>
[9.d] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.	<p><u>Welk</u> <i>See claim 5, element [5.d].</i></p>
10. A display unit according to claim 9, wherein the control of said memory means includes rewriting or	<p><u>Satoru</u> “Next, a description is made of communication data according to the invention, which is initialization data used in assigning ID codes to the respective display units U1-U4 when a control system is installed (or</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Schmidt (Ex. 1012)
writing control of said data in said memory means.	<p>expanded). An exemplary serial data format is shown in Figure 3. In Figure 3, "id" represents an ID code of intended one of the display units U1-U4. For example, if the ID code of the intended display unit U1 is "11 ", "id" should be "11 ". Similarly, if the ID code of the intended display unit U2 is "12", "id" should be "12". In the format of Fig. 3, "command" represents data of an ID code setting instruction, e.g., "IDS" (ID set). Further, to set new ID codes for the respective display units U1-U4, it is necessary that the current ID codes be cleared. A command for such a purpose is, e.g., "IDC" (ID clear)." Ex. 1013 at 4:2-18.</p>
11. A display unit according to claim 9, wherein said first identification information is stored in said memory means.	<p><u>Schmidt</u></p> <p>As described with respect to claim element [5.a], the same memory means that stores the compatible frequency ranges of Schmidt can also store identifying information.</p>
12. A display unit according to claim 9, wherein said data relating at least to a display specification of said display unit stored in said memory means, includes data of a frequency range to which said display unit is operable.	<p><u>Schmidt</u></p> <p>See claim 5, element [5.a].</p>
13. A display unit according to claim 9, wherein said first and second identification information include an	<p><u>Satoru</u></p> <p>See claim 8.</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Schmidt (Ex. 1012)
identification number.	

O. Satoru Combined with Welk and Admitted Prior Art Teaches Each Limitation of Claims 15, 24, 26, and 29

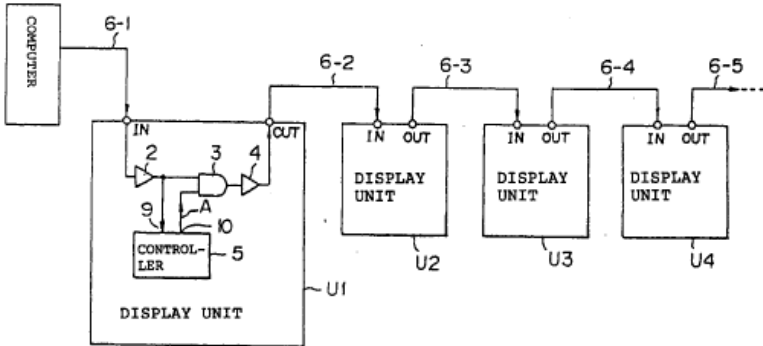
236. It is also my opinion that Satoru combined with Welk and the admitted prior art in the '970 Patent discloses each limitation of claims 15, 24, 26, and 29 of the '970 Patent. Additional details supporting my opinion are provided in the following paragraphs. As described above, one of ordinary skill in the art would be motivated to combine the systems of Welk and Satoru. One of ordinary skill would further be motivated to combine the admitted prior art of the '970 Patent with Welk and Satoru.

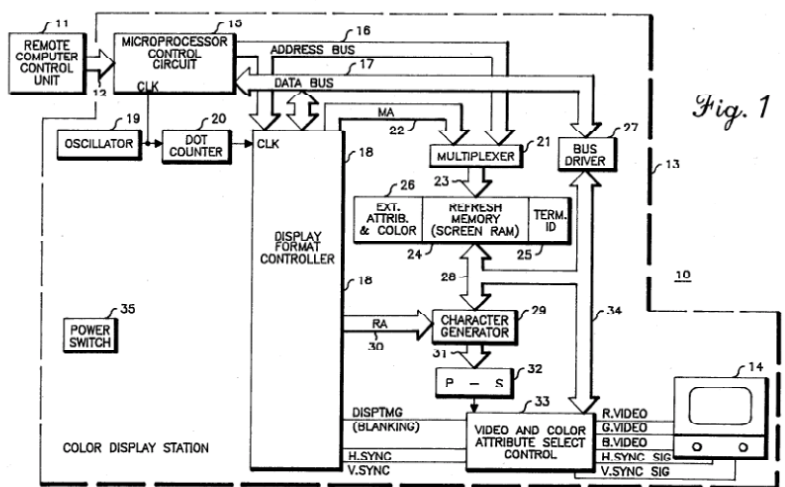
237. In particular, the '970 Patent admits that the use of computer commands to change the size and position of a display was known in the prior art. (Ex. 1001 at 2:2-12.) As both Welk and Satoru disclose systems by which a computer transmits commands to a display one of ordinary skill in the art would be motivated to add the known capability of changing display size and position to the previously described combination of Welk and Satoru to render claim 15 obvious.

238. With respect to claims 24, 26, and 29, these claims recite control of a deflection circuit by processor within the display. In the admitted prior art CRT systems, the control of size and position would have inherently required control of a

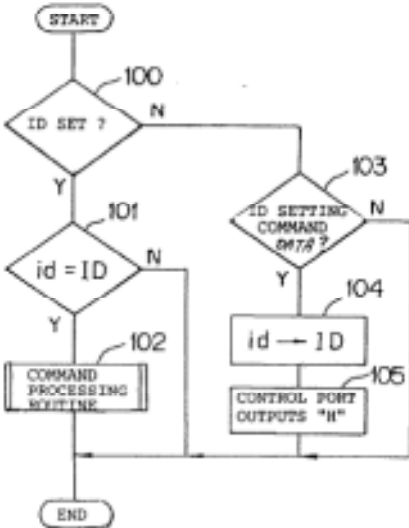
deflection circuit. Accordingly these features are disclosed in the admitted prior art as well.

239. The table below provides a summary of the specific disclosures in Welk, Satoru and the admitted prior art of the '970 Patent that support my opinions that the combination of these references discloses each element of claims 15, 24, 26, and 29 of the '970 Patent. It should be noted that the disclosures cited in the table below are merely exemplary and are in no way limiting, and there may be other portions of these references that additionally disclose a given limitation.

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Admitted Prior Art
<p>15. A display unit having a communication control circuit for communicating with an externally connected computer, wherein said communication control circuit comprises:</p>	<p>Satoru <i>See Ex. 1013 at Fig. 1.</i></p> <p><i>Fig. 1</i></p>  <p>“The display unit U1 includes: a buffer amplifier 2 for amplifying a level of transmission data received via an input terminal IN; a controller 5 in the form of a microprocessor for controlling the entire display unit U1 based on the transmission data provided via an input port 9; an AND gate 3 for controlling transfer of the transmission data output from the buffer amplifier 2 based on a transfer permission signal A output from an</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Admitted Prior Art
	<p>control port of the controller 5; and a buffer amplifier 4 for providing, after amplification, the transmission data output from the AND gate 3 to an output terminal OUT.” Ex. 1013 at 3:14-26.</p> <p>Welk</p> <p>“A preconverged color display station is disclosed which is compatible with a computer controlled control unit that provides electrical convergence control signals.” Ex. 1015 at Abstract</p> <p>“FIG. 1 illustrates a display information system 10 in which a remote computer control unit 11 is contemplated as supplying display information via a coaxial cable 12 to a color display station 13 (shown dashed) which includes a CRT (cathode ray tube terminal) 14 and a programmed microprocessor control circuit (MPU) 15.” Ex. 1015 at 3:15-21.</p> <p>Ex. 1015 at Fig. 1</p>  <p>Fig. 1</p>
[15.a] comparing means for comparing a first identification information which is previously stored in said display unit, and a	<p>Satoru</p> <p>“Specific ID codes are preassigned to the respective display units U1-U4, and an ID code (unique identification code: see claim 1) included in transmission data from the computer 1 is decoded by each display</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Admitted Prior Art
<p>second identification information which is previously stored in said computer and is sent from said computer; and</p>	<p>unit....In this example, each of the display units U1-U4 must be provided with setting switches and a memory such as ROM for setting and storing its own ID code, respectively.” Ex. 1013 at 1:28-37.</p> <p>“For example, if the first-sent so command data is "111DS", the controller 5 of the first display unit U1 recognizes that its ID code is to be determined as "11 ", and stores the ID code "11" into a memory of the controller 5. If the ID code "11" is included in any kind of communication data received thereafter, the controller 5 controls the display unit U1 in accordance with the command included in that communication data.” Ex. 1013 at 4:49-57.</p>
<p>[15.b] a reception permission means for enabling control of a display size/position of said display unit by said computer and permitting reception of a control command from said computer for controlling at least the display size/position of said display unit, when said first and second identification information match as a result of the comparison by said comparing means,</p>	<p><u>Satoru</u></p> <p>“For example, if the first-sent so command data is "111DS", the controller 5 of the first display unit U1 recognizes that its ID code is to be determined as "11 ", and stores the ID code "11" into a memory of the controller 5. If the ID code "11" is included in any kind of communication data received thereafter, the controller 5 controls the display unit U1 in accordance with the command included in that communication data.” Ex. 1013 at 4:49-57.</p> <p><i>See</i> Ex. 1013 at Fig. 5 #101 and #102.</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Admitted Prior Art
	<p style="text-align: center;">Fig. 5</p>  <pre> graph TD START([START]) --> 100{ID SET ?} 100 -- Y --> 101{id = ID} 100 -- N --> 103{ID SETTING COMMAND DATA ?} 101 -- Y --> 102[COMMAND PROCESSING ROUTINE] 101 -- N --> 103 102 --> END([END]) 103 -- Y --> 104[id → ID] 103 -- N --> 105[CONTROL PORT OUTPUTS "H"] 104 --> 105 105 --> END </pre> <p>Admitted Prior Art</p> <p>“According to the former prior art among the aforementioned prior arts, the control of the display position and size on the screen is managed by the display device. Therefore, when adjustment is required or requested from the user of display device, it is necessary to perform manual adjustment using the adjustment switch of the display device each time and it is rather troublesome to operate the system. According to the latter prior art among the aforementioned prior arts, the control can be operated by the computer.” Ex. 1001 at 2:2-12.</p>
[15.c] wherein said communication control circuit enables bi-directional communication with said display unit and said computer.	<p>Welk</p> <p>“The above operation for color selection is illustrated by the initializing power on step 50 in the flowchart in FIGS. 2a and 2b which step is then followed by the process step 51. After implementing the process step 51, information flow passes to a process block 52 wherein the display station identification (ID) code is effectively read by the control unit 11. This essentially corresponds</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Admitted Prior Art
	to the microprocessor 15 reading out data, in response to a command from the control unit 11, from a designated storage location (location 25) wherein this data identifies to the control unit 11 the type of display station that the control unit 11 is connected to. To insure compatibility with the IBM 3270 system, the ID data stored in location 25 corresponds to data identifying the display station 13 as an IBM 3279 display station. This ID data is supplied by the microprocessor 15 to the control unit 11." Ex. 1015 at 7:11-28.
23. A display unit for displaying an image based on an image signal inputted from an externally connected computer, comprising:	<p><u>Satoru</u> <i>See claim 15, preamble.</i></p> <p><u>Welk</u> <i>See claim 15, preamble.</i></p>
[23.a] a processor adapted to control display of the display unit;	<p><u>Satoru</u> "The display unit U1 includes: a buffer amplifier 2 for amplifying a level of transmission data received via an input terminal IN; a controller 5 in the form of a microprocessor for controlling the entire display unit U1 based on the transmission data provided via an input port 9; an AND gate 3 for controlling transfer of the transmission data output from the buffer amplifier 2 based on a 5 transfer permission signal A output from an control port 10 of the controller 5; and a buffer amplifier 4 for providing, after amplification, the transmission data output from the AND gate 3 to an output terminal OUT." Ex. 1013 at 3:56-4:8.</p>
[23.b] a memory which stores an identification number; and	<p><u>Welk</u> "In addition to having the character information storage capabilities described above, the refresh memory screen RAM 24 can also be considered as containing (sic) one</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Admitted Prior Art
	<p>fixed storage location 25 which contains data that identifies the type of display station (terminal) corresponding to the display station 13. This terminal ID location 25 could alternatively consist of a storage location contained in the microprocessor control circuit 15. In addition, the refresh memory screen RAM 24 also has additional storage capability locations 26 for storing extended attributes including extended color control signals which would include storing control data for implementing the selection of colors in addition to the basic colors of red, green, blue and white. It should be noted that the extended attributes, in addition to extended color, may comprise underline, reverse video, blinking and programmable symbol selection. It is contemplated that these extended attribute and color select locations 26 contain stored control data only when such extended data is sent by the control unit 11 through the MPU 15 to the screen RAM 24. It should be noted that if the control unit 11 does not identify the color display station 13 as being compatible, no extended color attribute data will be sent to the MPU 15, and therefore no extended color selection will be possible.” Ex. 1015 at 4:37-61.</p>
<p>[23.c] a communication controller which sends the identification number stored in said memory to said computer;</p>	<p><u>Welk</u></p> <p>“In addition to having the character information storage capabilities described above, the refresh memory screen RAM 24 can also be considered as containing (sic) one fixed storage location 25 which contains data that identifies the type of display station (terminal) corresponding to the display station 13. This terminal ID location 25 could alternatively consist of a storage location contained in the microprocessor control circuit 15. In addition, the refresh memory screen RAM 24 also has additional storage capability locations 26 for storing extended attributes including extended color control signals which would include storing control data for implementing the selection of colors in addition to the</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Admitted Prior Art
	<p>basic colors of red, green, blue and white. It should be noted that the extended attributes, in addition to extended color, may comprise underline, reverse video, blinking and programmable symbol selection. It is contemplated that these extended attribute and color select locations 26 contain stored control data only when such extended data is sent by the control unit 11 through the MPU 15 to the screen RAM 24. It should be noted that if the control unit 11 does not identify the color display station 13 as being compatible, no extended color attribute data will be sent to the MPU 15, and therefore no extended color selection will be possible.” Ex. 1015 at 4:37-61.</p> <p>“The above operation for color selection is illustrated by the initializing power on step 50 in the flowchart in FIGS. 2a and 2b which step is then followed by the process step 51. After implementing the process step 51, information flow passes to a process block 52 wherein the display station identification (ID) code is effectively read by the control unit 11. This essentially corresponds to the microprocessor 15 reading out data, in response to a command from the control unit 11, from a designated storage location (location 25) wherein this data identifies to the control unit 11 the type of display station that the control unit 11 is connected to. To insure compatibility with the IBM 3270 system, the ID data stored in location 25 corresponds to data identifying the display station 13 as an IBM 3279 display station. This ID data is supplied by the microprocessor 15 to the control unit 11.” Ex. 1015 at 7:11-28.</p>
[23.d] wherein said communication controller enables bi-directional communication between said display and said	<p><u>Welk</u></p> <p>See claim 15, element [15.c].</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Admitted Prior Art
computer.	
24. A display unit according to claim 23, further comprising a deflection circuit, wherein the processor generates control signals for the deflection circuit.	<p><u>Admitted Prior Art</u></p> <p>“According to the former prior art among the aforementioned prior arts, the control of the display position and size on the screen is managed by the display device. Therefore, when adjustment is required or requested from the user of display device, it is necessary to perform manual adjustment using the adjustment switch of the display device each time and it is rather troublesome to operate the system. According to the latter prior art among the aforementioned prior arts, the control can be operated by the computer.” Ex. 1001 at 2:2-12.</p>
25. A display unit for displaying an image based on an image signal inputted from an externally connected computer, comprising:	<p><u>Satoru</u></p> <p><i>See</i> claim 15, preamble.</p> <p><u>Welk</u></p> <p><i>See</i> claim 15, preamble.</p>
[25.a] a processor adapted to control display of the display unit;	<p><u>Satoru</u></p> <p><i>See</i> claim 23, element [23.a].</p> <p><u>Welk</u></p> <p><i>See</i> claim 23, element [23.a].</p>
[25.b] a memory which stores identification information; and	<p><u>Welk</u></p> <p><i>See</i> claim 23, element [23.b].</p>
[25.c] a communication controller which sends the identification	<p><u>Welk</u></p> <p><i>See</i> claim 23, element [23.c].</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Admitted Prior Art
information stored in said memory to said computer in response to power on of at least one of said display unit and said computer;	
[25.d] wherein said communication controller enables bi-directional communication between said display and said computer.	<p><u>Welk</u> <i>See</i> claim 15, element [15.c].</p>
26. A display unit according to claim 25, further comprising a deflection circuit, wherein the processor generates control signals for the deflection circuit.	<p><u>Admitted Prior Art</u> <i>See</i> claim 24.</p>
27. A display unit for displaying an image based on an image signal inputted from an externally connected video source, comprising:	<p><u>Satoru</u> <i>See</i> claim 15, preamble. <u>Welk</u> <i>See</i> claim 15, preamble.</p>
[27.a] a processor adapted to control display of the display	<p><u>Satoru</u> <i>See</i> claim 23, element [23.a].</p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Admitted Prior Art
unit;	<u>Welk</u> <i>See claim 23, element [23.a].</i>
[27.b] a memory in which at least display unit information is stored, wherein the display unit information includes an identification number for identifying the display unit; and	<u>Welk</u> <i>See claim 23, element [23.b].</i>
[27.c] a communication controller capable of bi-directionally communicating with the video source;	<u>Welk</u> <i>See claim 15, element [15.c].</i>
[27.d] wherein the communication controller communicates the display unit information from the display unit to the video source and the display unit receives a signal from the video source that is generated based on the display unit information.	<u>Welk</u> “In addition to having the character information storage capabilities described above, the refresh memory screen RAM 24 can also be considered as containing (sic) one fixed storage location 25 which contains data that identifies the type of display station (terminal) corresponding to the display station 13. This terminal ID location 25 could alternatively consist of a storage location contained in the microprocessor control circuit 15. In addition, the refresh memory screen RAM 24 also has additional storage capability locations 26 for storing extended attributes including extended color control signals which would include storing control data for implementing the selection of colors in addition to the basic colors of red, green, blue and white. It should be noted that the extended attributes, in addition to extended color, may comprise underline, reverse video,

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Admitted Prior Art
	<p>blinking and programmable symbol selection. It is contemplated that these extended attribute and color select locations 26 contain stored control data only when such extended data is sent by the control unit 11 through the MPU 15 to the screen RAM 24. It should be noted that if the control unit 11 does not identify the color display station 13 as being compatible, no extended color attribute data will be sent to the MPU 15, and therefore no extended color selection will be possible.” Ex. 1015 at 4:37-61.</p> <p>“The above operation for color selection is illustrated by the initializing power on step 50 in the flowchart in FIGS. 2a and 2b which step is then followed by the process step 51. After implementing the process step 51, information flow passes to a process block 52 wherein the display station identification (ID) code is effectively read by the control unit 11. This essentially corresponds to the microprocessor 15 reading out data, in response to a command from the control unit 11, from a designated storage location (location 25) wherein this data identifies to the control unit 11 the type of display station that the control unit 11 is connected to. To insure compatibility with the IBM 3270 system, the ID data stored in location 25 corresponds to data identifying the display station 13 as an IBM 3279 display station. This ID data is supplied by the microprocessor 15 to the control unit 11.” Ex. 1015 at 7:11-28.</p>
28. A display unit according to claim 27, wherein the video source is a computer.	<p><u>Satoru</u> <i>See claim 15, preamble.</i></p> <p><u>Welk</u> <i>See claim 15, preamble.</i></p>
29. A display unit according to claim 28,	<p><u>Admitted Prior Art</u> <i>See claim 24.</i></p>

'970 Claim Element	Disclosure in Satoru (Ex. 1013), Welk (Ex. 1015), and Admitted Prior Art
further comprising a deflection circuit, wherein the processor generates control signals for the deflection circuit.	

P. Schmidt Combined with Satoru Teaches the Limitations of Claim 22

240. I have reviewed Schmidt in combination with Satoru and it is my opinion that Schmidt and Satoru render claim 22 obvious. Additional detail supporting my opinion is set forward in the following paragraphs.

241. As previously described Schmidt discloses a display system where a display sends display identification information to a graphics controller and the graphics controller configures itself according to the received information so that it can generate signals compatible with the display. (Ex. 1012 at Abstract, 2:60-3:3.) The communications link of Schmidt is bidirectional and enables the graphics controller to solicit configuration information from the display. (*Id.* at 8:40-11:52.)

242. As previously discussed Satoru discloses a system that allows for the control of multiple displays from a central computer. Satoru at Abstract. In the system, each display is equipped with components that allow it to receive a unique identification code from a central computer. *Id.* at 4:2-5:7. After each display receives and stores its ID, it can, through the use of a controller, thereafter accept and

implement control instructions from the computer based on whether or not the ID code in the transmission corresponds to the ID code of the display. *Id.* at 1:26-38, 4:49-57, Fig. 5.

243. With respect to claim 22, it would be obvious to add Satoru's disclosure of a unique identifier to the information provided by the display of Schmidt to a connected computer. Doing so would streamline the process by allowing the Schmidt system to provide a single identifier rather than more complicated configuration information. It would also allow the system of Schmidt to keep a preferred resolution associated with a particular display for the next time that the display is used and to support simultaneous control of multiple displays.

244. The table below provides a summary of the specific disclosures in Satoru and Schmidt that support my opinions that the combination of these references discloses each element of claim 22 of the '970 Patent. It should be noted that the disclosures cited in the table below are merely exemplary and are in no way limiting, and there may be other portions of these references that additionally disclose a given limitation.

U.S. Pat. No. 6,549,970	Disclosure of Schmidt(Ex. 1012) and Satoru (Ex. 1013)
22. A method of communicating between a display unit and a video source from which video	<p><u>Schmidt</u></p> <p>“An apparatus for determining a plurality of video signal characteristics including analog video frequency,</p>

U.S. Pat. No. 6,549,970	Disclosure of Schmidt(Ex. 1012) and Satoru (Ex. 1013)
signals are sent to the display unit for display, the method comprising the steps of:	horizontal sync frequency and vertical sync frequency produced by a graphics controller providing the video signal to a video display monitor, includes a memory storing bits which correspond to a set of operating characteristics of the video display monitor, a first circuit coupled to the memory for producing voltage fluctuations on a line based on the stored bits in response to a signal which corresponds to a command to set the characteristics of the video signal provided to the video display monitor, and a second circuit for sensing the voltage fluctuations so as to permit determination of the set of operating characteristics.” Ex. 1012 at Abstract.
communicating display unit information stored in a memory of the display unit from the display unit to the video source,	<p><u>Schmidt</u></p> <p>“According to another aspect of the present invention, the first circuit comprises a memory storing a plurality of bits corresponding to the characteristics of the video display monitor, and the memory outputs the bits responsive to changes in a selected characteristic of a horizontal sync signal corresponding to the second signal. The selected characteristic may be polarity. The first circuit advantageously can further comprise a switch operatively coupled to a video line of the video display monitor and to ground so as to permit grounding of the video line in response to the bits output by the memory. In addition, the second circuit comprises a logic element for detecting the bits.” <i>Id.</i> at 4:32-44.</p> <p>“When monitor 100 enters PRM, the microprocessor 106 waits for receipt of the next vertical sync pulse. After the vertical sync pulse is detected, the microprocessor 106 outputs a plurality of bits, with one bit being output for each horizontal sync signals received. It will be apparent that each bit must be</p>

U.S. Pat. No. 6,549,970	Disclosure of Schmidt(Ex. 1012) and Satoru (Ex. 1013)
	<p>stable until the next horizontal sync pulse so that the graphics controller 200 has sufficient time to read the bit. Preferably, one bit is output every 25 microseconds (μs), which advantageously is adequate time for graphics controller 200 to sample each bit.</p> <p>It will be appreciated that memory 112 of monitor 100 includes the plurality of bits used to identify the video display monitor type to the graphics controller 200, with the bits being grouped into a plurality of bytes.” <i>Id.</i> at 8:48-63.</p>
<p>wherein said display unit information includes an identification number for uniquely identifying the display unit; and</p>	<p><u>Satoru</u></p> <p>“Specific ID codes are preassigned to the respective display units U1-U4, and an ID code included in transmission data from the computer 1 is decoded by each display unit....In this example, each of the display units U1-U4 must be provided with setting switches and a memory such as ROM for setting and storing its own ID code, respectively.” Ex. 1013 at 1:28-38.</p>
<p>sending a signal from the video source to the display unit, wherein said signal is generated based on the display unit information, wherein information is bi-directionally communicated with the video source and the display unit.</p>	<p><u>Schmidt:</u></p> <p>“When monitor 100 enters PRM, the microprocessor 106 waits for receipt of the next vertical sync pulse. After the vertical sync pulse is detected, the microprocessor 106 outputs a plurality of bits, with one bit being output for each horizontal sync signals received. It will be apparent that each bit must be stable until the next horizontal sync pulse so that the graphics controller 200 has sufficient time to read the bit. Preferably, one bit is output every 25 microseconds (μs), which advantageously is adequate time for graphics controller 200 to sample each bit.</p> <p>It will be appreciated that memory 112 of monitor 100 includes the plurality of bits used to identify the video display monitor type to the graphics</p>

U.S. Pat. No. 6,549,970	Disclosure of Schmidt(Ex. 1012) and Satoru (Ex. 1013)
	<p>controller 200, with the bits being grouped into a plurality of bytes.” Ex. 1012 at 8:48-63 .</p> <p>“The present invention was motivated by a desire to provide a method and apparatus for communicating the capabilities of a video display monitor to a graphics controller so as to permit automatic determination of the optimal refresh rate used by the graphics controller. In order to determine which refresh rate the graphics controller is to use, the BIOS need three pieces of information, maximum horizontal sync frequency, maximum vertical sync frequency and maximum video bandwidth. With this information, the BIOS can automatically determine the best timing requirements for the graphics controller.” <i>Id.</i> at 2:60-3:3.</p>

VII. SUPPLEMENTATION

245. This declaration, along with the attached appendices, is based on my present assessment of material and information currently available to me.

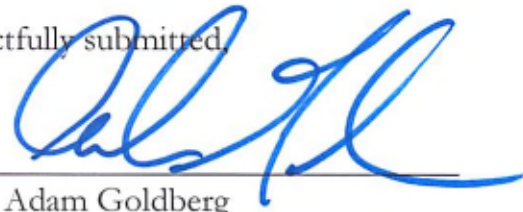
246. I hereby declare that all statements made herein of my own knowledge are true and that all statements made herein on information and belief are believed to be true. Further, these statements were made with the knowledge that willful false statements and the like so made are punishable by fine, imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-identified patent.

Executed on the 27th day of March, 2015 in Fairfax, VA.

Respectfully submitted,

By: _____

Adam Goldberg

A handwritten signature in blue ink, appearing to read 'Adam Goldberg', is written over a horizontal line. The signature is stylized and fluid.