

Declaration of Andrew Wolfe, Ph.D.
U.S. Patent No. 10,650,780

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TCL Electronics Holdings Ltd.
(f/k/a TCL Multimedia Technology Holdings, Ltd.)

Petitioner,

v.
Maxell, Ltd.

Patent Owner.

Case IPR2025-00134
U.S. Patent No. 10,650,780

**DECLARATION OF ANDREW WOLFE, PH.D.
ON BEHALF OF PETITIONER**

CLAIMS 1-11, 13, 15-20

Declaration of Andrew Wolfe, Ph.D.
U.S. Patent No. 10,650,780

I, Andrew Wolfe, Ph.D., declare as follows:

1. I have been retained on behalf of TCL Electronic Holdings Ltd. (f/k/a TCL Multimedia Technology Holdings, Ltd.) (“TCL” or “Petitioner”) to render my opinion on the patentability of claims 1-11, 13, and 15-20 of U.S. Patent 10,650,780 (the “‘780 Patent”). I have been asked to consider the state of the art and the prior art available before the time of the ‘780 Patent. My opinions are provided in this declaration.

2. To the best of my knowledge, I have no financial interest in Petitioner. Petitioner’s counsel has also informed me that a company known as Maxell, Inc. (“Maxell” or “Patent Owner”) is named as the current assignee of the ‘780 Patent and presumably is the Patent Owner. To the best of my knowledge, I have no financial interest in Maxell and, to the best of my recollection, I have had no contact with Maxell outside of their actions as opposing parties in similar litigation matters. To the best of my knowledge, I similarly have no financial interest in the ‘780 Patent. To the extent any mutual funds or other investments that I own have a financial interest in the Petitioner, the Patent Owner, or the ‘780 Patent, I am not aware of, nor do I have control over, any financial interest that would affect or bias my judgment.

3. I am being compensated at my standard consulting rate of \$750 for my time. My compensation is in no way contingent on the results of this or any other proceedings relating to the '780 Patent.

4. For ease of understanding, I have annotated figures and added emphasis in my discussions unless otherwise noted.

1. Background and Qualifications

5. My qualifications and professional experience are described in my curriculum vitae, a copy of which is provided as Exhibit 1006. The following briefly summarizes my relevant qualifications and professional experience.

6. I have more than 40 years of experience in consumer electronics and interactive graphics and interactive video computer systems, including as a computer architect, computer system designer, PC graphics designer, educator, and as an executive in the consumer electronics business.

7. In 1985, I earned the B.S.E.E. degree in Electrical Engineering and Computer Science from the Johns Hopkins University. In 1987, I received the M.S. degree in Electrical and Computer Engineering from Carnegie Mellon University and then in 1992, I received a Ph.D. in Computer Engineering from Carnegie

Mellon University. My doctoral dissertation proposed a new approach for the architecture of a computer processor.

8. In 1983, I began designing microprocessor-based computer systems and I/O cards for personal computers as a senior design engineer for Touch Technology, Inc. In some of these design projects, I designed interrupt-based I/O cards for PC-compatible computer systems including the IBM PC-AT to interface interactive touch-based computer terminals that I designed for use in public information systems. I later worked for the Carroll Touch division of AMP where I designed additional touchscreen technologies, developed system firmware, and designed the company's first custom integrated circuit. I designed the touch/pen input system for the Linus WriteTop, which many believe to be the first commercial tablet computer.

9. From 1986 through 1987, I designed and built a high-performance computer system at Carnegie Mellon University. From 1986 through 1988, I also developed the curriculum and supervised the teaching lab for the processor design courses.

10. In 1987-88, I worked as a senior design engineer for ESL-TRW Advanced Technology Division. I designed and built a bus interface and memory

controller for a workstation-based computer system and worked on the design of a multiprocessor system.

11. At the end of 1989, along with some partners, I reacquired the technology I had developed at Touch Technology and at AMP and founded The Graphics Technology Company. As an officer and a consultant, I managed engineering development activities at that company and personally developed dozens of interactive graphics and interactive video computer systems over the next seven years. Each of these included image rendering hardware and software and image-based user interfaces.

12. I have consulted, formally and informally, for a number of consumer electronics design companies. In particular, I have served on the technical advisory boards for two media processor design companies, BOPS, Inc., where I chaired the board, and Siroyan Ltd. I served in a similar role for three networking chip companies, Intellon, Inc., Comsilica, Inc., and Entridia, Inc. and one 3D game accelerator company, Ageia, Inc. I have also served as a technology advisor to Motorola and to several venture capital funds in the U.S. and Europe. Currently, I am a director of Turtle Beach Corporation, providing guidance in its development of premium audio peripheral devices for a variety of commercial electronic products.

13. From 1991 through 1997, I served on the Faculty of Princeton University as an Assistant Professor of Electrical Engineering. At Princeton, I taught undergraduate and graduate-level courses in Computer Architecture, Advanced Computer Architecture, Display Technology, and Microprocessor Systems courses as well as conducting sponsored research in the area of computer systems and related topics. I conducted DOD-sponsored research into client-server video streaming and supervised Ph.D. students working in this area. From 1999 through 2002, I also taught the Computer Architecture course to both undergraduates and graduate students at Stanford University several times as a Consulting Professor. At Princeton, I received several teaching awards, both from students and from the School of Engineering. I have also taught advanced microprocessor architecture to industry professionals in IEEE and ACM sponsored seminars. I am currently a lecturer at Santa Clara University teaching courses on Embedded Systems, Real-Time Computing, Mechatronics, and Engineering Practice.

14. From 1997 through 2002, I held a variety of executive positions at a publicly-held PC graphics company originally called S3, Inc. and later called Sonicblue Inc. These included Chief Technology Officer, Vice President of Systems Integration Products, Senior Vice President of Business Development, and

Director of Technology. At the time I joined S3, it supplied graphics accelerators for more than 50% of the PCs sold in the United States.

15. In these roles, I managed teams of engineers developing complex graphics chips for use in personal computers. I also managed the video research lab. I supervised several engineering design teams that developed 2D/3D graphics chips for notebook PCs including digital video playback hardware. I was involved in every aspect of the relationship with PC manufacturers ranging from discussions of product requirements, testing and qualification procedures, and competitive analysis, to market segmentation and pricing discussions. I met with senior executives in major PC manufacturers on numerous occasions to discuss business opportunities and general market trends. I also developed numerous consumer audio and video products including the Rio MP3 players, the ReplayTV digital video recorders, certain Löewe televisions, and the GoVideo DVD and VCR products. I also developed user interfaces and remote control protocols. I further assisted in the launch of streaming services. During my time at SonicBlue we launched more than 30 new consumer electronics products.

16. I have published more than 50 peer-reviewed papers in computer architecture and computer systems design including papers related to video streaming. I have also chaired IEEE and ACM conferences in microarchitecture

and integrated circuit design. I am a named inventor on at least fifty-seven U.S. patents and thirty-seven foreign patents, including on video recording and playback technology. I am an IEEE Fellow and an IEEE Computer Society Distinguished Contributor.

17. I have been the invited keynote speaker at the ACM/IEEE International Symposium on Microarchitecture and at the International Conference on Multimedia. I have also been an invited speaker on various aspects of technology or the PC industry at numerous industry events including the Intel Developer's Forum, Microsoft Windows Hardware Engineering Conference, Microprocessor Forum, Embedded Systems Conference, Comdex, and Consumer Electronics Show as well as at Harvard Business School and the University of Illinois Law School. I have been interviewed on subjects related to computer graphics and video technology and the electronics industry by publications such as the Wall Street Journal, New York Times, LA Times, Time, Newsweek, Forbes, and Fortune as well as CNN, NPR, and the BBC. I have also spoken at dozens of universities including MIT, Stanford, University of Texas, Carnegie Mellon, UCLA, University of Michigan, Rice, and Duke.

18. In summary, I have extensive familiarity with fields involving electronic device user interfaces, communication protocols, and displays. I am

familiar with the state of this field at the time of the '780 Patent, which I have been informed by Petitioner's counsel to assume as being October 17, 2007, for the purposes of this proceeding.

2. Materials Reviewed

19. In preparing this declaration, I have reviewed and considered the references listed below and all other documents referenced in this declaration. I have provided my opinions based on my personal knowledge of these documents as viewed from the view of a person of ordinary skill in the art (a "POSITA"), which I am familiar with based on my education, training, and experience in the field.

Exhibit No.	Document Description
EX1001	United States Patent 10,650,780
EX1002	Prosecution History of United States Patent 10,650,780
EX1004	U.S. Patent Application Publication No. 2008/0165081 ("Lawther")
EX1005	The JPEG Still Picture Compression Standard, Gregory K. Wallace
EX1006	Curriculum Vitae of Andrew Wolfe
EX1007	Intentionally Omitted
EX1008	USB1.1

EX1009	Universal Serial Bus Still Image Capture Device Definition
EX1010	PHOTOGRAPHIC AND IMAGING MANUFACTURERS ASSOCIATION, INC. PIMA 15740:2000 Standard
EX1011	How JPEG, released in 1992 gained Emmy fame in 2019
EX1012	Intentionally Omitted
EX1013	Intentionally Omitted
EX1014	The HDMI Specification 1.1
EX1015	A/53: Advanced Television Systems Committee, Inc.'s Digital Television Standard

3. Relevant Legal Standards

20. In preparing this declaration, counsel for Petitioner has informed me of the following aspects of the law, which I have applied in providing my opinions.

3.1. Burden of Proof

21. I have been informed and understand that the Petitioner must demonstrate unpatentability of a claim by a preponderance of the evidence. I understand that preponderance of the evidence means more likely than not in this context.

3.2. Person of Ordinary Skill in the Art

22. I have been informed and understand that a patent should be analyzed from the perspective of a POSITA. I have also been informed that factors

considered in determining a level of POSITA include: (1) the type of problems encountered in the art or field; (2) prior art solutions to these problems; (3) sophistication of the technology; (4) the rapidity with which innovations are made; (5) education level of workers active working in the field; (6) the named inventor's educational level and training; (7) the general state of the technology; and (8) types of testing and skills required to carry out such tests that are described in the patent.

23. I have been informed and understand that a POSITA is a hypothetical person of ordinary creativity. This person has knowledge of all prior art in the relevant field and takes from each reference what it would teach to a person having the skills of a POSITA. A POSITA is not an automaton and would be able to consider teachings from multiple references.

3.3. Claim Construction

24. I have been informed that to determine the meaning of the terms in the claims of the '780 Patent for purposes of this declaration, one should generally use the ordinary and customary meaning as understood by a POSITA at the time of the '780 Patent, taking into consideration the claim language and specification of the '780 Patent.

25. I have been informed and understand that an application of the patent can explicitly define a specific claim term in the specification. I have been informed and understand that in cases where a special definition is provided in the specification that is different from the normal plain and ordinary meaning of that term, the applicant has acted as his own lexicographer and that definition governs.

26. I have been informed and I understand that the specification of the patent and documents included in the file history of the '780 Patent (EX1002) should be considered in evaluating the proper construction of a claim term.

3.4. Obviousness

27. I have been informed that if one or more prior art references teach the claimed limitations, the claim can be found unpatentable based on obviousness.

28. I have been informed and understand that a patent claim would have been obvious to a POSITA over single or multiple references if the differences between the subject matter in the prior art and the subject matter in the claim would have been obvious to a POSITA before the priority date of the patent. I understand that a claim would have been obvious if a POSITA would have been motivated to combine the teachings of two or more prior art references to achieve

the claimed subject matter and a POSITA would have had a reasonable expectation of success of doing so.

29. I have been informed and understand that obviousness may be found based on the following exemplary rationales:

- combining prior art elements according to known methods to yield predictable results;
- simple substitution of one known element for another to obtain predictable results;
- use of known technique to improve similar devices (methods, or products) in the same way;
- applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- “obvious to try” – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
- known work in one field of endeavor that prompts variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;

- some teaching, suggestion, or motivation in the prior art that would have led a POSITA to modify the prior art reference or to combine prior art reference teachings to arrive at the claims.

30. I have been informed and understand that an obviousness analysis cannot be based on the benefit of hindsight obtained from the patent under consideration. In other words, the patent's specification or claim cannot be used as a map in the consideration of combining prior art references.

4. Summary of Opinions

31. In my opinion, claims 1-11, 13, and 15-20. (the "Challenged Claims") of the '780 Patent would have been obvious to a POSITA as more fully explained below in my declaration based on the following prior art and grounds.

Prior Art References	
Ref. 1:	U.S. Patent Application Publication No. 2008/0165081 ("Lawther") (EX1004).

GROUNDS			
Ground	Challenged Claims	Asserted Prior Art	Statutory Grounds
1	1-11, 13, 15-20	Lawther in view of the knowledge of the POSITA	Pre-AIA 35 U.S.C. § 103

5. Technology Background

32. Each of the Challenged Claims is generally directed to an image display apparatus (e.g., a television, a monitor, etc.) that transmits a picture acquisition request to an external portable image apparatus (e.g., a digital camera, video camera, mobile telephone, game machine, personal media player, etc.), receives picture information from the external portable image apparatus, and displays pictures in a slide show manner. I note that the external portable image apparatus is not claimed structure in any of the Challenged Claims.

33. The assumed priority date of the '780 Patent is October 17, 2007. As of that date, wireless communications to a video display were well established in the art. Video displays were available in the form of smart television, smartphones (such as the iPhone), and computer monitors. All were capable of supporting wireless communications at the time. Additionally, each of these video devices could support USB communications at the time including USB picture transfers. Many TV's and monitors supported the HDMI video transmission standard along

with the HDCP encryption protocol. These were required in order to perform digital playback of certain content.

34. Televisions and displays that could stream video and still pictures over Wi-Fi were released commercially around 2004.¹

35. The HDMI 1.1 (attached as Exhibit 1014) standard for video transmission was released in 2004. It included a recommendation to use HDCP copy protection with the HDCP 1.1 specification.

High-Definition Multimedia Interface Specification

Version 1.1

9 Content Protection

9.1 Recommendation

Content protection capability is recommended for all HDMI compliant devices. An HDMI compliant Source should protect all of the protected audiovisual data. Amongst adequate copy protection technologies that are compatible with HDMI, HDCP is available.

9.2 HDCP Implementations

HDCP implementations for HDMI shall adhere to HDCP specification version 1.10.

HDMI 1.1 specification at 96

¹ <https://www.engadget.com/2004-04-14-new-lcd-tv-with-wifi-coming-from-philips.html>
<https://www.cnet.com/reviews/philips-23pf9976i-preview/>
<https://www.nytimes.com/2004/03/18/technology/state-of-the-art-a-tv-that-cuts-all-cords.html>
<https://www.engadget.com/2004-04-12-down-on-sharps-new-wireless-lcd-tv.html>

36. The Universal Serial Bus Specification Revision 1.1 (USB 1.1) (Exhibit 1008) was released on September 23, 1998. It described a wired USB communications protocol with the capability to extend the standard with specific device profiles. On July 11, 2000, Revision 1.0 of the Universal Serial Bus Still Image Capture Device Definition was released (Exhibit 1009). It explains that “[t]his document specifies the behavior of USB Still Image Capture Devices. The document was designed with digital still cameras in mind, but it may be applicable to other simular (sic) devices.”

Revision 1.0

USB Still Image Capture Device Definition

Revision History

Rev	Date	Filename	Comments
1.0	July 11, 2000	usb_still_img10.pdf	Approved by the DWG

Please send comments via electronic mail to:

timothy.whitcher@kodak.com

USB Still Image Capture Device Definition
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37. The Universal Serial Bus Still Image Capture Device Definition (Exhibit 1009) references the July 5, 2000, edition of the Picture Transfer Protocol

which supported cameras under USB 1.1. This was documented in the
PHOTOGRAPHIC AND IMAGING MANUFACTURERS ASSOCIATION, INC.
PIMA 15740:2000 standard, which is attached as Exhibit 1010. It explained:

PIMA 15740: 2000

Foreword

The technical content of this PIMA standard is closely related to ISO 15740, which is currently in the working draft stage while work on multiple transports is being completed. The main difference is that PIMA 15740 includes an informative annex describing a USB implementation of ISO 15740. This information is not included in ISO 15740, which instead references the USB still device class document developed by the Device Working Group of the USB Implementers Forum. The USB annex in PIMA 15740 provides the same technical approach as the USB still device class specification. The reason for developing PIMA 15740 is to immediately provide a complete, fully documented, stable, publicly available specification for USB implementations of the Picture Transfer Protocol defined in ISO 15740. This will enable hardware and software manufacturers to immediately produce product implementations, without waiting for the ISO and USB documents to complete the approval process. This PIMA 15740 standard may be withdrawn once the ISO 15740 and USB still device class documents have been approved and are publicly available.

38. The PIMA PTP documentation further explains that:

Introduction

For the purposes of this standard, digital still photography devices (DSPDs) are defined as devices with persistent storage that capture a digital two-dimensional image at a discrete point in time. Most DSPDs include interfaces that can be used to connect to a host computer or other imaging devices, such as a printer. A number of new, high speed interface transports have recently been developed, including IrDA, USB, and IEEE1394 (Firewire). This standard is designed to provide requirements for communicating with DSPDs. This includes communications with any type of device, including host computers, direct printers and other DSPDs over a suitable transport. The requirements include standard image referencing behavior, operations, responses, events, device properties, datasets, and data formats to ensure interoperability. This standard also provides optional operations and formats, as well as extension mechanisms.

This standard has been designed to appropriately support popular image formats used in digital still cameras, including the EXIF and TIFF/EP formats defined in ISO 12234-1 and ISO 12234-2, as well as the Design Rule for Camera File System (DCF) and the Digital Print Order Format (DPOF).

ISO 12234 includes the JPEG picture encoding standard. It is referred to in the PTP documentation as the Exif/JPEG standard. Exif refers to the metadata that accompanies the picture. EX1010, p. 16 of 159. The PTP documentation also defines JPEG as “Joint Photographic Experts Group. Image compression method defined in ISO/IEC 10918-1.” EX1010, p. 16 of 159. The PTP protocol documentation explained how to transfer JPEG and other still image formats over USB to another device as well as how to transfer MPEG and other moving image formats over USB to another device. Both JPEG and MPEG are compressed image formats.

39. As such, it is clear that image display apparatuses with Wi-Fi and USB video and still image capabilities, as well as the general functions and

operation of these components, were well established in the industry at the time of the '780 priority date.

40. Furthermore, systems with similar structure and capabilities were known in the patent art. U.S. Patent Publication No. No. 2008/0165081 ("Lawther") (EX1004) discloses essentially the same system and methods as claimed in claims 1-11, 13, and 15-20 of the '780 Patent.

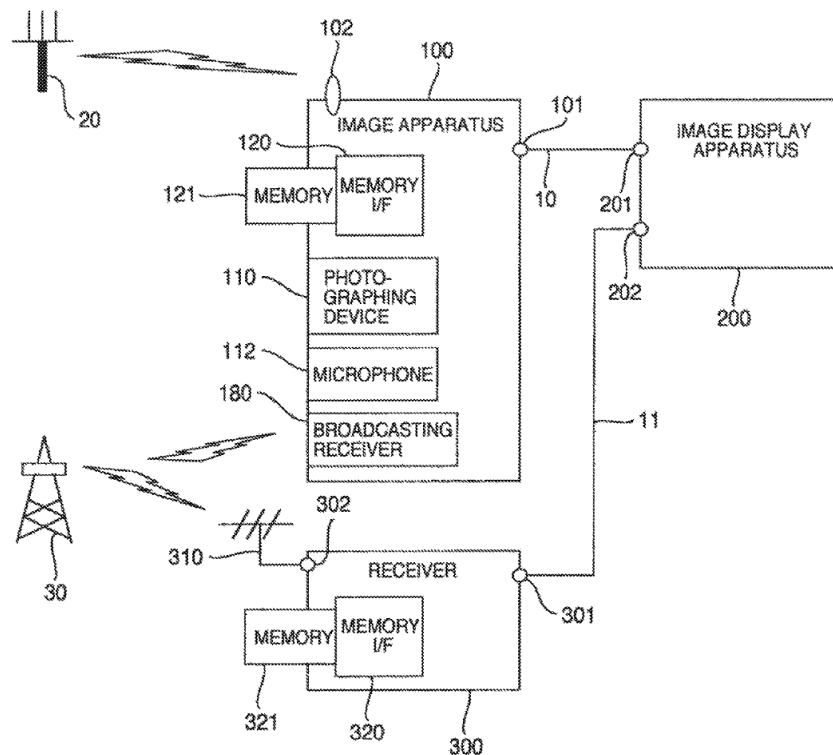
6. THE '780 Patent

41. The '780 Patent is the 7th continuation of a U.S. patent application claiming priority back to Japanese Patent Application No. 2007-269651, filed on October 17, 2007. For the purposes of this declaration, I have been asked to assume that the priority date of the '780 Patent is Oct. 17, 2007.

42. The '780 Patent is generally directed to an image display apparatus (e.g., a television, a monitor, etc.) that transmits a picture acquisition request to an external portable image apparatus (e.g., a digital camera, video camera, mobile telephone, game machine, personal media player, etc.), receives picture information from the external portable image apparatus, and displays pictures in a slide show manner. EX1001, Abstract. More specifically, it describes an image display apparatus that displays a slide show of images "at predetermined time

intervals” “based on an operation on the input device of the image display apparatus for conducting a slide show.” *Id.*, at 2:12-26. In some embodiments, the image display apparatus, such as a television, may include a USB interface circuitry and wireless LAN interface circuitry for communicating information between the image display apparatus itself and a portable image apparatus, such as a digital camera, as described in the FIG. 1 as reproduced below. *Id.*, at 3:29-4:4. For example, the operation may cause a first signal to be transmitted from the USB interface circuitry while a second signal to be transmitted from the wireless LAN interface circuitry to the digital camera. *Id.*, at 10:35-11:47. In response, the digital camera may output, over the respective interfaces, compressed image information, which is decoded by a decoder of the television. *Id.*, at 15:56-16:25. It should be noticed that the image apparatus is specifically claimed as digital cameras in the asserted claim 1 of the ‘780 Patent. *Id.*, claim 1.

FIG.1



EX1001 Figure 1

43. In its dependent claims, the '780 Patent discloses that the predetermined time intervals for the slide show may be changed by an operation on the input device (e.g., a remote controller) of the image display apparatus (e.g., a television). *Id*, claims 2 and 3. The '780 Patent also discloses that the image information received by the USB interface and the wireless LAN interface circuitry from the digital camera may be compressed in JPEG format. *Id*, claim 4. Such claimed combination(s) would have been an obvious combination of prior art elements according to known methods to yield predictable results and well within

the scope of capability of a POSITA. As I explained above, these capabilities were commercially available and well known in the art.

44. In summary, the ‘780 Patent discusses a general idea of improving user convenience by allowing display of images from portable devices on larger screens through both USB and wireless LAN connections. In some embodiments, displaying images on the display apparatus may be accomplished by decoding and resizing compressed still pictures received from the image apparatus and presenting them in a slideshow format at predetermined intervals. The ‘780 Patent has twenty claims, three of which are independent claims. Claims 1 and 15 are apparatus claims and Claim 20 is a method claim.

6.1. Prosecution History of the ‘780 Patent

45. I have reviewed the prosecution history of the ‘780 Patent, which I summarize below:

46. Applicant filed the application from which the ‘780 Patent issued on September 20, 2019, and the Examiner then issued a Notice of Allowance on November 4, 2019. EX1002, 171. The Applicant submitted additional references for consideration and Request for Continued Examination (RCE) on December 12, 2019. *Id.* Twenty-eight days (including the holidays therebetween) after the RCE

was requested, the Examiner issued a second Notice of Allowance, using the same discussion of prior art that the Examiner had included in other Notice of Allowances for previous patents in the same patent family, including the Notice of Allowance issued on November 4, 2019. *Id.* Although additional prior art was submitted in the RCE, the Examiner did not discuss these additional references. *Id.*

47. The ‘780 Patent was the sixth in a series of continuation patents allowed by the same Examiner. *Id.* The ‘780 Patent ultimately claims priority to Japanese Patent Application No. 2007-269651, filed on October 17, 2007. The ‘780 Patent, like many of its ancestor patents, was allowed without any meaningful discussion of the prior art. *Id.* Additionally, the Examiner did not appear to have the Lawther reference during the prosecution of the ‘780 Patent. In my opinion, the Board should institute this request for *inter partes* review of the ‘780 Patent to evaluate the patentability of the challenged claims in light of the Lawther reference.

7. Level of Ordinary Skill in the Art

48. As I noted above, I have been informed that a patent and the prior art should be analyzed from the perspective of a POSITA. In my opinion, a POSITA

as of the assumed priority date of the '780 Patent claims priority to (i.e., October 17, 2007) would have had a Electrical Engineering or Computer Engineering or a similar field as well as some understanding of wireless and serial protocols and image compression, together with two years of practical experience in the research, design, or development of consumer electronics products or the equivalent, with additional education possibly substituting for practical experience and vice versa.

49. As of October 17, 2007, I met and/or exceeded these requirements for a POSITA for at least the reasons described in the qualifications section above. Additionally, I worked with and managed many POSITAs and can evaluate documents from their perspective.

8. Claim Construction

50. I have reviewed the claims, specification, and file history of the '780 Patent.

51. I have been asked to opine if any claim terms must be construed for the Board to understand how the challenged claims read on the prior art. I do not believe the Board needs to necessarily construe any particular claim terms for the purposes of this proceeding. It is my understanding that the Petitioner reserves the

right to request constructions in other jurisdictions and construction may be necessary outside the context of this review.

52. As explained in this declaration, the Challenged Claims would have been obvious under their ordinary and customary meanings as understood by a POSITA.

9. Description of the Asserted Prior Art

A. Lawther (EX1004)

53. Lawther was filed on January 5, 2007, and published on July 10, 2008. It is my understanding that Lawther qualifies as a prior art over the ‘780 Patent under Pre-AIA 35 U.S.C. § 102(e). It is also my understanding that Lawther was not considered by the Examiner during prosecution of the ‘780 Patent. EX1002.

54. Lawther was filed by the Eastman Kodak Company and appears to be currently assigned to Kodak Alaris Inc. It is focused on digital display systems, particularly focusing on controlling multiple pixelated displays to show digital images within a presentation area. EX1004, Abstract. It emphasizes improving how clusters of inexpensive displays, such as LCDs, OLEDs, and plasmas, are arranged and managed to create seamless or thematic visual experiences for

various applications, including personal media viewing and immersive gaming. *Id.*, at [0003]-[0004]. The application outlines a method for managing visual content across these displays interactively and semantically, enhancing user interaction with multimedia content. *Id.*, at [0215]. It also introduces a system setup for organizing digital media frames in an aesthetic and functional array, facilitating dynamic content presentation across multiple frames, and considers environmental factors through sensors to adjust display properties. *Id.*, at [0063]. This approach addresses shortcomings in prior art references by offering a more engaging and versatile way to manage and display digital images over multiple screens. *Id.*, at [0007]-[0011]. More specifically, Lawther discloses an innovative approach of managing and displaying digital content across multiple display devices, such as digital media frames, in a visually contiguous or semantically meaningful array. *Id.* Unlike prior systems that are limited to fixed patterns or single display presentations, this invention allows for dynamic arrangement and management of content across various display formats and resolutions. *Id.* It uniquely supports presenting content in sequences, forms, or formats that capitalize on user-selected arrangements of digital picture frames, facilitating aesthetically pleasing, contextually relevant, and storytelling applications without user intervention. *Id.*

This system significantly enhances the user's ability to create personalized, interactive, and immersive display environments. *Id.*

55. Particularly, in its background section, Lawther teaches that displaying a slide show of images on a single display was well-known in the art and commonly used before the '780 Patent ("Furthermore digital 'transitions' used in movies and digital slide shows are designed to be viewed on a single display and indicate transitions from one digital multimedia content element to the next. They can include an almost unlimited variety of digital effects that 'temporally blend' the two sequential content elements so that the first content element disappears, and the second content element appears."). *Id.*, at [0010].

56. FIG. 1 of Lawther (reproduced below) illustrates an embodiment of a connection between external devices 100 and a digital media frame (DMF) 102. DMF 102 may include a display unit and control system that allows a user to display at least one digital image with minimal user intervention. EX. 1004, at [0041]-[0042]. In FIG. 1, DMF 102 (i.e., an image display apparatus) is illustrated as being connected to a camera 110 via a cable connector 114 (i.e., a USB connector) and an Internet connector 116 (i.e., a wireless LAN connector), which is very similar to the '780 Patent. *Id.*

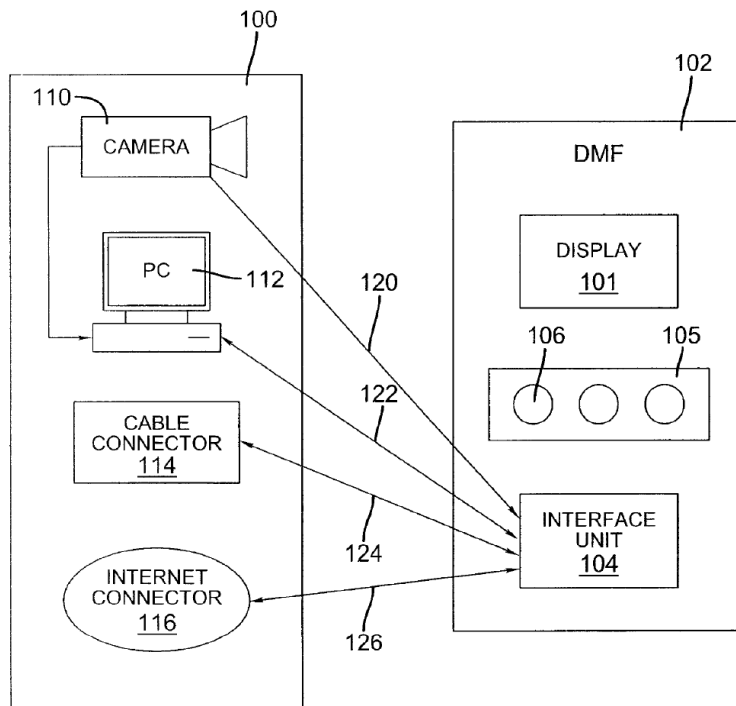


FIG. 1

EX1004 Figure 1

57. Further, FIG. 2 of Lawther (reproduced below) illustrates a block diagram of one embodiment of DMF 102 (i.e., an image display apparatus). EX. 1004, at [0048]-[0065]. In the illustrated embodiment, DMF 102 has an external device 202, an interface circuit 204 (i.e., a USB interface circuit and/or a wireless LAN interface circuit), a processing circuit 206, memory 208, a display controller 210, a display device 212, a user input system 214, optional sensors 216, and an audio system 218, which is also very similar to the '780 Patent. *Id.*

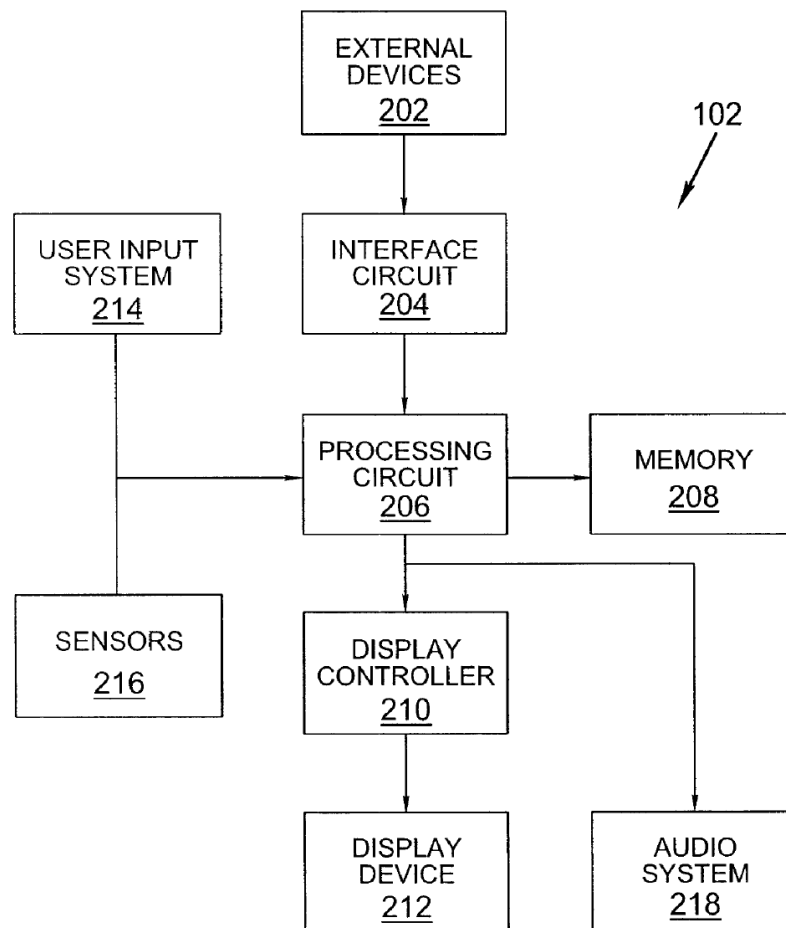


FIG. 2

EX1004 Figure 2

58. Lawther also describes displaying a slide show of images on an image display apparatus “at predetermined time intervals”, “based on an operation on the input device of the image display apparatus for conducting a slide show” as claimed by the ‘780 Patent as discussed below. ¶¶; EX1004, at [0043], [0057], [0059], [0077], [0081], [0091], [0093].

59. In addition, Lawther also discloses that the image display apparatus may include processor(s) configured for different functions. EX1004, at [0075]. Specifically, Lawther teaches that a “processing circuit 206 generally controls the operation of DMF 300 which can involve to performing functions including image size scaling, color space conversion, image filtering, image decoding, image data compression/decompression, and so on.” *Id.*

60. In summary, Lawther teaches the same operation flow, as discussed in the ‘780 Patent, of sending a request for image information from an external portable image apparatus (e.g., a digital camera), receiving the image information from the external portable image apparatus, decoding the image information, and displaying the image information on a display apparatus (e.g., a television) in a controlled manner (e.g., in a slide show manner). For example, Lawther discusses that “[i]nterface circuit 204 enables digital media frame 20 to **receive** input data from external devices 202 and can optionally be used to **send** data to external devices 202. External devices 202 can comprise but are not limited to **digital still cameras....** As will be discussed in greater detail below, interface unit 204 can also be adapted to **communicate with** one or more other types of external devices including other DMFs and/or **a remote control.**” EX1004, at [0049] (emphases added).

10. Obviousness Analysis

61. Claims 1-11, 13, and 15-20 of the '780 Patent are obvious to a POSITA in view of Lawther. Lawther discloses and/or renders obvious each and every element of the Challenged Claims under Pre-AIA 35 U.S.C. § 103.

10.1. Claim 1

10.1.1. Preamble: “An image display apparatus, comprising:”

62. I do not see any reason why the preamble in this claim would be a limitation, however to the extent that it is, Lawther teaches an image display apparatus. EX1004, at [0002], [0008], [0011], [0012], [0039], FIGS. 1, 2, 4 and claim 1. For example, Lawther indicates that the application relates to “display systems and methods for controlling display systems that use more than one pixilated display to display digital images to a presentation area” in its section of field of the invention. EX1004, at [0002]. Further, FIG. 4 of Lawther (reproduced below) illustrates an image display apparatus 400 with a display unit 402 and an input system 410 including a plurality of control buttons.

63. Thus, Lawther discloses this preamble if the preamble is a limitation.

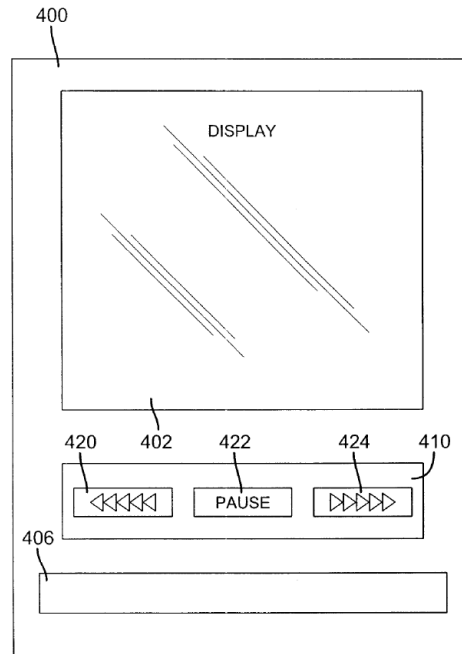


FIG. 4

10.1.2. Element 1[A]: “Universal Serial Bus (USB) interface circuitry configured to receive compressed first image information from a digital camera over a USB cable;”

64. Lawther teaches USB interface circuitry configured to receive image information from an external source (such as a digital camera) over a USB cable. EX1004, at [0041], [0042], [0044], [0046], [0068]. For example, Lawther teaches” [i]n one embodiment, the digital receiver circuit may include a universal serial bus (“USB”) port for receiving digital data from the interface block 314. Upon receipt of the digital data, the translation circuit determines whether a translation of the data is needed.” EX1004, at [0068]. A POSITA would understand that as of the priority date, digital cameras providing compressed image information was a

standard feature within the USB specification. USB Still Image Capture devices (i.e. digital cameras) were incorporated into the USB specification in 2000. See the discussion above in the background section. This specification references the Picture Transfer Protocol which supports JPEG and other compressed image formats as well as EXIF which provides information about compressed images. Again, see the discussion above in the background section. A POSITA would understand the USB Still Image Capture device class and the Picture Transfer Protocol to be part of the USB specification as of the '780 priority date.

65. To the extent that Lawther does not expressly mention “compressed first image information,” compressed images were well-known to a POSITA and routinely used by digital cameras and devices for displaying images taken by such digital cameras. The compressed images at the time were most commonly in the TIFF or JPEG formats, each of which includes a compressed representation of the pixels that make up an image. TIFF images commonly use lossless Lempel-Ziv-Welch compression while JPEG images generally use lossy compression based on the Discrete Cosine Transform. Almost all digital cameras at the time supported at least one of these formats. A POSITA would expect that images from a digital camera could be received in compressed and encoded form and are and are then decompressed and decoded for display. Indeed, even the '780 Patent admits in the

background of the invention that compression techniques were a known requirement to protect the images from “deterioration in picture quality and protection of copyright.” (“[i]n order to connect an image apparatus with an image display apparatus which is another image apparatus to make viewing and listening of picture, a method using analog connection to transmit picture and audio signals is used. However, with the spread of digital apparatuses, a method using digital connection to encrypt picture and audio signals to be transmitted is used from the viewpoint of prevention of deterioration in picture quality and protection of copyright.”). EX1001, 1:30-37. EX1004. For example, the JPEG standard (ISO/IEC 10918), had been known in the art since 1992. This standard is explained in Exhibit 1005, a document that was published in February 1992 and was widely disseminated to the public well before the priority date of the ‘780 patent. It would have been within the general knowledge of a POSITA that the JPEG standard is a “method for continuous-tone image compression.” EX1005, p. 2 of 17. The JPEG standard (ISO/IEC 10918) recognizes that “there is no requirement that implementations must include both an encoder and a decoder. Many applications will have systems or devices which require only one or the other.” EX1005, p. 3 of 17. JPEG recognized as early as 1992 that “many applications are ‘stuck’ ... because of argument over which (nonstandard) compression method to use.”

EX1005, p. 3 of 17. Accordingly, JPEG yields “an approved international standard that will withstand the test of quality and time.” *Id.* JPEG was widely adopted as a compression standard before 2007. This is illustrated by the United Nations’ agency for digital technologies, ITU, article entitled “How JPEG, released in 1992 gained Emmy fame in 2019” (EX1011), which states that after the JPEG standard’s release in 1992 it was “quickly adopted by ‘Independent JPEG,’ one of the world’s first open-source communities,” that “the world’s first Web browsers supported JPEG,” and “[b]y year 2000, digital photography had almost entirely supplanted analog photography.” Without the ability to receive and display compressed JPEG-format images, the Lawther reference system would have been one of the “stuck” applications described in the JPEG standard (ISO/IEC 10918). A POSITA would have been highly motivated to implement the ability to receive compressed JPEG-format images into the Lawther reference system, because it would have allowed the Lawther reference system to display images of a common, standard image compression method, it would have supported the PTP protocol within the USB standard, and it would have provided compatibility with the largest number of digital cameras on the market at the time. Furthermore, many USB implementations at the time were limited to the 12Mb/s nominal peak speed of

USB 1.1. Since JPEG images can practically be 10-100x smaller than uncompressed images they can be transmitted faster over USB.

66. Moreover, it would have been straightforward and predictable to implement the ability to receive compressed JPEG-format images in the Lawther reference system. First, as explained in the JPEG standard (ISO/IEC 10918), it is proper for implementations to include *only* a decoder. Thus, a POSITA would have understood that it is possible to implement a JPEG decoder in the Lawther reference to receive JPEG-format compressed image information. Further, the POSITA would have understood this to be a desirable feature because it would allow users to upload more or higher quality pictures in less time. Accordingly, including the ability to decode JPEG images in Lawther would not have required removal of anything from Lawther or any other fundamental change that would remove functionality from Lawther. Second, a POSITA would have understood that it the Lawther reference discloses various sources of image information. EX1004 at [0068]. Thus, because the Lawther reference system already contains the components necessary to accommodate a wide variety of image sources, a POSITA would have understood that the Lawther reference system is readily capable of implementing the JPEG standard (ISO/IEC 10918) and would have desired to implement it for the reasons stated above and because it would allow the

system of Lawther to receive visual data at a higher rate (because compressed images are a way to transfer more visual information for a given rate of transfer, relative to uncompressed images). Indeed, at the time of Lawther almost every, if not every, digital camera used the JPEG standard. Thus, it is not surprising that Lawther does not discuss that standard in detail because it was so widely known that any POSITA would have understood it would be implemented in a system like Lawther's. Lawther also explains that images from a digital camera may require translation. EX1004 at [0069]. This is just another way to disclose decoding.

67. Thus, implementing the ability to receive compressed JPEG-format images would have been obvious at least because it would combine prior art elements according to known methods to yield predictable results (i.e., inserting the known JPEG compression decoder in order to display JPEG compressed images) and/or uses a known technique to improve similar devices and methods in the same way. Lawther renders this element 1[A] obvious.

10.1.3. Element 1[B]: “wireless LAN interface circuitry configured to wirelessly receive compressed second image information from the digital camera over a network;”

68. Lawther teaches a wireless LAN interface circuitry configured to receive image information from an external source (including, e.g. a digital camera) over a network. EX1004, at [0041], [0042], [0044], [0046], [0047],

[0068], [0071]. For example, Lawther teaches that its “digital picture frames can receive multimedia content wirelessly” and “the camera 110 can directly transfer the captured image to the DMF using conventional transmission media, such as, for example, wireless, cable, or removable media.” EX1004, at [0008] and [0044].

Further, Lawther discloses:

“[w]ireless input circuit 305 comprises circuits and systems that enable DMF 20 to communicate with external devices 40 using wireless communication protocols. For example, wireless input circuit 305 can cooperate with wireless module 315 to provide circuits and systems that communicate in ways that conform to wireless communication standards such as the so-called “Wi-Fi” standards established and described at Institute of Electrical and Electronic Engineers standards 802.11a, 802.11b, 102.11g and 802.11n, the so-called “Bluetooth” wireless standard including Version 1.2, adopted November, 2003 by the Bluetooth Special Interest Group, Bellevue, Wash., U.S.A, or Version 2.0+Enhanced Data Rate (EDR), adopted November, 2004 by the same or any other such wireless communication standard developed by the Institute of Electrical and Electronic Engineers, the Bluetooth SIG or others in this field.” *Id.*, at [0071].

69. Further, it would have been obvious to a POSITA from the disclosure of Lawther to include both USB and wireless LAN connectivity capability in the same digital camera. Lawther describes both types of connections, as explained above, and a POSITA would have understood that a system such as Lawther’s would include a digital camera capable of both wired (USB) and wireless

connections because that would expand the camera's ability to connect to other devices.

70. To the extent that Lawther does not explicitly teach “compressed second image information”, compressed images were well-known in the art and commonly used by digital cameras and devices for displaying images taken by such digital cameras as illustrated in the discussion concerning the JPEG standard in the immediately preceding section and in the background. Moreover, a POSITA would be motivated to support the same image encoding format (e.g. JPEG) when using Wi-Fi or other wireless communication as when using USB communication since images are generally compressed and stored on the camera prior to transmission and independent of the transmission mechanism. Accordingly, Lawther renders this element 1[B] obvious.

10.1.4. Element 1[C]: “a decoder configured to decode the compressed first image information received by the USB interface circuitry or the compressed second image information received by the wireless LAN interface circuitry; and”

71. Lawther teaches “a decoder configured to decode the compressed first image information received by the USB interface circuitry or the compressed second image information received by the wireless LAN interface circuitry”. EX1004, at [0041], [0050], [0051], [0053], [0075]. For example, Lawther

discloses “interface circuit 204 can simply provide appropriate structures to receive and make use of the properly formatted digital data.” EX1004, at [0050]. Lawther further teaches that the interface circuit 204 can be adapted to exchange data with connected external devices 202 “using optical signals, radio frequency signals or other forms of signals that are specially adapted for data exchange using particular wireless or wired communication systems or standards.” *Id.* Lawther teaches decoding compressed image information by teaching a “processing circuit 206 [that] is adapted to analyze data received from interface circuit 204 to determine whether the data comprises instructions, a digital image or other data and to determine appropriate steps for processing such data.” *Id.*, at [0053]. Lawther further discloses that the “[p]rocessing circuit 206 can be adapted to edit, compress, modify or otherwise process and in this regard can be programmed for such use or can incorporate specific circuits such as signal processing circuits for this purpose.” *Id.* The disclosed “processing circuit 206 generally controls the operation of DMF 300 which can involve to performing functions including image size scaling, color space conversion, image filtering, **image decoding, image data compression/decompression**, and so on.” *Id.*, at [0075]. (emphases added).

Lawther also explains that images from a digital camera may require translation. EX1004 at [0068-0069]. This is just another way to disclose decoding.

72. To the extent that a decoder is not explicitly disclosed, a POSITA would have understood that a decoder is a component of the Lawther reference. The Lawther reference discloses a DMF that can receive digital images. Lawther specifies that it receives data from other devices such as “scanners, Internet servers, or cameras 110.” EX1004, at [0045]. Lawther explains that this data can arrive in various “type[s] of protocol[s] or data format[s] being used to encode the signal.” EX1004, at [0051]. Thus, Lawther explains, “[t]he need for a conversion of received data is determined if DMF 102 is unable to make use of the data contained in a received signal in the form that the signal is received in.” *Id.* To accomplish said conversion, Lawther discloses “interface circuit 204 [that] can provide signals to processing circuit 206 enabling control circuit to can [sic] perform an appropriate conversion of the data into a data format that can be used by DMF 102.” *Id.*

73. A POSITA reading Lawther would have understood that a control circuit capable of performing an appropriate conversion of the data into a data format that can be displayed is also known as a decoder. A POSITA would have also understood Lawther’s references to translation of images to be suggesting a decoder. Since Lawther teaches receiving encoded digital data, the display device discussed in Lawther would have a decoder in order to decode and display the

image information. For example, FIG. 3 (reproduced below) illustrates a detailed architecture of one embodiment of a DMF 300 (e.g., a television) with an interface block 301, a processing block 310 and a displaying block 340. EX1004, at [0066]. Upon reading Lawther, a POSITA would have understood that the processing unit 320 includes a decoder. A device used to receive an encoded signal and convert it to a different type of signal would be called a decoder in this context. Lawther discloses such a device. EX1004, at [0068-0069]. Therefore, a POSITA reading Lawther would have understood that Lawther at least suggests a decoder configured to decode image information received by the USB and LAN circuitry. However, to the extent, alternatives other than decoders capable of translating encoded images existed at the time of the '780 Patent, using a decoder would have been an obvious design choice among a list of finite options because it was the common approach at the time. Thus, Lawther renders this element 1[C] obvious.

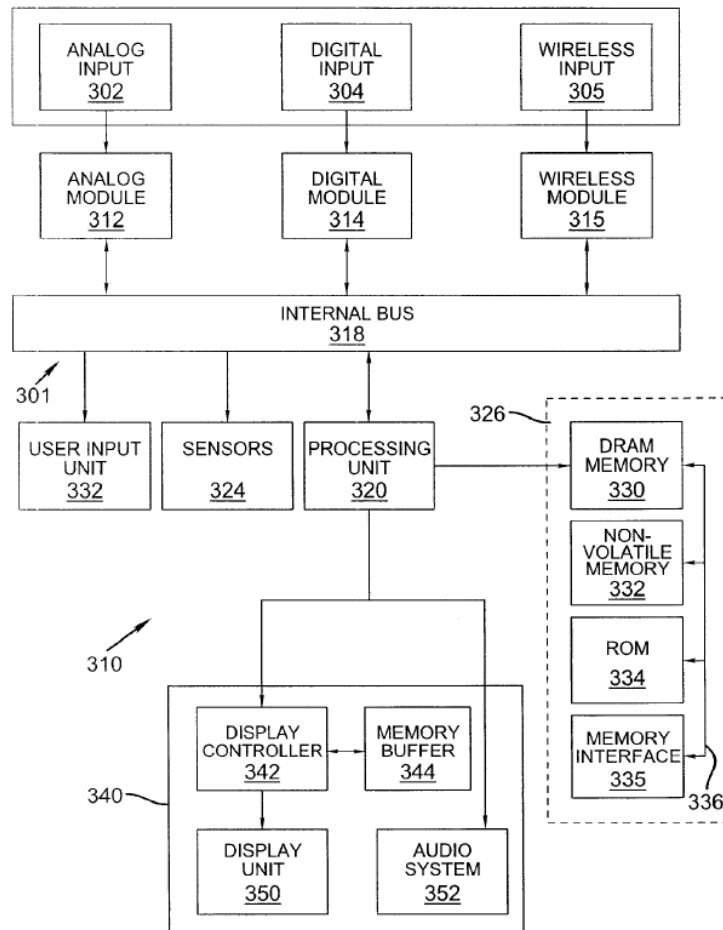


FIG. 3

10.1.5. Element 1[D]: “a display screen configured to display at least one of first images based on decoded the first image information and second images decoded the second information obtained by the decoder,”

74. Lawther teaches “a display screen configured to display at least one of first images based on decoded the first image information and second images decoded the second information obtained by the decoder”. EX1004, at [0041], [0052], [0061], Fig. 3. For example, Lawther discloses:

“[a] digital media frame (DMF) has a display unit and control system that allows a user to display at least one digital image with minimal user intervention. The DMF is capable of receiving digital images from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks and in certain embodiments the DMF optionally can be made to capture digital images. Upon obtaining digital images, the DMF can generate auxiliary information relating to each digital image and store the digital images together with the auxiliary information in a memory. The DMF, subsequently retrieves the digital images from the memory with the auxiliary information and displays the digital images on a display.” EX1004, at [0041].

75. As such, a POSITA reading Lawther would have understood that Lawther discloses a display screen configured to display at least one of images based on a first and/or a second image information decoded by a decoder. This is further shown by the reference to the “display unit” in Lawther’s Figure 3 as discussed in the preceding section. Thus, Lawther renders this element 1[D] obvious.

10.1.6. Element 1[E]: “wherein if displaying the first images on the display screen, based on an operation on the input device of the image display apparatus for conducting a slide show,”

76. Lawther teaches “wherein if displaying the first images on the display screen, based on an operation on the input device of the image display apparatus for conducting a slide show”. EX1004, at [0043], [0057], [0059], [0077], [0081], [0091], [0093]. For example, Lawther discloses “processing circuit 206 is

configured to determine a manner for presenting images, a sequence of sequence of images, video streams and other visual content on display unit 350.” EX1004, at [0077]. Lawther further teaches that “[t]his can involve, for example, determining time intervals for presenting the visual content, time transition types between images. *Id.* Lawther also explains that “[t]he interval transition time indicates the time interval between the current image and the next image to be displayed” and “[t]he image transition is a mechanism of retiring the presentation of a current image while phasing in the next image.”

77. Further, Lawther discloses “[i]n yet another embodiment, processing circuit 320 is capable of receiving, from an external device 100, instruction data identifying a predetermined sequence for displaying digital images and where such instructions are received, processing circuit 320 can present the digital images in the [in the] predetermined sequence. Moreover, **a sequence of digital images** to be displayed may be altered by control signals from a user, such as a pause signal from the **user-input unit 332.**” EX1004, at [0081] (emphases added)

78. Since processing circuit 206 is a component of the DMF 102 (i.e., the image display apparatus), and processing circuit 320 controls and identifies a predetermined sequence for displaying digital images by receiving instructions/input from an external device 100 (e.g., a digital camera), Lawther

teaches that either the image display apparatus or the digital camera controls the slide show of the images (e.g., the timing of displaying the images) as discussed above. EX1004, at [0077] and [0081]. Thus, Lawther disclose or renders this element 1[E] obvious.

10.1.7. Element 1[F]: “the USB interface circuitry transmits, over the USB cable, a first signal to the digital camera for causing the digital camera to output compressed first image information corresponding to first still pictures, and receives, over the cable, the compressed first image information corresponding to first still pictures output from the digital camera,”

79. Lawther teaches “the USB interface circuitry transmits, over the USB cable, a first signal to the digital camera for causing the digital camera to output compressed first image information corresponding to first still pictures, and receives, over the cable, the compressed first image information corresponding to first still pictures output from the digital camera”. EX1004, at [0041], [0042], [0044], [0050], [0052], [0121]. More specifically, Lawther describes that the “[p]rocessing circuit 206 causes interface circuit 204, local memory 208, a display controller 210 and a display device 212 **to display images in response to signals received from interface circuit 204**, a user input system 214, and/or optional sensors 216 and audio system 218”, EX1004, at [0052] (emphasis added), and the “[i]nterface circuit 204 can also be adapted to enable exchange data with a connected external device 202 using optical signals, radio frequency signals or

other forms of signals that are specially adapted for data exchange using particular wireless or wired communication systems or standards. In this regard, interface circuit 204 can provide optical, radio frequency or other receiving and optionally transmitting circuits appropriate to enable such an exchange of data and interface circuit 204 can be adapted for communication with external devices 202 using a direct electrical or optical path and can comprise, for example, a serial or parallel port, or a networked interface to a computer network or the Internet.” EX1004, at [0050].

80. As discussed above at paragraphs 65-67, a POSITA would have understood that Lawther includes compressed image capabilities or at least would have been motivated to integrate compressed images into the Lawther system. Thus, Lawther renders this element 1[F] obvious.

10.1.8. Element 1[G]: “the decoder decodes the compressed first image information corresponding to first still pictures received by the USB interface circuitry, and”

81. Lawther teaches “the decoder decodes the compressed first image information corresponding to first still pictures received by the USB interface circuitry”. EX1004, at [0041], [0050], [0051]. Since element 1[C] also recites “a decoder configured to decode the compressed first image information received by the USB interface circuitry or the compressed second image information received

by the wireless LAN interface circuitry”, my opinions (e.g., paragraphs 71-75) regarding element 1[C] – 1[E] also apply to this element. Lawther renders this element 1[G] obvious.

10.1.9. Element 1[H]: “the display screen displays a slide show at predetermined time intervals with the first still pictures, as the first images, based on the decoded first image information obtained by the decoder, and”

82. Lawther teaches “the display screen displays a slide show at predetermined time intervals with the first still pictures, as the first images, based on the decoded first image information obtained by the decoder”. EX1004, at [0041], [0052], [0061], [0077]. Specifically, Lawther discloses that “processing circuit 206 is configured to determine a manner for presenting images, a sequence of sequence of images, video streams and other visual content on display unit 350.” EX1004, at [0077]. Lawther further teaches that “[t]his can involve, for example, **determining time intervals** for presenting the visual content, time transition types between images. *Id.* (emphasis added). Lawther also explains that “[t]he interval transition time indicates the time interval between the current image and the next image to be displayed” and “[t]he image transition is a mechanism of retiring the presentation of a current image while phasing in the next image.”

83. Further, element 1[D] recites “based on decoded the first image information and second images decoded the second information obtained by the decoder”, which is substantially the same as the limitation “based on the decoded first image information obtained by the decoder” recited in this element 1[H]. Thus, my opinions concerning 1[D] and the other elements of this limitation as explained above demonstrate that Lawther renders this element 1[H] obvious.

10.1.10. Element 1[I]: “wherein if displaying the second images on the display screen, based on an operation on the input device of the image display apparatus for conducting a slide show,”

84. Lawther teaches “wherein if displaying the second images on the display screen, based on an operation on the input device of the image display apparatus for conducting a slide show”. EX1004, at [0041], [0052], [0061]. Since element 1[E] recites similar limitations as “wherein if displaying the first images on the display screen, based on an operation on the input device of the image display apparatus for conducting a slide show,” my opinions concerning 1[E] and the other elements of this limitation as explained above demonstrate that Lawther renders this element 1[I] obvious.

10.1.11. Element 1[J]: “the wireless LAN interface circuitry wirelessly transmits, over the network, a second signal to the digital camera for causing the digital camera to output compressed second image information corresponding to second still pictures, and wirelessly receives, over the network, the compressed second image information corresponding to second still pictures output from the digital camera,”

85. Lawther teaches “the wireless LAN interface circuitry wirelessly transmits, over the network, a second signal to the digital camera for causing the digital camera to output compressed second image information corresponding to second still pictures, and wirelessly receives, over the network, the compressed second image information corresponding to second still pictures output from the digital camera”. EX1004, at [0041], [0052], [0061]. Element 1[F] recites “the USB interface circuitry transmits, over the USB cable, a first signal to the digital camera for causing the digital camera to output compressed first image information corresponding to first still pictures, and receives, over the cable, the compressed first image information corresponding to first still pictures output from the digital camera”, which is similar to this element 1[J]. In addition, it would have been obvious to a POSITA from the disclosure of Lawther to include both USB and wireless LAN connectivity capability in the same digital camera as I explained above. A POSITA would have understood that a system such as Lawther’s would be motivated to include a digital camera capable of both wired (USB) and wireless

connections because that would expand the camera's ability to connect to other devices. See also the additional motivations explained above. As such, my opinions concerning 1[F] and the other elements of this limitation as explained above demonstrate that Lawther renders this element 1[J] obvious.

10.1.12. Element 1[K]: “the decoder decodes the compressed second image information corresponding to second still pictures received by the wireless LAN interface circuitry, and”

86. Lawther teaches that “the decoder decodes the compressed second image information corresponding to second still pictures received by the wireless LAN interface circuitry”. EX1004, at [0041], [0050], [0051]. Element 1[G] recites that “the decoder decodes the compressed first image information corresponding to first still pictures received by the USB interface circuitry”, which is very similar to element 1[K]. In addition, it would have been obvious to a POSITA from the disclosure of Lawther to include both USB and wireless LAN connectivity capability in the same digital camera for all of the reasons explained above. As such, my opinions concerning 1[G] and the other elements of this limitation as explained above demonstrate that Lawther renders this element 1[K] obvious.

10.1.13. Element 1[L]: “the display screen displays a slide show at predetermined time intervals with the second still pictures, as the second images, based on the decoded second image information obtained by the decoder.”

87. Lawther teaches that “the display screen displays a slide show at predetermined time intervals with the second still pictures, as the second images, based on the decoded second image information obtained by the decoder”. EX1004, at [0010], [0041], [0052], [0055], [0061] [0077], [0091], [0093]. For example, in its background section, Lawther discusses that “digital ‘transitions’ used in movies and digital slide shows are designed to be viewed on a single display and indicate transitions from one digital multimedia content element to the next. They can include an almost unlimited variety of digital effects that ‘temporally blend’ the two sequential content elements so that the first content element disappears, and the second content element appears.”. EX1004, at [0010].

88. In addition, Lawther also teaches the “predetermined time intervals” limitation by disclosing a “processing circuit 206 [that] is configured to determine a manner for presenting images, a sequence of sequence of images, video streams and other visual content on display unit 350.” EX1004, at [0077]. Lawther further discusses that “[t]his can involve, for example, **determining time intervals** for presenting the visual content, time transition types between images. *Id.* (emphasis added). Lawther also explains that “[t]he interval transition time indicates the time

interval between the current image and the next image to be displayed” and “[t]he image transition is a mechanism of retiring the presentation of a current image while phasing in the next image.”

89. As discussed in the preceding sections, a POSITA reading Lawther would have understood that Lawther discloses that the display screen displays a slide show at predetermined time intervals with the second still pictures, as the second images, based on the decoded second image information obtained by the decoder. Accordingly, Lawther renders this element 1[L] obvious.

90. Lawther discloses or renders obvious all elements of the ‘780 Patent’s claim 1. Based on the disclosure of Lawther, a POSITA would have been motivated to arrive at the invention claimed in the ‘780 Patent’s claim 1 because Lawther teaches or suggests the same arrangement of elements as the ‘780 Patent’s claim 1. Further, based on Lawther, a POSITA would have had a reasonable expectation that he or she would successfully create a system of the ‘780 Patent’s claim 1. In my opinion, claim 1 should be found unpatentable as obvious under 35 U.S.C. § 103.

10.2. Dependent Claim 2: “The image display apparatus according to claim 1, wherein the predetermined time intervals for the slide show for the first still pictures or the predetermined time intervals for the slide show for the second still pictures can be changed by an operation on the input device of the image display apparatus.”

91. Lawther teaches and/or renders obvious each and every element of claim 1 as explained above.

92. Lawther teaches “[t]he image display apparatus according to claim 1, wherein the predetermined time intervals for the slide show for the first still pictures or the predetermined time intervals for the slide show for the second still pictures can be changed by an operation on the input device of the image display apparatus”. EX1004, at [0010], [0077], [0081], [0091], [0093]. For example, as described in the sections for elements 1[E] and 1[H], Lawther discloses that “processing circuit 206 is configured to determine a manner for presenting images, a sequence of sequence of images, video streams and other visual content on display unit 350.” EX1004, at [0077]. Lawther further teaches that “[t]his can involve, for example, **determining time intervals** for presenting the visual content, time transition types between images. *Id.* (emphasis added). Lawther also explains that “[t]he interval transition time indicates the time interval between the current image and the next image to be displayed” and “[t]he image transition is a mechanism of retiring the presentation of a current image while phasing in the next

image.” *Id.* Further, Lawther discloses “[i]n yet another embodiment, processing circuit 320 is capable of receiving, from an external device 100, instruction data identifying a predetermined sequence for displaying digital images and where such instructions are received, processing circuit 320 can present the digital images in the [in the] predetermined sequence. Moreover, **a sequence of digital images** to be displayed may be altered by control signals from a user, such as a pause signal from the **user-input unit 332.**” EX1004, at [0081] (emphases added).

93. In addition, Lawther teaches that either the input device of the image display apparatus or the digital camera controls the slide show of the images (e.g., the timing of displaying the images) as discussed the section above discussing element 1[E]. EX1004, at [0077] and [0081].

94. Moreover, a POSITA would find it obvious that since “[p]rocessing circuit 206 is configured to determine a manner for presenting images” as well as determine the time intervals for displaying slide show images (EX1004 at [0077]), and processing circuit 206 is part of the disclosed image display apparatus, the controls and/or menus on that same image display apparatus would be used to provide input to processing circuit 206 with respect to the time intervals. User input system 214 is disclosed as providing input to processing circuit 206.

EX1004 at [0052] and [0057] This is merely common sense.

95. Lawther discloses or renders obvious all elements of the ‘780 Patent’s claim 2. Further, based on the disclosure of Lawther, a POSITA would have been motivated to arrive at the invention claimed in the ‘780 Patent’s claim 2 because Lawther teaches or suggests the same arrangement of elements as the ‘780 Patent’s claim 2. Further, based on Lawther, a POSITA would have had a reasonable expectation that he or she would successfully create a system of the ‘780 Patent’s claim 2. Thus, it is my opinion that claim 2 should be found unpatentable as obvious under 35 U.S.C. § 103.

10.3. Dependent Claim 3: “The image display apparatus according to claim 1, wherein the input device of the image display apparatus is a remote controller of the image display apparatus.”

96. Lawther teaches and/or renders obvious each and every element of claim 1 as explained above.

97. Lawther teaches “[t]he image display apparatus according to claim 1, wherein the input device of the image display apparatus is a remote controller of the image display.” EX1004, at [0057]-[0058]. For example, Lawther discloses that:

“[u]ser input system 214 can comprise any form of transducer or other device capable of receiving an input from a user and converting this input into a signal that can be used by processing circuit 206 in operating DMF 102. For example, user input system 214 can comprise

a push button, dial, rotatable controller, a touch screen input, a touch pad input, a 4-way switch, a 6-way switch, an 8-way switch, a stylus system, a trackball system, a joystick system, a voice recognition system, a gesture recognition system or other such systems.” EX1004, at [0057].

98. Lawther also teaches that “[u]ser input system 214 can be in whole or in part fixedly incorporated into DMF 102 and alternatively some or all of the portions of user input system 34 **can be separable from DMF 102** so as to provide **a remote control** (as will be described in greater detail below.)” EX1004, at [0058] (emphases added). The additional limitations of claim 3 are clearly disclosed in Lawther. Thus, it is my opinion that claim 3 should be found unpatentable as obvious under 35 U.S.C. § 103.

a. Dependent Claim 4: “The image display apparatus according to claim 1, wherein the first image information received by the USB interface circuitry from the digital camera and the second image information received by the wireless LAN interface circuitry from the digital camera are compressed in JPEG format.”

99. Lawther teaches and/or renders obvious each and every element of claim 1 as explained above.

100. Lawther teaches “[t]he image display apparatus according to claim 1, wherein the first image information received by the USB interface circuitry from the digital camera and the second image information received by the wireless LAN interface circuitry from the digital camera are compressed in JPEG format.”

EX1004, at [0039], [0045], [0051]. I explained in prior sections that the Lawther reference teaches a USB and wireless LAN interface circuitry configured to receive image information from an external source (e.g., a digital camera). See sections 10.1.2 and 10.1.3 above. I also explained in prior sections how and why a POSITA would understand the disclosures in Lawther to include the JPEG image format and in the alternative why it would have been obvious to include this format in Lawther's apparatus. E.g., paragraphs 65 and 66 above. The additional limitations of claim 4 are clearly disclosed in Lawther or rendered obvious. Thus, it is my opinion that claim 4 should be found unpatentable as obvious under 35 U.S.C. § 103.

b. Dependent Claim 5: “The image display apparatus according to claim 1, further comprising: a decryptor, wherein the first image information from digital camera or the second image information from digital camera is encrypted, and the decryptor decrypts the encrypted first image information from digital camera or the encrypted second image information from digital camera.”

101. Lawther teaches and/or renders obvious each and every element of claim 1 as explained above.

102. The ‘780 Patent describes the use of encryption and decryption of images as admitted prior art, referring to these techniques as “conventional techniques” including a citation to the IEEE 1394 standard. EX1001 1:23-54. The

POSITA would have understood that the IEEE 1394 standard had equivalent encryption/decryption requirements to the HDMI standard discussed above. This is confirmed by the '780 Patent's background, which states "The digital transmission using one cable conforming to the IEEE 1394 standard is known as an example thereof. In the digital transmission, mutual authentication is performed between a transmission apparatus and a receiving apparatus and picture and audio signals are multiplexed after the authentication, so that the multiplexed data is subjected to encryption processing named DTCP (Digital Transmission Content Protection) to be transmitted." EX1001 1:38-45. The '780 Patent never improves upon these conventional techniques nor utilizes them in any novel manner. Additionally, Lawther teaches that a DVD-ROM can be one of the image sources. EX1004 at [0060]. DVD systems were well known to use encryption of images at the time. In essence, claiming 5 claims the existing HDCP encryption/decryption that was built into the HDMI standard. In my opinion, the additional limitation in claim 5 does not add any novel structure or functionality to claim 1 and thus should similarly be found obvious.

103. Lawther discloses or renders obvious all elements of the '780 Patent's claim 5. Based on the disclosure of Lawther, the POSITA would have been motivated to arrive at the invention claimed in the '780 Patent's claim 5 because

Lawther teaches or suggests the same arrangement of elements as the ‘780 Patent’s claim 5. Further, based on Lawther, the POSITA would have had a reasonable expectation that he or she would successfully create a system of the ‘780 Patent’s claim 5. Thus, it is my opinion that claim 5 should be found unpatentable as obvious under 35 U.S.C. § 103.

10.4. Dependent Claim 6: “The image display apparatus according to claim 1 is a television display apparatus for receiving and displaying a digital television broadcast program.”

104. Lawther teaches and/or renders obvious each and every element of claim 1 as explained above.

105. Lawther teaches “[t]he image display apparatus according to claim 1 is a television display apparatus for receiving and displaying a digital television broadcast program.” EX1004, at [0042], [0043], [0046], [0061]. For example, Lawther discloses that “display device 214 can comprise **an analog television, a digital television**, computer monitor, projection system or other apparatus capable of receiving signals containing images or other visual content and converting the signals into such image modulated light.” EX1004, at [0061]. Further, Lawther discloses a cable connector 114, including television and telephone lines. *Id.*, at [0046]. In this context, a POSITA would understand the reference to “digital television” to refer to a television that can receive content according to a digital

broadcast standard such as ATSC (the U.S. digital broadcast standard published around 1995) or DVB (a similar European standard). For example, the A/53: ATSC Digital Television Standard released on January 3, 2007 by the Advanced Television Systems Committee, Inc. (“ATSC”) defines even a “standard definition television” as being a “...*digital* television system....” EX1015, p. 13 of 136 (emphasis in the standard).

106. Lawther discloses or renders obvious all elements of the ‘780 Patent’s claim 6. Further, based on the disclosure of Lawther, a POSITA would have been motivated to arrive at the invention claimed in the ‘780 Patent’s claim 6 because Lawther teaches or suggests the same arrangement of elements as the ‘780 Patent’s claim 6. Further, based on Lawther, a POSITA would have had a reasonable expectation that he or she would successfully create a system of the ‘780 Patent’s claim 6. Thus, in my opinion, claim 6 should be found unpatentable as obvious under 35 U.S.C. § 103.

10.5. Dependent Claim 7: “The image display apparatus according to claim 1, further comprising: a resizing processor configured to change a number of horizontal pixels and/or a number of vertical lines of the first still pictures or the second still pictures to be displayed.”

107. Lawther teaches and/or renders obvious each and every element of claim 1 as explained above.

108. Lawther teaches that the image display apparatus according to claim 1 may further comprise “a resizing processor configured to change a number of horizontal pixels and/or a number of vertical lines of the first still pictures or the second still pictures to be displayed.” EX1004, at [0075]. Specifically, Lawther teaches that a “processing circuit 206 generally controls the operation of DMF 300 which can involve to performing functions including **image size scaling**, color space conversion, image filtering, image decoding, image data compression/decompression, and so on.” *Id.* (emphasis added). The additional limitations of claim 7 are clearly disclosed in Lawther or rendered obvious.

109. Lawther discloses or renders obvious all elements of the ‘780 Patent’s claim 7. Based on this disclosure of Lawther, the POSITA would have been motivated to arrive at the invention claimed in the ‘780 Patent’s claim 7 because Lawther teaches or suggests the same arrangement of elements as the ‘780 Patent’s claim 7. Further, based on Lawther, the POSITA would have had a reasonable expectation that he or she would successfully create a system of the ‘780 Patent’s claim 7. Thus, it is my opinion that claim 7 should be found unpatentable as obvious under 35 U.S.C. § 103.

10.6. Dependent Claim 8: “The image display apparatus according to claim 1 further comprising: an effect addition processor configured to add a predetermined effect to the first still pictures or the second still pictures to be displayed.”

110. Lawther teaches and/or renders obvious each and every element of claim 1 as explained above.

111. Lawther teaches that the image display apparatus according to claim 1 may further comprise “an effect addition processor configured to add a predetermined effect to the first still pictures or the second still pictures to be displayed.” EX1004, at [0075]. Specifically, Lawther teaches that a “processing circuit 206 generally controls the operation of DMF 300 which can involve to performing functions including image size scaling, **color space conversion, image filtering**, image decoding, image data compression/decompression, and so on.” *Id.* (emphases added). The additional limitations of claim 8 are clearly disclosed in Lawther or rendered obvious.

112. Lawther discloses or renders obvious all elements of the ‘780 Patent’s claim 8. Based on the disclosure of Lawther, the POSITA would have been motivated to arrive at the invention claimed in the ‘780 Patent’s claim 8 because Lawther teaches or suggests the same arrangement of elements as the ‘780 Patent’s claim 8. Further, based on Lawther, the POSITA would have had a reasonable

expectation that he or she would successfully create a system of the '780 Patent's claim 8. Thus, it is my opinion that claim 8 should be found unpatentable as obvious under 35 U.S.C. § 103.

10.7. Dependent Claim 9: “The image display apparatus according to claim 1, wherein the wireless LAN interface circuitry wirelessly transmits, over the network, second signal with address information of the digital camera on the network to the digital camera.”

113. Lawther teaches and/or renders obvious each and every element of claim 1 as explained above.

114. Lawther teaches that the wireless LAN can use the well-known TCP/IP protocol which is the ubiquitous internet protocol.

“The Internet connector 116 is another external device 100 that enables the DMF 102 to receive digital images directly from an Internet node. In one embodiment, the DMF 102 is configured to be able to read (“HyperText Markup Language”) HTML and to interface with Transmission Control Protocol (“TCP”)/Internet protocol (“IP”). It should be noted that the connecting cables, 120, 122, 124, and 126 can use conventional optical, electrical, or wireless data communication technology.” EX1004 [0047]

115. The POSITA would have understood that TCP/IP protocol always includes the IP address of both the sending and receiving device in the communications packets. Further, POSITA would immediately understand that the “address information” of the digital camera means the IP address of the digital

camera. To the extent that this disclosure is inadequate, it would be obvious to a POSITA to use this common internet protocol to connect wireless devices. The additional limitations of claim 9 are clearly disclosed in Lawther or rendered obvious.

116. Lawther discloses or renders obvious all elements of the ‘780 Patent’s claim 9. Based on the disclosure of Lawther, the POSITA would have been motivated to arrive at the invention claimed in the ‘780 Patent’s claim 9 because Lawther teaches or suggests the same arrangement of elements as the ‘780 Patent’s claim 9. Further, based on Lawther, the POSITA would have had a reasonable expectation that he or she would successfully create a system of the ‘780 Patent’s claim 9. Thus, it is my opinion that claim 9 should be found unpatentable as obvious under 35 U.S.C. § 103.

10.8. Dependent Claim 10: “The image display apparatus according to claim 9, wherein the address information of the digital camera on the network is IP address of the digital camera.”

117. Lawther teaches and/or renders obvious each and every element of claim 1 as explained above.

118. Lawther teaches that the wireless LAN can use the well-known TCP/IP protocol which is the ubiquitous internet protocol.

“The Internet connector 116 is another external device 100 that enables the DMF 102 to receive digital images directly from an Internet node. In one embodiment, the DMF 102 is configured to be able to read (“HyperText Markup Language”) HTML and to interface with Transmission Control Protocol (“TCP”)/Internet protocol (“IP”). It should be noted that the connecting cables, 120, 122, 124, and 126 can use conventional optical, electrical, or wireless data communication technology.” EX1004 [0047]

119. The TCP/IP protocol always includes the IP address of both the sending and receiving device in the communications packets. To the extent that this disclosure is inadequate, it would be obvious to a POSITA to use this common internet protocol to connect wireless devices. The additional limitations of claim 10 are clearly disclosed in Lawther or rendered obvious. Thus, it is my opinion that claim 10 should be found unpatentable as obvious under 35 U.S.C. § 103.

10.9. Dependent Claim 11: “The image display apparatus according to claim 1, further comprising: a sound outputting apparatus configured to output sound during the display screen displays the slide show.”

120. Lawther teaches and/or renders obvious each and every element of claim 1 as explained above.

121. Lawther teaches that the image display apparatus according to claim 1 may further comprise “a sound outputting apparatus configured to output sound during the display screen displays the slide show.” EX1004, at [0052]-[0064]. For example, Lawther discloses that “[a]udio system 218 is likewise optional and can

include any known system for converting digital audio signals provided by processing circuit 206 or memory 208 into an audible signal.” EX1004, at [0064].

To the extent that Lawther does not explicitly disclose that the sound occurs during the slide show, this would have been obvious to a POSITA. Slide shows with audio accompaniment were commonplace at the time. Nothing in Lawther indicates that the audio capabilities would not be available in all display modes. The additional limitations of claim 11 are clearly disclosed in Lawther or rendered obvious.

122. Lawther discloses or renders obvious all elements of the ‘780 Patent’s claim 11. Based on the disclosure of Lawther, the POSITA would have been motivated to arrive at the invention claimed in the ‘780 Patent’s claim 11 because Lawther teaches or suggests the same arrangement of elements as the ‘780 Patent’s claim 11. Further, based on Lawther, the POSITA would have had a reasonable expectation that he or she would successfully create a system of the ‘780 Patent’s claim 11. Thus, it is my opinion that claim 11 should be found unpatentable as obvious under 35 U.S.C. § 103.

10.10. Dependent Claim 13: “The image display apparatus according to claim 1, further comprising: a demodulator, wherein the wireless LAN interface circuitry receives a radio signal including the compressed second image information which is modulated by a predetermined modulation method, and the demodulator demodulates the radio signal received by the wireless LAN interface circuitry based on the predetermined modulation method.”

123. Lawther teaches and/or renders obvious each and every element of claim 1 as explained above.

124. Lawther also teaches Wi-Fi as an embodiment of the wireless LAN. More specifically, he teaches specific Wi-Fi protocols including “802.11a, 802.11b, 102.11g and 802.11n.” EX1004 [0071]. Lawther also teaches that the image display apparatus (DMF 102) may be connected to the Internet wirelessly to receive digital images directly from an Internet node. EX1004, at [0047]. It is and was inherent that a specific Wi-Fi radio signal is modulated by a predetermined modulation method. It is also inherent that to receive and process such a signal as disclosed in Lawther, a demodulator that demodulates the radio signal received by the wireless LAN interface circuitry based on the predetermined modulation method must be present. Thus, the POSITA would have understood that a demodulator is equipped for all Wi-Fi devices that can be wirelessly connected to the internet. The additional limitations of claim 13 are clearly disclosed in Lawther or rendered obvious.

125. Lawther discloses or renders obvious all elements of the ‘780 Patent’s claim 13. Based on the disclosure of Lawther, the POSITA would have been motivated to arrive at the invention claimed in the ‘780 Patent’s claim 13 because Lawther teaches or suggests the same arrangement of elements as the ‘780 Patent’s claim 13. Further, based on Lawther, the POSITA would have had a reasonable expectation that he or she would successfully create a system of the ‘780 Patent’s claim 13. Thus, it is my opinion that claim 13 should be found unpatentable as obvious under 35 U.S.C. § 103.

10.11. Independent Claim 15

126. The only substantive differences between claim 15 and claim 1 are that claim 15 claims 1) a portable video processing apparatus instead of a digital camera, and 2) a resizing processor that resizes the still pictures by changing a number of horizontal pixels and/or a number of vertical lines of still pictures obtained by a decoder. EX1004, claims 1 and 15. A POSITA would have understood that a digital camera is a “digital processing apparatus;” this is confirmed by the ‘780 Patent’s claim 18, which specifies that the “portable video processing apparatus” of claim 15 is a digital camera. Further, as discussed in at paragraph 108 above (concerning claim 7), a resizing processor that resizes the still pictures by changing a number of horizontal pixels and/or a number of vertical

lines of the still pictures is disclosed by Lawther. EX1004, at [0075]. My opinions with respect to claims 1 and 7 apply to each of the elements of claim 15.

127. Lawther discloses or renders obvious all elements of the ‘780 Patent’s claim 15. Based on the disclosure of Lawther, the POSITA would have been motivated to arrive at the invention claimed in the ‘780 Patent’s claim 15 because Lawther teaches or suggests the same arrangement of elements as the ‘780 Patent’s claim 15. Further, based on Lawther, the POSITA would have had a reasonable expectation that he or she would successfully create a system of the ‘780 Patent’s claim 15. Thus, in is my opinion that claim 15 should be found unpatentable as obvious under 35 U.S.C. § 103.

10.12. Dependent Claim 16: “The image display apparatus according to claim 15, wherein the portable video processing apparatus is a cellular phone.”

128. Lawther teaches and/or renders obvious each and every element of claim 15 as explained above.

129. Lawther teaches “[t]he image display apparatus according to claim 15, wherein the portable video processing apparatus is a cellular phone.” EX1004, at [0049] and [0167]. For example, Lawther discloses that:

“External devices 202 **can comprise but are not limited to digital still cameras, digital video cameras**, scanners, computers, local servers, remote servers, memory devices, the internet, printers, internet appliances, a remote control (as will be described in greater detail below), personal digital assistants, personal video players, telephones, telecommunication networks, **cellular telephones**, analog televisions or digital televisions or television signal distribution systems such as cable, satellite or other television systems and/or television storage systems such as recorders or players of television systems such as solid state, optical, or magnetic television signal recording and/or playback systems. EX1004, at [0049] (emphases added)

“The source of digital images can include any of **digital still cameras, digital video cameras**, scanners, computers, local servers, remote servers, memory devices, the internet, printers, internet appliances, a remote control, personal digital assistants, personal video players, telephones, telecommunication networks, **cellular telephones**, analog televisions or digital televisions or television signal distribution systems such as cable, satellite or other television systems and/or television storage systems such as recorders or players of television systems such as solid state, optical, or magnetic television signal recording and/or playback systems.” EX1004, at [0167] (emphases added)

130. Thus, it is my opinion that claim 16 should be found unpatentable as obvious under 35 U.S.C. § 103.

10.13. Dependent Claim 17: “The image display apparatus according to claim 15, wherein the portable video processing apparatus is a game machine.”

131. Lawther teaches and/or renders obvious each and every element of claim 15 as explained above.

132. A POSITA would have understood that at the time of the priority date, (after the introduction of the iPhone in 2007) a cellular telephone would be recognized as a type of game machine. Additionally, a computer as disclosed would be recognized as a type of game machine. Thus, it is my opinion that claim 17 should be found unpatentable as obvious under 35 U.S.C. § 103.

10.14. Dependent Claim 18: “The image display apparatus according to claim 15, wherein the portable video processing apparatus is a digital camera.”

133. Lawther teaches and/or renders obvious each and every element of claim 15 as explained above.

134. Lawther teaches “[t]he image display apparatus according to claim 15, wherein the portable video processing apparatus is a digital camera” as discussed above with respect to claim 1. ¶¶ EX1004, at [0049] and [0167].

135. Thus, it is my opinion that claim 18 should be found unpatentable as obvious under 35 U.S.C. § 103.

10.15. Dependent Claim 19: “The image display apparatus according to claim 15, wherein the wireless LAN interface circuitry is capable of connecting internet and receiving internet content.”

136. Lawther teaches and/or renders obvious each and every element of claim 15 as explained above.

137. Lawther teaches “[t]he image display apparatus according to claim 15, wherein the wireless LAN interface circuitry is capable of connecting internet and receiving internet content...” EX1004, at [0047]. Specifically, Lawther teaches an internet connector 116 that “enables the DMF 102 to receive digital images directly from an Internet node.” EX1004, at [0047]. For example, in one embodiment, Lawther discusses that “the DMF 102 is configured to be able to read (“HyperText Markup Language”) HTML and to interface with Transmission Control Protocol (“TCP”)/Internet protocol (“IP”).” *Id.* ¶¶ Thus, it is my opinion that claim 19 should be found unpatentable as obvious under 35 U.S.C. § 103.

10.16. Independent Claim 20

138. Lawther discloses or renders obvious all elements of the ‘780 Patent’s claim 20, because this independent claim 20 is a method claim corresponding to the independent apparatus claim 15, and the claim 15 is disclosed or rendered obvious by Lawther as discussed above. EX1004, claim 20.

11. Secondary Considerations

139. At this stage of these proceedings, it is my understanding that Petitioner has no burden to identify and rebut secondary considerations. Rather, it is my understanding that Patent Owner must first present a *prima facie* case for

such consideration, which Petitioners should then have the chance to rebut. That said, I have considered evidence of secondary considerations that I am aware of at this time, and I am currently unaware of any evidence of secondary considerations that would support a finding of non-obviousness. If additional evidence of secondary considerations becomes available, I would ask to be able to opine on it at that time.

12. Availability for Cross-Examination

140. In signing this declaration, I recognize that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross examination in the case and that cross examination will take place within the United States. If cross examination is required of me, I will appear for cross examination within the United States during the time as mutually agreed between the parties.

13. Right to Supplement

141. I reserve the right to supplement my opinions in the future to respond to any arguments that the Patent Owner may raise. This declaration represents only those opinions that I have formed to date. I reserve the right to revise, supplement,

and/or amend my opinions stated herein based on new information that becomes available to me and on my continuing analysis of the materials already provided.

14. Jurat

142. Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

November 3, 2024

Date

A handwritten signature in black ink, appearing to read 'A. Wolfe', is written over a horizontal line.

Andrew Wolfe, Ph.D.