

DECLARATION OF TRAVIS N. BLALOCK, PH.D.
REGARDING VALIDITY OF U.S. PATENT NO. RE39,470

I. Introduction and Summary of Opinions

1. I, Travis N. Blalock, have been retained as a technical expert by Barco, Inc. (“Barco”) to provide my opinions and analysis in the above-captioned *Inter Partes* review.

2. This report sets forth my opinions regarding the validity of U.S. Patents No. RE39,470 titled “Digital Information System” (“the ‘470 patent”). If asked to do so, I anticipate testifying at a hearing based on the opinions expressed in this report.

3. As explained more fully below, it is my opinion that claims 25-26 of the ‘470 patent are invalid over prior art, specifically Japanese Patent Application Heisei 07-168544 (“Nakamura”), and U.S. Patent No. 5,566,353 to Cho et al. (“Cho”).

4. The information and opinions in this report are based on materials I have been provided by Barco’s counsel, including claim construction materials, the prosecution file histories, the patents and other references cited in the file history, and various additional patents, articles, texts, and other documentation that pre-date the filing of the patent, as well as my personal knowledge and experience. Where appropriate, I have included citations that are illustrative of the points expressed, which may also be supported by numerous other references.

II. Summary of My Background

5. I am currently an Associate Professor of Electrical Engineering in the School of Engineering and Applied Sciences at the University of Virginia and have been since 1998. I earned my Bachelor of Science and Master of Science in Electrical Engineering from the University of Tennessee in 1985 and 1988, respectively. I earned my Ph.D. in Electrical Engineering from Auburn University in 1991, and the primary emphasis of my doctoral research was CMOS analog and digital integrated

circuit design. I was full-time at the University from 1998 till 2013 when I reduced my time at the University to start an entrepreneurial enterprise. I still teach and work with students at the University. A copy of my CV is also attached as Ex. 1007.

6. I cofounded and built a medical device company that was acquired by Analogic, Inc. in 2013. The company was created to develop and market a handheld ultrasound imaging device. Key technical contributions included fully custom mixed-signal front-end acquisition circuits, high speed data communications, image processing, and custom image display algorithms. I have been leading the handheld R&D group for Analogic since acquisition.

7. In the early 1980's I worked as a young engineer at Technology for Energy Corp. on a nuclear data acquisition and display system. The system had an overall basic architecture similar to that presented in the '470, '334, and '603 patents. The central control processor acquired image data from sub-systems all over the reactor, assembled and linked the data with additional graphics, and then sent the various images over communication networks for presentation at remote displays scattered all over the reactor and offsite. Users at each display site could dynamically choose and/or modify the display schedules as needed.

8. From 1991 through August 1998, I worked at Hewlett Packard Laboratories, first as a Member of the Technical Staff, and then as a Principal Scientist. My work at Hewlett Packard Laboratories primarily involved design and implementation of digital and analog integrated circuits. I was the principal architect and designer of integrated circuits having a diverse range of applications, including CMOS analog signal processing integrated circuits for mass storage devices and optoelectronic image acquisition and processing integrated circuits. I also developed several custom design and high speed network management software tools.

9. I have written widely in the field of electrical engineering, including several editions of a book that is used to teach principles of microelectronic circuit

design to undergraduates. I have written over 43 papers, 10 of which have appeared in refereed journals.

10. I have contributed to or consulted on the design, fabrication, and/or operation of integrated circuits, including microelectronic integrated circuits, for organizations such as Hewlett-Packard, NASA Langley Research Center, Agilent Technologies and Displaytech.

11. I am a named inventor on at least sixteen U.S. patents and several pending patent applications. Several of these patent and patent applications relate to analog circuitry or semiconductor design.

12. I have been retained as an expert witness or technical consultant for the following companies: Micron Technology, Inc., Samsung, Inc., Agere, Inc., Agilent Technologies, Inc., Intel Inc., Cisco Systems, Inc., Sigmatel, Inc., Sound Design Technologies, Displaytech, Inc., AMI Semiconductor, ON Semiconductor, Apple, Inc., and Analog Devices, Inc.

13. My compensation for this matter is at a rate of \$325 per hour with reimbursement for actual expenses. My compensation in this matter is not affected by the conclusions I reach in conducting my analysis. No part of my compensation depends upon the outcome of this matter.

III. Background and Field of the Patents

A. *The '470 Patent Overview*

14. U.S. Pat. No. RE39,470 titled "Digital Information System" was filed on Mar. 30, 2001 and issued on Jan. 16, 2007. The '470 patent is a reissue of U.S. Pat. No. 6,005,534 which was filed on Jul. 2, 1996 and issued on Dec. 21, 1999. Priority is claimed to Swedish patent application no. 9601603-5 dated Apr. 26, 1996 and U.S. application No. 60/017,403, filed on May 14, 1996.

15. The '470 patent describes a digital information system for displaying information on displays located remotely with respect to a central control system.

The system contains four primary parts: A computerized control center, a communication interface, remote station(s) with display devices, and information mediators. Ex. 1001, 4:42-51. The computerized control center combines data with requests from subscribers (information mediators) to create display control instructions which are sent to the remote stations and displayed according to the control instructions. Ex. 1001, 4:57-66, 5:1-8. The information mediators send info via e-mail to the control center containing display requests along with relevant display materials and information. Ex. Ex. 1001, 7:61-65.

16. The information mediators can act in one of two ways. First, they can create and deliver picture sequences or films that can be introduced directly into the exposure list using special versions of the software used to create and modify exposure lists. Ex. 1001, 8:4-9. Second, they can submit picture material that is submitted to the control center for processing by personnel to generate the updated exposure lists. Ex. 1001, 8:10-26.

17. The '470 patent identifies several shortcomings with conventional forms of distributed advertising at the time of the patent, noting that “[s]ystems that are used to show information in the form of advertisements, timetable messages or arrival and departure times in present-day public service infrastructures with regard to buses, trains, subway traffic, etc., are of a static nature. Such information is given on notice boards, posters, charts, tables, verbally through loudspeakers, and on digital displays, etc. A characteristic feature of such information media is that the information media is not coordinated, but is in the form of individual items which are controlled and updated separately, often manually.” Ex. 1001, 1:27-36.

18. In addition, the '470 patent also asserts that it is different with respect to conventional display systems since in conventional systems, “[t]he display must be planned carefully beforehand, this planning often being carried out by experts within the technical field in question, so as to obtain a finished display product. For instance, when a company wishes to change its display and introduce a new picture series

combined with sound, the process again becomes static by virtue of the need to employ experts to program and arrange the new display.” Ex. 1001, 2:7-14.

19. The ‘470 patent identifies a need to allow for updates to occur “dynamically” and to grant third parties the ability to update information for display in a central control system without additional assistance: “Thus, present-day systems do not enable information to be updated dynamically for display in real time. Neither do present-day systems enable external mediators to update information for display in a central control system, nor yet the administrator who makes the display of information available, but it is the administrator who determines when, where and how the information shall be displayed.” Ex. 1001, 1:54-60.

20. The ‘470 patent states that one object of the invention is to “provide a flexible system in which external information mediators are able to dynamically control in real time the transmission of display instructions to a larger public in different places situated at any chosen distance apart through projectors which project information onto displays intended therefor.” Ex. 1001, 1:54-60.

21. The only figure in the ‘470 patent specification is shown below:

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