

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AXIS COMMUNICATIONS AB,
CANON INC., and CANON U.S.A., INC.,
Petitioners,

v.

AVIGILON FORTRESS CORPORATION,
Patent Owner.

Case No.: IPR2018-00138
U.S. Patent No. 8,564,661

Case No.: IPR2018-00140
U.S. Patent No. 8,564,661

**DECLARATION OF DR. ALAN BOVIK, PH.D. IN SUPPORT OF PATENT
OWNER'S RESPONSES TO *INTER PARTES* REVIEWS OF U.S. PATENT
NO. 8,564,661**

II.	QUALIFICATIONS AND EXPERIENCE.....	
III.	MATERIALS CONSIDERED.....	
IV.	PERSON OF ORDINARY SKILL IN THE ART.....	
V.	LEGAL STANDARDS.....	
	A. Claim Construction.....	
	B. Anticipation.....	
	C. Obviousness.....	
VI.	U.S. PATENT NO. 8,564,661.....	
	A. Disclosure of the '661 Patent.....	
	B. Re-Exam of U.S. Patent No. 7,868,912.....	
	1. Description of Courtney.....	
	2. The '912 Patent Overcame Courtney, Brill, and Olson.....	
	3. The '912 and '661 Patents Share the Independence-Based Claim Elements.....	
VII.	CORRECT CLAIM CONSTRUCTION.....	
	A. The Independence-Based Claim Elements.....	
	B. “User Rule that Defines an Event”.....	
VIII.	DESCRIPTION OF ASSERTED ART.....	
	A. Kellogg.....	
	1. Kellogg does not teach object or attribute detection.....	
	2. Kellogg does not teach the independence-based claim elements.....	
	B. Dimitrova.....	
	1. Dimitrova does not teach the independence-based claim elements.....	
	2. Dimitrova does not teach user rules.....	
	C. Brill.....	

I. INTRODUCTION

1. I have been retained as an independent expert by Patent & Trademark Office (PTO) in re Avigilon Fortress Corporation (“Patent Owner” or “Avigilon”) for IPR2018-00138 (“the 138 IPR”) and IPR2018-00140 (“the 140 IPR”), both involving U.S. Patent No. 8,564,661 (the “661 patent”). I have personal knowledge of the facts and circumstances set forth in this declaration, and, if called upon to do so, I would be able to testify competently thereto. All of the opinions and conclusions found in this declaration are my own.

2. I am being compensated at a rate of \$500 per hour for my services. I am being paid regardless of the conclusions or opinions I reach. I have no personal or financial stake or interest in the outcome of the present proceedings, and my compensation is not dependent in any way upon the outcome of these proceedings.

II. QUALIFICATIONS AND EXPERIENCE

3. I expect to testify regarding my background, qualifications, and relevant experience relevant to the issues in this litigation. I hold a Ph.D. in in Electric and Computer Engineering from the University of Illinois, Urbana-Champaign (awarded in 1984). I also hold a Master's degree in Electrical and Computer Engineering from the University of Illinois, Urbana-Champaign (awarded in 1982).

Department of Electrical and Computer Engineering, the Department of Computer Sciences, and the Department of Biomedical Engineering. I am also the Director of the Laboratory for Image and Video Engineering (“LIVE”).

5. My research is in the general area of digital television, digital camera, image and video processing, computational neuroscience, and modeling of biological visual perception. I have published over 800 technical articles in these areas and hold seven U.S. patents. I am also the author of *The Handbook of Image and Video Processing, Second Edition* (Elsevier Academic Press, 2005); *Modeling Image Quality Assessment* (Morgan & Claypool, 2006); *The Essential Guide to Image Processing* (Elsevier Academic Press, 2009); and *The Essential Guide to Video Processing* (Elsevier Academic Press, 2009); and numerous other publications.

6. I received the 2017 Edwin H. Land Medal from the Optical Society of America in September 2017 with citation: For substantially shaping the direction and advancement of modern perceptual picture quality computation, and energetically engaging industry to transform his ideas into global practice.

7. I received a Primetime Emmy Award for Outstanding Achievement in Engineering Development, for the Academy of Television Arts and Sciences.

satellite and internet Television industries.

8. Among other awards and honors, I have received the 2013 IEEE Signal Processing Society's "Society Award," which is the highest honor accorded by the IEEE Signal Processing Society technical society ("for fundamental contributions to digital image processing technology, leadership and education"). In 2005, I received the Technical Achievement Award of the IEEE Signal Processing Society, which is the highest technical honor given by the Society, for "broad and lasting contributions to the field of digital image processing"; and in 2008 I received the Education Award of the IEEE Signal Processing Society, which is the highest education honor given by the Society, for "broad and lasting contributions to image processing, including papers and important image processing books, innovative on-line courseware, and the creation of the leading research and educational journal and conference in the image processing field."

9. My technical articles have been widely recognized as well, including the 2009 IEEE Signal Processing Society Best Journal Paper Award for the paper "Image quality assessment: From error visibility to structural similarity," published in IEEE Transactions on Image Processing, volume 13, number 4, April 2004. The same paper received the 2017 IEEE Signal Processing Society Sustained I

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