

IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF TEXAS  
WACO DIVISION

PARKERVISION, INC.,

Plaintiff,

v.

TCL INDUSTRIES HOLDINGS CO.,  
LTD., TCL ELECTRONICS HOLDINGS  
LTD., SHENZHEN TCL NEW  
TECHNOLOGY CO., LTD., TCL KING  
ELECTRICAL APPLIANCES  
(HUIZHOU) CO., LTD., TCL MOKA  
INT'L LTD., and TCL MOKA  
MANUFACTURING S.A. DE C.V.,

HISENSE CO., LTD. and HISENSE  
VISUAL TECHNOLOGY CO., LTD. (F/K/A  
QINGDAO HISENSE ELECTRONICS CO.),  
LTD. and HISENSE ELECTRIC CO., LTD.

Defendants.

Case No. 6:20-cv-00945-ADA

Case No. 6:20-cv-00870-ADA

JURY TRIAL DEMANDED

**DECLARATION OF DR. MICHAEL STEER**

I have personal knowledge of the facts set forth in this Declaration and, if called to testify as a witness, would testify under oath:

**I. BACKGROUND**

1. I have been retained as an expert on behalf of ParkerVision, Inc. (“ParkerVision”) in the above-captioned litigation action against Defendants TCL Industries Holdings Co., Ltd., TCL Electronics Holdings Ltd., Shenzhen TCL New Technology Co., Ltd., TCL King Electrical Appliances (Huizhou) Co., Ltd., TCL Moka Int’l Ltd., and Moka Manufacturing S.A. De C.V. (collectively “TCL”) and Defendants Hisense Co., Ltd. and Hisense Visual Technology Co., Ltd. (f/k/a Qingdao Hisense Electronics Co., Ltd. and Hisense Electric Co., Ltd.) (collectively “Hisense”) (TCL and Hisense are collectively referred to as “Defendants”).

2. I understand that ParkerVision asserts the following patents against Defendants: U.S. Patent Nos. 6,049,706 (the “’706 patent”); 6,266,518 (the “’518 patent”); 6,580,902 (the “’902 patent”); 7,110,444 (the “’444 patent”); 7,292,835 (the “’835 patent”); 8,588,725 (the “’725 patent”); 8,660,513 (the “’513 patent”); 9,118,528 (the “’528 patent”); 9,246,736 (the “’736 patent”); and 9,444,673 (the “’673 patent”) (collectively, the “patents-in-suit”).

3. I have been asked by ParkerVision to provide my opinions regarding the ’706 patent, ’736 patent, and ’673 patent. In particular, I have been asked to provide my opinions on certain technical aspects relating to the ’706, ’736, and ’673 patents, and indefiniteness under 35 U.S.C. § 112.

4. In forming my opinions, I have reviewed and considered the materials identified in this declaration, including the patents-in-suit and file histories. I have also reviewed the parties’ proposed claim constructions as well as Defendants’ Opening Claim Construction Brief and the Declaration of Matthew B. Shoemake.

5. I am currently the Lampe Distinguished Professor Emeritus of Electrical and Computer Engineering at North Carolina State University.

6. I received my Bachelor of Engineering with Honors (B.E. Hons) and Ph.D. in Electrical Engineering from the University of Queensland, Brisbane, Australia, in 1976 and 1983 respectively.

7. I was a pioneer in the modeling and simulation of nonlinear radio frequency and microwave circuits. To put this in perspective, the first commercial cellular phone became available in 1983, and in that same year, I began teaching classes in radio frequency design. Specifically, I joined the Electrical Engineering Department at North Carolina State University, Raleigh, North Carolina, as a Visiting Assistant Professor in August 1983. I became an Assistant Professor in 1986 when the department was renamed the Department of Electrical and Computer Engineering. I have been promoted throughout the years, first becoming an Associate Professor in 1991, a Professor in 1996, a Named Professor in 2005, and a Distinguished Professor in 2010.

8. During the 1990s, I began working very closely with the U.S. Department of Defense, and in particular with the U.S. Army, on radio frequency communications and advanced radio frequency circuits. Between 1996 and 1998, I also worked as a consultant for Zeevo, Inc., a Silicon Valley-based provider of semiconductor and software solutions for wireless communications.

9. In 1999, I moved to the United Kingdom to become Professor and Director of the Institute of Microwaves and Photonics at the University of Leeds, one of the largest university-based academic radio frequency research groups in Europe. I held the Chair in Microwave and Millimetrewave Electronics. I also continued my work with the U.S. Army and worked with the European Office of the U.S. Army Research Office. I returned to the United States in 2000,

resuming the position of Professor of Electrical and Computer Engineering at North Carolina State University.

10. Further details on various aspects of my professional experience and qualifications can be found in my curriculum vitae, which is attached hereto as Appendix A.

11. Based on my experience in the wireless communications industry, I have a detailed understanding of radio frequency circuit design, including the radio frequency front end of cellular phones.

## **II. RELEVANT LEGAL PRINCIPLES**

### **A. Level of Ordinary Skill in the Art**

12. I have been informed and understand that claims are construed from the perspective of a person of ordinary skill in the art (“POSITA”) at the time of the claimed invention.

13. In my opinion, a POSITA with respect to the ’706, ’736 and ’673 patents would have (i) a Bachelor of Science degree in electrical or computer engineering (or a related academic field), and at least two (2) additional years of experience in the design and development of radio frequency circuits and/or systems, or (ii) at least five (5) years of experience and training in the design and development of radio frequency circuits and/or systems.

14. In view of my qualifications, experience, and understanding of the subject matter of the invention, I believe that I meet the above-mentioned criteria and consider myself a person with at least ordinary skill in the art pertaining to the ’706, ’736 and ’673 patents.

15. I disagree with Dr. Shoemake’s description of a POSITA because the claims being construed relate specifically to RF circuit design. It is therefore my opinion that a POSITA must have knowledge and experience within the relevant field, and in particular with the analysis and design of RF circuits. Dr. Shoemake opines, however, that a POSITA “would have been someone

with at least an undergraduate *degree in electrical engineering or a related subject* and two or more years of experience in the *fields of communication systems, signal processing and/or RF circuit design*. Less work experience may be compensated by a higher level of education, such as a master's degree.”<sup>1</sup> See Declaration of Matthew B. Shoemake, Ph.D. (“Shoemake Decl.”), ¶31. But electrical engineering is a broad discipline with many subspecialties, some of which do not include the study of circuits. Knowledge of circuits, circuit analysis, and design also cannot be substituted for experience in the fields of communication systems and signal processing. As such, Dr. Shoemake's description of a POSITA does not require the requisite knowledge of circuits.

16. I note that at the time of the invention, Dr. Shoemake had completed a master's degree at Cornell University in Electrical Engineering. See Shoemake Decl., ¶4. The title of Dr. Shoemake's Master's Thesis is “Topics in Coding Theory.” Coding theory is a discipline within the field of communications and signal processing. But coding theory is a separate and distinct area of study from circuits.

17. I also note that Dr. Shoemake earned his Ph.D. in Electrical Engineering from Cornell University in 1999. The title of Dr. Shoemake's dissertation is “Turbo Codes: Bounds and Applications.” Again, turbo code is a sub-discipline that is separate and distinct from circuits. I have examined Dr. Shoemake's dissertation and did not find a single circuit diagram in it. In addition, the word “circuit” does not appear in his dissertation at all. None of Dr. Shoemake's publications prior to/at the time of ParkerVision's inventions (and including into the early 2000s) relates to circuits.

18. While Dr. Shoemake believes that less work experience can be compensated by a higher level of education, I disagree. I particularly disagree when the higher education is in a

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<sup>1</sup> Unless indicated otherwise, all emphasis has been added.

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