UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TCT MOBILE (US), INC.; TCT MOBILE (US) HOLDINGS, INC.; HUIZHOU TCL MOBILE COMMUNICATION CO. LTD.; AND TCL COMMUNICATION, INC.

Petitioner,

v.

Fundamental Innovation Systems International LLC,

Patent Owner.

Case IPR2021-00599
Patent No. 7,834,586

DECLARATION OF DR. KENNETH FERNALD IN SUPPORT OF PATENT OWNER'S RESPONSE

TABLE OF CONTENTS

I. Introduction

1. My name is Kenneth Fernald, Ph.D. My qualifications are summarized below and are addressed more fully in my CV attached as EXHIBIT A.

2. For over 35 years I have been involved in the design of integrated circuits. A large portion of my work has involved the design of integrated circuits that involve power management, battery charging and USB control. I have designed USB controllers that have sold in the hundreds of millions of units, and I was intimately involved in this field during the time of the patents at issue in this case.

3. I earned my Bachelor of Science and Master of Science degrees in Electrical Engineering from North Carolina State University (NCSU) in 1985 and 1987. During this period I worked for the Space Electronics Group developing software for predicting the effects of radiation environments on integrated circuits. I also consulted for the Naval Research Laboratory (NRL). My services to NRL included the design of dosimetry instrumentation and the execution of radiation studies on electronic devices at various facilities around the United States. I joined NASA Langley Research Center in 1987 where I designed motor control instruments and firmware for ground and space station experiments.

4. I returned to NCSU in 1988 to earn my Ph.D. in Electrical

Engineering. My doctoral research efforts were funded by the National Science Foundation and focused on the development of medical systems utilizing wireless digital telemetry. My work included a thorough investigation of medical telemetry technology and design of a microprocessor-based system for the fast prototyping of implantable medical instruments. I also completed the design and testing of various components of this system, including a bidirectional digital telemetry integrated circuit (IC) and a general-purpose sensor interface and conversion IC. I completed my Ph.D. in 1992, after which I joined Intermedics Inc. in Angleton, Texas.

5. My responsibilities at Intermedics included system and circuit design of telemetry, signal-processing, and control ICs for medical devices. Examples include the design of a sensor acquisition, compression, and storage IC for implantable pacemakers and defibrillators. I also worked on advanced wireless digital telemetry technology, control ICs for therapy delivery in defibrillators, and software development for sensor waveform compression and recovery. I left Intermedics in 1998 to join Analog Devices Inc. in Greensboro, NC.

6. My work at Analog Devices included the design of advanced ICs for wireless digital communication devices. Specific projects included the design, debug, and testing of a base-band receiver IC for digital satellite systems. This IC performed QPSK demodulation, symbol recovery, and

DOCKET ALARM

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts

Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research

With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips

Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS
Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS
Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS
Sync your system to PACER to automate legal marketing.