

I, Joseph C. McAlexander III, P.E., declare as follows:

1. I have personal knowledge of the facts set forth herein, and, if called upon to do so, I could and would testify competently to them.
2. I have been asked to offer my opinion regarding the Petition for Inter Partes Review of U.S. Patent No. 9,282,396 in IPR2016-01639, and in particular to compare U.S. Patent No. 9,282,396 against the prior art references raised in the IPR Petition, and to consider the opinions of Petitioner's declarant, John Moring, offered in support of the IPR Petition.
3. I am being compensated at my customary hourly rate for my time spent on this opinion. I have no personal interest in the outcome of this or any related proceeding.

Expert Qualifications

4. I am a Registered Professional Engineer (#79454) and have been retained by Patent Owner One-E-Way, Inc. ("One-E-Way") to provide my expert opinion.
5. I am President of McAlexander Sound, Inc., and the Managing Director of McAlexander Sound Pte Ltd. I am also a Manager with QM Partners, LP, supporting clients in managing their Intellectual Property and the president and CEO of MDFHoldings, Inc., an IP holding company engaged in the field of GPS tracking. I hold a Bachelor of Science degree in Electrical Engineering from North Carolina State University and have over 44 years of experience in microcircuit and semiconductor technologies. I am an inventor of 31 issued United States patents and a number of foreign patents.
6. My skills and experience are in areas of software development, management, circuit design and analysis, device fabrication and assembly, testing, marketing, control system design and analysis, manufacturing operations, and respective areas of quality, reliability, and defect/failure analysis. Specifically, I have:

designed memories, including Dynamic Random Access Memories (DRAMs), Static Random Access Memories (SRAMs), Charge Coupled Devices (CCDs), Shift Registers (SRs), and functional circuits including I/O buffers for address and data, decoders, clocks, sense amplifiers, fault tolerant (incorporating both nonvolatile EPROM and random access memory components), parallel-to-serial data paths for video applications, level shifters, converters, pumps, and logic, as well as wireless communication systems and MEMs;

One-E-Way Ex. 2001

managed operations including engineering, training, and quality assurance for device fabrication, assembly, test, analysis, and reliability assessment, as well as manufacturing control, each of which involved both volatile and non-volatile memory; testing, analysis, and control involved use of mechanical calibration and measuring equipment, including optical, scanning e-beam, IR, capacitive, and laser using phase contrast and FFT for HARI applications;

taught courses in solid-state device physics, integrated circuit design, integrated circuit fabrication, and statistical control;

provided expert services, investigating both process and design technologies of various devices (microprocessor and controller, volatile and non-volatile memory, programmable logic, card, tag, module, mixed signal, custom, and other), systems (PC and peripheral, computer, control, laser measurement, switch, architecture, software, and other), and consumer products (medical, TV, telephone, VCR, facsimile, copier, lighting, game, and other);

designed and managed development, testing, and evaluation of memory devices and systems incorporating such devices, including simulation of operation. I have also had experience in programming, erasing, and wearout of electrically programmable and erasable non-volatile memories; and

managed the design and installation of audio sound systems for private and commercial enterprises.

7. Because of my background, training, and experience, I am qualified as an expert to opine as set forth herein. A more detailed account of my work experience and other qualifications is listed in my Curriculum Vitae attached as Appendix A.

Materials Considered

8. In the course of developing this declaration, I examined the following materials:
- U.S. Patent No. 9,282,396 to Woolfork (the “’396 patent”);
 - File history of the ’396 patent (Appl. No.: 13/775,754), and file histories of patents related to the ’396 patent;
 - IPR2016-01639, Petition for *Inter Partes* Review of U.S. Patent No. 9,282,396 (the “Petition”) and the exhibits to the Petition;

- U.S. Patent No. 6,563,892 to Haartsen et al. (the “892 patent”);
- Haartsen, J., “Bluetooth—The Universal Radio Interface for Ad Hoc, Wireless Connectivity”, Ericsson Review, Telecommunications Technology Journal No. 3, 1998, pp. 110–117 (“the 1998 Haartsen paper”);
- Giannakis, G. B. , et al., “Load-Adaptive MUI/ISI-Resilient Generalized Multi-Carrier CDMA with Linear and DF Receivers”, European Transactions on Telecommunications, Volume 11, Issue 6, pages 527–537; November–December 2000 (“the Giannakis paper”);
- Excerpts from the ‘396 patent file history, including file histories of its parent applications such as Appl. No.: 10/648,012 (“the 2003 application”), Application No. 13/356,949 (“the 2012 application”), etc.
- Order No. 12 Construing Terms of the Asserted Patents, Inv. No. 337-TA-943, July 24, 2015 (“ITC claim constructions”);
- S. Zhou, G. Giannakis, and A. Swami, titled “Frequency-Hopped Generalized MC-CDMA for Multipath and Interference Suppression,” MILCOM 2000 Proceedings;
- Haartsen, J., “The Bluetooth Radio System”, IEEE Personal Communications, February 2000 (“the 2000 Haartsen paper”); and
- U.S. Patent No. 5,530,929 to Lindqvist et al.

Level of Ordinary Skill in the Art

9. In this analysis, I have assumed that a person has ordinary skill in the art if the person has a Bachelor of Science degree in electrical engineering or a related field and around two years of experience in the design or implementation of wireless communications systems, or the equivalent, or six years of experience in the design or implementation of wireless communications systems, or the equivalent. I am very familiar with the level of knowledge meeting this standard. My own experience and education exceeds those levels, and did so throughout the time of the applications. Additional details are shown in my attached Curriculum Vitae.

Claim term constructions

10. I have applied the following claim constructions in this analysis:

Claim Term	Petitioner’s Requested Construction
“reduced intersymbol interference coding” (cl. 1, 2, 6, 9, 14, 16)	“coding that reduces intersymbol interference”

“configured for independent code division multiple access (CDMA) communication operation” (cl. 1, 2, 6, 9, 14, 16)	“configured for code division multiple access (CDMA) communication operation performed independent of any central control”
“unique user code” / “unique user code bit sequence” (cl. 1, 2, 6, 9, 14, 16)	“fixed code (bit sequence) specifically associated with one user of a device(s)”
“direct conversion module” (cl. 1, 2, 6, 9, 14, 16)	“a module for converting radio frequency to baseband or very near baseband in a single frequency conversion without an intermediate frequency”

The '892 Patent's Reference to the 1998 Paper

11. I have reviewed the '892 patent and the 1998 paper. In particular, I have considered the following paragraph:

Although channel effects are a dominant disturbance in conventional cellular systems, in other types of systems the dominant disturbance to transmitted signals may arise from other sources. For example, a new relatively low cost, low range wireless transmission system (defined by the recently developed “Bluetooth” technology) has been proposed for localized two-way data transmissions. Bluetooth systems are envisioned as a universal radio interface in the 2.45 GHz frequency band that enable portable electronic devices to connect and communicate wirelessly via short-range, ad hoc networks. Readers interested in various details regarding the Bluetooth technology are referred to the article entitled “BLUETOOTH—The universal radio interface for ad hoc, wireless connectivity” authored by Jaap Haartsen and found in the Ericsson Review, Telecommunications Technology Journal No. 3, 1998, the disclosure of which is incorporated here by reference. Of particular interest for this discussion is the fact that channel effects associated with the Bluetooth air interface may not be the dominant disturbance to transmitted signals in such systems, due to the short-range nature of the air interface links. Accordingly, other slowly varying disturbances may be more problematic than channel effects in such systems.

12. In reading the above paragraph, I do not understand it to refer to or incorporate any particular material from the 1998 paper into the '892 patent. One of ordinary skill in the art would understand that

paragraph as a sort of informative aside, suggesting the 1998 paper as distinct, but potentially interesting read for readers who might be interested in its details.

Detection vs. Demodulation

13. Signal detection is recognizing the existence of a signal. Signal demodulation is translating a modulated carrier wave into the information that it contains. Signal detection is distinct from signal demodulation. A system could detect signals but decide not to demodulate the signal or be unable to demodulate the signal. Demodulation by definition relies upon a demodulator. However, detection does not necessarily rely upon a demodulator.

Bluetooth History

14. Today, the term Bluetooth is widely associated with wireless music transmission and other local wireless connections. That was not always the case. Bluetooth did not become useful and widely adopted for such audio transmission until after the introduction of the Bluetooth version 2.0 Specification with Enhanced Data Rate (EDR) in 2004. The Bluetooth version 1.0 and 1.0B Specifications were widely considered flawed and received little industry adoption. The next Bluetooth Specification versions, 1.1 and 1.2 improved upon 1.0 but still did not provide bandwidth sufficient for wirelessly transmitting audio received from a portable audio player. The Bluetooth version 2.0 Specification was the next released version after 1.2, and was released in 2004, bringing about Bluetooth's widespread use for music transmission. However, during the 2000-2002 timeframe, Bluetooth was known primarily for its use in lower-bandwidth data connections such as those between a keyboard and a computer, or between a computer and a printer. Although there were some early Bluetooth hands-free headsets in that era, quality was poor and audio transmission was generally unsuccessful. One of ordinary skill in the art, in 2001, would have primarily associated the term Bluetooth with lower-bandwidth data connections—not for wireless transmissions of audio received from a portable audio player.

DPSK Encoding vs. Viterbi Decoding

15. The Viterbi algorithm is a decoding algorithm used to decode convolutional encoding. Convolutional encoding is a type of error-correcting encoding.

16. Differential phase shift keying (DPSK) is not a convolutional encoding, and is not an error-correcting encoding. DPSK is an information modulation scheme that represents transmitted data as

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