UNITED STATES PATENT AND TRADEMARK OFFICE

_____

BEFORE THE PATENT TRIAL AND APPEAL BOARD

_____

AMERICAN HONDA MOTOR CO., INC.,
Petitioner,

v.

NEO WIRELESS LLC,
Patent Owner.

_____

Case IPR2023-00797
Patent 10,771,302 B2

EXHIBIT 2001
DECLARATION OF WILLIAM P. ALBERTH JR.

TABLE OF CONTENTS

I. INTRODUCTION 3
II. QUALIFICATIONS 4
III. LEGAL STANDARDS 6

A. Priority Date Of Patent. 6
B. Level Of Ordinary Skill In The Art. 6
C. Claim Construction. 8
D. Obviousness Legal Standard. 8

IV. CLAIMS-AT-ISSUE 11
V. OPINIONS 11

A. Claim 23 Is Entitled To A Priority Date Of At Least January 30, 2004. 11
B. Mobility In IEEE 802.16a-2003 As Of The Priority Date. 16

VI. CONCLUSION 22

I. INTRODUCTION

1. My name is William P. Alberth Jr. I am an expert in mobile telecommunications and wireless technology. As further detailed below and exhibited in my *curriculum vitae* attached as Exhibit 2002, I have over 25 years of experience in the design, development, implementation, and manufacturing of mobile telephones, smartphones, and other electronic equipment in addition to being an inventor on over 100 patents, including those related to telecommunications and wireless communications.

2. I have been retained as an expert witness to provide my independent opinion in regard to the matters at issue in *inter partes* review of U.S. Patent No. 10,771,302 ("the '302 patent") in IPR2023-00426. I have been retained by Neo Wireless LLC ("Neo"), the Patent Owner in the above proceedings. The Petitioner is American Honda Motor Company ("Honda").

3. For my work on this case, I am being compensated for my time at my typical consulting rate. I am also being reimbursed for expenses that I incur during the course of this work. My compensation does not depend on the substance of my opinions or the outcome of any issues in this case.

4. My analysis of the materials produced in this matter is ongoing and I will continue to review any new material as it is provided. This declaration

represents only those opinions I have formed to date. I reserve the right to amend or supplement my opinions based on additional documents or evidence I am presented, including without limitation any arguments or expert declarations advanced by VW in this case.

II. QUALIFICATIONS

5. I am qualified to be an expert witness in this matter as I possess the requisite knowledge, skill, experience, training and education relating to the subject matter covered by the asserted patents.

6. In summary, I have over 25 years of experience in the design, development, implementation, and manufacturing of mobile telephones, smartphones, and other electronic equipment. The majority of my career was spent at Motorola where my final role was serving as the Chief Technology Officer for Motorola Mobile Devices. I held that position from 2007 until August 2012, and in that role, I led the development of differentiating technology that was integrated into Motorola's commercial mobile telephone products.

7. During the early stages of my career with Motorola (between 1987 and 2006, covering the Priority Dates of the '302 patent) I was employed as an engineer, working on developing cutting-edge chipsets to enable cellular devices, and in the development of many products that changed the way people

communicated, including the development of the Motorola MicroTAC, StarTAC and RAZR mobile telephones. I worked on or directed work on evaluating transmitter technologies and architectures to mitigate the effects of PAPR (Peak to Average Power Ratio) on the current drain of the devices. Some of the techniques evaluated include for example: pre-distortion; envelope following; EER (Envelope Elimination and Restoration); and Adaptive biasing.

8. My educational background includes a B.S. in Electrical Engineering from the University of Illinois Urbana-Champaign (1985), and a M.S. in Electrical Engineering from Illinois Institute of Technology (1992).

9. I am inventor or co-inventor on over 100 patents issued or pending, including patents related to my work on transmitter architectures involved for wireless communications.

10. In forming my opinions here, I am relying on my education and experience, including my over 25 years of experience in a variety of technologies and industries related to various wireless communications systems.

11. Additional information concerning my background, qualifications, publications, conferences, honors, and awards are described in my Curriculum Vitae, a copy of which is attached with this Report as Exhibit 2002.

III. LEGAL STANDARDS

12. I am not a lawyer, and I do not intend to offer any opinions as to the interpretation of the law. When considering the ’302 patent and stating my opinions, I rely on the following legal standards as described to me by the attorneys for Neo Wireless.

A. Priority Date Of Patent.

13. I understand that the analysis of alleged obviousness of the Patent should be performed from the perspective of a POSITA as of the priority date of the Patent. Through a series of continuations, the Patent claims priority to provisional applications filed on January 29 and January 30, 2004. Unless expressly stated otherwise, my opinions in this matter are from the perspective of a POSITA as of January 30, 2004.

B. Level Of Ordinary Skill In The Art.

14. My opinions in this declaration are based on the understandings of a person of ordinary skill in the art, as of the time of the invention. I understand that the person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the time of the invention. By “relevant,” I mean relevant to the challenged claim of the ’302 patent.

15. I understand that various factors should be considered when determining the person of ordinary skill in the art in connection with a particular patent. I understand that these factors include, without limitation, the type of problems encountered in the art, the prior solutions to those problems found in the prior art references, the rapidity with which innovations are made, the sophistication of the technology, the level of education of active workers in the field, and my own experience working with those of skill in the art at the time of the invention.

16. I am readily familiar with the level of ordinary skill in the art as of the priority date of the Patent. My qualifications at that time far exceeded that of a POSITA, and I had worked with, as well as supervised, many POSITA's throughout my work in the field.

17. Dr. Buehrer opines that a POSITA:

> would have had at least a Bachelor's degree in an academic area emphasizing electrical engineering, computer engineering, or a similar discipline, and at least two years of experience in the field working with, teaching, or researching wireless communication networks. Superior education could compensate for deficiency in work experience, and vice-versa.

Ex. 1003 [Buehrer-Decl.] ¶ 23.

18. For the purpose of this declaration, I have applied the same level of ordinary skill in the art as proposed by Dr. Buehrer.

C. Claim Construction.

19. I understand that claims in a patent-at-issue in an IPR are generally interpreted according to the district court-type claim construction.

20. I further understand that claim terms are interpreted as they would have been interpreted by a person of ordinary skill in the art at the time of the invention, in light of the specification and the patent's prosecution history in the patent office.

D. Obviousness Legal Standard.

21. I understand that a patent claim is unpatentable if the claimed invention would have been obvious to a person of ordinary skill in the art at the time of the invention.

22. I understand that an obviousness analysis involves comparing a claim to the prior art to determine whether the claimed invention would have been obvious to a person of ordinary skill in the art at the time of the invention in view of the prior art and in light of the general knowledge in the art as a whole. I also understand that obviousness is ultimately a legal conclusion based on underlying facts of four general types, all of which must be considered: (1) the scope and

content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) any objective indicia of non-obviousness, including any praise of the invention. Objective indicia of non-obviousness may include, for example, commercial success of an embodiment, a long-felt need, skepticism, failure by others to find the solution provided by the claimed invention, copying by others of the subject matter of the claim invention, unexpected results of the claimed invention, acceptance of others and industry praise, and licensing of the patents.

23. I also understand that obviousness may be established under certain circumstances by combining or modifying the teachings of the prior art. However, I have been informed that a claim is not proved obvious merely by demonstrating that each of the elements was independently known in the prior art. I have been informed that many, if not all, inventions rely on building blocks already previously known, and claimed discoveries almost of necessity will likely be combinations of what is already known. I have been informed that it is important to identify whether a reason existed at the time of the invention that would have motivated a person of ordinary skill in the art in the relevant field to combine the known elements in the way the claimed invention does. Specific teachings, suggestions, or motivations to combine any first prior art reference with a second

prior art reference can be explicit or implicit, but must have existed before the date of purported invention. I understand that prior art references themselves may be one source of a specific teaching or suggestion to combine features of the prior art, but that such suggestions or motivations to combine art may come from the knowledge that a person of ordinary skill in the art would have had.

24. I understand that a reference may be relied upon for all that it teaches, including uses beyond its primary purpose, but also including teachings that lead away from the invention. I understand that a reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, although the mere disclosure of alternative designs does not teach away.

25. I further understand that whether there is a reasonable expectation of success in combining references in a particular way is also relevant to the analysis.

26. I understand that it is improper to use hindsight to combine references or elements of references to reconstruct the invention using the claims as a guide. My analysis of the prior art is made from the perspective of a person of ordinary skill in the art at the time of the invention.

27. I am not offering any legal opinions in this declaration nor am I qualified to do so. I only consider such legal standards in framing my opinions and

conclusions as well as placing assertions made by Petitioner in the Petition into the proper context. Additionally, from a subject matter perspective, I understand that the petitioner always has the burden of persuasion regarding a challenge of patentability of an invention under an inter partes review.

IV. CLAIMS-AT-ISSUE

28. I understand that Petitioner has challenged claims 23, 24, 26 and 27 of the '302 Patent under two grounds, as summarized below (*see* Pet., 2):

Ground	'302 Patent Claims	Basis for Rejection
1	23, 24, 26, and 27	§103: 802.16a-2003 and 802.16-2001 (collectively "802.16a") in view of Koo
2	23, 24, 26, and 27	§103: 802.16a in view of Kitroser

29. Of the challenged claims, only claim 23 is independent. In this declaration, I have only been asked to address arguments relating to the independent claim.

V. OPINIONS

A. Claim 23 Is Entitled To A Priority Date Of At Least January 30, 2004.

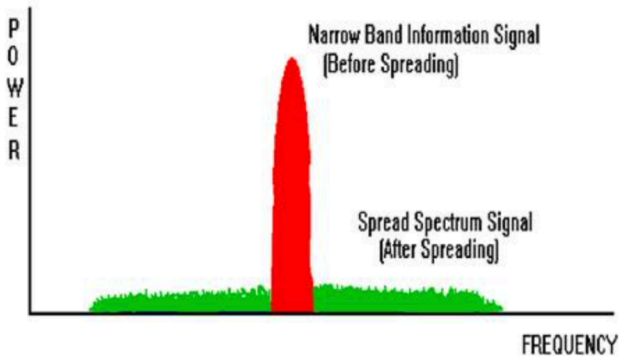
30. I understand that there is a dispute as to whether U.S Provisional Patent Application No. 60/540,586, filed on January 30, 2004 (Exhibit 1011)

provides sufficient disclosure to entitle claim 23 to a priority date of January 30, 2004.

31. I further understand that Petitioner argues that the ’586 Provisional Application does not provide sufficient disclosure to support the limitation “with a code sequence modulated in the frequency domain” in claim 23. Pet., 3.

32. As I will explain below, the DSSS signal, which is the exemplary spreading method in the embodiments disclosed in the 586 Provisional Application inherently discloses modulation in the frequency domain, as would be understood by a POSITA.

33. CDMA (Code Division Multiple Access) is a method of allowing multiple users to access the bandwidth, and is based on spreading technology. Each user is assigned a code (sometimes generated based on a pseudo-random number). The user “spreads” the information signal based on its assigned code to cover a wider frequency bandwidth but with a lower power density. This is shown schematically below, where the red signal is the information signal before spreading, and the green signal is the information signal after spreading:



34. The receiver of the spread signal is also in possession of the CDMA code that was assigned to the user, and can extract the intended data by applying the reverse of the spreading process. Because each user's spreading code is unique (a part of a pseudo-random generated signal), all users can send their spread signals in the same channel.

35. I understand that a book published by Dr. Buehrer also similarly defines spread spectrum, although the spreading code does not necessarily have to be generated based on a pseudo-random signal. *See* Ex. 2017 [Buehrer-Book] 23 ("Spread spectrum can be defined as any modulation technique that uses a bandwidth that is well beyond what is necessary for the data rate being transmitted and ***uses a*** pseudo-random signal to obtain the increased bandwidth.").

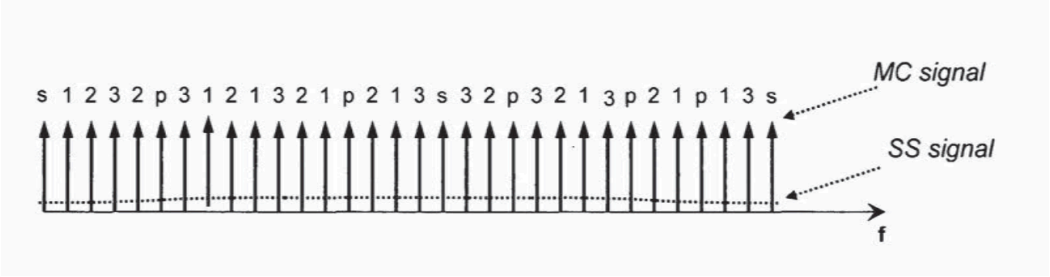
36. As Dr. Buehrer's book also notes, DSSS is a common spreading method where the spreading of the data signal over the bandwidth is achieved by directly multiplying the data signal with a spreading sequence. Thus, as is clear,

DSSS inherently discloses modulation in the frequency domain as it spreads a data signal in the frequency domain across the available frequency bandwidth by multiplying it with a spreading sequence. *See* Ex. 2017 [Buehrer-Book] 35 ("In DS/SS, the bandwidth is increased by directly multiplying the data signal by a higher-rate pseudo-random spreading sequence."); 24 ("DS/SS accomplishes bandwidth spreading through the use of a high rate symbol sequence (termed a *chip sequence*) that directly multiplies the information symbol stream.").

37. How Dr. Buehrer has mapped IEEE 802.16a-2003 also supports my opinion that DSSS inherently discloses modulation in the frequency domain. Dr. Buehrer relies on the conventional spreading technology in IEEE 802.16a-2003 to argue that it discloses a code sequence "modulated in the frequency domain." Specifically, the IEEE 802.16a-2003 explains that each subchannel is 53 subcarriers. Ex. 1004 [802.16a-2003] 198 (§ 8.5.6.2, Table 116cb). "[I]f the BS [Base Station] has defined the ranging channel to be the default two subchannels," (Ex. 1004 [IEEE 802.16a-2003] 203), then the spreading code would be 106 bits of the pseudo-random code so that the data signal can be spread across the 106 subcarriers of the two ranging subchannels. *Id*.

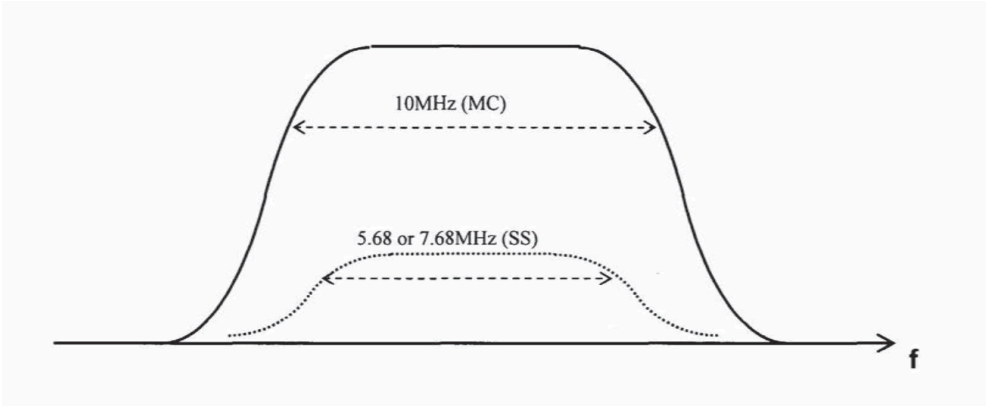
38. This is similar to the spreading techniques described in the '586 Provisional. For example, the '586 Provisional's figure 6, reproduced below,

shows the DSSS signal spread across the entire available frequency spectrum at lower powers:



Ex. 1011 [’586-Provisional] Fig. 6.

39. As another example, the ’584 Provisional explains that the modulation of the DSSS signal is modified such that it only occupies the “center portion” of the available frequency spectrum. Ex. 1011 [’586-Provisional] 12-13 (§ 4.3.3); Ex. 1001 [’302 Patent] 8:2-7. This is also schematically shown in the Patent’s (and the ’586 Provisional’s) Fig. 16:



B. Mobility In IEEE 802.16a-2003 As Of The Priority Date.

40. It was well-known in the field and to a POSITA that the IEEE 802.16-2003 standard were directed exclusively at stationary systems and did not support mobile users.

41. Even if mobility could be added to the IEEE 802.16 standard by many experts in the field after years of analysis, it was not at all clear at the outset whether it was desirable to do so to begin with. First, the high frequencies used by the IEEE 802.16 standard that at least initially forced stationary systems were integral to the operation of the standard. IEEE 802.16 was designed as a stationary system that would operate as the last mile connection between a building and the larger metropolitan network, in lieu of using cable networks. Ex. 2006 [Eklund] 98 ("As currently defined through IEEE Standard 802.16, a wireless MAN provides network access to buildings through exterior antennas communicating with central radio base stations (BSs)."). Once the building was connected to the larger metropolitan network through 802.16, the individual users inside the building could access the network through other standards such as WLAN 802.11, *i.e.*, the typical Wi-Fi network. *Id*. ("In this scenario, with WirelessMAN technology bringing the network to a building, users inside the building will

connect to it with conventional in-building networks such as, for data, Ethernet (IEEE Standard 802.3) or wireless LANs (IEEE Standard 802.11).").

42. The feasibility of IEEE 802.16 to operate as the last mile connection between a building and the larger metropolitan network in lieu of using cable networks was possible in part because the frequency range of 802.16 was very high frequencies of 10-66 GHz (later expanded to include 2-11 GHz as well). This allowed the system to use unlicensed frequency bands, and also allowed for the very high data rates that were necessary for its intended function of connecting a business or a building to the metropolitan network. However, the high frequencies would also mean that the signal could not tolerate much, if any, non-line-of-sight propagation. In other words, at least initially, there had to be a direct line of sight between the base station and the receiving station. A mobile user that could move anywhere would present a challenge.

43. Additionally, directional receive antennas could be of substantial use in fixed broadband networks that use very high frequencies. While directional antennas could be installed in stationary systems, they were challenging in mobile stations, especially around the time of the Patent's invention. These reasons are why at least in its early stages, antennas operating based on the IEEE 802.16 standard were stationary and installed on building rooftops in order to receive a

direct signal with minimal multipath propagation. Ex. 2006 [Eklund] 98 ("As currently defined through IEEE Standard 802.16, a wireless MAN provides network access to buildings through exterior antennas communicating with central radio base stations (BSs).").

44. The desirability of adding mobility to IEEE 802.16 was also not self-evident additionally because of the existence of other standards such as the cellular system (2G, 3G) that already allowed mobile users. This was recognized even in the initial Call for Contributions issued by the 802.16 working group to explore the feasibility and desirability of adding mobility to the standard:

> In addition to the technical issues, there are some other aspects of this effort that we need to keep in mind as we progress towards a possible PAR. ***The one that comes most readily to mind is: What significant advantages or disadvantages does a mobile enhanced 802.16a air interface provide over current or planned 3G mobile networks?*** Related to this is the question of liaison with other Standards Development Organizations such as T1P1, 3GPP and 3GPP2.

Ex. 2007 [Kiernan] 2.

45. In addition to motivation, even the feasibility of adding mobility to IEEE 802.16a-2003 was subject of much research and analysis by experts in the field. In August 2002, the IEEE 802.16 working group issued a Call for Contributions to determine both the feasibility and desirability of adding mobility

to the IEEE 802.16 standard. Ex. 2007 [Kiernan] 1. The working group had to "address enhancements to the IEEE 802.16a PHY/MAC to support mobile operation, including cell-to-cell and sector-to-sector handoff capability as well as other protocol and MIB support." Ex. 2007 [Kiernan] 1. The first task of the working group was to determine if adding mobility to IEEE 802.16 was even feasible:

> The initial output of the Study Group is expected to be a series of studies and analyses that would indicate ***whether such a capability can be provided*** within the basic confines of the 802.16a PHY/MAC, what level of mobility (pedestrian, vehicular) could be supported, and the extent of the PHY/MAC changes required to support it. It is NOT the current intent of the Study Group to develop a PAR. However, ***if the technical studies indicate that 802.16a enhancement for mobile operation is feasible***, development of a PAR can be expected at some future date.

Ex. 2007 [Kiernan] 1. Note that PAR is a Project Authorization Request.

46. The Call for Contributions then lists more than ***a dozen*** bullet points of "technical issues" that needed to be addressed to add mobility to IEEE 802.16, including specifically on "ranging":

- Reference System Deployment Scenario
  - Multi-cell, macro and/or micro
  - Omnidirectional or sectored antennas or both

- Frequency reuse and cell-to-cell interference (both FDD and TDD)
- Level of cell network interconnect
- MIB support

- Mobile Channel Models
  - Pedestrian (Indoor and Outdoor), Vehicular (target speed)
  - Doppler
  - Dispersive Multipath - Fast Fading
  - Simulations
- **Impact of the above mobile environment on current 802.16a Air Interface(s) parameters and performance to include:**
  - Synchronization and Timing, both initial and periodic
  - **Ranging**
  - Power Control
  - Channel coding
  - Measurement methods and messaging for support of intra- and inter-cell handoff
  - Effect on Advanced Antenna Systems
  - Protocols
- Impact on the Services to be provided:
  - QoS
  - Data Rates, BER or PER

- Latency
- Determination of appropriate frequency bands

Ex. 2007 [Kiernan] 1-2.

47. The IEEE 802.16 family of standards (including 802.16a-2003) did not support mobile users until version 802.16e, approved on December 7, 2005. This is confirmed by, for example, another article authored by Roger Marks. Dr. Marks explains that the 802.16 working group "began a new project" to "add support for mobile terminals" in 2002. Ex. 2008 [Marks] 74. While the project "brought in a large number of participants and new technology ideas," it was not until 2005 when the details, including feasibility and desirability, were worked out and support for mobile terminals were supported through the IEEE 802.16e amendment. *Id*.

48. In fact, even after approving the IEEE 802.16e amendment in 2005, the working group continued its work on other "critical issues" to support mobility, leading to IEEE 802.16f amendment in 2005 and IEEE 802.16g amendment in 2007. Ex. 2008 [Marks] 74. In short, it was not until at least 2005 that the IEEE 802.16 family of standards could support mobile users, with many of the details being worked out even later than 2005.

VI. CONCLUSION

49. For the foregoing reasons, based on my expertise and experience and the record of this case that I have reviewed, it is my opinion that the Challenged Claims are not shown to be disclosed or obvious.

50. I understand that my opinions discussed above support a legal conclusion that the challenged claims are nonobvious.

I hereby declare that all statements made herein of my own knowledge are true and all statements made herein on information and belief were and are believed by me to be true, and that all statements herein were and are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that any such willful false statements may jeopardize the validity of the application or any patents issued thereon.

August 21, 2023 SIGNED: William Alberth

William P. Alberth, Jr.