

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MOTOROLA SOLUTIONS, INC.,
Petitioner,

v.

STA GROUP LLC,
Patent Owner.

Case IPR2024-00511
U.S. Patent No. 9,319,852

**DECLARATION OF DR. ROBERT AKL
IN SUPPORT OF PATENT OWNER'S RESPONSE**

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I, Robert Akl, D.Sc. of Dallas, Texas, hereby state and declare:

I. INTRODUCTION

1. I am over the age of 18 and am competent to make this Declaration. I have personal knowledge, or have developed knowledge, of the matters set forth herein based upon my education, training, and/or experience. If called upon to do so, I would testify competently thereto.

2. I have been retained by counsel for Patent Owner STA Group LLC (“STA”) in the above matter. I am submitting this Declaration in response to the Petition for *Inter Partes* Review for U.S. Patent No. 9,319,852 (the “’852 Patent”) and associated exhibits. Specifically, I have been asked to consider the validity of claims 1-5 and 7-16 of the ’852 Patent (the “Challenged Claims”) in view of prior art, obviousness considerations, and understanding of a person of ordinary skill in the art (“POSITA”) at the time of the inventions claimed in the ’852 Patent.

II. BACKGROUND AND QUALIFICATIONS

3. I am an expert in the field of telecommunication systems. I have studied, taught, practiced, and researched this field for over 30 years. I have summarized in this section my educational background, work experience, and other relevant qualifications. Exhibit 2003 is a true and correct copy of my *curriculum vitae* describing my background and experience.

4. I earned Bachelor of Science degrees in Electrical Engineering and

Computer Science *summa cum laude* with a grade point average of 4.0/4.0 and a ranking of first in my undergraduate class from Washington University in St. Louis in 1994. In 1996, I earned my Master of Science degree in Electrical Engineering from Washington University in St. Louis with a grade point average of 4.0/4.0. I earned my Doctor of Science in Electrical Engineering from Washington University in St. Louis in 2000, again with a grade point average of 4.0/4.0, with my dissertation being on “Cell Design to Maximize Capacity in Cellular Code Division Multiple Access (CDMA) Networks.”

5. While a graduate student, from 1997 through 1999, I worked at MinMax Corporation in St. Louis, where I designed software packages that provided tools to flexibly allocate capacity in a CDMA communications network and maximize the number of subscribers. I also validated the hardware architecture for an Asynchronous Transfer Mode (ATM) switch capable of channel group switching, as well as performed logical and timing simulations, and developed the hardware architecture for the ATM switch. I also worked with Teleware Corporation in Seoul, South Korea, where I designed and developed algorithms that were commercially deployed in a software package suite for analyzing the capacity in a CDMA network implementing the IS-95 standard to maximize the number of subscribers.

6. After obtaining my Doctor of Science degree, I worked as a Senior Systems Engineer at Comspace Corporation from October of 2000 to December of

2001. At Comspace, I designed and developed advanced data coding and modulation methods for improving reliability and increasing the available data rates for cellular communications. I coded and simulated different encoding schemes (including Turbo coding, Viterbi decoding, trellis coded modulation, and Reed-Muller codes) and modulation techniques using amplitude and phase characteristics and multi-level star constellations. This work further entailed the optimization of soft decision parameters and interleavers for additive white Gaussian and Rayleigh faded channels. In addition, I also extended the control and trunking of Logic Trunked Radio (LTR) to include one-to-one and one-to-many voice and data messaging.

7. In January of 2002, I joined the faculty of the University of New Orleans in Louisiana as an Assistant Professor in the Department of Electrical Engineering. While in this position, I designed and taught two new courses called “Computer Systems Design I and II.” I also developed a Computer Engineering Curriculum with a strong hardware-design emphasis, formed a wireless research group, and advised graduate and undergraduate students.

8. In September of 2002, I received an appointment as an Assistant Professor in the Department of Computer Science and Engineering at the University of North Texas (UNT), in Denton, Texas. In May of 2008, I earned tenure and was promoted to the rank of Associate Professor. As a faculty member, I have taught courses and directed research in networking and telecommunications, including 2G,

3G, 4G, 5G, CDMA/WCDMA, GPS, GSM, UMTS, LTE, ad-hoc networks, antenna design and beamforming, Bluetooth, call admission control, channel coding, channel estimation, communication interfaces and standards, compression, computer architecture, MIMO systems, multi-cell network optimization, network security, packet-networks, telephony, VoIP, Wi-Fi (802.11), 802.15.4, Zigbee, wireless communication, and wireless sensors. Between January of 2015 and August of 2022, I was appointed Associate Chair of Graduate Studies in the Department of Computer Science and Engineering. In May of 2023, I was promoted to the rank of Professor.

9. I am also the director of the Wireless Sensor Lab (“WiSL”) at UNT. I am a member of the Center for Information and Cyber Security (CICS). It is the only program in the U.S. to be federally certified by the National Security Agency as a Center of Academic Excellence in Information Assurance Education and Research *and* Cyber Defense Research. I was also a member of the NSF Net-Centric & Cloud Software & Systems: Industry-University Cooperative Research Center (I/UCRC). Several of my research projects are funded by industry and the National Science Foundation and published in *IEEE* conference proceedings and journals.

10. In addition to advising and mentoring students at UNT, I was asked to join the faculty of the University of Arkansas in Little Rock as an Adjunct Assistant Professor from 2004 to 2008 in order to supervise the research of two Ph.D. graduate students who were doing research in wireless communications. At UNT, I have

advised and supervised more than 250 undergraduate and graduate students, several of whom received a master's or doctorate degree under my guidance.

11. Between 2005 and 2017, I have received over a million dollars in funding from the State of Texas, Texas Higher Education Coordination Board, the National Science Foundation, and industry to design and conduct robotics, video, and mobile gaming (*e.g.*, Xbox, PC, mobile device) programming summer camps for middle and high school students at UNT. By using video and mobile gaming as the backdrop, participants have learned coding and programming principles and developed an understanding of the role of physics and mathematics in video game design.

12. Between 2011 and 2013, I was director of the Bio-Com Project that was funded by Raytheon. The project evaluated the feasibility study using Surface Electromyography (EMG) and bend resistive sensors, which are attached to each of the five fingers of the hand, for hand gesture recognition. This approach is sometimes known as a “data glove.” A prototype was developed and demonstrated at Raytheon, to help soldiers in close-combat situations communicate with hand gestures and hand signals that would be recognized and transmitted to other soldiers’ Head Up Display (HUD) without breaking radio silence.

13. In addition to my academic work, I have remained active in the communication industry through my consulting work. In 2002, I consulted for

Input/Output Inc. and designed and implemented algorithms for optimizing the frequency selection process used by sonar for scanning the bottom of the ocean. In 2004, I worked with Allegiant Integrated Solutions in Ft. Worth, Texas to design and develop an integrated set of tools for fast deployment of wireless networks, using the 802.11 standard. Among other features, these tools optimize the placement of Access Points and determine their respective channel allocations to minimize interference and maximize capacity. I also assisted the Collin County Sheriff's Office (Texas) in a double homicide investigation, analyzing cellular record data to determine user location.

14. I have authored and co-authored over 100 journal publications, conference proceedings, technical papers, book chapters, and technical presentations in a broad array of communications-related technologies, including networking and wireless communication. I have also developed and taught over 100 courses related to communications and computer systems, including several courses on signals and systems, 4G/LTE and 5G/NR, OFDM, VoIP, Wi-Fi (802.11), 802.15.4, Zigbee, wireless communication, antenna design and beamforming, communications systems, communication interfaces and standards, channel estimation, location management, sensor networks, source coding and compression, network security, computer systems design, game and app design, and computer architecture. These courses have included introductory courses on communication networks and signals

and systems, as well as more advanced courses on wireless communications. A complete list of my publications and the courses I have developed and/or taught is also contained in my *curriculum vitae*.

15. My professional affiliations include services in various professional organizations and serving as a reviewer for a number of technical publications, journals, and conferences. I have also received a number of awards and recognitions, including the IEEE Professionalism Award (2008), UNT College of Engineering Outstanding Teacher Award (2008), and Tech Titan of the Future (2010) among others, which are listed in my *curriculum vitae*.

16. I have also served as an expert in certain legal proceedings. A list of cases in which I have testified at trial, hearing, or by deposition (including those during the past four years) is provided in my *curriculum vitae*. Over the years, I have been retained by both patent owners and petitioners, as well as plaintiffs and defendants.

17. I am being compensated for my work in this case at my standard rate. I am also being reimbursed for expenses that I incur during the course of this work. My compensation is not contingent upon the results of my study, the substance of my opinions, or the outcome of any proceeding involving the challenged claims. I have no financial interest in the outcome of this matter.

III. MATERIALS RELIED UPON IN FORMING MY OPINIONS

18. In preparing this Declaration, I have reviewed all documents cited herein, including the '852 Patent (Ex. 1001) and its prosecution history (Ex. 1003), and the Petition for IPR for the '852 Patent (Paper No. 3, "Petition"), including accompanying exhibits (*e.g.*, Ex. 1002, the "Kiaei Decl."). I have also reviewed Paper Nos. 9 (Preliminary Patent Owner's Response, "PPOR"), 10 (Institution Decision), and the other documents and materials cited therein. When quoting from these materials, all emphasis is added unless otherwise noted.

19. My opinions are also based upon my education, training, research, knowledge, and personal and professional experience.

IV. LEGAL STANDARDS FOR PATENTABILITY

20. I am not an attorney and I offer no opinion on the law itself. My understanding of the relevant legal principles in this section is based on information provided to me by counsel.

A. Claim Construction

21. I understand that claim terms are typically given their ordinary and customary meaning, as would have been understood by a person of ordinary skill in the art, at the time of invention, which I was asked to assume is the May 2008 timeframe. In considering the meaning of the claims, I also understand that one must consider the claim language, specification, prosecution history, and the knowledge

of a person of ordinary skill in the art (“POSITA”) at the relevant time. I have followed these principles in my analysis.

22. Except as set forth below in Section VII, I have been asked to apply the plain and ordinary meaning of the claim terms consistent with the specification.

B. Obviousness

23. I have been informed by counsel that a claim may be invalid if the invention recited in the claim would have been obvious to one of ordinary skill in the art at the time the invention was made in light of the prior art. I understand for a claim to be found obvious, every claim limitation must be found present in the combination of the prior art references before the obviousness analysis proceeds.

24. In considering whether a claim is obvious, I understand that one must consider (a) the level of skill in the art at the time of the claimed invention, (b) the scope and content of the prior art, (c) any differences between the prior art and the claims of the patent-in-suit, and (d) any “secondary factors” tending to show non-obviousness of the claimed invention, including commercial success, long-felt but unresolved need, failure of others, copying, praise by others, unexpected results, and simultaneous invention by others.

25. I understand that a claim composed of several elements is not proved obvious merely by demonstrating that each of its elements was independently known in the prior art. I also understand that obviousness should not be analyzed using the

benefit of hindsight. Instead, it must be analyzed from the standpoint of what was known and understood by a POSITA at the time of the claimed invention. I further understand demonstrating whether making a modification to a reference or whether combining multiple references would have been obvious requires providing a reason for why a POSITA would modify the reference or combine multiple references, and that reason must be supported with some rationale underpinning. Merely pointing out that two references are similar or in the same field of endeavor is not sufficient.

26. I understand that if a combination of two or more prior art references is used to render a claimed invention obvious, there must be a reasonable expectation of success in making or practicing the claimed invention based on such combination. I understand the combination cannot modify a prior art reference such that it would render the reference unsatisfactory for its intended purpose.

27. I understand that it is impermissible to use the patent as a template (and reason) for combining prior art references as that would be applying hindsight. I understand that a POSITA would have to be motivated to combine references to create the combination of features required by the claims of the patent. I further understand that mere assertions that prior art references are analogous art, without more, is an insufficient articulation for a motivation to combine.

V. LEVEL OF ORDINARY SKILL IN THE ART

28. In rendering the opinions set forth in this Declaration, I was asked to

consider the patent claims and the prior art through the eyes of a POSITA. The “art” is the field of technology to which the ’852 patent is related. In my Declaration, I use the term POSITA and skilled person to refer to the same hypothetical person of ordinary skill in the art. I considered factors such as the educational level and years of experience of those working in the pertinent art; the types of problems encountered in the art; the teachings of the prior art; patents and publications of other persons or companies; and the sophistication of the technology. I understand that a POSITA is not a specific real individual, but rather a hypothetical individual having the qualities reflected by the factors discussed above.

29. I understand that Petitioner and Dr. Kiaei have proposed that a POSITA in the field of the ’852 Patent inventions at the time of invention (May 27, 2008) “would have had at least a bachelors’ degree in electrical engineering, computer science, or a similar field, plus approximately three years of industry in networking or communication systems, in particular address interoperability between different types of networks and satellite communications. Additional education in the fields of electrical engineering or computer science, such as a masters or doctorate degree, could substitute for professional experience in the field. A person with less or different education but more relevant practical experience, or vice versa, may also meet this standard.” Ex. 1002 at ¶ 72; Pet. at 15. I further understand Petitioner and Dr. Kiaei have proposed that the qualifications of a POSITA would not have been

different as of the filing date of the '852 Patent, October 24, 2014. Pet. at 15; Ex. 1002 at ¶ 73.¹

30. I understand that Patent Owner does not dispute the proposal provided by Petitioner and Dr. Kiaei as to who would qualify as a POSITA. I do not dispute this proposal either. Under that proposal, I qualified as a POSITA at least as early as 1996, when I earned my Master's degree. I am qualified to provide opinions concerning what a POSITA would have known and understood, and my analysis and conclusions herein are from the perspective of a POSITA under Petitioner and Dr. Kiaei's set of qualifications.

VI. OVERVIEW OF THE '852 PATENT

31. The '852 Patent issued April 19, 2016 from an application filed October 24, 2014. Ex. 1001 at Cover. The '852 Patent is a divisional patent and claims priority to May 27, 2008. *Id.*

32. The '852 Patent is directed to a system and method for facilitating communication between non-compatible communication devices. *Id.* at Abstract.

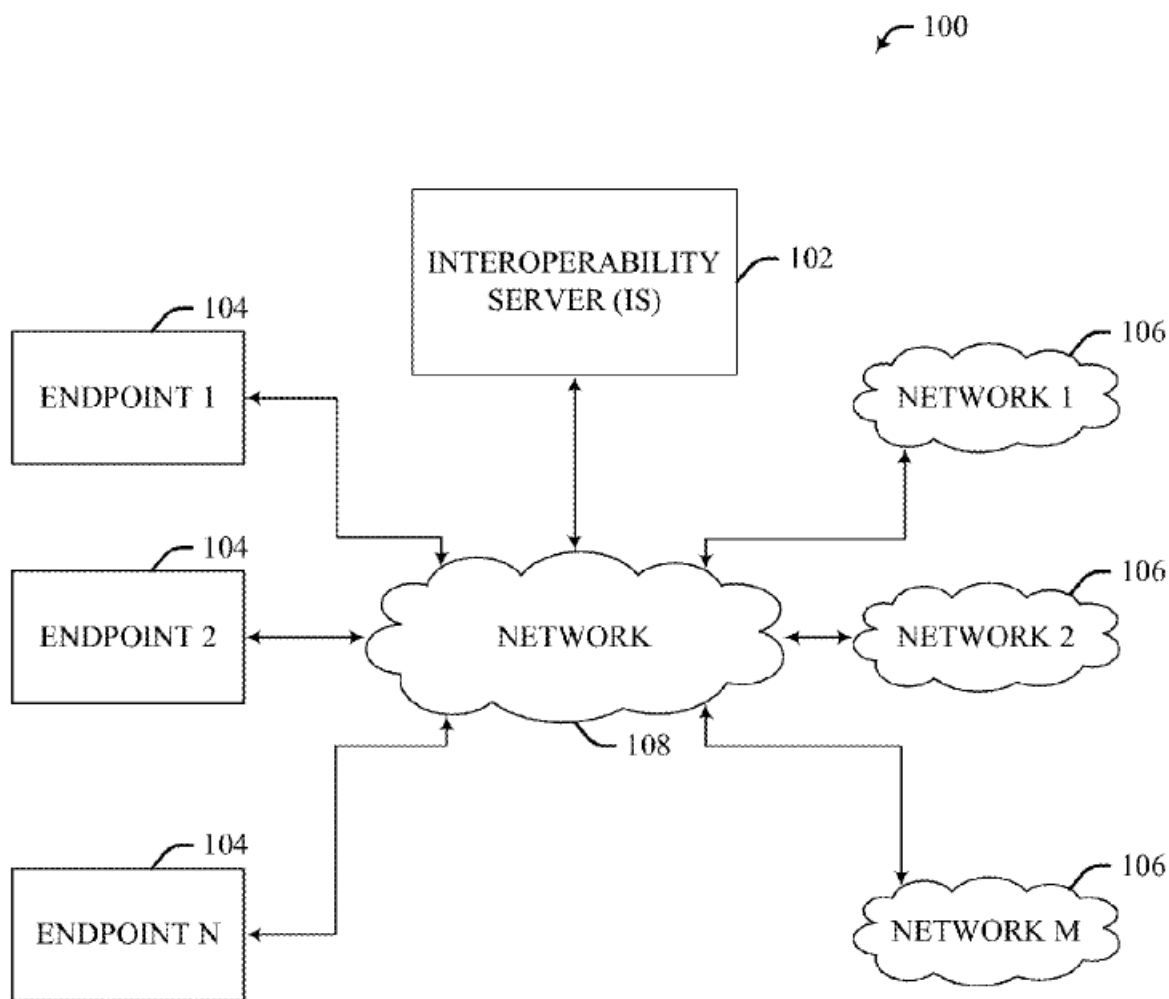
¹ Dr. Kiaei lists the filing date of the '852 Patent as April 19, 2016. Ex. 1002 at ¶ 73. I understand this to be the date on which the '852 Patent issued, not the date on which it was filed. The cover of the '852 Patent notes that it was filed October 24, 2014. Ex. 1001 at cover.

The '852 Patent facilitates this communication by using a dynamic media proxy in a virtual talk group. *Id.* The independent claims – claims 1, 8, 12, and 17 – each recite identifying information related to an endpoint, negotiating a communication session with an interoperability server (IS), receiving a determination that the endpoint is not in adherence with the capabilities of a predefined floor control mechanism, and receiving a determination that a proxy is to be dynamically inserted to connect the endpoint to a virtual talk group. *Id.* at cl. 1, 8, 12, 17.

33. The '852 Patent explains “an endpoint that initiates communication can include an information determination component that can determine media capabilities of the endpoint and/or the identity of the endpoint.” *Id.* at 2:43-46. Similarly, “an IS can include an information collection component that can collect information associated with an endpoint that initiates communication.” *Id.* at 2:52-57. The endpoint also includes “a negotiation component [that] can advertise the determined information and negotiate a session with an interoperability server (IS) over a private channel. The endpoint can communicate with the IS through custom messaging.” *Id.* at 2:46-51.

34. The '852 Patent “relates to interoperability systems that can dynamically insert a media proxy based on capability negotiation” between endpoints and ISs. *Id.* at 4:27-30. Specifically, “[b]ased on the information provided by the negotiation component 208, the IS 102 (FIG. 1) can determine if the endpoint

104 should be allowed to join the VTG and also determine if the endpoint should be directly connected to the VTG or should be connected via a proxy based in part on the system's 100 (FIG. 1) floor control policy.” *Id.* at 6:27-32. In this way, the ’852 Patent describes an invention that “can dynamically facilitate communication between two or more non-compatible communication devices.” *Id.* at 2:33-42.

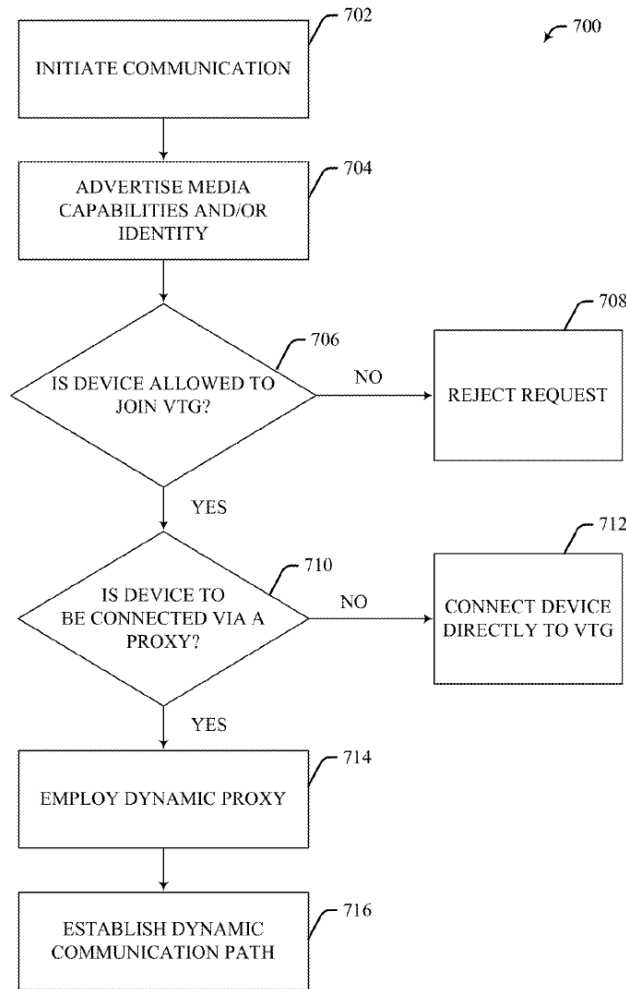


Id. at Fig. 1.

35. The benefits of this system include that “the system can asses[s]—a security risk associated with allowing a particular endpoint to join a VTG directly.

If the identity of the endpoint cannot be validated as trusted and/or secure, the system can either reject the communication request or act as a proxy for the endpoint and join the VTG on behalf of the endpoint.” *Id.* at 3:10-20; *see also id.* at 7:48-57.

36. The '852 Patent includes many examples of the endpoint and IS exchanging information. One such example is depicted in Figure 7 and the corresponding portion of the specification. *Id.* at Fig. 7, 11:40-12:8. “At [step] 704, media capabilities and/or identity of the device that initiated communication can be advertised.” *Id.* at 11:43-44. “If the device identity is determined to be trusted or safe, it can be determined if the device should join via proxy, as shown at 710. The determination at 710 can be based on the media capabilities of the device and the available system resources.” *Id.* at 11:48-52. “In one embodiment, if it cannot be determined that the endpoint can adhere to specified rules of transmission, the endpoint can be connected to the VTG via a proxy. At 714, a dynamic proxy can be employed for attaching the endpoint device to the VTG.” *Id.* at 11:60-12:3.



Id. at Fig. 7, 2:1-4 (“FIG. 7 illustrates an example flow chart of procedures that dynamically facilitate communication between non-compatible communication devices in accordance with embodiment of the specification.”).

37. The ’852 Patent provides plenty of detail the explains how the endpoint and IS communicate. For example, the ’852 Patent states a “negotiation component 208 [of an endpoint] can be employed to **exchange capability information** with an interoperability server (not shown) during communication.” *Id.* at 11:6-8. “The IS 102 can further include a resource determination component 304 that can determine

available system resources, e.g. bandwidth, and/or memory. ... The information regarding the available system resources can be employed to negotiate the dynamic utilization of a proxy for a particular endpoint and **establish a communication path** based on the resource information and/or the capability information.” *Id.* at 7:22-34. Indeed, “the dynamic proxy component 308 [of the IS] can establish a communication path based on capability negotiation.” *Id.* at 9:7-9.

38. To accomplish the negotiation with interoperability servers, “[a] transmitter/receiver 608 can be employed to transmit and receive data from/to the endpoint 104.” *Id.* at 11:14-15, Fig. 6. “The transmitter/receiver 608 can transmit information determined by the information collection component 202 to an interoperability server (not shown) over a private channel to initiate communication.” *Id.* at 11:17-20.

39. The ’852 Patent also discusses the insertion of a proxy based on the capability negotiation between the endpoint and IS. *Id.* at 4:27-30 (“The system disclosed herein, relates to interoperability systems that can dynamically insert a media proxy based on capability negotiation, according to an embodiment of the invention.”), 4:37-40 (“The subject disclosure relates generally to communication networks and in particular to an interoperability system that facilitates a dynamic insertion of a media proxy based on capability negotiation.”).

40. “[T]he IS 102 can include an information collection component 302

that can determine information regarding an endpoint that has initiated a communication session. ... The information can include, but is not limited to, media capabilities of the endpoint, the identity of the endpoint and/or attributes of the endpoint.” *Id.* at 7:14-21. “The information collected by the information collection component 302 and the information determined by resource determination component 304 can be analyzed by an analysis component 306.” *Id.* at 7:35-38. “The analysis component 306 can analyze the capabilities of the endpoint (determined by the information collecting component 302) to determine if the endpoint should be connected via a proxy.” *Id.* at 7:58-61.

41. The proxy that is dynamically inserted may be on a different server, or entirely different network, as the interoperability server. *Id.* at 7:63-65 (“It can be appreciated that the dynamic proxy component 308 and the IS 102 can reside on the same or on different servers.”), 8:2-7 (“Thus, although the dynamic proxy component 308 is depicted as a part of the IS 102, it can be appreciated that the dynamic proxy component can reside on a separate server. In one embodiment, the IS 102 can be attached to network 106 (or 108) while the dynamic proxy may be attached to another network 108 (or 106).”).

42. The Petition asserts invalidity of the Challenged Claims based on Grounds 1–4, as detailed below (Pet. at 1):

Ground	Basis for Challenge
1	Claims 1–5 and 7–16 are obvious based on Choksi ²
2	Claims 1–5 and 7–16 are obvious based on Shaffer ³ in view of Keller ⁴
3	Claims 1–5 and 7–16 are obvious based on Chowdhury, ⁵ PoC Interworking Service, ⁶ PoC System Description, ⁷ TR23.979, ⁸ and Jin ⁹

² U.S. Patent Application Publication No. 2006/0058007 to Choksi titled “Architecture for Facilitating Group Sessions Across Dispatch Operators.” Ex. 1005 (“Choksi”) at Cover.

³ U.S. Patent Application Publication No. 2009/0298525 to Shaffer titled “Interoperability and Communications System Dynamic Media Proxy Based on Capability Negotiation.” Ex. 1016 (“Shaffer”) at Cover.

⁴ U.S. Patent Application Publication No. 2004/0133683 to Keller titled “System and Method for Controlling and Managing Sessions Between Endpoints in a Communications System.” Ex. 1024 (“Keller”) at Cover.

⁵ U.S. Pat. No 7,774,012 to Chowdhury titled “Method for RTP Setup Coordination For Talk Groups When Interconnecting Public Safety Wireless Networks and Commercial Wireless Networks.” Ex. 1035 (“Chowdhury”) at Cover.

⁶ *OMA PoC Interworking Service V2.0* (OMA-TS-PoC_Interworking_Service-V2_0) (Feb. 26, 2008). Ex. 1032 (“PoC Interworking Service”) at 1.

⁷ *OMA PoC System Description V2.0* (OMA-TS-PoC_System_Description-V2_0) (Feb. 26, 2008). Ex. 1031 (“PoC System Description”) at 1.

⁸ *3GPP enablers for Open Mobile Alliance (OMA) Push-to-talk over Cellular (PoC) services* (3GPP TR23.979) V7.0.0 (June 2007). Ex. 1033 (“TS23.979”) at 1.

⁹ U.S. Patent Application Publication No. 2006/0003781 to Jin titled “_____.” Ex. 1036 (“Jin”) at Cover.

4	Claims 1–5 and 7–16 are obvious based on Chowdhury, PoC Interworking Service, PoC System Description, PoC Architecture, ¹⁰ TR23.979, Jin, and TS23.060 ¹¹
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43. I understand Ground 1 was the subject of a different *inter partes* review, IPR2024-00479. I was not asked to, nor did I prepare any opinion regarding the validity of Claims 1–5 and 7–16 in view of Choksi.

VII. CLAIM CONSTRUCTION

44. I have been informed by counsel that because the Petition was filed after November 13, 2018, the proper claim construction standard to be applied is articulated in *Phillips v. AWH Corp.* Therefore, I understand that the ’852 Patent claims should be given their ordinary and customary meaning and the ordinary and customary meaning of a claim term is the meaning that the term would have to a POSITA in question at the time of the invention (May 2008), *i.e.*, as of the effective filing date of the patent application.

45. I understand that Petitioner and Dr. Kiaei have proposed a construction for the receiving limitation that “[i]t is possible—but not required—that the proxy be dynamically inserted because the endpoint is not in adherence with the

¹⁰ OMA Push to Talk over Cellular (PoC) – Architecture V2.0 (OMA-AD-PoCV2_0) (Feb. 26, 2008). Ex. 1029 (“PoC Architecture”) at 1.

¹¹ 3GPP General Packet Radio Service (GPRS) Description (3GPP TS23.060) V8.0.0 (March 2008). Ex. 1034 (“TS23.060”) at 1.

capabilities of the predefined floor control mechanism.” Petition at 16 (emphasis in original); Ex. 1002 at ¶ 79. Put differently, Petitioner and Dr. Kiaei opine “the proxy can be dynamically inserted for reasons besides correcting for an endpoint not in adherence with the capabilities of the predefined floor control mechanism.” Petition at 18; Ex. 1002 at ¶ 82.

46. In my opinion, whether this construction is applied has no bearing on whether the art cited in the Petition renders obvious the Challenged Claims. My opinion that the cited art fails to render obvious the Challenged Claims is the same whether Petitioner’s construction is applied or not.

VIII. OVERVIEW OF THE CITED PRIOR ART

47. Here, I provide overviews of the prior art references relied on in the Petition and Dr. Kiaei’s Declaration. I discuss these references in more detail in connection with the claim limitations below.

A. Shaffer (Ex. 1016)

48. Shaffer is the publication of U.S. Patent Application No. 12/127,397 (the “’397 Application”). Ex. 1016 at cover. The cover of the ’852 Patent notes that it is a divisional patent of the ’397 Application. Ex, 1001, cover. The specification of Shaffer is substantially identical to the specification of the ’852 Patent, excluding the claims. Ex. 1002 at ¶ 89.

49. For the reasons discussed in Section IX.A.1, it is my opinion that

Shaffer provides sufficient written description to support the claims of the '852 Patent.

B. Keller (Ex. 1024)

50. Keller was filed on December 31, 2002, and published July 8, 2004. Ex. 1024 at cover. Keller describes “a communications system having a plurality of endpoints each including a logical entity and its physical counterpart, [and] a system for controlling and managing session [sic] between at least two endpoints.” *Id.* at Abstract.

51. Keller teaches “a call control architecture 200 comprising a number of entities and their communication paths for enabling communications between at least two endpoints in a communications system.” *Id.* at ¶ [0025]. In Keller’s system, “[t]he preferred transactional protocol is SIP, and the preferred broadcast protocol is SAP.” *Id.* “For enabling group communications between at least two endpoints (e.g., endpoints 240 and 242) architecture 200 comprises a session controller 206, a group database manager 208, and at least one group entity 210 that is named and addressable at the application layer.” *Id.* at ¶ [0026]. Per Keller, “the interfaces between the session controller 206 and the individual proxy 216, group entity 210, and bandwidth manager 232 provides flexibility to accommodate systems that use different [Radio Access Networks] or different session signaling protocols.” *Id.* at ¶ [0030].

52. Keller describes its “individual proxy 216, [as] preferably a ‘stateful’ SIP proxy that represents the signaling point of control through which the underlying session controller 206 can be accessed when an individual directed session (e.g. point-to-point) is setup between at least two endpoints.” *Id.* at ¶ [0041]. “In operation, the individual proxy 216 intercepts a SIP INVITE message from an initiating endpoint’s [User Agent Client] and then preferably decides what endpoints to involve in the session based on the destination specified in the INVITE and system policy information.” *Id.* at ¶ [0042]. “To the rest of the system and, most importantly, to the endpoints, the SIP signaling looks like it is being sent end to end even though the individual proxy 216 may change the SDP or indicate that a session cannot proceed.” *Id.* at ¶ [0041]. “To perform the above functions, the individual proxy 216 must either be in the session initiator’s initial route set, or through standard SIP routing conventions, the proxy must add itself to the dialog’s route set through, for instance, the appropriate use of SIP’s RECORD-ROUTE header.” *Id.* at ¶ [0046].

53. Keller describes that “[p]referably, the group entity 210 receives the first message and detects that a non-dispatch device is attempting to perform a group call.” *Id.* at ¶ [0120]. “[T]he group entity might detect that the endpoint is incapable of affiliating with a group,” “that the terminal is unable to communicate with the floor controller 230,” or “that the terminal is unable to exchange media via IP

multicast.” *Id.* at ¶¶ [0121]–[0123]. “In this case, the group entity would preferably generate signaling to the non-dispatch endpoint to cause the endpoint to direct its media to the media manager.” *Id.*

C. Chowdhury (Ex. 1035)

54. Chowdhury was filed on January 30, 2007, and issued on August 10, 2010. Ex. 1035 at cover. Chowdhury provides a “method and apparatus...for a gateway which interconnects public safety wireless networks and commercial wireless networks that support push-to-talk group calls.” *Id.* at Abstract.

55. In Chowdhury, “Gateway 10 has a Control Function 200 which is connected to OMA-POC Protocol Module 220, Interoperability Module 240, and [Intra-RF Sub-Systems Interface or “ISSI”] Protocol Module 260.” *Id.* at 5:41-44. This Gateway 10 is depicted in Figures 2, 3, and 9. *Id.* at Figs. 2, 3, 9. “ISSI Protocol Module 260 manages communications received from [Radio frequency sub-systems or “RFFSs”], e.g., RFSS 50 and RFSS 60, of a public safety wireless network, e.g., P25 network 30.” *Id.* at 6:40-42.

56. Chowdhury describes four “illustrative flow chart[s] for a method of operating the present invention in accordance with the principles of the invention” in Figures 4 through 8. *Id.* at 2:47-3:3. Chowdhury’s ISSI Protocol Module is used in each of these illustrative flow charts. *Id.* at 9:26-29 (“In step 420 (FIG. 4), upon receipt of the PoC-group-register message, Call Control Interop Module 242 (FIG.

2) sends an ISSI-setup-request to **ISSI Protocol Module 260** to set up an RTP connection with home RFSS350 (FIG. 3).”), 10:15-18 (“In step 510 (FIG. 5), Call Control Interop Module 242 (FIG. 2) monitors for a PoC-group-deregister message from OMA-POC Protocol Module 220 and an ISSI-disconnect message from **ISSI Protocol Module 260**.”), 11:4-12 (“In step 620 (FIG. 6), upon receipt of the PoC-group-register message, Call Control Interop Module 242 (FIG. 2) sends an ISSI-setup-request to **ISSI Protocol Module 260** to set up an RTP connection with home RFSS 350 (FIG. 3).”), 11:59-12:3 (“In step 711 (FIG. 7), Call Control Interop Module 242 (FIG. 2) sends an ISSI-setup-request, with the sequence number, to **ISSI Protocol Module 260**.”), 12:65-67 (“In step 810 (FIG. 8), Call Control Interop Module 242 (FIG.2) receives a ISSI-disconnect-indication from **ISSI Protocol Module 260**.”).

D. PoC Documents (Exs. 1029, 1031, 1032)

57. PoC Interworking Service (Ex. 1032), PoC System Description (Ex. 1031), and PoC Architecture (Ex. 1029) each lists October 2, 2007, on the face of the document. Ex. 1032 at 1; Ex. 1031 at 1; Ex. 1029 at 1. The PoC Documents are each “Candidate Version 2.0” of different aspects of the Push to talk over Cellular standard published by the Open Mobile Alliance Ltd. Ex. 1032 at 1; Ex. 1031 at 1; Ex. 1029 at 1. The PoC Documents “define the system concepts and high level procedures for the PoC service enabler V2.0.” Ex. 1031 at 10; Ex. 1029 at 5.

E. 3GPP Specifications (Exs. 1033, 1034)

58. TR23.979 (Ex. 1033) lists June 2007 on the face of the document. Ex. 1033 at 1. TR23.979 “studies the architectural requirements in order to enable services like PoC over 3GPP systems.” Ex. 1033 at 6.

59. TR23.060 (Ex. 1034) lists March 2008 on the face of the document. Ex. 1034 at 1. TR23.060 “defines the stage-2 service description for the General Packet Radio Service (GPRS) which is a packet bearer service and a main part of the packet domain.” Ex. 1034 at 11.

F. Jin (Ex. 1036)

60. Jin was filed on June 30, 2004, and published on January 5, 2006. Ex. 1036 at cover. Jin teaches “a mobile station [that] includes a wireless transceiver; a user interface including a Push-To-Talk (PTT) switch for initiating a PTT voice communication and a microphone for receiving voice input signals; one or more processors; and a First-In-First-Out (FIFO) buffer memory coupled to the one or more processors.” *Id.* at Abstract. “The one or more processors are operative to identify a user actuation of the PTT switch and, in response, save digital voice data corresponding to voice input signals in the FIFO buffer memory; cause a request for the PTT voice communication to be made through a wireless network; identify that a floor grant has been received through the wireless network in response to the request; and after identifying the floor grant, cause the digital voice data from the

FIFO buffer memory to be retrieved and transmitted to the wireless network for the PTT voice communication.” *Id.*

IX. GROUND 2: CLAIMS 1-5 AND 7-16 ARE NOT OBVIOUS OVER SHAFFER IN VIEW OF KELLER

61. I have been asked to opine (1) whether Shaffer provides support for the “receiving” limitation in the independent claims of the ’852 Patent, and (2) if it does not, whether Shaffer in view of Keller teaches the claims of the ’852 Patent. In my opinion, Shaffer provides clear support for the “receiving” limitation. Further, in my opinion, a POSITA would not have been motivated to combine Shaffer and Keller and as a result, a POSITA would not have found the claims of the ’852 Patent obvious over these references.

A. Independent Claims 1, 8, and 12

1. *Priority Claim*

62. I have been asked to opine on whether Shaffer discloses the limitation “receiv[e/ing] a first determination from the [IS/interoperability server] that the [endpoint/initiating device] is not in adherence with capabilities of the predefined floor control mechanism and that a proxy is to be dynamically inserted to connect the [endpoint/initiating device] to a virtual talk group...” which the Petitioner calls the “First Determination Limitation.” Pet. at 7–8. I understand that Petitioner and Dr. Kiaei are of the opinion that the ’852 Patent does not disclose this limitation. Pet. at 7–10; Ex. 1002 at ¶¶ 63–68. I disagree with Dr. Kiaei and Petitioner; the ’852

Patent provides enough disclosure that a POSITA would know that the “receiving” limitation was within the bounds of the Shaffer parent patent.

63. Notably, Petitioner and Dr. Kiaei agree that “Shaffer’s specification is identical to the disclosure of the ’852 Patent, exclusive of the claims.” Petition, 33; Ex. 1002 at ¶ 154. As I describe below, Shaffer’s original claims and specification provide plenty of detail to confirm it provides written description support for the First Determination Limitation.

a) Shaffer’s Original Claims 20 and 21 Demonstrate the First Determination Limitation was Contemplated

64. It has been explained to me by counsel that in patent prosecution, the applicant files a set of claims that may then be amended as the patent prosecution progresses. Counsel has also informed me that the claims originally filed are considered as part of the specification for purposes of determining whether the specification provides written description support for the amended or later-filed claims, which I understand is based in 35 U.S.C. § 112.

65. Shaffer’s original application included 27 patent claims. Ex. 1003 at 94-97. Original claim 20 recites:

An apparatus, comprising:

an information determination component that identifies information related to an endpoint; and

a negotiation component that negotiates a communication session with an interoperability server (IS) based in part on at least one of the identified information or a predefined floor control mechanism

associated with the IS.

Id. at 96. Claim 21 recites, “The apparatus of claim 20, further comprising a capability determination component that identifies media capabilities associated with the endpoint, the media capabilities employed by the IS to dynamically determine if the endpoint should be connected to a virtual talk group (VTG) via a proxy.” *Id.* In my opinion, the combination of these claims describes how an endpoint and an IS negotiate a communication session by determining capabilities associated with the endpoint.

66. First, claim 20 describes “a negotiation component that negotiates a communication session with an interoperability server.” *Id.* In my opinion, a POSITA would have understood the negotiation between endpoint and IS would have required back-and-forth communications between the devices. Simply put, a POSITA would have understood that a negotiation would have required a mutual discussion regarding the capabilities of each device in order to come to an agreement.

67. Claim 20 additionally describes that this back-and-forth communication between endpoint and IS would have been “based in part on at least one of the identified information or a predefined floor control mechanism associated with the IS.” *Id.* Claim 21 adds that the negotiation would have been used “to dynamically determine if the endpoint should be connected to a virtual talk group (VTG) via a proxy.” *Id.*

68. In light of these original claims, a POSITA would have understood that the endpoint would have been sending and receiving communications with the IS that would have included detail regarding “the predefined floor control mechanism associated with the IS” and whether to “dynamically” connect the endpoint to a virtual talk group “via a proxy.” Thus, in my opinion, these claims show that Shaffer contemplated the limitation “receiv[e/ing] a first determination from the [IS/interoperability server] that the [endpoint/initiating device] is not in adherence with capabilities of the predefined floor control mechanism and that a proxy is to be dynamically inserted to connect the [endpoint/initiating device] to a virtual talk group....”

**b) Shaffer’s Specification Details Other Examples
Supporting the First Determination Limitation**

69. While I believe Shaffer’s original claims 20 and 21 alone show that Shaffer provided detail to a POSITA supporting the First Determination Limitation, the specification of Shaffer includes other examples that further solidify my opinion.

70. For example, Shaffer describes “an endpoint that initiates communication can include an information determination component that can determine media capabilities of the endpoint and/or the identity of the endpoint.” Ex. 1016 at ¶ 16. Shaffer also explains that the “IS can include an information collection component that can collect information associated with an endpoint that initiates communication. The information can include media capabilities of the endpoint

and/or its identity and/or attributes.” *Id.* at ¶ 17, 34 (“The information can include, but is not limited to, media capabilities of the endpoint, the identity of the endpoint and/or attributes of the endpoint.”). “The IS can further include an analysis component that can analyze the information associated with the endpoint and the system resources to determine if the endpoint can be connected to a VTG via a proxy. The analysis component can identify an endpoint that does not adhere to specific rules of transmission and can dynamically connect such an endpoint to a VTG via a proxy....” *Id.* at ¶ 17.

71. The endpoint also includes “a negotiation component can advertise the determined information and negotiate a session with an interoperability server (IS) over a private channel.” *Id.* at ¶ 16. To enable the back-and-forth negotiation, Shaffer’s endpoint “can communicate with the IS through custom messaging.” *Id.*; *id.* at ¶ 37 (“The information collection component 302 [of the IS 102] can collect information from the endpoint through custom messages over a private channel.”) The endpoint’s “negotiation component 208 can be employed to exchange capability information with an interoperability server (not shown) during communication.” *Id.* at ¶ 53. In my opinion, the “exchange” between endpoint and IS described in Shaffer further confirms that the communications between endpoint and IS would have been two-way communications.

72. “Based on the information provided by the negotiation component 208,

the IS 102 (FIG. 1) can determine if the endpoint 104 should be allowed to join the VTG and also determine if the endpoint should be directly connected to the VTG or should be connected via a proxy based in part on the system's 100 (FIG. 1) floor control policy.” *Id.* at ¶ 34. Shaffer's disclosure “relates to interoperability systems that can dynamically insert a media proxy **based on capability negotiation**, according to an embodiment of the invention.” *Id.* at ¶ 25, 17 (“The IS can further include an analysis component that can **analyze the information associated with the endpoint** and the system resources to determine if the endpoint can be connected to a VTG via a proxy.”), 26 (“The subject disclosure relates generally to communication networks and in particular to an interoperability system that facilitates a dynamic insertion of a media proxy **based on capability negotiation**.”), 29 (“IS 102 can allow endpoints 104 to participate in one or more communication sessions **based on capability negotiation**.”), 34 (“IS 102 (FIG. 1) can determine **if the endpoint 104 adheres to the rules of transmission**. If the endpoint 104 does not adhere to rules of transmission, it can be dynamically connected to the VTG via a proxy”), 41. In my opinion, a POSITA would therefore understand that Shaffer's IS makes a first determination that the endpoint is not in adherence with capabilities of the floor control policy, and if the endpoint is not in adherence with the floor control mechanism, can dynamically connect the endpoint to the VTG via a proxy.

73. Shaffer also explains “[t]he IS 102 can further include a resource

determination component 304 that can determine available system resources, e.g. bandwidth, and/or memory.” *Id.* at ¶ 38. “The information regarding the available system resources can be employed to negotiate the dynamic utilization of a proxy for a particular endpoint and establish a communication path based on the resource information and/or the capability information.” *Id.* Shaffer’s “IS 102 can include a dynamic proxy component 308 that can be dynamically employed to proxy the endpoint based on the analysis performed by the analysis component 306. The dynamic proxy component 308 can communicate with the endpoint through a private session and join the VTG on behalf of the endpoint. Thus, the dynamic proxy component 308 can establish a communication path based on capability negotiation.” *Id.* at ¶ 46.

74. In my opinion, in order to “establish a communication path” between endpoint and proxy, a communication would necessarily have been sent from the IS to the endpoint informing the endpoint where to send its VTG communications. *Id.* at ¶¶ 38, 46. Indeed, Shaffer’s “dynamic proxy component 308,” which is part of the IS 102, communicates with the endpoint through a private session. *Id.* at ¶ 46. A private session could not be established unless and until the endpoint is made aware of the private session. Notably, this communication path is “based on capability negotiation” between endpoint and IS which, as discussed above, includes a determination regarding whether the “endpoint 104 adheres to the rules of

transmission.” *Id.* at 34 (“IS 102 (FIG. 1) can determine ***if the endpoint 104 adheres to the rules of transmission.*** If the endpoint 104 does not adhere to rules of transmission, it can be dynamically connected to the VTG via a proxy”).

75. Notably, Shaffer explains that “[i]t can be appreciated that the dynamic proxy component 308 and the IS 102 can reside on the same or on different servers.” *Id.* at ¶ 41. Shaffer also explains that “the IS 102 can be attached to network 106 (or 108) while the dynamic proxy may be attached to another network 108 (or 106).” *Id.* In my opinion, the need to inform the endpoint where to send its VTG communications is even more important when the endpoint is to direct its communications to a different server or different network altogether. *Id.* For instance, the endpoint would need an IP address of the dynamic proxy or other network routing information for communicating with the dynamic proxy.

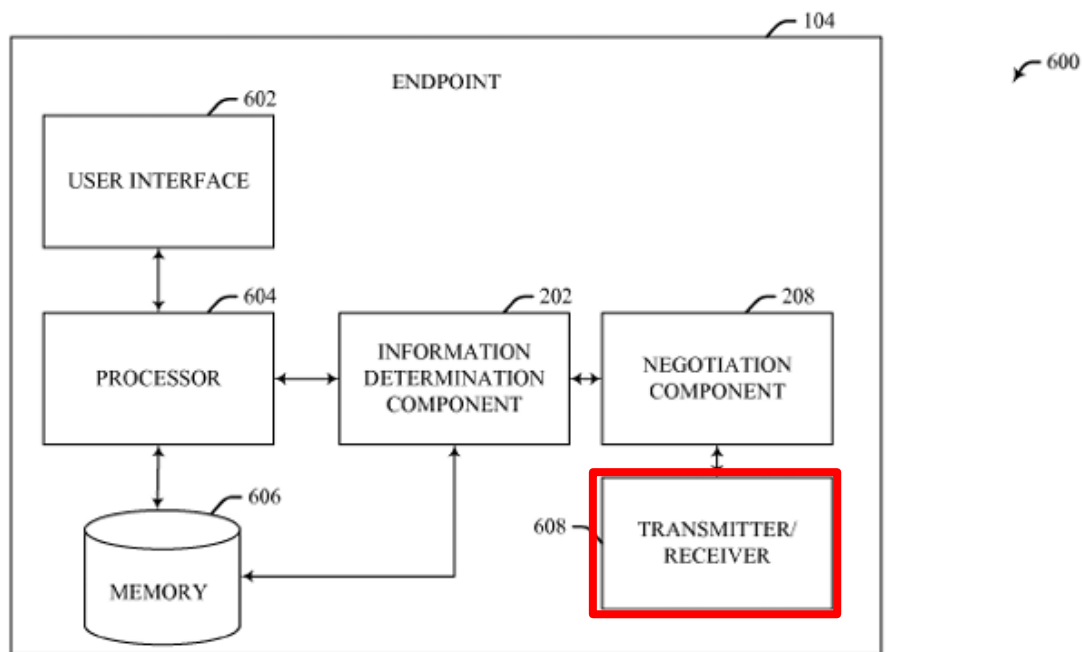
76. My opinion that the communication path that was established would have been communicated to the endpoint is further supported by Shaffer. For example, Shaffer states “the parameters of the VTG can be dynamically altered to conceal the VTG from the identified endpoint and prevent it from streaming into the VTG.” *Id.* at ¶¶ 34, 19. The parameters of the VTG would only need to be altered to conceal the VTG if those parameters were transmitted to the endpoint. If the parameters of the VTG were never sent to the endpoint, a POSITA would have understood there was no reason for the IS to alter those parameters.

77. While I understand Petitioner and Dr. Kiaei believe Shaffer does not disclose this limitation, they point to paragraph 122 of Keller as allegedly disclosing this limitation. Petition at 44 (citing Ex. 1024 at ¶ 121 but quoting ¶ 122); Ex. 1002 at ¶ 172 (citing Ex. 1024 at ¶ 123 but quoting ¶ 122). This paragraph, quoted in both the Petition and Dr. Kiaei’s declaration, states that Keller’s “group entity would preferably generate signaling to the non-dispatch endpoint to cause the endpoint to direct its media to the media manager, which would preferably be configured to impose talker arbitrated floor control on a full duplex device, e.g., the non-dispatch endpoint.” Ex. 1024 at ¶ 122.

78. In my opinion, this is the exact same signaling that a POSITA would have understood Shaffer’s IS to send, and Shaffer’s endpoint to receive, to “establish a communication path” between endpoint and IS. Ex. 1016 at ¶¶ 38, 46. In other words, while Shaffer does not use the exact words “generate signaling to the non-dispatch endpoint,” it is my opinion that Shaffer includes as much detail as Keller regarding the First Determination Limitation. *Id.* at ¶ 46 (“the dynamic proxy component 308 can establish a communication path based on capability negotiation. The dynamic proxy component 308 can behave as a fully-compliant endpoint and relay relevant information and/or features to the endpoint for which it serves as a proxy through custom messaging. Additionally, the dynamic proxy component 308 can provide talk group features. Such as, but not limited to, floor control, talker-id,

priority and/or preemption on behalf of the endpoint.”).

79. It should also be noted that Shaffer’s endpoints 104 include a transmitter/receiver 608. *Id.* at ¶ 54, Fig. 6. This “transmitter/receiver 608 can be employed to transmit and receive data from/to the endpoint 104.” *Id.* at ¶ 54. In my opinion, a POSITA would have understood this transmitter/receiver 608 to have been used to receive information from Shaffer’s IS 102. *Id.* (“The transmitter/receiver 608 can employ wireless and/or wired communication to transmit/receive information.”).



Ex. 1016 at Fig. 6.

80. I understand Dr. Kiaei has already entered some testimony that confirms he also understands Shaffer’s system would have included control signaling between the endpoints and IS. For example, when Dr. Kiaei was asked in

his deposition “[h]ow does the endpoint know where to send its media,” he responded “[i]n general, a person of skill in the art would know that when a [sic] endpoint is talking to another endpoint or communicating to other endpoint or is communicating via the radio network and so on, we do have a control signaling as well going on in the background, which is one of the obvious methods that the person of skill in the art would know that. So the same way that a radio would know which base station to talk to, a cell phone would know which base station to talk to and so on. So all of these are done through control signalings which is going on in the background, not apparent to the user, it’s not within the talking, so --.” Ex. 2004, 34:19-35:9. Thus, Dr. Kiaei has opined that a POSITA would have known that endpoints talking to one another, or communicating via a radio network, would have had “control signaling” to direct the media. *Id.* In general, I agree with his testimony, and confirm that it would have been a necessary aspect of endpoints communicating over VoIP channels to send and receive control signals from the server hosting the communication.

81. Expanding on Dr. Kiaei’s testimony, it is my opinion that control signals were a necessary component of communications between endpoints and servers at the time Shaffer was filed, and would have been necessarily used in Shaffer’s system. For example, Shaffer expressly states, “the IS 102 can facilitate the creation and maintenance of the VTG ***as it is responsible for the control signals***

and the dynamic proxy component 308 can deal with a media component (not shown).” Ex. 1016 at ¶ 41. Without control signaling, an endpoint would have no idea whether a server received its request or processed the request, and would be unable to establish any communication session, which is what Shaffer and the ’852 Patent are ultimately teaching. In my opinion, control signaling between endpoints and servers, including interoperability servers, would have been known and understood by a POSITA as Shaffer expressly confirms. *See id.*

82. When asked, “So is it your opinion that the POSITA would modify the system of Shaffer to include that specific determination from Keller?,” referring to disclosing to the endpoint that it is not in adherence with the floor control mechanism, Dr. Kiaei responded “I will not use the word ‘modify’ here. I would say that the POSITA would use the IP-based -- Internet protocol based technology such as SIP to be able to have a -- non-compatible endpoints to talk to each other.” Ex. 2004, 37:8-21. I also agree with Dr. Kiaei’s sentiment that Shaffer would not need to be modified to include the First Determination Limitation because it is my opinion Shaffer already discloses the First Determination Limitation.

83. Dr. Kiaei’s testimony further suggests that he agrees with my opinion that sending a control signal or other signal to an endpoint from an IS detailing the endpoint’s lack of adherence to the IS’s floor control mechanism and decision to dynamically insert a proxy would have been understood as a necessary aspect of

Shaffer's communication structure. While it is my opinion that Shaffer already discloses this signaling the fact that Shaffer does not need to be modified, as Dr. Kiaei rightly opines, confirms that a POSITA would not have found this particular signaling complicated.

84. Finally, both Shaffer and Keller each describe sending signals to endpoints, but do not provide detail regarding how that signaling is generated or received. For example, Shaffer states its IS "is responsible for the control signals." Ex. 1016 at ¶ 41. There is no additional details in all of Shaffer regarding the control signals that the IS is responsible for. Similarly, Keller says its "group entity would preferably generate signaling to the non-dispatch endpoint to cause the endpoint to direct its media to the media manager." Ex. 1024 at ¶ 122. "This signaling may carry session parameters that are different than those distributed to the dispatch enabled endpoints." *Id.* at ¶ 121. This is the extent of detail regarding the signaling that Keller provides.

85. In my opinion, these references reference this signaling with such little detail because a POSITA would have been well familiar with this concept, and readily understood the operation of these signals. Dr. Kiaei himself admitted Shaffer "is saying that IS 102 is employing a system approach to offer a framework for IP base -- IP -- sorry, to offer a framework based on IP services" and "[is] describing primarily the capabilities of these -- these blocks, not the details of their

communication or what signaling is being sent and so forth, or received, so --.” Ex. 2004 at 47:9-48:13. A POSITA reading Shaffer would have understood the framework for this concept because a POSITA would have already been familiar with this concept. See Ex. 1016 at ¶ 41; see also Ex. 2005 at 235 (“A SIP proxy server relays **session signaling** and acts as both client and server.”), 251 (“The MS typically listens to a beacon or a **control signal** from all surrounding base stations within range and measures the signal quality.”).

86. In conclusion, it is my opinion that Shaffer’s specification describes endpoints and interoperability servers in detailed communication concerning the endpoint capabilities that would have been received by the endpoint, including whether the endpoint is capable of adhering to a floor control mechanism of the IS, and whether a proxy will be dynamically inserted to connect the endpoint to a VTG.

2. There Is No Motivation To Combine Shaffer and Keller

87. I have also been asked to opine whether a POSITA would have been motivated to combine Shaffer and Keller. In my opinion, a POSITA would not have been motivated to combine these references. The Petitioner and Dr. Kiaei have not provided much, if any, evidence that a POSITA would have been motivated to combine Shaffer and Keller. Pet. at 33-34; Ex. 1002 at ¶ 155.

88. Petitioner’s motivation to combine analysis boils down the statement that Shaffer discusses ways to connect non-compatible endpoints with “standards-

based IP technologies” and that SIP would have been a well-known “standards-based IP technolog[y].” Pet. at 33. Because Keller describes “an example of a standards-based signaling technology, SIP, in a PTT system,” the Petitioner and Dr. Kiaei claim “a POSITA would have found it obvious to combine” these references. Pet. at 33-34; Ex. 1002 at ¶ 155.

89. First, with reference to SIP-based communication systems, Petitioner’s and Dr. Kiaei’s description of Keller as one “example of such a system” (Pet. at 24; Ex. 1002 at ¶ 155) does not describe any reason why a POSITA would have been motivated to combine these particular references. If finding an *example* of a type of *compatible system* were enough to describe the motivation to combine two or more references, a POSITA could instantly find a near infinite number of combinations for any given technology. *See, e.g.*, 2005 at 13 (“In addition to higher-speed Internet access, mobile WiMAX can be used to provide voiceover-IP services in the future. The low-latency design of mobile WiMAX makes it possible to deliver VoIP services effectively. VoIP technologies may also be leveraged to provide innovative new services, such as voice chatting, **push-to-talk**, and multimedia chatting.”).

90. Second, the general description of Keller as “disclos[ing] an example of a standards-based signaling technology” does not provide any indication as to whether Keller’s specific teachings are appropriately combined with Shaffer’s specific teachings. Pet. at 34; Ex. 1002 at ¶ 155. At best, Petitioner’s description of

Keller as “an example” of a SIP-based PTT system shows that Keller *could be* compatible with Shaffer. It does not explain why a POSITA would have looked at two systems, Shaffer and Keller, and been motivated to combine them.

91. Petitioner and Dr. Kiaei claim this would have been “a combination of known elements according to their established functions to achieve an expected result, and would been [sic] considered to constitute nothing more than a routine engineering task that was well within the skill level of a POSITA.” Pet. at 34; Ex. 1002 at ¶ 155. Neither Petitioner nor Dr. Kiaei provide any detail as to why this would have been an expected result or the result of a routine engineering task. Neither Petitioner nor Dr. Kiaei even explain what “known elements” would be combined to create the resulting combination.

92. Finally, even if Shaffer and Keller were a collection of “known elements” as the Petitioner claims, this does not mean a POSITA would have been motivated to combine these elements to arrive at the ’852 Patent. Assuming the ’852 Patent would have been obvious because the component parts were individually known shows Petitioner and Dr. Kiaei relied on hindsight when creating this combination.

93. Looking to Shaffer’s disclosure in particular, it describes an example of UHF and VHF push-to-talk radios. Ex. 1016 at ¶ [0028]. Shaffer states, “In another example embodiment, IS 102 can facilitate communication between users

of UHF radios and VHF radios or amongst users who use different channels on the same frequency band (e.g., VHF).” *Id.* A POSITA would not have thought to utilize SIP between ultra-high frequency radios and very-high frequency radios at least because a POSITA would have been primarily concerned with much higher frequency (above 2.3GHz) for this type of system. *See, e.g.,* Ex. 2005 at 21 (noting that “the 2.3GHz, 2.5GHz, 3.5GHz, and 5.7GHz bands are the most attractive for WiMAX in the near term”). While Dr. Kiaei did not explicitly state SIP would be used with these much lower frequency-band systems, I disagree that a POSITA would have thought to target these relatively low frequency bands for SIP-based or even VoIP-based communication channels in 2008. *Id.*

94. Dr. Kiaei seems to agree, or at least does not disagree, that SIP would not be used for these technologies, stating in his deposition that he “wouldn’t say that SIP may or may not be able to be needed – that the SIP may or may not be needed to be employed especially for these technologies.” Ex. 2004 at 38:23-40:12. Dr. Kiaei’s description of the motivation to combine Shaffer and Keller is based entirely on the use of SIP. Ex. 1002 at ¶ 155. But because SIP is not necessary, in my opinion, his analysis falls apart.

95. Thus, in my opinion, the Petition and Dr. Kiaei have not described any motivation to combine Shaffer and Keller.

B. Dependent Claims

96. Because, in my opinion, the Petition and Dr. Kiaei have not established that any of Claims 1, 8, or 12 are obvious, I understand that no claim depending from either of these claims can be obvious. Thus, it is thus my opinion that Shaffer in view of Keller does not render obvious any of claims 2-5, 7, 9-11, or 13-16.

X. GROUND 3: CLAIMS 1–5 AND 7-16 ARE NOT OBVIOUS OVER CHOWDHURY IN VIEW OF POC INTERWORKING SERVICE, POC SYSTEM DESCRIPTION, TR23.979, AND JIN

97. I have been asked to opine whether Chowdhury in view of PoC Interworking Service, PoC System Description, TR23.979, and Jin teaches the claims of the '852 Patent. In my opinion, these references would not render any claim in the '852 Patent obvious in the eyes of a POSITA.

A. Independent Claims 1, 8, and 12

98. In my opinion, the Petition fails to show that the combination of Chowdhury, OMA-PoC Documents, TR23.979, and Jin discloses all the elements of independent claims 1, 8, or 12.

- 1. *Chowdhury fails to disclose a processor configured to “receive a first determination from the IS that the endpoint is not in adherence with capabilities of the predefined floor control mechanism...wherein the capabilities comprise quality of service, rules of transmission and trusted endpoint identity”***

99. Claims 1, 8, and 12 recite receiving a first determination that an endpoint is not in adherence with capabilities of a predefined floor control

mechanism. These claims further recite what is meant by the “capabilities of the predefined floor control mechanism,” namely “quality of service, rules of transmission, and trusted endpoint identity.” Ex. 1001 at 16:65-60, 17:36-42, 12:4-9.

100. In my opinion, Chowdhury does not describe anything that a POSITA would understand as making a determination about these three claimed capabilities of a predefined floor control mechanism. In my opinion, Chowdhury also lacks any description that a POSITA would understand as teaching receiving a determination in the user equipment regarding adherence with these claimed capabilities.

101. The Petition and Dr. Kiaei’s declaration are further evidence that Chowdhury fails to teach this limitation. In both the Petition and Dr. Kiaei’s analysis, each includes a single sentence that reads: “In order to perform these functions, the Call Control Interop Module 242 determines that PoC Client A is not in adherence with the rules of transmission of the P2T network (e.g., if a codec translation is performed by the Call Control Interop Module 242, it must determine that the translation is necessary because the codecs are incompatible).” Petition at 73; Ex. 1002 at ¶ 231.

102. Even if Chowdhury were to teach determining PoC Client A was not in adherence with the rule of transmission capability of the predefined floor control mechanism (which I do not believe Petitioner has shown), this statement says

nothing about making a determination regarding the other two claimed capabilities, “quality of service” and “trusted endpoint identity.” Ex. 1001 at 16:65-60, 17:36-42, 12:4-9. Notably, in each of the other Grounds directed to the independent claims, the Petition and Dr. Kiaei address each capability individually. See *Motorola*, IPR2024-00479, Paper 2 at 26-31 (Ground 1); see also Petition at 42-43 (Ground 2); see also Ex. 1002 at ¶¶ 118-124 (Ground 1), 166-169 (Ground 2). The analysis for Ground 3 does not include anything addressing quality of service or trusted endpoint identity.

2. *Chowdhury fails to disclose a processor configured to “receive a first determination from the IS that the endpoint is not in adherence with capabilities of the predefined floor control mechanism and that a proxy is to be dynamically inserted to connect the endpoint to a virtual talk group”*

103. The specification of the ’852 Patent discloses the relationship between the capabilities of the floor control mechanism and the dynamically inserted proxy, stating when “an active VTG [] already has multiple talkers streaming media into it,” the endpoint “can be dynamically connected to the VTG via a proxy to prevent transmitting media into [the] active VTG.” Ex. 1001 at 6:34-45. Put differently, when an endpoint is “non-conforming with the floor control policy of the system, the IS 102 (FIG. 1) can dynamically insert a proxy between the endpoint 104 and the VTG” to prevent “rendering the VTG useless.” *Id.*

104. Chowdhury’s ISSI protocol module (which Petitioner and Dr. Kiaei

point to as the claimed proxy) is not “dynamically inserted to connect the endpoint to a virtual talk group.” Petition at 74; Ex. 1002 at ¶ 119. The ISSI protocol module “manages communications received from the P25 network.” Ex. 1035 at 6:40-42. Chowdhury discloses that upon receipt of a PoC-group-register message, the Call Control Interop Module 242 sends an ISSI-setup-request to ISSI Protocol Module 260 to set up an RTP connection with a home radio frequency subsystem (RFSS). *Id.* at 11:4-7. In my opinion, this describes how Chowdhury’s ISSI protocol module 260 is ***always*** used to connect a gateway to an RFSS server.

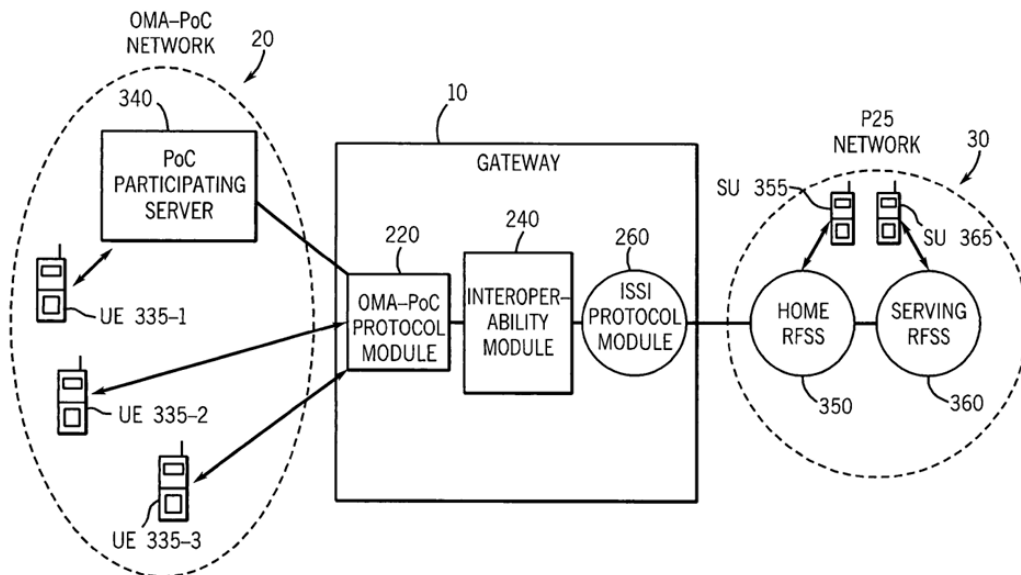


FIG. 3

Id. at Fig. 3, 6:40-48, 7:11-16, 9:26-34, 9:52-55 (use of ISSI Protocol Module 260 to control RTP connection in Fig. 4), 10:15-18, 10:28-31 (same in Fig. 5), 11:4-7 (same in Fig. 6), 11:59-61, 12:1-3, 12:29-32, 12:50-55 (same in Fig. 7), 12:65-67 (same in Fig. 8).

105. Therefore, in my opinion, Chowdhury fails to disclose a processor configured to receive a first determination from the IS that the endpoint is not in adherence with capabilities of the predefined floor control mechanism and that a proxy is to be dynamically inserted to connect the endpoint to a virtual talk group, as recited in claims 1, 8, and 12.

3. *Chowdhury fails to disclose a processor configured to “receive a first determination from the IS that the endpoint is not in adherence with capabilities of the predefined floor control mechanism”*

106. Chowdhury discloses a gateway device for interconnecting commercial wireless networks and public safety wireless networks that support push-to-talk (PTT) talk group calls. Ex. 1035 at 3:11-13. Chowdhury’s gateway device includes a PTT Interop Module 244 to manage communication operations, such as floor control arbitration. *Id.* at 6:17-20. In addition, Chowdhury’s gateway device includes a Call Control Interop Module 242 that manages connectivity, “i.e., set up and tear down of connections, between talk group components, e.g., handsets, push-to-talk servers, and provides interworking for SIP messages.” *Id.* at 6:14-17. Chowdhury indicates that a Transmission InterOp Module 246 of the gateway device manages the transfer of media packets between networks and provides interworking for Real Time Protocol (RTP) messages. *Id.* at 6:32-36. This includes performing audio codec translation if different codecs are used in different networks. *Id.* at 6:36-37.

107. Chowdhury fails to disclose receiving a determination that an endpoint is not in adherence with capabilities of a predefined floor control mechanism. Chowdhury instead discloses the PTT Interop Module 244 for providing or arbitrating floor control. *Id.* at 6:18-20. Arbitrating floor control among user equipment using Talk Burst Control Protocol, as disclosed by Chowdhury, is not the same as determining adherence with floor control capabilities of the floor control mechanism. *Id.* at 3:50-54. According to Chowdhury, arbitrating floor control relates to determining who can speak in a virtual talk group. *Id.* at 1:35-40. In contrast, determining adherence with floor control capabilities, as recited in each independent claim of the '852 Patent, relates to determining whether user equipment or an endpoint is even capable of complying with quality of service, rules of transmission, and trusted endpoint identity capabilities. Ex. 1001 at 7:35-51, 2:59-67, 6:27-34.

108. Further, Chowdhury contemplates the user equipment as having floor control capabilities such that a determination of the adherence of their capabilities is not needed or need to be received by the user equipment. Ex. 1035 at 8:24-40. At most, Chowdhury discloses adding a non-persistent tributary RTP segment between a gateway and the requesting user equipment when a request to access a floor is received. *Id.* Because the user equipment has floor control capabilities and the RTP segment does not make a determination regarding the capabilities of the floor control

mechanism, there would be no need to ever “receive a first determination from the IS that the endpoint is not in adherence with capabilities of the predefined floor control mechanism,” as recited in each independent claim.

B. Dependent Claims

109. Because, in my opinion, the Petition and Dr. Kiaei have not established that any of Claims 1, 8, or 12 are obvious, I understand that no claim depending from either of these claims can be obvious. Thus, it is thus my opinion that Chowdhury in view of PoC Interworking Service, PoC System Description, TR23.979, and Jin does not render obvious any of claims 2-5, 7, 9-11, or 13-16.

XI. GROUND 4: CLAIMS 4, 5, 14, AND 16 ARE NOT OBVIOUS OVER CHOWDHURY, POC INTERWORKING SERVICE, POC SYSTEM DESCRIPTION, POC ARCHITECTURE, TR23.979, JIN AND TS23.060

110. Because, in my opinion, the Petition and Dr. Kiaei have not established that any of Claims 1, 8, or 12 are obvious, I understand that no claim depending from either of these claims can be obvious. Thus, it is thus my opinion that Chowdhury in view of PoC Interworking Service, PoC System Description, PoC Architecture, TR23.979, TS.23.060, and Jin does not render obvious any of claims 4, 5, 14, and 16.

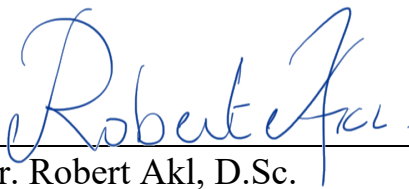
XII. ADDITIONAL REMARKS

111. I currently hold the opinions expressed in this Declaration. But my

analysis may continue, and I may acquire additional information and/or attain supplemental insights that may result in added observations.

I hereby declare that all statements made are of my own knowledge are true and that all statements made on information and belief are believed to be true. I further declare that these statements were 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 the Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this proceeding.

Dated: November 20, 2024

By: 
Dr. Robert Akl, D.Sc.
Dallas, Texas