

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMCAST CABLE COMMUNICATIONS, LLC,
Petitioner,

v.

ENTROPIC COMMUNICATIONS, LLC,
Patent Owner.

CASE: IPR2024-00430

U.S. PATENT NO. 8,284,690

**Declaration of John Holobinko in Support of Patent Owner's Response to
Petition for *Inter Partes* Review of U.S. Patent No. 8,284,690**

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I, John Holobinko, declare as follows:

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 relevant technologies and the matters set forth herein based upon my education, training, or experience. If called upon to do so, I would testify competently thereto.

2. I have been retained by counsel for Entropic Communications, LLC (“Entropic” or “Patent Owner”) as an independent consultant to offer opinions regarding U.S. Patent No. 8,284,690 and the petition for *inter partes* review filed by Comcast Cable Communications, LLC (“Comcast” or “Petitioner”).

3. I have reviewed the Declaration of James Bertonis (“Bertonis Decl.”) in support of Comcast’s Petition, and I disagree with his opinions and conclusions regarding the ’690 Patent. In my opinion, the claims of the ’690 Patent are neither anticipated nor obvious in view of the prior art.

4. My opinions are based on my years of education, research, and experience, as well as my investigation and study of relevant materials, including those identified in this Declaration.

5. I am being compensated for my services in this matter at my standard consulting rate of \$350 per hour. I am also being reimbursed for expenses that I may incur during this work. My compensation is not contingent upon the results of my

analysis, the substance of my opinions, or the outcome of any proceeding involving the '690 Patent. I have no financial interest in the outcome of this matter.

II. QUALIFICATIONS

6. A copy of my curriculum vitae (CV) is submitted with this Declaration as **Appendix A**.

7. As set forth in my CV, I have over 30 years' experience in the cable television (CATV) industry. During that time, I have held senior roles at some of the largest vendors of DOCSIS equipment and software within the CATV industry, and I have authored multiple patents and academic papers relating to cable TV networks and optical networks. More specifically, I have extensive experience with cable modem termination systems (CMTS) because I oversaw product engineering and development of such systems.

8. I received a Bachelor of Science in Electrical Engineering from Carnegie Mellon University in 1973.

9. In 1986, I cofounded American Lightwave Systems, which became a leading provider of optical network and fiber-to-the-home systems for cable television providers. In 1991, the company was acquired by ADC Telecommunications, Inc. I continued as an employee of ADC through 1998 and served as director of mergers and acquisitions and as VP of product management and marketing. I also helped conceive the company's flagship digital optics solution,

which enabled cable headend network interconnect rings, and some of the cable industry's first HFC optical equipment.

10. From 1998 through 2003, I was president and chief executive of Aplion Networks, Inc., a venture capital backed start up that developed the first patented solution for reliable cloud-based enterprise software as a service with prioritized delivery over service provider and enterprise networks. While there, I helped create the industry's first layer 4-7 programmable router/switch "Network Virtuoso" and dynamic provisioning software.

11. From 2003 through 2005, I was president and chief executive of VPI Systems, Inc., a data analytics software company for optimizing network capacity, whose customers were large telecoms and major communications network equipment providers. During my tenure at the company, I increased revenues 80%, won major new customer contracts, and delivered a new analytics software product.

12. From 2006 through 2010, I was employed by BigBand Networks (now Commscope), the only CMTS vendor to support DOCSIS 2.0 TDMA and SCDMA. I worked as VP and general manager of the cable edge business, VP of product management, and VP of marketing and member of the executive staff. During my tenure at the company, I led the "edgeQAM" product portfolio within the company's Cable Edge Business. I also led the company's DOCSIS CMTS product portfolio.

As part of my work, I oversaw product engineering and development of CMTS hardware and software.

13. From 2010 through 2013, I was employed by Motorola Mobility Home (now Commscope). I served as VP of strategy and business development for the company's Network Infrastructure Solutions group. As part of my work with the company, I oversaw business strategy and product roadmaps for CMTS hardware and software, HFC (hybrid fiber coaxial) equipment, QAM modulation equipment, video processing equipment, and "Fiber to the Home" equipment. I led the development of one of the cable industry's first PNM systems and wrote at least one technical paper that was in the 2013 SCTE Expo Conference Proceedings, Title: "New Analytic Methods For Determining Network Performance Issues And Predicting Service Disruptions in Cable Networks."

14. From 2014 through 2019, I was director of business strategy for Cisco Systems, Inc. There, I headed network business strategy for the company's access networks business. As part of my work, I was involved in product design and specifications for CMTS hardware and software, HFC equipment and passives, RF (radiofrequency) equipment, OSS systems, and optical networking equipment. I also coauthored multiple patents related to this work.

15. I am currently managing director and owner of Business Reimagined, LLC, an independent consulting firm that provides market, technology, competitive

analysis, and business strategy assessments across hybrid cloud, routing/switching, micro-services software, optical networks, wireless and wired networks, and other related markets.

III. MATERIALS CONSIDERED

16. In preparing this Declaration, I reviewed and considered the following materials, as well as any others referenced in the body of this Declaration:

- a. The '690 Patent and its file history;
- b. Comcast's Petition for *inter partes* review, the Bertonis Declaration, and the Exhibits cited therein; and
- c. The materials listed in **Appendix B**.

17. My opinions are based in part on a review and analysis of the above-mentioned documents and materials. The materials relied upon within this Declaration are of the type that an expert in my field would have reasonably relied upon in forming opinions related to the subject matter herein during the relevant period. I have also drawn on my education, experience, and knowledge of basic engineering principles for broadband communication systems, Hybrid Fiber Coax (HFC) cable systems, and the systems and equipment used to deliver cable TV/internet to the home, that were already in use prior to the earliest priority date for the claimed subject matter of the '690 Patent.

IV. LEGAL STANDARDS

18. Although I am not a lawyer, I have been advised on the relevant legal principles by Entropic's counsel, and I have used them as a basis for my opinions.

A. Claims

19. I have also been informed and understand that terms in the patent claims must be read as they would have been understood by a "person of ordinary skill in the art" ("POSITA") at the time of the claimed invention.

20. I understand that a POSITA is a person to which the claimed subject matter pertains with the capability of understanding the scientific and engineering principles applicable to the pertinent art. I understand that the following factors may be considered in determining the level of ordinary skill: the type of problems encountered in the art; prior art solutions to those problems; the speed with which innovations are made; the sophistication of the technology; and the educational level of active workers in the field. I also understand that not every factor may be present and that one or more factors may predominate.

21. I understand that the claims within a patent set forth what the inventors have presented as their inventions. I understand that claims can be independent or in dependent form, meaning that they depend from the identified independent claims and add requirements to those claims.

B. Specification

22. I understand that there are other parts of a patent, including the abstract, the figures of a patent, the background of the invention, the summary of the invention, and the detailed description of the invention. I understand that these portions often are collectively referred to as the “specification” of a patent. I understand that technically, the claims are part of the specification, but that referring to the “specification” typically means referring to the written description of the inventions rather than the claims. I understand that the specification informs the understanding of the claims by, for example, describing the claimed invention and providing preferred examples of the claimed invention.

23. I have also been informed and understand that terms of a claim should be understood in the context of the claim as a whole. I also understand that the specification of the patent is relevant to the meaning of a claim term. I further understand that the claims must be read in light of the specification.

C. Prosecution History

24. I understand that the correspondence back and forth between the representative of the applicant, and the U.S. Patent and Trademark Office, leading up to the issuance of a patent is called the “file history” or “prosecution history.” It has been explained to me that, in the process of obtaining a claim of a patent, the inventors and the examiner may make statements explaining their understanding of

the scope of their claimed invention. It has also been explained to me that for a statement by the inventors to narrow the scope of a claimed invention, the statement must clearly and unambiguously limit the scope of an invention. I understand this is called “prosecution disclaimer” or “prosecution disavowal.” I understand that the claim language, specification, and file history are referred to as “intrinsic evidence” or “the intrinsic record.”

D. Preponderance of the Evidence

25. I understand that, unlike at the district court, patents subject to inter partes review, such as this proceeding, are not presumed to be valid, such that a lower burden of proof is used to judge the patentability of challenged claims. Unlike the district court’s “clear and convincing” burden, here a “preponderance of the evidence” burden exists. I further understand that the “preponderance of the evidence” standard is met when the evidence shows that something is more likely true than it is not.

E. Obviousness

26. I understand that a patent claim may describe an invention that was new (i.e., not anticipated by any prior art reference), but nevertheless be invalid for “obviousness” if the differences between the patented subject matter and the prior art are such that the subject matter as a whole would have been obvious to a person of ordinary skill in the art at the time of the invention was made.

1. Reasonable Expectation of Success

27. I understand that an invention is not rendered obvious simply on the basis of two or more different disclosures that collectively disclose all of the claimed elements. In other words, an invention is not obvious just because all of the elements that comprise the invention may have been known in the prior art. Instead, a person of ordinary skill in the art must have had a reasonable expectation of success in pursuing the possibility that turns out to succeed and is claimed. In particular, I understand that knowledge of a goal does not itself render achievement of that goal obvious.

28. I also understand that determining whether or not a claimed invention would have been obvious requires assessing facts related to (1) the scope and content of the prior art, (2) the differences between the prior art and the claimed invention, (3) the level of ordinary skill in the art, and (4) any objective evidence (“secondary considerations”) of non-obviousness. I understand that this is known as consideration of the “Graham Factors.”

2. Motivation to Combine

29. I further understand that an invention is not obvious just by demonstrating that each of its elements was, independently, known in the prior art. To prove that an invention is obvious, I understand that it can be important to point to a reason or reasons, such as a teaching, suggestion, or motivation, that would have

prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed invention does. I understand that this is because inventions in most (if not all) instances rely upon building blocks already known, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known, therefore it can be important to point to such a reason or reasons. I understand that in identifying such a reason, the analysis need not require precise teachings in the prior art directed to the specific subject matter of the challenged claim.

30. I understand that it will often be necessary for a court to look to interrelated teachings of multiple patents and the background knowledge possessed by a person having ordinary skill in the art in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. I understand that any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed. I understand that when a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. I understand that the combination of familiar elements according to known methods may be obvious when it does no more than yield predictable results.

31. I also understand that a claim is not invalid as obvious if it is more than the predictable use of prior art elements according to their established functions.

32. Further, I understand that while predictability is a touchstone of obviousness, the concept of a “predictable result” under the law refers not only to the expectation that prior art elements are capable of being physically combined, but also that the combination would have worked for its intended purpose.

33. I also understand that if the prior art “teaches away” from combining known elements in the manner claimed by the invention at issue, discovering a successful way to combine them is less likely to be obvious. In particular, 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, or would be led in a direction divergent from the path that was taken by the applicant, or would understand based on the reference that the line of development flowing from the reference’s disclosure is unlikely to be productive of the result sought by the applicant. Likewise, I understand that similar subject matter may not be sufficient motivation for a person of skill in the art to combine references if the references have conflicting elements.

34. Further, I understand that even if a reference does not necessarily “teach away,” the reference’s statements regarding preferences are relevant to a finding

regarding whether a person of ordinary skill would have had reason to combine that reference with another reference.

3. Hindsight

35. I also understand that one must be cautious and resist the temptation to rely on hindsight reasoning when attempting to combine references to suggest that a claim may be obvious. It is important to analyze validity based on the perspective of one of skilled in the art at the time of the invention, which for this case I have been asked to assume is September 8, 2011, and which I understand is the date Mr. Lett and the Petition use as the priority date of the '008 Patent.

4. Objective Indicia of Non-Obviousness

36. I understand that objective indicia (or “secondary considerations”) of non-obviousness or obviousness may be particularly probative and helpful in avoiding hindsight.

37. I understand that industry praise is considered an objective indicia of non-obviousness. This is because industry participants, especially competitors, are not likely to praise an obvious advance over the known art. I also understand that, for the industry praise to be relevant, it must be tied to the claimed invention. This means that there must be a nexus between the industry praise and the patented technology.

V. OVERVIEW OF THE '690 PATENT

38. The '690 Patent was filed December 10, 2009 and is titled "Receiver Determined Probe." The patent claims priority to provisional application No. 61/122,687 (filed December 15, 2008) and provisional application No. 61/179,454 (filed May 19, 2009). I treat December 15, 2008 as the priority date for the '690 Patent.

39. The '690 Patent describes how "nodes on a network are programmed to generate a probe transmission in response to a request from the node that will be receiving the probe." Ex. 1001, Abstract. These nodes, also referred to as network devices (*id.* at 1:67–2:1), can be associated with a variety of devices.

Nodes described herein can be associated with a variety of devices. For example, in a system deployed in a residence 101, a node may be a network communications module associated with one of the computers 109 or 110. Such nodes allow the computers 109, 110 to communicate on the communications medium 100. Alternatively, a node may be a module associated with a television 111 to allow the television to receive and display media streamed from the internet, or from one or more other network nodes. A node might also be associated with a speaker or other media playing devices 103 that plays music. A node might also be associated with a module configured to interface with an internet or cable service provider 112, for example to provide Internet access, digital video recording capabilities, media streaming functions, or network management services to the residence 101.

Ex. 1001, 4:10–24.

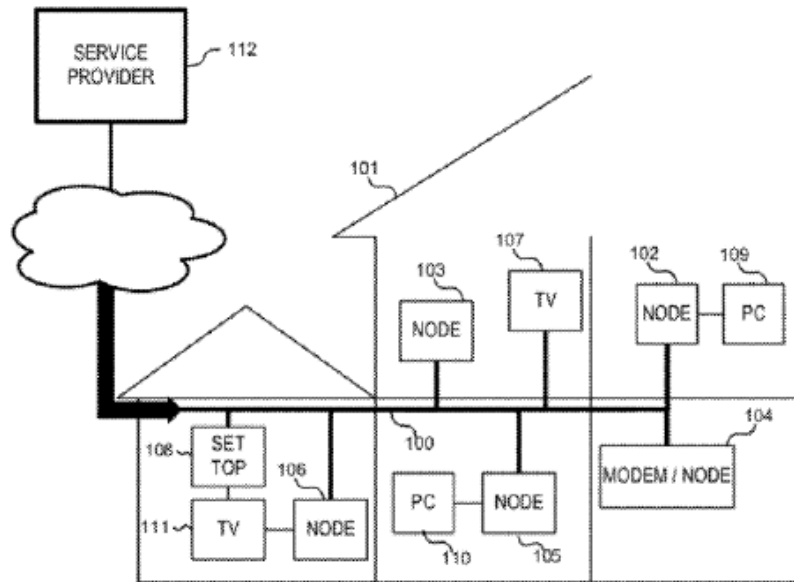


Fig. 1

Ex. 1001, Fig. 1.

40. The '690 Patent explains that prior art probes were “typically well defined.” *See id.* at 1:52–53. That is, the transmitting node would send a “predetermined probe” to the receiving node. *See id.* at 1:57–59. However, this process suffered from a lack of flexibility in the characterization process. *See id.*

41. To address this problem, the '690 Patent describes how “[t]he receiving node may generate a probe request that specifies a plurality of parameters to be used in such a ‘receiver determined’ probe to generate a probe having the ‘form’ specified by these parameters.” *Id.* at 2:3–6. After receiving the request, the transmitting node can generate a responsive probe “base[d] upon one of the parameters of the probe request or based upon information that previously existed within the transmitting node.” *Id.* at 6:42–45. The probe is transmitted, for example to the node that initiated

the probe request, where it “may be used for OFDMA sub-channel assessment” or “for off-site network diagnosis.” *See id.* at 2:22–27; *see also id.* at 4:25–27. An example process is depicted in Figure 4 of the patent.

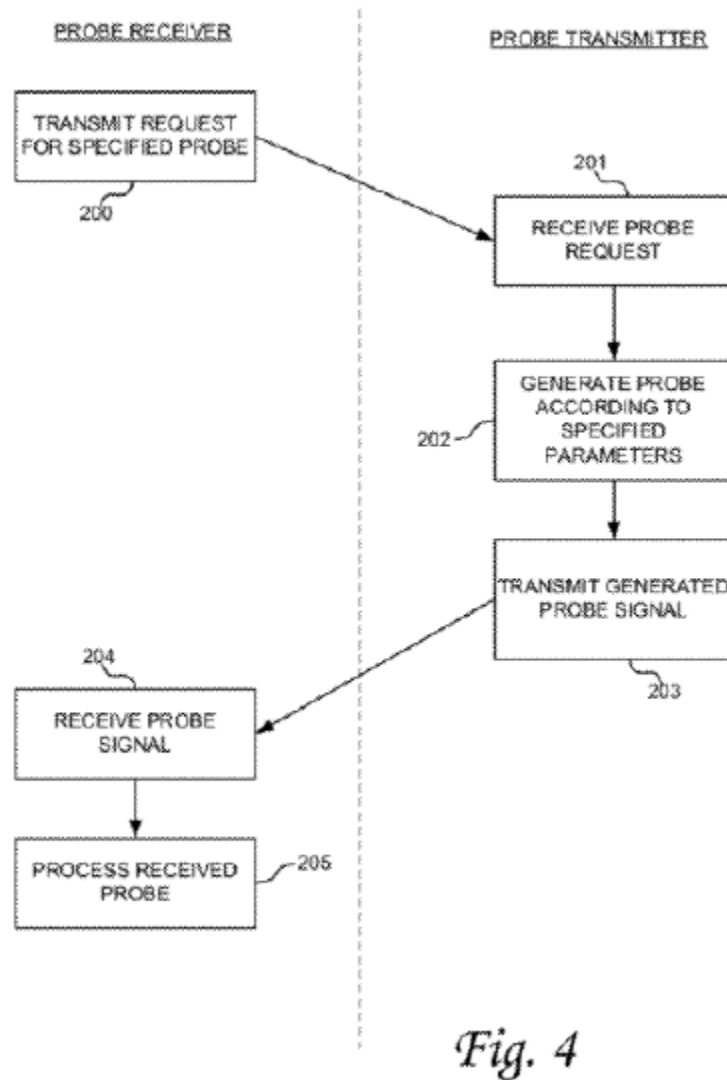


Fig. 4

Ex. 1001, Fig. 4.

VI. LEVEL OF ORDINARY SKILL IN THE ART

42. I understand that claims are viewed from the perspective of a person of ordinary skill in the art (“POSITA”). I understand that a POSITA is a hypothetical

person who is presumed to have known the relevant art at the time of the invention. Factors that may be considered in determining the level of ordinary skill in the art may include: (1) type of problems encountered in the art; (2) prior art solutions to those problems; (3) rapidity with which innovations are made; (4) sophistication of the technology; and (5) educational level of active workers in the field, including the inventors. I have also been informed that in some cases, every factor may not be accounted for, and the factors may have various weights applied to them.

43. Taking these factors into consideration, it is my opinion that a POSITA at the time of the earliest priority date of the '690 Patent would have been an engineer with at least a bachelor's degree in electrical engineering (or equivalent), with at least two years of experience developing broadband/cable TV/satellite communication systems and solutions. I agree with Mr. Bertonis that "[a]dditional education may substitute for experience, and significant work experience may substitute for formal education." Bertonis Decl. ¶ 118.

44. I understand Mr. Bertonis has opined that a POSITA would have had a bachelor's degree in electrical engineering, computer engineering, or a similar discipline, and three to four years of experience working in signal processing and/or communication systems/networks. *Id.* He has also explained that, in his view, "a POSITA's skill set would have included client side and headend side (e.g., server side) programming skills" and "computer programming, network architecture

design, and knowledge of various communication standards including MoCA, 802.11, 802.16 (WiMAX), and DOCSIS.” *Id.* at ¶ 119.

45. I consider both definitions to be reasonable in the context of the ’690 Patent. My opinions are the same under both definitions of a POSITA.

VII. CLAIM CONSTRUCTION

46. I understand that the terms in a patent claim should be interpreted as they would be understood by a POSITA at the time of the invention. I understand that the claims are to be construed with reference to the patent’s specification, the claims, and the prosecution history, in light of the plain meaning of the terms used in the claims, and with reference to other sources of information, such as dictionaries, textbooks, and literature or other patents in the same or related fields. Below I propose specific constructions for some of the terms used in the claims of the ’690 Patent. Unless otherwise stated, I apply the plain and ordinary meaning of the terms of the ’690 Patent claims in my analysis in this Declaration.

A. Probe

47. As I described above, the ’690 Patent relates to the use of probe transmissions in a communication network. In my opinion, a POSITA would understand the plain meaning of a “probe,” in the context of the ’690 Patent, as referring to *a particular kind of signal or message having a form used to characterize the communication channel between the two nodes.*

48. Certain parts of Mr. Bertonis’ report appear to suggest that the claimed probes are simply messages. *See* Ex. 1002, ¶ 132 (stating that “the claims simply refer to two messages (a probe request and a probe)”). In his deposition, however, Mr. Bertonis agreed that probes are “used to assess the communications path.” Ex. 2002, 10:5–10. He also generally agreed that the probes in the ’690 Patent are used to determine characteristics of the channel on which the signal was transmitted. *Id.* at 25:18–26:10. Thus, although Mr. Bertonis uses the slightly different wording of “assess[ing] the communications path,” I understand him to be in agreement that probes have a form used to characterize the channel. He and I also agree a POSITA would recognize that, while a probe can take the form of a message, not all messages are probes. *See also* Ex. 2002, 17:24–25 (Mr. Bertonis agreeing that not all messages are probes). Likewise, while a probe can take the form of a signal, not all signals are probes.

49. The ’690 Patent explains that “probes are sent between nodes of the network in order to allow a receiving node on the network to determine some of the characteristics of the channel between the receiving node and the transmitting node.” Ex. 1001, 1:48–52; *see also* 1:57–59 (referring to probing as a “characterization process”). The patent expressly refers to these probes as “channel assessment probes” (*Id.* at 1:12–14), and it describes how they can be “used to diagnose problems” within the network, replicate a potential problem, reach or discover a

distant or previously undetected node on the network, or assist with network admissions procedures.” *Id.* at 4:34–38. This is consistent with the patent’s stated goal of “characteriz[ing] the communication channel over which data is to be sent between nodes of the network.” *Id.* at 1:41–43. Thus, a POSITA reviewing the ’690 Patent would understand that the claimed “probes” have a form used to characterize the communication channel.

50. The plain meaning of “probe” is also supported by extrinsic evidence from around the time of the priority date. For example, U.S. Patent No. 8,146,125 by Grinkemeyer was filed on July 1, 2009 and relates to analyzing signals in a Multimedia Over Coax Alliance (MoCA) network. Ex. 2003. Grinkemeyer explains that “devices on a network regularly send physical-layer ‘probe’ messages to each other to evaluate the physical network between them.” Ex. 2003, 6:19–21. Grinkemeyer also expressly defines “probe messages” as “physical layer messages that are used to evaluate the physical network among nodes.” Ex. 2003, 15:49–51.

51. As another example, U.S. Patent No. 8,228,910 by Wu was filed on May 9, 2008 and relates to “Aggregating Network Packets for Transmission to a Destination Node.” Ex. 2004. Wu describes “transmitting probe messages formed using a predetermined bit sequence and length from one node to another node to estimate the channel characteristics between the nodes.” Ex. 2004, 2:46–50.

52. As another example, U.S. Patent No. 8,634,498 by Mueller was filed on December 17, 2008 and relates to “Systems and Methods for Probing Wired Communication Channels.” Ex. 2005. The abstract describes how “[a] network device may receive the error vector probe packet and measure an error vector magnitude based on the received error vector probe packet. Using the error vector magnitude, the network device estimates channel characteristics such as signal-to-noise ratio, data capacity, etc.” Ex. 2005, Abstract; *see also* 1:67–2:4 (“The characteristics of each channel are determined by transmitting an error vector magnitude (EVM) probe . . .”).

53. Thus, extrinsic evidence from around the time of the priority date confirms that the plain meaning of a “probe” is *a signal or message having a form used to characterize the communication channel*.

54. I understand that the term “probe” was construed by the District Court in *Entropic Communications, LLC v. Charter Communications, Inc.* Ex. 1005, 84. Specifically, the Court construed the term to mean “a signal transmitted to a network node that the network node can compare to a reference signal having a known form in order to determine characteristics of the channel on which the signal was transmitted.” *Id.* In my opinion, this is consistent with the plain meaning as I have described it above. The *Charter* construction confirms that a probe is not simply any

kind of message, but rather a specific kind of signal or message having a form used to characterize the channel on which the signal was transmitted.

55. I also understand that the Board considered, but did not adopt, the construction of “probe” from the *Charter* case. My opinions below are not based on the *Charter* construction of “probe” but on the plain and ordinary meaning construction that I identify above, and that Mr. Bertonis agreed with in his deposition, *a signal or message having a form used to characterize the communication channel*.

B. Physical Layer Probe

56. In my opinion, a POSITA would understand the plain meaning of this term in view of the plain meaning of “probe,” which I explain above. A POSITA would understand that a *physical layer* probe is a probe that characterizes attributes of the *physical* communication layer. This is consistent with extrinsic evidence from around the time of the priority date, such as Grinkemeyer. *See* Ex. 2003, 6:19–21 (“devices on a network regularly send physical-layer ‘probe’ messages to each other to evaluate the physical network between them”).

57. Traditionally, these attributes of the physical communication layer would be things like voltage, current, or power. But in a MoCA (or DOCSIS) environment like that of Grinkemeyer—where these cannot be directly measured—it would be other attributes such as frequency response, signal delay, attenuation, or

noise. All these things affect signal quality, as measured *e.g.* by signal-to-noise ratio (SNR) or bit error rate (BER).

58. Additionally, I understand that “physical layer probe” was previously construed by the Court in the *Charter* case. That Court construed the term according to its plain meaning. *See* Ex. 1005, 84. My construction above is consistent with that construction from the *Charter* case. Nevertheless, as discussed with “probe” above, my analysis below uses the construction of “physical layer probe” I identify above: *a signal or message having a form used to characterize the communication channel’s physical communication layer attributes.*

VIII. ANALYSIS

59. I have reviewed the declaration of James Bertonis in support of Petitioner’s petition, his deposition, and the exhibits he cites to. In my opinion, none of the claims of the ’690 Patent are anticipated or obvious in view of the prior art cited in Mr. Bertonis’ declaration.

A. IEEE Std. 802.16-2004 (“WiMAX”) Does Not Anticipate or Render Obvious the Challenged Claims

60. In my opinion, IEEE Std. 802.16-2004 (“WiMAX”) does not anticipate or render obvious any of the challenged claims.

1. Overview of WiMAX

61. WiMAX is a wireless communication standard that relates to the communication interface between a Base Station (BS) and Subscriber Stations (SS).

Ex. 1013, 1–2, 7, 11. WiMAX includes a “ranging” procedure, whereby an SS can “acquir[e] the correct timing offset and power adjustment such that the SS’s transmissions” are aligned with the time slots/frames and thresholds expected by the BS. *Id.* at 174. This is important because WiMAX involves multiple SSs in communication with a single BS, where the various SSs may be located at different distances from the BS, but their respective transmissions still need to be aligned in time.

62. The ranging process involves an SS sending a “Ranging Request” to the BS. The BS then responds with a “Ranging Response” message that controls the SS timing by “indicating the required changes” the SS should make to its “ranging parameters.” Ex. 1013, 478. I understand Mr. Bertonis has opined that the “Ranging Response” is the claimed “probe” and that the “Ranging Request” is the claimed “probe request.” Ex. 1002, ¶ 137, 155.

2. WiMAX’s Ranging Response is not a probe

63. Independent claims 1, 9, and 17 of the ’690 Patent all require a probe. In my opinion, WiMAX’s Ranging Response message is not a probe. Therefore, WiMAX fails to anticipate or render obvious any of the challenged claims.

64. WiMAX’s ranging procedure does not *characterize the channel* but rather *negotiates parameters for messages* to be communicated over the channel. Specifically, “Ranging is the process of acquiring the correct timing offset and

power adjustments such that the SS's transmissions are aligned to a symbol that marks the beginning of a minislot boundary in SC and Sca PHY, or aligned with the BS receive frame for OFDM and OFDMA PHY, and received within the appropriate reception thresholds." Ex. 1013, 174; *see also* Ex. 2002, 70:17–25 (Mr. Bertonis agreeing that ranging can be understood as a negotiation of communications parameters between two nodes). Accordingly, the Ranging Response does not have a form used to *characterize* the channel. It is a means to coordinate packet transmission that involves instructing the SS to make certain power and timing adjustments. Ex. 1013, 478; *see also* Ex. 2002, 74:8–12 (Mr. Bertonis agreeing that the ranging response message tells the SS which parameters to adjust and how to adjust them).

65. In fact, WiMAX has other means of characterizing the channel, separate from the ranging process. The BS communicates information about uplink channel characteristics through a UCD message to the SS. Ex. 1013, 174 ("an SS shall synchronize to the downlink and learn the uplink channel characteristics through the UCD MAC management message"). This happens *before* the ranging process takes place. *See id.* at 174–175 ("First, an SS shall synchronize to the downlink and learn the uplink channel characteristics through the UCD . . ." *then* "the SS shall put together a RNG-REQ message").

66. In addition, WiMAX discloses that the SS monitors the carrier to interference-plus-noise ratio (CINR) of the channel—again, a separate process that occurs *before* ranging. *Id.* at 199. The SS monitors CINR and compares the average value against the allowed range of operation, and, if the received CINR is outside the allowed operating region, then the SS requests a new burst profile by sending a Ranging Request. *Id.*; *see also id.* (“The SS applies an algorithm [before the ranging process] to determine its optimal burst profile in accordance with the threshold parameters established in the DCD message in accordance with Figure 81”).

67. For these reasons, a POSITA would not equate WiMAX’s Ranging Response with the claimed probes. *See also* Ex. 2002, 131:17–132:18 (Mr. Bertonis unable to identify anything other than his own testimony that refers to ranging as probing). Therefore, a POSITA would not find claims 1, 9, or 17 of the ’690 Patent to be anticipated or rendered obvious by WiMAX.

68. I further note that independent claim 9 recites a *physical layer* probe, which as I have explained above is a probe that characterizes attributes of the physical communication layer. Mr. Bertonis opines that the Ranging Response is a physical layer probe because it is configured to “ensure the correct timing and preferred power for transmissions over the PHY layer.” Ex. 1002, ¶ 191. But as I have explained in this section, ensuring the correct timing and preferred power for transmissions is *setting* of communication parameters for messages, not

characterizing the channel over which those messages are sent. The Ranging Response does not have a form used to characterize the physical layer. It instructs the SS to make certain timing and power adjustments, and only after the SS has already characterized the channel through other means. Therefore, it is also my opinion that WiMAX's Ranging Response is not a physical layer probe.

3. WiMAX's Ranging Request does not specify the "content payload" of the Ranging Response

69. Independent claims 1 and 17 of the '690 Patent both require the first plurality of parameters to specify a content payload (or payload content) for the probe. *See* Ex. 1001, Cl. 1 ("wherein the first plurality of parameters at least specify content payload of the probe"); Cl. 17 ("wherein the first plurality of probe parameters comprising at least a payload content for the probe"). In my opinion, WiMAX's ranging process does not satisfy or render obvious this claim element.

70. Mr. Bertonis identifies two parameters in the WiMAX ranging process that supposedly meet this claim element: the connection identifier (CID) and the ranging code index. Ex. 1002, ¶¶ 149 (opining that the CID "is part of the payload portion of the MAC PDU for sending the RNG-RSP message" and that the ranging code index "is another example of data that is in a parameter of the RNG-REQ message and used for the payload of the RNG-RSP message"). I disagree.

71. First, the CID is not part of the payload of a MAC management message, such as the Ranging Request and Ranging Response. *See* Ex. 1013, 43

(Table 14 confirming that the RNG-REQ and RNG-RSP are MAC management messages). Rather, the CID is part of the *header* of a MAC management message, as shown in Figure 19 and Table 5 of WiMAX. Ex. 1013, 36–37. Both WiMAX and the '690 Patent explain that the message header (or preamble) is distinct from the message payload. Ex. 1013, 35 (Figure 18 showing that the “Generic MAC header” and “Payload” are separate portions of a MAC PDU); Ex. 1001, 3:44–47, 3:57–58 (distinguishing between the preamble and payload in a physical layer packet).

72. Moreover, the Ranging Request does not “specify” the CID for use in the Ranging Response. During an initial ranging procedure, the SS does not yet have addressing information for the BS, so it uses a default value. *See* Ex. 1013, 8 (defining an “initial ranging connection identifier”). The appropriate CID for the connection between the SS and the BS is actually assigned by the BS, and then conveyed to the SS in the Ranging Response. *Id.* at 33 (“The CIDs for these connections shall be assigned in the RNG-RSP and REG-RSP messages”). The CID is then shared by the BS and SS for both uplink and downlink communications. *Id.* (“The same CID value is assigned to both members (uplink and downlink) of each connection pair”).

73. With respect to the other parameter identified by Mr. Bertonis—the ranging code index—WiMAX does not provide any indication that this parameter is included in the Ranging Request in the first place. The portions of WiMAX cited by

Mr. Bertonis (*see* Ex. 1002, ¶ 149) state only that the ranging code index “was sent by the SS.” Ex. 1013, 51. But there are numerous messages and parameters that are “sent by the SS” without necessarily being included in a Ranging Request. It is also significant that the ranging code index does not appear in any of the tables or figures depicting the format of the Ranging Request. *See id.* at 49 (Table 19), 664 (Table 364).

74. For these reasons, neither the CID nor the ranging code index show that WiMAX’s Ranging Request specifies a content payload for the Ranging Response. Therefore, a POSITA would not find claims 1 or 17 of the ’690 Patent to be anticipated or rendered obvious by WiMAX.

4. WiMAX does not teach or suggest transmitting two Ranging Response messages simultaneously using OFDMA.

75. Dependent claims 11 and 19 of the ’690 Patent both require transmitting two probes “simultaneously using OFDMA.” OFDMA stands for orthogonal frequency-division multiple access, and it is a wireless network technology that allows for simultaneous data transmissions from multiple clients, using different subcarriers. According to Mr. Bertonis, a single SS might send separate Ranging Requests to two different BSs, each of which would then send its own Ranging Response to the SS. *See* Ex. 1002, ¶¶ 250–254. In my opinion, however, there is no teaching or suggestion in WiMAX that these two Ranging Responses would be transmitted *simultaneously*.

76. Mr. Bertonis admits that WiMAX does not expressly disclose transmitting multiple Ranging Responses “simultaneously.” Ex. 1002, ¶ 249. He also admits that the timing of each BS’s Ranging Response is independent of others. *Id.* at ¶ 257 (“These times for one connection between a SS and BS are independent from similar times for another connection between the same SS and another BS.”). Nonetheless, he opines that “there would be situations in which . . . one base station would have transmitted a Ranging Response message at the same time that another base station would have transmitted another Ranging Response message.” *Id.*; *see also* Ex. 2002, 84:12–16 (“Q. What you’re saying instead is that they are both transmitting and therefore, at some times at least, they might both transmit at the same time. Is that correct? A. I think that’s generally correct.”). In other words, sometimes, by pure coincidence, the two Ranging Responses *might* be transmitted simultaneously. In my opinion, a POSITA would not conclude that WiMAX teaches or suggests such a scenario.

77. Moreover, I disagree that it would be obvious to have the base stations communicate these Ranging Responses downstream using OFDMA. As Mr. Bertonis explains elsewhere in his declaration, “OFDMA allows multiple *users* to simultaneously transmit on the same *uplink* channel.” Ex. 1002, ¶ 527 (emphasis added). In a configuration like WiMAX, OFDMA would be used to have multiple SSs transmit *upstream* to a single BS; not the other way around as Mr. Bertonis

suggests. At the time of the patent, I am unaware of any system that used OFDMA for downstream transmission from the BS to an SS, as Mr. Bertonis suggests would have been obvious.

78. Therefore, WiMAX does not render obvious dependent claims 11 or 19 of the '690 Patent.

B. Waxman Does Not Anticipate or Render Obvious the Challenged Claims

79. In my opinion, U.S. Patent Publication No. 2007/0223402 (“Waxman”) does not anticipate or render obvious any of the challenged claims.

1. Overview of Waxman

80. Waxman relates to a wireless access point (AP) that is in communication with one or more “stations.” Ex. 1007, ¶ [0012]. Waxman discloses an active scanning process, whereby a station sends a “probe request” to the AP. *Id.* at ¶ [0030]. However, Waxman’s “probe request” is unlike the kind claimed in the '690 Patent because it does not ask the AP to characterize the downstream channel. Waxman’s “probe request” is actually a request for the AP to communicate with the station using a “requested transmission scheme” (such as an extended-range scheme), a “requested number of transmission antennas,” and “other attributes of a requested transmission scheme.” *Id.* at ¶¶ [0030]–[0035], [0042]–[0048], [0052]–[0056], Figs. 2–3. The AP may then send a simple acknowledgement message,

which Waxman calls a “probe response.” *Id.* at ¶ [0037] (“an indication acknowledging or approving the request embedded in the probe request”).

2. Waxman’s “probe request” does not specify content payload or a second node

81. Independent claims 1 and 17 of the ’690 Patent both require the first plurality of parameters to specify a content payload (or payload content) for the probe. *See* Ex. 1001, Cl. 1 (“wherein the first plurality of parameters at least specify content payload of the probe”); Cl. 17 (“wherein the first plurality of probe parameters comprising at least a payload content for the probe”). Claim 1 additionally requires the first plurality of parameters to specify “a second node,” *i.e.* the node that will receive the probe response. In my opinion, Waxman fails to anticipate or render obvious either of these elements.

82. Mr. Bertonis opines that Waxman’s “probe request” “indicates (e.g., using a value of a parameter in a field of the probe request) a requested transmission scheme, a requested number of transmission antennas to be used, and/or other attributes of a requested transmission scheme.” Ex. 1002, ¶ 342 (quoting Ex. 1007, ¶ [0035]). However, none of these parameters relate to the content payload of the probe response, nor do any of them identify a recipient node for the probe response. The “requested transmission scheme” is simply a request for the AP to transmit to the station using a particular transmission scheme, such as an extended-range transmission scheme (*e.g.*, TADS, STBC, BF). *See* Ex. 1007, ¶ [0054]. And the

“requested number of transmission antennas” is a request for the AP to transmit using a certain number of physical antennas. *Id.* at ¶¶ [0020], [0032]–[0035].

83. In short, the parameters identified by Mr. Bertonis relate to *how* the AP should transmit messages to the station, rather than the *content* (or *recipient*) of those messages. *See also* Ex. 1007, ¶ [0037] (characterizing the probe response as a simple acknowledgement that is transmitted using the requested scheme); Ex. 2002, 87:16–88:18 (Mr. Bertonis generally agreeing that the probe request is for requesting different communication parameters and that the probe response is an acknowledgement message that uses the requested transmissions scheme).

84. In fact, Mr. Bertonis even admitted in his deposition that his opinions relating to “content payload” in Waxman were based on what he believed would be a POSITA’s understanding of Waxman, and not anything that is expressly stated in Waxman. Ex. 2002, 100:9–14; *see also* 96:21–100:14 (Mr. Bertonis unable to identify any support in Waxman for his assertion that the “probe request” specifies the content payload for the response).

85. For these reasons, a POSITA would not conclude that Waxman teaches or renders obvious “a probe request specifying a first plurality of parameters . . . wherein the first plurality of parameters at least specify content payload of the probe and a second node.” Therefore, Waxman does not anticipate or render obvious claims 1 or 17 of the ’690 Patent.

3. Waxman’s “probe response” is not the claimed *physical layer* probe

86. Independent claim 9 of the ’690 Patent requires a *physical layer* probe. As I have explained above in the section on Claim Construction, a POSITA would understand that a physical layer probe is a probe that characterizes attributes of the physical communication layer. In my opinion, a POSITA would not find this element taught or suggested by Waxman.

87. I first note that Mr. Bertonis’ explanation of this element makes no sense. He relies on language in the ’690 Patent itself, which explains that “physical layer (PHY) packets comprise preambles and payloads.” *See* Ex. 1002, ¶ 404; Ex. 1001, 3:42–44. He then concludes that Waxman’s probe response is a physical layer probe simply because it is a packet that has preamble and data portions. *See* Ex. 1002, ¶ 404. But this does not logically follow. Virtually all traffic across the physical layer consists of packets that include a preamble and data portion. By Mr. Bertonis’ explanation, *every* packet that crosses the physical layer is a physical layer probe. Therefore, Mr. Bertonis’ explanation of this element makes no sense.

88. In his deposition, Mr. Bertonis attempted to clarify that “it’s a physical layer probe because it goes over the physical layer.” Ex. 2002, 107:3–11. But as he himself admitted, this suffers from the same problem. All network messages go over the physical layer—that is how they are transmitted. *Id.* at 107:20–24; *see also*

107:12–19 (“Q. Are there any probes that don’t go over the physical layer? A. Not in the context we’re discussing . . .”).

89. Nor does Mr. Bertonis provide any explanation of how Waxman’s probe response characterizes attributes of the physical communication layer. As I described above, Waxman’s “probe response” is simply an acknowledgement message that may be transmitted using the requested transmission scheme. Waxman does not describe the “probe response” as conveying any information about the physical characteristics of the channel, nor does it describe the station as using the “probe response” to extrapolate any such information. In his deposition, Mr. Bertonis attempted to explain that the probe response could be used for assessing the communications path, but ultimately he only opined that this was something that *could have been done* in Waxman, not that it is something Waxman (or the prior art) affirmatively teaches. *See* Ex. 2002, 104:25–106:13.

90. For these reasons, a POSITA would not conclude that Waxman teaches or renders obvious a physical layer probe. Therefore, Waxman does not anticipate or render obvious claim 9 of the ’690 Patent.

4. Waxman, alone or in combination with Zuckerman, does not teach or suggest transmitting two Ranging Response messages simultaneously using OFDMA

91. Dependent claims 11 and 19 of the ’690 Patent both require transmitting two probes “simultaneously using OFDMA.” According to Mr. Bertonis, a single

station might send separate “probe requests” to two different APs, each of which would then send its own “probe response” to the station. *See* Ex. 1002, ¶¶ 427–428. In my opinion, however, there is no teaching or suggestion in Waxman or in Zuckerman that these two “probe responses” would be transmitted *simultaneously*.

92. First, Mr. Bertonis admits that “Waxman does not expressly disclose this ‘simultaneously’ feature.” Ex. 1002, ¶ 526. He also admits that the station would not be able to control when each AP sends its “probe response.” *Id.* at ¶ 429 (“Stations using OFDMA would not have controlled when the AP sends a probe response”). He reasons that “those stations would have been configured to receive probe responses that were simultaneously transmitted by different APs.” *Id.* In my opinion, this is pure conjecture and is the same as his opinions with respect to WiMAX—sometimes, by pure coincidence, the two APs *might* transmit their probe responses simultaneously. A POSITA would not conclude that Waxman teaches or suggests such a scenario.

93. Zuckerman does not fill this gap in Waxman. According to Mr. Bertonis, Zuckerman teaches simultaneous communication between one base station and multiple mobile stations. *See* Ex. 1002, ¶ 527. To quote Mr. Bertonis directly, Zuckerman teaches that “OFDMA allows multiple *users* to simultaneously transmit on the same *uplink* channel.” Ex. 1002, ¶ 527 (emphasis added). But this does not translate to how Mr. Bertonis has mapped claims 11 and 19. Mr. Bertonis describes

a situation in Waxman where multiple APs (*i.e.* base stations) would transmit “probe responses” (*i.e.* on a downlink) to a single station (*i.e.* mobile station). This is the opposite of what Zuckerman describes.

94. In addition, Waxman itself teaches against the very idea that Mr. Bertonis has suggested. In the event that a single station is in communication with multiple APs, Waxman provides that “the probe response may be transmitted by AP 105 utilizing a ‘back-off’ mechanism, for example, a random or pseudo-random delay period, e.g., to allow other access points to contend for communication with the station that transmitted the probe request.” Ex. 1007, ¶ [0038]. In other words, Waxman’s AP imposes a random delay on the “probe response,” precisely to *avoid* the situation of multiple APs transmitting simultaneous probe responses to a single station.

95. Therefore, Waxman and Zuckerman do not render obvious dependent claims 11 or 19 of the ’690 Patent.

C. **DOCSIS 2.0 With or Without ISO8802-2 Does Not Anticipate or Render Obvious the Challenged Claims**

96. In my opinion, the Data-Over-Cable Service Interface Specifications (“DOCSIS”) 2.0 standard does not anticipate or render obvious any of the challenged claims.

1. Overview of DOCSIS 2.0

97. DOCSIS 2.0 is version 2.0 of the Data-Over-Cable Service Interface Specifications, a standard that relates to the delivery of high-speed data over cable systems. Ex. 1010, 1–3. Mr. Bertonis opines that two separate processes in DOCSIS 2.0 either anticipate or render obvious the challenged claims: (1) ranging and (2) testing.

98. DOCSIS 2.0’s ranging process, similar to that of WiMAX, is used to acquire the correct timing offset so that the cable modem’s transmissions are aligned to the time slots expected by the CMTS. Ex. 1010, 197. The process involves a cable modem sending a Ranging Request to a cable modem termination system (CMTS), which then returns a Ranging Response to the cable modem. *Id.*, 183, 197, 247. Unlike with WiMAX, however, Mr. Bertonis opines that it is actually DOCSIS 2.0’s Ranging *Request* that is the claimed “probe.” Ex. 1002, ¶ 571. He further opines that a third message type, called an Upstream Channel Descriptor (UCD) is the claimed “probe request.” Ex. 1002, ¶ 565. The UCD is a broadcast message that the CMTS periodically sends to the cable modems at fixed intervals to specify the characteristics of each upstream communications channel between the modem and the CMTS. Ex. 1010, 246–250.

99. DOCSIS 2.0’s testing process involves the CMTS sending a test request (TST-REQ) message to the cable modem and must be manually initiated by the

operator. Ex. 1010, 184–185. The TST-REQ instructs the cable modem to enter one of two pre-defined test modes and causes it to transmit a “continuous (non-burst) upstream signal” for up to 30 minutes or until the cable modem receives another TST-REQ message instructing it to disable testing. *Id.* This testing process is performed *before* the cable modem begins normal operation, at which point it must ignore any subsequent TST-REQ messages. *Id.* at 185 (“In normal operation, the CM MUST ignore any TST-REQ message it receives subsequent to receiving the first SYNC message.”).

100. With respect to the testing process, Mr. Bertonis further relies on ISO8802-2, which is Part 2 of the IEEE 802.2 standard governing the Logical Link Control (LLC) sublayer. Ex. 1011, I, iii–v, 1–3. ISO8802.2 includes a test function where successful completion involves sending a TEST command with a particular information field and receiving the identical information field in a TEST response. *Id.*, 63. However, the TEST messages do not actually have to convey any information; the information fields are optional. *See id.* at 39 (describing how the size of the information field is $M \times 8$ bits, where ‘M’ can be zero); 41 (“The information field shall consist of any integral number (including zero) of octets”).

2. DOCSIS 2.0’s Ranging Request is not a “probe,” and the UCD is not a “probe request”

101. Independent claims 1, 9, and 17 of the ’690 Patent all require a probe and a probe request. In my opinion, DOCSIS 2.0’s UCD message is not a probe

request, and the Ranging Request is not a probe. Therefore, DOCSIS 2.0 ranging fails to anticipate or render obvious any of the challenged claims.

102. As I explained above with respect to WiMAX, ranging is a process where the CMTS and cable modem negotiate power thresholds and timing offsets for the messages exchanged between them. *See also* Ex. 1010, 183, 197. Ranging does not involve characterization of the channel, and this is especially true of the Ranging *Request* that the cable modem sends to the CMTS. The Ranging Request does not have a form used to characterize the channel to the CMTS. Rather, the CMTS has already determined those characteristics and reported them to the cable modem via the UCD messages, which it sends at periodic intervals. *See* Ex. 1010, 246–250. Therefore, a POSITA would not consider DOCSIS 2.0’s Ranging Request to be a probe. By extension, a POSITA would not consider the Ranging Request to be a *physical layer* probe—it is not a probe at all, and it is not used to characterize attributes of the physical communication layer.

103. Moreover, a POSITA would not understand the UCD message to be a request for a probe. The UCD does not *request* anything. Rather, the UCD itself is the message that characterizes the channel.

104. Therefore, DOCSIS 2.0’s ranging procedure does not anticipate or render obvious any of independent claims 1, 9, or 17.

3. DOCSIS 2.0's Test Signal is not a "probe"

105. In my opinion, DOCSIS 2.0 does not show that its Test Signal is a probe. Therefore, DOCSIS 2.0 testing fails to anticipate or render obvious any of the challenged claims.

106. In DOCSIS 2.0, the Test Request "force[s] a CM to enter or leave one of two test modes." Ex. 1010, 184–185. In either case, the CM is instructed to transmit "a continuous (non-burst) upstream signal" with nominal amplitude. *Id.* at 185. When the test mode is set to 1, the Test Signal is equivalent to an alternating binary sequence (1, -1, 1, -1, ...). *Id.* When the test mode is set to 2, the Test Signal is equivalent to a constant sequence (1, 1, 1, 1, ...). *Id.*

107. There is no indication in DOCSIS 2.0 or in Mr. Bertonis' report that the Test Signal has a form used to characterize the channel between the CMTS and cable modem. *See* Ex. 1002, ¶¶ 576–581, 585–587, 591–593. Although DOCSIS 2.0 does not explicitly state what the testing process is used for, a POSITA would understand it is a basic test that simply confirms the cable modem is capable of transmitting 1s and -1s in the amplitude and phase. A POSITA would further understand that the ordered (as opposed to randomized) set of 1s and -1s is not useable for channel diagnostics or for characterizing the channel, and so they would not expect the test process to be used in that way.

108. Moreover, the test must be manually initiated by the operator, and it must occur—if at all—before the cable modem begins normal operation. *See* Ex. 1010 at 185 (“In normal operation, the CM MUST ignore any TST-REQ message it receives subsequent to receiving the first SYNC message.”). This is because the test involves *continuously* transmitting the test signal, effectively tying up the communication channel from normal use. This is another reason a POSITA would not be motivated to use this test process as a means of characterizing the channel.

109. Mr. Bertonis further relies on ISO8802-2’s description of testing. *See* Ex. 1002, ¶ 585–586, 596. However, ISO8802-2 explains that the “TEST command” is used to test the logical link control transmission path. Ex. 1011, 51; *id.* at 63 (“The TEST function provides a facility to conduct loopback tests of the LLC to LLC transmission path”). The test does not aim to characterize the channel. Instead, it is a test of the network that involves sending a TEST command with a particular information field and looking to receive the identical information field in the response. *Id.* at 63. Moreover, the logical link control transmission path is distinct from the physical channel and instead relates to the network layer. *See* Ex. 1002, ¶ 49.

110. Moreover, as I explained above with respect to ranging, there is no need for the Test Response message (sent from the cable modem to the CMTS) to characterize the channel. The CMTS will already know the channel characteristics

and will have been communicating them to the cable modem using periodic UCD messages. *See* Ex. 1010, 246–250.

111. For these reasons, DOCSIS 2.0’s testing procedure, either alone or in combination with the teachings of ISO8802-2, does not anticipate or render obvious any of independent claims 1, 9, or 17.

4. At the time of the priority date, it was not obvious how to combine DOCSIS and OFDMA

112. Dependent claims 10, 11, 18, and 19 all require transmission using orthogonal frequency-division multiple access (“OFDMA”). Mr. Bertonis opines that “it would have been obvious to use OFDMA in the system taught by DOCSIS 2.0.” Ex. 1002, ¶ 665; *see also* ¶¶ 666–671, 681–687, 729, 746. I disagree.

113. Version 2.0 of DOCSIS initially released in 2001. *See* Ex. 1010, ii. At that time, OFDMA (and OFDM) were already well known in the art¹, as were other advanced modulation schemes such as spread spectrum and frequency hopping. If it had been obvious to combine DOCSIS 2.0 with OFDM / OFDMA, it would have occurred by the time DOCSIS version 3.0 released in 2006, especially considering how much DOCSIS 3.0 improved upon version 2.0. Instead, OFDM was not introduced into the DOCSIS standard until version 3.1, released 12 years after DOCSIS 2.0 (and five years after the priority date of the ’690 Patent). *See* Ex. 2006

¹ OFDM was first invented in the 1960s by Bell Labs.

(DOCSIS 3.1 MAC and Upper Layer Protocols Interface Specification), iii; *see also* 30 (“DOCSIS 3.1 introduces a number of features that build upon what was present in previous versions of DOCSIS, in particular a new generation wideband PHY based on Orthogonal Frequency Division Multiplexing (OFDM)”).

114. Furthermore, DOCSIS 2.0 defines the upstream spectrum for cable systems to be from 5 MHz to 42 MHz in North America. *See* Ex. 1010, 1. This portion of the RF spectrum is very noisy, and, at the time of the ’690 Patent, a POSITA would have understood that using OFDMA to provide return path communications in the lowest part of the RF spectrum would not be practical. Not until DOCSIS 3.1—when return path spectrum could be expanded to much higher RF frequencies—did OFDMA become viable for a portion of the return path RF spectrum generally in the higher frequency portion of the extended return path spectrum.

115. In my opinion, at the time of the ’690 Patent’s priority date, a POSITA would not have found it obvious *how* to merge DOCSIS with OFDM / OFDMA. Therefore, Mr. Bertonis has not shown that dependent claims 10, 11, 18, or 19 would be obvious in view of DOCSIS 2.0 and Zuckerman.

IX. CONCLUSION

116. For the reasons described above, it is my opinion that Mr. Bertonis has not demonstrated that any of the challenged claims are anticipated or rendered obvious by the prior art asserted in the Petition.

I declare that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

06 DEC 2024
Date

John Holobinko
John Holobinko

APPENDIX A

John Holobinko

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John Holobinko currently is an Independent consultant and the Managing Director of his company Business Reimagined, LLC which he founded in April 2019. He provides insight on high tech companies and markets, especially in the areas of financial performance, technology assessment, and business/market strategy. He has also served as an expert witness in patents litigation. His expertise spans cloud computing, optical networking, routing/switching silicon and systems, big data analytics/AI systems, fiber to the home, 5G/WiFi, and cable networks. He has following key skills: Executive Management, Strategy, Technology Assessment, Profit and Loss Management, Cross-functional Team Leadership. He has authored/coauthored 8 patents in the fields of optics, networking and big data analytics/AI.

Business Reimagined, LLC, Managing Director

May 2019 - Present

Provides consulting services to businesses and financial firms, including analysis of markets, technology assessment, operations and financial performance, competition, R&D effectiveness and provides expert witness services. He also assists companies in evaluation of acquisition targets.

Pineville NC Chamber of Commerce, President and CEO

April 2019 - Present

Leads this community organization within the Charlotte Metropolitan area focused on helping businesses to grow and supporting the community. Coordinates programs, collaborates with local business leaders of large corporations and local government officials.

Cisco Systems, Inc., Director, Access Networks Business Strategy

May 2014 - April 2019

Led strategy for Cisco's access network products, collaborating across multiple business units. Led new product initiatives in cloud networking, big data analytics, optical networking, DOCSIS, Ethernet and RF access networking. Also responsible for driving internal initiatives to improve product development velocity and business operations. Served as external Cisco spokesperson to analysts and trade press for the business unit.

Business Transformation Consultants, President

October 2013 - May 2014

Independent consultant providing business and market analysis, strategy and recommendations for revenue and profit margin improvement and reinvigorating innovation for multiple clients.

For client Cisco Systems, provided profit/loss reviews and recommendations for product, technology, and market strategies for multiple Cisco business segments, Results for one business unit included 30% Y/Y revenue growth and increased market share, while improving delivery and product quality.

Motorola Mobility, Network Infrastructure VP of Business Strategy/Ops *July 2010 - Sep 2013*

Reporting to the VP/GM of the \$1B Network Infrastructure business, led a strategy and business development team responsible for identifying and driving emerging technologies and market opportunities across four business units. Also led monthly P&L operations reviews and headed the Business Investment Board, responsible for major projects and M&A evaluations.

BigBand Networks, Inc., Vice President, GM

December 2006 - June 2010

Multiple senior positions including VP, General Manager of IP Video (CMTS and IP services) business, VP of Product Management and VP of Marketing. BigBand was a market leader of digital video networking solutions for cable operators and telcos worldwide. Later acquired by Arris in 2011.

VPIsystems, Inc., President and CEO

November 2003 - November 2005

Lead successful business turnaround of this international big data/analytics software company focused on optimizing networking traffic capacity for major telecom carriers worldwide and major communications equipment vendors. Managed business locations across three continents including US headquarters and subsidiaries in Germany, Belarus and Australia

Aplion Networks Inc., President and CEO

March 1998 - March 2003

Led this pioneering company that developed and built the first software programmable packet routing/switching platform for delivering cloud based services (SaaS), using patented layer 4-7 deep packet inspection. Applications: IP Video, voice and VPNs over service provider networks and internet access networks. Raised over \$50 Million in four tranches. 140 employees worldwide, including India development subsidiary. Patents and IP sold in 2003.

ADC Telecommunications BCD (now CommScope)

July 1986 - March 1998

VP, Marketing and Strategic Planning

Cofounded American Lightwave Systems, a digital fiber optic, FTTx and RF networking company in 1986, which was subsequently acquired at 17X multiple by ADC in 1990, ADC's most successful acquisition in the 1990's. '91 - '96 ADC VP of Product Management and Strategic Planning for Broadband Communications Division. Responsible for hardware and software product P&Ls and market strategy. '96 - '98 Director of Mergers, Acquisitions and long range technology planning. These businesses were later acquired by Commscope.

Education

BSEE Electrical Engineering, Carnegie Mellon University

Other

Author of 8 patents in the areas of optical networking, cable/RF technology and big data analytics/AI.

Chairman, Pineville Police Department Citizens Advisory Board

APPENDIX B

List of Materials Considered

In forming my opinions, I have considered numerous documents and other materials, including but not limited to those listed below and anything cited or referred to in my report.

1. Petitioner's Petition for *Inter Partes* Review of U.S. Patent No. 8,284,690, IPR2024-00430, and the exhibits attached thereto
2. The Declaration of James Bertonis (Ex. 1002) and the exhibits cited therein
3. U.S. Patent No. 8,284,690 (Ex. 1001) and its certified file history (Ex. 1003)
4. Transcript of the Deposition of James Bertonis (Ex. 2002)
5. U.S. Patent No. 8,146,125 by Grinkemeyer (Ex. 2003)
6. U.S. Patent No. 8,228,910 by Wu (Ex. 2004)
7. U.S. Patent No. 8,634,498 by Mueller (Ex. 2005)
8. DOCSIS 3.1 MAC and Upper Layer Protocols Interface Specification (Ex. 2006)