UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD. AND
SAMSUNG ELECTRONICS AMERICA, INC.,

Petitioners,

v.

APEX BEAM TECHNOLOGIES LLC,

Patent Owner.

Patent No. 10,462,767
Filing Date: April 18, 2018
Issue Date: October 29, 2019

Inventor: Xiaobo Zhang
Title: METHOD AND DEVICE IN UE AND BASE STATION USED FOR PAGING

DECLARATION OF MIGUEL GOMEZ

Case No. IPR2023-00598

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I, Miguel Gomez, declare as follows:

I. BACKGROUND AND QUALIFICATIONS

1. The details of my education, work experience, and research are summarized in my curriculum vitae ("CV") which is attached to this Report as **Exhibit A**. I have summarized some of the relevant information about my experience and qualifications below.

2. I received my Bachelor's degree in Electrical Engineering from Yale University in 1983.

3. I am a co-inventor on the following patents: U.S. Patent No. 7,814,204 "Method of and system for analyzing the content of resource requests", U.S. Patent No. 7,447,777 "Switching System", U.S. Patent No. 7,321,926 "Method and system for allocating resources to resource requests", U.S. Patent No. 8,412,838 "Method and system for analyzing the content of resource requests", and U.S. Patent No. 7,298,746 "Method and system for reassembling and parsing packets in a network environment."

4. In summary, I have more than 35 years of experience as an Electrical Engineer with a broad background in integrated circuit design, storage, power conversion, telephony and telecommunications.

5. I have prepared this Declaration as an expert witness retained by Apex Beam Technologies LLC. In this Declaration, I provide my opinions as to whether

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the Challenged Claims of U.S. Patent No. 10,462,767 (the "'767 Patent") are valid. I provide technical bases for these opinions as appropriate.

6. This Declaration contains statements of my opinions formed to date and the bases and reasons for those opinions. I may offer additional opinions based on further review of the materials in this proceeding, including opinions and/or testimony of other expert witnesses.

II. MATERIALS CONSIDERED

7. The materials I considered include the '767 patent and the prosecution history for the '767 Patent. I also considered the materials that I refer to and that I cite in this declaration.

8. I also considered all papers and exhibits filed in IPR2023-00598 including the petition ("Pet.") and the declaration of Dr. Harry Bims.

9. I have also considered the Board's Decision on Institution (IPR2023-00598, Paper 10) ("Inst.") in this proceeding.

10. I have also considered any exhibits attached to the Patent Owner's Response in this proceeding, including the deposition transcript of Dr. Harry Bims.

11. In addition, I have drawn on my experience and knowledge, as discussed above and described more fully in my CV.

III. LEGAL PRINCIPLES

12. I understand that a patent claim is unpatentable as "obvious" if the

subject matter of the claim as a whole would have been obvious to a person of ordinary skill in the art as of the time of the invention at issue.

13. I understand that the use of the "person of ordinary skill" rubric is to prevent one from improperly, in the present day, using hindsight to decide whether a claim is obvious.

14. I understand that the following factors must be evaluated to determine whether the claimed subject matter is obvious: (1) the scope and content of the prior art; (2) the difference or differences, if any, between the scope of the patent claim and the scope of the prior art; and (3) the level of ordinary skill in the art at the time of the invention.

15. I understand that, unlike anticipation, which allows consideration of only one item of prior art, obviousness may be shown by considering more than one item of prior art. I understand that, when considering a combination of prior art references as part of an obviousness analysis, it can be important to ascertain if the references are from the same field of endeavor and also to ascertain whether there is any reason that would have prompted a person of ordinary skill in the relevant art to combine the elements in the way the claim does. In other words, a claim generally cannot be rendered obvious by combining (i) art from across different fields, including outside the field of the claimed invention, or (ii) art that itself teaches away from combination with other art that would otherwise provide its missing limitations,

or (iii) art for which there is not at least an articulable, common sense reason to bridge the gap between its disclosure and the claim at issue.

16. Moreover, I understand that so-called "objective indicia of nonobviousness," also known as "secondary considerations," are also to be considered when assessing obviousness. I understand that this objective evidence includes at least: the commercial success of the invention; the long felt but unresolved need to develop the invention; any praise of the invention in the market; and copying by others. I also understand that evidence of objective indicia of non-obviousness must be commensurate in scope with the claimed subject matter; *i.e.*, that there must be a nexus or connection between the criteria and the claim itself.

17. I understand that the disclosure of an asserted prior art reference must provide an enabling disclosure of the desired subject matter and that mere naming or description of the subject matter is insufficient; to be enabling, I understand that it must be able to be produced without undue experimentation.

18. I understand that I must construe a claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and consistent with the prosecution history pertaining to the patent.

IV. LEVEL OF ORDINARY SKILL IN THE ART

26. I understand that I should perform my analysis from the viewpoint of a person of ordinary skill in the art. I understand that this hypothetical person of

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ordinary skill in the art is considered to have the normal skills of a person in a certain technical field. I understand that factors that may be considered in determining the level of ordinary skill in the art include: (1) the education level of the inventor; (2) the types of problems encountered in the art; (3) the prior art solutions to those problems; (4) rapidity with which innovations are made; (5) the sophistication of the technology; and (6) the education level of active workers in the field.

27. In my opinion, a person of ordinary skill in the art would have had had at least a master's degree in electrical engineering or a related field, and five years of work/research experience in the field of wireless networking. Someone with less or different technical education but more relevant practical experience, or more relevant education but less practical experience, could also be considered a POSITA This aligns with Petitioner's proposed level of skill in the art. Pet. at 22.

28. My qualifications and experience exceed those of a person of ordinary skill in the art. Nonetheless, my analysis and opinions herein regarding the '767 patent are given from the perspective of a person of ordinary skill in the art.

V. CLAIM CONSTRUCTION

29. I have been informed by Counsel that, for purposes of my analysis in this *inter partes* review proceeding, claim terms should be given their ordinary and customary meaning within the context of the patent in which the terms are used, *i.e.*, the meaning that the term would have to a person of ordinary skill in the art in

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question at the time of the invention in light of what the patent teaches, unless it appears that the inventors were using them to mean something else. Additionally, the specification and prosecution history must be consulted to confirm whether the patentee has acted as his/her own lexicographer (*i.e.*, provided special meaning to any disputed terms), or intentionally disclaimed, disavowed, or surrendered any claim scope).

30. I have further been informed by Counsel that a person of ordinary skill in the art is deemed to read a claim term not only in the context of the particular claim in which the disputed term appears, but also in the context of the entire patent, including the specification and the prosecution history. The prosecution file history provides evidence of how both the Patent Office and the inventors understood the terms of the patent, particularly in light of what was known in the prior art. Further, where the specification describes a claim term broadly, arguments and amendments made during prosecution may require a more narrow interpretation. For these reasons, the words of the claim must be interpreted in view of, and be consistent with, the entire specification. The specification is the primary basis for construing the claims and provides a safeguard such that correct constructions closely align with the specification. Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim as set forth in the patent itself.

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31. I have further been informed by Counsel that, to determine how a person of ordinary skill would understand a claim term, one should look to those sources available that show what a person of skill in the art would have understood disputed claim language to mean. Such sources include the words of the claims themselves, the remainder of the patent's specification, the prosecution history of the patent (all considered "intrinsic" evidence), and "extrinsic" evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art. I understand that one looks primarily to the intrinsic patent evidence, but extrinsic evidence may also be useful in interpreting patent claims when the intrinsic evidence itself is insufficient. Additionally, the context in which a term is used in the Asserted Claims can be highly instructive. Likewise, other claims of the patent in question, both asserted and not asserted, can inform the meaning of a claim term. For example, because claim terms are normally used consistently throughout the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims. Differences among claims can also be a useful guide in understanding the meaning of particular claim terms.

32. I have further been informed by Counsel that, while intrinsic evidence is of primary importance, extrinsic evidence, *e.g.*, all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises, can also be considered. For example, technical dictionaries may

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help one better understand the underlying technology and the way in which one of skill in the art might use the claim terms. Extrinsic evidence should not be considered, however, divorced from the context of the intrinsic evidence. Evidence beyond the patent specification, prosecution history, and other claims in the patent should not be relied upon unless the claim language is ambiguous in light of these intrinsic sources. Furthermore, while extrinsic evidence can shed useful light on the relevant art, it is less significant than the intrinsic record in determining the legally operative meaning of claim language.

33. I have been asked to provide my opinion on the term "time intervals" in the context of the '767 Patent specification and claims.

34. In my opinion, a POSITA reading the '767 Patent specification and the claims themselves would consider "time intervals" to mean "variable ranges of time."

35. I agree with the admission of Petitioner's expert that a person of ordinary skill in the art would understand that "time intervals" are "ranges of time":

> Q And is it your testimony that the DCI monitoring occasions in Liu is the disclosed time interval or the claimed time interval?
>
> A So it's my opinion that the claimed X time interval defines – the X time intervals rather -- define the – the ***ranges of time*** in which a DCI monitoring occasion is included in the downlink subframe.
>
> Q So in your opinion, X time intervals is not a direct

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> mapping to DCI monitoring occasions; is that right?
>
> A The X time intervals are the ***ranges of time*** within a subframe within which a DCI monitoring occasion appears within the subframe.

Ex. 2005, 86:16-87:8. In my opinion, Petitioner's expert's definition of "time intervals" comports with the plain and ordinary meaning identified by Wiley Electrical and Electronics Engineering Dictionary:

> "**interval**:
>
> 1. ***A space or separation between two points***, locations, objects, or the like. For example, the distance between peaks of successive wave cycles.
>
> 2. A ***given range of values***. For instance, an interval of frequencies or temperatures. Also, a specific range of values, such as the readings an instrument can display.
>
> 3. The ***time that elapses between the occurrence of two specified events, states, or instants***. For example, the regular intervals at which AC voltage alternates, the irregular intervals at which a circuit with a loose connection might open and close, or the time within which a pulse rises from 0 to its maximum amplitude."

Steven M. Kaplan, Wiley Electrical and Electronics Engineering Dictionary, 2004.

36. I note that Petitioner's expert was also unable to provide a definition of "time interval" beyond that of the term's plain and ordinary meaning or outside of repeating the limitations of Claim 1.

> Q Is "time interval" a term of art?
> …
> A A person of ordinary skill in the art with a master's

> degree and five years of work experience would apply that skill to understand what X time intervals means in the context of Claim 1. And that's been what ***my testimony has been about, not whether the term "time interval" has a particular meaning to a person of ordinary skill***.

Ex. 2005, 41:14-42:6.

37. In my opinion, a person of ordinary skill in the art would understand that the specification of the '767 Patent explicitly construes "time intervals" as variable ranges of time because the relevant embodiments in the specification show that the length of each time interval is variable, and not necessarily following a pattern. As shown below, some time intervals among the X time intervals can be equal in time / symbol length or could have different time / symbol lengths, regardless of the length of slots, subframes, or frames.

> In one embodiment, any two of the X time intervals have an equal time length.
>
> In one embodiment, two of the X time times [sic] have different time lengths.
> …
> In one embodiment, any one of the X time intervals is M OFDM symbols. M is a positive integer smaller than 14.
>
> In one embodiment, any one of the X time intervals is M OFDM symbols. M is a positive integer smaller than 7.

'767 Patent, 2:48-51, 2:58-63, 19:1-4, 19:11-15. Based on the reading of the aforementioned portions of the '767 Patent, a person of ordinary skill in the art would also understand that each time interval need not be equally spaced between

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each other since the lengths of the X time intervals within a slot (or across slots), subframe (or across subframes), or frame (or across frames) are of different lengths. The diversity of lengths among the X time intervals means that time intervals are variable ranges of time.

VI. ANY COMBINATION OF YOU, LIU, AND MALLICK DOES NOT RENDER CLAIMS 1-20 OBVIOUS

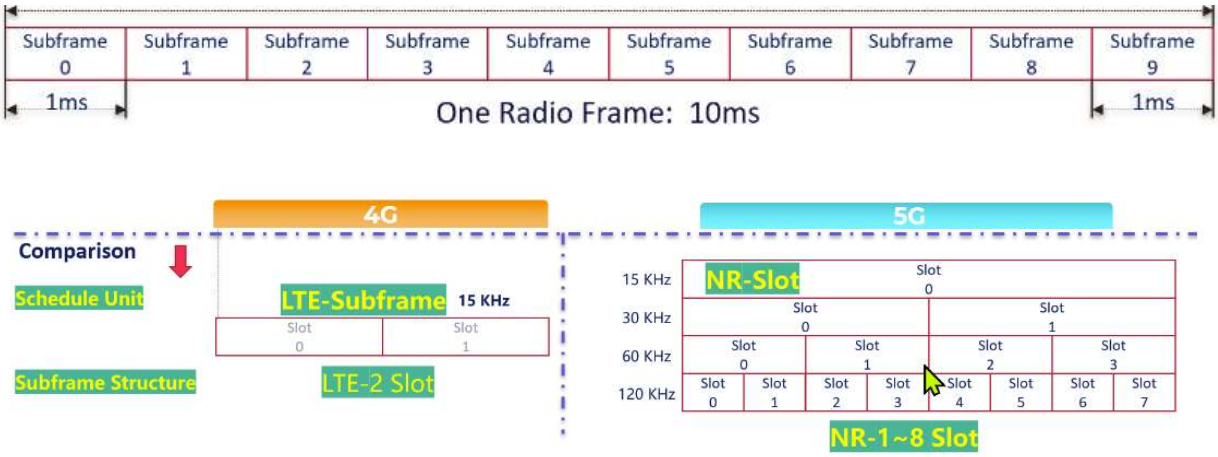
A. There is No Motivation to Combine the 4G / LTE Systems of You or Mallick with the 5G / NR System of Liu

38. In my opinion, Petitioner's Grounds 1 and 2 rely on the improper combination of You, Liu, and Mallick because a person of ordinary skill in the art would not combine a 4G/LTE system with a 5G/NR system. 4G and 5G systems, while similar in some ways since 5G is a progression from 4G, also have various and substantial differences which make combination not possible. A person of ordinary skill in the art would not make the changes alleged by Petitioner, which include regressing to 4G/LTE again (Sections VI.B.5 and VI.B.7, which only rely on You, a 4G / LTE system) because those differences were already considered by standard setting organizations, such as 3GPP, at the time of transitioning to 5G.

39. One pertinent example is that of 4G/LTE systems have a single subcarrier spacing and the number of slots in a subframe are always fixed. A frame is made up of 10 subframes each of 1ms, making the frame duration of 10ms. Each subframe carries 2 slots, so 20 slots comprise a complete frame. 5G / *NR* systems

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have subframes as a numerology independent time reference while a slot is the typical dynamic scheduling unit. The difference between scheduling units (subframes in 4G / LTE systems versus slots in 5G / NR systems) is demonstrated below despite that 5G retained the same division of frames into subframes, indicating that any motivation to "combine" was already acted upon.



https://www.linkedin.com/pulse/4g-vs-5g-key-technology-differencespost-video-mohamed-eladawi.

40. The '767 Patent clearly discloses an improvement to a basic 5G/NR system.

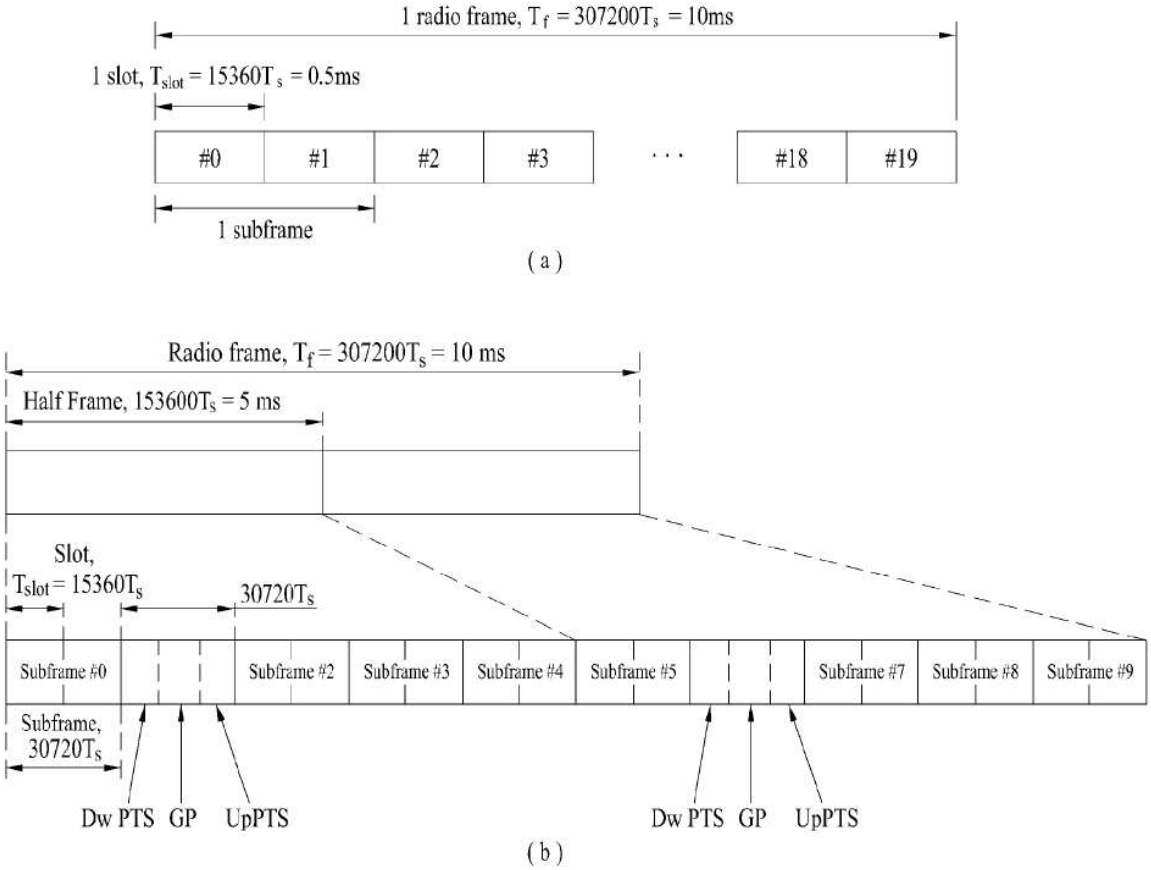
> ***In order to solve the above design problem of paging when multiple numerologies are employed in the 5G NR***, the present disclosure provides a solution.

'767 Patent, 2:1-3.

41. Having established that 4G/LTE and 5G/NR systems are not combinable to create another 5G / NR system, it follows that a person of ordinary skill in the art would not combine You or Mallick with Liu to create the 5G / NR

system of the ’767 Patent.

42. In my opinion, a person of ordinary skill in the art would understand that You is a typical 4G/LTE system which divides 10ms frames into 1ms subframes, as shown below.



Ex. 1005, Fig. 1; Ex. 1005, [50]-[52].

43. Petitioner’s expert admits that “paging control and scheduling in only particular portions of a subframe[1] and not a search space that is the entirety of a

[1] I note that, despite showing slots in Fig. 1 of You, the inventor (or anybody else) was not motivated to create a system with paging control or scheduling in

subframe, but a search space that is only a portion of a subframe [] is not something expressly disclosed in You" because You discloses a 4G / LTE system. Ex. 2005, 60:3-25. Petitioner's expert says that scheduling in particularly portions of a subframe is "possible if You were to be [improperly] combined with other art such as Liu" and further notes that "You is not expressly teaching that a UE should search through only a particular portion of a subframe." *Id.* Petitioner's expert also describes, as is conventional for a 4G / LTE system, that "different portions of a subframe in your hypothetical would have different symbol lengths, which is not something expressly disclosed in You" or any conventional 4G / LTE system. *Id.* at 61:2-11.

44. Mallick, like You, is a 4G / LTE system, as described below:

> Approaches to lower the cost of LTE presently regard the volume of products as the primary reason…
>
> In this respect, the following approaches to lower the cost of LTE, i.e., defining low cost MTC are discussed…
>
> Reduction in supported bandwidth for the low-cost LTE…
>
> Modified PDCCH-related design for the low-cost LTE…

Ex. 1007 at [0053]-[0056]. As an LTE system, Mallick describes periodic subframes as its basic time scheduling unit, as shown below.

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particular portions of a subframe, such as a slot, let alone the claimed "X time intervals" of the '767 Patent.

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> Therefore, for case A and B with NS equals 1 and i_s equals zero, the table would yield the subframe number 9 such that the UE for cases A and B would be paged regularly in subframe 9 of radio frame 76 of every paging cycle.

Ex. 1007, [0030].

45. Liu is a 5G/NR system. Ex. 1006, [0002]-[0003]. Like the '767 Patent, Liu criticizes the faults of You / Mallick and other conventional 4G / LTE systems, namely that, in 4G / LTE systems, "DCI monitoring is performed per subframe or per slot" or some other fixed length with periodicity and that LTE "cannot support the DCI monitoring occasion change due to numerology and scheduling unit size." Ex. 1006, [0004]-[0005]. In my opinion, because You and Mallick are 4G / LTE systems, they are inapposite to the claims and disclosure of the '767 Patent, and a person of ordinary skill in the art would not be motivated to combine You or Mallick with the 5G / NR system of Liu.

B. Ground 1: The Combination of You and Liu Does Not Render Claims 1 and 4-6 Obvious

1. The Combination of You and Liu Does Not Render Obvious "*monitoring a first signaling in X time intervals*," as Required by Claim 1

46. In my opinion, Petitioner incorrectly argues that You discloses this limitation because "*You*'s one or more downlink subframes in a paging occasion constitute the claimed 'X time intervals' because ***each subframe is a time interval***." Pet. at 38. However, You's subframes (i.e., fixed ranges of time) are not X time

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intervals, which are variable ranges of time, meaning that the length of the time intervals are not necessarily equal and the time intervals are not necessarily periodic in time, as described in Section IV.

47. The ’767 Patent clearly discloses the shortcomings of the 4G / LTE system of You. One of those shortcomings is the failure to include variable ranges of time:

> In existing LTE systems, transmission opportunities of paging are defined through a Paging Frame (PF) and a Paging Occasion (PO) uniformly. The PF is a radio frame which is likely to transmit a paging message, and the PO is used for determining a subframe which is likely to transmit a paging message in the PF. The radio frame in LTE has a fixed time length of 10 milliseconds, and the subframe has a fixed time length of 1 millisecond. Since an LTE network generally employs a single numerology or the numerology basically does not change in a long time in the network, the definition of the possible time of paging using the PF and PO having a fixed time length can simplify the design of system, under the premise of guaranteeing the paging capacity and not increasing the power consumption of UE.

’767 Patent, 1:45-58 (showing that a paging occasion is used for determining a fixed-length subframe to transmit a paging message). While a fixed time length has the advantage of design simplification and minimal power consumption, 4G /LTE systems like You also restrict the time periods for transmission opportunities for paging in subframes. Petitioner’s expert also testified that “paging control and scheduling in…only a portion of a subframe [] is not something expressly disclosed

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in You" because You discloses a 4G / LTE system. Section IV; Ex. 2005, 60:3-61:11.

48. In my opinion, Petitioner also incorrectly argues that Liu discloses this limitation because Liu describes "monitor[ing] one or more DCI monitoring occasions at the slot level." Pet. at 38. However, this is inapposite to the claimed "X time intervals" because the '767 Patent explains prior art 5G / NR systems which utilize different numerologies to compute smaller scheduling units such as slots within 1ms subframes in which to detect the paging message. These slots are also fixed ranges of time, which cannot be X time intervals.

> Under the 5G NR, a network supports different numerologies, thus, a given time length, for example, 1 millisecond, probably includes 60 multiple basic scheduling units (for example, slot). If the legacy design of the current paging opportunity is employed, the UE would detect the paging message different times for different numerologies within the 1 millisecond. Therefore, power consumption in some numerology would be greatly increased. Meanwhile, the paging capacity varies greatly due to the adoption of different numerologies.

'767 Patent, 1:58-67. The '767 Patent describes a solution to the problem of the 5G / NR systems employed in Liu where the transmission opportunities of paging (*i.e.*, X time intervals) are determined according to "different numerologies":

> In order to solve the above design problem of paging when multiple numerologies are employed in the 5G NR, the present disclosure provides a solution, which determines the transmission opportunities of paging according to the

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> numerology employed by the paging, thereby guaranteeing that the UE has a small difference in the complexity and power consumption of monitoring the paging message under different numerologies and that the paging capacity basically remains the same.

'767 Patent, 2:1-9. While Liu may describe slot-level monitoring of DCI, Liu does not disclose either the number (X) of time intervals or the duration of each of the X time intervals, which could be variable (*i.e.*, different duration for each interval, and the one paragraph that Petitioner dedicates to Liu points to no such disclosure. Pet. at 38.

2. The Combination of You and Liu Does Not Render Obvious "*wherein X is a positive integer*," as Required by Claim 1

49. In my opinion, since Petitioner fails to show how the combination of You and Liu discloses, teaches, or suggests "monitoring a first signaling in ***X time intervals***," it therefore cannot disclose, teach, or suggest "wherein X is a positive integer." Section VI.B.1.

50. I note Petitioner's changing positions related to its construction of "positive integer." The Petition describes that "You in view of Liu teaches that "the paging M-PDCCH is monitored in ***one or more (i.e., a positive integer)*** time intervals." Pet. at 39; Ex. 1002, ¶129). However, that same Dr. Bims testified that "in the context of Claim 1, the number one is not a positive integer." Ex. 2005, 28:2-5, 29:5-10, 34:19-24**.** Dr. Bims' contradictory testimony is a blatant attempt to match Petitioner's incorrect claim construction in the related district court litigation, where

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it construed "X time intervals . . . wherein X is a positive integer" as "plural, positive integer number of time intervals." Ex. 2005, at 3.

51. The '767 patent explicitly points to the case where "X=1 time interval in the first time window," meaning that "positive integer" in the context of claim 1 means "one or more."

	Index of X=1 time interval in the first time window			
	Feature ID=a	Feature ID=b	Feature ID=c	Feature ID=d
Y=1	0	0	0	0
Y=2	0	1	0	1
Y=4	0	1	2	3
Y=8	1	3	5	7
Y=16	2	6	10	14

'767 Patent, Fig. 7.

3. The Combination of You and Liu Does Not Render Obvious "*the first signaling is used for determining scheduling information for the first radio signal*" as Required by Claim 1

52. In my opinion, since Petitioner fails to show how the combination of You and Liu discloses, teaches, or suggests a "monitoring a first signaling in X time intervals," it therefore cannot disclose, teach, or suggest "the first signaling is used for…" Section VI.B.1.

4. The Combination of You and Liu Does Not Render Obvious "*the scheduling information comprises at least one of {occupied time-frequency resource, adopted Modulation Coding Scheme (MCS), subcarrier spacing of subcarriers in occupied frequency domain resource}*" as Required by Claim 1

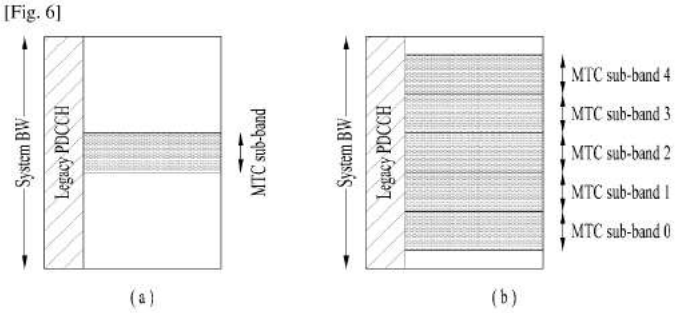
53. In my opinion, since Petitioner fails to show how the combination of

You and Liu discloses, teaches, or suggests "the first signaling is used for determining scheduling information," it therefore cannot disclose, teach, or suggest "the scheduling information…" Section VI.B.3.

5. The Combination of You and Liu Does Not Render Obvious "*the frequency domain resource used for transmitting the first signaling belongs to a first subband*" as Required by Claim 1

54. In my opinion, since Petitioner fails to show how the combination of You and Liu discloses, teaches, or suggests "monitoring a first signaling in X time intervals," it therefore cannot disclose, teach, or suggest "the frequency domain resource used for transmitting the first signaling belongs to a first subband." Section VI.B.4.

55. I note that Petitioner only relies on You and specifically Fig. 6 of You for this limitation. Pet. at 42. But the specification of Fig. 6 only makes clear the allegedly disclosed subband corresponds ***to a singular subframe*** in which M-PDCCH is monitored, as shown below:



Ex. 1005, Fig. 6.

At this time, a subband (narrowband) for operating the

> MTC UE may always be located at the center (e.g., 6 center PRBs) of a cell as shown in Fig. 6(a), or several subbands for MTC may be provided ***for one subframe*** to multiplex MTC UEs as shown in Fig. 6(b), whereby the UEs may use their respective subbands different from each other or the UEs use the same subband not the subband of 6 center PRBs.

Ex. 1005, [76]. For the reasons noted above in Sections V and VI.B.1, time intervals are not subframes. Moreover, in my opinion, under Petitioner's understanding of "X" or a "positive integer" of time intervals meaning "more than one subframe" (Section VI.B.2), You would not disclose this claim limitation because it only describes ***one*** subframe per subband. For both these reasons, You cannot disclose the claimed "first subband."

6. The Combination of You and Liu Does Not Render Obvious "*at least one of {location of the first subband in frequency domain, subcarrier spacing of subcarriers included in the first subband} is used for determining the X time intervals*," as Required by Claim 1

56. In my opinion, since Petitioner fails to show how the combination of You and Liu discloses, teaches, or suggests "X time intervals" or "a first subband" it therefore cannot disclose, teach, or suggest "at least one of {location of the first subband in frequency domain, subcarrier spacing of subcarriers included in the first subband} is used for determining the X time intervals." Section VI.B.1 and Section VI.B.5.

57. I note that Petitioner only relies on Liu to disclose this claim limitation. Pet. at 45-51. But, as described in Section VI.B.1 and shown below, Liu only

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discloses periodic slots with fixed length for DCI monitoring occasions, which are not X time intervals.

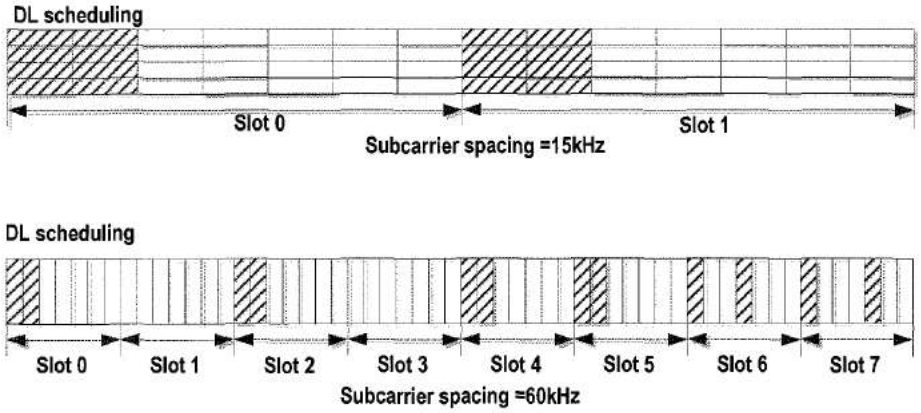


Fig. 2

Ex. 1006, Fig. 2. In my opinion, a person of ordinary skill in the art would understand "determining the X time intervals" to include determining the number of time intervals (i.e., X), the duration of each of the X time intervals, and the spacing between each of the X time intervals. Contrary to Petitioner's arguments, Liu fails to disclose all three aspects using at least one of "a location of the first subband in frequency domain or subcarrier spacing of subcarriers included in the first subband to determine the X time intervals." Instead, Petitioner argues that Liu's subcarrier spacing shows the quantity and fixed duration of each of Liu's slots. Pet. at 45-51. Every one of these slots, according to Petitioner, discloses the X time intervals. Pet. at 45-51. However, Petitioner's understanding directly contradicts what a person of ordinary skill would understand to be X time intervals, which are an X-number of

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variable ranges of time. Since slots have a fixed duration and occupy the entirety of a subframe, as shown in Fig. 2 of Liu displayed above, it would render the term X time intervals redundant and eliminate the possibility of spacing between each of the time intervals.

7. The Combination of You and Liu Does Not Render Obvious "*receiving a second radio signal wherein the second radio signal is used for determining at least one of {location of the first subband in frequency domain, subcarrier spacing of subcarriers included in the first subband}*," as Required by Claim 4

58. In my opinion, since Petitioner fails to show how the combination of You and Liu discloses, teaches, or suggests "at least one of {location of the first subband in frequency domain, subcarrier spacing of subcarriers included in the first subband} is used for determining the X time intervals," it therefore cannot disclose, teach, or suggest "receiving a second radio signal wherein the second radio signal is used for determining at least one of {location of the first subband in frequency domain, subcarrier spacing of subcarriers included in the first subband}." Section VI.B.6.

59. I note that while Petitioner relies on the combination of You and Liu for the entirety of the claim limitation, Petitioner only relies on You's SIB to disclose "the second radio signal" aspect. Pet. at 51-54. However, a person of ordinary skill in the art would understand that You is a 4G / LTE system so its SIB would not determine at least one of {location of the first subband in frequency domain,

subcarrier spacing of subcarriers included in the first subband, which are 5G / NR numerology metrics. You's SIB merely "includes parameters needed to determine if a specific cell is suitable for cell selection, as well as information about time-domain scheduling of the other SIBs." Ex. 1005, [70]-[71]. Additionally, as described in Section VI.A, in my opinion, there is no motivation to combine a 4G / LTE system with a 5G / NR system.

8. The Combination of You and Liu Does Not Render Obvious "*the first subband belongs to one of the Q subbands*," as Required by Claim 5

60. In my opinion, since Petitioner fails to show how the combination of You and Liu discloses, teaches, or suggests "a first subband," it therefore cannot disclose, teach, or suggest "the first subband belongs to one of the Q subbands." Section VI.B.5.

9. The Combination of You and Liu Does Not Render Obvious "*the feature ID of the monitor of the first signaling is used for determining the first subband in the Q subbands*," as Required by Claim 5

61. In my opinion, since Petitioner fails to show how the combination of You and Liu discloses, teaches, or suggests "the first signaling" or "the first subband" it therefore cannot disclose, teach, or suggest "the feature ID of the monitor of the first signaling is used for determining the first subband in the Q subbands." Sections VI.B.1. and VI.B.5.

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II. Ground 2: The Combination of You, Liu, and Mallick Does Not Render Claims 2 and 3 Obvious

1. The Combination of You, Liu, and Mallick Does Not Render Obvious "*wherein any one of the X time intervals belongs to a first time window in time domain*," as Required by Claim 2

62. In my opinion, since Petitioner fails to show how the combination of You and Liu discloses, teaches, or suggests "time intervals," it therefore cannot disclose, teach, or suggest "wherein any one of the X time intervals belongs to a first time window in time domain." Section VI.B.1.

63. In my opinion, Mallick also does not rectify the deficiency of You with Liu because Mallick is a 4G / LTE system, and as such, only describes a periodic subframe per paging cycle, as shown below.

> Therefore, for case A and B with NS equals 1 and i_s equals zero, the table would yield the subframe number 9 such that the UE for cases A and B would be paged regularly in subframe 9 of radio frame 76 of every paging cycle.

Ex. 1007, [0030]. Referring to the portion of Mallick above, Petitioner's expert confirmed that the subframe 9 "in which paging scheduling information would be delivered to the UE" is repeated for each paging cycle.

> [Q.] Is it your understanding that this description refers to using a feature ID to determine a subframe in which a paging message is transmitted to the UE?
>
> A. Paragraph 30 is written in the context of describing a DRX cycle, which paragraph 30 calls a paging cycle. And a paging cycle spans multiple radio frames. So what this is

> saying is that ***subframe 9 of radio frame 76, in each and every one of these cycles is what would be the subframe in which the paging scheduling information would be delivered to the UE***. So this is not indicating the location of a single subframe but rather the repetition of a subframe in each DRX paging cycle.

Ex. 2005, 111:16-112:14. As described in Section VI.B.1, Mallick does not disclose the claimed "time intervals" because a subframe is not the claimed time interval, and because the claimed time interval is variable and not predictably subject to periodicity (e.g., every subframe 9), like in Mallick.

2. The Combination of You, Liu, and Mallick Does Not Render Obvious "*the first time window is divided into Y time intervals*," as Required by Claim 2

64. In my opinion, since Petitioner fails to show how the combination of You, Liu, and Mallick discloses, teaches, or suggests "time intervals," it therefore cannot disclose, teach, or suggest "the first time window is divided into Y time intervals." Sections VI.B.1 and VI.C.1.

3. The Combination of You, Liu, and Mallick Does Not Render Obvious "*the X time intervals are X time intervals of the Y time intervals, Y being a positive integer not smaller than X*," as Required by Claim 2

65. In my opinion, since Petitioner fails to show how the combination of You, Liu, and Mallick discloses, teaches, or suggests "time intervals," it therefore cannot disclose, teach, or suggest "the X time intervals are X time intervals of the Y time intervals, Y being a positive integer not smaller than X." Sections VI.B.1 and

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VI.C.1.

4. The Combination of You, Liu, and Mallick Does Not Render Obvious "*the subcarrier spacing of subcarriers included in the first subband is used for determining Y*," as Required by Claim 2

66. In my opinion, since Petitioner fails to show how the combination of You, Liu, and Mallick discloses, teaches, or suggests "the first subband" or "Y time intervals," it therefore cannot disclose, teach, or suggest "the subcarrier spacing of subcarriers included in the first subband is used for determining Y." Sections VI.B.1, VI.B.5, VI.C.1.

5. The Combination of You, Liu, and Mallick Does Not Render Obvious "*a feature ID of a monitor of the first signaling is used for determining the X time intervals in the Y time intervals*," as Required by Claim 2

67. In my opinion, since Petitioner fails to show how the combination of You, Liu, and Mallick discloses, teaches, or suggests "the first signaling" or "time intervals," it therefore cannot disclose, teach, or suggest "a feature ID of a monitor of the first signaling is used for determining the X time intervals in the Y time intervals." Sections VI.B.1 and VI.C.1.

6. The Combination of You, Liu, and Mallick Does Not Render Obvious "*the feature ID of the monitor of the first signaling is used for determining the first time window in the Z time windows*," as Required by Claim 3

68. In my opinion, since Petitioner fails to show how the combination of You, Liu, and Mallick discloses, teaches, or suggests "the first signaling" or "time

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windows" that include "time intervals" it therefore cannot disclose, teach, or suggest "the feature ID of the monitor of the first signaling is used for determining the first time window in the Z time windows." Sections VI.B.1 and VI.C.1.

II. Any Combination of You, Liu, and Mallick Does Not Render Claims 2-20 Obvious

69. In my opinion, Claims 2-5 depend upon Claim 1, and for at least the same reasons as Claim 1, any combination of You, Liu, and Mallick, fails to obviate Claims 2-5.

70. Claims 6-10 recites "[a] method in a base station for paging" that mirrors the claim limitations of Claims 1-5, which recites "[a] method in a User Equipment (UE) for paging." In other words, Claims 6-10 disclose a method from the perspective of the base station that is in communication with the UE in Claims 1-5. For at least the same reasons as Claims 1-5, any combination of You, Liu, and Mallick, fails to obviate Claims 6-10.

71. Claims 11-15 recite "[a] UE for paging," which are the apparatus claims of Claims 1-5. For at least the same reasons as Claims 1-5, any combination of You, Liu, and Mallick fails to obviate Claims 11-15.

72. Claims 16-20 recite "[a] base station device for paging" that mirrors the claim limitations of Claims 11-15, which recites "[a] UE for paging." In other words, Claims 16-20 discloses the base station device that is in communication with the UE in Claims 11-15. For at least the same reasons as Claim 11, any combination of You,

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Liu, and Mallick fails to obviate Claims 16-20.

VII. SUMMARY OF OPINIONS

73. It is my opinion that the Board should confirm the validity of the challenged claims. I reserve the right to supplement my opinions in response to any additional contentions by Petitioner or opinions by Dr. Harry Bims, and as the Board permits.

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

Executed on December 7th, 2023 in Livermore, CA.



Miguel Gomez

EXHIBIT A

Curriculum Vitae of Miguel Gomez

2178 Sirah Ct., Livermore CA 94550
miguel@rockslideanalytics.com
ph. 415.793.4103

Mr. Gomez has thirty five years of experience in the design and development of hardware and software technology used in telecommunications, data communications, networking and storage infrastructure. He also is highly skilled in the use of microelectronics simulation software, ASIC & FPGA coding and Verilog. Mr. Gomez has designed and coded digital switching, optical encoders, and semiconductor memory hardware and software.

Expertise

- ASIC & FPGA Design
- Computer Architecture
- Computer Buses, Cache, and I/O
- Hardware Emulators
- Hardware Programming Languages
- Hardware Verification & Test
- Software Programming Languages
- Network Protocols
- Telecom Protocols
- Storage, Raid Controllers
- Digital Switching Technology
- Modems
- Security in place, security in motion
- Compression Algorithms,
- Optical Encoders
- Video Capture and Display Systems
- Semiconductor Memories
- Power supply design
- Power Inverter design.
- Computer Vision

Consulting Areas

Computer Architectures
- Data General
- IBM PC
- MIP 3000, 4000
- Intel 8051, x86, Pentium II
- Motorola 68000
- TI TMS320Cxx (DSP)
- PowerPC

Computer Buses:
- USB
- I2C
- PCI
- ISA
- EISA
- PCMCIA
- SBUS
- VME
- S100

Hardware Programming Languages:
- PALASM
- ABEL
- AHDL
- VHDL
- Verilog

Hardware Simulation and Compilation
- Synopsys VCD
- Synplicity
- ModelSim
- VerilogNC
- Spice, Hspice

ASIC and FPGA Design:
- Actel
- Altera
- Xilinx

Networking Protocols:
- ATM
- TCP/IP
- Ethernet
- VOIP
- HTTP/HTML
- SIP/SDP

Software Programming Languages:
- C,C++
- BASIC, VISUAL BASIC
- Assembly and Machine Languages
- FORTRAN
- Java
- Pascal
- Python/Django/bootstrap

Operating Systems:
- MSDOS
- Windows 3.1/NT/9x/2000/XP/CE
- UNIX

Communications
- Spread Spectrum (802.11a,b,g,n)
- LTE
- ODFM
- RF Transmission and reception
- CDMA/GSM

Power Electronics
- Solar Inverters
- 3-phase motors

CAD Tools
- Max+Plus II, Quartus (Altera)
- XACT, ISE (Xilinx)
- Mentor
- Orcad
- Allegro
- Viewlogic

- Schema
- P-Cad

Hardware Emulators
- Quickturn
- Ikos
- Zycad

Computer Memories
- SDRAM
- Rambus
- DDR I,II
- SDR

Compression:
- ADPCM

- H.264

Education

Year	College or University	Degree
1983	Yale University	BSEE

Engineering Experience

From: April 2013
To: Present
Organization: Rockslide Analytics, LLC.
Title: CEO
Summary: Mr. Gomez founded Rockslide Analytics in order to develop and eventually sell a depth sensing camera. A depth sensing camera can image a scene in three dimensions. Currently Rockslide Analytics is also used to promote Mr. Gomez's consulting and expert work.

From: August 2006
To: March 30, 2009
Organization: ActSolar Inc.
Title: VP Engineering and System Architect
Summary: Mr. Gomez has designed and built a 400 watt power inverter which takes an input voltage of 30 volts DC and converts it to 240 VAC. Included in the design is an energy compensation circuit that recovers up to 40% of power normally lost due to power factor correction issues. Included as part of the inverter system was rooftop data collection for power and temperature with wireless connections to cloud management services.

ActSolar was sold to National Semiconductor Corp. on March 19, 2009.

From: September 2004
To: August 2005
Organization: BridgeWave Inc.
Title: Consultant
Summary: Mr. Gomez built a 10 gig Ethernet test platform to facilitate manufacturing tests of Bridgewave's high speed wireless network system. This system replaced the Smart Bits Ethernet test analyzer in the manufacturing test environment.

- Built test generator: Ethernet packet generator which generated packets of various sizes, address spaces, payload and checksums.
- Built test receiver and analyzer which detected various failure mechanisms, maintained statistics and reported them to a user interface written in Lab View.
- Used the Xilinx Vertex II in the 2003 version. Used Xilinx Spartan 3e in 2004 version.

From: September 2004
To: September 2004
Organization: PA Consulting Group
Title: Consultant

Summary: Miguel Gomez has provided hardware evaluation services for corporate mergers and acquisitions. These services include systems and hardware reviews in the following areas:

- Analysis of system performance to cost of the hardware implementation. Costs include development time, flexibility of the system for future growth and final product costs.
- Review of the VHDL and Verilog code implementations, documentation and development strategies.
- VHDL and Verilog code management including compilation processes, simulation, test coverage, bug tracking and source code control.
- FPGA and ASIC tool chain management.
- Circuit board design and layout for production environments
- Circuit board certification testing for FCC, UL, and Environmental tests
- Review of production line management including assembly and test processes.

From: Jan 2003
To: May 2003
Organization: Santel Networks
Title: Consultant
Summary: Mr. Gomez Developed an optical duo-binary (ODB) encoder. At 10.7 Giga bits per second (GBps) ODB reduces the spectral spread to ½ of the ordinary NRZ format. This format allows high spectral efficiency over long distances by reducing nonlinear penalties due to narrower channel spacing and allows a higher bit rate or increases transmission distances. The project was implemented in a Xilinx FPGA running at 667 Mbs with a 10.7 GHz Mux/Demux feeding 16 LVDS streams to the FPGA. The ODB behavior was simulated in a C-coded simulation. The circuit board's highest clock speed was 10.7 Gigahertz and was modeled in HSPICE. Board level simulation was performed using NCVerilog. Several Patents were applied for and the board was shown at the Optical Fiber Communication Conference & Exposition in March of 2003.

From: March 2001
To: December 2002
Organization: Extreme Networks, Inc.
Title: Director of Hardware, Content Networking Division
Summary: Mr. Gomez managed a team of Hardware and Software engineers, which developed and maintained a Layer 5 Content Addressable Switch. The switch is capable of L2, L3, L4 switching as well as L5 switching which uses HTTP headers to make routing decisions. All routing decisions were made in real time (1 GBPs) by hardware in FPGAs while a Power PC provided a user interface, configuration management and housekeeping diagnostics. Communications between the hardware elements and the PowerPC CPU was via a PCI bus.

From: January 2000
To: March 2001
Organization: Webstacks, Inc. (Now Extreme Networks, Inc.)

Title: Director of Hardware
Summary: Extreme Networks and several venture founding partners commissioned Webstacks to build a Content Addressable Switch. As the number four employee Mr. Gomez was hired to be the system architect and to in-turn to hire the hardware team which would implement it. He hired 13 ASIC, FPGA and software engineers into his department and managed them for the duration of the project. Time to development was one year and at that time functionality was proven to Extreme, which then bought Webstacks for $68MM cash and stock.

From: February 1997
To: December 1999
Organization: Philips Semiconductor
Title: Consultant
Summary:

- Developed the certification environment which was used by Philips Semiconductor and Microsoft to verify operation of Philips' Poseidon handheld chipset running Windows CE. This included board development, FPGA coding and simulation as well as porting Windows CE.
- Supported development of Philip's version of the Mips 4000 along with several of the peripheral devices that made up the system on a chip and the bus interconnect.
- Miguel Gomez also developed the ASIC logic and board level hardware for a 56Kbs software modem while at Philips.

From: September 1994
To: January 1997
Organization: Minden Group, Inc.
Title: President & Founder
Summary: After founding The Minden Group, Miguel Gomez developed several types of memory adapters used to adapt various sizes and types of memory sticks into Personal Computers. These were sold through retail stores throughout the nation. Over 250,000 memory adapters were sold at stores such as Fry's, CompUSA, Computer City and Future Shop. Miguel Gomez also designed a video conferencing system including a low cost video capture board and modified drivers. This system was also sold through the retail channels.
After developing these products he organized and managed a small team of 10 to 15 product managers and sales personal. Manufacturing was done in Taiwan with final assembly and distribution in the United States.

From: April 1989
To: August 1994
Organization: Spectrum Analysis, Inc.
Title: Founder & President
Summary: Consulting services company which Mr. Gomez founded specializing in computing, telephony and data systems. The company was a full service design firm capable of electrical circuit design with emphasis on ASIC, FPGA and ASIC emulation as well as complex PCB level designs. Responsibilities as founder were to identify specific business opportunities as well as to manage and implement portions of the technical projects.

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From:	August 1987
To:	March 1989
Organization:	Quickturn Systems, Inc.
Title:	Applications Manager
Summary:	Quickturn developed an ASIC emulator using Xilinx FPGAs. Mr. Gomez was hired as Quickturn's first applications engineer, and was initially responsible for developing the training and demonstration systems for Quickturn's initial customers. Later as the company matured, he managed the customer support team. Since this ASIC emulator worked at a fraction of clock speed, he developed a methodology of slowing board designs to 100s of KHz while maintaining clock and memory (DRAM) integrity.

From:	July 1987
To:	September 1988
Organization:	Telestream Corporation
Title:	Applications Engineer
Summary:	Applications engineer responsible for demonstration system development, training and sales support of the Telestream programmable voice and data management system.

From:	March 1985
To:	April 1987
Organization:	Stratacom, Inc.
Title:	Design Engineer
Summary:	Responsible for development and maintenance of an Adaptive Differential Pulse Code Modulation (ADPCM) voice compression board. This system allowed twice as many calls to be placed on Tl transmission lines. Also developed Stratacom’s digital data over T1 lines which was used in Stratacom's network management system, a precursor to frame-relay.

From:	June 1983
To:	March 1985
Organization:	ROLM Corporation
Title:	Design Engineer
Summary:	Responsible for the development of a multiplex/demultiplex hardware board used in the ROLM BUS 295 telephone switch. A novel elastic buffer was used to automatically determine the length of an inter-cabinet data bus, whose length varied based on the customer's requirements. This eliminated the need for manufacturing technicians to manually adjust clock skew.

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Litigation Support Experience

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Fabricant LLP
Case Names:	Rampart v. NXP Semiconductors 6:21-CV-01294-ADA Supported Rampart
Services Provided:	Investigated DDR SDRAM memory systems
Dates	December 2022 - September 2023

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Winston Strawn LLP
Case Names:	Flypsi Inc. v. Google LLC 6:22-cv-00031 Supported Flypsi
Services Provided:	Investigated Voice over IP software code.
Dates	February 2023 - Present

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Sheridan Ross LLC
Case Names:	K.Mizra v. Cisco Systems 6:20-cv-01031 Supported K.Mizra
Services Provided:	Investigated infringement related to contagion detection, isolation and repair.
Dates	February 2023 - Present

Expert Engagement:

Type of Matter:	Patent Infringement Case

Law Firm:	Procopio, Cory, Hargreaves & Savitch LLP
Case Names:	RICMIC LLC v. Teldata Enterprise Networks 3:21-cv-1334-CAB-MDD
	Supported Teldata
Services Provided:	Wrote invalidity report to a health care and safety alerting system patent. Investigated prior art source code.
Dates	June 2022 - May 2023

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Hoge Fenton LLP
Case Names:	Michael Joseph Costabile v. Ustopit, LLC 7:21-cv-00155-BO
	Supported Michael Constablile
Services Provided:	Investigated infringement of timing systems in sports events. Wrote claim construction report and defended opinions at deposition.
Dates	August 2022 - March 2023

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Fabricant LLP
Case Names:	RFCyber v. Apple Inc. IPR2022-00412, IPR2022-00413
	Supported RFCyber
Services Provided:	Wrote and defended a response to invalidity contentions concerning security used in financial transactions.
Dates	November 2022 - February 2023

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Fabricant LLP
Case Names:	Rampart Asset Management v. NXP, Renesas, Texas Instruments, Huawei and Silicon Motion. 6:20-cv-01031
	Supported Rampart Asset Management

Services Provided:	Investigated infringement related to PCIe equalization circuits.
Dates	January 2022 - February 2022

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Fish and Richards
Case Names:	Ikorongo v. Bumble Trading LLC 6:20-cv-00256
	Supported Bumble Trading LLC
Services Provided:	Investigated infringement related to collecting geographic location data from cell phones.
Dates	October 2021 - November 2021

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Folio Law PLLC
Case Names:	K.Mizra v. Cisco Systems 6:20-cv-01031
	Supported K.Mizra
Services Provided:	Investigated infringement related to contagion detection, isolation and repair.
Dates	June 2021 - October 2021

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Mintz
Case Names:	Philips v. MediaTek, RealTek 337-TA-1222
	Supported Philips
Services Provided:	Investigated infringement related to securing digital video.
Dates	January 2021 - July 2021

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Russ August & Kabat
Case Names:	EcoFactor v. Google, ecobee, Alarm, Vivent 337-TA-1185
	Supported EcoFactor
Services Provided:	Investigated infringement related to smart thermostat devices.
Dates	February 2020 - September 2020

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Russ August & Kabat
Case Names:	Pavo Technologies v. Kingston 8:14-cv-1352-JLS
	Supported Pavo
Services Provided:	Investigated infringement related to USB Flash Drives. I provided a written opinion, defended my opinions in a deposition and testified at trial.
Dates	February 2019 - February 2020

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Orrick
Case Names:	Infinity Computer Products Inc. v. Toshiba America Business Solutions' 2:12-cv-06796-NIQA
	Supported Konica Minolta Business Solutions (Defendant).
Services Provided:	Investigated infringement related to fax/business copy solutions
Dates	April 2019 - June 2019

Expert Engagement:

Type of Matter:	Contracts Dispute
Law Firm:	HorizonIP
Case Names:	Smith v. ORBCOMM
	Supported ORBCOMM
Services Provided:	Investigated geolocation services for asset tracking.
Dates	March 2019 - July 2019

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Russ August & Kabat
Case Names:	SPEX Technologies v. Kingston
	Supported SPEX
Services Provided:	Investigated infringement related to secure disk drives. I provided a written opinion, defended my opinions in three depositions and testified at trial.
Dates	January 2017 - July 2020

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Orrick, Herrington & Sutcliffe
Case Names:	Synopsys v. Mentor Graphics Inv.
	Supported Synopsys
Services Provided:	Analyzed FPGA based hardware emulators relative to patent infringement allegations. Provided written statements.
Dates	December 2014 – September 2017

Expert Engagement:

Type of Matter:	Inter Partes Review
Law Firm:	Schmeiser, Olsen & Watts
Case Names:	NA
Services Provided:	Researched prior art related to video conferencing systems.
Dates	May 2016 – March 2017

Expert Engagement:

Type of Matter:	Patent Infringement and Trade Secret Cases
Law Firm:	Russ August & Kabat
Case Names:	VIA Technologies, Inc., et al. v. ASUS Computer International, Inc.Case No. 5:14-cv-03586-BLF
	Supported VIA Technologies.

Services Provided:	Analyzed hardware infringement of USB and PCIE drivers. Analyzed trade secrets theft of the same hardware. Provided written statements and oral testimony. I provided a written opinion, defended my opinions in three depositions and presented our positions at an arbitration hearing.
Dates	June 2015 – August 2017

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	CALDWELL CASSADY CURRY P.C.
Case Names:	Smartflash LLC, et al. v Google Inc., et al., Case No. 6:14-cv-435- KNM
Services Provided:	Analyzed Google in-app purchase client-server software.
Dates	January 2015 – November 2015

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Orrick, Herrington & Sutcliffe
Case Names:	Certain Consumer Electronics and Display Devices with Graphics Processing and Graphics Processing Units Therein Nvidia v. Qualcomm, Samsung, Imagination Inv. No. 337-TA-932 Supported Nvidia
Services Provided:	Analyzed thread execution and video processing in graphics integrated circuits.
Dates	December 2014 – May 2015

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	CALDWELL CASSADY CURRY P.C.
Case Names:	Smartflash LLC, et al. v Apple Inc., et al., Case No. 6:13-cv-447-MHS-KNM Supported Smartflash
Services Provided:	Analyzed Apple in-app purchase client-server software.
Dates	June 2014 – August 2014

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Young Basile Hanlon & MacFarlane P.C. Durie Tangri
Case Names:	Narada Systems, LLC v. Tabula Inc. Case No. 6:13-cv-336-LED Supported Tabula Inc.
Services Provided:	Analyzed prior art related to FPGA switch and routing fabrics.
Dates	February 2014 – April 2014

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Morrison Foerster
Case Names:	Intellectual Ventures I & II, LLC et al. v. Altera Corporation et al. Case No. 10cv 01065-LPS Supported Altera and Xilinx
Services Provided:	Analyzed prior art related to systems on a chip.
Dates	September 2012 – May 2014

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	McKool Smith, Dallas Texas
Case Names:	ParkerVision Inc. Inc. v. Qualcomm Incorporated. Civil Action No. 3:11-cv-719-J-37-TEM Supported ParkerVision
Services Provided:	Reviewed schematics related to the down conversion of a radio frequency signal to a base band signal.
Dates	September 2012 – May 2013

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	McKool Smith, Dallas Texas
Case Names:	WI-LAN INC., v. HTC CORPORATION, HTC AMERICA, INC., and EXEDEA, INC.

	Civil Action No. 2:11-CV-68 Supported WiLAN
Services Provided:	Investigated patent infringement related to the decoding and encoding of broadband transmission. I investigated VHDL, Verilog, C, and C++ source code related to Orthogonal Frequency Division Multiplexing and SC-OFDMA
Dates	September 2012 – August 2013
Expert Engagement:	
Type of Matter:	Patent Infringement Case
Law Firm:	Orrick, Herrington & Sutcliffe
Case Names:	Lantiq Deutschland GmbH v. Ralink Technology Corp., et al.
	Civil Action No. 11-cv-00234-EJD Supported Ralink
Services Provided:	Investigated patent infringement related to fractional phase lock loops and integer phase lock loops embedded in Ethernet and DSL circuits.
Dates	May 2012 – September 2012
Expert Engagement:	
Type of Matter:	Patent Infringement Case
Law Firm:	Morrison and Foerster
Case Names:	Sonic v. Arteris UNITED STATES DISTRICT COURT NORTHERN DISTRICT OF CALIFORNIA Case No. 11-CV-05311 MEJ
	Supporting Sonic
Services Provided:	Investigating infringement of hardware patents related to integrated circuit interconnections.
Dates	March 2012 – February 2013
Expert Engagement:	

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Type of Matter:	Patent Infringement Case
Law Firm:	Quinn Emanuel
Case Names:	MotionPoint v. Transperfect
	Supported MotionPoint
Services Provided:	Investigated infringement of software patents related to language translation. Offered an opinion regarding MotionPoint's product infringement on the asserted patent and invalidity thereof. Testified at trial in the United States District Court, Northern District of California Oakland Division.
Dates:	August 2012 – July 1 2013

Expert Engagement:	
Type of Matter:	Patent Infringement Case
Law Firm:	Faegre Baker Daniels
Case Names:	Honeywell International, Inc, v. Nest Labs Inc., and Best Buy Co. Inc. Case No. 12-cv-299 (SRN/JSM)
	Supporting Honeywell International
Services Provided:	Investigated infringement of hardware patents related to power stealing.
Dates:	July 2012 – August 2012

Expert Engagement:	
Expert Engagement:	
Type of Matter:	Patent Infringement Case
Law Firm:	DLAPiper
Case Names:	MOTOROLA MOBILITY, INC. and GENERAL INSTRUMENT CORP. v. TIVO Inc. UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF TEXAS Civil Action No. 5:11-00053-DF
	Supported Motorola
Services Provided:	Investigated infringement of software patents related to Personal Video Recording devices.

Dates: February 2012 – August 2012

Expert Engagement:

Type of Matter: Patent Infringement Case
Law Firm: Kellogg, Huber, Hansen, Todd, Evans & Figel. P.L.L.C. Washington D.C.
Case Names: TiVo Inc. v Verizon Communications Inc. et al.
UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS MARSHALL DIVISION
Case No. 2:09-cv-257-DF (E.D. Tex.)

Supported Verizon

Services Provided: Investigated infringement of software patents related to digital video recording.

Dates: April 2012 – June 2012

Expert Engagement:

Type of Matter: Patent Infringement Case
Law Firm: McDermott Will & Emery
Case Names: MotionPoint v. Transperfect
UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
Case No. 4:10-cv-02590-CW (JCS)

Supported MotionPoint

Services Provided: Investigated infringement of software patents related to language translation.

Dates: January 2012 – June 2012

Expert Engagement:

Type of Matter: Patent Infringement Case
Law Firm: DLA Piper LLP
Case Names: Freescale Semiconductor v. Funai Electric, MediaTek Inc., Zoran Corporation
INTERNATIONAL TRADE COMMISSION
Case No. ITC 337-TA-786
Supporting Funai, MediaTek, Zoran.

Supported Zoran

Services Provided: None

Dates: October 2011 – June 2012

Expert Engagement:

Type of Matter: Patent Infringement Case
Law Firm: Morrison and Foerster
Case Names: Altera v. LSI
UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
Case No. 11-cv-03139 CW
Supported Altera

Services Provided: Investigated infringement of hardware patents related to integrated circuit power management, clock recovery and high-speed bus implementations.

Dates June 2011 – September 2011

Expert Engagement:

Type of Matter: Patent Infringement Case
Law Firm: Jones Day
Case Names: Nielsen. v comScore Inc.
UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF VIRGINIA ALEXANDRIA DIVISION
Case No. 1:11-cv-290-LMB-TRJ
Supported Nielsen

Services Provided: Investigated infringement of software patents related to the collection of demographic information from survey panels and automated user identification. I investigated C, C++, C#, Java and SQL code residing on servers and personal computers.

Dates June 2011 – September 2011

Expert Engagement:

Type of Matter: Patent Infringement Case
Law Firm: Kellogg, Huber, Hansen, Todd, Evans & Figel. P.L.L.C. Washington D.C.
Case Names: Active Video Networks Inc. v Verizon Communications Inc.
UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS MARSHALL DIVISION
Case No. 2:10-cv-248-RAJ-FBS

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Supported Verizon

Services Provided: Investigated infringement of software patents related to communications between the set-top box and content providing servers at the communications head-end.

Dates December 2010 – March 2011

Expert Engagement:

Type of Matter: Patent Infringement Case
Law Firm: Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.C. Washington D.C.
Case Names: HTC v. Apple Computers in the matter of Certain Portable Electronic Devices and Related Software.
UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON D.C.
Case 337-TA-721

Supported HTC

Services Provided: Investigated infringement of software patents related to power management in smart phones.

Dates November 2010 – January 2011.

Expert Engagement:

Type of Matter: Patent Infringement Case
Law Firm: Kellogg, Huber, Hansen, Todd, Evans & Figel. P.L.L.C. Washington D.C.
Case Names: Verizon Communications Inc. in the matter of Certain Digital Set-Top Boxes
UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON D.C.
Case 337-TA-712
Case 337-TA-717

Supported Verizon

Services Provided: Investigated infringement of software patents related to communications between the set-top box and content providing servers at the communications head-end.

Dates June 2010 – September 2010

Expert Engagement:

Type of Matter: Patent Infringement Case
Law Firm: McKool Smith, Dallas Texas
Case Names: WiLAN Inc. v. Acer, et. al.

THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

Civil Action No. 2-07CV-473 (E.D. Tex.)
WiLAN Inc. v. Acer, et. al.

Civil Action No. 2-07CV-473 (E.D. Tex.)
WiLAN Inc. v. Westell Technologies Inc.

Civil Action No. 2:08-CV-247 (TJW)
WiLAN Inc. v. RESEARCH IN MOTION CORPORATION,
RESEARCH IN MOTION LTD.,
MOTOROLA, INC., UTSTARCOM, INC.,
LG ELECTRONICS MOBILECOMM
U.S.A., AND LG ELECTRONICS, INC.,

Case No. 5:08-CV-04555-JW
WiLan v. Intel

Supported WiLAN

Services Provided: These cases consisted of 802.11a,b,g,n and Bluetooth investigations. In as much I investigated infringement of hardware patents related to the decoding and encoding of broadband transmission. Investigated Verilog, C, and C++ source code related to Bluetooth piconets, Orthogonal Frequency Division Multiplexing and Complementary Code Key incorporated in various integrated circuits. In addition to the above investigations, I was deposed and was asked to testify. This case settled before trial.

Dates: May 2009 – March 2011

Expert Engagement:

Type of Matter: Patent Infringement Case
Law Firm: Jones Day, Palo Alto CA.
Case Names: Agere Systems Inc. and LSI Corp. vs. Xilinx, Inc.
UNITED STATES DISTRICT COURT
SOUTHERN D1STR[CT OF NEW YORK
Case 09 Civ. 9717 (JSR)
Case 09 Civ. 9719 (JSR)

Supported Xilinx

Services Provided: Investigated infringement of hardware patents related to the implementation of Field Programmable Gate Arrays (FPGAs).

Dates: February 2010 – April 2010

Expert Engagement:

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Type of Matter:	Patent Infringement Case
Law Firm:	Goodwin Procter LLP
Case Names:	MedioStream, Inc. v. Acer, et al. Consolidated Case No. 2:08-CV-369-CE, Eastern District of Texas
	Supported MedioStream
Services Provided:	Investigated infringement of software patents related to the decoding and encoding of video in Apple Computer products. Investigated C, C++ and Objective C source code in various video transcoding applications.
Dates	July 2009 – October 2010

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Womble Carlyle Sandridge & Rice.
Case Names:	Rembrandt Data Technologies vs. AOL LLC, et. al.
	THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF VIRGINIA - Alexandria Division C.A. No. 1:08-cv-01009-GBL-IDD
	Supported Rembrandt Data Technologies.
Services Provided:	Investigated infringement of hardware and software patents related to the transmission of data, voice and video over cable networks.
	Miguel Gomez performed the following tasks: ▪ Investigated assembly level source code for a V.34 modem physical layer modulation and de-modulation circuit. ▪ Gave testimony at deposition.
Dates	April 2009 – June 2009

Expert Engagement:

Type of Matter:	Patent Infringement Case
Law Firm:	Kellogg, Huber, Todd, Evans & Figel Washington D.C.
Case Names:	Rembrandt Data Technologies vs. Comcast, et. al.
	UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF TEXAS MARSHALL DIVISION
	2:06-cv-00047-TJW-CE Rembrandt Data Technologies vs. Rembrandt Data Technologies vs. SHARP CORPORATION and SHARP ELECTRONICS CORP.

Case No. 2:06CV507 (LED)
Rembrandt Data Technologies vs.
CHARTER COMMUNICATIONS, INC.,)
CHARTER COMMUNICATIONS)
OPERATING, LLC, and COXCOM, INC.

2:06-cv-00223-TJW-CE
Rembrandt Data Technologies vs.
CHARTER COMMUNICATIONS, INC,
CHARIER COMMUNICATIONS
OPERATING, LLC, COX
COMMUNICATIONS, INC, COXCOM,
INC, COX ENTERPRISES, INC., CSC
HOLDINGS, INC, and CABLEVISION
SYSTEMS CORPORATION,

THE UNITED STATES BANKRUPTCY COURT
SOUTHERN DISTRICT OF NEW YORK
Case No. 02-41729 (REG)
Rembrandt Data Technologies vs.
Adelphia Communications Corporation;)
Century-TCI California, LP;)
Century-TCI California Communications, LP;)
Century-TCI Distribution Company, LLC;)
Century-TCI Holdings, LLC;)
Parnassos, LP;)
Parnassos Communications, LP;)
Parnassos Distribution Company I, LLC;)
Parnassos Distribution Company II, LLC;)
Parnassos Holdings, LLC;)
Western NY Cablevision, LP

Supported Rembrandt Data Technologies.

Services Provided: Investigated infringement of hardware and software patents related to the transmission of data, voice and video over cable networks.

Miguel Gomez performed the following tasks:

- Investigated Verilog source code used to implement a modem physical layer modulation and de-modulation circuit.
- Investigated C and C++ software used to implement cable modems.

Dates September 2008 – February 2009

Expert Engagement:
Type of Matter: Patent Infringement Case
Law Firm: Hogan and Hartson, New York NY
Case Names: ProMOS Technologies vs. Freescale Semiconductor Inc.
Case No. 06-788 JJF (D. Del.)

Supported ProMOS

Services Provided: Investigated infringement of hardware logic patents related to cache controllers.

Miguel Gomez performed the following tasks:

- Investigated Verilog source code used to implement a cache controllers in integrated circuits designed and produced by Freescale Technologies.

Dates February 2008 – August 2008

Expert Engagement:

Type of Matter: Patent Infringement Case
Law Firm: McKool Smith, Dallas Texas
Case Names: i4i Limited Partnership vs. Microsoft., et al.

THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TYLER DIVISION
Case No. 6:07-CV-113-LED

Supported i4i.

Services Provided: Investigated infringement of software patents related to the organization of XML data.

Miguel Gomez performed the following tasks:

- Investigated C and C++ software code that read, displayed and managed XML constructs in Microsoft office software products.

Dates November 2007 – August 2008

Expert Engagement:

Type of Matter: Patent Infringement Case
Law Firm: McKool Smith, Dallas Texas
Case Names: Rembrandt Data Technologies vs. Comcast., et al.
MDL Docket No. 07-mdl-1848 GMS

Supported Rembrandt Data Technologies.

Services Provided: Investigated infringement of software and hardware patents related to the transmission of data, voice and video over cable networks.

Miguel Gomez performed the following tasks:

- Investigated C and C++ software code in the cable modem management layer that controlled data flows through the various chip sets of the cable modem.
- Investigated DSP code that provided data connection services in cable modems.

Dates May 2007 – July 2007

Expert Engagement:

Type of Matter: Patent Infringement Case
Law Firm: McKool Smith, Dallas Texas
Case Names: Samsung vs. Ericsson et al.,

UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.
Case No. 337-TA-583
Case No. 337-TA-577

Supported Ericsson.

Services Provided: Investigated infringement of patents in cell phones.

Miguel Gomez performed the following tasks:

- Investigated C and C++ software code that controlled the power management and clock calibrations.
- Reviewed hardware description language code and DSP firmware to trace the control flow from the managing software down to the hardware registers.
- Wrote an expert report that documented the findings.
- Acquired and wrote software tools to assist the investigation process.

Dates January 2007 – May 2007

Expert Engagement:

Type of Matter: Patent Infringement Case
Law Firm: McKool Smith, Dallas Texas
Case Names: American Video Graphics, L.P. vs. Sony Computer Entertainment America
American Video Graphics, L.P. vs. Hewlett Packard Co., et al.,

Supported American Video Graphics.

Services Provided: Investigated patent infringement in graphic chipsets used in personal computers and game consoles.

Miguel Gomez performed the following tasks:

- Investigated the accused chipsets by examining the hardware code for various sub-modules including the 2D and 3D rendering engines and the frame buffers that connect the graphics processing units to memory devices.
- Wrote claim charts and created exhibits.
- Acquired and wrote software tools to assist the investigation process.

Dates August 2005 – November 2005

Expert Engagement:

Type of Matter: Patent Infringement Case
Law Firm: McKool Smith, Dallas Texas
Case Names: American Video Graphics, L.P. vs. Sony Corporation of America, et al.,
American Video Graphics, L.P. vs. Hewlett-Packard Co., et al.,
American Video Graphics, L.P. v. Electronic Arts, Inc., et al., No. 6:04-CV-398 LED

Supported American Video Graphics.

Services Provided: Patent infringement investigation of computer game software.

Miguel Gomez performed the following tasks:

- Examined C and C++ source code for electronic computer games which ran on Sony, Microsoft and Nintendo game consoles as well as Personal Computers
- Wrote a claim chart and created exhibits.

Dates May 2005 – August 2005

Expert Engagement:

Type of Matter: Patent Infringement
Law firm: Dewey Ballantine, Palo Alto, California
Case Name: Matsushita vs. Texas Instruments

Supported Matsushita.

Services Provided:

- Read and interpreted approximately 50 patents issued to Matsushita for Dewey Ballantine attorneys in their preparation for litigation between Matsushita and Texas Instruments.

Dates: November 2004 – March 2005

Expert Engagement:

Type of Matter: Patent Infringment
Law firm: Wilson Sonsini Goodrich Rosatti
Case Name: Zoran vs MediaTek et, al.

Supported MediaTek.

Service Provided: Offered an opinion as to when a product was ready for patenting per the requirements for an on-sale bar.

Miguel Gomez performed the following tasks:

- Offered an opinion as to whether the product in this was ready to be patented
- Reviewed all available documentation.
- Wrote report and rebuttal to opposition expert report
- Gave testimony at deposition and provided a written opinion at the ITC hearing.

Dates

September 2004 – February 2005

Patents

Issued Patents

7,814,204	Method of and system for analyzing the content of resource requests
7,447,777	Switching system
7,298,746	Method and system for reassembling and parsing patents in a network environment
7,321,926	Method of and system for allocating resources to resource requests
8,412,838	Method of and system for analyzing the content of resource requests

Applications

"System and Method for an array of intelligent inverters"
European: 09747629.5-1242/2291908
US PCT/US2009044033
Also published as: CN102067429A, US2090283129, WO2009140548A3