Juanita R. Brooks, SBN 75934, brooks@fr.com
Seth M. Sproul, SBN 217711, sproul@fr.com
Frank Albert, SBN 247741, albert@fr.com
Joanna M. Fuller, SBN 266406, jfuller@fr.com
Robert M. Yeh, SBN 286018, ryeh@fr.com
Fish & Richardson P.C.
12390 El Camino Real
San Diego, CA 92130
Phone: 858-678-5070 / Fax: 858-678-5099

Ruffin B. Cordell, DC Bar No. 445801, *appearing pro hac vice*, cordell@fr.com
Lauren A. Degnan, DC Bar No. 452421, *appearing pro hac vice*, degnan@fr.com
Fish & Richardson P.C.
1000 Maine Avenue, S.W. Suite 1000
Washington, D.C. 20024
Phone: 202-783-5070 / Fax: 202-783-2331

Mark D. Selwyn (SBN 244180), mark.selwyn@wilmerhale.com
WILMER CUTLER PICKERING HALE AND DORR LLP
950 Page Mill Road
Palo Alto, CA 94304
Phone: 650-858-6000 / Fax: 650-858-6100

Attorneys for *Defendant/Counterclaim-Plaintiff Apple Inc.*

[Additional counsel listed in signature block on last page.]

UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF CALIFORNIA

QUALCOMM INCORPORATED, Plaintiff, v. APPLE INCORPORATED, Defendant. AND RELATED COUNTERCLAIMS.	Case No. 3:17-CV-1375-DMS-MDD **DECLARATION OF VINCENT MOONEY IN SUPPORT OF THE OPENING CLAIM CONSTRUCTION BRIEF OF APPLE INC.** Judge: Hon. Dana M. Sabraw Mag. Jdg. Hon. Mitchell D. Dembin

VII. CLAIM CONSTRUCTION

A. "performance domain" ('812 Patent, cl. 8; '216 Patent, cl. 1; '196 Patent, cls. 1, 2, 3)

25. I have been asked to provide my understanding, as one of ordinary skill in the art, of the disputed term "performance domain" as used in the Apple Asserted Patents.[2] My understanding of Apple's and Qualcomm's proposed constructions of this term is set forth in the following table:

Apple's Proposed Construction	Qualcomm's Proposed Construction
performance domain: "one or more components that may be controlled as a unit or independently for performance configuration purposes"	**performance domain:** "one or more components that may be controlled by the power management unit as a unit for performance configuration purposes"

26. It appears that there is no dispute that a "performance domain" includes one or more components, as indeed the Apple Asserted Patents teach. *See, e.g.*, Ex. B at 2:31–34 ("[E]ach performance domain may include ***at least one component*** but may include ***multiple components***, in various embodiments.") (emphasis added). Nor do the parties dispute that the components are controlled "for performance configuration purposes." *See id.* 4:14–16 ("A performance domain may be one or more components that may be controlled by the PMU 28 as a unit for performance configuration purposes."). Rather, I understand the dispute centers on whether a "performance domain" is controlled either as a unit or independently, as Apple asserts, or as a unit only, as Qualcomm argues.

27. To one of ordinary skill in the art reading the specifications at the relevant time, Apple's proposed definition correctly captures the full meaning of the term performance domain. For instance, the specification tells me the following:

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[2] For the disputed terms "performance domain," "power management unit," and "establish a . . . performance state," I have included citations to the '812 Patent, which shares a specification with the '216 and '196 Patents.

> The components that form a performance domain ***may transition together*** from one performance state to another performance state. On the other hand, ***components in different performance domains may be independent of each other***, at least from the standpoint of hardware, and may have ***independently-determined performance states***.

'812 Patent 4:20–25 (emphasis added). One of ordinary skill would understand from this description that components in a "performance domain" may be controlled either as a unit (i.e., together) or independently of each other.

28. Other discussions in the Apple Asserted Patents also support Apple's definition. For example, the Apple Asserted Patents illustrate that components can be controlled independently from other components in the same performance domain via separate voltage supplies:

> In some embodiments, the performance state may include multiple instances of a performance characteristic. For example, if the ***processor is powered off*** in the sleep state and ***other components are in the same performance domain***, the ***voltage for the processor may be set separately from the voltage for the other components*** that remain active. Similarly, any other performance characteristics that apply to more than one component in a performance domain and that ***may be independent controlled for such components*** may be represented by multiple instances in the performance state.

Id. at 5:19–28.[3] The Apple Asserted Patents illustrate this idea with an example involving a processor in the sleep state and an L2 cache in retention mode both in the same performance domain. *See id.* 5:36–43. Because the Apple Asserted Patents demonstrate specific instances in which components within a "performance domain"

[3] Although not a disputed term, the Apple Asserted Patents define "component" to include, among other things, processors. '812 Patent 6:23–24.

are controlled either as a unit or independently, Qualcomm's definition that excludes independently controlled components is unreasonably narrow.

29. The parties also dispute whether a "performance domain" must be controlled by the power management unit.[4] In my opinion, as one of ordinary skill in the art,, Qualcomm's proposal unnecessarily limits the definition a person having ordinary skill in the art would give "performance domain." While power management unit control of the components is possible, it is not necessary according to my understanding, as one of ordinary skill in the art, of the patent specification. *See, e.g.*, *id.* at Abstract ("The PMU ***may*** control the transition of the performance domains."). The Apple Asserted Patents very explicitly tell me that "…performance domain[] transition may be hardware controlled by the PMU 28, ***or*** may be software controlled using the valid indications in the performance configuration registers." *Id.* at 8:57–60. Qualcomm's definition that requires exclusive power management unit control of performance domains is therefore inconsistent with my understanding, as one of ordinary skill in the art, of the plain language of the Apple Asserted Patents.

30. Thus, in my opinion, as one of ordinary skill in the art, a "performance domain" is "one or more components that may be controlled as a unit or independently for performance configuration purposes."

B. "power management unit" ('812 Patent, cl. 8; '216, cls. 1, 2; '196, cl. 1)

31. I have been asked to provide my understanding, as one of ordinary skill in the art, of the disputed term "power management unit" as used in the Apple Asserted Patents. My understanding of Apple's and Qualcomm's proposed constructions of this term is set forth in the following table:

[4] I understand that Qualcomm proposes a definition for the term power management unit. I offer my opinion as to the appropriate definition of that term below.

Apple's Proposed Construction	Qualcomm's Proposed Construction
power management unit: plain and ordinary meaning. To the extent the Court finds that further construction is necessary, "hardware and/or software that causes a performance domain to transition to a performance state"	**power management unit:** "a circuit that manages power consumption by automatically transitioning in hardware the performance states of a plurality

32. Based on my reading of the Asserted Apple Patents as one of skill in the art, a "[power management unit] may be configured to establish a corresponding performance state for each performance domain, and may be configured to control transitions between performance states in each performance domain." *Id.* at 4:16-20. The power management unit achieves these transitions using either hardware or software. For example the patent discloses hardware that is programmable—implying a combination of hardware and software: "a power management unit (PMU) may automatically transition (***in hardware***) the performance states of one or more performance domains in a system." *Id.* at Abstract (emphasis added); *see also id.* at 2:34–39 ("The power management unit may be programmable with performance state identifiers for each performance domain, and for each ***hardware-managed transition*** (e.g. into the sleep state, out of the sleep state, or both into and out of the sleep state, in various embodiments).") (emphasis added); APL-QC1375_00205332 (responding to Office Action rejecting claims as being non-statutory for being implemented only in software and listing "power management unit" as "express recitation of hardware").

33. The patent also discloses software-managed state transitions by software running on hardware: "[t]he target performance states to which the performance domains are to transition ***may be programmable in the PMU by software***, and software may signal the PMU that a processor in the system is to enter the sleep state." *Id.* (emphasis added); *see also id.* at 8:37–41 ("Alternatively, ***software*** may use processor instruction execution mechanisms to cause the

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