

1 UNITED STATES DISTRICT COURT
2 SOUTHERN DISTRICT OF CALIFORNIA

3
4 QUALCOMM INCORPORATED,)

5 Plaintiff,)

CASE NO.

6 vs.)

3:17-CV-1375-DMS-MDD

7 APPLE INCORPORATED,)

8 Defendant.)

9 _____)
AND RELATED COUNTERCLAIM)

10 _____)

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12
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14 VIDEOTAPE DEPOSITION OF
15 VINCENT J. MOONEY, III, PH.D.
16 Atlanta, Georgia
17 Thursday, August 2, 2018
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22 Reported by:

23 Judith Leitz Moran, CCR, RPR, RSA

24 JOB NO.: 145806
25

1 take a server farm for a search engine company, we
2 can think of some names, and that server farm would
3 choose the high frequency, high performance medium
4 power consumption option because they want the
5 fastest searches that are possible and they'll have
6 more complicated packages.

7 The low power option will have lower
8 clock speeds, lower performance, but would be more
9 appropriate for a battery power device.

10 And the fundamental difference, for
11 example, would be in the threshold voltages of the
12 transistors. So for the server one you'd have
13 lower threshold voltages with higher leakage but
14 higher performance. In the low power chips you'd
15 have slightly higher threshold voltages but much
16 lower leakage and that would be to lower overall
17 power.

18 Q The '812 patent -- or excuse me -- the de
19 Cesare family of patents talks about having
20 components in different performance domains; is
21 that correct?

22 A Yes, it talks about different performance
23 domains.

24 Q Is it fair to describe that as having
25 different portions of the chips that are subdivided

1 for performance purposes?

2 A For performance purposes you would take
3 the overall chip and define power domains in
4 portions of the chip.

5 Q Was that known to persons of skill in the
6 art before the de Cesare family? In other words,
7 was it already known you didn't have to run every
8 part of the chip at the same performance level
9 before the de Cesare family?

10 A Prior to the de Cesare patent the idea of
11 having different parts of the chip with different
12 clock voltage frequencies, different performance
13 characteristics was known.

14 Q Was there also before the de Cesare
15 family hardware and/or software that could be used
16 to transition the performance states of different
17 performance domains?

18 A Yes, there was hardware and software to
19 design microchips and have different performance
20 domains with different levels.

21 Q Can you think of any specific examples
22 prior to the de Cesare family of that being the
23 case, having hardware and/or software that changes
24 the performance states of different components on a
25 system on a chip?

1 A So you're asking can I think of examples
2 of hardware and software designs that controlled
3 performance domains.

4 MR. GREEN: Object to the form.

5 A So, for example, one that I looked at in
6 the 2000s was the Intel StrongARM processor and
7 there were ways to have the memory go faster or
8 slower, have different frequencies and voltages for
9 the memory versus the processor.

10 BY MR. DAVIS:

11 Q In the Intel StrongARM design, what was
12 it that caused the memory to go faster or slower
13 based upon the processor performance?

14 A In the Intel StrongARM processors the
15 software would decide to move either the processor
16 itself or the memory system to a different
17 frequency and voltage.

18 That decision would be implemented by --
19 well, the software would make the decision, would
20 send information down and eventually you'd have
21 hardware gates that would actually, for example,
22 connect a new voltage to the power line or connect
23 a different frequency to the memory or to the
24 processor.

25 The broad name of the technology was

1 called dynamic frequency and voltage scaling.

2 Q When you say software would cause it, is
3 this operating system software or what exactly do
4 you mean by the software?

5 A The software that would control the power
6 could be the operating system or in the case of an
7 embedded system without a full fledged operating
8 system you could have application software specific
9 to that embedded system making -- making the
10 decision.

11 MR. GREEN: Is it okay if we take a
12 break? I need to run to the restroom and I've lost
13 my real-time feed.

14 MR. DAVIS: Oh, yeah, yeah, that's fine,
15 we can take a break.

16 MR. GREEN: Thank you.

17 VIDEO TECHNICIAN: The time is 10:12 a.m.
18 We're now off the record.

19 (Recess taken.)

20 VIDEO TECHNICIAN: The time is 10:19 a.m.
21 We're back on the record.

22 BY MR. DAVIS:

23 Q Welcome back, Dr. Mooney.

24 A Thank you.

25 Q If you could look at Mooney Exhibit 3

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