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**UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
SAN JOSE DIVISION**

DIANA HAUCK, et al.,  
  
Plaintiff,  
  
v.  
  
ADVANCED MICRO DEVICES, INC.,  
  
Defendant.

Civil Action No. 18-CV-00447-LHK  
**CONSOLIDATED CLASS ACTION  
COMPLAINT**  
**DEMAND FOR JURY TRIAL**

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1 Plaintiffs Diana Hauck, Shon Elliott, Michael Garcia, JoAnn Martinelli, Benjamin D. Pollack,  
2 and Jonathan Caskey-Medina (collectively “Plaintiffs”), individually, and on behalf of all others  
3 similarly situated, hereby allege the following based on personal knowledge as their own conduct,  
4 and upon information and belief as to all other matters.

## 5 I. INTRODUCTION

6 1. This case concerns Defendant Advanced Micro Devices, Inc.’s (“Defendant,”  
7 “AMD,” or the “Company”) violations of state common law and state and federal statutory law with  
8 respect to the manufacture and sale of central processing units (“CPUs” or “processors”) for more  
9 than 20 years with serious security vulnerabilities (the “Defect”), which allows hackers to steal  
10 sensitive data from the most secure area of the CPU. AMD’s focus on the CPU’s speed, at the expense  
11 of security, led Plaintiffs and the Classes (as defined herein) to purchase or lease these processors, or  
12 devices containing these processors, without the knowledge that the Defect left their most sensitive  
13 data, including passwords, social security numbers, and credit card information, stored within the  
14 device’s memory vulnerable to malware attacks, and without the knowledge that attempts to patch  
15 the Defect would result in a degradation of the CPU’s advertised performance, including clock speed.

16 2. The Defect is the result of AMD’s reliance on microarchitectural optimization  
17 techniques supporting “out-of-order” execution, including “speculative execution” and “branch  
18 prediction,” to design, manufacture, and ultimately sell to the consuming public, CPUs with ever-  
19 increasing processing and performance speed. Without speculative execution and branch prediction,  
20 AMD’s CPUs are unable to reach advertised speeds. However, CPUs that rely on speculative  
21 execution and branch prediction put consumers’ most sensitive information at risk, a fact that AMD  
22 has been aware of for many year

23 3. CPUs are the “brains” of the device they power. Processors fetch, decode, and execute  
24 instructions from software programs or applications (*e.g.*, opening a Microsoft Word document).  
25 Prior to 1995, AMD processors fetched, decoded, and executed instructions one at a time, in program  
26 order, leaving CPUs idle much of the time. To better harness the performance potential of CPUs,  
27 AMD introduced a new architecture in 1995, known as “K5.”  
28

1           4.       K5 improved upon earlier-generation AMD architectures in three significant ways.  
2       *First*, K5 allowed the processor to fetch, decode, and execute several instructions in parallel—a so-  
3       called “superscalar” design—thereby improving the peak instruction throughput of the system.  
4       *Second*, K5 allowed instructions to be executed in an order subject to data dependencies, rather than  
5       the original order specified in the program—a so-called “out-of-order” design. This allowed the  
6       processor to perform useful work during otherwise idle (and therefore wasted) cycles. *Third*, K5  
7       allowed the processor to predict the path that the program would follow ahead of the execution of  
8       “branch” instructions—an optimization technique called “branch prediction”—and to speculatively  
9       execute instructions along the predicted path in order to reduce the cost of branch instructions—  
10      known as “speculative execution.”

11           5.       In high-speed CPUs, a single cycle or “clock” period is not long enough to process an  
12      individual instruction in its entirety. Instead, the processor breaks each instruction into a series of  
13      simple steps (*e.g.*, fetch, decode, and execute) called “pipeline stages,” each of which takes one clock  
14      cycle to complete. Successive instructions flow through consecutive pipeline stages one after  
15      another, similar to how manufactured goods flow through an assembly line on a factory floor.

16           6.       When the processor runs into a “branch instruction,” the purpose of which is to decide  
17      which instruction to process next, this steady flow of instructions through the pipeline is interrupted,  
18      slowing down the processor. Speculative execution allows the processor to *predict* the result of the  
19      branch instruction, and *speculatively execute* instructions further down the predicted path. When the  
20      processor eventually executes the branch instruction, the processor checks whether its prediction was  
21      correct. If the CPU guessed correctly, the processor has performed useful work by speculatively  
22      executing the instructions down the predicted path and the results are written to memory. If the CPU  
23      guessed incorrectly, however, the processor “flushes” its pipeline of the instructions it speculatively  
24      executed and proceeds to execute the instructions from the correct path. Speculative execution is  
25      necessary to keep a high-speed CPU busy with useful instructions. Without speculative execution,  
26      most modern CPUs—including those designed, manufactured, and sold by AMD—cannot operate at  
27      GHz clock rates or frequencies.  
28

1           7.       Because there is a danger that the CPU will incorrectly predict the result of a branch  
2 instruction, speculative instructions are not allowed to overwrite data stored in the processor’s cache  
3 memory.<sup>1</sup> Nevertheless, speculative instructions *are* permitted to read data, including “privileged  
4 information,” from main memory, causing such data to be brought inside the CPU’s caches. If the  
5 speculative instructions are not on the correct path, then the CPU prevents communication of the data,  
6 including “privileged” information, to the outside world by flushing the pipeline.

7           8.       Speculative execution and branch prediction led to significant increases in the CPU’s  
8 clock speed or rate, also known as its “frequency.” Beginning in 1995, and continuing until today,  
9 AMD disclosed the specifications for each and every processor it manufactured and sold. These  
10 specifications included the base and max clock speed. AMD also routinely touted gains in clock  
11 speed when advertising its CPU architecture and processors to consumers. This at times myopic  
12 focus on clock speed led to several battles between AMD and its biggest competitor, Intel Corporation  
13 (“Intel”), known within the industry as the “Megahertz” and “Gigahertz” wars.

14           9.       By 2003, CPU manufacturers had hit a wall with respect to clock speed. While CPUs  
15 had become incredibly fast due to complex superscalar designs and reliance on out-of-order  
16 execution, speculative execution, and branch prediction, the memory subsystem—which stores the  
17 instructions and data necessary for a computer, laptop, or server to function—was considerably  
18 slower than the CPU. In a 1996 article for the *Microprocessor Report*, called “It’s The Memory,  
19 Stupid!,” a CPU architect presciently noted: “today’s chips are largely able to execute code faster  
20 than we can feed them with instructions and data. . . . The real design action is in memory subsystems  
21 – caches, buses, bandwidth, and latency.”

22           10.       As a result, AMD began to address memory latency by putting greater amounts of  
23 cache memory on the same die as the CPU itself. AMD progressively increased both the number and  
24 the sizes of these on-chip caches, allowing the processor to buffer more instructions and data on-chip,  
25 where the data could be served faster when the processor needed it. AMD also imbued its processors

---

26  
27 <sup>1</sup> “Cache memory, also called Cache, [is] a supplementary memory system that temporarily  
28 stores frequently used instructions and data for quicker processing by the central processor of a  
computer.” Cache memory, ENCYCLOPEDIA BRITANNICA, <https://www.britannica.com/technology/cache-memory> (last visited June 12, 2018). Throughout this Complaint, all emphasis is added unless otherwise noted.

1 with greater intelligence to predict and speculatively execute instructions to better, as AMD's Chief  
2 Technology Officer, Mark Papermaster, described it, "feed the beast." AMD publicly touted these  
3 efforts to consumers, emphasizing the impact of these components on its CPUs' processing speeds.  
4 However, at no time did AMD disclose that the increased reliance of its CPUs on speculative  
5 execution and branch prediction to reach the advertised clock speeds exposed consumers to the  
6 Defect.

7 11. At the same time, researchers began focusing their efforts on security vulnerabilities  
8 present in computer hardware, including side channel attacks on processors and, in particular, side  
9 channel attacks on the CPU's cache subsystem. The purpose of a side-channel attack is to make  
10 inferences regarding secret information stored on a computer system by monitoring the interaction of  
11 the CPU with its physical environment (*e.g.*, the amount of time it takes to access data stored in the  
12 caches). This information can then be used to reconstruct and recover sensitive data to which an  
13 attacker otherwise would not have access.

14 12. In August 2014, AMD participated in a security-focused tutorial at an industry  
15 conference known as "Hot Chips 26" to discuss hardware security following large-scale software  
16 attacks, Stuxnet and Heartbleed. During AMD's portion of the presentation, Leendert Van Doorn  
17 ("Van Doorn"), an AMD Corporate Fellow, identified "side channel attacks" on hardware as "***a very***  
18 ***rich area of attack and very hard to protect against,***" noting in his slides that protecting against side  
19 channel attacks was "expensive." In remarks at the end of the Hot Chips 26 security tutorial, Dr.  
20 Ruby B. Lee ("Dr. Lee"), a researcher at Princeton University, confirmed that "the crown jewels,"  
21 *e.g.*, sensitive data, are "vulnerable to side-channel attacks on hardware, especially software side-  
22 channel attacks on hardware caches." She observed, "***All current processors with caches are***  
23 ***vulnerable – from embedded devices to cloud servers.***"

24 13. Despite AMD's knowledge that its processors possessed this security vulnerability,  
25 AMD did nothing to address it in its CPU architecture or its CPUs. Instead, AMD continued to sell  
26 its defective processors to consumers because the cost of tackling the Defect head-on was too great  
27 for AMD in a number of ways, including: (i) the likely material impact on processing speed of  
28 restricting speculative execution and branch prediction; (ii) the cost to fix legacy processors; and (iii)

1 the expense of re-designing and manufacturing new architecture and processors that did not have the  
2 Defect. Moreover, the inability to design and manufacture secure high-speed CPUs that were  
3 competitive with respect to clock speed would inure to the benefit of AMD's chief rival, Intel. As a  
4 result, AMD did nothing to alert consumers or fix the Defect, allowing AMD to generate tens of  
5 billions of dollars in revenues from the sale of defective processors to consumers who did not know  
6 that they were sacrificing security for clock speed.

7 14. Then, in June 2017, several researchers independently identified and disclosed to  
8 AMD and other processor manufacturers the first of four known ways to exploit the Defect in AMD's  
9 processors, all of which are collectively known as "Spectre." In the simplest type of Spectre attack,  
10 the attacker exploits security vulnerabilities that exist as a result of CPU's reliance on "speculative  
11 execution." To exploit a high-speed CPU's speculative execution capability, an attacker writes a  
12 piece of malicious code that causes the processor to "mispredict" the result of a branch instruction,  
13 inducing the CPU to speculatively execute instructions that it otherwise would not execute. It is these  
14 speculative instructions, executed on the mispredicted path, that leak the information that the attacker  
15 is then able to recover.

16 15. Depending on the contents of the secret information, the speculative instructions on  
17 the mispredicted path cause different blocks of data to be brought in from main memory to the CPU's  
18 cache subsystem. Critically, while the processor flushes its pipeline when it discovers that it has  
19 speculatively executed instructions down a mispredicted path, the CPU *does not flush the cache*  
20 *subsystem* of data related to those speculative instructions. As such, the hacker can utilize a cache-  
21 timing side channel attack to ultimately gain access to sensitive information, such as passwords or  
22 bank account information, without the requisite permissions ever being checked.

23 16. Thus, by no later than June 2017, AMD not only knew about the Defect but had  
24 evidence clearly demonstrating how it could be exploited by hackers. Despite this, AMD not only  
25 failed to alert consumers who had purchased legacy processors impacted by the Defect, but it  
26 continued to sell defective processors to consumers, generating \$1.64 billion in revenue between July  
27 1, 2017 and December 31, 2017 in its Computing and Graphics segment. Indeed, during a November  
28 28, 2017 appearance at the Credit Suisse 21<sup>st</sup> Annual Technology, Media, & Telecom Conference,

1 AMD's CEO, Lisa Su, touted AMD's "value proposition," as "extremely good," given AMD's  
2 processors "performance" and "performance-per-dollar," and noted: "[w]e just went through Black  
3 Friday here in North America, and we had a very, very strong showing." In fact, AMD was "often 3  
4 out of the top 5 or 6 out of the top 10 sellers over the weekend" and had begun to "ramp[] desktop  
5 OEM" sales "in the holiday season."

6 17. The existence of the Defect and the ways to exploit it (Spectre) were first publicly  
7 disclosed in early January 2018, when *The Register* reported that certain Intel processors contained a  
8 defect, exposing them to Spectre and another exploit known as "Meltdown." In a January 4, 2018  
9 article titled, "Nearly Every Computer Made Since 1995 Is Dangerously Flawed. Here's What You  
10 Need to Know," the author underscored the materiality of the Defect: "Spectre exploits can be used  
11 by malicious users to get at sensitive data stored in the memory of other running programs –  
12 everything from passwords and credit card information to emails and photographs. And unlike  
13 traditional malware which operates like an application, kernel exploits [*e.g.*, Spectre] can't be seen  
14 by antivirus software or in system logs."

15 18. Initially, AMD attempted to shape the narrative regarding Spectre and a related exploit  
16 known as "Meltdown" as an "Intel Only" problem. However, AMD was soon forced to admit that  
17 all of its processors had the Defect and could be exploited through Spectre.

18 19. Following the public unmasking of the Defect, AMD began to roll out "patches" to  
19 prevent hackers from using the Defect to obtain sensitive data through a Spectre exploit. Spectre,  
20 however, is difficult to "patch." As reported by *Wired* on January 6, 2018, the patches that have been  
21 rolled out or made available to consumers to prevent a much more insidious attack have resulted in  
22 "corresponding performance slowdowns" because the patches require the CPUs to "rout[e] data for  
23 processing in less efficient ways." Initial estimates have suggested that software patches intended to  
24 mitigate Spectre may reduce processing speed by as much as thirty percent and Microsoft Corp. has  
25 recently confirmed that Spectre-related patches for computers running Windows operating systems  
26 with affected processors result in "a performance impact."

27 20. In May 2018, two new Spectre exploits were disclosed, both of which take advantage  
28 of the Defect in AMD's processors and require additional patches. Researchers fully expect the

1 discovery and publication of further exploits of the Defect, lending credence to the assessment of the  
2 researchers who first identified the exploits that Spectre will “haunt” the industry for some time.

## 3 **II. PARTIES**

### 4 **A. Plaintiffs**

5 21. Plaintiff Diana Hauck is a resident and citizen of the State of Louisiana. On November  
6 4, 2016, Ms. Hauck purchased an HP 15-ba079dc Notebook computer, containing an AMD A10-  
7 9600P processor, for \$349.99, at the Best Buy in Metairie, Louisiana located at 6205 Veterans  
8 Boulevard. The AMD processor’s specifications, including its clock speed or frequency, were  
9 prominently displayed next to an in-store sample of the computer. According to these specifications,  
10 the AMD A10-9600P processor had an advertised base clock speed or frequency of 2.4 GHz and a  
11 max boost clock speed or frequency of 3.3 GHz. At the time of her purchase, Ms. Hauck relied on  
12 AMD’s representations that the AMD processor would perform as advertised and was not defective.  
13 Had Ms. Hauck been aware of the Defect or that Spectre could be used to exploit the Defect and  
14 access sensitive information, and that patching the Defect would result in a degradation of the CPU’s  
15 advertised performance, she would not have purchased the computer, or paid substantially less for  
16 her computer.

17 22. Plaintiff Shon Elliott is a resident and citizen of the State of California. Mr. Elliott is  
18 a longtime customer of AMD processors. Between 2005 and 2016, Mr. Elliott purchased several  
19 AMD processors, four of which are in computers or servers. On April 21, 2016, Mr. Elliott purchased  
20 an AMD FX 8370 processor with Wraith cooler at the Fry’s Electronics (“Fry’s”) in Sunnyvale,  
21 California, for \$157.50. The AMD processor’s specifications, including its clock speed or frequency,  
22 were prominently displayed on the box and on the receipt. According to these specifications, the  
23 AMD FX 8370 processor had an advertised base clock speed or frequency of 4.0 GHz and a max  
24 boost clock speed or frequency of 4.3 GHz. At the time of his purchase, Mr. Elliott relied on AMD’s  
25 representations that the AMD processor would perform as advertised and was not defective. Had Mr.  
26 Elliott been aware of the Defect or that Spectre could be used to exploit the Defect and access  
27 sensitive information, and that patching the Defect would result in a degradation of the CPU’s  
28

1 advertised performance, he would not have purchased his processors, or paid substantially less for  
2 his processors.

3 23. Plaintiff Michael Garcia is a resident and citizen of the State of California. On April  
4 21, 2016, Mr. Garcia purchased an AMD FX 8370 processor with Wraith cooler at Fry's in  
5 Sunnyvale, California. The AMD processor's specifications, including its clock speed or frequency,  
6 were prominently displayed on the box and on the receipt. According to these specifications, the  
7 AMD FX 8370 processor had an advertised base clock speed or frequency of 4.0 GHz and a max  
8 boost clock speed or frequency of 4.3 GHz. At the time of his purchase, Mr. Garcia relied on AMD's  
9 representations that the AMD processor would perform as advertised and was not defective. Had Mr.  
10 Garcia been aware of the Defect or that Spectre could be used to exploit the Defect and access  
11 sensitive information, and that patching the Defect would result in a degradation of the CPU's  
12 advertised performance, he would not have purchased his processors, or paid substantially less for  
13 his processors.

14 24. Plaintiff Joann Martinelli is a resident and citizen of the State of California. On July  
15 6, 2013, Ms. Martinelli purchased an HP Pavilion p7-1534, containing an AMD A8-5500 processor,  
16 for \$532.11 at a Best Buy in Auburn, California, located at 1760 Grass Valley Highway. The AMD  
17 processor's specifications, including its clock speed or frequency, were prominently displayed next  
18 to an in-store sample of the computer. According to these specifications, the AMD A8-5500  
19 processor had an advertised clock speed or frequency of 3.2 GHz and a max boost clock speed or  
20 frequency of 3.7 GHz. At the time of her purchase, Ms. Martinelli relied on AMD's representations  
21 that the AMD processor would perform as advertised and was not defective. Had Ms. Martinelli been  
22 aware of the Defect or that Spectre could be used to exploit the Defect and access sensitive  
23 information, and that patching the Defect would result in a degradation of the CPU's advertised  
24 performance, she would not have purchased the computer, or paid substantially less for her computer.

25 25. Plaintiff Benjamin D. Pollack is a resident and citizen of the State of Florida. On  
26 September 26, 2014, Mr. Pollack purchased an AMD A10-7850K processor for his personal computer  
27 on Newegg.com. The AMD processor's specifications, including its clock speed or frequency, were  
28 prominently displayed on the webpage where he added the processor to his shopping cart, on the

1 receipt, and on the box which he later received. According to these specifications, the AMD A10-  
2 7850K processor had an advertised base clock speed or frequency of 3.7 GHz and a max boost clock  
3 speed or frequency of 4.0 GHz. At the time of his purchase, Mr. Pollack relied on AMD's  
4 representations that the AMD processor would perform as advertised and was not defective. Had Mr.  
5 Pollack been aware of the Defect or that Spectre could be used to exploit the Defect and access  
6 sensitive information, and that patching the Defect would result in a degradation of the CPU's  
7 advertised performance, he would not have purchased his processors, or paid substantially less for  
8 his processors.

9 26. Plaintiff Jonathan Caskey-Medina is a resident and citizen of the State of  
10 Massachusetts. On January 6, 2018, Mr. Caskey-Medina purchased a CYBERPOWERPC  
11 GUAA2600BS/AMD R5/1TB/8GB/R, containing an AMD Ryzen 5 1400 processor, for \$796.86, at  
12 the Best Buy in Holyoke, Massachusetts located at 50 Holyoke Street. The AMD processor's  
13 specifications, including its clock speed or frequency and its reliance on SenseMI Technology, were  
14 prominently displayed next to an in-store sample of the computer. According to these specifications,  
15 the AMD Ryzen 5 1400 processor had a base clock speed of 3.2 GHz and a max turbo clock speed  
16 of 3.4 GHz and possessed "AMD SenseMI technology." Prior to his purchase, Mr. Caskey-Medina  
17 researched different computers on the market to determine the unit that contained the best CPU for  
18 his needs. At the time of his purchase, Mr. Caskey-Medina relied on AMD's representations that the  
19 AMD processor would perform as advertised and was not defective. Had Mr. Caskey-Medina been  
20 aware of the Defect or that Spectre could be used to exploit the Defect and access sensitive  
21 information and that patching the Defect would result in a degradation of the CPU's advertised  
22 performance, he would not have purchased the computer, or paid substantially less for his computer.

23 **B. Defendant**

24 27. Defendant AMD is a Delaware corporation with its principal place of business located  
25 within this District at 2485 Augustine Drive, Santa Clara, California. AMD was founded in  
26 Sunnyvale, California in 1969. Defendant is engaged in the business of designing, manufacturing,  
27 selling, and/or distributing CPUs, including the defective processors at issue here. Many of AMD's  
28 key executives are based in the District, including AMD's Chief Technology Officer, Mark

1 Papermaster. All references herein to any act of AMD shall include the acts of AMD's directors,  
2 officers, employees, affiliates, subsidiaries, and agents where such persons or entities were engaged  
3 in the management, direction, or control of AMD, or where such persons or entities were acting at  
4 the direction of AMD.

### 5 **III. JURISDICTION AND VENUE**

6 28. This Court has general personal jurisdiction over Defendant because it resides within  
7 this District.

8 29. This Court has jurisdiction pursuant to 28 U.S.C. § 1332(d) because this matter is a  
9 putative class action, the Class contains members, including Plaintiff, that are citizens of a state  
10 different from Defendant, there are more than 100 members of the Class, and the matter in  
11 controversy, exclusive of interest and costs, exceeds the sum or value of \$5,000,000.

12 30. Venue properly lies in this District pursuant to 28 U.S.C. § 1391 because Defendant  
13 maintains its principal place of business in this District, a substantial part of the events or omissions  
14 giving rise to Plaintiff's claims occurred in this District, and because Defendant conducts a substantial  
15 amount of business in this District.

16 31. Assignment to the San Jose Division of this District is proper under Northern District  
17 of California Civil Local Rule 3-2(c) because a substantial part of the events or omissions which give  
18 rise to Plaintiff's claims occurred within the District and Defendant's principal place of business is  
19 located in Santa Clara, California. Pursuant to Northern District of California Civil Local Rule 3-  
20 2(e), all civil actions which arise in the Santa Clara County shall be assigned to the San Jose Division.

### 21 **IV. FACTUAL ALLEGATIONS**

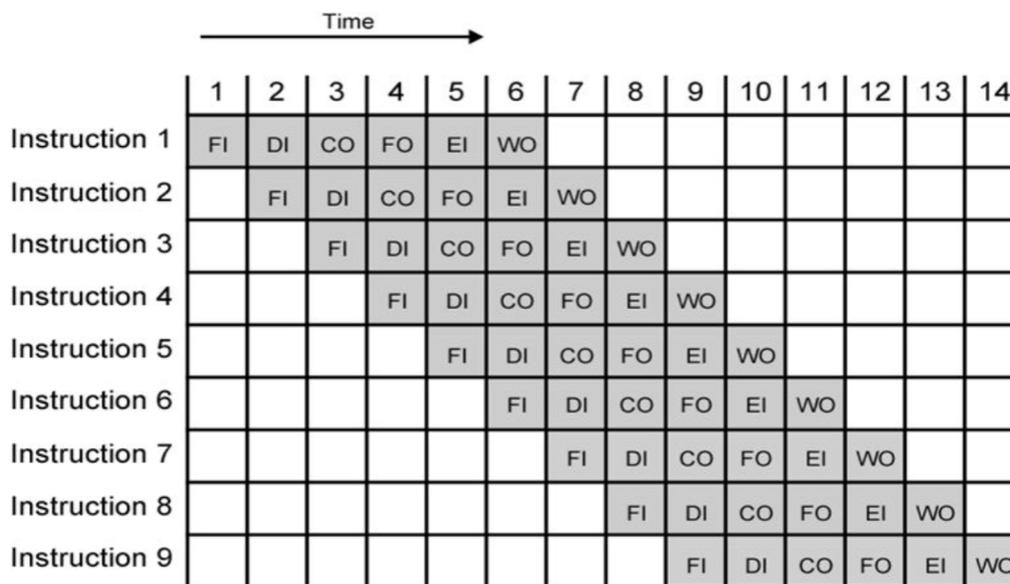
22 32. Founded in 1969, AMD is a leading manufacturer of CPUs. AMD both sells its  
23 processors to the marketplace as stand-alone components and sells its processors to original  
24 equipment manufacturers or OEMs that—with AMD's assistance and guidance—incorporate AMD's  
25 processors into, among other things, desktop and laptop computers, and servers. OEMs utilizing  
26 AMD processors include household names such as Dell Inc., HP Inc., and Lenovo Group Limited.  
27 AMD also sells its processors as stand-alone items through third party retailers.  
28

1           **A. CPUs, Speculative Execution, and Branch Prediction**

2           33. The CPU is the so-called “brains” of the computer, laptop, or server it powers. CPUs  
3 are responsible for processing system data and controlling other devices and components connected  
4 to the system. When the user asks the computer to perform a function or task, for example, to open  
5 a document in Microsoft Word, the CPU; (i) “fetches” the necessary instruction for the task from the  
6 computer’s memory; (ii) “decodes” the instruction; and (iii) “executes” the instruction (collectively,  
7 the “instruction cycle”). Each step in the instruction cycle takes at least one clock cycle.

8           34. In 1981, IBM selected Intel to supply the CPU for IBM’s first personal computer. The  
9 processor was known as Intel 8086. The basic architecture or “instruction set” utilized in the Intel  
10 8086, known as x86, can still be found in virtually every microprocessor designed and manufactured  
11 for personal computers and laptops, and servers.

12           35. Older CPUs were designed to complete an entire instruction cycle before advancing  
13 to the next instruction. However, executing instructions in this manner is inefficient. Accordingly,  
14 beginning in 1995, AMD introduced “pipelined” and “superscalar” processors based on its “K5” CPU  
15 architecture, which simultaneously executed multiple instructions. As reflected in Figure 1 below, a  
16 “pipelined” processor with six pipeline stages can work on six independent instructions  
17 simultaneously, achieving a speedup of up to 6x over an unpipelined design:



27  
28           **Figure 1**

1  
2 In a “superscalar” processor, each pipeline stage can operate on more than one instruction in parallel,  
3 further amplifying the performance improvements on top of a simple, unpipelined processor. For  
4 example, a 4-way superscalar processor with a 6-stage pipeline can achieve up to a 24x performance  
5 improvement over a simple, unpipelined CPU.

6 36. Superscalar or pipelined processors also created the possibility that the CPU’s  
7 resources might be idle while executing instructions in the order dictated by a particular function or  
8 program. As a result, engineers developed “out-of-order execution” to make use of the available  
9 pipeline resources and clock cycles that might otherwise be wasted. By relying on out-of-order  
10 execution, a CPU can potentially eliminate any idle time associated with waiting for the completion  
11 of long latency events, such as accesses to main memory.

12 37. Modern out-of-order, deeply pipelined processors often implement two critical  
13 optimization techniques: (i) branch prediction; and (ii) speculative execution. Branch prediction  
14 attempts to guess the instructions that must be executed following a conditional branch instruction.  
15 Speculative execution is a technique whereby a CPU guesses the likely future instructions, and  
16 eagerly executes those instructions in order to keep a high-speed, deep pipeline busy with useful  
17 work. According to a January 8, 2018 *Bloomberg* article titled, “‘It Can’t Be True.’ Inside the  
18 Semiconductor Industry’s Meltdown,” “processor makers have tried to speed up the way chips crunch  
19 data and run programs by making them guess” the instructions that the processor will need for the  
20 next task through the process of “speculative execution.” According to AMD, “[s]peculative  
21 execution is a basic principle of all modern processor designs and is critical to supporting high  
22 performance hardware.”

23 38. Beginning with the K5 architecture in 1995, virtually every AMD processor relied  
24 upon speculative execution and branch prediction.

25 **B. The Speed Wars**

26 39. The speed at which a CPU performs is a material attribute for consumers purchasing  
27 either a stand-alone AMD processor or computers, laptops, and servers powered by AMD processors.  
28 Without sufficient processing speed, a CPU will be unable to effectively and efficiently run the

1 device's operating system and software programs, and utilize connected hardware and peripheral  
2 devices.

3 40. To measure a CPU's performance, consumers look to and rely upon the processor's  
4 specifications, including, in particular, its clock speed. A CPU requires a number of "clock cycles"  
5 to execute each instruction. Clock speed reflects the amount of time necessary to complete each clock  
6 cycle. The faster the clock speed, the more instructions the CPU can execute per second. Clock  
7 speeds are expressed in megahertz (MHz) or gigahertz (GHz).

8 41. Since the 1990s, processor manufacturers have placed great emphasis on the clock rate  
9 of their processors as an indication of its performance. Beginning with the launch of AMD's first  
10 proprietary CPU in 1995, the Company marketed each model of its processors based on its advertised  
11 clock speed. For instance, AMD's A10-9600P processor has advertised clock speeds of 2.4 GHz  
12 (base) and 3.3 GHz (max boost). AMD's FX 8370 has advertised clock speeds of 4.0 GHz (base)  
13 and 4.3 GHz (max boost). AMD's A10-7850K had advertised clock speeds of 3.7 GHz (base) and  
14 4.0 GHz (max boost). AMD's Ryzen R5 1400 processor had advertised clock speeds of 3.2 GHz  
15 (base) and 3.4 GHz (max turbo). AMD's website also allows prospective customers to compare the  
16 clock speed of each of its processors, and explicitly references its processors' "clocks" as setting its  
17 processors apart from the competition. Likewise, websites reviewing and selling AMD processors  
18 allow consumers to directly compare the clock speed of available processors.

19 42. AMD's focus on the clock speed of its processors led to the Megahertz Wars, followed  
20 by the Gigahertz Wars, during which Intel and AMD battled to see which manufacturer could design  
21 a CPU that had the fastest clock speed. The "speed crown" ping-ponged back and forth between the  
22 companies, at one point changing hands several times in one quarter in 1999. Both companies  
23 claimed to be the first to manufacture and sell a processor with a 1 GHz clock speed in early March  
24 2000.

25 43. By 2003, however, the rivals had hit a wall. Increases in clock speed began to slow.  
26 Where the CPU manufacturers were once able to announce materially increased clock speeds every  
27 month, now they were lucky to obtain a single digit percentage increase in a single year. One of the  
28 primary reasons for this was memory.

1           44. Memory holds all of the instructions and data the CPU utilizes to function. Memory's  
2 frequency or clock speed often was materially slower than the CPU. Moreover, the instructions and  
3 data stored in memory had to travel to the CPU utilizing a "bus" structure, further extending the time  
4 it took to locate and transfer instructions and data to the CPU for processing. As a result, while the  
5 CPU was able to execute multiple instructions simultaneously, the CPU's capacity was hampered by  
6 how fast that information could be obtained from memory. In a 1996 article for the *Microprocessor*  
7 *Report* called, "It's the Memory, Stupid!," a CPU architect presciently noted: "today's chips are  
8 largely able to execute code faster than we can feed them with instructions and data. . . . The real  
9 design action is in the memory subsystems – caches, buses, bandwidth, and latency."

10           **C. AMD Heavily Relied Upon Speculative Execution and Branch Prediction to**  
11           **Achieve Advertised CPU Clock Speed**

12           45. No longer able to feed a CPU running at aggressive clock speeds with useful  
13 instructions, AMD was forced to contend with the speed and capacity of the memory subsystem.  
14 AMD first addressed the issue of latency—the time it takes for instruction and data stored in memory  
15 to reach the CPU. Released in 1999, AMD's K6-III CPU architecture moved the L2 cache to the  
16 CPU die from its prior location on the motherboard, greatly enhancing the speed of the processors.  
17 In 2003, AMD launched the K8 CPU architecture. K8 moved the memory controller from its separate  
18 location on the motherboard to the CPU die, which drastically reduced memory latency.

19           46. A CPU dependent on branch prediction and speculative execution to productively  
20 operate at GHz clock speeds, also required sufficient cache space in which to buffer necessary  
21 instructions and data. To that end, AMD increased the utility of the CPU's cache subsystem. The  
22 number of caches (which store instructions and data within the CPU) increased, from one cache (L1),  
23 to two caches (L1 and L2), and finally to three caches (L1, L2, and L3).

24           47. The caches grew larger. For instance, AMD processors launched in 1995 had a 24 KB  
25 L1 cache. One year later, AMD processors had a 64 KB L1 cache. Processors released early in 1999  
26 employing the K6-III architecture boasted two caches, including a 256 KB L2 cache, while processors  
27 launched in the latter half of 1999 with the K7 architecture had a 128 KB L1 cache and a 512 KB L2  
28 cache. With the launch of AMD's first dual "core" processors in 2003 (Athlon 64), the K8

1 architecture boasted two sets of L1 and L2 caches, one for each core, and the L2 cache was now 1  
2 MB. The processor's clock speed increased accordingly—whereas processors running the K6-III  
3 architecture had advertised max clock speeds of 550 MHz, processors running the K7 (and later, the  
4 K75) architecture had advertised max clock speeds of 700 MHz to 2.3 GHz.

5 48. AMD also focused on the CPU's ability to more intelligently utilize branch prediction  
6 and speculative execution to further increase efficiency and clock speed. In a preview of the new K8  
7 architecture at the 2002 Hot Chips conference, AMD touted the fact that processors employing K8  
8 had improved accuracy in branch prediction, and the ability to load and store more data necessary to  
9 perform "aggressive out of order" execution within the CPU's cache subsystem. This led to material  
10 increases in performance, including max clock speeds of up to 3.2 GHz for Athlon 64 X2 processors  
11 running K8. As explained in *ExtremeTech's* April 22, 2003 review of AMD's server processors  
12 based on the K8 architecture, the Opteron had "improved with 'branch selectors' in the L2 cache that  
13 reference branch locations in code, and flag the branch types, improve overall efficiency of various  
14 branch prediction structures and algorithms" which "contribute[d] to Opteron being able to process  
15 more instructions per clock (IPC) than Athlon."

16 49. Following the launch of its K8 architecture, AMD identified its "Future Micro-  
17 Architectural Innovations," at the October 2003 Microprocessors Forum, listing among other things:  
18 (i) "Much higher performance superscalar, out of order CPU core[s];" (ii) "Huge caches;" and (iii)  
19 "Branch and memory hints" and enhanced branch predictors. In 2006, AMD previewed its "next  
20 generation processor technology" at the annual Hot Chips conference, touting its "Balanced, Highly  
21 Efficient Cache Structure," including a new L3 cache, and "Improved branch prediction."

22 50. Thereafter, in 2007, AMD launched its Phenom processors, which utilized the K10  
23 CPU architecture. The K10 architecture contained a number of improvements to further enhance  
24 AMD's ability to improve system performance. For instance, the K10 architecture boasted major  
25 improvements in the architecture's memory subsystem, to complement AMD's ability to harness  
26 performance efficiencies gained through the use of speculative execution and branch prediction. K10  
27 had a larger indirect branch predictor and return address stack, and had an L3 cache of up to 6 MB  
28

1 shared among the cores. Processors employing the K10 architecture achieved max clock speeds of  
2 2.6 GHz to 3.7 GHz.

3 51. In 2010, AMD announced the launch of two new CPU architecture families—  
4 Bulldozer, for mainstream processors, and Bobcat, for low-powered processors. Bulldozer and  
5 Bobcat represented a complete redesign of AMD’s approach to CPU architecture. In particular,  
6 Bulldozer featured “Prediction-Directed Instruction Pre-Fetch,” as well as larger pipelines and  
7 caches, increasing the processor’s ability to fetch and store instructions and data for speculative  
8 execution and branch prediction. Processors running the Bulldozer architecture achieved max clock  
9 speeds of 4.2 GHz to 4.3 GHz.

10 52. Then, in early 2014, AMD began producing processors utilizing the Steamroller CPU  
11 architecture, the third-generation successor to Bulldozer. Steamroller maintained Bulldozer’s basic  
12 design but included better instruction schedulers, improved branch prediction, and larger and smarter  
13 caches. For instance, according to an *AnandTech* August 28, 2012 review of Steamroller, while  
14 Piledriver—AMD’s second generation Bulldozer architecture—boasted a “major design  
15 improvement[.] . . . in branch prediction,” Steamroller “inherit[ed] the perceptron branch predictor  
16 from Piledriver, but in an improved form for better performance (mostly in server workloads).”

17 53. In 2015, AMD launched the fourth and final generation of Bulldozer. Known as  
18 Excavator, the architecture included a faster L1 cache that was capable of processing 15% more  
19 instructions per clock compared to Steamroller. The Excavator architecture also included a larger  
20 branch target buffer (50% larger as compared to Steamroller-based CPUs), which helped improve  
21 performance.

22 54. Thereafter, in 2017, AMD launched “Zen,” its most recent and ambitious CPU  
23 architecture. With Zen, AMD attempted to design an intelligent CPU, which would rely extensively  
24 on high-level speculative execution and branch prediction to achieve more than 50% performance  
25 gains over the Excavator architecture. Commenting on Zen at the May 2017 Analyst/Investor Day,  
26 AMD’s CTO Mark Papermaster, stated:

27 We delivered over 52% of performance gain generationally, and it was really hard-  
28 nosed focused engineering effort. It starts with the execution engines. You look at  
what we did, we widened our execution pipes by 50%. We increased the instruction

1 scheduling by 75%, so you can flow that instruction execution much more  
effectively each clock tick.

2 But that only works if you can feed that engine. So what did we do? *We have to be*  
3 *able to feed the beast, so we improved on the instruction side with a very smart*  
4 *branch prediction. We actually built in a Perceptron to have much more*  
5 *accuracy, a Perceptron engine to give us better accuracy in our branch*  
6 *prediction.* We inserted a Micro-Op Cache to more efficiently dispatch those  
instructions to those pipelines, and then you have to feed it from the data side.

7 *We revamped our cache subsystem.* We increased our cache size. We added a  
8 dedicated L3 cache, and we advanced our pre-fetch algorithms, our memory pre-  
9 fetch algorithms. Looking at the strides of data, what's the patterns coming in and  
10 getting the right data where you need it at the right time.

11 On top of all of that, we added simultaneous multi-threading. So your execution  
12 engines are precious. And so if you do have an install, you're waiting for some data  
13 to complete instruction, you want to flip over on a new thread. So simultaneous  
14 multi-threading effectively doubles the number of threads. It looks to the operating  
system like a doubling of the cores available to get any work done.

15 And what's the result? It's a dramatic improvement of instruction-level parallelism  
16 of that execution. Said another way, *it's a dramatic increase in the performance*  
17 *at every clock tick.* And so that's what we've done. The team has delivered  
18 competitive x86 single-threaded high-performance and hands-down leadership of  
19 multi-threaded performance and application development -- and application  
20 performance. This achievement absolutely defies industry convention to have this  
21 type of gain in a single generational update of CPU design.

22 55. AMD has manufactured and sold two new lines of processors based on the Zen  
23 architecture: the Ryzen family of processors for desktop and laptop computers and EPYC family of  
24 processors for servers. All Ryzen processors have SenseMI Technology, which is listed as a "Key  
25 Feature" in the specifications for each processor. SenseMI Technology includes "Neural Net  
26 Prediction" (predicting the pathway—or branch—that the program will take) which is related to  
27 speculative execution functions. According to AMD, "SenseMI technology is a key enabler of  
28 AMD's landmark increase of greater than 40 percent in instructions per clock."

29 56. Over at least the last 15 years, AMD has continually touted the advances in its design  
30 of components intended to support speculative execution and branch prediction, and tying these  
31 attributions to increased advertised clock speeds and overall processor performance. AMD's efforts  
32 to market each new CPU architecture or processor line as faster and more efficient due to, among  
33 other things, speculative execution and branch prediction, led to revenues in the tens of billions of  
34 dollars. However, consumers purchased these intelligent, high-speed processors without knowing  
35 the truth: the use of speculative execution and branch prediction in each and every one of these CPUs

1 created a security vulnerability which, when exploited, could leak a user's most sensitive data, and  
2 the only way to patch these vulnerabilities would be degrade the advertised and promised  
3 performance of the CPUs themselves.

4 **D. AMD's Processors Are Defective**

5 57. Together with the introduction of superscalar processors, out-of-order execution has  
6 delivered dramatic performance improvements over older processors. Indeed, CPUs are only able to  
7 meet their advertised performance metrics by relying on advanced out-of-order execution effectuated  
8 through sophisticated instruction and data pre-fetching, dataflow analysis, branch prediction, and  
9 speculative execution, as well as numerous pipelines and caches.

10 58. However, unbeknownst to Plaintiff and the Class, processors manufactured and sold  
11 by AMD that relied on, among other things, branch prediction and speculative execution to achieve  
12 performance speeds were defective. Specifically, AMD's processors use of speculative execution  
13 and branch prediction to achieve advertised clock speeds exposes users to the possibility of side-  
14 channel attacks, including a set of exploits known as "Spectre." As quoted in a January 8, 2018  
15 *Bloomberg* article, Paul Kocher, one of the researchers who helped uncover Spectre and has been  
16 studying the trade-offs between security and performance, succinctly stated: "[t]he processor people  
17 were looking at performance and not looking at security."

18 59. Spectre gets its name from "speculative execution," and the fact that this class of  
19 security vulnerabilities are not easy to fix and will "haunt" the industry for a long time. Spectre can  
20 be used to steal sensitive data, such as user names and passwords or credit card information, from a  
21 computer's "kernel." The kernel is the most secure part of any computer, and it is fundamental to the  
22 operation of the system. One of its most basic functions is preventing data associated with one  
23 program from being accessed or overwritten by another program. To that end, the kernel acts as a  
24 go-between for all of a computer's applications, operations, and peripheral devices (*e.g.*, the  
25 keyboard, mouse, or printers). For instance, when a program needs access to credit card data stored  
26 in a computer's memory, the kernel acts as an intermediary to prevent the program from gaining  
27 direct access to that information.

28 60. In processors that deploy speculative execution, the CPU can guess the next

1 instruction that must be executed following a branch instruction, and aggressively fetch and execute  
2 instructions from this predicted path rather than wait for the branch to complete its execution. In the  
3 case of a branch misprediction, the direct side-effects of the speculatively executed instructions are  
4 ultimately undone (*i.e.*, “flushed”), but the remnants of sensitive kernel data, including measurable  
5 data that may reveal its location or other salient details, remain in the caches, each of which is  
6 vulnerable to side-channel attacks employed by hackers.

7 61. As explained in a January 3, 2018 *Google Security Blog* regarding Spectre, with the  
8 security vulnerabilities inherent in speculative execution, “malicious actors c[an] take advantage of  
9 speculative execution to read system memory that should have been inaccessible” and may, as a  
10 result, be able to “read sensitive information in the system’s memory such as passwords, encryption  
11 keys, or sensitive information open in applications.” As explained in the seminal white paper  
12 describing the Spectre exploits, “Spectre attacks involve inducing a victim to speculatively perform  
13 operations that would not occur during correct program execution and which leak the victim’s  
14 confidential information via a side channel to the adversary.”

15 62. To date, researchers have identified four types of Spectre attacks, and are likely to  
16 discover more. Each variant takes advantage of the CPU’s efforts to look ahead and speculatively  
17 execute future instructions while it waits to complete more time-consuming tasks, and includes a  
18 side-channel attack the purpose of which is to obtain information about sensitive kernel data left  
19 behind in the cache after the CPU unwinds incorrectly executed instructions.

20 63. As explained by AMD itself in late January 2018, Spectre Variant 1 or “Bounds Check  
21 Bypass,” exploits the CPU’s effort to resolve “memory references that are beyond the enforced  
22 privilege limit of access for the program,” known as “bounds checking.” Bounds checking may  
23 require “a large number of processor cycles for the processor to obtain” the necessary information to  
24 assess the relevant boundary for the privileged information. At that point, the CPU “may speculate  
25 and bring in cache lines that are currently allowed to be referenced based on the privilege of the  
26 current mode but outside the boundary check.” Once the bounds check is resolved, anything that  
27 should not have been speculatively executed is reversed. However, this reversal does not remove  
28

1 information about the kernel data from the CPU's caches, allowing a hacker to use a cache timing  
2 side-channel attack to access this data.

3 64. Spectre Variant 2 or "Branch Target Injection" exploits the time it takes for a CPU to  
4 resolve a mispredicted branch path and identify the correct target. A hacker can trick the CPU to  
5 mispredict the branch path, leading the processor to speculatively execute instructions down that path  
6 that require access to sensitive kernel data. Once the CPU identifies the correct target, it unwinds the  
7 improperly executed instructions, but the information about the accessed kernel data remains in the  
8 CPU's caches. As with Spectre Variant 1, the hacker would then rely on a cache timing side-channel  
9 attack to access this data.

10 65. Spectre Variant 3a or "Rogue System Register Read" involves speculative reads of  
11 system register values used in speculative load instructions. Such subsequent speculative loads cause  
12 allocations into the cache that may allow a sequence of speculative loads to be used to perform timing  
13 side-channel attacks. This allows an attacker with local user access to use timing side-channel  
14 analysis to determine the values stored in system registers.

15 66. Spectre Variant 4 or "Speculative Store Bypass" exploits the time it takes for a CPU  
16 to store data to memory. In that instance, the CPU will look to execute other instructions that are not  
17 dependent on the completion of the particular data store effort. Once the data store is complete, the  
18 CPU will reverse any incorrectly executed instructions, leaving information about the kernel data in  
19 the CPU's caches, which hackers can access through a side-channel attack. The problem is so  
20 widespread that a May 23, 2018 *BusinessReport* article quoted Intel CEO Brian Krzanich as stating  
21 that "[p]hones, PCs, everything are going to have some impact" from the latest Spectre variant.

22 67. Each of the four currently known Spectre variants impacts virtually all AMD  
23 processors that utilize the x86 instruction set and rely on speculative execution and branch prediction.  
24 As a result, **all** of the processors manufactured and sold by AMD since 1995 are defective in that they  
25 contain design flaws that expose the CPUs to a variety of security vulnerabilities that are exploited  
26 by the Spectre variants.

1           **E.     AMD’s Knowledge of the CPU’s Vulnerability to Side-Channel Attacks**

2           68.     Although unknown to the consumer public, the concept of potential security  
3 weaknesses of CPUs using speculative execution is not novel among academics and industry experts,  
4 including AMD executives. For more than a decade, researchers have been warning companies like  
5 AMD of Spectre-like security attacks that exploit a CPU’s out-of-order execution process to execute  
6 side-channel attacks. For instance, as noted in a January 10, 2018 *Bloomberg* article titled, “‘It can’t  
7 be true.’ Inside the semiconductor industry’s meltdown,” in early 2005, “[r]esearchers began writing  
8 about the potential for security weaknesses at the heart of central processing units.” Yuval Yarom, a  
9 researcher from the University of Adelaide who helped discover Spectre, is credited with some of  
10 these earlier findings.

11           69.     By 2013, industry researchers identified additional security flaws in CPUs that let  
12 unauthorized users see the layout of the kernel. This vulnerability, known as a KASLR break, served  
13 as the foundation for the discovery of Spectre.

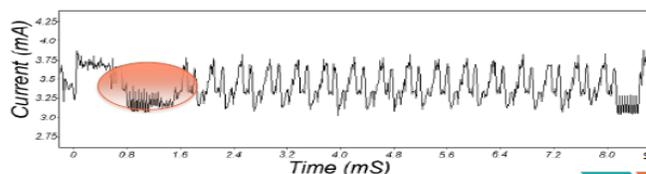
14           70.     Thereafter, in August 2014, AMD participated in a security-focused tutorial at the Hot  
15 Chips 26 industry conference. During his presentation, AMD Corporate Fellow Van Doorn identified  
16 the components central to a “secure systems design” as: (i) “[w]ell-defined security properties  
17 (objectives);” (ii) a “[t]hreat analysis (what are we protect[ing,] from whom, cost of entry);” and (iii)  
18 a “[d]esign methodolog[y] (test plan, penetration testing, code review, etc.).” In answering the  
19 question, what happens if you do not have a “secure system design”?, Van Doorn confirmed that  
20 “Hardware is not safe” and used as an example “side channel attacks”:

## EXAMPLE: SIDE CHANNEL ATTACKS

Hardware is not safe either



- ▲ Side channels: Electronic components leak a lot of signals
  - ▲ Power signals (SPA & DPA)
  - ▲ RF signals (EMSEC)
  - ▲ Resource contention (cache contention, TLB contention, etc)
  - ▲ ...
- ▲ All these signals can be used to reconstruct the computation at hand
  - ▲ Recover secret keys!
- ▲ Protecting against these kind of attacks is hard and expensive



As an illustration:  
Smartcard simple power  
attack (SPA) where the 16  
DES rounds are clearly  
visible; key schedule  
computation precedes DES  
with key clearly visible

Source: Paul Kocher, et. al., Differential Power Analysis

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Commenting on this slide, Van Doorn concluded that “side channel attacks” on hardware as “*a very rich area of attack and very hard to protect against.*”

71. After Van Doorn presented, Dr. Lee of Princeton University spoke about “University Research in Hardware Security,” including how to detect and mitigate side channel attacks. Dr. Lee noted that there were many types of “side channels” including “caches” and “branch prediction.” With respect to “Secure Hardware Design,” Dr. Lee identified “[s]ecure caches that do not leak information,” noting that a fix for a recent software attack which leaked sensitive data (Heartbleed) did nothing to secure the same information from a side-channel attack on hardware. She described the problem as “[c]orrectly functioning hardware caches leak secret information through cache side-channel attacks.” According to Dr. Lee, “[*a*]ll current processors with caches are vulnerable” to side channel attacks “from embedded devices to cloud servers.”

72. Significantly, this was not the first time that Dr. Lee presented on side channel attacks. In 2006, she co-authored a paper entitled, “Covert and Side Channels due to Processor Architecture.” The abstract for this paper is prescient given the later discovery of Spectre: “Information leakage through covert channels and side channels is becoming a serious problem, especially when these are enhanced by modern processor architecture features. We show how processor architecture features such as simultaneous multithreading, control speculation and shared caches can inadvertently accelerate such covert channels or enable new covert channels and side channels.”

1           73.     In 2016, research conducted by Felix Wilhelm and others showed how an early version  
2 of speculative execution could make chips vulnerable to security exploits and data leaks. In August  
3 2016, at Black Hat USA, a major cybersecurity conference in Las Vegas, a group of cyber-security  
4 researchers led by Anders Fogh and Daniel Gruss presented a research paper titled “Using  
5 Undocumented CPU Behavior to See into Kernel Mode and Break KASLR in the Process.” The  
6 paper divulged potential cyber-attacks on the CPU hardware itself, specifically focusing on the x86  
7 architecture, and concluding that it was possible for an attacker to access the secure kernel data via  
8 the use of low security programs such as JavaScript. The researchers were skeptical, however, that  
9 this was a real flaw, assuming that chipmakers would have uncovered such a “glaring security hole  
10 during testing and would never have shipped chips with a vulnerability like that.”

11           74.     Anders Fogh and his team again discussed the potential method of attack at the Black  
12 Hat Europe conference in November 2016, but there was still a level of skepticism among researches  
13 that such a dangerous security vulnerability would have been missed by chip manufacturers.  
14 Effectively, the industry assumed that companies like AMD had heeded the warnings of academic  
15 researchers, and/or had conducted the type of security analysis described by AMD Corporate Fellow  
16 Van Doorn in 2014. In other words, for all intents and purposes, the public justifiably believed that  
17 AMD had well-defined objectives with respect to its CPUs, had conducted threat analyses, and  
18 implemented plans to test the CPU and its components (*e.g.*, the cache subsystem), including  
19 penetration testing and code review.

20           75.     By January 2017, Anders Fogh discovered how the security vulnerabilities created by  
21 the use of speculative execution could be exploited to attack the kernel. He disclosed his findings at  
22 an industry conference on January 12, and by March he had shared his idea with other industry  
23 experts.

24           76.     In April 2017, Jann Horn, a member of Google’s Project Zero, a team of security  
25 researchers tasked with finding “zero-day” security holes, had independently discovered the first two  
26 Spectre exploits. Mr. Horn disclosed these findings to AMD and ARM Holdings by June 1, 2017,  
27 and soon after Intel informed Microsoft about same. The tech giants began secretly working on  
28 purported fixes.

1           77. By the middle of 2017, the researchers had developed a software security patch they  
2 called “KAISER” that was designed to fix the KASLR break. The patch was specifically designed  
3 for Linux, the world’s most popular open-source operating system, which controls servers and also  
4 underlies the Android operating system used by the majority of mobile devices. The Linux updates  
5 were required to be shared publicly, and KAISER was well-received by the developer community.

6           78. Unbeknownst to the public, however, AMD, Intel, ARM Holdings, Google, and  
7 Microsoft were already scrambling to find a fix for a much bigger attack that they were aware of. In  
8 late November 2017, large tech companies such as Microsoft, Amazon, Google, ARM, and Oracle  
9 Corp. began rolling out Linux updates, which prompted cybersecurity researchers who were unaware  
10 of the existence of Spectre to question their motivation for developing and issuing such patches. Tests  
11 conducted with respect to these patches demonstrated serious implications for the performance of key  
12 computer systems, with one Amazon patch decreasing performance speed by up to 400%. Despite  
13 the massive performance hit, Amazon was still encouraging Linux users to accept the software patch,  
14 solidifying suspicions that there must be a larger, but as of yet undisclosed, security issue looming.

15           79. By December 3, 2017, researchers unaffiliated with the groups who had discovered  
16 Spectre in June 2017 confirmed the existence of another related exploit, Meltdown, and were shocked  
17 to uncover that sort of “mistake” in processors that allowed for the security exploit. The researchers  
18 reported these findings to Intel the following day, and were surprised to learn that Intel and other  
19 chipmakers had already been made aware of the security exploits for months by Jann Horn and others.

20           80. Consumers remained unaware of the Defect due in part to AMD’s reassurances that  
21 its processors were secure. As an initial matter, the hallmark of a cache timing side channel attack—  
22 the method used by all four Spectre variants to obtain access to information about sensitive data—is  
23 that it is invisible to the operating system and leaves absolutely no trace. As a result, Spectre cannot  
24 be detected by anti-virus software or other mechanisms meant to protect the computer, laptop, or  
25 server from malware. Therefore, a consumer utilizing a defective processor would not have any  
26 indication that her CPU’s cache subsystem is leaking information about the most sensitive data stored  
27 within the device.  
28

1           81.     Moreover, ordinary consumers would not have been aware of, have access to, or even  
2 have sufficient expertise to understand the ramification of much of the industry research. Instead,  
3 consumers relied on AMD’s representations concerning its CPUs. For instance, certain processors  
4 manufactured from 2013 until the present include AMD’s platform security process or PSP, known  
5 commercially as “AMD Secure Technology.” According to AMD’s developer’s guide for its  
6 processors, the PSP is “responsible for creating, monitoring and maintaining the security  
7 environment” and “its functions include managing the boot process, initializing various security  
8 related mechanisms, and monitoring the system for any suspicious activity or events and  
9 implementing an appropriate response.”

10           82.     On its website, AMD describes AMD Secure Technology as follows:

11           **Ultimate protection for AMD products**

12           The growth of mobile devices and cloud services is rapidly changing the computer  
13 industry, and threats to your privacy and security are growing ever more diverse  
14 and sophisticated. Anti-virus protection alone is no longer sufficient to keep your  
15 system secure. You need a robust hardware solution. AMD Secure Technology  
16 brings you a built-in security system that puts the protection right on your  
17 processor. Through our collaboration with an extensive network of platform  
18 providers, we are working to provide the greatest peace of mind on every AMD  
19 product.

20           **Security built right into your hardware**

21           AMD gives you a dedicated AMD Secure Processor<sup>1</sup> built into select AMD  
22 Accelerated Processing Units (APUs). ARM® TrustZone®, a system-wide  
23 approach to security, runs on top of the hardware creating a secure environment by  
24 partitioning the CPU into two virtual “worlds.” Sensitive tasks are run on the AMD  
25 Secure Processor – in the “secure world” – while other tasks are run in “standard  
26 operation.” This helps ensure the secure storage and processing of sensitive data  
27 and trusted applications. It also helps protect the integrity and confidentiality of key  
28 resources, such as the user interface and service provider assets.

29           83.     Processors that include AMD’s PSP list “AMD Secure Technology” in the “Supported  
30 Technologies” section of the CPU’s specifications. Incredibly, even AMD’s PSP has been the subject  
31 of security vulnerabilities, including a handful of serious flaws impacting Ryzen and EPYC  
32 processors, all of which are known as Ryzenfall, Masterkey, Chimera, and Fallout, first announced  
33 in March 2018.

1           **F.     AMD’s Knowledge of Spectre Variants 1 and 2**

2           84.     Although the public only became aware of Spectre in January 2018, AMD has been  
3 aware of Spectre since *at the latest* June 1, 2017, when a team from Google’s Project Zero alerted  
4 the company to the existence of the Defect.

5           85.     Google’s Project Zero team was not the only researcher to have uncovered Spectre, as  
6 when Intel responded to the news of the discovery from Graz researchers—nearly a week after having  
7 been informed of the exploits—Intel told the researchers that it had already been informed about the  
8 vulnerability by two other research teams. Including another, related technique that would come to  
9 be known as Spectre, Intel told the researchers they were actually the *fourth* to report the new class  
10 of attack, all within the period of just a few months.

11           86.     Further, as discussed *supra*, AMD knew, or should have known, of the Defect in its  
12 processors many years ago given that AMD was in a superior position to perform proper tests and  
13 security checks of its processors and appropriate due diligence would have revealed the  
14 vulnerabilities that were uncovered by various independent teams. Indeed, Defendant had actual  
15 knowledge, and access to proprietary information to discover, that defects in design were causing the  
16 Defect in its processors. As stated by Paul Kocher, one of the researchers who identified Spectre,  
17 “[t]here’s no reason someone couldn’t have found this years ago instead of today.”

18           87.     These early reports ultimately prompted industry presentations at various “Black Hat”  
19 and other cybersecurity conferences in 2016 and 2017, including presentations by members of the  
20 Graz University team, regarding potential attacks against the kernel memory of CPU processors, such  
21 as the Spectre Variants.

22           88.     Nevertheless, rather than inform the public about Spectre, AMD continued to sell its  
23 defective processors to unknowing customers at prices much higher than what customers would have  
24 paid had they know about the Defect and the impact on processing speeds. In fact, with its EPYC  
25 processor, AMD sought to reenter the server market with a fast, efficient, and *secure* CPU based on  
26 the Zen architecture. Commenting on EPYC at the May 2017 Analyst/Investor Day, the SVP and  
27 GM of AMD’s Enterprise, Embedded, and Semi-Custom Business Group, Forrest Norrod stated:  
28

1 And so the way that we're attacking that market is, you guessed it, EPYC. We're  
 2 attacking that market with a part that Mark and the whole team at AMD has  
 3 generated, has wrought from those 32 "Zen" cores, offering tremendous power and  
 4 flexibility. But it's a balanced design. So each "Zen" chip with those 32 cores is  
 coupled to 8 memory channels to keep that beast fed, to keep performance available  
 to applications. We're also adding 128 lanes of high-bandwidth I/O on each EPYC  
 chip, again, so that we can pull in data from the network, from the drives, from  
 flash.

5 And *none of this would matter if we didn't also support security*, something that  
 6 has become all too evident in today's world and we were reminded of earlier this  
 7 week and over the weekend. *Security is paramount. Doesn't matter how fast your  
 chip is. If it can't help be part of the security solution, it's part of the problem.*  
 And so that's what we brought.

8  
 9 89. In August 2017, after AMD had learned about Spectre, AMD presented on its EPYC  
 10 processors at Hot Chips 29. With respect to security, AMD once again touted EPYC's ability to  
 11 "*defen[d] against unauthorized access to memory.*"

12 **G. Spectre "Patches" Are Inadequate and Materially Impact CPU Performance  
 Once Installed**

13 90. Because the Defect is fully integrated into the design of the CPU, there is no way to  
 14 completely eliminate the security vulnerabilities created by the use of speculative execution and  
 15 branch prediction to achieve high processor clock speeds. As explained by a January 9, 2018  
 16 *Scientific American* article, soon after Spectre's public disclosure, the security vulnerabilities "can  
 17 only be mitigated—not fixed—at this time" because of the flaw's vast impact to "operating systems,  
 18 drivers, Web servers and databases." Only a fundamental change in the design of the CPU itself can  
 19 ensure that such security vulnerabilities can be adequately accounted for and removed. Significantly,  
 20 companies such as AMD and Intel simply cannot abandon the use of speculative execution and branch  
 21 prediction in their CPU architectures. Doing so would be akin to abandoning the car in favor of the  
 22 horse-drawn carriage.

23 91. Attempts to mitigate the Defect have been particularly complicated. As explained by  
 24 *Ars Technica* in a January 3, 2018 article entitled, "'Meltdown' and 'Spectre': Every Modern  
 25 Processor Has Unfixable Security Flaws":

26 while there may be limited ways to block certain kinds of speculative execution,  
 27 general techniques that will defend against any information leakage due to  
 28 speculative execution aren't known.

1 Sensitive pieces of code could be amended to include ‘serializing instructions’—  
2 instructions that force the processor to wait for all outstanding memory reads and  
3 writes—to prevent most kinds of speculation from occurring. . . . But these  
4 instructions would have to be very carefully placed, with no easy way of identifying  
the correct placement.

5 As such, *Ars Technica* confirmed in a January 11, 2018 article entitled, “Here’s how, and why, the  
6 Spectre and Meltdown patches will hurt performance,” “at-risk applications (notably, browsers) are  
7 being updated to include certain Spectre mitigating techniques to guard against the array bounds  
8 variant” while “[o]perating system and processor updates are needed to address the branch prediction  
9 version.” Some sources, including *Wired* in a January 6, 2018 article, predict that Spectre “may be  
10 impossible to defend against [ ] entirely in the long term without updating hardware.”

11 92. Any attempts to address the Defect come at a cost to a CPU’s processing speed. As  
12 *The Register* explained in a January 2, 2018 article entitled “Kernel-memory-leaking Intel Processor  
13 design flaw forces Linux, Windows redesign,” discussing the impact of the software “patches:”

14 It allows normal user programs – from database applications to JavaScript in web  
15 browsers – to discern to some extent the layout or contents of protected kernel  
16 memory areas.

17 The fix is to separate the kernel’s memory completely from user processes using  
18 what’s called Kernel Page Table Isolation, or KPTI. . . .

19 The downside to this separation is that it is relatively expensive, time wise, to keep  
20 switching between two separate address spaces for every system call and for every  
21 interrupt from the hardware. These context switches do not happen instantly, and  
22 they force the processor to dump cached data and reload information from memory.  
23 ***This increases the kernel’s overheard and slows down the computer.***

24 93. *The Register* went on to note that while “[t]he effects are still being benchmarked, [ ]  
25 we’re looking at a ballpark figure of five to 30 per cent slow down, depending on the task and the  
26 processor model.” Regardless of the amount of slowdown, AMD’s processors will not perform as  
27 promised and advertised once patched.

28 94. Research confirms that current software “patches” or updates that have been issued to  
combat Spectre have resulted, in “corresponding performance slowdowns” given that “the fixes  
involve routing data for processing in less efficient ways,” as explained in a January 6, 2018 *Wired*

1 article. Furthermore, Microsoft Corp. has recently acknowledged that Spectre-related patches for  
2 computers running Windows operating systems with affected processors result in “a performance  
3 impact.” As such, it is improper to term these security “patches” as a “fix.” Rather, as Jérôme  
4 Boursier, a researcher at Malwarebytes, explained to *Fox News* in January 2018, the patches are  
5 simply “a set of workarounds ... they aren’t a fix. They just change the system behavior to avoid  
6 using the bad-designed part of the CPU.” The Spectre Variants take advantage of design flaws in  
7 AMD processors created to increase processing speeds, and thus any “patch” that attempts to  
8 workaround such design flaws would not be a true “fix,” but rather would result in a decrease in  
9 performance since the patch avoids utilizing such processes that would otherwise increase processing  
10 speed. According to Mr. Boursier, “[t]hat’s because the fix in effect, plugs the vulnerable processes  
11 that would otherwise boost performance.”

12 95. In fact, according to *Wired*, on January 12, 2018, “Microsoft paused distribution of its  
13 Meltdown and Spectre patches for certain AMD processors after the update bricked [or rendered  
14 inoperable] some machines” and “Microsoft claims that its patches were flawed because of  
15 inaccuracies in AMD’s chip documentation.”

16 96. Although AMD initially downplayed its exposure to Spectre, by January 11, 2018,  
17 AMD was forced to admit that almost every AMD processor in use was vulnerable to Variants 1 and  
18 2 of Spectre. At that point, AMD could only say that “[w]e believe this threat can be contained with  
19 an operating system (OS) patch.” But the software and firmware updates proved to be far from a  
20 “fix.”

21 97. The hurried “patches” created more problems than they solved, spurring a series of  
22 unintended consequences such as putting computers into a continuous reboot cycle, which led some  
23 manufacturers to recommend that customers stop downloading the patches altogether until the issues  
24 could be rectified, leaving consumers in a classic “Catch-22” situation. Even more concerning, some  
25 of the patches, including Windows patches, are incompatible with certain, often costly, anti-virus  
26 software, preventing some users from receiving the emergency patches at all, or having to disable  
27 critical anti-virus software. The patches have also shown to be incompatible with “older” processors,  
28

1 leading AMD to refrain from releasing any patches for its pre-2011 processors that suffer from the  
2 Defect.

3 98. Patches released for the most recent Spectre variants are likely to put a significant  
4 drain on CPU performance, with Intel predicting performance impacts of approximately two to eight  
5 percent. In other words, consumers can only achieve added security protection at the expense of their  
6 CPUs' performance, if they can obtain security protection at all based on the age of the processor.  
7 With regard to the most recent Spectre variants, AMD is warning users to keep systems updated and  
8 said Microsoft was wrapping up testing for an AMD-specific fix, though nothing has been released  
9 to date.

10 99. In reality, the only true "fix" for the security vulnerabilities inherent in AMD's  
11 defectively designed CPUs is a newly designed chip. Indeed, Intel's CEO Brian Krzanich's January  
12 25, 2018 announcement that Intel expects to ship a newly designed chip without these flaws by the  
13 end of 2018 is telling in this regard. Mr. Krzanich's announcement demonstrates that CPU  
14 manufacturers have little faith that such security vulnerabilities can be cured by the patches, which,  
15 as explained herein, do little more than attempt to bypass the security flaws and mitigate the risks.

16 100. Many experts predict that Spectre is just the tip of the iceberg of a new wave of attacks  
17 leveraging the security flaws inherent in speculative execution processes. Anders Fogh, one of the  
18 researchers who helped uncover the Spectre vulnerabilities, predicted that speculative execution  
19 would likely be a "Pandora's box" for future security vulnerabilities. As such, Spectre is likely only  
20 just the beginning of similar cache timing side-channel attacks leveraging the speculative execution  
21 flaw inherent in AMD's CPUs. As stated bluntly by Paul Kocher, a researcher who helped uncover  
22 the Variants, "Spectre is going to live with us for decades."

23 101. In a May 22, 2018 *SC Media* article, Tod Beardsley, research director at Rapid7 (a  
24 well-known computer security management and compliance company), echoed these sentiments:  
25 "Given the complexity and ubiquity of side-channel attacks enabled by speculative execution, I doubt  
26 these will be the last variants that will be announced." In the same article, Oren Aspir, CTO at  
27 Cyberbit, likewise warned that the public cannot rely on the patches to cure the security defects,  
28 "[b]ecause even after patching Variant 4, we can expect Variants 5, 6 and 7 to appear sooner or later."

1           **H. Defendant's Attempts to Limit and Disclaim Warranties are Unconscionable**

2           102. Based on pre-production testing, pre-production design or failure mode analysis, post-  
3 production testing and research, much like that done by Google's Project Zero and the Graz  
4 University of Technology, and information from third-party researchers given to it in June 2017,  
5 Defendant was aware of the defect in its processors but did not correct the defect prior to sale in order  
6 to achieve higher processing speeds in their products, which they then falsely marketed as defect-  
7 free. This information was not available to Plaintiffs and members of the Classes at the time of their  
8 purchases.

9           103. The average lifespan of a computer is five to six years, but the average lifespan of a  
10 computer processor can be longer before there is a failure. As a result, Defendant knew that the defect  
11 in the processors would be discovered while most of the processors sold were still in use.

12           104. Defendant took into account the defect in selecting the durational term of the  
13 warranties of two or three years, which was well below the average and expected lifespan of the  
14 processors or the computer in which they were installed. Defendant also disclaimed design defects  
15 and the implied warranties, because they knew they had designed their processors with the Defect in  
16 order to achieve higher processing speeds. These non-negotiable terms were selected unilaterally by  
17 Defendant in order to avoid having to honor the warranty for the vast majority of their processors  
18 when the defect was inevitably discovered, leaving Plaintiffs and members of the Classes without  
19 any warranty protection for the Defect and the damages caused by the Defect.

20           105. Plaintiffs and members of the Classes lacked the ability to negotiate or even review  
21 the terms of the warranty prior to purchase. The warranties are offered on a "take-it-or-leave-it"  
22 basis, the terms of which are not available until the product is purchased and the packaging opened.  
23 In fact, Defendant published warranty terms on its website, but the terms of the warranty that  
24 Plaintiffs received with their products differed from those published. As a result of the difference  
25 between the warranty language published by Defendants and the warranty contained in the boxes of  
26 the processors or computer purchased by Plaintiffs and members of the Classes, the applicable terms  
27 of the warranties were a surprise to Plaintiffs.  
28

1           106. Plaintiffs and members of the Classes are also without meaningful choice in the  
2 selection of processors. Together, AMD and Intel control nearly 100% of the computer processor  
3 market. Intel processors are usually more expensive than their AMD counterparts, leaving Plaintiffs  
4 and consumers with only one choice for a more affordable processor for their computers: AMD.

5           107. AMD also disclaims implied warranties, such that AMD provided products to  
6 Plaintiffs and the Classes while forcing them to agree that the product would be completely useless,  
7 or unfit for its ordinary purpose.

8           108. There is no reasonable commercial justification for such broad disclaimers and  
9 limitations on liability. Defendant had obligations under the Uniform Commercial Code, as well as  
10 state and federal law, to not falsely advertise or misrepresent the quality or security of their products,  
11 so it cannot be commercially reasonable to attempt to evade those legal obligations by way of  
12 disclaimers buried in warranties which are not available for review prior to purchase. Defendant was  
13 not selling used products at a yard sale—where an “as is” limitation might be commercially  
14 appropriate—it is a technology giant providing a significant portion of the marketplace with the  
15 “brains” of their computers.

16           109. Further, the disclaimers are unenforceable under CAL. CIV. CODE § 1668, which  
17 prohibits enforcement of contract terms where the contract attempts to “exempt anyone from  
18 responsibility for his own fraud, or willful injury to the person or property of another, or violation of  
19 law, whether willful or negligent...”

20           110. Here, to the extent Defendant is seeking to invoke the disclaimers or limitations on  
21 liability to avoid responsibility for their violation of several laws, including the CLRA, the UCL,  
22 Florida Unfair & Deceptive Trade Practices Act (“FDUPTA”), Massachusetts General Law Chapter  
23 93A, and Louisiana Civil Code articles 2520 and 2524, among others, they are “against the policy of  
24 the law” and cannot be enforced.

## 25       **V. TOLLING OF THE STATUE OF LIMITATIONS AND ESTOPPEL**

26           111. **Discovery Rule Tolling.** Plaintiffs and members of the Class could not have  
27 reasonably discovered through the exercise of reasonable diligence that their AMD processors  
28

1 suffered from major security vulnerabilities that, if mitigated, resulted in reduced processing  
2 performance, within the time period of any applicable statute of limitations.

3 112. Plaintiffs and members of the Class did not discover and did not know of any facts  
4 that would have caused a reasonable person to suspect that Defendant was concealing a latent defect  
5 and/or that the AMD processors contained a defect that exposed them to security vulnerabilities that,  
6 if mitigated, resulted in reduced processing performance.

7 113. **Fraudulent Concealment Tolling.** Throughout the time period relevant to this  
8 action, Defendant concealed from and failed to disclose to Plaintiffs and members of the Class vital  
9 information concerning the Defect described herein, despite the fact that Defendant knew, or should  
10 have known of, the Defect in its Processors well before its discovery by a third party.

11 114. Defendant kept Plaintiffs and members of the Class ignorant of vital information  
12 essential to the pursuit of their claims. As a result, neither Plaintiffs nor members of the Class could  
13 have discovered the Defect, even upon reasonable exercise of diligence.

14 115. Despite its knowledge of the Defect, Defendant failed to disclose and concealed, and  
15 continues to conceal, critical information relating to the Defect from Plaintiffs and members of the  
16 Class, even though, at any point in time, it could have done so through individual correspondence,  
17 media release, or by other means.

18 116. Plaintiffs and members of the Class justifiably relied on Defendant to disclose the  
19 Defect in the AMD processors they purchased or leased (either directly or as a component of, among  
20 other things, a computer or server), because the Defect was hidden and not discoverable through  
21 reasonable efforts by Plaintiffs and members of the Class.

22 117. Thus, the running of all applicable statutes of limitations have been suspended with  
23 respect to any claims that Plaintiffs and members of the Class have sustained as a result of the  
24 defective AMD processors by virtue of the fraudulent concealment doctrine.

25 118. **Estoppel.** Defendant was under a continuous duty to disclose to Plaintiffs and  
26 members of the Class the true character, quality, and nature of the defective processors and associated  
27 security vulnerabilities and reductions in processing performance, but concealed the true nature,  
28 quality, and character of the processors.

1 119. Based on the foregoing, Defendant is estopped from relying on any statutes of  
2 limitations in defense of this action.

3 **VI. CLASS ACTION ALLEGATIONS**

4 120. Plaintiffs bring this proposed action pursuant to FED. R. CIV. P. 23(a), 23(b)(2), and/or  
5 23(b)(3) on behalf of the following Classes:

6 **Nationwide Class:** All persons or entities that purchased or leased one or more AMD  
7 processors, or one or more devices containing an AMD processor in the United States within  
8 the applicable statute of limitations;

9 **California Class:** All persons or entities that purchased or leased one or more AMD  
10 processors, or one or more devices containing an AMD processor in the state of California  
11 within the applicable statute of limitations;

12 **Florida Class:** All persons or entities that purchased or leased one or more AMD processors,  
13 or one or more devices containing an AMD processor in the state of Florida within the  
14 applicable statute of limitations;

15 **Louisiana Class:** All persons or entities that purchased or leased one or more AMD  
16 processors, or one or more devices containing an AMD processor in the state of Louisiana  
17 within the applicable statute of limitations; and

18 **Massachusetts Class:** All persons or entities that purchased or leased one or more AMD  
19 processors, or one or more devices containing an AMD processor in the Commonwealth of  
20 Massachusetts within the applicable statute of limitations.

21 121. Excluded from the Classes are Defendant and any parents, subsidiaries, corporate  
22 affiliates, officers, directors, employees, assigns, successors, the Court, Court staff, Defendant's  
23 counsel, and all respective immediate family members of the excluded entities described above.  
24 Plaintiff reserves the right to revise the definition of the Class based upon subsequently discovered  
25 information and reserves the right to establish subclasses where appropriate.

26 122. This action has been brought and may be properly maintained on behalf of the Class  
27 proposed herein under FED. R. CIV. P. 23.  
28

1            123.    **Numerosity.** FED. R. CIV. P. 23(a)(1): The Classes are so numerous that individual  
2 joinder of all potential members is impracticable. Plaintiffs believe that there are at least thousands  
3 of proposed members of the Classes throughout the United States. Members of the Classes may be  
4 notified of the pendency of this action by recognized, Court-approved notice dissemination methods,  
5 which may include U.S. Mail, electronic mail, Internet postings, and/or published notice.

6            124.    **Commonality and Predominance.** FED. R. CIV. P. 23(a)(2) and 23(b)(3): This action  
7 involves common questions of law and fact, which predominate over any questions affecting  
8 individual members of the Classes, including, without limitation:

- 9            A.     Whether Defendant engaged in the conduct alleged herein;
- 10           B.     Whether Defendant’s processors are defective;
- 11           C.     Whether the purported “patches,” “fixes,” or other remedies are ineffective and/or  
12 result in reduced processing performance;
- 13           D.     Whether any such reduced processing performance is material;
- 14           E.     Whether Defendant knew, or should have known, that its processors were defective  
15 and that, if mitigated, resulted in reduced processing performance;
- 16           F.     Whether Defendant had a duty to disclose, and breached its duty to disclose, that its  
17 processors were defective and that, if mitigated, resulted in reduced processing performance;
- 18           G.     Whether Defendant intentionally, recklessly, or negligently misrepresented or omitted  
19 material facts including the fact that its processors are defective and that, if mitigated, resulted in  
20 reduced processing performance;
- 21           H.     Whether Defendant breached its express warranties in that its processors were  
22 defective with respect to manufacture, workmanship, and/or design;
- 23           I.     Whether Defendant breached its implied warranties in that its processors were  
24 defective with respect to manufacture, workmanship, and/or design;
- 25           J.     Whether Defendant violated the Magnuson-Moss Warranty Act, 15 U.S.C. § 2301, *et*  
26 *seq.*;
- 27           K.     Whether Defendant violated California’s Consumers Legal Remedies Act, CAL. CIV.  
28 CODE § 1750, *et seq.*;

1 L. Whether Defendant violated California’s Unfair Competition Law, CAL. BUS. & PROF.  
2 CODE § 17200, *et seq.*;

3 M. Whether Defendant violated the Florida Deceptive and Unfair Trade Practices Act,  
4 FLA. STAT. § 501.201, *et seq.*;

5 N. Whether Defendant breached its warranty in violation of LA. CIV. CODE ANN. Art  
6 2520, 2524;

7 O. Whether Defendant committed deceptive acts or practices in violation of MASS. GEN.  
8 LAWS ch. 93A, §2;

9 P. Whether Plaintiffs and members of the Classes overpaid for AMD processors;

10 Q. Whether Defendant made material omissions concerning the true characteristics of the  
11 AMD processors, including the existence of significant security vulnerabilities in the processors as  
12 designed;

13 R. Whether members of the Classes would not have purchased or leased—or would have  
14 paid significantly less for—AMD processors (or devices containing AMD processors), had  
15 Defendant disclosed the Defect;

16 S. Whether Plaintiffs and members of the Classes are entitled to equitable relief,  
17 including, but not limited to, restitution or injunctive relief; and

18 T. Whether Plaintiffs and members of the Classes are entitled to damages and other  
19 monetary relief and, if so, in what amount.

20 125. **Typicality.** FED. R. CIV. P. 23(a)(3): Plaintiffs’ claims are typical of the claims of the  
21 other members of the Classes because, among other things, all members of the Classes were  
22 comparably injured through Defendant’s wrongful conduct as described above.

23 126. **Adequacy.** FED. R. CIV. P. 23(a)(4): Plaintiffs are adequate Class representatives  
24 because their interests do not conflict with the interests of the other members of the Classes they seek  
25 to represent; Plaintiffs have retained counsel competent and experienced in complex class action  
26 litigation; and Plaintiffs intend to prosecute this action vigorously. The interests of the Classes will  
27 be fairly and adequately protected by Plaintiffs and their counsel.  
28



1           134. AMD’s processors are “goods” within the meaning of the CLRA, CAL. CIV. CODE §  
2 1761(a).

3           135. Plaintiffs, the Nationwide Class, and the California Class’s purchase or lease of AMD  
4 processors, or devices containing AMD processors, are “transactions” within the meaning of the  
5 CLRA, CAL. CIV. CODE § 1761(e).

6           136. Defendant violated the CLRA by misrepresenting the performance and security  
7 capabilities and features of its processors, and failing to disclose and omitting the existence of the  
8 Defect in its processors. As such, Defendant violated the CLRA by:

9           (a) “[r]epresenting that goods . . . have . . . characteristics, . . . uses, [and] benefits  
10 . . . that they do not have...” (CAL. CIV. CODE § 1770(a)(5));

11           (b) “[r]epresenting that goods . . . are of a particular standard, quality, or grade...”  
12 (CAL. CIV. CODE § 1770(a)(7));

13           (c) “[a]dvertising goods . . . with intent not to sell them as advertised...” (CAL. CIV.  
14 CODE § 1770(a)(9)); and

15           (d) “[r]epresenting that the subject of a transaction has been supplied in accordance  
16 with a previous representation when it has not.” (CAL. CIV. CODE § 1770(a)(16)).

17           137. Defendant was provided notice of the Defect by independent research teams, and  
18 knew, or should have known, of the existence of the Defect much earlier. Nevertheless, Defendant  
19 failed to disclose and omitted the existence of the Defect in its processors. Defendant owed a duty to  
20 disclose the material fact that its processors were defective to Plaintiffs and members of the  
21 Nationwide and California Classes, but failed to do so.

22           138. Defendant’s scheme and concealment of the true characteristics of the AMD  
23 processors was material to Plaintiffs and the Nationwide and California Classes. The Defect relates  
24 to the central functionality of the AMD processors as it affects the processors’ ability to ensure  
25 effective and efficient performance of a computer or similar device, and to maintain sufficient data  
26 security to adequately process, communicate, and store sensitive and confidential information.  
27 Plaintiffs and the Nationwide Class and the California Class used Defendant’s products and had  
28

1 business dealings with Defendant either directly or indirectly through third-parties, and were the  
2 intended recipients of Defendant's processors.

3 139. Defendant had a duty to disclose that the AMD processors were defective, because,  
4 having volunteered to provide information to Plaintiffs and the Nationwide and California Classes,  
5 Defendant had the duty to disclose not just the partial truth, but the entire truth.

6 140. Defendant intentionally and knowingly failed to disclose and misrepresented material  
7 facts regarding the AMD processors with intent to mislead Plaintiffs and members of the Nationwide  
8 and California Classes.

9 141. Defendant's deceptive conduct was likely to deceive a reasonable consumer, and did  
10 in fact deceive reasonable consumers including Plaintiffs and members of the Nationwide and  
11 California Classes.

12 142. Plaintiffs and members of the Nationwide and California Classes reasonably relied  
13 upon Defendant's material omissions and misrepresentations. They had no way of knowing that  
14 Defendant's representations were false and misleading. Plaintiffs and members of the Nationwide  
15 and California Classes did not (and could not) unravel Defendant's deception on their own.

16 143. The facts concealed and omitted by Defendant from Plaintiffs and members of the  
17 Nationwide and California Classes are material in that a reasonable consumer would have considered  
18 them to be important in deciding whether to purchase or lease the AMD processors (or devices  
19 containing AMD processors) or pay a lower price. Had Plaintiffs and the Nationwide and California  
20 Class members known about the defective nature of AMD processors, they would not have purchased  
21 or leased the AMD processors (or devices containing AMD processors), or would not have paid the  
22 prices they paid.

23 144. Defendant's unlawful acts and practices affect the public interest and trade and  
24 commerce in the State of California, and present a continuing risk to Plaintiff and members of the  
25 Nationwide and California Classes.

26 145. Defendant's violations of the CLRA were willful and oppressive. Defendant knew or  
27 should have known that its conduct violated the CLRA.  
28

1 146. Plaintiffs and members of the Nationwide and California Classes were injured and  
2 suffered ascertainable loss, injury-in-fact, and/or actual damage as a proximate result of Defendant’s  
3 conduct in that respective class members overpaid for their AMD processors and did not receive the  
4 benefit of their bargain, and their AMD processors (or devices containing AMD processors) have  
5 suffered a diminution in value. These injuries are the direct and natural consequence of Defendant’s  
6 misrepresentations and omissions.

7 147. Plaintiffs and members of the Nationwide and California Classes are entitled to, *inter*  
8 *alia*, injunctive relief, costs, attorneys’ fees, and other such relief the Court deems appropriate, just,  
9 and equitable, in amounts to be determined at trial.

10 148. With this filing, and on this Count, pursuant to CAL. CIV. CODE § 1782(d), Plaintiffs  
11 and members of the Nationwide and California Classes seek an order enjoining the above-described  
12 unfair and deceptive practices.

13 149. Plaintiffs and members of the Nationwide and California Classes have provided  
14 Defendant with notice of its violations of the CLRA pursuant to CAL. CIV. CODE § 1782(a), which is  
15 attached hereto as **Exhibit A**. Thirty days having expired and Defendant having failed to provide the  
16 requested relief, Plaintiffs seek actual damages under the CLRA.

17 **COUNT II**  
18 **Violation of California’s Unfair Competition Law (“UCL”) – Unlawful Business Practice**  
19 **CAL. BUS. & PROF. CODE § 17200, et seq.**  
20 **(On Behalf of the Nationwide Class and the California Class)**

21 150. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
22 fully set forth herein.

23 151. Plaintiffs Elliott, Garcia, and Martinelli (for the purposes of this section, “Plaintiffs”)  
24 bring this Count on behalf of themselves, the Nationwide Class, and the California Class.

25 152. CAL. BUS. & PROF. CODE § 17200, *et seq.*, the UCL, prohibits “any unlawful, unfair  
26 or fraudulent business act or practice.”

27 153. By reason of the conduct alleged herein, Defendant engaged in unlawful business  
28 practices within the meaning of the UCL.

1           154. At all relevant times, Defendant has maintained substantial operations in, regularly  
2 conducted business throughout, and engaged in the conduct described herein within the State of  
3 California.

4           155. In the course of its business, Defendant specifically violated the UCL by engaging in  
5 the following unlawful business acts and practices:

6                   (a) Violating the Magnuson-Moss Warranty Act, 15 U.S.C. § 2301, *et seq.*;

7                   (b) Violating the Consumer Legal Remedies Act, CAL. CIV. CODE § 1750, *et seq.*;

8                   and

9                   (c) Violating California's False Advertising Law, CAL. BUS. & PROF. CODE §  
10 1700, *et seq.*

11           156. Defendant was provided notice of the Defect by independent research teams, and  
12 knew, or should have known, of the existence of the Defect much earlier. Nevertheless, Defendant  
13 failed to disclose the existence of the Defect in its processors. Defendant owed a duty to disclose the  
14 material fact that its processors were defective to Plaintiffs and members of the Nationwide and  
15 California Classes, but failed to do so.

16           157. Defendant's unlawful business practices were likely to deceive a reasonable  
17 consumer. Plaintiffs and members of the Nationwide and California Classes used Defendant's  
18 products and had business dealings with Defendant either directly or indirectly through third-parties,  
19 and were the intended recipients of Defendant's processors.

20           158. Defendant's unlawful business practices and concealment of the true characteristics  
21 of the AMD processors were material to Plaintiffs and members of the Nationwide and California  
22 Classes. The Defect relates to the central functionality of the AMD processors as it affects the  
23 processor's ability to ensure effective and efficient performance of a computer or similar device, and  
24 to maintain sufficient data security to adequately process, communicate, and store sensitive and  
25 confidential information.

26           159. Defendant misrepresented and failed to disclose the truth with the intention that  
27 Plaintiffs and members of the Nationwide and California Classes would rely on the  
28 misrepresentations and omissions. Had they known the truth, Plaintiffs and members of the

1 Nationwide and California Classes would not have purchased or leased – or would have paid  
2 significantly less for – AMD processors (or devices containing AMD processors).

3 160. As a direct and proximate result of Defendant’s misrepresentations and failure to  
4 disclose material information, Plaintiffs and members of the Nationwide and California Classes have  
5 suffered ascertainable loss and actual damages.

6 161. The harm caused by this conduct vastly outweighs any legitimate business utility it  
7 possibly could have.

8 162. As a direct and proximate result of Defendant’s unlawful business practices, Plaintiffs  
9 and members of the Nationwide and California Classes have suffered loss of money.

10 163. As a result of Defendant’s unlawful business practices, Plaintiffs and members of the  
11 Nationwide and California Classes are entitled to restitution, including disgorgement of profits, costs,  
12 and attorneys’ fees in amounts to be determined at trial.

13 164. Defendant’s conduct is or may well be continuing and ongoing. Accordingly,  
14 Plaintiffs and members of the Nationwide and California Classes are entitled to injunctive relief to  
15 prohibit or correct such ongoing acts of unfair competition, in addition to obtaining equitable  
16 monetary relief.

17 **COUNT III**  
18 **Violation of California’s UCL – Unfair Business Practice**  
19 **CAL. BUS. & PROF. CODE § 17200, et seq.**  
20 **(On Behalf of the Nationwide Class and the California Class)**

21 165. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
22 fully set forth herein.

23 166. Plaintiffs Elliott, Garcia, and Martinelli (for the purposes of this section, “Plaintiffs”)  
24 bring this Count on behalf of themselves, the Nationwide Class, and the California Class.

25 167. Cal. Bus. & Prof. Code § 17200, *et seq.*, the UCL, prohibits “any unlawful, unfair or  
26 fraudulent business act or practice.”

27 168. By reason of the conduct alleged herein, Defendant engaged in unfair practices within  
28 the meaning of the UCL.

1           169. At all relevant times, Defendant has maintained substantial operations in, regularly  
2 conducted business throughout, and engaged in the conduct described herein within the State of  
3 California.

4           170. In the course of its business, Defendant specifically violated the UCL by engaging in  
5 the following unfair business acts and practices:

6           (a) selling or leasing the AMD processors (either directly or as a component of  
7 devices containing such processors), to Plaintiffs and members of the Nationwide and  
8 California Classes, either directly or indirectly through third-parties, with knowledge of the  
9 Defect in the AMD processors, and failing to disclose the Defect from Plaintiffs and members  
10 of the Nationwide and California Classes; and

11           (b) marketing the AMD processors as secure and of particular processing speeds,  
12 and misrepresenting the security and processing speeds of the AMD processors.

13           171. **Defendant engaged in unfair business practices under the “balancing test.”** The  
14 harm caused by Defendant’s actions and omissions, as described above, greatly outweigh any  
15 perceived utility. Indeed, Defendant’s failure to disclose the Defect with its processors has no utility,  
16 and therefore does not outweigh the harm Plaintiffs suffered as a result of the defective processors.

17           172. Defendant’s actions and omissions were injurious to Plaintiffs and members of the  
18 Nationwide and California Classes, directly causing the harms alleged.

19           173. **Defendant engaged in unfair business practices under the “tethering test.”**  
20 Defendant’s actions and omissions, as described above, violated fundamental public policies  
21 expressed by the California Legislature. *See, e.g.*, CAL. BUS. & PROF. CODE § 17500 (California  
22 legislative policy against false advertising); CAL. CIV. CODE § 1798.1 (“The Legislature declares that  
23 . . . all individuals have a right of privacy in information pertaining to them.... The increasing use of  
24 computers . . . has greatly magnified the potential risk to individual privacy that can occur from the  
25 maintenance of personal information.”); CAL. CIV. CODE § 1798.81.5(a) (“It is the intent of the  
26 Legislature to ensure that personal information about California residents is protected.”).  
27 Defendants’ acts and omissions, and the injuries caused by them are thus “comparable to or the same  
28

1 as a violation of the law . . . .” *Cel-Tech Commc’ns, Inc. v. Los Angeles Cellular Tel. Co.*, 20 Cal. 4th  
2 163, 187 (1999).

3 174. Defendant was provided notice of the Defect by independent research teams, and  
4 knew, or should have known, of the existence of the Defect much earlier. Nevertheless, Defendant  
5 failed to disclose the existence of the Defect in its processors. Defendant owed a duty to disclose the  
6 material fact that its processors were defective to Plaintiffs and members of the Nationwide and  
7 California Classes, but failed to do so.

8 175. Defendant’s unfair business practices were likely to deceive a reasonable consumer.  
9 Plaintiffs and members of the Nationwide and California Classes used Defendant’s products and had  
10 business dealings with Defendant either directly or indirectly through third-parties, and were the  
11 intended recipients of Defendant’s processors.

12 176. Defendant’s unfair business practices and failure to disclose the true characteristics of  
13 the AMD processors were material to Plaintiffs and members of the Nationwide and California  
14 Classes. The Defect relates to the central functionality of the AMD processors as it affects the  
15 processor’s ability to ensure effective and efficient performance of a computer or similar device, and  
16 to maintain sufficient data security to adequately process, communicate, and store sensitive and  
17 confidential information.

18 177. Defendant misrepresented and failed to disclose the truth with the intention that  
19 Plaintiffs and members of the Nationwide and California Classes would rely on the  
20 misrepresentations and omissions. Had they known the truth, Plaintiffs and members of the  
21 Nationwide and California Classes would not have purchased or leased – or would have paid  
22 significantly less for–AMD processors (or devices containing AMD processors).

23 178. As a direct and proximate result of Defendant’s misrepresentations and failure to  
24 disclose material information, Plaintiffs and members of the Nationwide and California Classes have  
25 suffered ascertainable loss and actual damages.

26 179. The harm caused by this conduct vastly outweighs any legitimate business utility it  
27 possibly could have.  
28

1 180. Plaintiffs and members of the Nationwide and California Classes are entitled to  
2 restitution, including disgorgement of profits, costs, and attorneys’ fees in amounts to be determined  
3 at trial.

4 181. Defendant’s conduct is or may well be continuing and ongoing. Accordingly,  
5 Plaintiffs and members of the Nationwide and California Classes are entitled to injunctive relief to  
6 prohibit or correct such ongoing acts of unfair competition, in addition to obtaining equitable  
7 monetary relief.

8 **COUNT IV**  
9 **Violation of California’s UCL – Fraudulent Business Practice**  
10 **CAL. BUS. & PROF. CODE § 17200, et seq.**  
11 **(On Behalf of the Nationwide Class and the California Class)**

12 182. Plaintiffs reallege and incorporate by reference all preceding allegations as through  
13 fully set forth herein.

14 183. Plaintiffs Elliott, Garcia, and Martinelli (for the purposes of this section, “Plaintiffs”)  
15 bring this Count on behalf of themselves, the Nationwide Class, and the California Class.

16 184. CAL. BUS. & PROF. CODE § 17200, *et seq.*, the UCL, prohibits “any unlawful, unfair  
17 or fraudulent business act or practice.”

18 185. By reason of the conduct alleged herein, Defendant engaged in fraudulent business  
19 practices within the meaning of the UCL.

20 186. At all relevant times, Defendant has maintained substantial operations in, regularly  
21 conducted business throughout, and engaged in the conduct described herein within the State of  
22 California.

23 187. In the course of its business, Defendant specifically violated the UCL by engaging in  
24 the following fraudulent business act or practice:

- 25 (a) selling or leasing the AMD processors (either directly or as a component of  
26 devices containing such processors), to Plaintiffs and members of the Nationwide and  
27 California Classes, either directly or indirectly through third-parties, with knowledge of the  
28 Defect in the AMD processors, and failing to disclose the Defect to Plaintiffs and members  
of the Nationwide and California Classes;

1 (b) omitting the fact in Defendant’s public statements, statements to third-party  
2 retailers, and on the packaging of its processors that AMD processors were capable of  
3 achieving particular speeds only if the data of Plaintiffs and members of the Nationwide and  
4 California Classes were made vulnerable to side-channel attacks, with the intent that those  
5 statements be relied upon; and

6 (c) knowingly and falsely stating that “there is a near zero risk to AMD  
7 processors” following the public exposure of the Spectre vulnerability and only correcting  
8 that false statement on January 11, 2018.

9 188. Defendant’s statements regarding the speed and/or security of its processors were  
10 objectively verifiable statements of fact, and not mere puffery.

11 189. The who, what, where, when, and why of Defendant’s fraudulent business practices  
12 are as follows:

13 (a) **Who:** Defendant AMD;

14 (b) **What:** Defendant affirmatively misrepresented and failed to disclose the true  
15 security and processing speed of its processors;

16 (c) **Where:** Defendant made its affirmative misrepresentations to Plaintiffs and  
17 members of the Nationwide and California Classes on its packaging for its processors, on the  
18 packaging by third-party computer and server manufacturers, on in-store displays  
19 communicated to retailers by AMD or its authorized manufacturers (*e.g.*, Fry’s), and online  
20 (*e.g.*, Newegg.com);

21 (d) **When:** July 6, 2013, September 26, 2014, April 21, 2016, and January 6,  
22 2018; and

23 (e) **Why:** Because, contrary to AMD’s representations and omissions, AMD  
24 processors are not secure and are only capable of working at the speed and with the  
25 performance as promised at the expense of a significant security vulnerability.

26 190. Defendant was provided notice of the Defect by independent research teams no later  
27 than June 2017, and knew, or should have known, of the existence of the Defect much earlier.  
28 Nevertheless, Defendant failed to disclose the existence of the Defect in its processors. Defendant

1 owed a duty to disclose the material fact that its processors were defective to Plaintiffs and members  
2 of the Nationwide and California Classes, but failed to do so.

3 191. Defendant's fraudulent business practices were likely to deceive a reasonable  
4 consumer. Plaintiffs and members of the Nationwide and California Classes used Defendant's  
5 products and had business dealings with Defendant either directly or indirectly through third-parties,  
6 and were the intended recipients of Defendant's processors.

7 192. Defendant's scheme and failure to disclose the true characteristics of the AMD  
8 processors were material to Plaintiffs and members of the Nationwide and California Classes, as  
9 evidence by, among other things, the massive public outcry once the Defect was disclosed. Moreover,  
10 the Defect relates to the central functionality of the AMD processors as it affects the processor's  
11 ability to ensure effective and efficient performance of a computer or similar device, and to maintain  
12 sufficient data security to adequately process, communicate, and store sensitive and confidential  
13 information.

14 193. Defendant misrepresented and failed to disclose the truth with the intention that  
15 Plaintiffs and members of the Nationwide and California Classes would rely on the  
16 misrepresentations and omissions. Had they known the truth, Plaintiffs and members of the  
17 Nationwide and California Classes would not have purchased or leased – or would have paid  
18 significantly less for – AMD processors (or devices containing AMD processors).

19 194. As a direct and proximate result of Defendant's misrepresentations and failure to  
20 disclose material information, Plaintiffs and members of the Nationwide and California Classes have  
21 suffered ascertainable loss and actual damages.

22 195. Plaintiffs and members of the Nationwide and California Classes are entitled to  
23 restitution, including disgorgement of profits, costs, and attorneys' fees in amounts to be determined  
24 at trial.

25 196. Defendant's conduct is or may well be continuing and ongoing. Accordingly,  
26 Plaintiffs and members of the Nationwide and California Classes are entitled to injunctive relief to  
27 prohibit or correct such ongoing acts of unfair competition, in addition to obtaining equitable  
28 monetary relief.

**COUNT V**  
**Fraud by Omission**

**(On Behalf of the Nationwide Class and the California Class)**

1  
2  
3 197. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
4 fully set forth herein.

5 198. Plaintiffs Elliott, Garcia, and Martinelli (for the purposes of this section, “Plaintiffs”)  
6 bring this Count on behalf of themselves and the Nationwide and California Classes.

7 199. Defendant intentionally and knowingly omitted material facts about the AMD  
8 processors, including the fact the processors have significant security vulnerabilities and that the  
9 advertised processor speeds were not available without rendering the processors vulnerable to side-  
10 channel attacks which expose users’ private information to potential hacking through such side-  
11 channel attacks.

12 200. Defendant acted with the intent that Plaintiffs and members of the Classes rely on  
13 Defendant’s omissions so that Defendant could profit from the sale of the processors.

14 201. Specifically, Defendant’s fraudulent omissions include, but are not limited to:

15 (a) selling or leasing the AMD processors (either directly or as a component of  
16 devices containing such processors), to Plaintiffs and members of the Nationwide and  
17 California Classes, either directly or indirectly through third-parties, with knowledge of the  
18 Defect in the AMD processors, and failing to disclose the Defect to Plaintiffs and members  
19 of the Nationwide and California Class;

20 (b) omitting the fact in Defendant’s public statements, statements to third-party  
21 retailers, and on the packaging of its processors that AMD processors were capable  
22 achieving particular speeds only if the data of Plaintiffs and members of the Nationwide and  
23 California Classes were made vulnerable to side-channel attacks, with the intent that those  
24 statements and omissions be relied upon; and/or

25 (c) failing to disclose that AMD processors were vulnerable to Spectre and only  
26 disclosing that fact publicly on January 11, 2018.

27 202. Defendant’s statements and omissions regarding the speed and/or security of its  
28 processors were objectively verifiable statements or omissions of fact, and not mere puffery.

1           203. The who, what, where, and why of Defendant's fraudulent business practices are as  
2 follows:

3           (a)       **Who:** Defendant AMD;

4           (b)       **What:** Defendant affirmatively omitted the fact there are significant security  
5 vulnerabilities with the processors and that the speed of its processors was only available if  
6 consumers' data was left vulnerable;

7           (c)       **Where:** Defendant omitted the existence of the Defect from Plaintiffs and  
8 members of the Nationwide and California Classes on its packaging for its processors, on  
9 the packaging by third-party computer and server manufacturers, on in-store or online  
10 displays communicated to retailers by AMD or its authorized retailers (*e.g.* Fry's,  
11 Newegg.com);

12           (d)       **Why:** Because, contrary to AMD's omissions, AMD processors are not  
13 secure and are only capable of working at the speed and with the performance as promised  
14 at the expense of a significant security vulnerability.

15           204. Defendant was provided notice of the Defect by independent research teams no later  
16 than June 2017, and knew, or should have known, of the existence of the Defect much earlier.  
17 Nevertheless, Defendant failed to disclose the existence of the Defect in its processors. Defendant  
18 owed a duty to disclose the material fact that its processors were defective to Plaintiffs and members  
19 of the Nationwide and California Classes, but failed to do so.

20           205. Defendant owed a duty to disclose the Defect in its processors because Defendant  
21 possessed superior and exclusive knowledge regarding the defect and the vulnerability to which  
22 users' data was exposed. Rather than disclose the defect, Defendant intentionally and knowingly  
23 omitted material facts including the existence of the Defect and that the represented processor speeds  
24 were only available at the expense at the expense of a significant security vulnerability in order to  
25 deceive consumers and sell additional processors and avoid the cost of repair or replacement of the  
26 defective processors.

27           206. Defendant's fraudulent acts were likely to deceive a reasonable consumer. Plaintiffs  
28 and members of the Nationwide and California Classes used Defendant's products and had business

1 dealings with Defendant either directly or indirectly through third-parties, and were the intended  
2 recipients of Defendant’s processors.

3 207. Defendant’s scheme and failure to disclose the true characteristics of the AMD  
4 processors were material to Plaintiffs and members of the Nationwide and California Classes, as  
5 evidence by, among other things, the massive public outcry once the Defect was disclosed. Moreover,  
6 the Defect relates to the central functionality of the AMD processors as it affects the processor’s  
7 ability to ensure effective and efficient performance of a computer or similar device, and to maintain  
8 sufficient data security to adequately process, communicate, and store sensitive and confidential  
9 information. Defendant knew its omissions were misleading and knew the effect of those omissions.

10 208. Defendant failed to disclose the truth with the intention that Plaintiffs and members of  
11 the Nationwide and California Classes would rely on the omissions. Had they known the truth,  
12 Plaintiffs and members of the Nationwide and California Classes would not have purchased or leased  
13 – or would have paid significantly less for–AMD processors (or devices containing AMD processors).

14 209. As a direct and proximate result of Defendant’s failure to disclose material  
15 information, Plaintiffs and members of the Nationwide and California Classes have suffered actual  
16 damages, in an amount to be proven at trial.

17 **COUNT VI**  
18 **Breach of Express Warranty – Limited Warranty**  
19 **CAL. COM. CODE § 2313**  
20 **(On Behalf of the Nationwide Class and the California Class)**

21 210. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
22 fully set forth herein.

23 211. Plaintiffs Elliott, Garcia, and Martinelli (for the purposes of this section, “Plaintiffs”)  
24 bring this Count on behalf of themselves, the Nationwide Class, and the California Class.

25 212. Defendant is and was at all relevant times a “merchant” with respect to the AMD  
26 processors under CAL. COM. CODE § 2104(1), and a “seller” of the AMD processors under §  
27 2103(1)(d).

28 213. The AMD processors are and were at all relevant times “goods” within the meaning  
of CAL. COM. CODE § 2105(1).

1           214. In connection with the purchase of AMD processors sold through the AMD processor  
2 in a Box Program, AMD provided a three-year limited warranty for processors sold with a  
3 heatsink/fan (“HSF”) and a two-year limited warranty for processors sold without an HSF. Both  
4 warranties cover defects in the material and workmanship of the AMD processors, and processors  
5 that fail to substantially conform to AMD’s publicly available specifications.

6           215. Plaintiffs and members of the Nationwide and California Classes experienced the  
7 existence of the Defect in AMD processors within the warranty periods but had no knowledge of the  
8 existence of the Defect, which was known and concealed by Defendant.

9           216. Plaintiffs and members of the Nationwide and California Classes could not have  
10 reasonably discovered the Defect in AMD processors prior to the public disclosure of the Defect by  
11 cybersecurity experts, or prior to experiencing a known security hack resulting from the Defect.

12           217. Defendant breached the express warranty by selling AMD processors that were  
13 defective with respect to design, workmanship, and manufacture when Defendant knew its processors  
14 were defective and posed security vulnerabilities that, if mitigated, resulted in reduced processing  
15 performance.

16           218. Because of the existence of the Defect, the AMD processors do not perform as  
17 warranted.

18           219. Defendant was provided notice of the Defect by independent research teams, and  
19 knew, or should have known, of the existence of the Defect much earlier. Affording Defendant a  
20 reasonable opportunity to cure its breach of express warranties would be unnecessary and futile here  
21 because Defendant has known of and concealed the Defect and, on information and belief, has refused  
22 to adequately repair or replace its processors free of charge within or outside of the warranty periods  
23 despite the Defect’s existence at the time of sale or lease of the processors, or devices containing  
24 AMD processors.

25           220. Thus, Defendant’s two-year and three-year limited warranties fail of their essential  
26 purpose and the recovery of Plaintiffs and members of the Nationwide and California Classes is not  
27 limited to the remedies of the express limited warranties.  
28

1           221. Any attempt by Defendant to disclaim or limit the express warranties *vis-à-vis*  
2 consumers is unconscionable and unenforceable here. Specifically, any warranty limitation is  
3 unenforceable because Defendant knowingly sold or leased a defective product without informing  
4 customers about the Defect. This reasoning equally applies to any attempt to limit the warranties  
5 Defendant furnished directly to Plaintiff and members of the Nationwide and California Classes  
6 through its marketing campaign, regardless of whether Plaintiff and members of the Nationwide and  
7 California Classes purchased or leased their AMD processors, or devices containing such processors,  
8 through the AMD processor in a Box program.

9           222. Furthermore, the time limits contained in the express limited warranties Defendant  
10 furnished in connection with the AMD processor in a Box Program were also unconscionable and  
11 inadequate to protect Plaintiffs and members of the Nationwide and California Classes. Among other  
12 things, Plaintiffs and members of the Nationwide and California Classes did not determine these  
13 limitations, the terms of which unreasonably favor Defendant. A gross disparity in bargaining power  
14 existed between Defendant and Plaintiffs and members of the Nationwide and California Classes, and  
15 Defendant knew or should have known that its processors were defective at the time of sale or lease  
16 of the processors, or devices containing AMD processors, and that its processors were defective and  
17 posed security vulnerabilities that, if mitigated, resulted in reduced processing performance.

18           223. Defendant knew that its processors were inherently defective and did not conform to  
19 their warranties. Plaintiffs and members of the Nationwide and California Classes were induced into  
20 purchasing or leasing AMD processors, or devices containing AMD processors, under false pretenses.

21           224. Plaintiffs and members of the Nationwide and California Classes have been excused  
22 from performance of any warranty obligations as a result of Defendant's conduct described herein.

23           225. As a direct and proximate result of Defendant's breach of express warranties, Plaintiffs  
24 and members of the Nationwide and California Classes have been damaged in an amount to be  
25 determined at trial, including, but not limited to, repair and replacement costs, monetary losses  
26 associated with reduced processor speeds, diminished value of their computer devices, and loss of  
27 use of or access to their computer devices.  
28

**COUNT VII**  
**Breach of Express Warranty -- Representations**  
**CAL. COM. CODE § 2313**  
**(On Behalf of the Nationwide Class and the California Class)**

1  
2  
3 226. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
4 fully set forth herein.

5 227. Plaintiffs Elliott, Garcia, and Martinelli (for the purposes of this section, “Plaintiffs”)  
6 bring this Count on behalf of themselves, the Nationwide Class, and the California Class.

7 228. Defendant is and was at all relevant times a “merchant” with respect to the AMD  
8 processors under CAL. COM. CODE § 2104(1), and a “seller” of the AMD processors under §  
9 2103(1)(d).

10 229. The AMD processors are and were at all relevant times “goods” within the meaning  
11 of CAL. COM. CODE § 2105(1).

12 230. Defendant marketed its processors to Plaintiffs and members of the Nationwide and  
13 California Classes, and made affirmative representations, as regarding the security and processing  
14 speeds of the processors. Plaintiffs and members of the Nationwide and California Classes were  
15 exposed to, and aware of, these representations.

16 231. Defendant’s express warranties formed the basis of the bargain in Plaintiffs’, the  
17 Nationwide Class’, and the California Class’s decision to purchase or lease AMD processors, or  
18 devices containing AMD processors. Defendant’s various oral and written representations regarding  
19 the AMD processors’ security and processing speed constituted express warranties to Plaintiffs and  
20 the Nationwide and California Classes.

21 232. An affirmation of fact, promise, or description made by the seller to the buyer which  
22 relates to the goods and becomes a part of the basis of the bargain creates an express warranty that  
23 the goods will conform to the affirmation, promise, or description.

24 233. Plaintiffs and members of the Nationwide and California Classes used Defendant’s  
25 products and had business dealings with Defendant either directly or indirectly through third-parties,  
26 and were the intended recipients of Defendant’s processors. As such, Defendant’s express warranty  
27 regarding the benefits of the AMD processors extends directly to consumers like Plaintiffs and  
28 members of the Nationwide and California Classes, who are intended third-party beneficiaries of any

1 contract between Defendant and the retailers where AMD processors, or devices with AMD  
2 processors, were sold or leased.

3 234. Defendant represented that its processors were secure and of particular processing  
4 speeds. AMD processors were not secure—given that they were subject to the Defect – and did not  
5 operate at stated processing speeds given that patches necessary to mitigate the Defect result in  
6 reduced processing performance.

7 235. Plaintiffs and members of the Nationwide and California Classes experienced the  
8 existence of the Defect in AMD processors but had no knowledge of the existence of the Defect,  
9 which was known and concealed by Defendant.

10 236. Plaintiffs and members of the Nationwide and California Classes could not have  
11 reasonably discovered the Defect in AMD processors prior to the public disclosure of the Defect by  
12 cybersecurity experts, or prior to experiencing a known security hack resulting from the Defect.

13 237. Because of the existence of the Defect, the AMD processors do not perform as  
14 warranted.

15 238. Defendant was provided notice of the Defect by independent research teams, and  
16 knew, or should have known, of the existence of the Defect much earlier. Affording Defendant a  
17 reasonable opportunity to cure its breach of express warranties would be unnecessary and futile here  
18 because Defendant has known of and concealed the Defect and, on information and belief, has refused  
19 to adequately repair or replace its processors free of charge within or outside of the warranty periods  
20 despite the Defect's existence at the time of sale or lease of the processors, or devices containing  
21 AMD processors.

22 239. Any attempt by Defendant to disclaim or limit the express warranties *vis-à-vis*  
23 consumers is unconscionable and unenforceable here. Specifically, any warranty limitation is  
24 unenforceable because Defendant knowingly sold or leased a defective product without informing  
25 customers about the Defect. This reasoning equally applies to any attempt to limit the warranties  
26 Defendant furnished directly to Plaintiff and members of the Nationwide and California Classes  
27 through its marketing campaign, regardless of whether Plaintiff and members of the Nationwide and  
28

1 California Classes purchased or leased their AMD processors, or devices containing such processors,  
2 through the AMD processor in a Box program.

3 240. Furthermore, the time limits contained in in the express limited warranties Defendant  
4 furnished in connection with the AMD processor in a Box Program were also unconscionable and  
5 inadequate to protect Plaintiffs and members of the Nationwide and California Classes. Among other  
6 things, Plaintiffs and members of the Nationwide and California Classes did not determine these  
7 limitations, the terms of which unreasonably favor Defendant. A gross disparity in bargaining power  
8 existed between Defendant and Plaintiffs and members of the Nationwide and California Classes, and  
9 Defendant knew or should have known that its processors were defective at the time of sale or lease  
10 of the processors, or devices containing AMD processors, and that its processors were defective and  
11 posed security vulnerabilities that, if mitigated, resulted in reduced processing performance.

12 241. Defendant knew that its processors were inherently defective and did not conform to  
13 their warranties. Plaintiffs and members of the Nationwide and California Classes were induced into  
14 purchasing or leasing AMD processors, or devices containing AMD processors, under false pretenses.

15 242. Plaintiffs and members of the Nationwide and California Classes have been excused  
16 from performance of any warranty obligations as a result of Defendant's conduct described herein.  
17 As a direct and proximate result of Defendant's breach of express warranties, Plaintiffs and members  
18 of the Nationwide and California Classes have been damaged in an amount to be determined at trial,  
19 including, but not limited to, repair and replacement costs, monetary losses associated with reduced  
20 processor speeds, diminished value of their computer devices, and loss of use of or access to their  
21 computer devices.

22 **COUNT VIII**

23 **Breach of Implied Warranty**

24 **CAL. COM. CODE §§ 23114 & 2315**

25 **(On Behalf of the Nationwide Class and the California Class)**

26 243. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
27 fully set forth herein.

28 244. Plaintiffs Elliott, Garcia, Martinelli (for the purposes of this section, "Plaintiffs") bring  
this Count on behalf of themselves, the Nationwide Class, and the California Class.

1           245. Defendant is and was at all relevant times a “merchant” with respect to the AMD  
2 processors under CAL. COM. CODE § 2104(1), and a “seller” of the AMD processors under §  
3 2103(1)(d).

4           246. The AMD processors are and were at all relevant times “goods” within the meaning  
5 of CAL. COM. CODE § 2105(1).

6           247. A warranty that the AMD processors were in merchantable condition and fit for their  
7 ordinary purpose is implied by law pursuant to CAL. COM. CODE § 2314.

8           248. In addition, a warranty that the AMD processors were fit for their particular purpose  
9 is implied by law pursuant to CAL. COM. CODE § 2315. Defendant knew at the time of sale of the  
10 AMD processors that Plaintiffs and members of the Nationwide and California Classes intended to  
11 use those processors in a manner requiring a particular standard of security and performance, and that  
12 Plaintiffs and members of the Nationwide and California Classes were relying on Defendant’s skill  
13 and judgment to furnish suitable products for this particular purpose.

14           249. Plaintiffs and members of the Nationwide and California Classes purchased or leased  
15 AMD processors, or devices containing AMD processors, from Defendant, by and through  
16 Defendant’s authorized agents for retail sales, or were otherwise expected to be the eventual  
17 purchasers or lessors of AMD processors when purchased or leased from a third party. At all relevant  
18 times, Defendant was the manufacturer, distributor, warrantor, and/or seller of the relevant  
19 processors. Defendant knew or had reason to know of the specific use for which its processors were  
20 purchased or leased.

21           250. AMD processors, when sold or leased and at all times thereafter, were not in  
22 merchantable condition and are not fit for the ordinary purpose due to the Defect, and the associated  
23 problems and failures caused by the Defect. Thus, Defendant breached its implied warranty of  
24 merchantability.

25           251. Plaintiffs and members of the Nationwide and California Classes used Defendant’s  
26 products and had business dealings with Defendant either directly or indirectly through third-parties,  
27 and were the intended recipients of Defendant’s processors. As such, Defendant’s implied warranty  
28 regarding the benefits of the AMD processors extends directly to consumers like Plaintiffs and

1 members of the Nationwide and California Classes, who are intended third-party beneficiaries of any  
2 contract between Defendant and the retailers where AMD processors, or devices with AMD  
3 processors, were sold or leased.

4 252. Defendant marketed its processors to Plaintiffs and members of the Nationwide and  
5 California Classes as secure and of particular processing speeds. Plaintiffs and members of the  
6 Nationwide and California Classes were exposed to, and aware of, these representations. Indeed,  
7 such representations formed the basis of their respective decisions to purchase or lease AMD  
8 processors, or devices containing AMD processors.

9 253. The AMD processors were defective when they left Defendant's possession and, as  
10 such, could not perform according to Defendant's affirmative representations that the AMD  
11 processors were secure and of particular processing speeds. Therefore, the AMD processors were  
12 not reasonably fit for their intended, anticipated, or reasonably foreseeable use.

13 254. As a direct and proximate result of Defendant's breach of its implied warranty of  
14 merchantability, Plaintiffs and members of the Nationwide and California Classes have been  
15 damaged in an amount to be proven at trial.

16 255. Defendant cannot disclaim its warranties implied by law as it knowingly sold or leased  
17 a defective product.

18 256. Defendant was provided notice of the defect by independent research teams, and knew,  
19 or should have known, of the existence of the Defect much earlier. Affording Defendant a reasonable  
20 opportunity to cure its breach of implied warranties would be unnecessary and futile here because  
21 Defendant has known of and concealed the Defect and, on information and belief, has refused to  
22 adequately repair or replace its processors free of charge within or outside of the warranty periods  
23 despite the Defect's existence at the time of sale or lease of the processors, or devices containing  
24 AMD processors.

25 257. Any attempt by Defendant to disclaim or limit the implied warranty of merchantability  
26 *vis-à-vis* Plaintiffs and members of the Nationwide and California Classes is unconscionable and  
27 unenforceable. Specifically, any warranty limitation is unenforceable because Defendant knowingly  
28 sold or leased a defective product without informing customers about the Defect. Among other

1 things, Plaintiffs and members of the Nationwide and California Classes did not participate in  
2 determining any warranty limitations, especially those which unreasonably favor Defendant. A gross  
3 disparity in bargaining power existed between Defendant, and Plaintiffs, and members of the  
4 Nationwide and California Classes, and Defendant knew or should have known that its processors  
5 were defective at the time of sale or lease of the processors, or devices containing AMD processors,  
6 and that its processors were defective and posed security vulnerabilities that, if mitigated, resulted in  
7 reduced processing performance.

8 258. Further, as a manufacturer of consumer goods, Defendant is precluded from excluding  
9 or modifying an implied warranty of merchantability or limiting customers' remedies for breach of  
10 this warranty.

11 259. Plaintiffs and members of the Nationwide and California Classes have complied with  
12 all obligations under the warranty, or otherwise have been excused from performance of said  
13 obligations as a result of Defendant's conduct described herein.

14 260. Defendant's warranties were designed to influence consumers who purchased or  
15 leased its processors, including products that contain them.

16 261. Defendant is estopped by its conduct, as alleged herein, from disclaiming any and all  
17 implied warranties with respect to the defective processors.

18 262. The applicable statute of limitations for the implied warranty claim has been tolled by  
19 the discovery rule and Defendant's concealment.

20 **COUNT IX**

21 **Violation of the Magnuson-Moss Warranty Act ("MMWA"),**

22 **15 U.S.C. § 2301, et seq.**

23 **(On Behalf of the Nationwide Class and the California Class)**

24 263. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
25 fully set forth herein.

26 264. Plaintiffs Elliott, Garcia, and Martinelli (for the purposes of this section, "Plaintiffs")  
27 bring this Count on behalf of themselves, the Nationwide Class, and the California Class.  
28

1           265. Plaintiffs and members of the Nationwide and the California Classes satisfy the  
2 MMWA’s jurisdictional requirement because this action satisfies the diversity jurisdiction  
3 requirements under the Class Action Fairness Act, 28 U.S.C. § 1332(d).

4           266. Plaintiffs and members of the Nationwide and the California Classes are “consumers”  
5 within the meaning of the MMWA, 15 U.S.C. § 2301(3).

6           267. Defendant is a “supplier” and “warrantor” within the meaning of the MMWA, 15  
7 U.S.C. § 2301(4)-(5).

8           268. AMD’s processors are “consumer products” within the meaning of the MMWA, 15  
9 U.S.C. § 2301(1).

10          269. The MMWA, 15 U.S.C. § 2310(d)(1), provides a cause of action for any consumer  
11 who is damaged by the failure of a warrantor to comply with a written or implied warranties.

12          270. Defendant provided Plaintiffs and members of the Nationwide and the California  
13 Classes with one or more express warranties, which are covered under the MMWA, 15 U.S.C.  
14 §2301(6). In connection with the purchase or lease of AMD processors, or devices containing AMD  
15 processors, Defendant directly provided warranty coverage for its processors, or indirectly provided  
16 warranty coverage for its processors under one or more manufacturer’s warranties.

17          271. Through written advertisements, Defendant marketed its processors to the Plaintiffs  
18 and members of the Nationwide and California Classes as secure and of particular processing speeds.  
19 Indeed, such representations formed the basis of the bargain in Plaintiffs and members of the  
20 Nationwide and California Classes’ decision to purchase or lease AMD processors, or devices  
21 containing AMD processors.

22          272. Plaintiffs and members of the Nationwide and the California Classes experienced the  
23 existence of the Defect in AMD processors within the warranty periods but had no knowledge of the  
24 existence of the Defect, which was known and concealed by Defendant, and have not been provided  
25 a suitable repair or replacement of the defective processors free of charge within a reasonable time.

26          273. Defendant provided Plaintiffs and members of the Nationwide and the California  
27 Classes with one or more implied warranties, which are covered under the MMWA, 15 U.S.C. §  
28 2301(7).

1           274. In connection with the purchase or lease of AMD processors, or devices containing  
2 AMD processors, Defendant breached these warranties by misrepresenting the standard, quality, or  
3 grade of its processors, and failing to disclose and fraudulently concealing the existence of the Defect  
4 in its processors. AMD processors share a common defect in design, workmanship, and manufacture  
5 that is prone to security vulnerabilities and fails to operate as represented by Defendant.

6           275. Defendant was provided notice of the Defect by independent research teams, and  
7 knew, or should have known, of the existence of the Defect much earlier. Affording Defendant a  
8 reasonable opportunity to cure its breach of warranties would be unnecessary and futile here because  
9 Defendant has known of and concealed the Defect and, on information and belief, has refused to  
10 adequately repair or replace its processors free of charge within or outside of the warranty periods  
11 despite the Defect's existence at the time of sale or lease of the processors, or devices containing  
12 AMD processors. Under the circumstances, the remedies available under any informal settlement  
13 procedure would be inadequate and any requirement that Plaintiffs and members of the Nationwide  
14 and the California Classes resort to an informal dispute resolution procedure and/or afford Defendant  
15 a reasonable opportunity to cure their breach of warranties is excused and thereby deemed satisfied.

16           276. Any attempt by Defendant to disclaim or limit its express or implied warranties *vis-à-*  
17 *vis* consumers is unconscionable and unenforceable here. Specifically, any warranty limitation is  
18 unenforceable because Defendant knowingly sold or leased a defective product without informing  
19 customers about the Defect. Among other things, Plaintiffs and members of the Nationwide and  
20 California Classes did not participate in determining any warranty limitations, especially those which  
21 unreasonably favor Defendant. A gross disparity in bargaining power existed between Defendant  
22 and Plaintiffs and members of the Nationwide and the California Classes, and Defendant knew or  
23 should have known that its processors were defective at the time of sale or lease of the processors, or  
24 devices containing AMD processors, and that its processors were defective and posed security  
25 vulnerabilities that, if mitigated, resulted in reduced processing performance.

26           277. Plaintiffs and members of the Nationwide and the California Classes would suffer  
27 economic hardship if they returned their AMD processors, or devices containing the AMD  
28 processors, but did not receive the return of all payments made by them to Defendant. Thus, Plaintiffs

1 and members of the Nationwide and the California Classes have not reaccepted their AMD processors  
2 by retaining them.

3 278. The amount in controversy of Plaintiffs and members of the Nationwide and the  
4 California Classes' individual claims meets or exceeds the sum of \$25. The amount in controversy  
5 of this action exceeds the sum of \$50,000, exclusive of interest and costs, computed on the basis of  
6 all claims to be determined in this lawsuit.

7 279. Plaintiffs and members of the Nationwide and the California Classes, individually and  
8 on behalf of the respective Classes, seek all damages permitted by law, including diminution in the  
9 value of the AMD processors, in an amount to be proven at trial.

10 **COUNT X**

11 **Negligence**

12 **(On Behalf of the Nationwide Class and the California Class.)**

13 280. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
14 fully set forth herein.

15 281. Plaintiffs Elliott, Garcia, and Martinelli (for the purposes of this section, "Plaintiffs")  
16 bring this Count on behalf of themselves, the Nationwide Class, and the California Class.

17 282. Defendant owed a duty of care to Plaintiffs and members of the Nationwide and  
18 California Classes, arising from the sensitivity of information stored on computers and the  
19 foreseeability of the impact of the Defect on data security, to exercise reasonable care in safeguarding  
20 sensitive information.

21 283. Defendant also had a duty to ensure that its processors would function at the quality  
22 and processing speeds that it represented to customers, including Plaintiffs and members of the  
23 Nationwide and California Classes. This duty included, *inter alia*, designing, maintaining,  
24 monitoring, and testing its processors to ensure that Plaintiff and members of the Nationwide and  
25 California Classes' data and computers were adequately secured and that its processors would  
26 function as promised.

27 284. Defendant owed a duty to Plaintiffs and members of the Nationwide and California  
28 Classes to implement processes that would detect major security vulnerabilities, such as the Defect,  
in a timely manner.



1           292. The stated purpose of the FDUPTA is to “protect the consuming public and legitimate  
2 business enterprises from those who engage in unfair methods of competition, or unconscionable,  
3 deceptive, or unfair acts or practices in the conduct of any trade or commerce.” FLA. STAT. §  
4 501.202(2).

5           293. Plaintiff and Florida Class members are each “consumers,” the AMD processors are  
6 “goods,” and Defendant is engaged in “trade or commerce” within the meaning of the statute. FLA.  
7 STAT. § 501.203.

8           294. FDUPTA declares unlawful “[u]nfair methods of competition, unconscionable acts  
9 or practices, and unfair or deceptive acts or practices in the conduct of any trade or commerce.” FLA.  
10 STAT. § 501.204(1).

11           295. In the course of its business, Defendant violated FDUPTA by misrepresenting the  
12 performance, security capabilities, and features of its processors, and failing to disclose and  
13 fraudulently concealing the existence of the Defect in its processors. Specifically, in marketing,  
14 offering for sale, and selling the AMD processors, Defendant engaged in one or more of the following  
15 unfair or deceptive acts or practices prohibited by FLA. STAT. § 501.204(1):

16           (a) representing that the AMD processors have characteristics or benefits that they  
17 do not have;

18           (b) representing that the AMD processors are of a particular standard and quality  
19 when they are not;

20           (c) advertising goods the AMD processors with intent not to sell them as  
21 advertised;

22           (d) engaging in other conduct which created a likelihood of confusion or of  
23 misunderstanding; and/or

24           (e) using or employing deception, fraud, false pretense, false promise or  
25 misrepresentation, or the concealment, suppression, or omission of a material fact with intent  
26 that others rely upon such concealment, suppression, or omission, in connection with the  
27 advertisement and sale of the AMD processors.  
28

1           296. Defendant was provided notice of the Defect by independent research teams, and  
2 knew, or should have known, of the existence of the Defect much earlier. Nevertheless, Defendant  
3 failed to disclose and fraudulently concealed the existence of the Defect in its processors. Defendant  
4 owed a duty to disclose the material fact that its processors were defective to Plaintiff and members  
5 of the Florida Class, but failed to do so.

6           297. Defendant's scheme and concealment of the true characteristics of the AMD  
7 processors was material to Plaintiff and the Florida Class, and Defendant misrepresented, concealed,  
8 or failed to disclose the truth with the intention that Plaintiff and the Florida Class would rely on the  
9 misrepresentations, concealments, and omissions. Had Plaintiff and the Florida Class members  
10 known about the defective nature of AMD processors, they would not have purchased or leased the  
11 AMD processors (or devices containing AMD processors) or would have paid significantly less for  
12 them.

13           298. Plaintiff and the Florida Class members had no way of discerning that Defendant's  
14 representations were false and misleading, or otherwise learning the facts that Defendant had  
15 concealed or failed to disclose.

16           299. Defendant had an ongoing duty to Plaintiff and the Florida Class to refrain from unfair  
17 and deceptive practices under FDUPTA in the course of its business. Specifically, Defendant owed  
18 Plaintiff and the Florida Class members a duty to disclose all the material facts concerning the AMD  
19 processors because it intentionally concealed such material facts from Plaintiff and the Florida Class,  
20 and/or it made misrepresentations that were rendered misleading because they were contradicted by  
21 withheld facts.

22           300. Defendant's deceptive conduct was likely to deceive a reasonable consumer and did  
23 in fact deceive reasonable consumers including Plaintiff and members of the Florida Class.

24           301. Plaintiff and the Florida Class members were injured and suffered ascertainable loss  
25 and actual damage as a direct and proximate result of Defendant's conduct in that respective class  
26 members overpaid for their AMD processors (or devices containing AMD processors) and did not  
27 receive the benefit of their bargain, and their AMD processors (or devices containing AMD  
28

1 processors) have suffered a diminution in value. These injuries are the direct and natural consequence  
2 of Defendant’s concealment, misrepresentations and/or omissions.

3 302. Pursuant to FLA. STAT. § 501.211(1), Plaintiff and Florida Class members seek a  
4 declaratory judgment and Court Order enjoining Defendant’s above-described wrongful acts and  
5 practices, and for damages, restitution, and disgorgement. Additionally, pursuant to FLA. STAT. §§  
6 501.211(2) and 501.2105, Plaintiff and the Florida Class asserts claims for damages, attorney fees,  
7 and costs.

8 **COUNT XII**  
9 **Fraud by Omission**  
10 **(On Behalf of the Florida Class)**

11 303. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
12 fully set forth herein.

13 304. This Count is brought on behalf of Plaintiff Pollack (for the purposes of this section,  
14 “Plaintiff”) and the Florida Class.

15 305. Defendant intentionally and knowingly omitted material facts about its AMD  
16 processors, including the fact that the processors have significant security vulnerabilities and that the  
17 advertised processor speeds were not available without rendering the processors vulnerable to side-  
18 channel attacks, which expose users’ private information to potential hacking through such side-  
19 channel attacks.

20 306. Defendant acted with the intent that Plaintiff and members of the Florida Class rely  
21 on Defendant’s omissions so that Defendant could profit from the sale of the processors.

22 307. Specifically, Defendant’s fraudulent omissions include, but are not limited to:

23 (a) selling or leasing the AMD processors (either directly or as a component of  
24 devices containing such processors), to Plaintiffs and members of the Florida Class, either  
25 directly or indirectly through third-parties, with knowledge of the Defect in the AMD  
26 processors, and failing to disclose the Defect to Plaintiffs and members of the Florida Class;  
27 and/or

28 (b) omitting the fact in Defendant’s public statements, statements to third-party  
retailers, and on the packaging of its processors that AMD processors were capable

1 achieving particular speeds only if the data of Plaintiffs and members of the Florida Class  
2 were made vulnerable to side-channel attacks, with the intent that those statements and  
3 omissions be relied upon;

4 (c) failing to disclose that AMD processors were vulnerable to Spectre and only  
5 disclosing that fact publicly on January 11, 2018.

6 308. Defendant's statements and omissions regarding the speed and/or security of its  
7 processors were objectively verifiable statements or omissions of fact, and not mere puffery.

8 309. The who, what, where, and why of Defendant's fraudulent business practices are as  
9 follows:

10 (a) **Who:** Defendant AMD;

11 (b) **What:** Defendant affirmatively omitted the fact there are significant security  
12 vulnerabilities with the processors and that the speed of its processors was only available if  
13 consumers' data was left vulnerable;

14 (c) **Where:** Defendant omitted the existence of the Defect from Plaintiffs and  
15 members of the Florida Class on its packaging for its processors, on the packaging by third-  
16 party computer and server manufacturers, on in-store or online displays communicated to  
17 retailers by AMD or its authorized retailers (*e.g.* Fry's, Newegg.com); and/or

18 (d) **Why:** Because, contrary to AMD's omissions, AMD processors are not  
19 secure and are only capable of working at the speed and with the performance as promised  
20 at the expense of a significant security vulnerability.

21 310. Defendant was provided notice of the Defect by independent research teams no later  
22 than June 2017, and knew, or should have known, of the existence of the Defect much earlier.  
23 Nevertheless, Defendant failed to disclose the existence of the Defect in its processors. Defendant  
24 owed a duty to disclose the material fact that its processors were defective to Plaintiff and members  
25 of the Florida Class, but failed to do so.

26 311. Defendant owed a duty to disclose the Defect in its processors because Defendant did  
27 not disclose that the advertised speeds for AMD processors were only available at the expense of a  
28 significant security vulnerability, which constitutes a partial disclosure. Rather than disclose the

1 defect, Defendant intentionally and knowingly omitted material facts including the existence of the  
2 Defect and that the represented processor speeds were only available at the expense of a significant  
3 security vulnerability in order to deceive consumers and sell additional processors and avoid the cost  
4 of repair or replacement of the defective processors.

5 312. Defendant's fraudulent acts were likely to deceive a reasonable consumer. Plaintiff  
6 and members of the Florida Class used Defendant's products and had business dealings with  
7 Defendant either directly or indirectly through third-parties, and were the intended recipients of  
8 Defendant's processors.

9 313. Defendant's scheme and failure to disclose the true characteristics of the AMD  
10 processors were material to Plaintiff and members of the Florida Class, as evidenced by, among other  
11 things, the massive public outcry once the Defect was disclosed. Moreover, the Defect relates to the  
12 central functionality of the AMD processors as it affects the processor's ability to ensure effective  
13 and efficient performance of a computer or similar device, and to maintain sufficient data security to  
14 adequately process, communicate, and store sensitive and confidential information. Defendant knew  
15 its omissions were misleading and knew the effect of those omissions.

16 314. Defendant failed to disclose the truth with the intention that Plaintiff and members of  
17 the Florida Class would rely on the omissions. Had they known the truth, Plaintiff and members of  
18 the Florida Class would not have purchased or leased – or would have paid significantly less for –  
19 AMD processors (or devices containing AMD processors).

20 315. As a direct and proximate result of Defendant's failure to disclose material  
21 information, Plaintiff and members of the Florida Class have suffered actual damages, in an amount  
22 to be proven at trial.

23 **COUNT XIII**

24 **Breach of Express Warranty – Limited Warranty**

25 **FLA. STAT. § 672.313**

26 **(On Behalf of the Florida Class)**

27 316. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
28 fully set forth herein.

1           317. This Count is brought on behalf of Plaintiff Pollack (for the purposes of this section,  
2 “Plaintiff”) and the Florida Class.

3           318. Defendant is and was at all relevant times a “merchant” with respect to the AMD  
4 processors under FLA. STAT. § 672.104(1), and a “seller” of the AMD processors under §  
5 672.103(1)(d).

6           319. The AMD processors are and were at all relevant times “goods” within the meaning  
7 of FLA. STAT. § 672.105(1).

8           320. In connection with the purchase of AMD processors sold through the AMD Processor  
9 in a Box Program, AMD provided a three-year limited warranty for processors sold with a  
10 heatsink/fan (“HSF”) and a two-year limited warranty for processors sold without an HSF. Both  
11 warranties cover defects in the material and workmanship of the AMD processors, and processors  
12 that fail to substantially conform to AMD’s publicly available specifications.

13           321. Plaintiff and members of the Florida Class experienced the existence of the Defect in  
14 AMD processors within the warranty periods but had no knowledge of the existence of the Defect,  
15 which was known and concealed by Defendant.

16           322. Plaintiff and the Florida Class could not have reasonably discovered the Defect in  
17 AMD processors prior to the public disclosure of the Defect by cybersecurity experts or prior to  
18 experiencing a known security hack resulting from the Defect.

19           323. Defendant breached the express warranty by selling AMD processors that were  
20 defective with respect to design, workmanship, and manufacture when Defendant knew its processors  
21 were defective and posed security vulnerabilities that, if mitigated, resulted in reduced processing  
22 performance.

23           324. Because of the existence of the Defect, the AMD processors do not perform as  
24 warranted.

25           325. Defendant was provided notice of the Defect by independent research teams, and  
26 knew, or should have known, of the existence of the Defect much earlier. Affording Defendant a  
27 reasonable opportunity to cure its breach of express warranties would be unnecessary and futile here  
28 because Defendant has known of and concealed the Defect and, on information and belief, has refused

1 to adequately repair or replace its processors free of charge within or outside of the warranty periods  
2 despite the Defect's existence at the time of sale or lease of the processors, or devices containing  
3 AMD processors.

4 326. Thus, Defendant's two-year and three-year limited warranties fail of their essential  
5 purpose and the recovery of Plaintiff and members of the Nationwide and California Classes is not  
6 limited to the remedies of the express limited warranties.

7 327. Any attempt by Defendant to disclaim or limit the express warranties *vis-à-vis*  
8 consumers is unconscionable and unenforceable here. Specifically, any warranty limitation is  
9 unenforceable because Defendant knowingly sold or leased a defective product without informing  
10 customers about the Defect. This reasoning equally applies to any attempt to limit the warranties  
11 Defendant furnished directly to Plaintiff and members of the Florida Class through its marketing  
12 campaign, regardless of whether Plaintiff and members of the Class purchased or leased their AMD  
13 processors, or devices containing such processors, through the AMD processor in a Box program.

14 328. Furthermore, the time limits contained in in the express limited warranties Defendant  
15 furnished in connection with the AMD processor in a Box Program were also unconscionable and  
16 inadequate to protect Plaintiff and members of the Florida Class. Among other things, Plaintiff and  
17 members of the Florida Class did not determine these limitations, the terms of which unreasonably  
18 favor Defendant. A gross disparity in bargaining power existed between Defendant and Plaintiff and  
19 members of the Florida Class, and Defendant knew or should have known that its processors were  
20 defective at the time of sale or lease of the processors, or devices containing AMD processors, and  
21 that its processors were defective and posed security vulnerabilities that, if mitigated, resulted in  
22 reduced processing performance.

23 329. Defendant knew that its processors were inherently defective and did not conform to  
24 their warranties. Plaintiff and members of the Florida Class were induced into purchasing or leasing  
25 AMD processors, or devices containing AMD processors, under false pretenses.

26 330. Plaintiff and members of the Florida Class have been excused from performance of  
27 any warranty obligations as a result of Defendant's conduct described herein.  
28



1           339. An affirmation of fact, promise, or description made by the seller to the buyer which  
2 relates to the goods and becomes a part of the basis of the bargain creates an express warranty that  
3 the goods will conform to the affirmation, promise, or description.

4           340. Defendant represented that its processors were secure and of particular processing  
5 speeds. AMD processors were not secure – given that they were subject to the Defect – and did not  
6 operate at stated processing speeds given that patches necessary to mitigate the Defect result in  
7 reduced processing performance.

8           341. Plaintiff and members of the Florida Class experienced the existence of the Defect in  
9 AMD processors but had no knowledge of the existence of the Defect, which was known and  
10 concealed by Defendant.

11           342. Plaintiff and the Florida Class could not have reasonably discovered the Defect in  
12 AMD processors prior to the public disclosure of the Defect by cybersecurity experts or prior to  
13 experiencing a known security hack resulting from the Defect.

14           343. Because of the existence of the Defect, the AMD processors do not perform as  
15 warranted.

16           344. Defendant was provided notice of the Defect by independent research teams, and  
17 knew, or should have known, of the existence of the Defect much earlier. Affording Defendant a  
18 reasonable opportunity to cure its breach of express warranties would be unnecessary and futile here  
19 because Defendant has known of and concealed the Defect and, on information and belief, has refused  
20 to adequately repair or replace its processors free of charge within or outside of the warranty periods  
21 despite the Defect's existence at the time of sale or lease of the processors, or devices containing  
22 AMD processors.

23           345. Any attempt by Defendant to disclaim or limit the express warranties *vis-à-vis*  
24 consumers is unconscionable and unenforceable here. Specifically, any warranty limitation is  
25 unenforceable because Defendant knowingly sold or leased a defective product without informing  
26 customers about the Defect. This reasoning equally applies to any attempt to limit the warranties  
27 Defendant furnished directly to Plaintiff and members of the Florida Class through its marketing  
28

1 campaign, regardless of whether Plaintiff and members of the Class purchased or leased their AMD  
2 processors, or devices containing such processors, through the AMD processor in a Box program.

3 346. Furthermore, the time limits contained in in the express limited warranties Defendant  
4 furnished in connection with the AMD processor in a Box Program were also unconscionable and  
5 inadequate to protect Plaintiff and members of the Florida Class. Among other things, Plaintiff and  
6 members of the Florida Class did not determine these limitations, the terms of which unreasonably  
7 favor Defendant. A gross disparity in bargaining power existed between Defendant and Plaintiff and  
8 members of the Florida Class, and Defendant knew or should have known that its processors were  
9 defective at the time of sale or lease of the processors, or devices containing AMD processors, and  
10 that its processors were defective and posed security vulnerabilities that, if mitigated, resulted in  
11 reduced processing performance.

12 347. Defendant knew that its processors were inherently defective and did not conform to  
13 their warranties. Plaintiff and members of the Florida Class were induced into purchasing or leasing  
14 AMD processors, or devices containing AMD processors, under false pretenses.

15 348. Plaintiff and members of the Florida Class have been excused from performance of  
16 any warranty obligations as a result of Defendant's conduct described herein.

17 349. Accordingly, Plaintiff and the Florida Class assert as remedies, all actual, incidental,  
18 and consequential damages as allowed. As a direct and proximate result of Defendant's breach of its  
19 express warranty, Plaintiff and the Florida Class members have been damaged in an amount to be  
20 determined at trial, including, but not limited to, repair and replacement costs, monetary losses  
21 associated with reduced processor speeds, diminished value of their computer devices, and loss of  
22 use of or access to their computer devices.

23 **COUNT XV**  
24 **Violation of the MMWA**  
25 **15 U.S.C. § 2301, et seq.**  
26 **(On Behalf of the Florida Class)**

27 350. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
28 fully set forth herein.

351. This Count is brought on behalf of Plaintiff Pollack (for the purposes of this section,  
"Plaintiff") and the Florida Class.

1           352. Plaintiff and the Florida Class members satisfy the MMWA’s jurisdictional  
2 requirement because this action satisfies the diversity jurisdiction requirements under the Class  
3 Action Fairness Act, 28 U.S.C. § 1332(d).

4           353. Plaintiff and the members of the Florida Class are “consumers” within the meaning of  
5 the MMWA, 15 U.S.C. § 2301(3).

6           354. Defendant is a “supplier” and “warrantor” within the meaning of the MMWA, 15  
7 U.S.C. § 2301(4)-(5).

8           355. AMD’s processors are “consumer products” within the meaning of the MMWA, 15  
9 U.S.C. § 2301(1).

10           356. The MMWA, 15 U.S.C. §2310(d)(1), provides a cause of action for any consumer  
11 who is damaged by the failure of a warrantor to comply with a written warranty.

12           357. Defendant provided Plaintiff and members of the Florida Class with one or more  
13 express warranties, which are covered under the MMWA, 15 U.S.C. § 2301(6). In connection with  
14 the purchase or lease of AMD processors, or devices containing AMD processors, Defendant directly  
15 provided warranty coverage for its processors, or indirectly provided warranty coverage for its  
16 processors under one or more manufacturer’s warranties.

17           358. Through written advertisements, Defendant marketed its processors to the Plaintiff  
18 and members of the Florida Class as secure and of particular processing speeds. Indeed, such  
19 representations formed the basis of the bargain in Plaintiff and the Florida Class’ decision to purchase  
20 or lease AMD processors, or devices containing AMD processors.

21           359. Plaintiff and members of the Florida Class experienced the existence of the Defect in  
22 AMD processors within the warranty periods but had no knowledge of the existence of the Defect,  
23 which was known and concealed by Defendant, and have not been provided a suitable repair or  
24 replacement of the defective processors free of charge within a reasonable time.

25           360. In connection with the purchase or lease of AMD processors, or of devices containing  
26 AMD processors, Defendant breached these warranties by misrepresenting the standard, quality, or  
27 grade of its processors, and failing to disclose and fraudulently concealing the existence of the Defect  
28

1 in its processors. AMD processors share a common defect in design, workmanship, and manufacture  
2 that is prone to security vulnerabilities and fail to operate as represented by Defendant.

3 361. Defendant was provided notice of the Defect by independent research teams, and  
4 knew, or should have known, of the existence of the Defect much earlier. Affording Defendant a  
5 reasonable opportunity to cure its breach of warranties would be unnecessary and futile here because  
6 Defendant has known of and concealed the Defect and, on information and belief, has refused to  
7 adequately repair or replace its processors free of charge within or outside of the warranty periods  
8 despite the Defect's existence at the time of sale or lease of the processors, or devices containing  
9 AMD processors. Under the circumstances, the remedies available under any informal settlement  
10 procedure would be inadequate and any requirement that Plaintiff and the members of the Florida  
11 Class resort to an informal dispute resolution procedure and/or afford Defendant a reasonable  
12 opportunity to cure their breach of warranties is excused and thereby deemed satisfied.

13 362. Any attempt by Defendant to disclaim or limit its express or implied warranties vis-à-  
14 vis consumers is unconscionable and unenforceable here. Specifically, any warranty limitation is  
15 unenforceable because Defendant knowingly sold or leased a defective product without informing  
16 customers about the Defect. Among other things, Plaintiff members of the Florida Classes did not  
17 participate in determining any warranty limitations, especially those which unreasonably favor  
18 Defendant. A gross disparity in bargaining power existed between Defendant on the one hand, and  
19 Plaintiff and members of the Florida Class on the other hand, and Defendant knew or should have  
20 known that its processors were defective at the time of sale or lease of the processors, or devices  
21 containing AMD processors, and that its processors were defective and posed security vulnerabilities  
22 that, if mitigated, resulted in reduced processing performance.

23 363. Plaintiff and members of the Florida Class would suffer economic hardship if they  
24 returned their AMD processors, or devices containing the AMD processors, but did not receive the  
25 return of all payments made by them to Defendant. Thus, Plaintiff and the Florida Class members  
26 have not reaccepted their AMD processors by retaining them  
27  
28



1 presented by the Defect. Moreover, Plaintiff and members of the Florida Class that purchased or  
2 leased AMD processors and separately installed those processors on a device, have suffered a  
3 diminution in value of such devices.

4 373. Plaintiff and members of the Florida Class were foreseeable victims of Defendant's  
5 wrongdoing, and Defendant knew, or should have known, that its processors would cause damages  
6 to class members.

7 374. The defective AMD processors are installed into larger devices which, by virtue of the  
8 Defect, are then less secure, less valuable and/or more exposed to hackers accessing private data  
9 stored on such devices. The fact that the defective AMD processors are installed into computers and  
10 other devices is material because Plaintiffs and members of the Florida Class had a reasonable  
11 expectation that their devices containing an AMD processor would not suffer from a defect that would  
12 expose their users' information to hackers. No reasonable consumer expects a computer or device  
13 containing an AMD processor to contain a defect that exposes their users' information to hackers.

14 375. As a direct and proximate result of Defendant's negligence, Plaintiff and members of  
15 the Florida Class have been damaged in an amount to be proven at trial, including, but not limited to,  
16 compensatory damages, incidental and consequential damages, and other damages allowed by law.

17 **COUNT XVII**  
18 **Warranty Against Redhibitory Defects**  
19 **LA. CIV. CODE ANN. art. 2520, 2524 (2015)**  
20 **(On Behalf of the Louisiana Class)**

21 376. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
22 fully set forth herein.

23 377. Plaintiff Hauck (for the purposes of this section, "Plaintiff") brings this Count on  
24 behalf of herself and the Louisiana Class.

25 378. Defendant marketed its processors to Plaintiff and the Louisiana Class as secure and  
26 of particular processing speeds. Indeed, such representations formed the basis of the bargain in  
27 Plaintiff's and the Louisiana Class' decision to purchase or lease AMD processors, or devices  
28 containing AMD processors.

379. The AMD processors were defective when they left Defendant's possession and, as  
such, could not perform according to Defendant's affirmative representations that the AMD

1 processors were secure and of particular processing speeds. Moreover, developing a permanent  
2 solution to the Defect may not be possible (without upgrading the hardware) and, even if possible,  
3 will negatively impact the performance of the AMD processors or the devices containing such  
4 processors.

5 380. The Defect in the AMD processors render their use so inconvenient that Plaintiff and  
6 members of the Louisiana Class would not have purchased or leased the AMD processors, or devices  
7 containing AMD processors, had they known of the Defect. Accordingly, Plaintiff and the Louisiana  
8 Class are entitled to obtain a rescission of the sale of the AMD processors.

9 381. Alternatively, the Defect diminishes the usefulness of the AMD processors (or devices  
10 containing such processors) or their value so that Plaintiff and members of the Louisiana Class would  
11 still have bought the AMD processors (or devices containing such processors) but for a lesser price.  
12 Accordingly, Plaintiff and the Louisiana Class are entitled to obtain a reduction of the price.

13 382. Defendant is liable as a bad faith seller for selling a defective product with knowledge  
14 of the Defect, and thus, is liable to Plaintiff and the Louisiana Class members for the price of the  
15 AMD processors, or of the devices containing such processors, with interest from the purchase date,  
16 as well as reasonable expenses occasioned by the sale of the AMD processors, or of the devices  
17 containing such processors, and attorneys' fees. As the manufacturer of the AMD processors,  
18 Defendant is deemed to know that the AMD processors possessed a redhibitory defect.

19 383. Additionally, a warranty that the AMD processors were fit for the ordinary purpose  
20 for which processors are used is implied by law pursuant to LA. CIV. CODE ANN. art. 2524.

21 384. These AMD processors, when sold or leased and at all times thereafter, were not fit  
22 for the ordinary purpose for which processors are used.

23 385. Plaintiff and the Louisiana Class members seek a judgment in their favor for all  
24 possible damages, together with interest, costs herein incurred, attorneys' fees, and all such other and  
25 further relief as this Court deems just and proper.  
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**COUNT XVIII**  
**Violation of the MMWA**  
**15 U.S.C. § 2301, et seq.**  
**(On Behalf of the Louisiana Class)**

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3 386. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
4 fully set forth herein.

5 387. Plaintiff Hauck (for the purposes of this section, “Plaintiff”) brings this Count on  
6 behalf of herself and the Louisiana Class.

7 388. Plaintiff and the Louisiana Class members satisfy the MMWA’s jurisdictional  
8 requirement because this action satisfies the diversity jurisdiction requirements under the Class  
9 Action Fairness Act, 28 U.S.C. § 1332(d).

10 389. Plaintiff and the Louisiana Class members are “consumers” within the meaning of the  
11 MMWA, 15 U.S.C. § 2301(3).

12 390. Defendant is a “supplier” and “warrantor” within the meaning of the MMWA, 15  
13 U.S.C. § 2301(4)-(5).

14 391. The AMD processors described above are “consumer products” within the meaning  
15 of the MMWA, 15 U.S.C. § 2301(1).

16 392. The MMWA, 15 U.S.C. § 2310(d)(1), provides a cause of action for any consumer  
17 who is damaged by, among other things, the failure of a warrantor to comply with written or implied  
18 warranties.

19 393. Defendant sells and leases the AMD processors subject to implied (including  
20 statutory) warranties within the meaning of the MMWA, 15 U.S.C. § 2301(7).

21 394. Through written advertisements, Defendant marketed its processors to Plaintiff and  
22 the Louisiana Class members as secure and of particular processing speeds. Indeed, such  
23 representations formed the basis of the bargain in Plaintiff’s and the Louisiana Class’ decision to  
24 purchase or lease AMD processors, or devices containing AMD processors.

25 395. AMD processors were not secure – given that they were subject to the Defect – and  
26 did not operate at stated processing speeds given that patches necessary to mitigate the Defect result  
27 in reduced processing performance.  
28

1           396. Plaintiff and members of the Louisiana Class experienced the existence of the Defect  
2 in AMD processors within the warranty periods but had no knowledge of the existence of the Defect,  
3 which was known and concealed by Defendant, and have not been provided a suitable repair or  
4 replacement of the defective processors free of charge within a reasonable time.

5           397. Defendant provided Plaintiff and members of the Louisiana Class with one or more  
6 implied warranties, which are covered under the MMWA, 15 U.S.C. § 2301(7).

7           398. In connection with the purchase or lease of AMD processors, or devices containing  
8 AMD processors, Defendant breached these warranties by misrepresenting the standard, quality, or  
9 grade of its processors, and failing to disclose and fraudulently concealing the existence of the Defect  
10 in its processors. AMD processors share a common defect in design, workmanship, and manufacture  
11 that is prone to security vulnerabilities and fails to operate as represented by Defendant. The AMD  
12 processors were defective when they left Defendant's possession and, as such, could not perform  
13 according to Defendant's affirmative representations that the AMD processors were secure and of  
14 particular processing speeds. Moreover, developing a permanent solution to the Defect may not be  
15 possible (without upgrading the hardware) and, even if possible, will negatively impact the  
16 performance of the AMD processors or the devices containing such processors.

17           399. Plaintiff and the Louisiana Class members used Defendant's products and had  
18 business dealings with Defendant, either directly or indirectly through third-parties, and were the  
19 intended recipients of Defendant's processors.

20           400. Defendant breached the express warranty by selling AMD processors that were  
21 defective with respect to design, workmanship, and manufacture when Defendant knew its processors  
22 were defective and posed security vulnerabilities that, if mitigated, resulted in reduced processing  
23 performance.

24           401. When Plaintiff and the Louisiana Class purchased or leased the AMD processors, or  
25 devices containing such processors, Defendant warranted that the processors were fit for their  
26 ordinary purpose for which they intended to be used.

1           402. Defendant has breached its implied warranties by failing to disclose and repair the  
2 Defect in the AMD processors, and by selling or leasing AMD processors that are unfit for their  
3 ordinary purposes.

4           403. Any attempt by Defendant to disclaim or limit its express or implied warranties *vis-à-*  
5 *vis* consumers is unconscionable and unenforceable here. Specifically, any warranty limitation is  
6 unenforceable because Defendant knowingly sold or leased a defective product without informing  
7 customers about the Defect. Among other things, Plaintiff and members of the Louisiana Class did  
8 not participate in determining any warranty limitations, especially those which unreasonably favor  
9 Defendant. A gross disparity in bargaining power existed between Defendant and Plaintiff and  
10 members of the Louisiana Class, and Defendant knew or should have known that its processors were  
11 defective at the time of sale or lease of the processors, or devices containing AMD processors, and  
12 that its processors were defective and posed security vulnerabilities that, if mitigated, resulted in  
13 reduced processing performance.

14           404. Plaintiff and members of the Nationwide and the Louisiana Class would suffer  
15 economic hardship if they returned their AMD processors, or devices containing the AMD  
16 processors, but did not receive the return of all payments made by them to Defendant. Thus, Plaintiff  
17 and members of the Louisiana Class have not reaccepted their AMD processors by retaining them.

18           405. The amount in controversy of Plaintiff's and the Louisiana Class' individual claims  
19 meets or exceeds the sum of \$25. The amount in controversy of this action exceeds the sum of  
20 \$50,000, exclusive of interest and costs, computed on the basis of all claims to be determined in this  
21 lawsuit.

22           406. Plaintiff and the Louisiana Class members seek all damages permitted by law,  
23 including diminution in value of their AMD processors, or devices containing such processors, in an  
24 amount to be proven at trial.

**COUNT XIX**  
**Violation of the Massachusetts Consumer Protection Act**  
**MASS. GEN. LAWS ch. 93A, § 1, et seq.**  
**(On Behalf of the Massachusetts Class)**

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3 407. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
4 fully set forth herein.

5 408. Plaintiff Caskey-Medina (for the purposes of this section, “Plaintiff”) brings this  
6 Count on behalf of himself and the Massachusetts Class.

7 409. Defendant, Plaintiff, and members of the Massachusetts Class are “persons” within  
8 the meaning of MASS. GEN. LAWS Ch. 93A, § 1(a).

9 410. Defendant engaged in “trade” or “commerce” within the meaning of MASS. GEN.  
10 LAWS Ch. 93A, § 1(b).

11 411. The Massachusetts Consumer Protection Act (the “MCPA”) prohibits “unfair or  
12 deceptive acts or practices in the conduct of any trade or commerce.” MASS. GEN. LAWS Ch. 93A, §  
13 2.

14 412. In the course of its business, Defendant violated the MCPA by misrepresenting the  
15 performance and security capabilities and features of its processors, and failing to disclose and  
16 omitting the existence of the Defect in its processors. As such, Defendant violated the Massachusetts  
17 Act by:

- 18 (a) representing that the AMD processors have characteristics, uses, benefits, or  
19 qualities that they do not have;
- 20 (b) representing that the AMD processors are of a particular standard, quality,  
21 and grade when they are not; and/or
- 22 (c) advertising the AMD processors with the intent not to sell them as  
23 advertised.

24 413. Defendant failed to disclose and omitted the existence of the Defect in its processors.  
25 Defendant owed a duty to disclose the material fact that its processors were defective to Plaintiff and  
26 members of the Massachusetts Class, but failed to do so.

27 414. Defendant’s scheme and concealment of the true characteristics of the AMD  
28 processors was material to Plaintiff and members of the Massachusetts Class. The Defect relates to

1 the central functionality of the AMD processors as it affects the processors' ability to ensure effective  
2 and efficient performance of a computer or similar device, and to maintain sufficient data security to  
3 adequately process, communicate, and store sensitive and confidential information. Plaintiff and  
4 members of the Massachusetts Class used Defendant's products and had business dealings with  
5 Defendant either directly or indirectly through third-parties, and were the intended recipients of  
6 Defendant's processors.

7 415. Defendant had a duty to disclose that the AMD processors were defective, because,  
8 having volunteered to provide information to Plaintiff and the Massachusetts Class, Defendant had  
9 the duty to disclose not just the partial truth, but the entire truth.

10 416. Defendant intentionally and knowingly failed to disclose and misrepresented material  
11 facts regarding the AMD processors with intent to mislead Plaintiff and members of the  
12 Massachusetts Class.

13 417. Defendant's deceptive conduct was likely to deceive a reasonable consumer, and did  
14 in fact deceive reasonable consumers including Plaintiff and members of the Massachusetts Class.

15 418. Plaintiff and members of the Massachusetts Class reasonably relied upon Defendant's  
16 material omissions and misrepresentations. They had no way of knowing that Defendant's  
17 representations were false and misleading. Plaintiff and members of the Massachusetts Class did not  
18 (and could not) unravel Defendant's deception on their own.

19 419. The facts concealed and omitted by Defendant from Plaintiff and members of the  
20 Massachusetts Class are material in that a reasonable consumer would have considered them to be  
21 important in deciding whether to purchase or lease the AMD processors (or devices containing AMD  
22 processors) or pay a lower price. Had Plaintiff and members of the Massachusetts Class known about  
23 the defective nature of AMD processors, they would not have purchased or leased the AMD  
24 processors (or devices containing AMD processors), or would not have paid the prices they paid.

25 420. Plaintiff and members of the Massachusetts Class suffered ascertainable loss and  
26 actual damages as a direct and proximate result of Defendant's conduct. Pursuant to MASS. GEN.  
27 LAWS Ch. 93A, § 9, Plaintiff and members of the Massachusetts Class seek monetary relief against  
28 Defendant measures as the greater of (a) actual damages in an amount to be determined at trial and

1 (b) statutory damages in the amount of \$25 for Plaintiff and each member of the Massachusetts Class.  
2 Because Defendant's conduct was committed willfully and knowingly, Plaintiff and members of the  
3 Massachusetts Class are entitled to recover, for Plaintiff and each member of the Massachusetts Class,  
4 up to three times actual damages, but no less than two times actual damages.

5 421. Defendant was provided notice of the Defect by independent research teams, and  
6 knew, or should have known, of the existence of the Defect much earlier. In addition, on June 13,  
7 2018, a notice letter was sent on behalf of Plaintiff and the members of the Massachusetts Class to  
8 Defendant. Because Defendant does not maintain a place of business or keep assets within the  
9 Commonwealth of Massachusetts, this claim may be pursued without awaiting thirty days from the  
10 notice, pursuant to MASS. GEN. LAWS Ch. 93A, § 9(3).

11 **COUNT XX**  
12 **Fraud by Omission**  
13 **(On Behalf of the Massachusetts Class)**

14 422. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
15 fully set forth herein.

16 423. This Count is brought on behalf of Plaintiff Mr. Caskey-Medina (for the purposes of  
17 this section, "Plaintiff") and the Massachusetts Class.

18 424. Defendant intentionally and knowingly omitted material facts about its AMD  
19 processors, including the fact that the processors have significant security vulnerabilities and that the  
20 advertised processor speeds were not available without rendering the processors vulnerable to side-  
21 channel attacks, which expose users' private information to potential hacking through such side-  
22 channel attacks.

23 425. Defendant acted with the intent that Plaintiff and members of the Massachusetts Class  
24 rely on Defendant's omissions so that Defendant could profit from the sale of the processors.

25 426. Specifically, Defendant's fraudulent omissions include, but are not limited to:

- 26 (a) selling or leasing the AMD processors (either directly or as a component of  
27 devices containing such processors), to Plaintiffs and members of the Massachusetts Class,  
28 either directly or indirectly through third-parties, with knowledge of the Defect in the AMD

1 processors, and failing to disclose the Defect to Plaintiffs and members of the Massachusetts  
2 Class; and/or

3 (b) omitting the fact in Defendant's public statements, statements to third-party  
4 retailers, and on the packaging of its processors that AMD processors were capable  
5 achieving particular speeds only if the data of Plaintiffs and members of the Massachusetts  
6 Class were made vulnerable to side-channel attacks, with the intent that those statements  
7 and omissions be relied upon;

8 (c) failing to disclose that AMD processors were vulnerable to Spectre and only  
9 disclosing that fact publicly on January 11, 2018.

10 427. Defendant's statements and omissions regarding the speed and/or security of its  
11 processors were objectively verifiable statements or omissions of fact, and not mere puffery.

12 428. The who, what, where, and why of Defendant's fraudulent business practices are as  
13 follows:

14 (a) **Who:** Defendant AMD;

15 (b) **What:** Defendant affirmatively omitted the fact there are significant security  
16 vulnerabilities with the processors and that the speed of its processors was only available if  
17 consumers' data was left vulnerable;

18 (c) **Where:** Defendant omitted the existence of the Defect from Plaintiffs and  
19 members of the Massachusetts Class on its packaging for its processors, on the packaging  
20 by third-party computer and server manufacturers, on in-store or online displays  
21 communicated to retailers by AMD or its authorized retailers (*e.g.* Fry's, Newegg.com);  
22 and/or

23 (d) **Why:** Because, contrary to AMD's omissions, AMD processors are not  
24 secure and are only capable of working at the speed and with the performance as promised  
25 at the expense of a significant security vulnerability.

26 429. Defendant was provided notice of the Defect by independent research teams no later  
27 than June 2017, and knew, or should have known, of the existence of the Defect much earlier.  
28 Nevertheless, Defendant failed to disclose the existence of the Defect in its processors. Defendant

1 owed a duty to disclose the material fact that its processors were defective to Plaintiff and members  
2 of the Massachusetts Class, but failed to do so.

3 430. Defendant owed a duty to disclose the Defect in its processors because Defendant did  
4 not disclose that the advertised speeds for AMD processors were only available at the expense of a  
5 significant security vulnerability, which constitutes a partial disclosure. Rather than disclose the  
6 Defect, Defendant intentionally and knowingly omitted materials facts including the existence of the  
7 Defect and that the represented processor speeds were only available at the expense of a significant  
8 security vulnerability in order to deceive consumers and sell additional processors and avoid the cost  
9 of repair or replacement of the defective processors.

10 431. Defendant's fraudulent acts were likely to deceive a reasonable consumer. Plaintiff  
11 and members of the Massachusetts Class used Defendant's products and had business dealings with  
12 Defendant either directly or indirectly through third-parties, and were the intended recipients of  
13 Defendant's processors.

14 432. Defendant's scheme and failure to disclose the true characteristics of the AMD  
15 processors were material to Plaintiff and members of the Massachusetts Class, as evidence by, among  
16 other things, the massive public outcry once the Defect was disclosed. Moreover, the Defect relates  
17 to the central functionality of the AMD processors as it affects the processor's ability to ensure  
18 effective and efficient performance of a computer or similar device, and to maintain sufficient data  
19 security to adequately process, communicate, and store sensitive and confidential information.  
20 Defendant knew its omissions were misleading and knew the effect of those omissions.

21 433. Defendant failed to disclose the truth with the intention that Plaintiff and members of  
22 the Massachusetts Class would rely on the omissions. Had they known the truth, Plaintiff and  
23 members of the Massachusetts Class would not have purchased or leased—or would have paid  
24 significantly less for—AMD processors (or devices containing AMD processors).

25 434. As a direct and proximate result of Defendant's failure to disclose material  
26 information, Plaintiff and members of the Massachusetts Class have suffered actual damages, in an  
27 amount to be proven at trial.  
28

**COUNT XXI**  
**Breach of Express Warranty – Limited Warranty**  
**MASS. GEN. LAWS ch. 106, § 2-313.**  
**(On Behalf of the Massachusetts Class)**

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3 435. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
4 fully set forth herein.

5 436. Plaintiff Caskey-Medina (for the purposes of this section, “Plaintiff”) brings this  
6 Count on behalf of himself and the Massachusetts Class.

7 437. Defendant is and was at all relevant times a “merchant” with respect to the AMD  
8 processors under MASS. GEN. LAWS ch. 106 § 2-104(1), and a “seller” of the AMD processors under  
9 MASS. GEN. LAWS ch. 106 § 2-103(1)(d).

10 438. The AMD processors are and were at all relevant times “goods” within the meaning  
11 of MASS. GEN. LAWS ch. 106 § 2-105(1).

12 439. In connection with the purchase of AMD processors sold through the AMD processor  
13 in a Box Program, AMD provided a three-year limited warranty for processors sold with a  
14 heatsink/fan (“HSF”) and a two-year limited warranty for processors sold without an HSF. Both  
15 warranties cover defects in the material and workmanship of the AMD processors, and processors  
16 that fail to substantially conform to AMD’s publicly available specifications.

17 440. Plaintiff and members of the Massachusetts Class used Defendant’s products and had  
18 business dealings with Defendant either directly or indirectly through third-parties, and were the  
19 intended recipients of Defendant’s processors. As such, Defendant’s express warranty regarding the  
20 benefits of the AMD processors extends directly to consumers like Plaintiff and members of the  
21 Massachusetts Class, who are intended third-party beneficiaries of any contract between Defendant  
22 and the retailers where AMD processors, or devices with AMD processors, were sold or leased.

23 441. Plaintiff and members of the Massachusetts Class experienced the existence of the  
24 Defect in AMD processors within the warranty periods but had no knowledge of the existence of the  
25 Defect, which was known and concealed by Defendant.

26 442. Plaintiff and the Massachusetts Class could not have reasonably discovered the Defect  
27 in AMD processors prior to the public disclosure of the Defect by cybersecurity experts or prior to  
28 experiencing a known security hack resulting from the Defect.

1           443. Defendant breached the express warranty by selling AMD processors that were  
2 defective with respect to design, workmanship, and manufacture when Defendant knew its processors  
3 were defective and posed security vulnerabilities that, if mitigated, resulted in reduced processing  
4 performance.

5           444. Because of the existence of the Defect, the AMD processors do not perform as  
6 warranted.

7           445. Defendant was provided notice of the Defect by independent research teams, and  
8 knew, or should have known, of the existence of the Defect much earlier. Affording Defendant a  
9 reasonable opportunity to cure its breach of express warranties would be unnecessary and futile here  
10 because Defendant has known of and concealed the Defect and, on information and belief, has refused  
11 to adequately repair or replace its processors free of charge within or outside of the warranty periods  
12 despite the Defect's existence at the time of sale or lease of the processors, or devices containing  
13 AMD processors.

14           446. Thus, Defendant's two-year and three-year limited warranties fail of their essential  
15 purpose and the recovery of Plaintiff and members of the Massachusetts Class is not limited to the  
16 remedies of the express limited warranties.

17           447. Any attempt by Defendant to disclaim or limit the express warranties *vis-à-vis*  
18 consumers is unconscionable and unenforceable here. Specifically, any warranty limitation is  
19 unenforceable because Defendant knowingly sold or leased a defective product without informing  
20 customers about the Defect. This reasoning equally applies to any attempt to limit the warranties  
21 Defendant furnished directly to Plaintiff and members of the Massachusetts Class through its  
22 marketing campaign, regardless of whether Plaintiff and members of the Massachusetts Class  
23 purchased or leased their AMD processors, or devices containing such processors, through the AMD  
24 processor in a Box program.

25           448. Furthermore, the time limits contained in in the express limited warranties Defendant  
26 furnished in connection with the AMD processor in a Box Program were also unconscionable and  
27 inadequate to protect Plaintiff and members of the Massachusetts Class. Among other things,  
28 Plaintiff and members of the Massachusetts Class did not determine these limitations, the terms of

1 which unreasonably favor Defendant. A gross disparity in bargaining power existed between  
2 Defendant and Plaintiff and members of the Massachusetts Class, and Defendant knew or should  
3 have known that its processors were defective at the time of sale or lease of the processors, or devices  
4 containing AMD processors, and that its processors were defective and posed security vulnerabilities  
5 that, if mitigated, resulted in reduced processing performance.

6 449. Defendant knew that its processors were inherently defective and did not conform to  
7 their warranties. Plaintiff and members of the Massachusetts Class were induced into purchasing or  
8 leasing AMD processors, or devices containing AMD processors, under false pretenses.

9 450. Plaintiff and members of the Massachusetts Class have been excused from  
10 performance of any warranty obligations as a result of Defendant's conduct described herein.

11 451. As a direct and proximate result of Defendant's breach of express warranties, Plaintiff  
12 and members of the Massachusetts Class have been damaged in an amount to be determined at trial,  
13 including, but not limited to, repair and replacement costs, monetary losses associated with reduced  
14 processor speeds, diminished value of their computer devices, and loss of use of or access to their  
15 computer devices.

16 **COUNT XXII**  
17 **Breach of Express Warranty – Representations**  
18 **MASS. GEN. LAWS ch. 106, § 2-313.**  
19 **(On Behalf of the Massachusetts Class)**

20 452. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
21 fully set forth herein.

22 453. Plaintiff Caskey-Medina (for the purposes of this section, "Plaintiff") brings this  
23 Count on behalf of himself and the Massachusetts Class.

24 454. Defendant is and was at all relevant times a "merchant" with respect to the AMD  
25 processors under MASS. GEN. LAWS ch. 106 § 2-104(1), and a "seller" of the AMD processors under  
26 MASS. GEN. LAWS ch. 106 § 2-103(1)(d).

27 455. The AMD processors are and were at all relevant times "goods" within the meaning  
28 of MASS. GEN. LAWS ch. 106 § 2-105(1).

456. Defendant marketed its processors to Plaintiff and the members of the Massachusetts  
Class, and made affirmative representations, as to the security and processing speeds of the

1 processors. Plaintiff and members of the Massachusetts Class were exposed to, and aware of, these  
2 representations.

3 457. Defendant's express warranties formed the basis of the bargain in Plaintiff's and the  
4 Massachusetts Class's decision to purchase or lease AMD processors, or devices containing AMD  
5 processors. Defendant's various oral and written representations regarding the AMD processors'  
6 security and processing speed constituted express warranties to Plaintiff and the Massachusetts Class.

7 458. An affirmation of fact, promise, or description made by the seller to the buyer which  
8 relates to the goods and becomes a part of the basis of the bargain creates an express warranty that  
9 the goods will conform to the affirmation, promise, or description.

10 459. Plaintiff and members of the Massachusetts Class used Defendant's products and had  
11 business dealings with Defendant either directly or indirectly through third-parties, and were the  
12 intended recipients of Defendant's processors. As such, Defendant's express warranty regarding the  
13 benefits of the AMD processors extends directly to consumers like Plaintiff and members of the  
14 Massachusetts Class, who are intended third-party beneficiaries of any contract between Defendant  
15 and the retailers where AMD processors, or devices with AMD processors, were sold or leased.

16 460. Defendant represented that its processors were secure and of particular processing  
17 speeds. AMD processors were not secure—given that they were subject to the Defect – and did not  
18 operate at stated processing speeds given that patches necessary to mitigate the Defect result in  
19 reduced processing performance.

20 461. Plaintiff and members of the Massachusetts Class experienced the existence of the  
21 Defect in AMD processors but had no knowledge of the existence of the Defect, which was known  
22 and concealed by Defendant.

23 462. Plaintiff and the Massachusetts Class could not have reasonably discovered the Defect  
24 in AMD processors prior to the public disclosure of the Defect by cybersecurity experts or prior to  
25 experiencing a known security hack resulting from the Defect.

26 463. Because of the existence of the Defect, the AMD processors do not perform as  
27 warranted.  
28

1           464. Defendant was provided notice of the Defect by independent research teams, and  
2 knew, or should have known, of the existence of the Defect much earlier. Affording Defendant a  
3 reasonable opportunity to cure its breach of express warranties would be unnecessary and futile here  
4 because Defendant has known of and concealed the Defect and, on information and belief, has refused  
5 to adequately repair or replace its processors free of charge within or outside of the warranty periods  
6 despite the Defect's existence at the time of sale or lease of the processors, or devices containing  
7 AMD processors.

8           465. Any attempt by Defendant to disclaim or limit the express warranties *vis-à-vis*  
9 consumers is unconscionable and unenforceable here. Specifically, any warranty limitation is  
10 unenforceable because Defendant knowingly sold or leased a defective product without informing  
11 customers about the Defect. This reasoning equally applies to any attempt to limit the warranties  
12 Defendant furnished directly to Plaintiff and members of the Massachusetts Class through its  
13 marketing campaign, regardless of whether Plaintiff and members of the Massachusetts Class  
14 purchased or leased their AMD processors, or devices containing such processors, through the AMD  
15 processor in a Box program.

16           466. A gross disparity in bargaining power existed between Defendant and Plaintiff and  
17 members of the Massachusetts Class, and Defendant knew or should have known that its processors  
18 were defective at the time of sale or lease of the processors, or devices containing AMD processors,  
19 and that its processors were defective and posed security vulnerabilities that, if mitigated, resulted in  
20 reduced processing performance.

21           467. Defendant knew that its processors were inherently defective and did not conform to  
22 their warranties. Plaintiff and members of the Massachusetts Class were induced into purchasing or  
23 leasing AMD processors, or devices containing AMD processors, under false pretenses.

24           468. Plaintiff and members of the Massachusetts Class have been excused from  
25 performance of any warranty obligations as a result of Defendant's conduct described herein.

26           469. As a direct and proximate result of Defendant's breach of express warranties, Plaintiff  
27 and members of the Massachusetts Class have been damaged in an amount to be determined at trial,  
28 including, but not limited to, repair and replacement costs, monetary losses associated with reduced

1 processor speeds, diminished value of their computer devices, and loss of use of or access to their  
2 computer devices.

3 **COUNT XXIII**  
4 **Breach of Implied Warranty**  
5 **MASS. GEN. LAWS ch. 106, §§ 2-314, 2-315**  
6 **(On Behalf of the Massachusetts Class)**

7 470. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
8 fully set forth herein.

9 471. Plaintiff Caskey-Medina (for the purposes of this section, “Plaintiff”) brings this  
10 Count on behalf of himself and the Massachusetts Class.

11 472. Defendant is and was at all relevant times a “merchant” with respect to the AMD  
12 processors under MASS. GEN. LAWS ch. 106 § 2-104(1), and a “seller” of the AMD processors under  
13 MASS. GEN. LAWS Ch. § 2-103(1)(d).

14 473. The AMD processors are and were at all relevant times “goods” within the meaning  
15 of MASS. GEN. LAWS ch. 106 § 2-105(1).

16 474. A warranty that the AMD processors were in merchantable condition and fit for their  
17 ordinary purpose is implied by law pursuant to MASS. GEN. LAWS ch. 106 § 2-314.

18 475. In addition, a warranty that the AMD processors were fit for their particular purpose  
19 is implied by law pursuant to MASS. GEN. LAWS ch. 106 § 2-315. Defendant knew at the time of sale  
20 of the AMD processors that Plaintiff and members of the Massachusetts Class intended to use those  
21 processors in a manner requiring a particular standard of security and performance, and that Plaintiff  
22 and members of the Massachusetts Class were relying on Defendants’ skill and judgment to furnish  
23 suitable products for this particular purpose.

24 476. Plaintiff and members of the Massachusetts Class purchased or leased AMD  
25 processors, or devices containing AMD processors, from Defendant, by and through Defendant’s  
26 authorized agents for retail sales, or were otherwise expected to be the eventual purchasers or lessors  
27 of AMD processors when purchased or leased from a third party. At all relevant times, Defendant  
28 was the manufacturer, distributor, warrantor, and/or seller of the relevant processors. Defendant  
knew or had reason to know of the specific use for which its processors were purchased or leased.

1           477. AMD processors, when sold or leased and at all times thereafter, were not in  
2 merchantable condition and are not fit for the ordinary purpose due to the Defect, and the associated  
3 problems and failures caused by the Defect. Thus, Defendant breached its implied warranty of  
4 merchantability.

5           478. Plaintiff and members of the Massachusetts Class used Defendant's products and had  
6 business dealings with Defendant either directly or indirectly through third-parties, and were the  
7 intended recipients of Defendant's processors. As such, Defendant's implied warranty regarding the  
8 benefits of the AMD processors extends directly to consumers like Plaintiff and members of the  
9 Massachusetts Class, who are intended third-party beneficiaries of any contract between Defendant  
10 and the retailers where AMD processors, or devices with AMD processors, were sold or leased.

11           479. Defendant marketed its processors to Plaintiff and members of the Massachusetts  
12 Class as secure and of particular processing speeds. Plaintiff and members of the Massachusetts  
13 Class were exposed to, and aware of, these representations. Indeed, such representations formed the  
14 basis of their respective decisions to purchase or lease AMD processors, or devices containing AMD  
15 processors.

16           480. The AMD processors were defective when they left Defendant's possession and, as  
17 such, could not perform according to Defendant's affirmative representations that the AMD  
18 processors were secure and of particular processing speeds. Therefore, the AMD processors were  
19 not reasonably fit for their intended, anticipated, or reasonably foreseeable use.

20           481. As a direct and proximate result of Defendant's breach of its implied warranty of  
21 merchantability, Plaintiff and members of the Massachusetts Class have been damaged in an amount  
22 to be proven at trial.

23           482. Defendant cannot disclaim its warranties implied by law as it knowingly sold or leased  
24 a defective product.

25           483. Defendant was provided notice of the Defect by independent research teams, and  
26 knew, or should have known, of the existence of the Defect much earlier. Affording Defendant a  
27 reasonable opportunity to cure its breach of implied warranties would be unnecessary and futile here  
28 because Defendant has known of and concealed the Defect and, on information and belief, has refused

1 to adequately repair or replace its processors free of charge within or outside of the warranty periods  
2 despite the Defect's existence at the time of sale or lease of the processors, or devices containing  
3 AMD processors.

4 484. Any attempt by Defendant to disclaim or limit the implied warranty of merchantability  
5 *vis-à-vis* Plaintiff and members of the Massachusetts Class is unconscionable and unenforceable.  
6 Specifically, any warranty limitation is unenforceable because Defendant knowingly sold or leased a  
7 defective product without informing customers about the Spectre Defect. Among other things,  
8 Plaintiff and members of the Massachusetts Class did not participate in determining any warranty  
9 limitations, especially those which unreasonably favor Defendant. A gross disparity in bargaining  
10 power existed between Defendant and Plaintiff and members of the Massachusetts Class, and  
11 Defendant knew or should have known that its processors were defective at the time of sale or lease  
12 of the processors, or devices containing AMD processors, and that its processors were defective and  
13 posed security vulnerabilities that, if mitigated, resulted in reduced processing performance.

14 485. Further, as a manufacturer of consumer goods, Defendant is precluded from excluding  
15 or modifying an implied warranty of merchantability or limiting customers' remedies for breach of  
16 this warranty.

17 486. Plaintiff and members of the Massachusetts Class have complied with all obligations  
18 under the warranty, or otherwise have been excused from performance of said obligations as a result  
19 of Defendant's conduct described herein.

20 487. Defendant's warranties were designed to influence consumers who purchased or  
21 leased its processors, including products that contain them.

22 488. Defendant is estopped by its conduct, as alleged herein, from disclaiming any and all  
23 implied warranties with respect to the defective processors.

24 489. The applicable statute of limitations for the implied warranty claim has been tolled by  
25 the discovery rule and Defendant's concealment.

**COUNT XXIV**  
**Violation of the MMWA,**  
**15 U.S.C. § 2301, et seq.**  
**(On Behalf of the Massachusetts Class)**

1  
2  
3 490. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
4 fully set forth herein.

5 491. Plaintiff Caskey-Medina (for the purposes of this section, “Plaintiff”) brings this  
6 Count on behalf of himself and the Massachusetts Class.

7 492. Plaintiff and members of the Massachusetts Class satisfy the MMWA’s jurisdictional  
8 requirement because this action satisfies the diversity jurisdiction requirements under the Class  
9 Action Fairness Act, 28 U.S.C. § 1332(d).

10 493. Plaintiff and members of the Massachusetts Class are “consumers” within the meaning  
11 of the MMWA, 15 U.S.C. § 2301(3).

12 494. Defendant is a “supplier” and “warrantor” within the meaning of the MMWA, 15  
13 U.S.C. § 2301(4)-(5).

14 495. AMD’s processors are “consumer products” within the meaning of the MMWA, 15  
15 U.S.C. § 2301(1).

16 496. The MMWA, 15 U.S.C. § 2310(d)(1), provides a cause of action for any consumer  
17 who is damaged by the failure of a warrantor to comply with a written or implied warranties.

18 497. Defendant provided Plaintiff and members of the Massachusetts Class with one or  
19 more express warranties, which are covered under the MMWA, 15 U.S.C. § 2301(6). In connection  
20 with the purchase or lease of AMD processors, or devices containing AMD processors, Defendant  
21 directly provided warranty coverage for its processors, or indirectly provided warranty coverage for  
22 its processors under one or more manufacturer’s warranties.

23 498. Through written advertisements, Defendant marketed its processors to the Plaintiff  
24 and members of the Massachusetts Class as secure and of particular processing speeds. Indeed, such  
25 representations formed the basis of the bargain in Plaintiff’s and members of the Massachusetts Class’  
26 decision to purchase or lease AMD processors, or devices containing AMD processors.

27 499. Plaintiff and members of the Massachusetts Class experienced the existence of the  
28 Defect in AMD processors within the warranty periods but had no knowledge of the existence of the

1 Defect, which was known and concealed by Defendant, and have not been provided a suitable repair  
2 or replacement of the defective processors free of charge within a reasonable time.

3 500. Defendant provided Plaintiff and members of the Massachusetts Class with one or  
4 more implied warranties, which are covered under the MMWA, 15 U.S.C. § 2301(7).

5 501. In connection with the purchase or lease of AMD processors, or devices containing  
6 AMD processors, Defendant breached these warranties by misrepresenting the standard, quality, or  
7 grade of its processors, and failing to disclose and fraudulently concealing the existence of the Defect  
8 in its processors. AMD processors share a common defect in design, workmanship, and manufacture  
9 that is prone to security vulnerabilities and fails to operate as represented by Defendant.

10 502. Defendant was provided notice of the Defect by independent research teams, and  
11 knew, or should have known, of the existence of the Defect much earlier. Affording Defendant a  
12 reasonable opportunity to cure its breach of warranties would be unnecessary and futile here because  
13 Defendant has known of and concealed the Defect and, on information and belief, has refused to  
14 adequately repair or replace its processors free of charge within or outside of the warranty periods  
15 despite the Defect's existence at the time of sale or lease of the processors, or devices containing  
16 AMD processors. Under the circumstances, the remedies available under any informal settlement  
17 procedure would be inadequate and any requirement that Plaintiff and members of the Massachusetts  
18 Class resort to an informal dispute resolution procedure and/or afford Defendant a reasonable  
19 opportunity to cure their breach of warranties is excused and thereby deemed satisfied.

20 503. Any attempt by Defendant to disclaim or limit its express or implied warranties *vis-à-*  
21 *vis* consumers is unconscionable and unenforceable here. Specifically, any warranty limitation is  
22 unenforceable because Defendant knowingly sold or leased a defective product without informing  
23 customers about the Defect. Among other things, Plaintiff and members of the Massachusetts Class  
24 did not participate in determining any warranty limitations, especially those which unreasonably  
25 favor Defendant. A gross disparity in bargaining power existed between Defendant and Plaintiff and  
26 members of the Massachusetts Class, and Defendant knew or should have known that its processors  
27 were defective at the time of sale or lease of the processors, or devices containing AMD processors,  
28

1 and that its processors were defective and posed security vulnerabilities that, if mitigated, resulted in  
2 reduced processing performance.

3 504. Plaintiff and members of the Massachusetts Class would suffer economic hardship if  
4 they returned their AMD processors, or devices containing the AMD processors, but did not receive  
5 the return of all payments made by them to Defendant. Thus, Plaintiff and members of the  
6 Massachusetts Class have not reaccepted their AMD processors by retaining them.

7 505. The amount in controversy of Plaintiff and members of the Massachusetts Class’  
8 individual claims meets or exceeds the sum of \$25. The amount in controversy of this action exceeds  
9 the sum of \$50,000, exclusive of interest and costs, computed on the basis of all claims to be  
10 determined in this lawsuit.

11 506. Plaintiff and members of the Massachusetts Class, individually and on behalf of the  
12 respective Classes, seek all damages permitted by law, including diminution in the value of the AMD  
13 processors, in an amount to be proven at trial.

14 **COUNT XXV**  
15 **Negligence**  
16 **(On Behalf of the Massachusetts Class)**

17 507. Plaintiffs reallege and incorporate by reference all preceding allegations as though  
18 fully set forth herein.

19 508. Plaintiff Caskey-Medina (for the purposes of this section, “Plaintiff”) brings this  
20 Count on behalf of himself and the Massachusetts Class.

21 509. Defendant owed a duty of care to Plaintiff and members of the Massachusetts Class,  
22 arising from the sensitivity of information stored on computers and the foreseeability of the impact  
23 of the Defect on data security, to exercise reasonable care in safeguarding sensitive information.

24 510. Defendant also had a duty to ensure that its processors would function at the quality  
25 and processing speeds that it represented to customers, including Plaintiff and members of the  
26 Massachusetts Class. This duty included, *inter alia*, designing, maintaining, monitoring, and testing  
27 its processors to ensure that Plaintiff’s and members of the Massachusetts Class’ data and computers  
28 were adequately secured and that its processors would function as promised.

1           511. Defendant owed a duty to Plaintiff and members of the Massachusetts Class to  
2 implement processes that would detect major security vulnerabilities, such as the Defect, in a timely  
3 manner.

4           512. Defendant also owed a duty to disclose the material fact that its processors were  
5 defective.

6           513. But for Defendant’s breach of its duties, Plaintiff and members of the Massachusetts  
7 Class would not have purchased or leased—or would have paid substantially less for—AMD processors  
8 (or devices containing AMD processors) had they known of the Defect and the reduction in  
9 processing performance associated with efforts necessary to mitigate the substantial security risks  
10 presented by the Defect.

11           514. Plaintiff and members of the Massachusetts Class were foreseeable victims of  
12 Defendant’s wrongdoing, and Defendant knew, or should have known, that its processors would  
13 cause damages to class members.

14           515. The defective AMD processors are installed into larger devices which, by virtue of the  
15 Defect, are then less secure, less valuable and/or more exposed to hackers accessing private data  
16 stored on such devices. The fact that the defective AMD processors are installed into computers and  
17 other devices is material because Plaintiffs and members of the Massachusetts Class had a reasonable  
18 expectation that their devices containing an AMD processor would not suffer from a defect that would  
19 expose their users’ information to hackers. No reasonable consumer expects a computer or device  
20 containing an AMD processor to contain a defect that exposes their users’ information to hackers.

21           516. As a direct and proximate result of Defendant’s negligence, Plaintiff and members of  
22 the Massachusetts Class have been damaged in an amount to be proven at trial, including, but not  
23 limited to, compensatory damages, incidental and consequential damages, and other damages allowed  
24 by law.

1 **VIII. PRAYER FOR RELIEF**

2 WHEREFORE, Plaintiffs, on behalf of themselves and all others similarly situated,  
3 respectfully request that this Court enter judgment against Defendant and in favor of Plaintiffs and  
4 the Classes, and award the following relief:

5 A. An order certifying this action as a class action pursuant to Rule 23 of the FED. R. CIV.  
6 P., declaring Plaintiffs as the representatives of the Classes, and Plaintiffs' counsel as counsel for the  
7 Classes;

8 B. An order awarding declaratory relief and enjoining Defendant from continuing the  
9 unlawful, deceptive, harmful, and unfair business conduct and practices alleged herein;

10 C. Appropriate injunctive and equitable relief;

11 D. A declaration that Defendant is financially responsible for all Class notice and the  
12 administration of Class relief;

13 E. Costs, restitution, damages, including statutory and punitive damages, penalties, and  
14 disgorgement in an amount to be determined at trial;

15 F. An order requiring Defendant to pay both pre- and post-judgment interest on any  
16 amounts awarded;

17 G. An award of costs and attorneys' fees; and

18 H. Such other or further relief as the Court may deem appropriate, just, and equitable.

19 **IX. DEMAND FOR JURY TRIAL**

20 Plaintiffs hereby demand a trial by jury.

21  
22 DATED: June 13, 2018

Respectfully submitted,

23 **KESSLER TOPAZ MELTZER**  
24 **& CHECK, LLP**

25 /s/Jennifer L. Joost

JENNIFER L. JOOST (Bar No. 296164)

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28 Tel: (415) 400-3000

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-and-

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*Interim Co-Lead Plaintiffs' Counsel*

# **EXHIBIT A**



Writer's Direct Dial: 415-400-3000  
E-Mail: [egreenstein@ktmc.com](mailto:egreenstein@ktmc.com)  
*Please reply to the San Francisco Office*

January 19, 2018

**CERTIFIED MAIL**  
**RETURN RECEIPT REQUESTED**

Advanced Micro Devices, Inc.  
Attn: Harry Wolin, General Counsel  
2485 Augustine Drive  
Santa Clara, California 95054

**Re: Notice of Violation of the California Consumers Legal Remedies Act, Cal. Civil Code § 1750, *et seq.* on behalf of Diana Hauck**

Dear Mr. Wolin:

Please be advised that this firm represents Plaintiff Diana Hauck, as well as the class of consumers she seeks to represent. This letter serves as notice, pursuant to Cal. Civ. Code § 1782(a), of Diana Hauck and the class's claims against Advanced Micro Devices, Inc. ("AMD" or "Defendant") for engaging in unlawful business practices under the California Consumers Legal Remedies Act, Cal. Civil Code § 1750, *et seq.* ("CLRA") in connection with Ms. Hauck's purchase of an HP 15-ba079dc Notebook computer, containing an AMD A10-9600P processor, and class members' purchases or leases of AMD processors, or devices containing AMD processors. This notice is being sent contemporaneous with the filing of a class action complaint in the United States District Court for the Northern District of California, a copy of which will hereafter be provided to AMD.

Specifically, Ms. Hauck avers that at the time she purchased her HP computer on or about November 4, 2016, AMD did not disclose and/or failed to warn Ms. Hauck that the AMD processor in her HP computer contained a defect which exposes consumers to a security vulnerability, known as the "Spectre Defect," which allows hackers access to confidential information stored on a consumer's AMD processor that should have been inaccessible, and for which a proposed "fix" will negatively impact processor speeds. Prior to the public disclosure of the Spectre Defect in January 2018, none of AMD's advertisements or marketing materials contained any disclosure relating to the Spectre Defect and the associated security vulnerability in AMD's processors. Rather, AMD touted itself as the "high-performance computing leader for the gaming, immersive



platform, and datacenter markets,” priding itself on its research and development activities focused on “improving product performance and enhancing product design.”<sup>1</sup> Indeed, AMD has long promoted the purported speed and security of its processors in materials directed to customers, including Ms. Hauck.

The AMD processor in Ms. Hauck’s HP computer contains the Spectre Defect, which exposes Ms. Hauck to increased security risks, and which some sources predict “may be impossible to defend against [ ] entirely in the long term without updating hardware.”<sup>2</sup> Had AMD disclosed the existence of the Spectre Defect in its processors, and the reduction in processing performance associated with efforts necessary to mitigate the substantial security risks presented by the Spectre Defect, Ms. Hauck would have not purchased a computer containing an AMD processor, or would have paid substantially less for a computer containing an AMD processor. Accordingly, Ms. Hauck has suffered an ascertainable loss in the form of diminished value of her computer. As a result, Ms. Hauck asserts that AMD violated the CLRA by engaging in the following deceptive practices, *inter alia*: (1) representing that AMD processors had characteristics that they did not have in that they contained the Spectre Defect; (2) representing AMD processors were of a particular standard of being defect-free, when it contained the Spectre Defect; and (3) advertising AMD processors as being defect-free with the intent not to sell them as advertised, but rather selling AMD processors with the Spectre Defect. *See* Cal. Civ. Code §§ 1770(a)(5), (7), (9).

Ms. Hauck hereby demands that AMD remedy this violation of the law by correcting, repairing, replacing, or otherwise rectifying the Spectre Defect without degrading the performance of her computer. Specially, Plaintiff demands that AMD take the following actions pursuant to Cal. Civil Code § 1782(c):

1. Identify, or make a reasonable effort to identify, all consumers who purchased or leased AMD processors, or devices containing AMD processors;
2. Notify all such consumers that AMD will make the appropriate correction, repair, replacement, or other remedy, such as repair or replace the defective AMD processors, provide a full refund of the purchase price of the AMD processors, pay for any diminution in value as a result of the Spectre Defect in the AMD processors, issue a notification to all AMD processors owners regarding the Spectre Defect, and inform class members that corrective measures will be provided for free;
3. Perform the correction, repair, replacement, or other remedy as set forth above for no charge to class members without impact to processor performance and security, and in a reasonable amount of time; and

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<sup>1</sup> *See* Advanced Micro Devices, Inc., 2016 Annual Report, <http://phx.corporate-ir.net/External.File?item=UGFyZW50SUQ9MzcwMzI1fENoaWxkSUQ9LTF8VHlwZT0z&t=1&cb=636251116960573121>.

<sup>2</sup> Lily Hay Newman, *Meltdown and Spectre Fixes Arrive—But Don’t Solve Everything*, WIRED, January 6, 2018.



4. Cease to engage in the methods, acts, or practices outlined at length above and in the complaint.

In compliance with Cal. Civ. Code § 1782, Ms. Hauck is providing AMD with the opportunity to correct this violation within thirty (30) days after receipt of this notice. If AMD does not correct this violation before this period has expired, Ms. Hauck will have the right to seek damages on behalf of herself and the class against AMD pursuant to Cal. Civ. Code §§ 1780, 1782. In addition, to the extent required by and allowed by law, this letter also requests that all necessary repairs and associated damages be made and paid to members of the class for AMD's breach of its express and implied warranties as a result of the defective AMD processors outlined above and in the complaint.

Please feel free to contact me at the above number or email address. Thank you in advance for your prompt attention to this matter.

Sincerely,

**KESSLER TOPAZ  
MELTZER & CHECK LLP**

A handwritten signature in black ink, appearing to read "E. Greenstein", written over a horizontal line.

Eli R. Greenstein

Enclosure