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UNITED STATES OF AMERICA
BEFORE THE FEDERAL TRADE COMMISSION

COMMISSIONERS: Jon Leibowitz, Chairman
Pamela Jones Harbour
William E. Kovacic (recused)
J. Thomas Rosch

In the Matter of)
INTEL CORPORATION,)
a corporation)

DOCKET NO. 9341
REDACTED PUBLIC VERSION

ANSWER OF RESPONDENT INTEL CORPORATION

Pursuant to Rule 3.12 of the Commission's Rules of Practice for Adjudicative Proceedings, Respondent Intel Corporation ("Intel") answers the Complaint as follows:

The Complaint paints a picture of competition for microprocessors and graphics products that bears little resemblance to reality. Competition in these sectors has been robust during the period covered by the Complaint, producing greater consumer benefits than any other sector of the economy.

Decreasing Prices and Expanding Output. According to the Complaint, Intel's alleged conduct raised the prices of microprocessors (also known as "CPUs") and the products containing them. In reality, during the period covered by the Complaint, according to U.S. Bureau of Labor Statistics data, microprocessor prices, adjusted for quality, *declined* at an annual rate of 42%. *This rate of decline was greater than that of any of the 1,200 other products that the Bureau tracks, including any other high-technology product.* During the same period, the quality-adjusted price of personal computers declined at an annual rate of 23%. Contrary to the Complaint's allegation that Intel's conduct reduced output, sales of x86 microprocessors grew from 136.5 million in 1999, the first year covered by the Complaint, to 324.7 million in 2008. Although the Bureau of Labor Statistics does not make similar price data available for graphics products, over the period covered by the Complaint the quality-adjusted prices of graphics products also declined sharply. Output of graphics products rose over the same period in tandem with microprocessors.

During the time when the Complaint alleges that Intel was suppressing output, Intel made repeated multi-billion dollar investments in new semiconductor manufacturing capacity, even during business downturns. Most recently, in February 2009 Intel announced a \$7 billion investment in U.S. manufacturing, in the midst of the worst business downturn in decades.

Dramatic Increases in Innovation. The Complaint alleges that Intel's conduct has stifled innovation. But the period covered by the Complaint has been characterized by rapid innovation that has increased the functionality and performance of microprocessors and the


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platforms into which they are incorporated. During this period, Intel, among other things:

- Developed dual-core and multi-core microprocessors, with the result that most personal computers (“PCs”) today are sold with microprocessors that contain the brains of at least two separate microprocessors;
- Reduced microprocessor power consumption to improve energy efficiency and enable prolonged battery life;
- Introduced the Centrino mobile technology, the first mobile computing platform optimized for long battery life and wireless connectivity, which sparked an explosion in mobile computing and a paradigm shift in computing toward mobility;
- Introduced other important platform-level innovations, including technologies that enable IT departments to diagnose PCs remotely, even when they are turned off;
- Incorporated cache memory onto its microprocessors and has since dramatically increased the amounts of cache memory on microprocessors;
- Consistently led in transitioning to new manufacturing technologies that in each generation doubled the number of transistors that could be packed into the same area of a microprocessor chip; and
- Consistently led in manufacturing innovations, including its development of the high-k metal gate technology, which Computerworld called “one of the most significant technological advances in the past several decades.”

Intel’s main rival, Advanced Micro Devices (“AMD”) also incorporated important innovations during this period, including 64-bit extensions to the x86 microprocessor architecture, a point-to-point link for multiprocessor systems, and the introduction of an integrated memory controller in an x86 microprocessor for the first time since Intel’s i486SL processor.



This extraordinary level of innovation is a reflection of large investments in research and development, which rose sharply during the period covered by the Complaint. In 1999, Intel spent \$3.1 billion on research and development, and AMD spent \$636 million. In 2008, Intel spent \$5.7 billion on R&D, and AMD spent \$1.8 billion, nearly three times as much as it spent in 1999.

Although the Commission alleges harm to innovation in graphics processing units (“GPUs”), its own Complaint alleges that GPUs have improved dramatically in their functionality and performance. Today, even entry level integrated graphics chipsets from Intel, which the Complaint mislabels as “GPUs” and derides as laggards, render 3D animations and

display high definition content that would not have been possible even a few years ago. During the period in which Intel allegedly suppressed innovation from Nvidia, Nvidia's R&D expenditures rose from \$47 million in 1999 to \$856 million in 2008; Nvidia's R&D expenditures rose by more than \$300 million between 2006 and 2008 alone, an increase of 55 percent over that two-year period.

The large increases in AMD's and Nvidia's R&D expenditures over the period of alleged predation speak volumes to the opportunities available to Intel's competitors. These investments, and the combination of dramatic increases in product quality and unparalleled reductions in prices, provide the true measure of competition in the microprocessor and graphics industries.

A. Microprocessors

The Complaint seeks to characterize Intel as a technological laggard in microprocessors, a claim that disregards the facts disclosed in AMD's own documents in the Commission's records. AMD itself considered Intel to be the technology leader. A 2003 AMD strategy document, written after the release of both the Athlon and Opteron microprocessors that the Complaint claims placed Intel behind AMD, acknowledged that Intel possessed "best in class silicon design," "best in class silicon manufacturing," "a strong record of execution," and "one of the most recognized brands in the world."

In 2004, AMD Executive Vice President Henri Richard, the company's highest ranking sales executive, declared internally that "[i]f you look at it, with an objective set of eyes, you would never buy AMD. I certainly would never buy AMD for a personal system if I wasn't working here." Mr. Richard also declared that "[redacted]." Mr. Richard described AMD as "pathetic" for "selling processors rather than platforms [as Intel did] and exposing a partial story, particularly in the commercial segment, that is clearly inferior to Intel's, if we want to be honest with ourselves." He added that AMD is saddled with a reputation that "we're cheap, less reliable, lower quality consumer type product."

AMD's shortcomings were particularly acute in microprocessors for mobile computers, the fastest growing and now largest industry segment. Thus, one of AMD's most [redacted], stating that "the reason AMD lost business with Sony is that AMD's mobile products fell out of competitiveness with Intel." [redacted] In public, AMD's Chairman conceded that AMD had adopted a strategy under which "we were going to not be as competitive in the mobile space, even though we knew that mobile space was going to be critical." As a consequence, AMD's Chairman conceded, AMD was "late with a competitive product[]" in the mobile space."

AMD trailed Intel in many critical areas, and its executives so recognized. An AMD Corporate Vice President declared, also in 2005, that "[redacted]"

To characterize pricing that encourages customers to buy more as improper “punishment” is to attack competition itself.

In addition to attacking ordinary discounting, the Complaint alleges that Intel has engaged in illegal bundled pricing for microprocessors and compatible chipsets with integrated graphics. That allegation is false. Intel has provided discounted pricing to OEMs that wish to buy microprocessors or chipsets alone and has priced its “kits” (consisting of microprocessors plus chipsets) to comply with the law.

The Complaint also wrongly alleges that Intel threatened OEMs that considered buying from AMD with the loss of technical support or technical collaborations. In fact, customers that increased their dealings with AMD continued to receive competitive discounts, marketing assistance, and technical support from Intel. Moreover, AMD increased its market share dramatically during the period covered by the Complaint – because of its successes in selling microprocessors for individual consumers, whose requirements are less rigorous than those of commercial customers, and its successful introduction of an innovative new product for servers in 2003.

The Complaint even goes so far as to question technical design decisions, such as the composition of performance benchmarks that were developed by industry bodies in a fair and open process or unilaterally by third parties not controlled by Intel. The Complaint claims that one relevant industry benchmark sometimes cited by Intel unfairly disadvantages AMD, but it ignores the fact that AMD itself publicly endorsed both that same benchmark and the integrity of the organization that developed it. The Complaint not only second guesses the technical judgments made by the industry-wide engineering experts that developed the benchmarks, but seeks to punish Intel for relying on these judgments. The Complaint proposes to do so by requiring Intel to conduct costly “scientific” testing before discussing microprocessor performance with its customers, even though Intel’s customers are themselves sophisticated engineering companies that perform their own testing to evaluate microprocessors.

Contrary to well-accepted antitrust principles, the Complaint treats Intel as if it were a public utility that has an ongoing duty to help competitors. That approach reaches into every corner of the case, however inconsequential. The Complaint wrongly asserts, for example, that Intel, a minor player with a single digit market share in compilers, “degraded” the performance of AMD microprocessors. That contorted charge rests on Intel’s occasional development of compiler optimizations for some of its own microprocessors that were not immediately implemented for AMD microprocessors (which did not even provide the instructions necessary to support the optimizations when Intel first released these optimizations). The relief contemplated by the Complaint would require Intel to delay or even forego product improvements unless it could simultaneously ensure that such improvements equally benefited Intel competitors, essentially requiring Intel to design its products for the benefit of its competitors rather than for its own benefit and the benefit of consumers.

Curtis V. Trinko, LLP, 540 U.S. 398 (2004); *Cargill, Inc. v. Monfort of Colo., Inc.*, 479 U.S. 104 (1986); *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574 (1986).

B. Graphics

The Complaint is equally flawed with respect to graphics. To begin, the Commission did not even conduct a thorough investigation as to graphics and told Intel that – in the manner of a private plaintiffs’ attorney – it need not do so because it can learn the facts through post-Complaint discovery.

The Complaint incorrectly asserts that Intel has a GPU market share in excess of 50 percent and that it threatens to monopolize the market. But Intel does not even produce or sell discrete GPUs, which provide high-performance graphics rendering for 3D gaming and engineering workstations, among other applications. Intel does sell chipsets with integrated graphics, which combine with circuitry to control the flow of data to and from various components of a computer system and provide less sophisticated graphics functionality than GPUs; these chipsets are typically sold at prices much lower than the prices of discrete GPUs.

The Complaint further alleges that Intel has “degrad[ed]” the interconnection between its microprocessors and discrete GPUs (which Intel does not sell) in an attempt to forestall a challenge to microprocessor-centric computing. This allegation is groundless. As the Complaint acknowledges, discrete GPUs connect to Intel’s microprocessors through an industry standard, non-proprietary interconnection, called “PCI Express.” Intel has done nothing to degrade the connection provided by PCI Express. Moreover, discrete GPUs are complements to Intel microprocessors, and Intel enhances the value of its microprocessors by enabling OEMs and other customers demanding high-performance graphics for their computer systems to interconnect discrete GPUs offered by Nvidia and AMD to Intel microprocessors. Indeed, Intel’s main microprocessor rival, AMD, provides its own GPU solutions, and failing to maintain interconnections between its microprocessors and GPUs offered by Nvidia and AMD could place Intel at a competitive disadvantage to AMD.

Several of the Complaint’s other allegations relate to chipsets with integrated graphics, which Intel does sell. But the Complaint fails to disclose that those chipsets will not continue to be used widely in new computer platforms, because industry innovation is making them obsolete. Basic graphics capability that for the last decade resided in the chipset (having previously been a discrete component) is now being integrated into the microprocessor itself to improve performance, reduce energy demands, and allow smaller computer form factors. This integration is part of and entirely consistent with the industry’s history of innovating by integrating more functionalities on to a single silicon chip, which has brought about computing products with better capabilities, higher performance, and lower prices. Intel is not alone in pursuing this integration path. Nvidia already ships microprocessors with integrated graphics and AMD’s core strategy is to integrate graphics into its microprocessors. Indeed, recognizing the limited future for chipsets with integrated graphics, Nvidia announced in October 2009 that it would no longer be developing chipsets for use with future generations of either Intel or AMD microprocessors. Accordingly, the Complaint’s allegations of purported Intel exclusionary conduct regarding soon-to-be-obsolete chipsets with integrated graphics, while wrong and unsupportable, fail for the additional reason that Intel could not plausibly forestall a long term threat to microprocessor-centric computing or lead to an Intel monopoly in a “GPU” market by anticompetitive conduct aimed at chipsets with integrated graphics.

