Intel's Public Comments Regarding the Interim Final Rule "Implementation of Additional Export Controls: Certain Advanced Computing Items; Supercomputer and Semiconductor End Use; Updates and Corrections"

RIN 0694-AI94, 88 Federal Register 73458

January 17, 2024

Intel Corporation ("Intel") appreciates the opportunity to provide comments on the Bureau of Industry and Security ("BIS") Interim Final Rule published on October 25th, 2023, "Implementation of Additional Export Controls: Certain Advanced Computing Items; Supercomputer and Semiconductor End Use; Updates and Corrections." While Intel strongly advocates for the use of multilateral export controls over unilateral controls, we recognize that the national security of the United States is the U.S. Government's primary responsibility and that occasionally unilateral controls are required. We hope that the U.S. Government ("USG") will continue to collaborate with allies to align on multilateral controls and be open to modifying portions of the Interim Final Rule where necessary to ensure U.S companies are not disproportionally disadvantaged from unilateral controls when compared to their foreign competitors.

Artificial intelligence ("AI") technology is being added to mainstream commercial products in a way that is analogous to the evolution of commercial encryption functionality over 20 years ago. Both started out in niche areas and were quickly realized to have significant and broad applicability and benefit to a wide range of products. Given the speed and breadth of the development and integration of AI capabilities in the marketplace, regulating this area is especially complex. We recommend BIS consider evaluating the history of the encryption export regulations and building from that learning to ensure that U.S. items are not being designed out of computing systems given the inevitability of AI in commodities around the world. Over the years, the encryption regulations have evolved to focus on that which is most critical to control. We encourage you to make the same effort today at this AI inflection point and continue to seek information and feedback to focus the controls and processes on restricting only that which is essential.

Given the complexity of the Interim Final Rule, it is important for the USG to understand the totality of the current state of activities that the USG seeks to regulate, comprehend the intended and unintended impacts on legitimate business transactions, and weigh the full consequences of its actions on the U.S. economic security to fully understand the impact to U.S. national security.

A. Further Clarification Needed

Further clarification is needed for the following items to ensure consistent application of the regulations, thereby minimizing unintended impact on industry while still achieving the USG's objective:

- Specific criteria for ICs "designed or marketed for use in datacenters."
- Types of datacenters: currently, there is no differentiation for ICs that are used in datacenters to support cloud gaming for entertainment, virtual desktop for education, data mining for transportation, or AI training for large language modeling. It would be beneficial to further identify specific applications or datacenters that the USG seeks to regulate and those which do not require a higher control.

- Multiple ECCNs for a given product create classification inconsistency (e.g., FPGA meeting parameters of 3A001.a, 3A001.z, 3A090.b; ICs meeting parameters of 3A991.a and 3A991.p).
- License exception ENC inconsistency in 5A002.z. License exception ENC is not eligible for 5A002.z items; however, in section 740.17(b)(3)(iv), it references 5A002.z items as authorized.
- Licensing requirements for non-D5 end-users via China (e.g., a U.S. company ships to a Chinese company who then ships to its customers in Ireland).
- The scope of NAC notification with respect to:
  - Inclusivity (e.g., parent companies and all subsidiaries)
  - Party to the transaction and/or ultimate destination
  - "Multiple" exports (e.g., multiple product families, multiple customers)
- "Headquartered" definition. The definition must address dual/multiple headquarters.
- "Ultimate End Use" in the context of TGL, considering the complexity of multi-tier supply chain where the knowledge of "ultimate end use" is not readily known.

B. Recommendations

- One-time Commodity Classification Automated Tracking System ("CCATS") for NAC: eliminate redundant notifications for same or similar product generations within agreed range for 'total processing performance' and/or 'performance density'.
- Bulk authorization and reporting requirements for NAC: explore the feasibility of bulk authorizations for NAC and shifting reporting requirements to post-shipment, rather than pre-notification, for products and end-uses/end-users that have been reviewed by BIS.
- Given the potential variations in calculations for ECCN 3A090, we recommend a more detailed explanation of inputs and measurement criteria to ensure a level playing field for industry.
- Creation of sub-categories for 5A992.z: differentiate mass-market encryption products incorporating 3A090 or 4A090 items that are or are not eligible for NAC.

C. Regulatory Comments and Technical Assessments

- **Deemed exports**: We applaud the decision to not apply deemed export controls in this AI and advanced computing rule. Typically, deemed export licensing is an additional downstream requirement for U.S. companies to hire technical foreign nationals who have already been vetted by the USG through the visa process. From a practical perspective, the deemed export licensing process has become primarily a "paperwork" exercise with dedicated resources required from both the USG and U.S. companies. We recommend BIS expand the approach with 3A090 and consider removing deemed export controls from other CCL items. Deemed export controls often act as a barrier to competitiveness of U.S. companies – if these controls are not delivering expected benefits, the USG should remove the controls and/or reevaluate the entire program (e.g., its objectives and accomplishments over the last 15 years), assess current foreign-countries capabilities, and streamline the process accordingly to reduce unnecessary administrative burden for both parties. If deemed export controls are determined to be critical, we recommend assessing the NAC process to determine if a similar approach (one time technology review, 25-day person review) can be utilized for vetting foreign person employees for all deemed export controls.

- **Automated Export System ("AES") implementation**: The USG delay in updating the AES system according to the requirements of new rule publications presents a challenge for exporters to remain compliant with the EAR.
- **AES description requirement**: The unprecedented requirement of adding ".z" as the first text to appear in the commodity description on AES filing creates a burden for high-volume exporters. It makes it difficult to leverage ERP systems to submit EEIs due to the multi-purpose use of ERP product/item descriptions. To address the root cause of the issue, AES capability could be improved to handle ECCN subparagraph data or, alternatively, the USG could consider using a different 5-character ECCN given that most systems are designed to accept 5-character ECCNs.
- **Supplement no. 3 to part 732**: Regarding the red flag 19 to help foundries identify "advanced node ICs" that are subject to the EAR based on "Advanced Computing FDP" rule, one option provided is to calculate the total number of transistors using the die area and the transistor density for a given process node. Since the transistor density for a given node is a constant, the total number of transistors is essentially a function of the die area, independent of the IC design, functionality, or application. However, the die area is not a direct indication of whether the IC will meet the 3A090 control thresholds. In fact, most transistors on an IC are attributed to memory cells. Thus, the total transistor count would not be a meaningful parameter to measure the IC compute performance.
- **ECCN 3A090**: With AI present in all computing platforms, from datacenter to personal laptops and devices, compute performance alone will not provide the needed differentiation for high-performance ICs. To identify ICs for the purpose of 3A090, it is more meaningful to explore specific parameters that increase data throughput or enable system scalability, such as the total memory and input/output bandwidths, which are necessary for large-scale AI training and allow for differentiation between ICs that can be used in state-of-the-art computing systems from those that go into laptops or gaming consoles. It is important to point out that the control thresholds for 3A090 are quite low and in a couple of years, 3A090 will be a catch-all ECCN for most ICs that can do multiply-accumulate ("MAC") computation. Since AI is omnipresent in every facet of life, most ICs will and can comfortably perform more than 1600 TPP (e.g., 100 16-bit or 200 8-bit TOPS). Furthermore, such ICs with 3A090-computing capabilities are being designed and manufactured by many companies worldwide.[1] Thus, the regulation will need to be re-evaluated and adjusted every couple of years to keep up with technological advancement that brings AI everywhere across all market segments in modern computing infrastructure.

D. Closing

Intel thanks the USG and BIS for the opportunity to comment on this rule. We ask that the USG consider not only the direct but also cumulative impact of this rule on the semiconductor industry, especially on U.S. companies, as the USG contemplates other regulatory and policy actions to balance the economic security and national security of the United States. Clarifications and guidance from the USG on items highlighted above will ensure consistent application of the regulation worldwide and level the playing field especially for U.S companies. Further granularity on the AI regulations is critical to minimize unintended impacts on legitimate business transactions. We look forward to further dialogue on these matters.

[1] As an example, Huawei's Ascend910 can perform 256 TFLOPs of FP16, with the corresponding performance density of 6.56 for a total die area of 624mm^2.