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Agency: Bureau of Industry and Security, Department of Commerce.

Re: Implementation of Additional Export Controls: Certain Advanced Computing Items; Supercomputer and Semiconductor End Use; Updates and Corrections

Introduction

SEMI member companies thank the Bureau of Industry and Security, Department of Commerce for their leadership and maintaining a productive dialogue with our industry. SEMI members welcome the opportunity to provide the following comments on the Implementation of Additional Export Controls: Certain Advanced Computing Items; Supercomputer and Semiconductor End Use; Updates and Corrections

Established in 1970, SEMI is the leading global industry association that works to advance the business of the electronics manufacturing supply chain. SEMI includes over 530 American headquartered companies along with another 1,300 foreign headquartered companies, and represents the full range of U.S. semiconductor companies, including designers, equipment makers, materials producers, and subcomponent suppliers.ⁱ While SEMI's membership includes many large companies, more than 85 percent of SEMI members are considered small or medium-sized businesses. SEMI member companies are the foundation of the \$2 trillion electronics industry. This vital supply chain supports 350,000 high-skill and high-wage jobs across the United States.ⁱⁱ

Semiconductors are the building blocks of the modern economy, making possible the countless devices on which we all rely. The United States currently possesses market and technological leadership in the manufacturing technology, equipment, and materials that enable semiconductor production, but there are still significant gaps in national capability and opportunities, which are either eased or strained by changes in export controls.

Background

On October 7, 2022, the Bureau of Industry and Security (BIS) released the interim final rule (IFR), "Implementation of Additional Export Controls: Certain Advanced Computing and Semiconductor Manufacturing Items; Supercomputer and Semiconductor End Use; Entity List Modification" (October 7 IFR), which amended the Export Administration Regulations (EAR) to implement controls on advanced computing integrated circuits (ICs), computer commodities that contain such ICs, and certain semiconductor manufacturing items, and to make other EAR changes to implement appropriate related controls, including on certain "U.S. person" activities.

On October 17, 2023, the Bureau of Industry and Security (BIS) released an interim final rule, which became effective on November 17, 2023. The rule supplements the export controls regulations issued in October of 2022 and seeks to further restrict access to advanced AI and computing technologies, and semiconductor manufacturing equipment.

Multilateral Effort

SEMI member companies acknowledge that limiting technology exports and essential components through the use of export controls is a standard approach for nations to balance economic policies with national security priorities, fostering global stability. The widespread use of regulations in managing technology exports makes it logical for countries to believe in the feasibility of unilateral policy engagement. However, recognizing that national security threats are multifaceted, solutions to address them should be equally nuanced and comprehensive.

Engaging export controls requires a precise identification of a national security threat that warrants immediate attention¹. Despite the apparent clarity of this principle, there is a strong temptation to address a wide array of valid concerns that may not necessarily reach the level of a national security threat. It is impossible in many cases for industry to fully evaluate the degree to which this principle is followed, so industry expects a balanced approach to always be implemented.

In the United States, national security encompasses a broad spectrum, including considerations such as infrastructure, supply chains, and data protection, alongside conventional concerns about militarized threats. Nonetheless, a foundational tenet in national security revolves around specificity, recognizing that if everything is perceived as a threat, then nothing genuinely is.

Economic security is arguably regarded as inseparable from national security and a key catalyst in the United States government's pursuit of a well-defined goal: the advancement of leading-edge technological capabilities. From the economic perspective, SEMI member companies believe the lack of multilateral or plurilateral alignment can result in ceding technology leadership, hindering the industry's capacity to fully tap into the global market and impeding its ability to stay ahead from a U.S. domestic perspective. Leadership in this industry requires that the United States remain competitive in global markets and for U.S. policy to always move in concert with international partners and allies.

The intricately specialized global semiconductor manufacturing and design supply chain encompasses numerous stages and contributors, from raw material suppliers to chip designers, equipment manufacturers, packaging and testing facilities, and distributors. This intricate web of interdependence mirrors the delicacy and sensitivity of the semiconductor components it produces. A prudent policy approach, marked by deliberate direction and thoughtful execution, is essential. Through ongoing collaboration with the industry and international partners, regulations can effectively address national security priorities while upholding global market stability. Conversely, a rushed, unilateral strategy based on wishful thinking about the ecosystem's dynamics would ultimately falter in combating both national security and economic threats, to the detriment of clear priorities. SEMI members commend U.S.

¹ I.2 I.3 Part I. Sec. 1752. 6 - Statement of Policy, Authority And Administration Of Controls, Bureau of Industry and Security, U.S. Department of Commerce: “(6) Export controls applied unilaterally to items widely available from foreign sources generally are less effective in preventing end-users from acquiring those items. Application of unilateral export controls should be limited for purposes of protecting specific United States national security and foreign policy interests.”

diplomatic efforts to align export controls with international partners, emphasizing that this alignment fosters crucial supply chain stability.

Notified Advanced Computing (NAC):

Propose modified NAC process to create a true license exception: SEMI Members view a license exception with a “pre-notification” and an approval is not an exception, it is a faster license. SEMI members suggest that BIS implement a one-time Commodity Classification Automated Tracking System (CCATS) review that determines if future notifications are required or alternatively if companies can follow a reporting process annually. Enacting this will help companies plan and ensure that BIS is not inundated with repetitive reviews. This also aligns with the approach taken to review and approve encryption under license exception ENC.

Definition of "Use in Data Centers": The term "use in data centers" requires clarification, considering the varying sizes, power requirements, and structures of data centers. To avoid ambiguity, SEMI members propose a definition that directly links to the CPU/GPU for determining "use in data centers." Additionally, guidance on whether edge use is considered as "data centers" would be beneficial. It would also be helpful to know if there are specific applications or datacenters that the U.S. government (USG) is targeting. There are different types of datacenters. If high-performance GPUs for commonly used gaming that go into systems are not a concern and do not need NAC or an export license, would the USG be concerned with low-performance GPUs that support cloud gaming or virtual desktops? These datacenter GPUs are currently captured by 3A090 and require NAC and/or license. Thus, additional granularity for the term "datacenter" could minimize the impact on industry while still achieving the USG's objective.

Bulk Authorization and Reporting Requirements: SEMI members suggest exploring the feasibility of bulk authorizations for NAC and shifting reporting requirements to post-shipment rather than pre-shipment notification. This could streamline processes and reduce the administrative burden.

NAC Notification Requirement 740.8 (a)(2): The USG should provide clarification on the definition of "multiple exports" in the context of NAC. It is unclear if this term refers to multiple exports to the same party or of the same product. It is also unclear if the exports must be all associated with a single purchase order. Additionally, clarification is needed on whether a notification for a parent company applies to all subsidiaries.

Enumerated ECCNs and Notes

Creation of subcategories for 5A992.z: SEMI members recommend creating sub-categories to differentiate items that are NAC-eligible from items that need an export license (i.e., items incorporating 3A090.b ICs versus items incorporating 3A090.a ICs). As the rule is currently written, there is no differentiation for products that are eligible for NAC versus products that need an export license. The USG created the ".z" entries attempting to fix issues from the October 2022 rule where they were not able to differentiate 5A992.c items with or without the high-performance ICs (3A090). A similar issue now exists with ".z" if there is no sub-categories to differentiate "NAC" versus "license" items.

Definition of HQ: The term "headquartered" needs additional clarification to ensure a consistent understanding among industry participants. To help clarify, BIS should adopt a "nerve center" test that relies on quantifiable and easily verifiable parameters for purposes of assessing whether a company's

ultimate parent is “headquartered” in a Country Group D:5 location. Additionally, it would be helpful if BIS provided specific examples and best practices in the BIS FAQ and provided due diligence guidelines and tools (if any) for verification if a company’s ultimate parent is “headquartered in a D5 country” where it is controlled (through shareholding or not) by a D5 country located company.

Licensing for Non-D5 End Users via Country Group D:5: SEMI members request clarification regarding the requirement for a license when advanced computing items pass through a Country Group D:5 company but are destined for a non-Country Group D:5 end user.

ECCN 3A090 "or Worldwide" Clause: SEMI members request further clarification on the inclusion of "or worldwide" in the rule, especially concerning licensing policy discrepancies and potential challenges in implementation.

Expanded Foreign Direct Product Rule (FDP):

Use of "Produced by" vs. "Direct Product": The use of "produced by" in the new FDP rules represents a significant expansion and may have implications for affected entities. Moreover, the Note to 734.9 paragraph (h)(2) further expanded the FDPR by using the concept of “a party to the transaction” to define the destination scope, which seems to conflict with the original wordings of (h)(2).

Temporary General License (TGL):

Clarification of "Ultimate End Use": The term "ultimate end use" in the TGL requires clarification, especially regarding how it applies in the context of software and technology. Guidance on the scope of "ultimate end use" concerning technology transfer would be beneficial. Clarification is requested around what constitutes knowledge of the “ultimate end use.” It is currently unclear what is expected of exporters who are not aware of “ultimate end use.” For example, it is unclear whether the TGL applies if an exporter is shipping to an original design manufacturer (ODM) who will build servers and then sell those servers to distributors who will then sell to the distributor’s customers.

Recipient location: SEMI members request confirmation that under paragraph (d)(1) of the TGL, recipients can be located in D1 and D4 (this appears to be an accidental omission). As written, shipments are limited to exports, reexports, and transfers to D1, D4, and D5 (minus A5, A6) when the recipient is located in, but not headquartered in D5. The IFR limits the TGL to recipients *located in* D5, though the intent is to permit exports, reexports, and transfers to D1, D4, and D5.

Deemed Export Controls:

SEMI members commend the decision to not control deemed exports: The university process and H1B process creates an environment where many of the most well technically trained engineers are foreign persons that graduated from US universities. Moreover, any person on an H-1B visa working in the US has already been vetted by the US government.

SEMI members specifically comment on the applicability of deemed exports and deemed reexports in § 742.6(a)(6)(iv). Commenters are asked to provide feedback regarding the impact of this provision on their business and operations, in particular, what if any impact companies would experience if a license were required for deemed exports and deemed reexports. Commenters are also asked to provide guidance on what, if any, practices are utilized to safeguard technology and intellectual property and the role of foreign person employees in obtaining and maintaining U.S. technology leadership.

- The carveout for deemed exports on technology for 3A090 items has had a significant positive impact on US leadership in developing these chips.
- Executive Order 14110 identified the importance of attracting non-US talent to work in AI fields in the United States, but deemed export licensing requirements would directly undermine efforts to ensure that the most talented chip developers can continue to ensure that US companies remain the leading chip developers in the world. Otherwise, such talent is likely to go to other countries, including foreign competitors and even adversaries.
- The practicalities of recruiting talent and obtaining deemed export licenses create severe challenges for employees and employers.
 - Other US government regulations regarding employment discrimination make it difficult to refrain from hiring an applicant solely because they would require a deemed export license.
 - Given the lengthy processing times for the US government to review deemed export license applications and, in the case of approved licenses, determine the conditions that should attach to the license, employers must decide to either push back start dates or allow the employee to start work without being able to perform their intended responsibilities.
 - Individuals who face the uncertainty of whether or when they will be able to perform the work they were hired to do may choose to forgo working on export controlled projects that contribute to US leadership in important fields.
 - The need to obtain and renew deemed export licenses creates uncertainty for medium- and long-term planning for projects subject to heightened controls.
- ECCN 3E002 already applies to technology used in many 3A090 chips, which would make controls on 3E001 technology for 3A090 chips redundant in many cases.
- In general, the deemed export licensing experience has led to negative and counterintuitive outcomes.
 - The frequent practice of imposing overly-restrictive license conditions has led to outcomes in which licenses are granted but in practice are useless for the applicant's intended work.
 - In several cases, deemed export licenses for non-US nationals with world-class expertise have included conditions so restrictive as to make the licenses practically useless. Shortly thereafter, the same non-US nationals became US persons and were no longer subject to deemed export licensing requirements. Such a dynamic does not serve either US national security objectives or US companies' business goals, and it seems to suggest that government agencies making decisions about deemed export licenses are applying stricter criteria than the agencies making decisions to extend the broader, more significant benefits of becoming a US person.

Redundant and/or unused ECCNs:

There has been much effort focused on developing new export controls. SEMI members note that it is important that efforts should also be dedicated to re-evaluating existing controls to ensure they are consistent, clear, and up to date. For example, the new ECCN 3A991.p added in 2022 is basically a catch-all ECCN for all ICs that could perform computation. With this addition, 3A991.a is no longer needed, as 3A991.a is a subset of 3A991.p (i.e., all CPUs meet the performance threshold of both 3A991.a and 3A991.p). Looking at the technology direction, products such as FPGAs with ECCN 3A001.a.7 will also meet the performance thresholds of 3A090. It presents unnecessary challenges when a product can have multiple ECCNs with different licensing requirements.

Exclusion of Back-End Production Steps

SEMI members support the addition of an exclusion in § 744.23(a)(5) for “back-end” production steps for purposes of § 744.23(a)(2) “advanced-node IC” controls, to limit the scope of “production” steps captured by paragraphs 744.23(a)(2)(i) and (a)(2)(ii) to exclude back-end production steps.

While back-end manufacturing steps are a crucial part of the semiconductor manufacturing process, SEMI agrees that the back-end processes do not materially change the technology level at which advanced node IC’s are produced and therefore should not be subject to these enhanced controls. Global competition in the back-end processing is increasing with foreign availability and unduly controlling these items would be detrimental to U.S. and allied industry partners.

Photomasks

SEMI members suggest that BIS amended § 744.23(a)(4) (formerly § 744.23(a)(2)(v)) to remove photomasks from the scope of the end-use restrictions therein because photomasks are not used in the “development” or “production” of semiconductor manufacturing equipment (SME). Following similar logic, it is reasonable to remove photomasks which are designed for technology nodes outside of those for “advanced-node ICs” from the end-use scopes in § 744.23(a)(2) (formerly § 744.23(a)(2)(iii)-(iv)) and § 744.6(c)(2)(i)-(ii) (formerly § 744.6(c)(2)(i)-(vi)).

Photomasks, unlike other items which are potentially useable within the integrated circuit “development” or “production” process, are not capable of being interchangeably used at different semiconductor technology nodes. Photomasks by their very nature cannot be used in a “mixed node” fab beyond their intended design rule (i.e. a 28nm mask set cannot be used for a 14nm design). Therefore, photomasks which are designed and manufactured for technology nodes outside those set forth in the definition of “advanced-node ICs,” in Part 772 of the EAR, should be excluded from the end-use scope of § 744.23(a)(2) and § 744.6(c)(2)(i)-(ii).

Supply chain issues and limits on ability to supply and service legacy production systems:

The SME IFR retains the “SME Restriction” – the restriction on knowing supply of items for development or manufacture of SME and SME components. EAR § 744.23(a)(4). The SME Restriction will create a strong incentive for companies operating in restricted countries, including those headquartered in the United States and allied countries, to replace U.S. origin items with non-U.S. alternatives.

While BIS has made the SME Restriction somewhat less restrictive, the government should rescind the provision entirely.² Even with the revisions, the SME Restriction remains fairly broad.

The SME Restriction creates challenges regarding U.S. and allied country SME suppliers' ability to maintain supply chains. The semiconductor industry is global in nature and features companies across the value chain located around the world, each reliant on a complex and integrated supply chain. The global nature of the industry facilitates cost savings and continuous performance enhancements. Given supply chain complexity, companies need stability in their supply chains. While the temporary general license from the October 2023 IFRs ("Temporary General License") is helpful, its limited lifespan gives rise to uncertainty, which is detrimental to decision making.

SEMI members believe that if the restriction is not reversed, it should make permanent the Temporary General License, which, for a limited period, enables companies to continue to rely on their supply chains. Alternatively, BIS could permanently authorize intra-company transfers of items, including technology, to ensure that subsidiaries of U.S. and allied country companies in restricted countries can effectively operate and contribute to U.S. and allied country SME suppliers' ability to continue to develop and supply IC production systems.

Applying in-country transfer controls to restrict repair and storage:

The EAR impose a variety of license requirements on "transfer (in country)" of items. The regulations generally define "transfer (in country)" as "a change in end use or end user of an item within the same foreign country." EAR § 734.16.

BIS has advised that, for purposes of enforcing restrictions on in-country transfers, it will consider repair or storage at a repair center to be a change of end use and/or end user such that sending the item could require authorization.³ SEMI members ask that BIS revisit this assessment. There is no reasonable basis to construe the regulations such that an item's end use or end user changes when the item is repaired or stored. Furthermore, as described above, it is in the United States' interests that U.S. and other allied SME suppliers have the unrestricted ability to repair and otherwise service the equipment that they supplied for legacy IC production.

Plain Meaning of Regulations and Definitions of "End Use" and "End User" Exclude Repair or Storage: A repair operation "uses" its repair tools and services items on an interim basis – the "end use" of the item being serviced or repaired remains constant. The item is the object of the servicing, but its end use never varies. As to storage, the party providing storage services can hardly be viewed as "using" the stored item. This accords with the common understanding of these terms; we would not view our car repair provider as "using" our car, or the airport long-term parking lot as "using" our car.

BIS's interpretation equates "use" and "user" with "possess" and "possessor". SEMI members believe that this is not logically sustainable.⁴

² BIS has mitigated problems with the SME Restriction by limiting it to items on the Commerce Control List.

³ Computing IFR, 88 Fed. Reg. 73,458, 73,469-70.

Moreover, the EAR define an end user as “[t]he person that receives and *ultimately uses* the exported or reexported items.” EAR § 772.1 (emphasis added). The EAR do not define “end use.” But the ordinary meaning of the term is consistent with the understanding that “end use” refers to the ultimate use of a particular item.⁵

Under governing principles of regulatory construction, BIS must accord meaning to each word of its regulation, including “ultimately.”⁶ A party that is repairing or storing an item does not “use” the item. Even if it did, it certainly could not be said to be the “ultimate” user of the item. An item’s end use or end user can change if, for example, the owner decides to sell the item. But an item cannot have a series of “ultimate” uses or users due to repair or storage of the item over the course of its useful life – activities that are known will occur when the item is first deployed. Such a view would deprive “ultimately” of any meaning.

Finally, the regulations specify that an end user “is not a forwarding agent or intermediary.” EAR § 772.1. A third party that repairs or stores an item would be an intermediary. The EAR do not define “intermediary,” but its definition of “intermediate consignee” provides relevant guidance. An “intermediate consignee” is “[t]he person that acts as an agent for a principal party in interest for the purpose of effectuating delivery of items to the ultimate consignee.”⁷ This aligns with the common dictionary definition of “intermediary” as a “go-between.”⁸ An intermediary does not use an item for its own purpose; instead, it interacts with the item in support of the owner’s end use. A third party that repairs or stores an item does just that.

BIS’s Current Interpretation Would Cover On-Site Repair and Storage: The EAR definition of “in-country transfer” does not require any movement of the item; just a change in end user or end use. Consequently, if repair or storage is an “end use,” an operator using an item would effect an “in-country transfer” by independently repairing or storing the item at its site. BIS acknowledges that the regulations cannot be applied in this way but does not explain how it can make this distinction consistently with the regulatory definition.⁹ That its interpretation would logically lead to this outcome, however, shows that the interpretation is deficient and insupportable.

EAR99

⁴ BIS emphasizes that the EAR definition of “end user” “does not specify that the item needs to be used for its intended end use.” Computing IFR, 88 Fed. Reg. 73,458, 73,469. With respect, this misses the point. A party providing repair or storage services does not use the item at all.

⁵ See, e.g., “end use,” Merriam Webster Online, <https://www.merriam-webster.com/dictionary/end%20use> (“the ultimate specific use to which a manufactured product (such as paper) is put or restricted”).

⁶ See, e.g., Corley v. United States, 556 U.S. 303, 314 (2009) (internal quotation marks omitted) (“A statute should be construed so that effect is given to all its provisions, so that no part will be inoperative or superfluous, void or insignificant.”).

⁷ EAR § 772.1. (“The intermediate consignee may be a bank, forwarding agent, or other person who acts as an agent for a principal party in interest.”).

⁸ See, e.g., “intermediary,” Merriam Webster Online, <https://www.merriam-webster.com/dictionary/intermediary> (“an intermediary is someone who moves back and forth in the middle area between two sides – a ‘go between.’”).

⁹ Computing IFR, 88 Fed. Reg. 73,469, 73,469.

SEMI members appreciate the action taken to narrow the scope of the former 744.23(a)(2)(v) which was too broad and captured EAR99 designated items for semiconductor development or production. The new 744.23(a)(4) narrows the Product Scope from “any item subject to the EAR” to “any item subject to the EAR and specified on the CCL”. Conceivably, EAR99 items caught under the original provision was an unintended consequence of the October 2022 rule. The narrowed Product Scope helps industry tremendously and supports the guidance that the controls are not intended for items of lesser concern.

Final Comment

In conclusion, SEMI members appreciate the opportunity to provide feedback on the Advanced Semiconductor Rule. The suggested clarifications aim to foster a better understanding and implementation of the regulations. We look forward to further dialogue on these matters.

ⁱ “About SEMI,” <http://www.semi.org/en/About>, January 2023. A full list of SEMI members can be found here: <http://www.semi.org/en/Membership/MemberDirectory>.

ⁱⁱ “Trade Policy,” SEMI, <http://www1.semi.org/en/trade-policy>, January 2023.