

## RECORD OF PUBLIC COMMENTS

### INTERIM FINAL RULES: Export Controls on Semiconductor Manufacturing Items

Publication in *Federal Register*: October 25, 2023 (88 FR 73424)  
Comments due January 17, 2024<sup>1</sup>

	SOURCE <sup>2</sup>	SIGNER(S) OF COMMENT	DATE
1.	Individual	Brett Snodgrass	11/12/23
2.	China Chamber of Commerce for Import and Export of Machinery and Electronic Products	China Chamber of Commerce for Import and Export of Machinery and Electronic Products	11/13/23
3.	Individual	William Root	11/21/23
4.	The SPRING Group	Hanming Sun (Chair), Jachun Baek (Co-Chair), Aanya Baddela, Brian Zhou	12/19/23
5.	Anonymous	Anonymous	1/7/24
6.	Technology Trade Regulation Alliance (TTRA)	Ken Montgomery	1/17/24
7.	US-China Business Council (USCBC)	USCBC	1/17/24
8.	*ASML US LLC	Maryam Khan Cope	1/17/24
9.	Center for AI Policy (CAIP)	Thomas Larsen	1/17/24
10.	*Applied Materials, Inc.	Mario Palacios	1/17/24
11.	<b>Note:</b> Commenter 11 misdirected their comment, which was intended for the ACS IFR instead of the SME IFR. This comment has been added to the ACS IFR comments as Commenter 33.		
12.	*KLA Corporation	Dennis Ralston	1/17/24
13.	Semiconductor Industry Association (SIA)	SIA	1/17/24
14.	Onto Innovation	Onto Innovation	1/17/24

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<sup>1</sup> Comment period was extended from December 15, 2023 to January 17, 2024 in the Interim final rule; request for comments; extension of comment period, *Export Controls on Semiconductor Manufacturing Items; Implementation of Additional Export Controls: Certain Advanced Computing Items; Supercomputer and Semiconductor End Use; Updates and Corrections; Extension of Comment Period* published December 15, 2023 (88 FR 86821).

<sup>2</sup> Sources followed by an asterisk also submitted Business Confidential comments.

15.	*Lam Research Corp.	Rich Ashooh	1/17/24
16.	Individual	William Root	1/2/24
17.	*ASM	ASM	1/11/24



## DEPARTMENT OF COMMERCE

### Bureau of Industry and Security

15 CFR Parts 734, 736, 740, 742, 744, 772, and 774

[Docket No. 231013–0246]

RIN 0694–AJ23

### Export Controls on Semiconductor Manufacturing Items

**AGENCY:** Bureau of Industry and Security, Commerce.

**ACTION:** Interim final rule; request for comments.

**SUMMARY:** 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” (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. The October 7 IFR also made other EAR changes to ensure appropriate related controls, including on certain “U.S. person” activities. This IFR addresses comments received in response to only the part of the October 7 IFR that controls semiconductor manufacturing equipment (SME) and amends the EAR to implement SME controls more effectively and to address ongoing national security concerns.

#### DATES:

**Effective dates:** This rule is effective November 17, 2023, except for amendatory instruction 5, which is effective January 1, 2026.

**Comment due date:** Comments must be received by BIS no later than December 18, 2023.

**ADDRESSES:** Comments on this rule may be submitted to the Federal rulemaking portal ([www.regulations.gov](http://www.regulations.gov)). The *regulations.gov* ID for this rule is: BIS–2023–0016. Please refer to RIN 0694–AJ23 in all comments.

All filers using the portal should use the name of the person or entity submitting the comments as the name of their files, in accordance with the instructions below. Anyone submitting business confidential information should clearly identify the business confidential portion at the time of submission, file a statement justifying nondisclosure and referring to the specific legal authority claimed, and

provide a non-confidential version of the submission.

For comments submitted electronically containing business confidential information, the file name of the business confidential version should begin with the characters “BC.” Any page containing business confidential information must be clearly marked “BUSINESS CONFIDENTIAL” on the top of that page. The corresponding non-confidential version of those comments must be clearly marked “PUBLIC.” The file name of the non-confidential version should begin with the character “P.” Any submissions with file names that do not begin with either a “BC” or a “P” will be assumed to be public and will be made publicly available through <https://www.regulations.gov>. Commenters submitting business confidential information are encouraged to scan a hard copy of the non-confidential version to create an image of the file, rather than submitting a digital copy with redactions applied, to avoid inadvertent redaction errors which could enable the public to read business confidential information.

#### FOR FURTHER INFORMATION CONTACT:

- For general questions, contact Regulatory Policy Division, Office of Exporter Services, Bureau of Industry and Security, U.S. Department of Commerce at 202–482–2440 or by email: [RPD2@bis.doc.gov](mailto:RPD2@bis.doc.gov), please include “RIN: 0694–AJ23” in the subject line.

- For technical questions, contact Carlos Monroy at 202–482–3246 or [Carlos.Monroy@bis.doc.gov](mailto:Carlos.Monroy@bis.doc.gov).

#### SUPPLEMENTARY INFORMATION:

#### Background

##### A. Introduction

On October 7, 2022, BIS released interim final rule (IFR) “Implementation of Additional Export Controls: Certain Advanced Computing and Semiconductor Manufacturing Items; Supercomputer and Semiconductor End Use” (October 7 IFR) and requested public comments on the newly imposed measures. (87 FR 62186, October 13, 2022) BIS imposed these new controls to protect U.S. national security interests by restricting the People’s Republic of China (China’s) military modernization efforts and degrading its ability to violate human rights. With a calibrated and measured approach, focused on key, force-multiplying technologies, the October 7 IFR accomplished U.S. national security objectives while interfering with commercial trade no more than necessary to accomplish those objectives.

The advanced computing integrated circuits (ICs), semiconductor manufacturing equipment (SME) essential to producing advanced-node ICs, and items used to further supercomputing capacity controlled through the October 7 IFR are critical for the development of weapons of mass destruction (WMD), advanced weapons systems, exascale supercomputing, and artificial intelligence (AI) capabilities, as well as high-tech surveillance applications. The use of such items in development and deployment of advanced weapons systems and advanced AI to support military applications would further U.S. military adversaries’ goals of surpassing the United States and its allies in military capability, thereby destabilizing regional and global security status quos. This includes logic integrated circuits needed for future advanced weapon systems and memory needed for high volume and high-performance data storage in such systems. Additionally, AI capabilities, facilitated by supercomputing and built on advanced-node ICs made by SME, lead to improved speed and accuracy of military decision-making, planning, and logistics. They can also be used for cognitive electronic warfare, radar, signals, intelligence, and jamming. These ongoing national security concerns motivated the October 7 IFR and require the controls set forth in this SME IFR.

The October 7 IFR imposed controls on two sets of items and activities. First, the rule established new Export Control Classification Numbers (ECCNs) and controls for certain advanced computing ICs and computer commodities that contain such ICs, as well as end-use and end-user controls related to “supercomputers.” Second, it established a new ECCN and controls for certain SME essential to producing advanced-node ICs, end-use controls related to the “development” and “production” of those advanced ICs, and end-use controls related to the “development” and “production” of SME. BIS later imposed the same controls implemented on China in the October 7 IFR to Macau because of Macau’s position as a Special Administrative Region of China and the potential risk of diversion of items subject to the EAR from Macau to China. See “Implementation of Additional Export Controls: Certain Advanced Computing and Semiconductor Manufacturing Items; Supercomputer and Semiconductor End Use Updates to the Controls to Add Macau” (88 FR 2821, January 18, 2023).

In this rule, BIS updates the SME controls through publication of this SME IFR while publishing elsewhere in this issue of the **Federal Register** a separate IFR, “Implementation of Additional Export Controls: Certain Advanced Computing Items; Supercomputer and Semiconductor End Use; Updates to the Controls and Corrections” (AC/S IFR). Together, these IFRs advance the U.S. national security objectives identified above and discussed more extensively in the chapeau of section C of this rule.

This SME IFR amends the EAR by refining the scope of the October 7 IFR to more effectively achieve national security objectives while responding to public comments about the semiconductor manufacturing and SME controls adopted in the October 7 IFR. This SME IFR: (1) includes additional types of SME to those previously described under ECCN 3B090 and controls all such items under ECCNs 3B001 and 3B002; (2) revises ECCNs 3D001, 3D002, 3D003, and 3E001 to make conforming changes for the license requirements for the items moved from ECCN 3B090 to ECCNs 3B001 and 3B002; (3) revises the license exception restrictions to reflect the removal of 3B090 and makes other changes related to the availability of license exceptions for these SME items; (4) revises the national security license requirements and review policy to impose national security controls on newly added SME and those items moved from ECCN 3B090 to ECCNs 3B001 and 3B002 for Macau and destinations specified in Country Group D:5; (5) revises the regional stability license requirements and license review policy to, among other things, remove references to ECCN 3B090 and expand the license requirement to Macau and destinations specified in Country Group D:5; (6) revises the *de minimis* provisions to add a 0% *de minimis* rule for items described in new ECCN 3B001.f.1.b.2.b; (7) revises and reformats the “U.S. persons” activities controls and “supercomputer” and semiconductor manufacturing end-use controls to better achieve the objectives of the October 7 IFR and improve clarity; (8) adds two new defined terms to the EAR for “extreme ultraviolet” (“EUV”) and “advanced-node integrated circuits;” (9) adds a new Temporary General License (TGL) to provide SME producers in the United States and Country Groups A:5 and A:6 countries additional time to identify alternative sources of supply outside of arms-embargoed countries, or to acquire individually validated licenses; and (10)

revises license requirements based on destination.

## B. Public Comments and BIS's Responses

BIS received 43 responsive public comments in response to the October 7 IFR. This rule summarizes and addresses the comments under 63 topics that were specific to controls related to SMEs and the production of advanced-node ICs. The AC/S IFR, published elsewhere in this issue of the **Federal Register**, summarizes and addresses comments on the advanced computing provisions of the October 7 IFR, as well as general comments applicable to all aspects of the October 7 IFR that are not otherwise addressed in this SME IFR. BIS appreciates the many public comments it received and encourages continued engagement and feedback. This SME rule is published as an IFR with a 60-day comment period and 30-day delayed effective date for most changes for the purpose of gathering valuable public input.

### *Breadth of the October 7 IFR and Its Unilateral Imposition*

*Topic 1:* Many commenters expressed concern and surprise about the breadth of the October 7 IFR, in some cases arguing that existing multilateral (*i.e.*, the Wassenaar Arrangement) controls were sufficient to address BIS's stated objectives.

*BIS Response:* BIS understands the importance of predictability and specific focus in export controls, particularly given the complexity and interdependence of the global semiconductor industry. The U.S. Government has frequently and consistently raised its concerns about China's military modernization, particularly in light of China's Military-Civil Fusion (MCF) strategy, which deliberately blurs the lines between commercial sectors and military programs, and the ability of China's government to demand information and assistance from companies. The U.S. Government, including BIS, has been clear that MCF, combined with China's government system, has led to additional U.S. export controls on items including emerging technologies that have military applications. Consistent with this view, BIS has specifically signaled intent during speeches at BIS's 2022 Annual Update Conference and various other public engagements to pursue additional controls in this area to address U.S. national security and foreign policy concerns, including with respect to military modernization and human rights.

Moreover, while some may argue against the breadth of the October 7 IFR controls, in fact BIS sought to use a scalpel approach, seeking to restrict China's military modernization efforts through the narrowest possible restrictions of sensitive technologies without unduly interfering with commercial trade. While items that are the subject of this SME IFR are not yet formally controlled under a multilateral regime, the urgency and criticality of the U.S. national security concerns described herein dictate control pending adoption through the Wassenaar Arrangement.

*Topic 2:* Many commenters expressed concern about the unilateral nature of new controls in the October 7 IFR. These commenters highlighted the established congressional preference for multilateral controls set forth in the Export Control Reform Act of 2018 (ECRA), urging that BIS should not have acted, and should not act in the future, without first securing multilateral support for any new controls, particularly those related to SME and semiconductor production because foreign available items not subject to U.S. control may undercut the effectiveness of U.S. action. For example, a commenter noted that, in function, new ECCN 3B090 on SME expands existing 3B001 by adding new parameters controlled only to China. Before becoming effective, Wassenaar Arrangement approval of a U.S. proposal should be obtained.

*BIS response:* BIS continues to work with interagency partners to obtain formal multilateral regime agreement for all new controls, including those imposed in this IFR, consistent with ECRA. There are circumstances, however, consistent with ECRA, in which action pending formal multilateral regime agreement is warranted to protect U.S. national security interests. BIS's imposition of National Security (NS) controls on the items in this SME IFR is consistent with these principles. These controls are being implemented in anticipation of formal multilateral regime adoption.

*Topic 3:* Many commenters agreed with BIS's objectives but argued that the unilateral controls in the October 7 IFR have already been, and will be, both damaging and ineffective particularly because they encourage foreign companies to “design out” or avoid products subject to the EAR. This “design out” is to the short- and long-term detriment of U.S.-based companies and their technological leadership within the semiconductor industry. Accordingly, commenters argue the

controls are, or over time will become, ineffective.

**BIS response:** BIS's goal is to implement effective and focused controls that do not diminish U.S. technology leadership. To this end, BIS's revisions in this SME IFR focus controls on specific capabilities related to military advancement and activities or technologies that enable those capabilities. At the same time, BIS has refined controls to minimize negative consequences including by encouraging replacement of items subject to the EAR with items not subject to the EAR. Among other things, BIS has adopted more nuanced license review policies that account for end use and the replaceability of items subject to control and made available new general authorizations to allied-destination companies to facilitate their transition to the new controls. These steps recognize China's role in the global semiconductor industry and electronics ecosystem. BIS's focus is on the development and production of advanced-node ICs, given their national security implications and China's well-documented MCF policy. Finally, BIS understands and appreciates the significant efforts by global industry to comply with new export controls. Corporate compliance activities are the keystone of effective controls, and BIS reiterates its interest in feedback from the export community. BIS also notes that, when warranted, we will consider requests for expedited review or other forms of authorization, as it did in the days, weeks, and months following the October 7 IFR.

**Topic 4:** A commenter noted that allies have not imposed similar semiconductor end-use controls on their nationals. This commenter noted that although the Enhanced Proliferation Control Initiative (EPCI) is a decades-old initiative that was the basis for U.S. and allied partner export control authorities to impose licensing obligations for the provision of services and exports involving otherwise uncontrolled items, no ally has similarly informed its citizens that support for advanced-node IC development or production in China could *per se* support the development or production of WMD.

**BIS response:** BIS has revised the "U.S. persons" controls related to SME set forth in § 744.6 to ensure that EPCI controls are calibrated to address the national security concerns described above without unduly undermining the ability of U.S. persons to work for companies headquartered in the United States and closely allied countries. Additional discussion on the changes

made to U.S. person controls are discussed in section C.10 of this rule.

**Topic 5:** A commenter requested that BIS should consider the impact on potential public benefits derived from advanced technologies developed through cross-border cooperation, especially in the realm of global health and environmental issues.

**BIS response:** BIS has considered this impact and notes that existing licensing policies are designed to be flexible, enabling authorization of certain types of collaboration when warranted, such as to maintain supply chains, assuming the risks of diversion to prohibited end uses are sufficiently mitigated.

**Topic 6:** A commenter noted that the United States will be hurt by not having access to technology developed in China and the United States may be left behind in the technology race because it will be harder to share information needed for technological development.

**BIS response:** The EAR controls do not restrict the importation of items from China. However, BIS understands that this commenter likely means that because U.S. companies will be restricted in the types of items they will be able to export, reexport, or transfer to or within China or Macau and the types of end uses or end users they can engage with in China or Macau, it may be more difficult to collaborate with parties in China and Macau. BIS does not seek to disrupt existing supply chains through this rulemaking. These controls are necessary to protect national security and have been tailored in as focused a way as possible to affect this result.

**Topic 7:** A commenter noted that when some People's Republic of China (PRC) semiconductor foundries buy semiconductor manufacturing equipment, they may (without BIS authorization) resell part or the entire semiconductor production line to an entity that makes military products. The commenter expressed doubt that the U.S. Government would be able to control how the semiconductor equipment will be used after it is shipped to China. It is vital that much stricter controls be implemented.

**BIS response:** BIS acknowledges that transfers within China or Macau are a concern, but the existing EAR requirements, including the controls imposed in the October 7 IFR, conditions on BIS licenses, and the license requirement imposed by §§ 744.21 and 744.22 for such transfers (in-country), already impose an authorization requirement for these types of transfers. In addition, equipment exporters typically have staff on-site to assist in operating the semiconductor manufacturing

equipment. Further, PRC Import Certificates are required for certain licenses, which facilitates U.S. Government oversight in identifying diversion. BIS is continually assessing how these efforts can be strengthened to address this issue of concern.

#### *ECCN 3B090*

BIS summarizes below the comments received on ECCN 3B090 and highlights how these comments are addressed in the new controls added in this SME IFR in ECCNs 3B001 and 3B002. Additional discussion of the specific revisions made to ECCNs 3B001 and 3B002 can be found in sections C.1 and C.2 of this rule, respectively. The removal of ECCN 3B090 is discussed in section C.3, and revisions to ECCNs 3D001 and 3E001 are discussed in section C.4.

**Topic 8:** BIS received various comments on the addition of ECCN 3B090. Some commenters raised concerns over certain commodities that fell under ECCN 3B090 if they believed that there is foreign availability of the same technology. Several commenters highlighted areas in which they thought additional clarifications or changes were needed to the 3B090 control parameters.

**BIS response:** As a general matter, BIS believes that the revisions made to the Commerce Control List (CCL) in this SME IFR respond to the concerns raised in response to the October 7 IFR for CCL-based controls for semiconductor manufacturing items. This SME IFR removes ECCN 3B090 and makes conforming changes to ECCNs 3B001, 3B002, 3D001, and 3E001, as BIS determined that use of existing ECCNs would facilitate global compliance and enforcement. Because of the removal of ECCN 3B090 and the other changes in the SME CCL-based controls implemented, the comments submitted in response to the October 7 IFR on ECCN 3B090 and related software and technology under ECCNs 3D001 and 3E001 are generally no longer applicable. BIS encourages these commenters to review the SME IFR revisions to the CCL, along with the conforming changes made to other parts of the EAR and submit any additional comments that may be warranted. BIS also encourages public comment on any changes in foreign availability since the October 7 IFR.

**Topic 9:** A commenter noted that ECCN 3B090.a.1 under-controls the types of equipment at issue and could be available from non-U.S. manufacturers. This commenter also requested BIS add the words "or electroless" after "electroplating" to ECCN 3B090.a.1. This commenter noted that the control does not refer to



“electroless” plating, which is an alternative means to enable the selective cobalt process described in ECCN 3B090.a.5. In other words, equipment for depositing an alloy of cobalt through electroless plating is also equipment that is specific to the production of semiconductors at 14 nm nodes or smaller.

*BIS response:* This SME IFR removes ECCN 3B090.a.1 and adds these items to the new ECCN 3B001.d.1. BIS accepts this commenter’s recommendation. BIS has also added a note to ECCN 3B001.d.1 to clarify that this control applies to semiconductor wafer processing equipment, but not necessarily other equipment that may nevertheless be designed for cobalt electroplating or cobalt electroless-plating deposition.

*Topic 10:* A commenter noted that ECCN 3B090.a.2 applies to tools available outside the United States used to produce mature node semiconductors. This commenter requested BIS remove the words “or tungsten” in ECCN 3B090.a.2 or, in the alternative, remove ECCN 3B090.a.2 completely because ECCN 3B090.a.8 covers the same scope of equipment. ECCN 3B090.a.2 controls “chemical vapor deposition equipment capable of deposition of cobalt or tungsten fill metal having a void/seam having a largest dimension less than or equal to 3 nm in the fill metal using a bottom-up fill process.” The inclusion of the words “or tungsten” in this control appears to be a mistake because equipment capable of chemical vapor deposition of tungsten has been in use for producing semiconductors at the 90nm and larger technology nodes for more than two decades. To fix this apparent error, the words “or tungsten” could be removed. Another option would be to remove ECCN 3B090.a.2 because the equipment described in the paragraph are all already within the scope of the tools described in ECCN 3B090.a.8, which describes the equipment for cobalt fill.

*BIS response:* BIS has removed ECCN 3B090.a.2 and adds related items to ECCN 3B001.d.2. BIS has also revised the scope of the control to provide greater specificity on the types of tungsten-based capabilities subject to control. The new ECCN 3B001.d.2 also includes the phrase “Equipment designed for” at the beginning of ECCN 3B001.d.2 and removes the phrase “capable of” and adds in its place the phrase “by performing” in ECCN 3B001.d.2.a to make the control parameter more precise. BIS encourages commenters that submitted comments on ECCN 3B090 to submit any

additional comments they consider relevant.

*Topic 11:* A commenter noted that ECCN 3B090.a.6 applies to tools available outside the United States used to produce mature node semiconductors. This commenter requested BIS remove ECCN 3B090.a.6 because it is not limited to the production of advanced-node ICs and ECCN 3B090.a.8 already controls the types of equipment apparently intended to be controlled by the ECCN. ECCN 3B090.a.6 controls “physical vapor deposition equipment capable of depositing a cobalt layer with a thickness of 10 nm or less on a top surface of a copper or cobalt metal interconnect.” BIS apparently inadvertently worded the control in such a way that it is not limited to equipment specific to the production of advanced-node ICs. That is, the control text is not limited in scope to the production of cobalt interconnects on semiconductors at the 14 nm or smaller technology nodes. Rather, it applies equally to equipment that is widely used to produce mature node ICs (e.g., at the 65 nm technology node) that have been in production for more than a decade.

*BIS response:* This SME IFR removes ECCN 3B090.a.6 and, unlike other ECCN 3B090 controls, does not re-establish a similar control under ECCN 3B001.d. The objective of former ECCN 3B090 was to focus controls on items used in the production of advanced-node ICs. Based on feedback from industry, including from this commenter, BIS agrees that ECCN 3B090.a.6 did not effectively tailor the scope of control to this objective, and as a result BIS has decided not to re-establish this control at this time.

*Topic 12:* A commenter requested BIS remove ECCN 3B090.a.7 and add alternative text, which would be clearer and better achieve the intended objectives of the October 7 IFR.

*BIS response:* This IFR removes ECCN 3B090.a.7 and adds controls on these commodities to ECCN 3B001.d.12. BIS has not adopted this commenter’s recommendations but continues to study the controls to ensure appropriate coverage. BIS encourages commenters that submitted comments on ECCN 3B090 to submit any additional comments they consider relevant.

*Topic 13:* A commenter noted that ECCN 3B090.a.11 applies to tools available outside the United States used to produce mature node semiconductors. This commenter requested BIS revise slightly ECCN 3B090.a.11 so that it is limited in scope to equipment specific to producing

advanced-node ICs. Although BIS apparently intended this control to only apply to equipment specific to producing advanced-node ICs, the commenter believes the control is worded in such a way that it also applies to tools that have been used for more than a decade to produce mature node ICs. Instead, the language would need to be slightly revised so that it is focused only on the atomic layer deposited fill process.

*BIS response:* This SME IFR removes ECCN 3B090.a.11 and adds new controls on these commodities to ECCN 3B001.d.11. BIS has not adopted this commenter’s recommendations but continues to study the controls to ensure appropriate coverage. BIS encourages commenters that submitted comments on ECCN 3B090 to submit any additional comments they consider relevant.

#### *SME End-Use Control Under § 744.23(a)(4) (Former § 744.23(a)(1)(v) and (a)(2)(v))*

The following is a summary of public comments regarding § 744.23 and BIS’s responses thereto. Additional discussion about § 744.23 can be found in section C.11 of this rule.

*Topic 14:* Many commenters argued that the end-use control set out in § 744.23(a)(2)(v) of the October 7 IFR (and now in § 744.23(a)(4)) is too broad, expressing concern about unintended consequences for the “development” and “production” of legacy ICs.

*BIS response:* BIS agrees that this provision is overbroad and has narrowed the product scope to any item subject to the EAR and specified on the CCL. Allowing continued development and production of indigenous SME in China would erode the effectiveness of the end-use controls in § 744.23(a)(2). However, BIS believes that this narrowed scope will capture the parts, components, and accessories for SME that are of greatest concern.

*Topic 15:* Several commenters expressed concern that the end-use control set out in § 744.23(a)(2)(v) of the October 7 IFR (and now in § 744.23(a)(4)) goes far beyond the advanced production objectives of the October 7 IFR by prohibiting exports of even EAR99 designated items to China for basic semiconductor development and production applications. These commenters warned against cutting off U.S.-based producers of EAR99 items from large segments of the global semiconductor supply chain or risking the loss of long-held supply positions to non-U.S. and producers of raw materials from China.

*BIS response:* Neither the October 7 IFR nor this SME IFR cut off U.S.-based suppliers of EAR99 items from the global semiconductor supply chain, and BIS disagrees with these commenters' characterization of the scope of these end-use controls. BIS notes that it has narrowed the "Product Scope" specified in § 744.23(a)(4) to items subject to the EAR specified on the CCL, and the "End-Use Scope" is now narrowed to the "development" or "production" of certain CCL-listed, Category 3 front-end SME in either Macau or a destination specified in Country Group D:5. This said, the end-use control under § 744.23(a)(4) is not related to the "development" or "production" of ICs or other semiconductor items. Further, there is no general end-use control on the export, reexport, or transfer (in-country) of EAR99 items to China or Macau when destined only for use in the "development" or "production" of non-"advanced-node ICs," absent other prohibited end uses or end users.

*Topic 16:* A commenter noted that including ECCN 3B991 significantly broadens the scope of § 744.23(a)(4) (former § 744.23(a)(2)(v)) beyond items only used for semiconductors. This commenter requests BIS to provide clarity as to why the rule should restrict exports of "parts," "components," or "equipment" for the development or production of these types of equipment that are not related to semiconductor device manufacturing.

*BIS response:* BIS disagrees with this commenter's characterization of the controls. Specifically, BIS is not aware of items in ECCN 3B991 that are unrelated to semiconductor device manufacturing. However, BIS welcomes additional comments identifying specific Category 3, Group B ECCNs that are unrelated to semiconductor device manufacturing, and which may warrant consideration for exclusion from § 744.23(a)(4). Also, BIS clarifies in this rule that the product scope of § 744.23(a)(4) covers any items subject to the EAR specified on the CCL (not just "parts," "components," or "equipment") when destined for use in the "development" or "production" of SME specified in the listed ECCNs under § 744.23(a)(4).

*Topic 17:* A commenter noted that controlling EAR99 materials for use in China's semiconductor industry unnecessarily harms early stages of semiconductor supply chains that feed a wide range of commercial applications. This commenter believes that former § 744.23(a)(1)(v) and (a)(2)(v) do not distinguish between suppliers at different stages of the semiconductor supply chain and treats basic material

suppliers equally to advanced IC suppliers, subjecting all to an effective ban on exports to China when for use in Group 3B ECCN equipment.

*BIS response:* BIS disagrees with the commenter's characterization of these controls. The end-use control under § 744.23(a)(4) (former § 744.23(a)(2)(v)) does not capture items that are merely "used" by Group 3B ECCN items, but rather only items used in the "development" or "production" of specified Group 3B ECCN items. For example, § 744.23(a)(4) would not control the shipment of CCL items to be used in or consumed by "front-end integrated circuit "production" equipment" specified in a Group 3B ECCN in an IC production setting, assuming the equipment is not involved in the "development" or "production" of "advanced-node integrated circuits," as that term is now defined in § 772.1. Similarly, these sections do not prohibit providing spare parts or materials for 3B ECCN items (again, assuming the 3B items are already "developed" or "produced"). In addition, this rule eases the compliance burden associated with license requirements arising from § 744.23(a)(4) controls by providing a TGL in supplement no. 1 to part 736 for entities headquartered in the United States or in a destination specified in Country Group A:5 or A:6 that are not majority-owned by an entity headquartered in either Macau or a destination specified in Country Group D:5.

*Topic 18:* A commenter noted that controls are catching items that are purely used for civil applications. This commenter noted that initial processing steps for basic silicon wafers can involve semiconductor production equipment and processes employed for solely commercial applications, such as photovoltaic cells and battery technologies.

*BIS response:* BIS disagrees with this commenter's characterization of the controls. Section 744.23(a)(2) only controls items destined for the "development" or "production" of ICs. The controls do not generally capture the "development" or "production" of photovoltaic cells or battery technologies simply because such activity involves semiconductor production equipment. If the commenter is referring to the "development" or "production" of basic silicon wafers or ICs (other than "advanced-node ICs"), including those that are subsequently used in these types of commercial applications (and not any of the end uses described in § 744.23), these items similarly fall outside the scope of § 744.23. If BIS has

misunderstood the commenter's characterization, additional comments may be submitted in response to this SME IFR or guidance may be sought directly from BIS, including in the form of an Advisory Opinion request to BIS pursuant to § 748.3(c) for clarification.

*Topic 19:* A commenter noted that the semiconductor end-use control in § 744.23(a)(4) (former § 744.23(a)(2)(v)) could potentially apply to shipments of U.S.-origin EAR99-designated raw materials to non-U.S. fabricators of parts for Group 3B ECCN equipment, if the non-U.S. fabricator intends to export at least one of its products, which are not otherwise subject to the EAR, to China. The commenter recommends BIS address these circumstances in its revision to the October 7 IFR or in BIS published guidance.

*BIS response:* This rule narrows the product scope of § 744.23(a)(4) (former § 744.23(a)(2)(v)) to items subject to the EAR and specified on the CCL. Authorization would be required if there is "knowledge" at the time of export, reexport, or transfer (in-country) that an item on the CCL will ultimately be used (including by incorporation into another item such as a "part" or "component") in the "development" or "production" of specified Group 3B ECCN equipment in Macau or a destination specified in Country Group D:5. This commenter should also review BIS's responses to Topics 42 through 45, below, for additional guidance on the scope of § 744.23(a)(4). Consistent with its response to Topic 43, BIS notes that an export, reexport, or transfer (in-country) of a replacement "part" or "component" destined for incorporation into Group 3B equipment in Macau or a destination specified in Country Group D:5 that is already "developed" and "produced" (e.g., finished equipment that is already in operation in an integrated circuit production facility) would not fall within the scope of § 744.23(a)(4) and would need to be analyzed separately under other end-use controls, particularly § 744.23(a)(2).

*Topic 20:* A commenter requested that BIS limit the scope of § 744.23(a)(4) (former § 744.23(a)(2)(v)) by exempting (1) legacy SME and SME components, (2) exports to companies located in China but headquartered in the United States and allied partners, and (3) exports of items to China intended for incorporation into SME or SME components that will be utilized outside of China.

*BIS response:* In this rule, BIS has added a TGL in paragraph (d)(1) of supplement no. 1 to part 736, which permits companies headquartered in the United States or in Country Group A:5



or A:6 countries to continue to use suppliers in China and other destinations in Country Group D:5 and Macau, subject to certain conditions. BIS believes this TGL will mitigate or resolve the concerns raised by this commenter. See the discussion in section C.6 of this rule for additional information about this TGL.

**Topic 21:** A commenter noted that the SME restrictions under § 744.23(a)(4) (former § 744.23(a)(2)(v)) will create a strong incentive for companies operating in China, including those headquartered in the United States and allied partners, to replace U.S.-origin items with non-U.S. alternatives. When U.S.-origin components cannot be designed out, it will create a major incentive for companies to move their supply chains out of China even when U.S. and allied companies are the economic beneficiaries of these supply chains.

**BIS response:** BIS has established a new TGL in in paragraph (d)(1) of supplement no. 1 to part 736 to permit the activities described by this commenter and mitigate the commenter's concerns. Separately, BIS agrees with the commenter's suggestion that difficulty procuring certain U.S.-origin items may incentivize companies to move supply chains out of China. Separate from release of the October 7 IFR, companies are also analyzing the risks of continued operation in China related to economic coercion and intellectual property theft, among other concerns.

**Topic 22:** A commenter noted that given lower production costs in China, without modification, the SME restriction under § 744.23(a)(4) (former § 744.23(a)(2)(v)) will result in greater fabrication costs for "Western" semiconductor equipment manufacturers and the entire electronics sector in the United States. These costs do not appear to be balanced by a substantial strategic benefit.

**BIS response:** The national security imperative for the October 7 IFR and this subsequent rulemaking is explained in section C and, with respect to the "development" and "production" of indigenous SME, immediately below in response to Topic 23. BIS's effort to regulate only the most advanced and important technologies with these rules reflects a focus on national security without interfering with commercial trade any more than necessary to accomplish national security objectives.

**Topic 23:** Several commenters requested that BIS publish a list of fabs of concern. These commenters noted that to reduce uncertainty around what facilities fall under the scope of the

October 7 IFR, BIS should consider publishing a list of fabs manufacturing advanced nodes covered by the October 7 IFR. These comments noted that BIS should publish an affirmative list of "semiconductor fabrication facilities" that engage in covered "development" or "production" of NOT AND (NAND), logic, or dynamic random-access memory (DRAM) integrated circuits. These commenters noted that the Entity List should be used instead of relying on § 744.23 or § 744.6. Several commenters noted that untold hours of due diligence efforts by companies could be eliminated if BIS would simply identify the covered entities. These commenters also noted that the due diligence conclusions reached by one exporter may be different from another, even for the same PRC end user, leading to an unlevel playing field.

**BIS response:** BIS is aware of, and generally shares, industry's preference that BIS use the Entity List where possible in lieu of end-use controls under § 744.23 or "U.S. person" controls under § 744.6. BIS reflected this approach in the October 7 IFR by identifying 28 entities involved in the use of advanced computing items or supercomputers and intends to add additional entities to the Entity List as they are identified and approved by the End-User Review Committee (ERC). The use of the Entity List for this purpose will, like the Military End-User (MEU) List, be non-exhaustive, so exporters, reexporters, and transferors will still need to do their own due diligence when dealing with parties not identified on the Entity List with a footnote 4 designation. This SME IFR does not add any additional entities to the Entity List, but a separate Entity List rule that is on public inspection October 17, 2023, and publishing in the **Federal Register** of October 19, 2023, adds multiple entities that the ERC determined should be added to the Entity List. That rule, "Entity List Additions," adds 13 entities to the Entity List for acquiring and attempting to acquire U.S.-origin items in support of China's military modernization. Specifically, these entities have developed large AI models and AI chips for defense purposes using U.S.-origin items. They are also given a footnote 4 designation, which means that items subject to the EAR, for the purpose of these license requirements, include foreign-produced items that are subject to the EAR pursuant to § 734.9(e)(2) of the EAR. As the ERC identifies and approves additional entities, those entities will be added to the Entity List on a timely basis.

#### *Appropriate Scope of the SME Development and Production End-Use Control for Lower-Level Items*

**Topic 24:** A commenter requests that BIS remove ECCNs controlled only for Anti-Terrorism (AT) reasons, *i.e.*, 3B991 and 3B992, from § 744.23(a)(4) (former § 744.23(a)(2)(v)). The commenter noted that the removal of these AT-only ECCNs will prevent excessive and unnecessary use of unilateral controls and limit the impact of the October 7 IFR on legacy semiconductor manufacturing. The commenter noted that ECCNs 3B991 and 3B992 generally did not require a license to China prior to the October 7 IFR and have utility across the spectrum, including legacy manufacturing nodes.

**BIS response:** BIS disagrees with the commenter's characterization of the scope of controls. ECCNs 3B991 and 3B992 remain uncontrolled to China generally, and § 744.23 does not impose a license requirement for the export, reexport, or transfer (in-country) of a ECCN 3B991 or 3B992 item to Macau or a destination specified in Country Group D:5 unless the item is destined for one of the end uses specified in § 744.23(a)(1) through (4), such as the "development" or "production" of integrated circuits at a facility where "production" of "advanced-node integrated circuits" occurs, or for "development" or "production" of "front-end integrated circuit "production" equipment," and "components," "assemblies," and "accessories" specified in ECCN 3B001 (except 3B001.g, .h, and .j), 3B002, 3B611, 3B991 (except 3B991.b.2), or 3B992. If an exporter has "knowledge" that its 3B991 or 3B992 equipment will be used only at a facility that "produces" ICs at a legacy technology node but not "advanced-node ICs," § 744.23(a)(2) does not apply. Furthermore, § 744.23(a)(4) does not restrict the export of ECCN 3B991 and 3B992 items destined for use in the production of ICs. Rather, it only restricts these items (among all other items subject to the EAR and specified on the CCL) destined for use in the "development" or "production" of other SME (or "parts" or "components" therefor), which if indigenized would erode the effectiveness of BIS's end-use and list-based controls.

**Topic 25:** A commenter noted that it is very unlikely restrictions on the development or production of ECCN 3B991 and 3B992 items would ever be adopted by our allies and that these commodities and items used in their development and production are already widely available in China,

which means even if other countries were to add these controls on exports to China, the controls would still be ineffective.

**BIS response:** Consistent with ECRA, BIS prioritizes engagement with relevant governments to achieve multilateral coordination of controls, including through the Wassenaar Arrangement.

**Topic 26:** A commenter requests that the SME restriction under § 744.23(a)(4) (former § 744.23(a)(2)(v)) should not apply to the production of legacy SME or SME components. This commenter notes that the production of SME and SME components used for the manufacture of legacy semiconductor devices, which can generally be sent to China without a license under current multilateral and U.S. export controls (notwithstanding the October 7 IFR), can be permitted in China without affecting the ability of the United States to restrict advanced-node IC manufacturing in China.

**BIS response:** BIS believes that restricting the indigenization of ‘front-end integrated circuit “production” equipment,’ and items on the CCL therefor, is critical for the effectiveness of the end-use controls in § 744.23(a)(2). BIS welcomes additional comments on the scope of § 744.23(a)(4), including the identification of specific SME items (and related ECCNs) that are exclusively used in the manufacture of legacy-node ICs.

**Topic 27:** A commenter asked for clarification whether BIS intended to include the development or production in China of masks, reticles, and mask substrates within the scope of § 744.23(a)(4) (former § 744.23(a)(2)(v)). This commenter notes that the policy purpose of the rule appears to be focused on limiting the development and production in China of semiconductor production equipment, such as etch, deposition, inspection, and lithography tools. ECCNs 3B001.g, 3B001.h, 3B001.j, and 3B991.b.2, however, refer to various types of masks, reticles, and mask substrate blanks. This commenter notes that while these items are essential in the fabrication of semiconductors, these are not production “equipment” in the traditional sense of the word as they are developed in a process that immediately precedes the front-end integrated circuit fabrication process. If BIS did not intend to affect exports for use in producing masks, reticles, or mask substrates, this commenter asks that BIS amend the provision to exclude them from its scope.

**BIS response:** BIS agrees and has excluded masks and related items from

the end-use scope of § 744.23(a)(4). However, BIS notes that end-use control § 744.23(a)(2) could still capture a mask, reticle, or mask substrate excluded from § 744.23(a)(4) if it is subject to the EAR and destined for use in the “development” or “production” of ICs at a facility that “produces” “advanced-node integrated circuits” (or if the technology node of the ICs is unknown) in China or Macau.

**Topic 28:** A commenter noted that photomasks are not “parts,” “components,” or “equipment,” so they are outside the scope of § 744.23(a)(4) (former § 744.23(a)(2)(v)). This commenter seeks BIS’s confirmation that no license would be required for exports, reexports, or transfers (in-country) of items subject to the EAR that are intended for use in photomask manufacturing in China because photomasks, even if specified in ECCN 3B001 or 3B991, are not captured within the end-use scope of § 744.23(a)(4).

**BIS response:** Under the EAR, a photo mask is “equipment.” ECCN 3B991 controls “[e]quipment not controlled by 3B001 for the manufacture of electronic “parts,” “components,” and materials (See List of Items Controlled), and “specially designed” “parts,” “components” and “accessories” therefor.” ECCN 3B991.b.2.a controls “[f]inished masks.” Nonetheless, BIS has excluded these items from the end-use scope of § 744.23(a)(4) as masks are not used in the “development” or “production” of SME. See the response to Topic 27, above, for additional guidance on the treatment of masks, reticles, and mask substrates under § 744.23(a)(4) and other end-use controls.

#### *Appropriate Scope of SME End-Use Controls for Back-End Testing Equipment*

**Topic 29:** A commenter requested that BIS exclude items that are exclusively for use in back-end activities, including ECCN 3A992.a or 3B992.b.4, and EAR99 items, from §§ 744.23(a)(1) and (2) (former § 744.23(a)(1)(iii) and (iv), (a)(2)(iii) and (iv)) and 744.6(c)(2). This commenter noted that these controls impose licensing obligations over the export, reexport, and transfer to or within China or Macau of their post-production test equipment, whether subject to the EAR or not, if they would be for use in the “production” of semiconductors “at” a covered facility. This commenter noted that this location-specific control makes no policy sense with respect to their post-production test equipment, because their products have no bearing on the key characteristics of advanced-node ICs

described in the definition of “advanced-node integrated circuit” (former § 744.23(a)(1)(iii)(A), (B), or (C)).

**BIS response:** BIS agrees. Consistent with BIS’s October 7 IFR Frequently Asked Questions (FAQ) II.A.1, which may be found at <https://www.bis.doc.gov/index.php/documents/product-guidance/3211-2023-1-25-updated-faqs-for-oct-7-advanced-computing-and-semiconductor-manufacturing-equipment-rule/file>, posted on January 25, 2023, this SME IFR adds a new paragraph (a)(5) (Back-end exclusion) to § 744.23 and specifies under this paragraph that for purposes of § 744.23(a)(2), the term “production” does not apply to back-end steps, such as assembly, test, or packaging that do not alter the integrated circuit technology level. If there is a question at the time of export, reexport, or transfer (in-country) about whether a manufacturing stage is “back-end” or whether a back-end activity “alter[s] the semiconductor technology level,” you may submit an Advisory Opinion request to BIS pursuant to § 748.3(c) for clarification.

**Topic 30:** A commenter noted that semiconductor automated test equipment (ATE) should be considered “use” equipment rather than “production” equipment. The commenter requested BIS confirm in its response to the comments that semiconductor ATE are, for purposes of the controls at issue in §§ 734.9(e), 744.6(c)(2), and 744.23, “use” equipment and not “production” equipment, as these terms are defined in the EAR. The commenter noted that the EAR define “use” as meaning the “operation, installation (including on-site installation), maintenance (checking), repair, overhaul, and refurbishing.” This commenter’s ATE is used to check already-produced items and is not part of the semiconductor production process that is the policy concern that BIS is seeking to address in implementing the controls in § 734.9(e), § 744.6(c)(2), or § 744.23.

**BIS response:** BIS does not agree that testing equipment is “use” equipment because testing is specifically listed under the definition of “production” in § 772.1 of the EAR. However, this commenter’s concerns should be addressed by the new exclusion for certain “back-end” equipment under new paragraph § 744.23(a)(5).

**Topic 31:** A commenter requested that BIS exclude certain items from § 744.23(a)(4) (former § 744.23(a)(2)(v)), particularly ECCN 3B992.b.4.b and related EAR99 items for use in developing or producing other ECCN 3B992.b.4.b items, that are exclusively



for use in back-end activities. This commenter believes that controlling the export to China or Macau of these items is an unintended impact of the October 7 IFR. These controls have a far bigger and even more unintended impact on this commenter's U.S. suppliers of parts and components that ship to China for use in producing ECCN 3B992.b.4.b items. This commenter also requested that if a carve out for certain ECCN 3B992.b.4.b items cannot be added for "back-end" activities, BIS should issue a temporary general license (TGL) to allow continued development and production of these items in China.

**BIS response:** BIS agrees that the principal underlying the exclusion for back-end testing in § 744.23(a)(5) should also apply to § 744.23(a)(4), see discussion below under section C.11. BIS has also added a new TGL to allow companies to continue exporting less restricted SME "parts," "components," or "equipment" to destinations in Country Group D:5 countries (including China) and Macau if the recipient is "developing" or "producing" "parts," "components, or "equipment" at the direction of a U.S. or Country Group A:5 or A:6-headquartered company that is not majority owned by an entity headquartered in either Macau or a destination specified in Country Group D:5.

#### *Technology Nodes Under Advanced Node "Facility" End-Use Controls*

**Topic 32:** A commenter noted that the phrase "technology node" in §§ 744.6 and 744.23 does not have a consistent technical meaning and could refer to the smallest resolvable feature at varying fields or pitch characteristics. To illustrate the complexity of this issue, clever proprietary techniques (e.g., double patterning, multi-pass) can make equipment exclusively intended for larger features capable of producing smaller features.

**BIS response:** BIS agrees. This SME IFR adds a new Note to the definition of "advanced-node integrated circuits" in § 772.1 to define the term "technology node" to refer to the Logic Industry "Node Range" figure described in the "International Roadmap for Devices and Systems," 2016 edition ("More Moore" White Paper). BIS welcomes comment on this definition in response to this SME IFR.

**Topic 33:** A commenter noted that BIS needs to define half-pitch or otherwise describe how one determines whether a DRAM IC "uses a production technology node of 18 nm half-pitch or less for purposes of §§ 744.6(c)(2)(i) and 744.23(a)(2)." The commenter noted that the October 7 IFR did not do so and

requested that BIS publicly identify the correct methodology.

**BIS response:** BIS agrees. This rule revises §§ 734.4(a)(3), 744.6(c)(2)(i) and (ii), and 744.23(a)(2) to refer to a new definition of "advanced-node integrated circuits" set forth in § 772.1. This definition specifies the calculation methodology for determining whether a DRAM IC uses a "production technology node of 18 nanometer half-pitch or less."

**Topic 34:** A commenter requested that BIS draw a distinction between semiconductor fabrication processing test equipment, which does warrant control, and semiconductor screening test equipment, which does not. This commenter noted that there are two primary categories of semiconductor test equipment: (1) semiconductor fabrication processing test equipment, which provides measurements for process control parameters and ensures that Chemical Vapor Deposition (CVD), Physical Vapor Deposition (PVD), lithography, and other pieces of equipment and additive manufacturing processes work as required to produce the semiconductor; and (2) semiconductor screening test equipment, which provides measurements used to establish if individual manufactured devices satisfy quality requirements and can be shipped. This commenter noted that former items are necessary to the proper operation of a semiconductor fabrication plant, and include essential elements used during the fabrication process to produce a viable semiconductor.

**BIS response:** This comment is addressed by the addition of new paragraph § 744.23(a)(5) in this SME IFR, described in greater detail below in section C.11. BIS has created a distinction between these two types of test equipment. As described by this commenter, semiconductor fabrication processing test equipment appears to include equipment that is used in front-end integrated circuit fabrication steps, while semiconductor screening test equipment would appear to be used only in back-end production steps. If the semiconductor screening test equipment is used exclusively in back-end production stages that do not alter the technology level of the ICs produced, the equipment does not trigger the end-use scope in paragraphs § 744.23(a)(2) or § 744.6(c)(2)(i) and (ii), because this type of test equipment qualifies for the back-end exclusion under paragraph § 744.23(a)(5) and the exclusion in § 744.6(d)(3).

#### *SME End-Use Controls and Their Relationship to Nodes of Concern*

**Topic 35:** A commenter noted that § 744.23(a)(4) (former § 744.23(a)(2)(v)) overreaches because it is not tied to the end use of concern. This commenter noted that because § 744.23(a)(4) is so broad, vendors cannot supply any U.S.-origin equipment or parts that will be used in the "development" or "production" in China or Macau of any "parts," "components," or "equipment" specified under ECCN 3B001, 3B002, 3B090, 3B611, 3B991, or 3B992, even though such activity does not require a license under § 744.23(a)(2).

**BIS response:** BIS has narrowed both the product scope and end use scope of § 744.23(a)(4) in light of U.S. national security concerns. That section has been narrowed to items subject to the EAR and specified on the CCL by this rule. As noted above, § 744.23(a)(4) restricts the "development" and "production" of items, including node-agnostic front-end tools, that would erode the effectiveness of other end-use controls on the "development" or "production" of advanced-node ICs. Section 744.23(a)(4) also more broadly inhibits the development of an indigenous ecosystem in Macau or destinations specified in Country Group D:5 for the "development" and "production" of front-end SME, which supports the longer-term effectiveness of controls with respect to advanced-node IC controls. As noted elsewhere, BIS welcomes comment on whether there are specific front-end SME items that are used exclusively in legacy production. Moreover, to address the commenter's concerns about the breadth of this control, BIS is issuing a new TGL in this SME IFR. See discussion in section C.6 of this rule.

**Topic 36:** A commenter asked BIS to limit the scope of § 744.23(a)(4) (former § 744.23(a)(2)(v)) to higher-end advanced-node capabilities and exclude items used in legacy "production." The commenter also suggested that BIS consider limiting the end-use restrictions under § 744.23(a)(4) on exports of 3B991 items to China or Macau to items capable of use in higher-end advanced-node capabilities and exclude items in paragraphs of 3B991 that are not designed for semiconductor manufacturing.

**BIS response:** BIS partially adopted this recommendation by narrowing both the product scope and end-use scope of paragraph (a)(4), but not by technology level. See discussion in section C.11.c. BIS also notes that the presumption of denial license review policy leaves room for an applicant to make a case for



approval, unlike a policy of denial. Also note that many of the parameters for SME in ECCN 3B001 have been changed from “capable of” to “designed for.” Separately, BIS welcomes additional feedback from this commenter, or any other interested party, on whether specific 3B991 items warrant exclusion from the scope of § 744.23(a)(4), for reasons including if they are not used in IC manufacturing or are exclusively used at legacy production technology nodes.

#### *Requested Changes or Clarifications to § 744.23*

**Topic 37:** A commenter noted that difficulty in identifying fabs of concern will lead to overcompliance or delays relating to obtaining licenses that may not be needed. This commenter noted that in situations where a company is unable to determine whether a fabrication facility is a covered fabrication facility, the most likely course of action is (i) to over-comply and abandon a transaction for fear of potential non-compliance or (ii) seek a license and risk loss of the business as a result of delay, even when ultimately the fabrication facility in question is not a covered fabrication facility.

**BIS response:** BIS shares concerns that the new § 744.23 from the October 7 IFR may result in over compliance or delays related to obtaining unnecessary licenses. BIS recognized similar issues with the expanded MEU List and § 744.21, but after BIS developed outreach materials, including FAQs for the application of § 744.21, these trends were reduced considerably. BIS anticipates that the addition of § 744.23 and the expanded U.S. person control under § 744.6 will follow a similar pattern.

#### *Narrow the Scope of § 744.23 Fabrication Controls*

**Topic 38:** A commenter noted that there does not appear to be a national security basis for excluding equipment sales to NAND memory fabricating facilities in China because NAND memory is so widely available on the commercial market. This regulation will harm U.S. companies and jobs while boosting the market share gain of our allies where the majority of NAND memory is manufactured.

**BIS response:** BIS disagrees with this commenter’s characterization of the controls. The end use control under § 744.23 and the “U.S. persons” control under § 744.6 both now reference the newly defined term “advanced-node integrated circuits” added by the SME IFR. That term specifies NAND memory as part of the criteria as well as the level

of NAND memory that is a concern (*i.e.*, NOT AND (NAND) memory integrated circuits with 128 layers or more). This higher threshold for NAND memory was intended to distinguish between the type of items easily obtained on the open market and the types of NAND memory that represent national security and foreign policy concerns under the October 7 IFR.

#### *Changes to License Review Policies*

**Topic 39:** A commenter requested BIS replace the current one-size-fits-all presumption of denial for all license requests (under § 744.23(d)) with a review policy that accounts for the specific items involved and their potential for direct use in sensitive or advanced-node IC manufacturing.

**BIS response:** BIS revised the license review policy under § 744.23(d) to include a presumption of approval license review policy when there is a foreign-made item available that is not subject to the EAR and performs the same function as the item subject to the EAR, and for end users headquartered in the United States or a destination in Country Group A:5 or A:6, that are not majority-owned by an entity headquartered in either Macau or a destination specified in Country Group D:5. As a result, the presumption of denial license review policy does not cover all transactions. In addition, the license review will take into account factors including technology level, customers, and compliance plans.

**Topic 40:** A commenter noted that their company’s very existence requires being able to obtain a license to continue to engage in their activities in China that would otherwise be restricted under § 744.23(a)(4) (former § 744.23(a)(1)(v)) and that the financial impact of these new regulations to this company is massive. This commenter noted that the company’s engineering team has been advised to cease all operations and the company’s supply chain team has no work because all exports have been put on hold. The company depends on receiving authorization to export parts, software, and technology for the development and production of ECCN 3A991.b.1.c crystal pullers, used to produce ingots and wafers, to China.

**BIS response:** Upon request, BIS has authorized certain types of transactions requiring a license under § 744.23(a)(4) with authorization letters (ALs). BIS is not able to publicly confirm whether this specific commenter obtained an AL because of confidentiality requirements under ECRA. The ALs reflect a policy to impact “development” and “production” of SME by indigenous

companies located in China. BIS has transitioned away from using ALs to address these types of issues to BIS licenses and other more standard means of authorization.

**Topic 41:** One commenter expressed concern that the time required to obtain a license would eliminate one of its key competitive advantages for supplying EAR99 items. The commenter feared that even if they were granted a license, the delays caused by the application process for each order of their commodities would eliminate their lead-time advantage over its foreign competitors.

**BIS response:** Recognizing the availability of EAR99 items from multiple sources, BIS has narrowed the product scope of § 744.23(a)(4) to items subject to the EAR and specified on the CCL, which eliminates the license requirement for EAR99 items for SME. Separately, BIS acknowledges that exports that can be made without a license are more quickly executed. However, because a purchase order is not required under the EAR to apply for a BIS license, it is possible to obtain licenses in advance, which may help address the potential for delays. BIS also notes that licenses are generally valid for a four-year period. Once the license is in place, a company may ship with the same speed at which it did previously when the items could be exported without a license. There is also the possibility that the transaction may be eligible for a TGL or exclusion. The license applicant would need to know the particulars of the transaction to apply for a BIS license.

#### *Additional Guidance on the Scope of SME End-Use Controls*

**Topic 42:** A commenter stated it is inconsistent that § 744.23(a)(4) (former § 744.23(a)(1)(v)) does not establish a license requirement for AT-controlled end-item equipment when not for “development” or “production” in the China or Macau of any “parts,” “components,” or “equipment” specified under ECCN 3B001, 3B002, 3B090, 3B611, 3B991, or 3B992, but a license is required for items destined for use in the “development” or “production” of “parts” or “components” for AT-controlled end-item equipment.

**BIS response:** BIS does not believe this result is inconsistent with the policy objectives of the October 7 IFR. The purpose of § 744.23(a)(4) is to prevent the indigenous “development” or “production” of items having national security implications that could erode or circumvent the effectiveness of other end-use controls,

particularly § 744.23(a)(2). This objective is not affected by the export, reexport, or transfer (in-country) of AT-controlled equipment that is already developed or produced, assuming the equipment is not destined for a prohibited end use (e.g., those enumerated in § 744.23(a)(1) and (2)).

*Topic 43:* A commenter stated that § 744.23(a)(4) (former § 744.23(a)(2)(v)) does not include “incorporation” of EAR99 items into Category 3B items. This commenter notes that the wording in § 744.23(a)(4) prohibits the “development” or “production” of Category 3B items. This commenter believes that if BIS wanted to prohibit the incorporation of EAR99 items (e.g., screws and tubing) into Category 3B items, it should have prohibited the incorporation of any item that is subject to the EAR into a Category 3B item under § 744.23(a)(4), just as it did in § 744.23(a)(2).

*BIS response:* BIS has narrowed the product scope in paragraph (a)(4) to items subject to the EAR and specified on the CCL. This said, former § 744.23(a)(2)(v) would have captured the incorporation of an EAR99 item into a Category 3B item if the incorporation occurred during the “development” or “production” of the 3B item. The term “production” is defined to include all production stages, such as *manufacture*, *integration*, and *assembly*, each of which could encompass the activity described by the commenter, depending on the details of the scenario. However, as noted below, BIS omitted the term “incorporation” from § 744.23(a)(4) to avoid capturing incorporation of an item (e.g., a replacement part) subject to the EAR into a 3B item *after* that 3B item is already “developed” or “produced.” Such incorporation would be addressed by other end-use controls. For this reason, incorporation of an EAR99 item into an item that is already “produced” (e.g., a tool already in operation in volume production) is not within the scope of § 744.23(a)(4). These types of transactions are instead addressed under end-use controls in § 744.23(a)(2). At the same time, BIS reiterates that § 744.23(a)(4) still captures items destined for use in all stages of the “development” or “production” of such 3B equipment, up to and including qualification for ultimate use. For example, § 744.23(a)(4) would capture exports of CCL items destined for use by a research and development facility involved in qualifying unfinished 3B equipment as part of the final “development” or “production” stages for that equipment. By contrast, § 744.23(a)(4) does not capture exports of CCL items (among others) destined

for the operation, installation (including on-site installation), maintenance (checking), repair, overhaul, or refurbishing of equipment that is already “developed” and “produced.” Other provisions in § 744.23(a)(2) may be applicable to this scenario.

*Topic 44:* A commenter asked BIS to confirm that a U.S. person’s shipment to China, from outside the United States, of foreign-origin items that are not subject to the EAR, but which are destined for use in developing or producing items described in a Group 3B ECCN, are not subject to EAR licensing requirements under § 744.23(a)(4) (former § 744.23(a)(2)(v)). This commenter noted that they asked for this clarification because § 744.23(a)(4) prohibits the unlicensed export, reexport, and transfer of items subject to the EAR if there is knowledge the items will be for the development or production of commodities described in Group 3B ECCNs. The commenter clarified that this question assumes that there are no Footnote 1 or Footnote 4 entities or other § 734.9 issues involved in the transaction. This commenter noted that the difference in scope indicates that a U.S. person’s shipment of items not subject to the EAR for use in producing Group 3B items in China is not covered by the new rules.

*BIS response:* Section 744.23 does not control the export, reexport, or transfer (in-country) of items not subject to the EAR, however, § 744.6 of the EAR does. Depending on the classification of the foreign item and the specific end use of the item, § 744.6(c)(2)(ii) or (iii) may impose a license requirement for items that will be for the development or production of commodities described in Group 3B ECCNs. However, foreign persons engaged in such conduct or directing U.S. persons to do so may be viewed as engaging in activities contrary to U.S. national security or foreign policy interests. Accordingly, the End-user Review Committee could add such foreign person to the Entity List. For example, see BIS’s publication of Entity List additions published on December 19, 2022 (87 FR 77505).

*Topic 45:* A commenter asked BIS to clarify whether a license would be required under § 744.23(a)(4) (former § 744.23(a)(2)(v)) to export an item subject to the EAR to a third party Original Equipment Manufacturer (OEM) in a third country, where there is “knowledge” at the time of the export that the item would be incorporated into a foreign-made 3B991 item (not subject to the EAR) by the OEM in the third country, and that the OEM would then send the 3B991 item to a manufacturer of Category 3 items in China. This

commenter noted that § 744.23(a) does not expressly state that the “End Use Scope” includes the end use of the item into which the exported item is incorporated, and this differs from other EAR provisions, such as the foreign direct product (FDP) rules under §§ 734.9 and 744.23(a)(1)(ii)(B), which expressly include “incorporated into” as part of the end-use scope.

*BIS response:* This commenter did not clarify whether they intended the “Category 3” items (i.e., the items being developed or produced in China) to mean only items in Category 3A (e.g., ICs) or other items in Category 3 (e.g., items in Category 3B). Assuming the commenter refers to Category 3A items, more information would be required to determine whether the 3B991 item is “destined for” a prohibited end use, e.g., under § 744.23(a)(2). However, if the commenter refers to Category 3B items in ECCN 3B001 (except 3B001.g, .h, and .j), 3B002, 3B611, 3B991 (except 3B991.b.2), or 3B992, a license would be required to export the initial item subject to the EAR (if specified on the CCL) to the third-party OEM. Unless captured by an exclusion in § 744.23(a)(5), § 744.23(a) requires a license when there is “knowledge” at the time of export, reexport, or transfer (in-country) that an item subject to the EAR described in paragraphs (a)(1) through (4) is “destined for” a destination, end use, or type of end user described in paragraphs (a)(1) through (4) of § 744.23. Paragraph (a) of this section captures items when “you have ‘knowledge’ at the time of export, reexport, or transfer (in-country) that the item is destined for a destination, end use, or type of end user described in paragraphs (a)(1) through (4) of this section. . . .” Paragraph (a)(4) then describes the activities that meet the end-use scope of the prohibition, specifically the “development” or “production” of ‘front-end integrated circuit ‘production’ equipment’ and ‘components,’ ‘assemblies’ and ‘accessories’ specified in certain Category 3, Group B ECCNs. Read together, these provisions prohibit the export, reexport, or transfer (in-country) when you have ‘knowledge,’ at the time of export, that the item subject to the EAR that is identified on the CCL ‘is destined for’ the ‘development’ or ‘production’ of ‘front-end integrated circuit ‘production’ equipment’ and ‘components,’ ‘assemblies’ and ‘accessories’ of the covered SME set forth in paragraph (a)(4). This ‘knowledge’ that the item ‘is destined for’ (either in its original form or as subsequently incorporated into a

foreign-made product) a prohibited activity is sufficient to trigger the applicable license requirement at the time the item subject to the EAR is exported, reexported, or transferred (in-country). For this reason, BIS does not consider the incorporation of the item into a foreign-made product not subject to the EAR to be relevant to the § 744.23 license requirement. BIS officials have provided similar and consistent guidance on these types of upstream transactions that involve “knowledge” that the item “is destined for” a prohibited end use, including in the context of other part 744 end uses. As to the relevance of the term incorporation, BIS uses this term in §§ 734.9(e) and 744.23(a)(1)(ii)(B) to capture items for use in a foreign-produced item or a “supercomputer,” respectively, that may already be “produced.” As indicated in response to other comments in this rule, the absence of the term incorporation from § 744.23(a)(4) avoids capturing the incorporation (outside the context of “production”) of, e.g., replacement parts or components into SME that is already produced. If the SME is otherwise involved in a separate prohibited end use (e.g., it is used in the “production” of “advanced-node integrated circuits”), the transaction must be analyzed separately with respect to any other relevant provisions of the EAR. Note: In this scenario, such knowledge similarly triggers a license requirement for the items identified in § 744.23(a)(4) when a person knows at the time of export that an item subject to the EAR and specified on the CCL “is destined for” (either in its original form or as subsequently incorporated into a foreign-made ECCN 3B991 product) a party listed in supplement no. 4 to part 744 of the EAR.

#### *Other Requested Clarifications to § 744.23*

**Topic 46:** A commenter asked BIS to confirm how far back up the supply chain the licensing obligation extends for an export of an item to a third party for use in developing or producing a whole new foreign-made item that will only later be used in the development or production of ICs at a covered facility. This commenter described a scenario in which someone exports an item to produce a foreign-made item, which will be used to produce another foreign-made item, which will later be used at a covered fabrication facility, and asked whether the original export is caught by the new licensing obligations if there is knowledge that this supply chain will ultimately result in the creation of an item used to produce ICs

at a covered fabrication facility. The commenter further inquired about the transfer outside the United States of items subject to the EAR to produce foreign-made items when only a small percentage of the foreign-made items will be for use at a covered fabrication facility. Specifically, the commenter asked whether BIS takes the position that 100% of all such transfers require a license by the foreign parties even when only an unknown small percentage will be used in the production of items that will ultimately be destined to covered fabrication facilities.

**BIS response:** If the exporter has “knowledge” at the time of export, reexport, or transfer (in-country) that the item is ultimately destined for a prohibited end use, the license requirement would extend to the original export, reexport, or transfer (in-country). If not properly authorized, then a subsequent party would be prohibited from relying on *de minimis* for an item that was involved in an EAR violation pursuant to § 764.2(e). See also BIS response to Topic 45.

**Topic 47:** A commenter noted that clarification of § 744.23(a)(2)(iv), which has been redesignated as paragraph (a)(2)(ii) in this SME IFR is needed if this imposes an affirmative duty to know or otherwise be subject to a license requirement. The commenter asks whether this means that a license is required when a company is exporting products to China and cannot confirm whether the semiconductor fabrication facility is producing products that meet the specified criteria in paragraphs (a)(2)(iii)(A) through (C), which has been redesignated as paragraphs (a)(2)(i) and (ii) in this SME IFR.

**BIS response:** Yes, if the exporter, reexporter, or transferor has “knowledge” that an item identified in § 744.23(a)(2)(iv), which has been redesignated as paragraph (a)(2)(ii) in this SME IFR will be used in the “development” or “production” of ICs in China or Macau, but does not have “knowledge” of whether such ICs are or will be “advanced-node integrated circuits,” a license is required. This BIS response would also apply to a similar scenario in which an exporter, reexporter, or transferor has positive “knowledge” that their 3B/C/D/E products are used by some number of entities engaged in legacy development/production, but they do not know how 100% of their product is used (e.g., because they are an upstream distributor and cannot keep track of all of it). A license is required to ship 100% of the items, unless the exporter, reexporter, or

transferor can determine which items of the 100% will not be used in the “development” or “production” of ICs in China or Macau, which would be excluded from the license requirement under § 744.23(a)(2)(iv), redesignated as paragraph (a)(2)(ii) in this SME IFR.

#### *Separate SME End-Use Controls Into Their Own Section and Provide More Specificity on Items Covered*

**Topic 48:** A commenter requested that it would be easier to navigate the controls in § 744.23, if the prohibitions under § 744.23(a)(2) and (4) (former § 744.23(a)(1)(iii) and (a)(2)(iii) and (a)(1)(v) and (a)(2)(v)) were in separate sections. Also given the broad scope of § 744.23(a)(4), this commenter requested creating new items level paragraphs under ECCNs 3B001, 3B002, 3B090, 3B611, 3B991, and 3B992 that identify the types of equipment that BIS intends to control under § 744.23(a)(4) rather than “catching” such a broad spectrum of semiconductor manufacturing and test equipment.

**BIS response:** BIS has reformatted the controls in § 744.23(a) by combining the product scope and end use scope into one paragraph for each type of item: (a)(1) “supercomputers,” (a)(2) “advanced-node integrated circuits,” and (a)(4) semiconductor manufacturing equipment. With respect to § 744.23(a)(4), BIS clarifies here and elsewhere in this rule that a license is required for items subject to the EAR specified on the CCL when destined to an entity headquartered and located in either Macau or a destination specified in Country Group D:5 for use in the “development” or “production” of “front-end integrated circuit “production” equipment” and certain “components,” “assemblies” and “accessories” in ECCN 3B001 (except 3B001.g, .h, and .j), 3B002, 3B611, 3B991 (except 3B991.b.2), or 3B992. If the exporter “does not know” the technology node for which a 3B item will be used (see § 744.23(a)(2)), then that is the only situation where the catch-all license requirement would apply for the export, reexport, or transfer (in-country). All the other end-use controls in § 744.23(a) now have specific product scopes.

#### *Acceptable Level of Due Diligence for § 744.6(c)(2)*

**Topic 49:** A commenter requested BIS clarify whether it would be sufficient under § 744.6 to have an end user certify that the exported item will not be used in “the “development” or “production” in China of any “parts,” “components,” or “equipment” specified under ECCN



3B001, 3B002, 3B090, 3B611, 3B991, or 3B992.

*BIS response:* BIS interprets this comment to refer to the end-use control under § 744.23(a)(4) (former § 744.23(a)(2)(v)), as there is no U.S. person control under § 744.6(c)(2) with the characteristics described by the commenter. Obtaining an end-user statement, even if not required under the EAR, is a good compliance practice, but is not by itself determinative. The exporter, reexporter, or transferor must evaluate all the information that it obtains during the normal course of business to determine if it has “knowledge” that the item is ultimately destined for use in a prohibited activity. BIS also reminds exporters, reexporters, and transferors that they may not self-blind to avoid these license requirements and that the act of self-blinding would be a violation of the EAR.

*Topic 50:* A commenter expressed concern about the October 7 IFR’s restrictions on U.S. persons’ activities under § 744.6(c)(2), including at semiconductor fabrication facilities and branches of certain multinational companies in China that are headquartered in the United States, South Korea, Taiwan, and other destinations. The application of such restrictions to the “shipping, transmitting, or transferring (in-country) of any item not subject to the EAR to development [of] a chip at a proscribed level” is extremely broad.

*BIS response:* This SME IFR adds an exclusion in § 744.6(d)(4) for companies headquartered in the United States or in a destination specified in Country Group A:5 or A:6 and not majority-owned by an entity that is headquartered in either Macau or a destination specified in Country Group D:5. The exclusion will authorize “U.S. persons” to engage in activities that would otherwise be prohibited under § 744.6(c)(2)(i) through (iii).

#### *Information Needed From Other Parties To Comply With These Controls*

*Topic 51:* A commenter noted that most companies that ship items caught under 3B, 3C, 3D, or 3E, will not be able to determine whether items are going to a prohibited semiconductor fabrication facility, e.g., for companies that supply components or materials, as there may be many layers of purchasing between themselves and any covered fabrication facility engaged in the “development” or “production” of NAND, logic, or DRAM integrated circuits. This commenter noted that it is also possible that some companies will conclude that the new controls require exporters,

reexporters, and transferors of such items to find out the answer to this question for each shipment or for group transactions.

*BIS response:* BIS is aware that the end-use control under § 744.23(a)(2)(iv), which has been redesignated as paragraph (a)(2)(ii) in the AC/S IFR, may present a compliance challenge for certain exporters, reexporters, or transferors, but this control is important for protecting U.S. national security and foreign policy interests. Companies in China that are transparent with their capabilities with exporters, reexporters, and transferors will see a reduced impact of § 744.23(a)(2)(iv), now redesignated as paragraph (a)(2)(ii), and those that are not transparent will see an increased impact of § 744.23(a)(2)(ii).

#### *Temporary General License and Supply Chain Authorization Letters (ALs)*

*Topic 52:* A commenter noted that the TGL played a major role in avoiding disruptions to supply chains and that the TGL was critical to maintain continuing operations and avoid major business disruptions. This commenter also requested that the TGL be extended for at least one year to allow time to build the capacity to relocate supply chain activities outside of China.

*BIS response:* BIS interprets this comment’s reference to the “TGL” to refer to the supply chain ALs issued in the wake of the October 7 IFR. BIS addresses issues related to the existing TGL for 3A090 and related items in this second IFR. Separately, with respect to SME, BIS has issued a new TGL for less restricted SME “parts,” “components,” or “equipment” to address other more significant supply chain disruptions arising from the October 7 IFR. BIS’s experience with the original TGL was that it played a helpful role in the initial transition to the October 7 IFR, but that it was only used by a small set of companies engaged in making ECCN 3A090 ICs and related items. Prior to April 7, 2023, when that TGL expired, these exporters, reexporters, and transferors were able to obtain other authorizations as needed to continue with these types of activities in China or Macau. For this reason, BIS does not intend to reinstate the TGL that expired.

*Topic 53:* A commenter noted that the TGL from the October 7 IFR did not go far enough to eliminate all disruptions in semiconductor supply chains. This commenter noted that by forcing the termination of “non-listed activities” that had already been occurring in China, the U.S. Government caused disruptions and supply chain related delays.

*BIS response:* BIS regrets that companies may have paused or ceased activities that were not ultimately restricted by the October 7 IFR and encourages industry to engage with BIS to confirm the scope of controls when needed. Separately, BIS agrees that the original TGL was not broad enough in scope to address other unintended consequences of the October 7 IFR, including those related to § 744.23(a)(4) (former § 744.23(a)(2)(v)). However, BIS addressed these issues with ALs as warranted in consideration of supply chains, and BIS has subsequently issued licenses to address other specific unintended consequences related to the supply chains of U.S. and allied-destination companies. This issue is further addressed with the issuance of a new TGL and an exclusion in this SME IFR. The TGL is further discussed in section C.6 of this rule and the exclusion to § 744.23 is discussed in section C.11.

*Topic 54:* Many commenters noted that industry needs longer-term and more permanent solutions than the ALs to relieve the unintended consequences of the October 7 IFR. These comments covered concerns both with respect to multinational fabrication facilities as well as companies that employ foreign nationals from China in the “development” or “production” of Category 3B items. With respect to multinational fabrication facilities, one commenter requested that the ALs be extended with a two-year validity period.

*BIS response:* BIS agrees that longer term authorizations are warranted, and that the one-year ALs were intended merely as a short-term bridge. The new TGL in this SME IFR, which is valid until December 31, 2025, temporarily authorizes specific activities with certain conditions and requirements, as applicable. BIS also notes that exporters, reexporters, and transferors may apply for BIS licenses to obtain long-term predictability or amendments to their Validated End Users (VEU) authorizations.

#### *Other Ways That BIS Can Consult With Industry To Better Improve the Effectiveness of Policies in This Area*

*Topic 55:* A commenter noted that ECRA section 1765 (50 U.S.C. 4824) requires BIS to submit to Congress by the end of the year a report on the implementation of ECRA during the previous year. Subsection (a)(2) requires that the annual report include a description of “the impact of [all that year’s] controls on the scientific and technological leadership of the United States.” In addition, ECRA section

1752(1) (50 U.S.C. 4811(1)) states that the United States should “use export controls only after full consideration of the impact on the economy of the United States.” Similarly, ECRA section 1752(3) states that the impact of the implementation of new controls on U.S. leadership and competitiveness “must be evaluated on an ongoing basis and applied in imposing controls . . . to avoid negatively affecting such leadership.” This commenter believes that it is important for BIS to obtain formal industry input on this specific topic so that its report to Congress is accurate and complete.

**BIS response:** BIS agrees that it may be beneficial to allow for public input to assist BIS in preparing this annual report. BIS intends in the next annual cycle for this report to publish a notice to solicit comments in the area. BIS will then evaluate the amount and type of public input provided to the agency to determine if continuing to publish this type of notice is worthwhile in the future.

*Advanced Computing FDP Rule—  
§ 734.9(h)*

**Topic 56:** A commenter noted that the new § 734.9(h) Advanced computing FDP rule is not needed because it is already covered by pre-existing § 734.9(b) National Security FDP rule.

**BIS response:** BIS does not agree. There is some cross over between these two FDP rules, but the Advanced Computing FDP rule extends to certain items that the National Security FDP rule does not, so the Advanced Computing FDP rule is necessary to address the national security and foreign policy concerns included in the October 7 IFR.

*Meaning and Scope of ‘Support’ Under  
U.S. Person Control in § 744.6(b)(6)*

**Topic 57:** A commenter noted that the exact definition of “support” is not clear under the October 7 IFR. BIS should consider reconfiguring certain definitions to factor in business processes in the logistics sector. This commenter requested that BIS publish additional guidance on how logistics firms can understand and apply “support” requirements to their supply chains without inducing severe operational disruptions.

**BIS response:** The term ‘support’ is defined for purposes of § 744.6 under paragraph (b)(6). BIS also notes that the term ‘support’ is not a new term added in the October 7 IFR. However, based on the comments received in response to the October 7 IFR, BIS agrees that additional clarifications should be made on what types of activities involving

‘support’ are excluded, such as certain logistics activities. The AC/S IFR states here that for logistics companies, the prohibited act is the actual delivery, by shipment, transmittal, or transfer (in-country), of the item and the act of authorizing the same.

**Topic 58:** A commenter noted that it is unclear whether U.S. person “support” for semiconductor fabrication is limited to shipping, transmitting, transferring or servicing items for advanced PRC fabrication facilities, or if it also includes the broad scope of “support” in § 744.6(b), including performing any contract, service, or employment that you “know” may assist or benefit advanced semiconductor fabrication in China.

**BIS response:** BIS’s answer to FAQ IV.A2, published on its website, specifies that it only applies to § 744.6(c)(2). As such, it is intended to provide exhaustive guidance for paragraph (c)(2), but not otherwise limit the scope of § 744.6(b) or apply to other uses of the term facilitate or facilitation found elsewhere in the EAR. However, BIS also cautions “U.S. persons,” as well as any other person, that may have acquired technology or software source code in the United States, that the subsequent release of that “technology” or software source code to PRC nationals would be regulated under the EAR as a release, and if subject to the October 7 controls or the controls in either the AC/S IFR or SME IFR, will require a license.

*What activities are considered  
‘facilitating’ under the U.S. person  
control?*

**Topic 59:** Some commenters noted that there is not an adequate definition of “facilitation” under § 744.6 or any other EAR provision that provides the industry with sufficient detail to comply with the law and request licenses when necessary.

**BIS response:** For purposes of § 744.6(b)(6)(iii), BIS intends facilitating such shipment, transmission or transfer (in-country) to means to make easier by helping to bring about. Facilitation does not include administrative, clerical, legal advice, or regulatory advice activities, but does include any other activity that is directly responsible for bringing about such a prohibited activity is covered under facilitation.

**Topic 60:** One commenter asked BIS to assess eight types of activities and provide guidance on whether they amount to “facilitation.”

**BIS response:** BIS would not consider the following five activities to be “facilitation,” provided that they are performed by administrative or clerical

staff and are undertaken only to carry out a decision maker’s decision to export, reexport, or transfer (in-country) items that may require a license under the EAR: provision of back-office services that help the business to function, such as IT services, financial services, or human resources support; order intake and processing; invoicing and cash or receivables collection activities; legal advice and counseling on the requirements of the EAR or other compliance obligations; and referring any matters or opportunities to non-U.S. persons. Two other activities raised by the commenter would not require a license because although they are a type of facilitation that would otherwise be prohibited, they have been authorized and, as such, the “U.S. person” could engage in these types of authorized facilitation activities: trade compliance clearance of licensed shipments or other authorized activities with PRC semiconductor customers including Entity List parties and providing administrative and limited servicing support for shipments to Entity List parties authorized by BIS licenses.

Finally, with respect to “management oversight by U.S. persons located in China or abroad,” BIS would need additional information on whether the oversight involves decisions to export, reexport, or transfer (in-country) items that require a license under the EAR. If it did, the oversight as a type of facilitation would require a license.

**Topic 61:** A commenter asked whether knowledge of a violation is a requirement to trigger the license requirements under § 744.6.

**BIS response:** Yes, the “U.S. person” control under § 744.6 is triggered by “knowledge.” This SME IFR revises the paragraph (c)(2) introductory text to make this point more clearly.

**Topic 62:** A commenter asked whether BIS will presume that a company’s executives (e.g., chief executive officer (CEO), chief financial officer (CFO), chief operating officer (COO), President, Board of Directors) “facilitated” a restricted transaction, even if those company executives were “U.S. persons” but did not have knowledge of a violative transaction. The commenter further asks BIS to provide distinguishing examples.

**BIS response:** These types of scenarios would be case specific and may lead to different outcomes depending on the nature of the company’s work and the role that the official plays in that company and in the activity at issue. If, as posited by the commenter, the official later asserted that they lacked the requisite knowledge, BIS would assess what the official knew or should have



known with respect to the prohibited activity. Limiting the information that would normally be coming to these officers may result in a violation of the EAR, if it is determined these steps were taken to try to avoid EAR license requirements. For officers that do receive information about transactions that may otherwise be prohibited under § 744.6, BIS would look at the role of that corporate officer and whether their decisions on behalf of the company would otherwise be prohibited under one of the ‘support’ activities under § 744.6.

*Topic 63:* A commenter asked BIS to identify what compliance methods the agency recommends for U.S. persons employed by multinational companies that engage in restricted transactions listed under § 744.6.

*BIS response:* First, the entity and natural persons all should identify whether they are “U.S. persons” as defined in § 772.1. If the company is a “U.S. person,” then all activities of that company will need to be reviewed in accordance with the “U.S. person” control. If it is only certain natural persons at a company that are “U.S. persons,” then those “U.S. persons” need to be aware of the § 744.6 end-use controls and comply with those as applicable, which may involve simply excluding themselves from those types of activities or obtaining a BIS license as needed. BIS notes that the SME IFR published elsewhere in this issue of the **Federal Register** also adds several exclusions to § 744.6(d), which may be applicable as well.

### C. Expansion of Export Controls on Semiconductor Manufacturing Items

This section describes the specific EAR revisions adopted in this IFR, which expand and refine the October 7 IFR with respect to semiconductor manufacturing and SME and addresses the national security concerns that led to an expansion of the country scope for SME and related software and technology.

#### Overview of EAR Amendments

Principally, this rule removes ECCN 3B090 and replaces and expands its provisions in ECCNs 3B001 and 3B002. This rule also harmonizes revisions to controls on associated software and technology therefor. Among other harmonizing changes, BIS revises the heading of ECCN 3B001 by adding the phrase “and equipment for manufacturing semiconductor manufacturing equipment” to reflect the expanded scope of items in this ECCN. BIS also adds a definition for “Extreme Ultraviolet” (“EUV”) to § 772.1 because

this term is now used within multiple ECCNs under 3B001, 3B002, and 3D003. Specific changes to ECCNs 3B001, 3B002, 3D001, and 3E001 as well as information about the removal of ECCN 3B090 are described below, in sequential order of the ECCNs; see sections C.1 through C.4 of this rule. The rule also imposes 0% *de minimis* for ECCN 3B001.f.1.b.2.b (specified lithography equipment), discussed in section C.5 of this rule. The addition of a new TGL is discussed in section C.6. BIS also notes restrictions under § 740.2(a)(9) on the use of license exceptions for any of these ECCNs, discussed in section C.7 of this rule.

BIS has determined that the newly added items under ECCNs 3B001 and 3B002, and associated software and technology therefor, are, with limited exceptions, only used for fabricating logic ICs with non-planar transistor architecture or with a “production” ‘technology node’ of 16/14 nanometers or less. These items are controlled for National Security (NS) and Regional Stability (RS) reasons, and those changes are discussed in sections C.8 and C.9, respectively. As noted above, although these items are not yet formally controlled under a multilateral regime, the urgency and criticality of the U.S. national security concerns stated in section A dictate control pending adoption through the Wassenaar Arrangement. Each of the items added with this SME IFR are key to production of “advanced-node integrated circuits,” such as, advanced memory integrated circuits that will be necessary to enable new platforms to leverage advanced analytics or autonomy in ways that will be essential to the twenty-first century battlefield. Their inclusion in these controls reflect BIS’s focused approach based on the critical national security applications of the most advanced ICs. For those that already hold a license that covers the expanded scope of controls, there is no need to reapply for a license.

This rule also revises the activities of “U.S. persons” controls in § 744.6 as well as § 744.23 regarding “supercomputer,” “advanced-node integrated circuits,” and semiconductor manufacturing equipment end use controls, and those changes are discussed in sections C.10 and C.11, respectively. The rule also adds two new definitions to § 772.1, “advanced-node integrated circuits” and “extreme ultraviolet,” which are discussed in section C.12.

#### National Security Considerations for Expanding Controls and Country Scope

This rule also expands the country scope of the controls for the items in this rule from “China and Macau” to “Macau or destinations specified in Country Group D:5” of supplement no. 1 to part 740. BIS imposed these new controls to protect U.S. national security interests by restricting China’s military modernization efforts and degrading its ability to violate human rights, as well as the national security threats posed by other arms embargoed countries. The advanced computing integrated circuits (ICs), semiconductor manufacturing equipment (SME) essential to producing advanced-node ICs, and items used to further supercomputing capacity controlled through the October 7 IFR have profound implications for the future of international security. They are critical for the further development of not only weapons of mass destruction (WMD) but also many concerning emerging technologies such as advanced AI systems, autonomous weapons, cyberweapons, hypersonics, as well as high-tech surveillance applications which China has stated it will use in its next generation military capabilities and to engage in activities contrary to democratic values. These advances will result in future challenges to the United States’ and partners’ militaries as China pushes towards its goal of fielding a military by 2027 designed to deter U.S. intervention in a future cross-Strait crisis.

The destinations described in Country Group D:5 and Macau are those BIS has previously identified as being destinations of national security concern, WMD developing countries, diversion countries of concern or as a country subject to a U.S. arms embargo or sanction, United Nations Security Council sanction, or countries that the Secretary of State has determined to be State Sponsors of Terrorism. Adding a license requirement for destinations in Country Group D:5 (which includes all the countries in Country Group E, plus countries such as Afghanistan, Belarus, China, Iraq, Libya, Syria, Russia, and Venezuela) will provide greater visibility into the flow of semiconductor manufacturing equipment, associated development and production technology and software, as well as specially designed parts, components and assemblies therefor to other countries and their intended end uses. As noted in the February 6, 2023 Annual Threat Assessment of the U.S. Intelligence Community, “foreign intelligence services are adopting cutting-edge technologies—from

advanced cyber tools to unmanned systems to enhanced technical surveillance equipment—that improve their capabilities and challenge U.S. defenses.” The report noted that potential advances in semiconductors and high-performance computers by adversaries, including China, could pose challenges to the U.S. military.

China in its latest Five-Year Plan is attempting to generate a self-sufficient design and production capacity of “advanced-node integrated circuits” to create “secure and controllable” indigenous supply chains. The United States—as a leader in the SME industry—must focus on and regulate the next increment of semiconductor development by controlling the export of critical SME and associated development and production technology and software, as well as activities of U.S. persons that support such SME development and production in countries of concern. These measures will help ensure “advanced-node ICs” are not going to end users and end uses of concern, which would threaten national security.

The expanded country scope is implemented through amendments to §§ 742.4 and 742.6, national security and regional stability reasons for control respectively, which are discussed in sections C.8 and C.9 of this rule.

#### 1. Revisions to ECCN 3B001

This section discusses the amendments to ECCN 3B001. No changes were made to ECCN 3B001 paragraphs .b, .e, or .g through .j. The heading of ECCN 3B001 is revised by adding the phrase “and equipment for manufacturing semiconductor manufacturing equipment” after the word “materials.”

The License Requirement table is revised to apply NS:2 controls only to items listed in ECCN 3B001 prior to adoption of this rule. Newly listed ECCNs (3B001.a.4, c, d, f.1.b, and k to p, described below) are controlled for NS, RS, and AT reasons, as identified in new paragraphs under §§ 742.4(a)(4) (NS) and 742.6(a)(6) (RS), which applies only to Macau and destinations specified in Country Group D:5. All of the items in the ECCN continue to be controlled for Anti-Terrorism (AT) reasons and subject to an AT:1 license requirement. The License Requirement table is revised to identify these reasons for control.

License Exception Shipments of Limited Value (LVS) eligibility is revised by removing eligibility for semiconductor manufacturing equipment specified in ECCN 3B001.a.4, c, d, f.1.b, k to p. Only license

exceptions found in § 740.2(a)(9) of the EAR may be used for specified semiconductor manufacturing equipment such as this.

ECCN 3B001.a.4 is added to control equipment designed for silicon (Si), carbon doped silicon, silicon germanium (SiGe), or carbon doped SiGe epitaxial growth with specified parameters. BIS notes that the material referred to in 3B001.a.1 do not contain silicon and that the material in ECCN 3B001.a.4 includes silicon and silicon plus other specified elements. Items that are specified in ECCN 3B001.a.4 are controlled for NS reasons under § 742.4(a)(4) and RS reasons under § 742.6(a)(6)(i). Consistent with § 742.4(b)(2) and (10), items specified in ECCN 3B001.a.4 will be reviewed consistent with license review policies in § 744.23(d) of the EAR, except applications will be reviewed on a case-by-case basis if no license would be required under other provisions in part 744 of the EAR. The equipment included in ECCN 3B001.a.4 uses high-vacuum or inert environment technology to ensure highly clean and controlled conditions during the epitaxial growth process.

ECCN 3B001.b is revised to add “Semiconductor wafer fabrication” in front of “equipment designed for ion implantation” in order to limit the application of this control to specific equipment.

ECCN 3B001.c previously was used to control anisotropic plasma dry etching that was decontrolled in 2015 due to availability from countries that do not participate in the Wassenaar Arrangement. ECCN 3B001.c.1 is now added to establish controls on equipment designed for dry etching, including isotropic dry etching as specified (ECCN 3B001.c.1.a) and anisotropic dry etching as specified (ECCN 3B001.c.1.b and c.1.c). The atomically precise equipment described in this rule is only available from Wassenaar Arrangement Participating States. Isotropic dry etching is required for lateral etching. Gate-All-Around Field Effect Transistors (GAAFETs) and similar 3D structures with different brand names require lateral etching with high selectivity. Atomic layer etching enhanced by the features described in ECCN 3B001.c.1.a., b., and c. produce the vertical edges required in high-quality, leading-edge advanced devices and structures, including GAAFET and similar 3D structures. Note 1 is added to inform the public that ECCN 3B001.c includes etching by ‘radicals’, ions, sequential reactions, or non-sequential reactions. Note 2 is added to inform the public of the types of etching that are

included in the scope of ECCN 3B001.c.1.b, e.g., etching using RF pulse excited plasma, plasma atomic layer etching, and plasma quasi-atomic layer etching. In addition, two technical notes are added to define two terms used in the control text of ECCN 3B001.c.1.a, c.2, and ECCN 3B001.c Note 1, which are ‘silicon germanium-to-silicon (SiGe:Si) etch selectivity’ and ‘radical,’ now defined in Technical Notes 1 and 2, respectively.

ECCN 3B001.c.2 is added to control equipment designed for wet chemical processing and having a largest ‘silicon germanium-to-silicon etch selectivity’ ratio of greater than or equal to 100:1. The definition for the term ‘silicon germanium-to-silicon (SiGe:Si) etch selectivity’ is found in Technical Note 1 to ECCN 3B001.c. Wet chemical processing is used for a variety of purposes, from chemical removal of material (wet etching) to deposition of material (electroplating), to sample cleaning, to the creation of patterns on the surface using optical lithography techniques. This particular equipment is controlled because of its high etch selectivity ratio, which is important to IC fabrication at more advanced technology nodes.

ECCN 3B001.d historically was applied to control deposition equipment that was then decontrolled because of technological advancements and foreign availability. The paragraph was reserved but is now being utilized again to control semiconductor wafer fabrication deposition equipment used today to manufacture advanced-node ICs. Contacts and lower interconnects are the smallest and most critical wiring layers delivering current to transistors, and due to continued geometric scaling of logic semiconductors, these metal layers now create a bottleneck to transistor performance. The items added to ECCN 3B001.d.3, d.4, d.5, and d.8 include advanced fabrication equipment designed for metal deposition of the barrier layer, liner layer, seed layer, or cap layer of metal interconnects.

ECCN 3B001.d.1 (former ECCN 3B090.a.1) is revised by adding the word “designed,” to better focus controls. This rule also revises the control to include “cobalt (Co) electroplating or cobalt electroless-plating deposition” in response to feedback from public comments. Electroplating has long been used to deposit metal on substrates in the semiconductor industry. In advanced-node IC manufacturing, a barrier layer such as cobalt (Co) is necessary to block the diffusion of copper into the surrounding material.

ECCN 3B001.d.2 (former ECCN 3B090.a.2) is revised by adding the phrase “equipment designed for” and replacing the phrase “capable of” with “by performing,” to better focus the controls. The phrase “capable of” was replaced because BIS determined the phrase could unintentionally capture equipment used to produce logic ICs at legacy technology nodes. Using “by performing” more precisely controls equipment that is used to produce logic ICs at the advanced technology node. Therefore, consistent with BIS’s focused approach to these controls and to aid with export control compliance, these controls are based on the designed performance of the equipment. In addition, periodic table symbols for elements are also added throughout this ECCN. Finally, BIS revised the scope of this control to provide greater specificity on the types of tungsten-based capabilities subject to control.

ECCN 3B001.d.3 (former ECCN 3B090.a.3) is revised by replacing “capable of fabricating” with “designed to fabricate,” for the reasons noted above in relation to ECCN 3B001.d.2, and by replacing “within” with “by multistep processing within a single chamber.”

ECCN 3B001.d.3.a (former ECCN 3B090.a.3.a) is revised by replacing “depositing a layer using” with “deposition of a tungsten layer, using an organometallic tungsten (W) compound” and replacing “between” with “greater than” and “less than.” Subparagraph 3B001.d.3.b (former ECCN 3B090.a.3.b) is revised by replacing “conducting a” with “a plasma process using hydrogen (H<sub>2</sub>),” and replacing “where the chemistries include” with “including hydrogen and nitrogen (H<sub>2</sub> + N<sub>2</sub>) or ammonia (NH<sub>3</sub>),” and adding periodic table symbols or names for elements in this subparagraph.

ECCN 3B001.d.4 contains descriptive introductory text that includes two common parameters that apply to all the paragraphs in ECCN 3B001.d.4, which establishes control of SME or systems designed for multistep processing in multiple chambers or stations and maintaining high vacuum (equal to or less than 0.01 Pa) or inert environment between process steps. Introductory text in ECCN 3B001.d.4.a (former ECCN 3B090.a.4) is revised by replacing “capable of” with “designed to fabricate,” for the reasons noted above in relation to ECCN 3B001.d.2. Clarifications are made to ECCN 3B001.d.4.a.1 through a.3 (former ECCN 3B090.a.4.a, a.4.b, and a.4.c), such as adding periodic table symbols or chemistry formulas and replacing

“between” with “greater than” and “less than.”

ECCN 3B001.d.4.b (formerly ECCN 3B090.a.5) is revised by cascading the control text into a header and two subparagraphs for easier readability and clarity. A note is retained that followed what had been ECCN 3B090.a.5 and indicating that the control does not apply to equipment that is non-selective.

ECCN 3B001.d.4.c (formerly ECCN 3B090.a.8) is revised by replacing “capable of” with “designed for,” for the reasons noted above in relation to ECCN 3B001.d.2 and tightening up other text referring to pressure and temperature in the related items paragraphs.

ECCN 3B001.d.4.d (formerly ECCN 3B090.a.9) controls equipment designed to fabricate copper interconnects, including those performing all the following processes: deposition of cobalt or ruthenium layer using an organometallic compound (see ECCN 3B001.d.4.d.1) and deposition of a copper layer using a physical vapor deposition technique (see ECCN 3B001.d.4.d.2).

ECCN 3B001.d.5 is added to control equipment designed for plasma enhanced chemical vapor deposition of carbon hard masks meeting specified parameters. As the feature size of semiconductor devices decreased, a carbon hard mask film with higher etching selectivity and higher transparency is required for manufacturing.

ECCN 3B001.d.6 (formerly ECCN 3B090.a.10) is revised to add “Atomic Layer Deposition (ALD)” to clarify the type of equipment that is designed for area selective deposition of a barrier or liner using an organometallic compound. Atomic layer deposition (ALD) equipment has become a critical enabler of today’s most advanced devices and the industry’s transition to 3D architectures. On the wafer substrate, the ALD processes build up material directly, a fraction of a monolayer at a time to build the thinnest, most uniform films possible. The self-limiting nature of the processes and the related capacity for conformal deposition are the basis for its importance as a 3D scaling enabler, such as in the fabrication of 3D DRAM, 3D NAND, and FinFET/GAAFET logic.

The ECCN 3B001.d.7 (formerly ECCN 3B090.a.11) control for Atomic Layer Deposition (ALD) equipment is revised by replacing the words “capable of” with “designed to” for the reasons noted above in relation to ECCN 3B001.d.2. BIS also revised the control to remove “cobalt,” which is addressed by other

revisions in ECCN 3B001.d.2. Further, BIS removed the phrase “void free fill” in favor of “fill an entire interconnect” to clarify that equipment designed only for ALD of a tungsten layer (rather than to fill an entire interconnect) or for ALD in channels of specified width) is not controlled. BIS also removed the phrase “having an aspect ratio greater than 5:1.”

ECCN 3B001.d.8 (formerly ECCN 3B090.a.7) controls certain ALD equipment of ‘work function metals,’ however the parameters are clarified to be more specific. A technical note that defines ‘work function metal’ is moved to this paragraph but remains unchanged.

ECCN 3B001.d.9 is added to establish control of spatial ALD equipment having a wafer support platform that rotates around an axis having any of the following: a spatial plasma enhanced ALD mode of operation, a plasma source, or a plasma shield or means to confine the plasma to the plasma exposure process region. These features help reduce unwanted particles in the deposition process to a degree needed for the fabrication of advanced-node ICs.

ECCN 3B001.d.10 is added to establish control of equipment designed for ALD or chemical vapor deposition (CVD) of plasma enhanced low fluorine tungsten films. This equipment is critical in filling voids in advanced-node device structures with higher and increasingly narrow aspect ratios, which minimizes resistance and improves performance.

ECCN 3B001.d.11 is added to control equipment designed to deposit a metal layer and maintain a specified vacuum or inert gas environment, including equipment designed for a chemical vapor deposition or cyclic deposition process by performing deposition of a tungsten nitride layer. This equipment is needed to achieve defect-free deposition of tungsten, which is critical to the production of advanced-node ICs.

ECCN 3B001.d.12 is added to establish control of equipment designed for depositing a metal layer and maintaining a specified vacuum or inert gas environment, including equipment designed for selective tungsten growth without a barrier and equipment designed for selective molybdenum growth without a barrier. This equipment enables the manufacture of contacts with significantly lower resistivity, which is important to the fabrication of advanced-node ICs.

ECCN 3B001.d.13 is added to establish control of equipment designed for depositing a ruthenium (Ru) layer using an organometallic compound, while maintaining the wafer substrate at



a specified temperature. The deposition of a Ru layer under the specified conditions is important to achieving lower resistivity interconnects needed for the fabrication of advanced-node ICs.

ECCN 3B001.d.14 is added to control deposition equipment assisted by remotely generated radicals enabling the fabrication of a silicon and carbon containing film having specified properties. This specific process promotes good cycle stability of the film, which is important in the fabrication of advanced-node ICs.

ECCN 3B001.d.15 is added to control equipment designed for void free plasma enhanced deposition of a low-k dielectric layer in gaps between metal lines with specified parameters. A low-k CVD barrier film reduces the dielectric constant (k) of copper damascene structures to lower capacitance (power consumption), which enables fabrication of more advanced integrated circuits.

ECCN 3B001.d.16 is added to control deposition equipment with capabilities similar to those described in new ECCN 3B001.d.14, but which also meets certain temperature requirements, has the capability to hold multiple vertically stacked wafers, and has certain injector configurations, as specified.

ECCN 3B001.f.1 “Align and expose step and repeat (direct step on wafer) or step and scan (scanner) equipment for wafer processing using photo-optical or X-ray methods” is revised to establish controls in ECCN 3B001.f.1.b for equipment that have a light source wavelength equal to or longer than 193 nm meeting certain parameters, and adding two paragraphs under ECCN 3B001.f.1.b.2 to capture items with a maximum ‘dedicated chuck overlay’ less than or equal to 1.50 nm, or greater than 1.50 nm but less than or equal to 2.4nm, respectively. The technical note for ECCN 3B001.f.1.b is also revised to add a definition for ‘dedicated chuck overlay.’ The equipment meeting the parameters in ECCN 3B001.f.1.b.2.b is not eligible for *de minimis* treatment with one exception as set forth in § 734.4(a)(3) of the EAR as described below in section C.5. This change recognizes the advancement of the state-of-the-art in immersion lithography equipment and the corresponding decrease in minimum resolvable feature (MRF) size of advanced-node ICs. This equipment is necessary to improve resolution by reducing the total edge placement error, which is a measure of the accuracy between pattern overlays on the same exposure mask level. The definition for “Extreme Ultraviolet” (“EUV”) is moved from the technical note located after ECCN 3B001.j.2 to

§ 772.1 as an EAR defined term, because the term is used in ECCNs 3B001, 3B002, and 3D003. The addition of this term to § 772.1 is described below in section C.12.

ECCN 3B001.k is added to establish controls on equipment designed for ion beam deposition or physical vapor deposition of multi-layer reflector for “EUV” masks. ECCN 3B001.l is added to establish controls on “EUV” pellicles and ECCN 3B001.m is added to establish controls on equipment for manufacturing “EUV” pellicles. Masks, reticles, and associated pellicles are critical components for EUV lithography, which itself enables fabrication of very small feature sizes used at more advanced production nodes. Masks for EUV lithography have many features that uniquely suit them for EUV lithography, e.g., they have a low thermal expansion low defect glass blank and operate in the reflection mode, whereas masks for 193 nm and 248 nm lithography technology operate in the transmission mode.

ECCN 3B001.n is added to establish controls on equipment designed for coating, depositing, baking, or developing photoresist formulated for “EUV” lithography, which as noted above is critical for production of advanced-node ICs.

ECCN 3B001.o is added to establish controls of semiconductor wafer fabrication annealing equipment with specified parameters. In the case of silicon wafers, annealing is often used to improve the surface roughness and crystal quality of the wafer. It can also be used to remove defects and impurities from the surface of the wafer. This removal is even more critical in the production of wafers used to fabricate advanced-node ICs given their smaller feature sizes.

ECCN 3B001.p is added to establish control of three types of semiconductor wafer fabrication cleaning and removal equipment.—Frequent removal of contaminants and wafer cleansing is critical during the manufacture of advanced-node integrated circuits. At advanced technology nodes any contaminant, unwanted particles or debris, in the nanometer range, can easily cause short circuits that would disable an IC.

ECCN 3B001.p.1 controls equipment designed for removing polymeric residue and copper oxide film and enabling deposition of copper metal in a vacuum (equal to or less than 0.01 Pa) environment. BIS notes that this control does not capture deposition equipment that is not elsewhere specified, but which may also have the capability described in the control.

ECCN 3B001.p.2 controls single wafer wet cleaning equipment with surface modification drying. BIS notes that this control is not intended to capture planarization equipment that may incorporate “cleaning” and “drying” steps as part of its overall process. Planarization is a process used in semiconductor manufacturing to polish wafers, rather than to clean wafers.

ECCN 3B001.p.3 controls equipment designed for dry surface oxide removal preclean or dry surface decontamination. As with ECCN 3B001.p.1, BIS notes that this control does not capture deposition equipment not elsewhere specified, but which may also have the capability described in the control. However, BIS notes that any components or attached chambers providing such capability would be controlled when exported, reexported, or transferred (in-country) as a separate item.

## 2. Revisions to ECCN 3B002

The heading to ECCN 3B002 is revised by adding “or inspection” before equipment and “or inspecting” after testing because inspection equipment is added to this ECCN. License Exception LVS eligibility is revised to remove eligibility for semiconductor manufacturing equipment specified in ECCN 3B002.b and c. Only license exceptions found in § 740.2(a)(9) of the EAR may be used for specified semiconductor manufacturing equipment such as this. Former paragraph 3B002.c is redesignated as paragraph 3B002.b and new paragraph 3B002.c is added to establish control of inspection equipment designed for “EUV” mask blanks or “EUV” patterned masks. Semiconductor inspection tools increase production throughputs by optimizing processes and improving quality and yields, and specialized versions of these tools are required for inspection at advanced technology nodes enabled by EUV, and therefore warrant NS and RS controls for EUV (high-end) masks. The definition for “Extreme Ultraviolet” (“EUV”) that this rule adds to § 772.1, as described below in section C.12, applies to that term as it is used in ECCN 3B002.c.

## 3. Removal of ECCN 3B090 and Conforming Changes

BIS added ECCN 3B090 to the CCL in the October 7 IFR. This rule removes ECCN 3B090 because it was determined that controls on SME should be placed with similar equipment specified in previously existing ECCNs, e.g., 3B001, for ease of compliance, enforcement, and because BIS anticipates that these items will be the subject of future formal

multilateral controls, as discussed above.

Licenses issued by BIS for equipment that was classified under ECCN 3B090, but is now under ECCN 3B001, remain valid until expiration, unless suspended or revoked. For export clearance purposes for licenses involving ECCN 3B090 items, exporters must use the new 3B001, consistent with § 750.7(c)(1)(viii). This concept also applies to all other ECCN redesignations that occur as a result of this SME IFR. Exporters must list the new ECCN classification on any export clearance documentation filed after the effective date of this rule.

#### 4. Revisions to ECCNs 3D001, 3D002, 3D003, and 3E001

The license requirement tables of ECCNs 3D001, 3D002, and 3E001 are revised following the same pattern as the table revisions for ECCNs 3B001 and 3B002, described above. For all three ECCNs, new NS and RS license requirements rows are added for software and technology related to newly added SME in ECCN 3B001.a.4, c, d, f.1.b and k to p when destined to or within Macau or destinations specified in Country Group D:5 of supplement no. 1 to part 740 of the EAR. The related changes to §§ 742.4(a)(4) and 742.6(a)(6) of the EAR are discussed in section C.8 and C.9, respectively. All items in these ECCNs, including these newly listed SME, are also controlled for AT reasons and subject to an AT:1 license requirement. The License Requirement table is revised to identify these reasons for control.

Because of the addition of RS controls, in ECCNs 3D001 and 3D002, License Exception TSR eligibility is revised to include “N/A for RS,” as TSR eligibility is for items that require a license for NS reasons only. For ECCN 3E001, TSR eligibility is also revised for the same reasons, but adds N/A for NP and RS.

In addition to the changes described above, the heading of ECCN 3D002 is revised by expanding the scope to include newly added SME in ECCN 3B001.k to p. In addition, the reporting requirement is removed, as ECCN 3D002 does not appear in supplement no. 2 to part 774—Sensitive List.

The heading of ECCN 3D003 is revised by adding double quotes around the newly defined term “EUV,” because that term is defined now defined in § 772.1 of the EAR.

This rule also makes an additional clarification to ECCN 3E001. In ECCN 3E001, this rule revises the Regional Stability control in the License

Requirements section Control(s) column to remove the phrase “or “software” specified by ECCN 3D001 (for ECCN 3A090 or 3B090 commodities)” because it is no longer needed. This rule is removing technology controls for ECCN 3D001 software (for ECCNs 3A090 and 3B090 commodities) because the technology related to software is simply source code, which is generally classified as software, so there is no need for a separate technology control under ECCN 3E001 for ECCN 3D001 software.

Only license exceptions found in § 740.2(a)(9) of the EAR may be used for technology or software for specified semiconductor manufacturing equipment.

#### 5. Addition of § 734.4(a)(3) 0% De Minimis Rule for ECCN 3B001.f.1.b.2.b Items

This rule revises § 734.4 by adding a new paragraph (a)(3) to specify that there is no *de minimis* level for lithography equipment and “specially designed” items therefor meeting the parameters in ECCN 3B001.f.1.b.2.b when destined for use in the “development” or “production” of “advanced-node integrated circuits,” except when the country from which the foreign-made item was originally exported or reexported has the item listed on its export control list. In other words, if the other country maintains an equivalent export control for equipment meeting the parameters of ECCN 3B001.f.1.b.2.b, BIS does not need to impose additional controls on the export from abroad, or the reexport or transfer (in-country) of these foreign-made items. BIS is adding a footnote with information concerning any countries that maintain an equivalent export control.

#### Retention of BIS Jurisdiction

For exports from abroad from any other country, and subsequent reexports or transfers to or within any other country of items that were exported from abroad from a country that does not maintain equivalent controls, BIS retains jurisdiction over such foreign-made equipment to protect U.S. national security and foreign policy interests.

#### 6. Revisions to the Temporary General License in Supplement no. 1 to Part 736—General Orders

Effective November 17, 2023, this rule revises paragraph (d) of (General Order No. 4) under supplement no. 1 to part 736 by removing the October 7 IFR TGL and adding a new TGL.

This SME IFR adds a new TGL under paragraph (d)(1) for companies

headquartered in the United States or a destination specified in Country Group A:5 or A:6 that send CCL items to manufacturing facilities in a Country Group D:5 country or Macau for the “development” or “production” of “parts,” “components,” or “equipment” of certain Category 3B ECCNs specified in § 744.23(a)(4). The TGL overcomes the license requirements described in § 744.23(a)(4) (former § 744.23(a)(2)(v)) when (1) the items exported, reexported, or transferred (in-country) are subject to the EAR, specified on the CCL, and controlled only for AT reasons, and (2) the items are exported, reexported, or transferred (in-country) at the direction of a company that is headquartered in the United States or a destination specified in Country Groups A:5 or A:6, and not majority-owned by a company headquartered in either Macau or a destination specified in Country Group D:5. The purpose of this TGL is to provide SME producers in the United States and Country Groups A:5 and A:6 countries additional time to identify alternative sources of supply outside of arms-embargoed countries, or to acquire individually validated licenses to continue manufacturing “front-end integrated circuit “production” equipment” and related “parts” and “components” in such countries. In keeping with that goal, this TGL is valid from November 17, 2023, through December 31, 2025.

As noted below in section C.11, the overarching purpose of § 744.23(a)(4) (former § 744.23(a)(2)(v)) is to inhibit the indigenization of “front-end integrated circuit “production” equipment” and related “parts” and “components” that would render the end-use controls in § 744.23(a)(2) obsolete. BIS has narrowed the scope of § 744.23(a)(4) to focus on the types of equipment (*i.e.*, front-end) that are most likely relevant to the “production” of “advanced-node integrated circuits,” which may include node-agnostic tools specified in ECCNs controlled for only AT reasons. As noted in section C.11, BIS welcomes comment on whether there are ECCNs that should be excluded from the end-use scope because they are exclusively used in the “production” of legacy-node integrated circuits.

In keeping with that goal, new paragraph (d)(4) (End-use and end-user restrictions) states that the TGL cannot be used for the indigenous “development” or “production” of Category 3B tools in either Macau or a destination specified in Country Group D:5, *i.e.*, where the “part,” “component,” or “equipment” is “developed” or “produced” at the

direction of an entity that is headquartered in either Macau or a destination specified in Country Group D:5. Paragraph (d)(4)(i) also specifies that the TGL does not overcome the license requirements of § 744.11 or § 744.21 of the EAR when an entity listed in supplements no. 4 or 7 to part 744 is a party to the transaction as described in § 748.5(c) through (f) of the EAR, or when there is knowledge of any other prohibited end use or end user.

Lastly, new paragraph (d)(5) (Recordkeeping requirements) specifies that all exports, reexports, transfers (in-country), and exports from abroad shipped under the authorization of the TGL are subject to the recordkeeping requirements of part 762. Paragraph (d)(5) states that the records subject to this recordkeeping requirement include but are not limited to directives to the parties that are eligible to use this TGL and a list of the parties that have received directives. Each party that issues or acts upon a directive is responsible for keeping a record of that directive.

#### 7. Revisions to § 740.2 License Exception Restrictions

This rule also restructures § 740.2(a)(9) by addressing SME in paragraph (a)(9)(i) and advanced computing and supercomputer items in paragraph (a)(9)(ii). This rule also revises § 740.2(a)(9) by replacing references to 3B090 with references to new ECCNs 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c, or associated software and technology in ECCN 3D001, 3D002, 3D003, or 3E001. As a result, these items remain ineligible for all license exceptions other than License Exception GOV. This SME IFR expands the availability of License Exception GOV for both SME and advanced computing and supercomputer items to all of the United States Government under § 740.11(b), consistent with policy that GOV should be available for U.S. Government use or for those acting for or on behalf of the U.S. Government.

In addition, for ECCNs 3A090 and 4A090 items, as requested in public comments on the October 7 IFR, this SME IFR also amends § 740.2(a)(9)(ii) to add eligibility for License Exception TMP under § 740.9(a)(6), so that eligible companies may temporarily send foreign-produced advanced computing items for inspection, test, calibration, and repair to Macau or destinations specified in Country Group D:5, as well as transfer within those destinations for inspection, test, calibration, and repair. Not including License Exception TMP for § 740.9(a)(6) in the October 7 IFR was an inadvertent oversight, which as

the commenters correctly noted would undermine the usefulness of License Exception RPL, which was included in the October 7 IFR for these items.

#### 8. Addition and Reformatting of § 742.4 National Security Controls

This rule amends § 742.4 by reformatting paragraph (a) for easier navigation and readability, as well as adding a new paragraph (b)(2) and paragraph (d) for license exception guidance. Specifically, a sentence is added to the introductory text of paragraph (a) to explain the basis for most of the items controlled for National Security reasons on the CCL. Paragraph (a) is now cascaded into separate paragraphs for ease of reading and navigation. Paragraph (a)(1) describes NS:1 license requirements, paragraph (a)(2) describes NS:2 license requirements, paragraph (a)(3) describes NS-related license requirements for ECCN 6A003.b.4.b, and paragraph (a)(4) is added to describe NS related license requirements for certain SME and associated software and technology, which is for the newly added SME in ECCNs 3B001 and 3B002, associated software in ECCNs 3D001 and 3D002, and associated technology in 3E001. A license is required for exports and reexports to either Macau or destinations specified in Country Group D:5 of commodities specified in ECCNs 3B001.a.4, c, d, f.1.b, k to p, and 3B002.b and c and their associated software and technology.

Paragraph (b) is amended by adding an introductory sentence that includes former paragraph (b)(3) and explains that if a license application meets the criteria of more than one of the paragraphs in (b), then the most restrictive license policy will be applied. This rule also adds subject headings to each license policy paragraph to assist with navigation within paragraph (b). This rule moves the text from paragraph (b)(2) to the end of paragraph (b)(1)(i), because this further explains license review policy for exports and reexports to destinations in Country Group D:1. The license policy in former paragraph (b)(1)(iii) for 9x515 to China and destinations in Country Group E:1 is combined with the license policy for “600 series” items in former paragraph (b)(1)(ii), because these destinations are also in Country Group D:5 and the corresponding licensing policy, consistent with § 126.1 of the International Traffic in Arms Regulations (ITAR) (22 CFR chapter I, subchapter M) for such destinations, would be a policy of denial. The combined license policy is now in paragraph (b)(1)(ii).

This rule adds a new paragraph (b)(2) indicating license applications will be reviewed consistent with license review policies in § 744.23(d) of the EAR, except applications will be reviewed on a case-by-case basis if no license would be required under part 744 of the EAR. License applications for items specified in paragraph (a)(4) will be reviewed consistent with license review policies in § 744.23(d) of the EAR, except applications will be reviewed on a case-by-case basis if no license would be required under part 744 of the EAR.

Paragraph (c), regarding the applicability of contract sanctity, has been revised to note that contract sanctity will be available as a factor for consideration for license applications involving the new SME items identified in paragraph (a)(4) of this section.

The previously reserved paragraph (d) is now a paragraph for license exceptions guidance. This paragraph is added to provide references to specific license exceptions that are for national security-controlled items, as well as other useful license exceptions for national security items. It also cross-references the restrictions that apply to all license exceptions in § 740.2 of the EAR.

#### 9. Revision of § 742.6 Regional Stability

Section 742.6(a)(6)(i) is revised to remove references to ECCN 3B090 and associated software and technology to conform to the removal of that ECCN from the CCL. See section C.3 of this rule for the description of the removal of 3B090 and addition of items to 3B001, 3B002, and associated software and technology ECCNs. This SME IFR separates from paragraph (a)(6)(i) sentences about exports from abroad from China or Macau and adds them to a new paragraph (a)(6)(ii). In addition, the deemed export/reexport paragraph in former paragraph (a)(6)(ii) is now redesignated as paragraph (a)(6)(iii).

BIS specifically seeks public comment on the applicability of deemed exports and deemed reexports in paragraph (a)(6)(iii). 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 the deemed export and deemed reexport provision was removed and a license were to be required. 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.

Lastly, this rule revises the license review policy under paragraph (b)(10) to



harmonize the destination scope to Macau and destinations specified in Country Group D:5 and state that the license review will be consistent with § 744.23(d) of the EAR, except applications will be reviewed on a case-by-case basis if no license would be required under part 744 of the EAR.

#### 10. Revision of § 744.6 Activities of “U.S. Persons”

Paragraph (c) is restructured by consolidating the nine former paragraphs (c)(2)(i) through (ix), which included redundant text, into three paragraphs (c)(2)(i) through (iii). Paragraph (c)(2) now captures the types of prohibited activities, *i.e.*, shipping, transmitting, or transferring (in-country), applicable to the destinations and end uses described in three paragraphs (c)(2)(i) through (iii). A commenter asked whether knowledge of a violation is a requirement to trigger the license requirements under § 744.6, and in response to this comment, BIS is clarifying this by adding “if you know your export, reexport, or transfer (in-country) meets any of the specified activities described in paragraphs (c)(2)(i) through (iii) of this section, then” to the paragraph (c)(2) introductory text to make this point.

Other paragraph specific changes are described below.

##### *a. Revisions related to former paragraphs (c)(2)(i) through (iii) regarding semiconductor “development” and “production” activities and related exclusions in paragraph (d).*

Section 744.6(c)(2)(i) and (ii) (former paragraphs (c)(2)(i) through (vi)) are revised to clarify the types of end uses captured by the controls, as well as the types of “facilities” where a prohibited end use must occur. First, the phrase “that fabricates” is replaced with “where “production” . . . occurs.” Second, the phrase “semiconductor fabrication” is removed and therefore no longer qualifies the term “facility.” BIS opted to leverage the existing defined term “production” rather than create a new defined term for “fabrication.” These changes are intended to retain BIS’s focus on specific “facilities” (*i.e.*, buildings) at locations that may maintain multiple production lines at different production technology nodes, not all of which may “produce” “advanced-node integrated circuits.” However, the changes also allow more flexibility in identifying relevant facilities where “production” may occur beyond a fabrication facility, which some in industry interpreted narrowly to encompass only a clean room or production floor. In contrast to the term

“fabrication,” the term “production” better captures facilities where important late-stage product engineering or early-stage manufacturing steps (among others) may occur, which aligns with BIS’s intended focus. In addition, because the controls still capture “development” activities that may occur at the same “facility” where “production” of “advanced-integrated circuits” occur, this change also better captures “development” and product engineering activities at research and development (R&D) fabrication “facilities” that may not engage in volume manufacturing of integrated circuits. On the other hand, BIS also clarifies that a “facility” where only “development” activities occur would not fall within the scope of controls, primarily because this could over-capture “facilities” engaged exclusively in design or other forms of “development” of consumer items (*e.g.*, smartphone ICs) that will be “produced” outside of China or at approved “facilities” in China and therefore do not necessarily warrant control. BIS welcomes comments on the implications of these changes relative to the objectives and considerations stated throughout this IFR.

To enhance readability and simplify the structure of the controls under paragraphs (c)(2)(i) and (ii) (former paragraphs (c)(2)(i) through (vi)), BIS has moved and clarified the criteria for three types of “advanced-node integrated circuits” to a new definition in § 772.1 of the EAR and has added a heading to each paragraph. The term servicing in § 744.6(c) is revised to add the term installation, so it is clear that the prohibition under these two paragraphs on servicing also extends to installing any item not subject to the EAR that you know will be used in the “development” or “production” of “advanced-node ICs” or specified SME.

##### *b. Revisions to former paragraphs (c)(2)(vii) through (ix) related to certain SME not subject to the EAR.*

Section 744.6(c)(2)(iii) is revised to remove references to ECCN 3B090 and associated software and technology to conform with the removal of that ECCN from the CCL. See above for the description of the removal of ECCN 3B090 and addition of items to ECCNs 3B001, 3B002, and associated software and technology ECCNs, found in sections C.3, C.1, and C.2, respectively. The country scope is changed from “PRC and Macau” to “either Macau or a destination specified in Country Group D:5,” which is explained in section C. Specifically, paragraph (c)(2)(iii) of § 744.6 is revised to add references to ECCN 3B001.a.4, c, d, f.1.b,

k to p; 3B002.b and c; 3D001 (for 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c); 3D002 (for 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c); or 3E001 (for 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c).

##### *c. Revisions related to paragraph (d) license exceptions and exclusions.*

Section 744.6(d) is amended by revising the heading from “exceptions” to “exceptions and exclusions,” as well as adding headings to the paragraphs in (d) for easier readability and navigation. This rule also moves the text of paragraph (d)(1) to the introductory paragraph, where it continues to state that paragraphs (b)(1) through (4) are not eligible for license exceptions. The paragraph is also amended to indicate that no license exceptions are available for § 744.6(c)(2). The license exception that was formerly in paragraph (d)(2) has been converted into an exclusion in paragraph (d)(2). Paragraph (d)(1) is now reserved. In addition, this rule differentiates between exclusions from the license requirements of this section and license exceptions found in part 740 of the EAR.

Also consistent with revisions to related sections of § 744.23, BIS has added an exclusion under paragraph (d)(3) to limit the scope of “production” steps captured by paragraphs (c)(2)(i) and (ii). In line with BIS’s response in its Jan. 25, 2023 FAQ II.A1, this exclusion excludes “back-end” production steps, such as assembly, test, or packaging steps that do not alter the technology level of an integrated circuit.

Additionally, this rule adds an exclusion that applies to paragraphs (c)(2)(i) through (iii) of this section in paragraph (d)(4) for natural “U.S. persons” employed or working on behalf of a company headquartered in the United States or a destination specified in Country Group A:5 or A:6 and not majority-owned by an entity that is headquartered in Macau or a destination specified in Country Group D:5. This exclusion is intended to ease the compliance burden and corresponding disincentive to employ U.S. persons in activities for which governments of closely allied destinations maintain or may establish appropriate controls. This rule also adds a new Note to paragraph (d)(4) to provide additional context on when activities of “U.S. persons” are excluded, including providing guidance on how these criteria apply to “U.S. persons” working as freelancers for companies headquartered in the United States or in a destination specified in Country Group A:5 or A:6, on behalf of a company not headquartered in the United States or in a destination

specified in Country Group A:5 or A:6, or some combination of these scenarios.

Finally, this rule adds an exclusion that applies to paragraph (c)(2)(iii) of this section in paragraph (d)(5) for servicing (including installation) activities unless such activities occur at a facility where “production” of “advanced-node integrated circuits” occurs. This will exclude servicing (including installation) of items specified in the ECCNs listed by paragraph (c)(2)(iii), when in a facility that does not produce “advanced-node integrated circuits” to avoid restricting servicing (including installation) at legacy-node facilities. This type of provision is included to ensure the controls remain focused on transactions

and activities of national security concern.

*d. Revisions related to paragraph (e) license review standards.*

Section 744.6(e) is amended by revising paragraph (e)(3) to focus on countries of concern and provide an additional exclusion for the presumption of denial policy. BIS will review applications with a presumption of denial when they include destinations in Macau and destinations in Country Group D:5, except when there is a foreign-made item available that is not subject to the EAR and has the same function as an item subject to the EAR, which will be reviewed with a presumption of approval. All other applications will be considered on a

case-by-case basis taking into account factors including technology level, customers, and compliance plans.

**11. Revisions of § 744.23**

“Supercomputer,” “Advanced-Node Integrated Circuits,” and Semiconductor Manufacturing Equipment End Use Controls

*a. General Revisions and Context for These Changes.*

BIS received comments from the public to simplify the format of § 744.23 by combining the product scope paragraphs with the end-use scope paragraphs. BIS agrees and has done this. Here is a table to help the public find the new locations of paragraphs within § 744.23.

**§ 744.23 “SUPERCOMPUTER,” “ADVANCED-NODE INTEGRATED CIRCUIT,” AND SEMICONDUCTOR MANUFACTURING EQUIPMENT END-USE CONTROLS**

Topic	Prior to this rule	In this rule
“Supercomputer” .....	(a)(1)(i) and (ii) .....	(a)(1)(i).
	(a)(2)(i) .....	(a)(1)(ii)(A).
	(a)(2)(ii) .....	(a)(1)(ii)(B).
“Advanced-node ICs” .....	(a)(1)(iii) and (a)(2)(iii) .....	(a)(2)(i).
	(a)(1)(iv) and (a)(2)(iv) .....	(a)(2)(ii).
Reserved .....	N/A .....	(a)(3).
Semiconductor Manufacturing Equipment (SME) .....	(a)(1)(v) and (a)(2)(v) .....	(a)(4).
Exclusions .....	None .....	(a)(5).
Is informed by BIS .....	(b) .....	(b).
License Exceptions .....	(c) .....	(c).
License review standards .....	(d) .....	(d).

The introductory text of paragraph (a) in § 744.23 is revised to reference the new exclusions in paragraph (a)(5) that apply to the license requirements of this section. Paragraphs (a)(1) and (2) are combined under three topical paragraphs: (a)(1) “supercomputers,” (a)(2) “advanced-node ICs,” and (a)(4) SME. This rule adds a new paragraph (a)(5) for an exclusion to the license requirements. Paragraphs (b) and (d) have not been amended. The country scope is changed from “China and Macau” to “Macau or a destination specified in Country Group D:5” throughout this section for reasons explained in section C of the preamble of this rule.

Paragraph (a)(2)(ii) (former paragraph (a)(1)(iv)) is also revised to replace the words “and classified” with “specified,” so that the public does not incorrectly conclude that one must formally submit a classification request to have the item classified by BIS to make a license requirement determination under this provision.

*b. Revisions related to paragraphs (a)(2)(i) and (ii) (former paragraphs (a)(2)(iii) and (iv)) regarding the*

*“development” and “production” of ICs.*

Consistent with revisions described above to § 744.6, the phrase “that fabricates” is replaced with “where “production” . . . occurs,” and the phrase “semiconductor fabrication” is removed and therefore no longer qualifies the term “facility.” BIS opted to leverage the existing defined term “production” rather than create a new defined term for “fabrication.” These changes are intended to retain BIS’s focus on specific “facilities” (i.e., buildings) at locations that may maintain multiple production lines at different production technology nodes, not all of which may “produce” “advanced-node integrated circuits.” However, the changes also allow more flexibility in identifying relevant facilities where “production” may occur beyond a fabrication facility. For example, the term “production” better captures facilities where important late-stage product engineering or early-stage manufacturing steps (among others) may occur. In addition, because the controls still capture “development” activities that may occur at the same “facility” where “advanced-integrated circuits”

are “produced,” this change also better captures “development” and product engineering activities at R&D fabrication “facilities” that may not engage in volume manufacturing of integrated circuits. On the other hand, BIS also clarifies that a “facility” where only “development” activities occur would not fall within the scope of controls, primarily because this could over-capture “facilities” engaged exclusively in “design” or other forms of “development” of consumer items (e.g., smartphone ICs). BIS welcomes comments on the implications of these changes relative to the objectives and considerations stated throughout this IFR.

In addition, BIS has added an exclusion under paragraph (a)(5) to limit the scope of “production” steps captured by paragraphs (a)(2) (former paragraphs (a)(2)(iii) and (iv)). As relayed in BIS’s Jan. 25, 2023, FAQ II.A.1, for purposes of § 744.23(a)(2), the term “production” does not apply to back-end steps, such as assembly, test, or packaging that do not alter the semiconductor technology level. If there is a question at the time of export, reexport, or transfer (in-country) about

whether a manufacturing stage is “back-end” or whether a back-end activity “alter[s] the semiconductor technology level,” you may submit an advisory opinion request to BIS pursuant to § 748.3(c) for clarification.

Further, to enhance readability and simplify the structure of the controls under paragraphs (a)(2) (former paragraphs (a)(2)(iii) and (iv)), BIS has moved and clarified the criteria for three types of “advanced-node integrated circuits” to a new definition in § 772.1 of the EAR.

Paragraphs (a)(1) through (4) are revised to add paragraph headings to make it easier for exporters, reexporters, and transferors to identify the scope of each of these paragraphs.

*c. Revisions related to paragraph (a)(4) (former paragraph (a)(2)(v)) regarding the “development” or “production” of SME.*

As noted above in response to public comments, BIS has narrowed the product scope of § 744.23(a)(4) to items subject to the EAR and specified on the CCL in supplement no. 1 to part 774 of the EAR, and it has narrowed the end-use scope of § 744.23(a)(4) to ‘front-end integrated circuit “production” equipment’ and other items specified in 3B ECCNs. The term ‘front-end integrated circuit “production” equipment’ does not include equipment used exclusively in back-end steps or other applications (e.g., outside of integrated circuit “production”) that do not alter the integrated circuit technology level. BIS welcomes comments on this revision, including identification of any specific items that warrant exclusion from the product scope or end use scope, e.g., because they are exclusively used in the production of integrated circuits at legacy production technology nodes.

In addition, BIS has revised the scope of paragraph (a)(4) to exclude masks and other items specified in ECCNs 3B001.g, 3B001.h, 3B001.j, and 3B991.b.2. This exclusion will allow the export, reexport, and transfer (in-country) of items subject to the EAR destined for use in the “development” or “production” in either Macau and destinations specified in Country Group D:5 of masks and reticles in the specified ECCNs for fabricating ICs that are not “advanced-node integrated circuits.” Any item subject to the EAR, including one specified in these ECCNs, that is destined for use in the “development” or “production” in either Macau or destinations specified in Country Group D:5 of “advanced-node integrated circuits,” must still be assessed against the license requirements in § 744.23(a)(2).

ECCN 3B090 is also removed from the list of ECCNs in paragraph (a)(4), because the equipment controlled in that ECCN has been moved to ECCN 3B001, which is already listed in this paragraph.

*d. Exclusion*

BIS added an exclusion to § 744.23(a)(5) to limit the scope of “production” steps captured by paragraphs (a)(2)(i) and (ii). In line with BIS’s response in its Jan. 25, 2023 FAQ II.A.1, this exclusion excludes back-end production steps, such as assembly, test, or packaging steps that do not alter the technology level of an integrated circuit.

*e. License exception*

As noted above, BIS has narrowed the product scope of § 744.23(a)(4) (former § 744.23(a)(2)(v)) to items subject to the EAR and specified on the CCL. BIS considered adding license exception availability for License Exceptions TSU, RPL, and TMP for updates and repairs for SME equipment. However, we came to the conclusion that there isn’t a need for License Exceptions TSU for paragraphs (a) (Operation technology and software) and (c) (Software updates) to allow for updates of items that were legally exported, reexported, or transferred (in-country) or License Exception TMP or RPL for repairs, because paragraph (a)(4) only captures “development” and “production” of SME. However, we welcome comments providing differing conclusions on this topic.

*f. License review standards*

There is a presumption of denial for Macau and destinations in Country Group D:5 of supplement no. 1 to part 740, with two exceptions. BIS is expanding the exception that could only be applied to one paragraph (a)(2)(i) (former paragraph (a)(2)(iii)) for “end users in China or Macau that are headquartered in the United States or in a Country Group A:5 or A:6 country” by allowing the exception to be applied to all paragraphs for end users in either Macau or a destination in Country Group D:5 that are headquartered in the United States or in a Country Group A:5 or A:6 country that are not majority-owned by an entity headquartered in either Macau or a destination specified in Country Group D:5. In addition, BIS is adding another exception that may be applied to all the paragraphs when there is a foreign-made item available that is not subject to the EAR and has the same function as the item subject to the EAR. Applications that meet either of these exceptions will be reviewed with a presumption of approval.

**12. Addition to § 772.1 Definitions of Terms as Used in the EAR**

Section 772.1 is revised to add a definition for the term “extreme ultraviolet” (“EUV”). To specify that this term means electromagnetic spectrum wavelengths greater than 5 nm and less than 124 nm. This rule adds this new defined term to § 772.1 because the term is used in ECCNs 3B001, 3B002 and 3D003.

Section 772.1 is also revised to add a definition for the term “advanced-node integrated circuit.” BIS added this definition to simplify the regulatory text in several places in §§ 744.6 and 744.23 that previously described the criteria for “advanced” ICs. As noted above under section C.11, this definition also now includes notes clarifying the meaning of “production technology node” for two types of “advanced-node integrated circuits.”

**Export Control Reform Act of 2018**

On August 13, 2018, the President signed into law the John S. McCain National Defense Authorization Act for Fiscal Year 2019, which included the ECRA, 50 U.S.C. 4801–4852. ECRA, as amended, provides the legal basis for BIS’s principal authorities and serves as the authority under which BIS issues this rule.

**Rulemaking Requirements**

1. Executive Orders 12866, 13563, and 14094 direct agencies to assess all costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health and safety effects and distributive impacts and equity). Executive Order 13563 emphasizes the importance of quantifying both costs and benefits and of reducing costs, harmonizing rules, and promoting flexibility.

This interim final rule has been designated a “significant regulatory action” under Executive Order 12866. This rule does not contain policies with federalism implications as that term is defined under Executive Order 13132.

2. Notwithstanding any other provision of law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*) (PRA), unless that collection of information displays a currently valid Office of Management and Budget (OMB) Control Number. Although this rule makes important changes to the



EAR for items controlled for national security reasons, BIS believes that the added exclusions and narrowing of scope on key paragraphs outweigh the expansion in country scope, so that the overall burden will decrease. Therefore, the burdens and costs associated with the following information collections due to this rule are within the approved burden estimates for the following:

- 0694–0088, “Simplified Network Application Processing System,” which carries a burden-hour estimate of 29.6 minutes for a manual or electronic submission. The burden associated with Supplement no. 1 to part 736, General order 4, paragraph (d)(5) Temporary General License burden for recordkeeping is accounted for under 0694–0088 and is minimal due to the limited scope of those required to keep records (11 companies). The recordkeeping does not go beyond that which the exporter is already under obligation to keep pursuant to part 762 recordkeeping provisions of the EAR. There is a sunset clause on this requirement effective August 1, 2024, when this provision will be removed from the EAR.

- 0694–0137 “License Exceptions and Exclusions,” which carries a burden-hour estimate average of 1.5 hours per submission (Note: submissions for License Exceptions are rarely required);

- 0694–0096 “Five Year Records Retention Period,” which carries a burden-hour estimate of less than 1 minute; and

- 0607–0152 “Automated Export System (AES) Program,” which carries a burden-hour estimate of 3 minutes per electronic submission.

Additional information regarding these collections of information—including all background materials—can be found at <https://www.reginfo.gov/public/do/PRAMain> and using the search function to enter either the title of the collection or the OMB Control Number.

3. Pursuant to section 1762 of ECRA (50 U.S.C. 4821), this action is exempt from the Administrative Procedure Act (APA) (5 U.S.C. 553) requirements for notice of proposed rulemaking, opportunity for public participation and delay in effective date. Although this rule is exempt from public comments, BIS is seeking them anyway on a number of issues.

4. Because a notice of proposed rulemaking and an opportunity for public comment are not required to be given for this rule by 5 U.S.C. 553, or by any other law, the analytical requirements of the Regulatory Flexibility Act, 5 U.S.C. 601, *et seq.*, are

not applicable. Accordingly, no regulatory flexibility analysis is required, and none has been prepared.

## List of Subjects

### 15 CFR Part 734

Administrative practice and procedure, Exports, Inventions and patents, Research, Science and technology.

### 15 CFR Part 736

Exports.

### 15 CFR Part 740

Administrative practice and procedure, Exports, Reporting and recordkeeping requirements.

### 15 CFR Part 742

Exports, Terrorism.

### 15 CFR Part 744

Exports, Reporting and recordkeeping requirements, Terrorism.

### 15 CFR Part 772

Exports.

### 15 CFR Part 774

Exports, Reporting and recordkeeping requirements.

Accordingly, parts 734, 736, 740, 742, 744, 772, and 774 of the Export Administration Regulations (15 CFR parts 730–774) are amended as follows:

## PART 734—SCOPE OF THE EXPORT ADMINISTRATION REGULATIONS

■ 1. The authority citation for part 734 continues to read as follows:

**Authority:** 50 U.S.C. 4801–4852; 50 U.S.C. 4601 *et seq.*; 50 U.S.C. 1701 *et seq.*; E.O. 12938, 59 FR 59099, 3 CFR, 1994 Comp., p. 950; E.O. 13020, 61 FR 54079, 3 CFR, 1996 Comp., p. 219; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; E.O. 13637, 78 FR 16129, 3 CFR, 2014 Comp., p. 223; Notice of November 8, 2022, 87 FR 68015 (November 10, 2022).

■ 2. Section 734.4 is amended by adding paragraph (a)(3) to read as follows:

### § 734.4 De minimis U.S. content.

(a) \* \* \*

(3) There is no *de minimis* level for equipment meeting the parameters in ECCN 3B001.f.1.b.2.b of the Commerce Control List in supplement no. 1 to part 774 of the EAR, when the equipment is destined for use in the “development” or “production” of “advanced-node integrated circuits” and the “advanced-node integrated circuits” meet the parameter specified in paragraph (1) of that definition in § 772.1 of the EAR, unless the country from which the

foreign-made item was first exported<sup>1</sup> has a commodity specified on an export control list.

\* \* \* \* \*

<sup>1</sup> The Government of Japan added ArF-wet lithography equipment and other advanced semiconductor manufacturing equipment to its control list for all regions on July 23, 2023.

## PART 736—GENERAL PROHIBITIONS

■ 3. The authority citation for part 736 is revised to read as follows:

**Authority:** 50 U.S.C. 4801–4852; 50 U.S.C. 4601 *et seq.*; 50 U.S.C. 1701 *et seq.*; E.O. 12938, 59 FR 59099, 3 CFR, 1994 Comp., p. 950; E.O. 13020, 61 FR 54079, 3 CFR, 1996 Comp., p. 219; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; E.O. 13338, 69 FR 26751, 3 CFR, 2004 Comp., p. 168; Notice of November 8, 2022, 87 FR 68015, 3 CFR, 2022 Comp., p. 563; Notice of May 8, 2023, 88 FR 30211 (May 10, 2023).

■ 4. Supplement no. 1 to part 736 is amended by revising paragraph (d) to read as follows:

### Supplement No. 1 to Part 736—General Orders

\* \* \* \* \*

(d) General Order No. 4: Exports, reexports, or transfers (in-country) authorized under the Temporary General License (TGL) specified under paragraph (d)(1) of this supplement must also comply with the terms and conditions under paragraphs (d)(4) through (5) of this supplement.

(1) *TGL—Less restricted SME “parts,” “components,” or “equipment.”* This TGL only overcomes the license requirements described in § 744.23(a)(4) of EAR when:

(i) *Product scope.* The items subject to the EAR that are specified on the Commerce Control List (CCL) in supplement no. 1 to part 774 of the EAR that are designated as controlled on the CCL only for AT reasons; and

(ii) *End-use scope.* The recipient is “developing” or “producing” “parts,” “components,” or “equipment” (as specified in § 744.23(a)(4) of the EAR) at the direction of a company that is headquartered in the United States or a destination specified in Country Group A:5 or A:6 and not majority-owned by an entity headquartered in either Macau or a destination specified in Country Group D:5.

(2) [Reserved]

(3) *Validity date.* The TGL under paragraph (d)(1) of this supplement expires on December 31, 2025.

(4) *End-use and end-user restrictions.*

(i) *Restrictions related to part 744 of the EAR.* The TGL under paragraph (d)(1) of this supplement does not overcome the license requirements of § 744.11 or § 744.21 of the EAR when an entity listed in supplements no. 4 or 7 to part 744 is a party to the transaction as described in § 748.5(c) through (f) of the EAR, or when there is knowledge

of any other prohibited end use or end user (other than the § 744.23 of the EAR provisions specified above in the TGL).

(ii) *Indigenous production.* The TGL under paragraph (d)(1) of this supplement cannot be used for the indigenous “development” or “production” of Category 3B tools in either Macau or a destination specified in Country Group D:5, *i.e.*, where the “part,” “component,” or “equipment” is “developed” or “produced” at the direction of an entity that is headquartered in either Macau or a destination specified in Country Group D:5.

(5) *Recordkeeping requirement.* All exports, reexports, transfer (in-country), and exports from abroad shipped under the authorization of this TGL are subject to the recordkeeping requirements of part 762 of the EAR. The records subject to this recordkeeping requirement include but are not limited to directives to the parties that are eligible to use this TGL and a list of the parties that have received directives. Each party that issues or acts upon a directive is responsible for keeping a record of that directive.

\* \* \* \* \*

#### Supplement No. 1 to Part 736 [Amended]

■ 5. Effective on January 1, 2026, supplement no. 1 to part 736 is further amended by removing and reserving paragraph (d).

#### PART 740—LICENSE EXCEPTIONS

■ 6. The authority citation for part 740 continues to read as follows:

**Authority:** 50 U.S.C. 4801–4852; 50 U.S.C. 4601 *et seq.*; 50 U.S.C. 1701 *et seq.*; 22 U.S.C. 7201 *et seq.*; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783.

■ 7. Section 740.2 is amended by revising paragraph (a)(9) to read as follows:

#### § 740.2 Restrictions on all License Exceptions.

(a) \* \* \*

(9)(i) The item is controlled under ECCN 3B001.a.4, c, d, f.1.b, k to p, 3B002.b or c, or associated software and technology in ECCN 3D001, 3D002, 3D003, or 3E001 and is being exported, reexported, or transferred (in-country) to or within either Macau or a destination specified in Country Group D:5 of supplement no. 1 to this part, and the license exception is other than License Exception GOV, restricted to eligibility under the provisions of § 740.11(b).

(ii) The item is identified in paragraph (a)(9)(ii)(A) or (B) of this section, is being exported, reexported, or transferred (in-country) to or within Macau or a destination specified in Country Group D:5, and the license exception is other than: TMP, restricted

to eligibility under the provisions of § 740.9(a)(6); RPL, under the provisions of § 740.10, including § 740.10(a)(3)(v), which prohibits exports and reexports of replacement parts to a destination specified in Country Group E:1 (see supplement no. 1 to this part); GOV, restricted to eligibility under the provisions of § 740.11(b); or TSU under the provisions of § 740.13(a) and (c). Items restricted to eligibility only for the foregoing license exceptions are:

(A) Controlled under ECCNs 3A090, 4A090, or associated software and technology in 3D001, 3E001, 4D090, and 4E001;

(B) A computer, integrated circuit, “electronic assembly” or “component” specified elsewhere on the CCL which meets or exceeds the performance parameters of ECCN 3A090 or 4A090.

\* \* \* \* \*

#### PART 742—CONTROL POLICY—CCL BASED CONTROLS

■ 8. The authority citation for part 742 continues to read as follows:

**Authority:** 50 U.S.C. 4801–4852; 50 U.S.C. 4601 *et seq.*; 50 U.S.C. 1701 *et seq.*; 22 U.S.C. 3201 *et seq.*; 42 U.S.C. 2139a; 22 U.S.C. 7201 *et seq.*; 22 U.S.C. 7210; Sec. 1503, Pub. L. 108–11, 117 Stat. 559; E.O. 12058, 43 FR 20947, 3 CFR, 1978 Comp., p. 179; E.O. 12851, 58 FR 33181, 3 CFR, 1993 Comp., p. 608; E.O. 12938, 59 FR 59099, 3 CFR, 1994 Comp., p. 950; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Presidential Determination 2003–23, 68 FR 26459, 3 CFR, 2004 Comp., p. 320; Notice of November 8, 2022, 87 FR 68015 (November 10, 2022).

■ 9. Section 742.4 is amended by:

■ a. Revising paragraph (a);

■ b. Adding introductory text to paragraph (b);

■ c. Revising paragraphs (b)(1) and (2);

■ d. Removing and reserving paragraph (b)(3);

■ e. Revising paragraph (c); and

■ f. Adding paragraph (d).

The revisions and additions read as follows:

#### § 742.4 National security.

(a) *License requirements.* It is the policy of the United States to restrict the export and reexport of items that would make a significant contribution to the military potential of any other destination or combination of destinations that would prove detrimental to the national security (NS) of the United States. Generally, items on the Commerce Control List in supplement no. 1 to part 774 of the EAR that have a reason for control of NS are those that are also listed on the Wassenaar Arrangement’s “List of Dual-

use Goods and Technologies,” as well as some items listed on the Wassenaar Arrangement’s “Munitions List.” “600 series” items and 9x515 items are also controlled for NS reasons.

(1) *National Security column 1 (NS:1).* A license is required for exports and reexports to all destinations, except Canada, for all items in ECCNs on the CCL that include NS Column 1 in the Country Chart column of the “License Requirements” section.

(2) *National Security column 2 (NS:2).* A license is required to all destinations except those specified in Country Group A:1 (see supplement no. 1 to part 740 of the EAR), for all items in ECCNs on the CCL that include NS column 2 in the Commerce Country Chart column of the “License Requirements” section except those cameras in ECCN 6A003.b.4.b that have a focal plane array with 111,000 or fewer elements and a frame rate of 60 Hz or less.

(3) *6A003.b.4.b.* A license is required to all destinations except those specified in Country Group A:1 (see supplement no. 1 to part 740 of the EAR) for those cameras in ECCN 6A003.b.4.b that have a focal plane array with 111,000 or fewer elements and a frame rate of 60 Hz or less and for cameras being exported or reexported pursuant to an authorization described in § 742.6(a)(2)(iii) or (v). The purpose of this control is to ensure that these items do not contribute to the military potential of destinations specified in Country Group D:1 (see supplement no. 1 to part 740 of the EAR) that would prove detrimental to the national security of the United States.

(4) *Certain semiconductor manufacturing equipment and associated software and technology.* A license is required for exports, reexports, and transfers (in-country) to or within either Macau or a destination specified in Country Group D:5 in supplement no. 1 to part 740 of the EAR of items specified in 3B001.a.4, c, d, f.1.b, k to p; 3B002.b and c; 3D001 (for 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c); 3D002 (for 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c); or 3E001 (for 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c). The license requirements in this paragraph (a)(4) do not apply to deemed exports or deemed reexports.

(b) *Licensing policy.* Each application is reviewed in light of prevailing policies with full consideration of all aspects of the proposed transaction. When the license application meets the criteria of more than one licensing policy, then the most restrictive licensing policy will be applied. The review generally includes: an analysis of the kinds and quantities of items to be



shipped; their military or civilian uses; the unrestricted availability abroad of the same or comparable items; the country of destination; the ultimate end users in the country of destination; and the intended end use.

(1)(i) *Country Group D:1*. The policy for national security-controlled items exported or reexported to any destination except a destination specified in Country Group D:1 (see supplement no. 1 to part 740 of the EAR) is to approve applications unless there is a significant risk that the items will be diverted to a destination specified in Country Group D:1. Except for those countries described in paragraphs (b)(5) through (7) and (9) of this section, the general policy for exports and reexports of items to Country Group D:1 (see supplement no. 1 to part 740 of the EAR) is to approve applications when BIS determines, on a case-by-case basis, that the items are for civilian use or would otherwise not make a significant contribution to the military potential of the country of destination that would prove detrimental to the national security of the United States.

(ii) *9x515 and “600 series” items*. When destined to a country listed in Country Group D:5 in supplement no. 1 to part 740 of the EAR, however, items classified under 9x515 or “600 series” ECCNs will be reviewed consistent with United States arms embargo policies in 22 CFR 126.1 (International Traffic in Arms Regulations (ITAR)). When destined to the People’s Republic of China or a country listed in Country Group E:1 in supplement no. 1 to part 740 of the EAR, items classified under any 9x515 ECCN will be subject to a policy of denial.

(2) License applications for items specified in paragraph (a)(4) of this section will be reviewed consistent with license review policies in § 744.23(d) of the EAR, except applications will be reviewed on a case-by-case basis if no license would be required under part 744 of the EAR.

\* \* \* \* \*

(c) *Contract sanctity*. Contract sanctity provisions are not available for license applications reviewed under this section, except for applications for items in paragraph (a)(4) of this section. For paragraph (a)(4), contract sanctity provisions are available for contracts signed before October 18, 2023.

(d) *License exceptions*. Certain license exceptions are available only for national security items, such as License Exceptions GBS (see § 740.4 of the EAR) and TSR (see § 740.6 of the EAR), but other license exceptions may also be

available for national security items, such as License Exception STA (see § 740.20 of the EAR) or license exceptions based on the facts of the transaction, such as License Exceptions TMP (see § 740.9 of the EAR) or GOV (see § 740.11 of the EAR). See part 740 of the EAR for a full list of license exceptions and § 740.2 of the EAR for license exception restrictions that apply to every license exception.

■ 10. Section 742.6 is amended by revising paragraphs (a)(6) and (b)(10) to read as follows:

**§ 742.6 Regional stability.**

(a) \* \* \*

(6) *RS requirement that applies to advanced computing and semiconductor manufacturing items—(i) Exports, reexports, transfers (in-country) to or within either Macau or Country Group D:5*. A license is required for items specified in ECCNs 3A090, 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c, 4A090, 5A992 (that meet or exceed the performance parameters of ECCNs 3A090 or 4A090); and associated software and technology in 3D001 (for 3A090, 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c), 3D002 (for 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c), 3E001 (for 3A090, 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c), 4D090, and 4E001 (for 4A090 and 4D090), and 5D992 (that meet or exceed the performance parameters of ECCNs 3A090 or 4A090) being exported, reexported, or transferred (in-country) to or within either Macau or a destination specified in Country Group D:5 in supplement no. 1 to part 740 of the EAR.

(ii) *Exports from abroad originating in either China or Macau*. A license is also required for the export from abroad originating in either China or Macau to any destination worldwide of 3E001 (for 3A090) technology developed by an entity headquartered in either China or Macau that is the direct product of software subject to the EAR and is for the “production” of commodities identified in ECCNs 3A090, 4A090, or identified elsewhere on the CCL that meet or exceed the performance parameters of ECCNs 3A090 or 4A090, consistent with § 734.9(h)(1)(i)(B)(1) and (h)(2)(ii) of the EAR.

(iii) *Deemed exports and reexports*. The license requirements in paragraphs (a)(6)(i) and (ii) of this section do not apply to deemed exports or deemed reexports.

\* \* \* \* \*

(b) \* \* \*

(10) *Advanced computing and semiconductor manufacturing items*. License applications for items specified

in paragraph (a)(6) of this section will be reviewed consistent with license review policies in § 744.23(d) of the EAR, except applications will be reviewed on a case-by-case basis if no license would be required under part 744 of the EAR.

\* \* \* \* \*

**PART 744—CONTROL POLICY: END-USER AND END-USE BASED**

■ 11. The authority citation for part 744 continues to read as follows:

**Authority:** 50 U.S.C. 4801–4852; 50 U.S.C. 4601 *et seq.*; 50 U.S.C. 1701 *et seq.*; 22 U.S.C. 3201 *et seq.*; 42 U.S.C. 2139a; 22 U.S.C. 7201 *et seq.*; 22 U.S.C. 7210; E.O. 12058, 43 FR 20947, 3 CFR, 1978 Comp., p. 179; E.O. 12851, 58 FR 33181, 3 CFR, 1993 Comp., p. 608; E.O. 12938, 59 FR 59099, 3 CFR, 1994 Comp., p. 950; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13099, 63 FR 45167, 3 CFR, 1998 Comp., p. 208; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; E.O. 13224, 66 FR 49079, 3 CFR, 2001 Comp., p. 786; Notice of November 8, 2022, 87 FR 68015, 3 CFR, 2022 Comp., p. 563; Notice of September 7, 2023, 88 FR 62439 (September 11, 2023).

■ 12. Section 744.6 is amended by revising paragraphs (c)(2), (d), and (e)(3) to read as follows:

**§ 744.6 Restrictions on specific activities of “U.S. persons.”**

\* \* \* \* \*

(c) \* \* \*

(2) Consistent with paragraph (c)(1) of this section, BIS is hereby informing “U.S. persons” that a license is required for the following activities, which could involve ‘support’ for the weapons of mass destruction-related end uses set forth in paragraph (b) of this section. Specifically, if you know your export, reexport, or transfer (in-country) meets any of the specified activities described in paragraphs (c)(2)(i) through (iii) of this section, then a license is required for shipping, transmitting, or transferring (in-country); facilitating the shipment, transmission, or transfer (in-country); or servicing (including installation) activities associated with any item, end use, or end user described in any of the following paragraphs:

(i) *“Development” or “production” of “advanced-node ICs.”* To or within China or Macau, any item not subject to the EAR that you know will be used in the “development” or “production” of integrated circuits at a “facility” of an entity headquartered in either China or Macau, where “production” of “advanced-node integrated circuits” occurs;

(ii) *Category 3 items for “development” or “production” of “advanced-node ICs.”* To or within China or Macau, any item not subject to

the EAR and meeting the parameters of any ECCN in Product Groups B, C, D, or E in Category 3 of the CCL that you know will be used in the “development” or “production” of integrated circuits at a “facility” of an entity headquartered in either China or Macau where “production” of integrated circuits occurs, but you do not know whether “production” of “advanced-node integrated circuits” occurs at such “facility”; or

(iii) *Semiconductor manufacturing equipment.* To or within either Macau or a destination specified in Country Group D:5, any item not subject to the EAR and meeting the parameters of ECCNs 3B001.a.4, c, d, f.1.b, k to p; 3B002.b and c; 3D001 (for 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c); 3D002 (for 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c); or 3E001 (for 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c) regardless of end use or end user.

(d) *Exceptions and exclusions.* No license exceptions apply to the prohibitions described in paragraphs (b)(1) through (4) or paragraph (c)(2) of this section.

(1) [Reserved]

(2) *Exclusion to paragraphs (b)(5) and (c)(2)(iii) of this section.*

Notwithstanding the prohibitions in paragraphs (b)(5) and (c)(2)(iii), “U.S. persons” who are employees of a department or agency of the U.S. Government may ‘support’ a ‘military-intelligence end user,’ as described in paragraphs (b)(5) and (c)(2)(iii), if the ‘support’ is provided in the performance of official duties in furtherance of a U.S. Government program that is authorized by law and subject to control by the President by other means. This paragraph (d)(2) does not authorize a department or agency of the U.S. Government to provide ‘support’ that is otherwise prohibited by other administrative provisions or by statute. ‘Contractor support personnel’ of a department or agency of the U.S. Government are eligible for this authorization when in the performance of their duties pursuant to the applicable contract or other official duties. ‘Contractor support personnel’ for the purposes of this paragraph (d)(2) has the same meaning given to that term in § 740.11(b)(2)(ii) of the EAR. This authorization is not available when a department or agency of the U.S. Government acts as an agent on behalf of a non-U.S. Government person.

(3) *Exclusion to paragraphs (c)(2)(i) and (ii) of this section.* The term “production” in paragraphs (c)(2)(i) and (ii) does not apply to back-end steps such as assembly, test, or packaging that

do not alter the integrated circuit technology level. If there is a question at the time of export, reexport, or transfer (in-country) about whether a manufacturing stage is back-end or whether a manufacturing stage is back-end or a back-end activity alters the technology level, you may submit an advisory opinion request to BIS pursuant to § 748.3(c) of the EAR for clarification.

(4) *Exclusion to paragraphs (c)(2)(i) through (iii) of this section.* (i) Paragraphs (c)(2)(i) through (iii) do not apply to a natural “U.S. person,” as defined in paragraphs (a)(1) and (3) of the definition in § 772.1 of the EAR, employed or working on behalf of a company headquartered in the United States or a destination specified in Country Group A:5 or A:6 and not majority-owned by an entity that is headquartered in either Macau or a destination specified in Country Group D:5.

(ii) Any activities a natural “U.S. person,” as defined in paragraphs (a)(1) and (3) of that term’s definition in § 772.1 of the EAR, undertakes when employed or acting on behalf of a company not headquartered in the United States or a destination specified in Country Group A:5 or A:6 must comply with the requirements in this paragraph (d)(4) as applicable. For example, if a natural “U.S. person” is a freelancer who works or acts on behalf of a company headquartered in the United States or a destination specified in Country Group A:5 or A:6, those activities would not be prohibited under paragraphs (c)(2)(i) through (iii) of this section. However, if that same natural “U.S. person” was also working or acting on behalf of a company headquartered somewhere other than the United States or a destination specified in Country Group A:5 or A:6, the activities performed on behalf of such a company would not be excluded under paragraphs (c)(2)(i) through (iii) and a license would be required.

(5) *Exclusion to paragraph (c)(2)(iii) of this section.* Paragraph (c)(2)(iii) does not apply to servicing (including installation) activities unless at a “facility” where “production” of “advanced-node integrated circuits” occurs, which would require a license under paragraph (c)(2)(i) of this section.

\* \* \* \* \*

(e) \* \* \*

(3) Applications for licenses submitted pursuant to the notice of a license requirement set forth in paragraph (c)(2) of this section will be reviewed with a presumption of denial for Macau and destinations in Country

Group D:5, except activities involving a foreign-made item that is not subject to the EAR and performs the same function as an item subject to the EAR, which will be reviewed with a presumption of approval. All other applications will be reviewed with a license review policy of case-by-case and consider factors, such as technology level, customers, and compliance plans.

■ 12. Section 744.23 is revised to read as follows:

**§ 744.23 “Supercomputer,” “advanced-node integrated circuits,” and semiconductor manufacturing equipment end use controls.**

(a) *General prohibition.* In addition to the license requirements for items specified on the CCL, you may not export, reexport, or transfer (in-country) without a license any item subject to the EAR described in paragraphs (a)(1) through (4) of this section when you have “knowledge” at the time of export, reexport, or transfer (in-country) that the item is destined for a destination, end use, or type of end user described in paragraphs (a)(1) through (4) of this section, unless excluded by paragraph (a)(5) of this section.

(1) “*Supercomputers*”—(i) *Item scope.* (A) An integrated circuit (IC) subject to the EAR and specified in ECCN 3A001, 3A991, 4A994, 5A002, 5A004, or 5A992; or

(B) A computer, “electronic assembly,” or “component” subject to the EAR and specified in ECCN 4A003, 4A004, 4A994, 5A002, 5A004, or 5A992.

(ii) *Destination and end-use scope.* (A) The “development,” “production,” “use,” operation, installation (including on-site installation), maintenance (checking), repair, overhaul, or refurbishing of a “supercomputer” located in or destined to China or Macau; or

(B) The incorporation into, or the “development” or “production” of any “component” or “equipment” that will be used in a “supercomputer” located in or destined to China or Macau.

(2) “*Advanced-node ICs*”—(i) *Any item to “production” “facility” of “advanced-node ICs.”* Any items subject to the EAR when you know the items will be used in the “development” or “production” of ICs at a “facility” located in China or Macau where “production” of “advanced-node ICs” occurs.

(ii) *Category 3 items to “facility” where the technology node is unknown.* Any item subject to the EAR specified in an ECCN in Product Groups B, C, D, or E in Category 3 of the CCL when you know the item will be used in the



“development” or “production” of ICs at a “facility” located in China or Macau where “production” of integrated circuits occurs, but you do not know whether “production” of “advanced-node ICs” occurs at such “facility.”

(3) [Reserved]

(4) *Semiconductor manufacturing equipment (SME)*. Any item subject to the EAR and specified on the CCL when destined to either Macau or a destination specified in Country Group D:5 for the “development” or “production” of “front-end integrated circuit “production” equipment” and “components,” “assemblies,” and “accessories” therefor specified in ECCN 3B001 (except 3B001.g, .h, and .j), 3B002, 3B611, 3B991 (except 3B991.b.2), or 3B992.

**Note 1 to paragraph (a)(4):** Front-end integrated circuit “production” equipment includes equipment used in the production stages from a blank wafer or substrate to a completed wafer or substrate (*i.e.*, the integrated circuits are processed but they are still on the wafer or substrate). If there is a question at the time of export, reexport, or transfer (in-country) about whether equipment is used in front-end integrated circuit “production,” you may submit an advisory opinion request to BIS pursuant to § 748.3(c) of the EAR for clarification.

(5) *Back-end exclusion*. For purposes of paragraph (a)(2) of this section, the term “production” does not apply to back-end steps such as assembly, test, or packaging that do not alter the integrated circuit technology level. If there is a question at the time of export, reexport, or transfer (in-country) about whether a manufacturing stage is back-end or whether a back-end activity alters the technology level, you may submit an Advisory Opinion request to BIS pursuant to § 748.3(c) of the EAR for clarification.

(b) *Additional prohibition on persons informed by BIS*. BIS may inform persons, either individually by specific notice or through amendment to the EAR published in the **Federal Register**, that a license is required for a specific export, reexport, or transfer (in-country)

of any item subject to the EAR to a certain end-user, because there is an unacceptable risk of use in, or diversion to, the end uses specified in paragraphs (a)(1) through (4) of this section. Specific notice is to be given only by, or at the direction of, the Deputy Assistant Secretary for Export Administration. When such notice is provided orally, it will be followed by a written notice within two working days signed by the Deputy Assistant Secretary for Export Administration or the Deputy Assistant Secretary’s designee. However, the absence of any such notification does not excuse persons from compliance with the license requirements of paragraph (a) of this section.

(c) *License exceptions*. No license exceptions may overcome the prohibition described in paragraph (a) of this section.

(d) *License review standards*. Applications will be reviewed with a presumption of denial for Macau and destinations specified in Country Group D:5. However, there is a presumption of approval license review policy when there is a foreign-made item available that is not subject to the EAR and performs the same function as the item subject to the EAR, and for end users headquartered in the United States or a destination in Country Group A:5 or A:6, that are not majority-owned by an entity headquartered in either Macau or a destination specified in Country Group D:5. For all other applications, there is a case-by-case license review policy. License review will take into account factors including technology level, customers, and compliance plans. Contract sanctity will be a factor in the review of all applications.

## PART 772—DEFINITIONS OF TERMS

■ 13. The authority citation for part 772 continues to read as follows:

**Authority:** 50 U.S.C. 4801–4852; 50 U.S.C. 4601 *et seq.*; 50 U.S.C. 1701 *et seq.*; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783.

■ 14. Section 772.1 is amended by adding definitions for “Advanced-Node Integrated Circuits (Advanced-Node IC)” and “Extreme Ultraviolet (EUV)” in alphabetical order to read as follows:

### § 772.1 Definitions of terms as used in the Export Administration Regulations (EAR).

\* \* \* \* \*

*Advanced-Node Integrated Circuits (Advanced-Node IC)*. For parts 734 and 744 of the EAR, advanced-node integrated circuits include integrated circuits that meet any of the following criteria:

(1) Logic integrated circuits using a non-planar transistor architecture or with a “production” ‘technology node’ of 16/14 nanometers or less;

(2) NOT AND (NAND) memory integrated circuits with 128 layers or more; or

(3) Dynamic random-access memory (DRAM) integrated circuits using a “production” ‘technology node’ of 18 nanometer half-pitch or less.

**Note 1 to definition of “ADVANCED-NODE INTEGRATED CIRCUITS”:** For the purposes of paragraphs (1) and (3) of this definition, the term *technology node* refers to the Logic Industry “Node Range” figure described in the *International Roadmap for Devices and Systems, 2016 edition* (“More Moore” White Paper), available at [https://irds.ieee.org/images/files/pdf/2016\\_MM.pdf](https://irds.ieee.org/images/files/pdf/2016_MM.pdf).

**Technical Note to definition of “Advanced-Node Integrated Circuits”:** For the purposes of paragraph (3) of this definition, the calculation methodology to be used in determining whether a DRAM integrated circuit uses a production technology node of 18 nanometer half-pitch or less is the calculated half-pitch method developed, adopted, and used by the Institute of Electrical and Electronics Engineers (IEEE) and published in the *International Roadmap for Devices and Systems (IRDS)*, as follows:

$$\text{Calculated Half – Pitch} = \sqrt{\frac{\text{Cell Area}}{\text{Cell size factor}}}$$

Cell size factor is 8, 6 or 4 depending on the DRAM architectures. Cell area is defined as Wordline\*Bitline (which

takes into consideration both transistor and capacitor dimensions)

\* \* \* \* \*

*Extreme Ultraviolet (EUV)*. Extreme Ultraviolet (EUV) means

electromagnetic spectrum wavelengths greater than 5 nm and less than 124 nm.

\* \* \* \* \*

## PART 774—THE COMMERCE CONTROL LIST

■ 15. The authority citation for part 774 continues to read as follows:

**Authority:** 50 U.S.C. 4801–4852; 50 U.S.C. 4601 *et seq.*; 50 U.S.C. 1701 *et seq.*; 10 U.S.C. 8720; 10 U.S.C. 8730(e); 22 U.S.C. 287c, 22 U.S.C. 3201 *et seq.*; 22 U.S.C. 6004; 42 U.S.C. 2139a; 15 U.S.C. 1824; 50 U.S.C. 4305; 22 U.S.C. 7201 *et seq.*; 22 U.S.C. 7210; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783.

■ 16. Supplement no. 1 to part 774 is amended by:

- a. Revising ECCNs 3B001 and 3B002;
- b. Removing ECCN 3B090; and
- c. Revising ECCNs 3D001, 3D002, 3D003, and 3E001.

The revisions read as follows:

### Supplement No. 1 to Part 774—The Commerce Control List

\* \* \* \* \*

**3B001 Equipment for the manufacturing of semiconductor devices, materials, or related equipment, as follows (see List of Items Controlled) and “specially designed” “components” and “accessories” therefor.**

#### License Requirements

*Reason for Control:* NS, RS, AT

<i>Control(s)</i>	<i>Country chart (see Supp. No. 1 to part 738)</i>
NS applies to 3B001.a.1 to a.3, b, e, f.1.a, f.2 to f.4, g to j.	NS Column 2.
NS applies to 3B001.a.4, c, d, f.1.b, k to p.	To or within Macau or a destination speci- fied in Country Group D:5 of sup- plement no. 1 to part 740 of the EAR. See § 742.4(a)(4) of the EAR.
RS applies to 3B001.a.4, c, d, f.1.b, k to p.	To or within Macau or a destination speci- fied in Country Group D:5 of sup- plement no. 1 to part 740 of the EAR. See § 742.6(a)(6) of the EAR.
AT applies to entire entry.	AT Column 1.

#### List Based License Exceptions (See Part 740 for a Description of All License Exceptions)

**LVS:** \$500, except semiconductor manufacturing equipment specified in 3B001.a.4, c, d, f.1.b, k to p.

**GBS:** Yes, except a.3 (molecular beam epitaxial growth equipment using gas sources), .e (automatic loading multi-chamber central wafer handling systems only if connected to equipment controlled

by 3B001.a.3, or .f), and .f (lithography equipment).

#### List of Items Controlled

*Related Controls:* See also 3B991

*Related Definitions:* N/A  
Items:

a. Equipment designed for epitaxial growth as follows:

a.1. Equipment designed or modified to produce a layer of any material other than silicon with a thickness uniform to less than  $\pm 2.5\%$  across a distance of 75 mm or more;

**Note:** 3B001.a.1 includes atomic layer epitaxy (ALE) equipment.

a.2. Metal Organic Chemical Vapor Deposition (MOCVD) reactors designed for compound semiconductor epitaxial growth of material having two or more of the following elements: aluminum, gallium, indium, arsenic, phosphorus, antimony, or nitrogen;

a.3. Molecular beam epitaxial growth equipment using gas or solid sources;

a.4. Equipment designed for silicon (Si), carbon doped silicon, silicon germanium (SiGe), or carbon doped SiGe epitaxial growth, and having all of the following:

a.4.a. Multiple chambers and maintaining high vacuum (equal to or less than 0.01 Pa) or inert environment (water and oxygen partial pressure less than 0.01 Pa) between process steps;

a.4.b. At least one preclean chamber designed to provide a surface preparation means to clean the surface of the wafer; and

a.4.c. An epitaxial deposition operating temperature of 685 °C or below;

b. Semiconductor wafer fabrication equipment designed for ion implantation and having any of the following:

b.1. [Reserved]

b.2. Being designed and optimized to operate at a beam energy of 20 keV or more and a beam current of 10 mA or more for hydrogen, deuterium, or helium implant;

b.3. Direct write capability;

b.4. A beam energy of 65 keV or more and a beam current of 45 mA or more for high energy oxygen implant into a heated semiconductor material “substrate”; or

b.5. Being designed and optimized to operate at beam energy of 20 keV or more and a beam current of 10mA or more for silicon implant into a semiconductor material “substrate” heated to 600 °C or greater;

c. Etch equipment.

c.1. Equipment designed for dry etching as follows:

c.1.a. Equipment designed or modified for isotropic dry etching, having a largest ‘silicon germanium-to-silicon (SiGe:Si) etch selectivity’ of greater than or equal to 100:1; or

c.1.b. Equipment designed or modified for anisotropic etching of dielectric materials and enabling the fabrication of high aspect ratio features with aspect ratio greater than 30:1 and a lateral dimension on the top surface of less than 100 nm, and having all of the following:

c.1.b.1. Radio Frequency (RF) power source(s) with at least one pulsed RF output; and

c.1.b.2. One or more fast gas switching valve(s) with switching time less than 300 milliseconds; or

c.1.c. Equipment designed or modified for anisotropic dry etching, having all of the following:

c.1.c.1. Radio Frequency (RF) power source(s) with at least one pulsed RF output;

c.1.c.2. One or more fast gas switching valve(s) with switching time less than 300 milliseconds; and

c.1.c.3. Electrostatic chuck with twenty or more individually controllable variable temperature elements;

c.2. Equipment designed for wet chemical processing and having a largest ‘silicon germanium-to-silicon (SiGe:Si) etch selectivity’ of greater than or equal to 100:1;

**Note 1:** 3B001.c includes etching by ‘radicals’, ions, sequential reactions, or non-sequential reaction.

**Note 2:** 3B001.c.1.c includes etching using RF pulse excited plasma, pulsed duty cycle excited plasma, pulsed voltage on electrodes modified plasma, cyclic injection and purging of gases combined with a plasma, plasma atomic layer etching, or plasma quasi-atomic layer etching.

#### Technical Notes:

1. For the purposes of 3B001.c, ‘silicon germanium-to-silicon (SiGe:Si) etch selectivity’ is measured for a Ge concentration of greater than or equal to 30% (Si<sub>0.70</sub>Ge<sub>0.30</sub>).

2. For the purposes of 3B001.c Note 1 and 3B001.d.14, ‘radical’ is defined as an atom, molecule, or ion that has an unpaired electron in an open electron shell configuration.

d. Semiconductor manufacturing deposition equipment, as follows:

d.1. Equipment designed for cobalt (Co) electroplating or cobalt electroless-plating deposition processes;

**Note:** 3B001.d.1 controls semiconductor wafer processing equipment.

d.2. Equipment designed for:

d.2.a. Chemical vapor deposition of cobalt (Co) fill metal; or

d.2.b. Selective bottom-up chemical vapor deposition of tungsten (W) fill metal;

d.3. Equipment designed to fabricate a metal contact by multistep processing within a single chamber by performing all of the following:

d.3.a. Deposition of a tungsten layer, using an organometallic compound, while maintaining the wafer substrate temperature greater than 100 °C and less than 500 °C; and

d.3.b. A plasma process using hydrogen (H<sub>2</sub>), including hydrogen and nitrogen (H<sub>2</sub> + N<sub>2</sub>) or ammonia (NH<sub>3</sub>);

d.4. Equipment or systems designed for multistep processing in multiple chambers or stations and maintaining high vacuum (equal to or less than 0.01 Pa) or inert environment between process steps, as follows:

d.4.a. Equipment designed to fabricate a metal contact by performing the following processes:

d.4.a.1. Surface treatment plasma process using hydrogen (H<sub>2</sub>), including hydrogen and nitrogen (H<sub>2</sub> + N<sub>2</sub>) or ammonia (NH<sub>3</sub>), while maintaining the wafer substrate at a temperature greater than 100 °C and less than 500 °C;

d.4.a.2. Surface treatment plasma process using oxygen (O<sub>2</sub>) or ozone (O<sub>3</sub>), while maintaining the wafer substrate at a

temperature greater than 40 °C and less than 500 °C; and

d.4.a.3. Deposition of a tungsten layer while maintaining the wafer substrate temperature greater than 100 °C and less than 500 °C;

d.4.b. Equipment designed to fabricate a metal contact by performing the following processes:

d.4.b.1. Surface treatment process using a remote plasma generator and an ion filter; and

d.4.b.2. Deposition of a cobalt (Co) layer selectively onto copper (Cu) using an organometallic compound;

**Note:** This control does not apply to equipment that is non-selective.

d.4.c. Equipment designed to fabricate a metal contact by performing all the following processes:

d.4.c.1. Deposition of a titanium nitride (TiN) or tungsten carbide (WC) layer, using an organometallic compound, while maintaining the wafer substrate at a temperature greater than 20 °C and less than 500 °C;

d.4.c.2. Deposition of a cobalt (Co) layer using a physical sputter deposition technique and having a process pressure greater than 133.3 mPa and less than 13.33 Pa, while maintaining the wafer substrate at a temperature below 500 °C; and

d.4.c.3. Deposition of a cobalt (Co) layer using an organometallic compound and having a process pressure greater than 133.3 Pa and less than 13.33 kPa, while maintaining the wafer substrate at a temperature greater than 20 °C and less than 500 °C;

d.4.d. Equipment designed to fabricate copper (Cu) interconnects by performing all of the following processes:

d.4.d.1. Deposition of a cobalt (Co) or ruthenium (Ru) layer using an organometallic compound and having a process pressure greater than 133.3 Pa and less than 13.33 kPa, while maintaining the wafer substrate at a temperature greater than 20 °C and less than 500 °C; and

d.4.d.2. Deposition of a copper layer using a physical vapor deposition technique and having a process pressure greater than 133.3 mPa and less than 13.33 kPa, while maintaining the wafer substrate at a temperature below 500 °C;

d.5. Equipment designed for plasma enhanced chemical vapor deposition of carbon hard masks more than 100 nm thick and with stress less than 450 Mpa;

d.6. Atomic Layer Deposition (ALD) equipment designed for area selective deposition of a barrier or liner using an organometallic compound;

**Note:** 3B001.d.6 includes equipment capable of area selective deposition of a barrier layer to enable fill metal contact to an underlying electrical conductor without a barrier layer at the fill metal via interface to an underlying electrical conductor.

d.7. Equipment designed for Atomic Layer Deposition (ALD) of tungsten (W) to fill an entire interconnect or in a channel less than 40 nm wide, while maintaining the wafer substrate at a temperature less than 500 °C.

d.8 Equipment designed for Atomic Layer Deposition (ALD) of 'work function metal' having all of the following:

d.8.a. More than one metal source of which one is designed for an aluminum (Al) precursor;

d.8.b. Precursor vessel designed and enabled to operate at a temperature greater than 30 °C; and

d.8.c. Designed for depositing a 'work function metal' having all of the following:

d.8.c.1. Deposition of titanium-aluminum carbide (TiAlC); and

d.8.c.2. Enabling a work function greater than 4.0eV;

**Technical Note:** For the purposes of 3B001.d.8, 'work function metal' is a material that controls the threshold voltage of a transistor.

d.9. Spatial Atomic Layer Deposition (ALD) equipment having a wafer support platform that rotates around an axis having any of the following:

d.9.a. A spatial plasma enhanced atomic layer deposition mode of operation;

d.9.b. A plasma source; or

d.9.c. A plasma shield or means to confine the plasma to the plasma exposure process region;

d.10. Equipment designed for Atomic Layer Deposition (ALD) or Chemical Vapor Deposition (CVD) of plasma enhanced of low fluorine tungsten (FW) (fluorine (F) concentration less than  $10^{19}$  atoms/cm<sup>3</sup>) films;

d.11. Equipment designed to deposit a metal layer, in a vacuum (equal to or less than 0.01 Pa) or inert gas environment, and having all of the following:

d.11.a. A Chemical Vapor Deposition (CVD) or cyclic deposition process for depositing a tungsten nitride (WN) layer, while maintaining the wafer substrate at a temperature greater than 20 °C and less than 500 °C; and

d.11.b. A Chemical Vapor Deposition (CVD) or cyclic deposition process for depositing a tungsten (W) layer having a process pressure greater than 133.3 Pa and less than 53.33 kPa, while maintaining the wafer substrate at a temperature greater than 20 °C and less than 500 °C.

d.12. Equipment designed for depositing a metal layer, in a vacuum (equal to or less than 0.01 Pa) or inert gas environment, and having any of the following:

d.12.a. Selective tungsten (W) growth without a barrier; or

d.12.b. Selective molybdenum (Mo) growth without a barrier;

d.13. Equipment designed for depositing a ruthenium layer (Ru) using an organometallic compound, while maintaining the wafer substrate at a temperature greater than 20 °C and less than 500 °C;

d.14. Equipment designed for deposition assisted by remotely generated 'radicals', enabling the fabrication of a silicon (Si) and carbon (C) containing film, and having all of the following properties of the deposited film:

d.14.a. A dielectric constant (k) of less than 5.3;

d.14.b. An aspect ratio greater than 5:1 in features with lateral openings of less than 70 nm; and

d.14.c. A feature-to-feature pitch of less than 100 nm;

d.15. Equipment designed for void free plasma enhanced deposition of a low-k

dielectric layer in gaps between metal lines less than 25 nm and having an aspect ratio greater than or equal to 1:1 with a less than 3.3 dielectric constant;

d.16. Equipment designed for deposition of a film, containing silicon and carbon, and having a dielectric constant (k) of less than 5.3, into lateral openings having widths of less than 70 nm and aspect ratios greater than 5:1 (depth: width) and a feature-to-feature pitch of less than 100 nm, while maintaining the wafer substrate at a temperature greater than 400 °C and less than 650 °C, and having all of the following:

d.16.a. Boat designed to hold multiple vertically stacked wafers;

d.16.b. Two or more vertical injectors; and

d.16.c. A silicon source and propene are introduced to a different injector than a nitrogen source or an oxygen source;

e. Automatic loading multi-chamber central wafer handling systems having all of the following:

e.1. Interfaces for wafer input and output, to which more than two functionally different 'semiconductor process tools' controlled by 3B001.a.1, 3B001.a.2, 3B001.a.3 or 3B001.b are designed to be connected; and

e.2. Designed to form an integrated system in a vacuum environment for 'sequential multiple wafer processing';

**Note:** 3B001.e does not control automatic robotic wafer handling systems "specially designed" for parallel wafer processing.

**Technical Notes:**

1. For the purposes of 3B001.e, 'semiconductor process tools' refers to modular tools that provide physical processes for semiconductor production that are functionally different, such as deposition, implant or thermal processing.

2. For the purposes of 3B001.e, 'sequential multiple wafer processing' means the capability to process each wafer in different 'semiconductor process tools', such as by transferring each wafer from one tool to a second tool and on to a third tool with the automatic loading multi-chamber central wafer handling systems.

f. Lithography equipment as follows:

f.1. Align and expose step and repeat (direct step on wafer) or step and scan (scanner) equipment for wafer processing using photo-optical or X-ray methods and having any of the following:

f.1.a. A light source wavelength shorter than 193 nm; or

f.1.b. A light source wavelength equal to or longer than 193 nm and having all of the following:

f.1.b.1. The capability to produce a pattern with a "Minimum Resolvable Feature size" (MRF) of 45 nm or less; and

f.1.b.2. Having any of the following:

f.1.b.2.a. A maximum 'dedicated chuck overlay' value of less than or equal to 1.50 nm; or

f.1.b.2.b. A maximum 'dedicated chuck overlay' value greater than 1.50 nm but less than or equal to 2.4 nm;

**Technical Notes:** For the purposes of 3B001.f.1.b:

1. The 'Minimum Resolvable Feature size' (MRF), i.e., resolution, is calculated by the following formula:



(an exposure light source wavelength in nm)  $\times$  (K factor)

MRF

-----  
maximum numerical aperture

where, for the purposes of 3.B.1.f.1.b, the K factor = 0.25 ‘MRF’ is also known as resolution.

2. ‘Dedicated chuck overlay’ is the alignment accuracy of a new pattern to an existing pattern printed on a wafer by the same lithographic system. ‘Dedicated chuck overlay’ is also known as single machine overlay.

f.2. Imprint lithography equipment capable of production features of 45 nm or less;

**Note:** 3B001.f.2 includes:

—Micro contact printing tools  
—Hot embossing tools  
—Nano-imprint lithography tools  
—Step and flash imprint lithography (S-FIL) tools

f.3. Equipment “specially designed” for mask making having all of the following:

f.3.a. A deflected focused electron beam, ion beam or “laser” beam; and

f.3.b. Having any of the following:

f.3.b.1. A Full-Width Half-Maximum (FWHM) spot size smaller than 65 nm and an image placement less than 17 nm (mean + 3 sigma); or

f.3.b.2. [Reserved]

f.3.b.3. A second-layer overlay error of less than 23 nm (mean + 3 sigma) on the mask;

f.4. Equipment designed for device processing using direct writing methods, having all of the following:

f.4.a. A deflected focused electron beam; and

f.4.b. Having any of the following:

f.4.b.1. A minimum beam size equal to or smaller than 15 nm; or

f.4.b.2. An overlay error less than 27 nm (mean + 3 sigma);

g. Masks and reticles, designed for integrated circuits controlled by 3A001;

h. Multi-layer masks with a phase shift layer not specified by 3B001.g and designed to be used by lithography equipment having a light source wavelength less than 245 nm;

**Note:** 3B001.h. does not control multi-layer masks with a phase shift layer designed for the fabrication of memory devices not controlled by 3A001.

**N.B.:** For masks and reticles, “specially designed” for optical sensors, see 6B002.

i. Imprint lithography templates designed for integrated circuits by 3A001;

j. Mask “substrate blanks” with multilayer reflector structure consisting of molybdenum and silicon, and having all of the following:

j.1. “Specially designed” for “Extreme Ultraviolet” (“EUV”) lithography; and

j.2. Compliant with SEMI Standard P37;

k. Equipment designed for ion beam deposition or physical vapor deposition of a multi-layer reflector for “EUV” masks;

l. “EUV” pellicles;

m. Equipment for manufacturing “EUV” pellicles;

n. Equipment designed for coating, depositing, baking, or developing photoresist formulated for “EUV” lithography;

o. Annealing equipment, operating in a vacuum (equal to or less than 0.01 Pa)

environment, performing any of the following:

o.1. Reflow of copper (Cu) to minimize or eliminate voids or seams in copper (Cu) metal interconnects; or

o.2. Reflow of cobalt (Co) tungsten (W) fill metal to minimize or eliminate voids or seams;

p. Removal and cleaning equipment as follows:

p.1. Equipment designed for removing polymeric residue and copper oxide (CuO) film and enabling deposition of copper (Cu) metal in a vacuum (equal to or less than 0.01 Pa) environment;

p.2. Single wafer wet cleaning equipment with surface modification drying; or

p.3. Equipment designed for dry surface oxide removal pre-clean or dry surface decontamination.

**Note to 3B001.p.1 and p.3:** These controls do not apply to deposition equipment.

**3B002 Test or inspection equipment “specially designed” for testing or inspecting finished or unfinished semiconductor devices as follows (see List of Items Controlled) and “specially designed” “components” and “accessories” therefor.**

#### License Requirements

*Reason for Control:* NS, RS, AT

<i>Control(s)</i>	<i>Country chart (see supp. No. 1 to part 738)</i>
NS applies to 3B002.a.	NS Column 2.
NS applies to 3B002.b and c.	To or within Macau or a destination specified in Country Group D:5 of supplement no. 1 to part 740 of the EAR. See § 742.4(a)(4) of the EAR.
RS applies to 3B002.b and c.	To or within Macau or a destination specified in Country Group D:5 of supplement no. 1 to part 740 of the EAR. See § 742.6(a)(6) of the EAR.
AT applies to entire entry.	AT Column 1.

#### List Based License Exceptions (See Part 740 for a Description of All License Exceptions)

LVS: \$500, except semiconductor manufacturing equipment specified in 3B002.b and c.

GBS: Yes

#### List of Items Controlled

*Related Controls:* See also 3A999.a and 3B992

*Related Definitions:* N/A  
Items:

a. For testing S-parameters of items specified by 3A001.b.3;

b. For testing microwave integrated circuits controlled by 3A001.b.2;

c. Inspection equipment designed for “EUV” mask blanks or “EUV” patterned masks.

\* \* \* \* \*

**3D001 “Software” “specially designed” for the “development” or “production” of commodities controlled by 3A001.b to 3A002.h, or 3B (except 3B991 and 3B992).**

#### License Requirements

*Reason for Control:* NS, RS, AT

<i>Control(s)</i>	<i>Country chart (see supp. No. 1 to part 738)</i>
NS applies to “software” for commodities controlled by 3A001.b to 3A001.h, 3A002, and 3B (except 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c).	NS Column 1.
NS applies to “software” for commodities controlled by 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c.	To or within Macau or a destination specified in Country Group D:5 of supplement no. 1 to part 740 of the EAR. See § 742.4(a)(4) of the EAR.
RS applies to “software” for commodities controlled by 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c.	To or within Macau or a destination specified in Country Group D:5 of supplement no. 1 to part 740 of the EAR. See § 742.6(a)(6) of the EAR.
RS applies to “software” for commodities controlled by 3A090.	China and Macau See § 742.6(a)(6).
AT applies to entire entry.	AT Column 1.

#### Reporting Requirements

See § 743.1 of the EAR for reporting requirements for exports under License Exceptions, Special Comprehensive Licenses, and Validated End-User authorizations.

#### List Based License Exceptions (See Part 740 for a Description of All License Exceptions)

TSR: Yes, except N/A for RS and for “software” “specially designed” for the “development” or “production” of Traveling Wave Tube Amplifiers described in 3A001.b.8 having operating frequencies exceeding 18 GHz.

#### Special Conditions for STA

STA: License Exception STA may not be used to ship or transmit “software” “specially designed” for the “development” or “production” of equipment specified by 3A002.g.1 or 3B001.a.2 to any of the destinations specified in Country Group A:6 (See Supplement No.1 to part 740 of the EAR).

**List of Items Controlled***Related Controls:* N/A*Related Definitions:* N/A*Items:*

The list of items controlled is contained in the ECCN heading.

**3D002** “Software” “specially designed” for the “use” of equipment controlled by 3B001.a to .f and .k to .p, or 3B002.

**License Requirements***Reason for Control:* NS, RS, AT

<i>Control(s)</i>	<i>Country chart (see Supp. No. 1 to part 738)</i>
NS applies to entire entry, except “software” for 3B001.a.4 c, d, f.1.b, k to p, 3B002.b and c.	NS Column 1.
NS applies to “software” for 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c.	To or within Macau or a destination specified in Country Group D:5 of supplement no. 1 to part 740 of the EAR. See § 742.4(a)(4) of the EAR.
RS applies to “software” for 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c.	To or within Macau or a destination specified in Country Group D:5 of supplement no. 1 to part 740 of the EAR. See § 742.6(a)(6) of the EAR.
AT applies to entire entry.	AT Column 1.

**License Requirements Note:** See § 744.17 of the EAR for additional license requirements for microprocessors having a processing speed of 5 GFLOPS or more and an arithmetic logic unit with an access width of 32 bit or more, including those incorporating “information security” functionality, and associated “software” and “technology” for the “production” or “development” of such microprocessors.

**List Based License Exceptions (See Part 740 for a Description of All License Exceptions)***TSR:* Yes, except N/A for RS.**List of Items Controlled***Related Controls:* Also see 3D991.*Related Definitions:* N/A*Items:*

The list of items controlled is contained in the ECCN heading.

**3D003** “Computational lithography” “software” “specially designed” for the “development” of patterns on “EUV”-lithography masks or reticles.

**License Requirements***Reason for Control:* NS, AT*Control(s)**Country chart  
(see Supp. No. 1 to  
part 738)*

NS applies to entire entry.

NS Column 1.  
AT Column 1.

AT applies to entire entry.

**List Based License Exceptions (See Part 740 for a Description of All License Exceptions)***TSR:* Yes**List of Items Controlled***Related Controls:* N/A

*Related Definitions:* For the purposes of 3D003, ‘computational lithography’ is the use of computer modelling to predict, correct, optimize and verify imaging performance of the lithography process over a range of patterns, processes, and system conditions.

*Items:*

The list of items controlled is contained in the ECCN heading.

\* \* \* \* \*

**3E001** “Technology” according to the General Technology Note for the “development” or “production” of commodities controlled by 3A (except 3A980, 3A981, 3A991, 3A992, or 3A999), 3B (except 3B991 or 3B992) or 3C (except 3C992).

**License Requirements***Reason for Control:* NS, MT, NP, RS, AT

<i>Control(s)</i>	<i>Country chart (see Supp. No. 1 to part 738)</i>
NS applies to “technology” for commodities controlled by 3A001, 3A002, 3A003, 3B001 (except 3B001.a.4, c, d, f.1.b, k to p), 3B002 (except 3B002.b and c), or 3C001 to 3C006.	NS Column 1.
NS applies to “technology” for 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c.	To or within Macau or a destination specified in Country Group D:5 of supplement no. 1 to part 740 of the EAR. See § 742.4(a)(4) of the EAR.
MT applies to “technology” for commodities controlled by 3A001 or 3A101 for MT Reasons.	MT Column 1.
NP applies to “technology” for commodities controlled by 3A001, 3A201, or 3A225 to 3A234 for NP reasons.	NP Column 1.
RS applies to “technology” for commodities controlled by 3A090.	China and Macau (See § 742.6(a)(6)).

*Control(s)**Country chart  
(see Supp. No. 1 to  
part 738)*

RS applies to “technology” for commodities controlled by 3A090, when exported from China or Macau.

Worldwide (See § 742.6(a)(6)).

RS applies to “technology” for commodities controlled by 3B001.a.4, c, d, f.1.b, k to p, 3B002.b and c.

To or within Macau or a destination specified in Country Group D:5 of supplement no. 1 to part 740 of the EAR. See § 742.6(a)(6) of the EAR.

AT applies to entire entry.

AT Column 1.

**License Requirements Note:** See § 744.17 of the EAR for additional license requirements for microprocessors having a processing speed of 5 GFLOPS or more and an arithmetic logic unit with an access width of 32 bit or more, including those incorporating “information security” functionality, and associated “software” and “technology” for the “production” or “development” of such microprocessors.

**Reporting Requirements**

See § 743.1 of the EAR for reporting requirements for exports under License Exceptions, Special Comprehensive Licenses, and Validated End-User authorizations.

**List Based License Exceptions (See Part 740 for a Description of All License Exceptions)**

*TSR:* Yes, except N/A for MT, NP, and RS, and “technology” for the “development” or “production” of:

- (a) vacuum electronic device amplifiers described in 3A001.b.8, having operating frequencies exceeding 19 GHz;
- (b) solar cells, coverglass-interconnect-cells or covered-interconnect-cells (CIC) “assemblies”, solar arrays and/or solar panels described in 3A001.e.4;
- (c) “Monolithic Microwave Integrated Circuit” (“MMIC”) amplifiers in 3A001.b.2; and
- (d) discrete microwave transistors in 3A001.b.3.

**Special Conditions for STA**

STA: License Exception STA may not be used to ship or transmit “technology” according to the General Technology Note for the “development” or “production” of equipment specified by ECCNs 3A002.g.1 or 3B001.a.2 to any of the destinations specified in Country Group A:6 (See Supplement No. 1 to part 740 of the EAR). License Exception STA may not be used to ship or transmit “technology” according to the General Technology Note for the “development” or “production” of components specified by ECCN 3A001.b.2 or b.3 to any of the destinations specified in Country Group A:5 or A:6 (See Supplement No. 1 to part 740 of the EAR).

**List of Items Controlled**

*Related Controls:* (1) “Technology” according to the General Technology Note for the “development” or “production” of certain “space-qualified” atomic frequency standards described in Category XV(e)(9), MMICs described in Category XV(e)(14), and oscillators described in Category XV(e)(15) of the USML are “subject to the ITAR” (see 22 CFR parts 120 through 130). See also 3E101, 3E201 and 9E515. (2) “Technology” for “development” or “production” of “Microwave Monolithic Integrated Circuits” (“MMIC”) amplifiers in 3A001.b.2 is controlled in this ECCN 3E001; 5E001.d refers only to that additional “technology” “required” for telecommunications.

*Related Definition:* N/A

*Items:*

The list of items controlled is contained in the ECCN heading.

**Note 1:** 3E001 does not control “technology” for equipment or “components” controlled by 3A003.

**Note 2:** 3E001 does not control “technology” for integrated circuits controlled by 3A001.a.3 to a.14, having all of the following:

(a) Using “technology” at or above 0.130  $\mu\text{m}$ ; and

(b) Incorporating multi-layer structures with three or fewer metal layers.

**Note 3:** 3E001 does not apply to ‘Process Design Kits’ (‘PDKs’) unless they include libraries implementing functions or technologies for items specified by 3A001 or 3A090.

**Technical Note:** For the purposes of 3E001 Note 3, a ‘Process Design Kit’ (‘PDK’) is a software tool provided by a semiconductor manufacturer to ensure that the required design practices and rules are taken into account in order to successfully produce a specific integrated circuit design in a specific semiconductor process, in accordance with technological and manufacturing constraints (each semiconductor manufacturing process has its particular ‘PDK’).

\* \* \* \* \*

**Thea D. Rozman Kendler,**  
Assistant Secretary for Export  
Administration.

[FR Doc. 2023–23049 Filed 10–18–23; 8:45 am]

**BILLING CODE 3510–33–P**



# PUBLIC SUBMISSION

<b>As of:</b> 1/29/24, 4:43 PM
<b>Received:</b> November 12, 2023
<b>Status:</b> Pending_Post
<b>Tracking No.</b> low-dm2s-qjha
<b>Comments Due:</b> January 17, 2024
<b>Submission Type:</b> Web

**Docket:** BIS-2023-0016

Expansion of Export Controls on Semiconductor Manufacturing Items; Entity List Modifications

**Comment On:** BIS-2023-0016-0001

Export Controls on Semiconductor Manufacturing Items

**Document:** BIS-2023-0016-DRAFT-0001

Comment on FR Doc # 2023-23049

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## General Comment

Title: "Balancing Tech Exports: Why Restricting China May Not Be the Solution"

In recent times, there has been growing debate about limiting technology exports to China, particularly concerning companies like Nvidia. While it's essential to consider national security and geopolitical implications, let's delve into the nuances of this issue.

The China Connection: iPhones and Beyond

It's true that many of our iPhones are manufactured in China. The intricate supply chains and cost efficiencies offered by Chinese factories have made them indispensable for global tech giants.

However, this doesn't necessarily mean we should extend the same logic to all technology exports. Each product category has unique considerations, and a blanket approach may not be suitable.

Military Advantage vs. Global Stability

Concerns often revolve around China gaining a minor military advantage through access to cutting-edge technology. While valid, we must weigh this against broader global stability.

A world at war with China would be catastrophic for both sides. The impact would extend far beyond military skirmishes—it would disrupt economies, societies, and ecosystems. The stakes are incredibly high.

The Snub Factor

Some argue that restricting exports serves as a diplomatic snub to China. However, we must tread carefully. Diplomacy is a delicate dance, and outright snubs can escalate tensions.

Instead, we should engage in constructive dialogue, emphasizing cooperation, fair competition, and

shared interests. After all, technological progress knows no borders.

#### Long-Term Technological Development

Limiting exports may not significantly hinder China's technological growth in the long run. Innovation is driven by multiple factors—research, talent, investment, and collaboration.

Rather than stifling China, we should focus on fostering a healthy global tech ecosystem. Collaboration and knowledge exchange benefit everyone.

In conclusion, the decision to restrict exports should be strategic, nuanced, and based on a comprehensive assessment of risks and benefits. Let's aim for a world where technology bridges gaps rather than widens them.



# 中国机电产品进出口商会

China Chamber of Commerce for Import and Export of  
Machinery and Electronic Products

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## **Comments of the China Chamber of Commerce for Import and Export of Machinery and Electronic Products on New U.S. Semiconductor Export Control Rule**

On October 17, 2023, the Bureau of Industry and Security (BIS) of U.S. Department of Commerce released two new interim final rules (IFR) and a final rule on export controls on advanced computing semiconductors, semiconductor manufacturing equipment and supercomputer items against China, which amended the IFR released on October 7, 2022, to further tighten the restrictions on exports of chips related to artificial intelligence (AI) and semiconductor manufacturing equipment to China, expand the scope of controls, and add a number of Chinese entities to the export controls "Entity List".

As the most important economies in the world, China and the U.S. are close economic and trade partners to each other. Enterprises from the two countries have established deep cooperation in a wide range of sci-tech areas such as semiconductors, computers and communications. U.S. tech enterprises, in particular, enjoy a high share of business and market interests in China. Once entered into force, these new rules will give a heavy blow to the market cooperation and technological exchanges between Chinese and U.S. enterprises in sci-tech fields, undermine the foundation of "global cooperation" and "mutual trust" on which the development of the global tech industry depends heavily, reduce the competitiveness for global sci-tech innovation, and harm the short-term economic interests and long-term competitiveness of the U.S. enterprises concerned.

These new rules will produce obvious negative impacts on some member enterprises of the China Chamber of Commerce for Import and Export of Machinery and Electronic Products (CCCME). Given this, CCCME puts forward the following comments:

### **First, CCCME is firmly opposed to unilateral measures which abuse export controls**

Upon consultation with the related member enterprises, including U.S.-funded enterprises, CCCME, on behalf of the industry, voices firm opposition to the U.S. continuous generalization of the concept of national security, abuse of export controls, and unilateral bullying.

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# 中国机电产品进出口商会

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As the world's second largest economy and largest developing country, China is an integral part of the global semiconductor industry, a key contributor to global sci-tech innovation, and an important consumer market, a source of profit and a driver of innovation for U.S. tech companies.

These new rules will significantly disrupt global tech supply chains, especially as AI is in a critical stage of accelerating global sci-tech innovation, and the unilateral measures taken by the U.S., the world's largest economy, will set a bad example by sabotaging the interests of a wide range of industries closely associated with the process of globalization. The rules will also drag down already fragile global macroeconomy, and potentially diminish the well-being sci-tech innovation created for people around the globe.

## **Second, the new rules generalize the concept of national security, violating the rules of the World Trade Organization**

The advanced computing semiconductors, semiconductor manufacturing equipment and supercomputing items involved in the proposed U.S. rules are high-tech AI products widely used in the civilian field. Semiconductor equipment, in particular, cannot be transformed into military uses, even if the chips produced are for civilian uses. Therefore, the inclusion of these items in export controls is groundless.

These rules are the self-sealing of "small yard with high fences" by the U.S., directly undermining exchanges and cooperation among Chinese, U.S. and related global enterprises and their economic benefits in the semiconductor and even tech fields, denting the trust and confidence of the semiconductor industry built up in international cooperation over the years, and slowing down the pace of the global tech industry and technological innovation.

## **Third, the new rules will jeopardize the broad interests of the global industry, including Chinese and American enterprises**

Featuring a highly globalized division of labor, the semiconductor industry is a driver and beneficiary of economic globalization and deep global division of labor and cooperation, and the important cornerstone of the multi-trillion dollar global tech industry and digital economy. International cooperation and collaborative innovation in the semiconductor industry among



# 中国机电产品进出口商会

## China Chamber of Commerce for Import and Export of Machinery and Electronic Products

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countries, including China and the U.S., is the foundation of global sci-tech innovation development and prosperity.

The U.S. government continues to upgrade its export controls against China, and these new rules contain a wide range of adjustments and go beyond the scope of conventional controls. AI and the semiconductor industry are becoming increasingly important in the global economy, trade, science and technology, culture and other fields. However, the U.S. side attempts to adjust the description of parameters of controls on AI-related products and items in these new rules. Such short-sighted behavior of seeking its own dominance in the industry will affect the short-term economic interests and long-term market competitiveness of U.S. manufacturers.

According to the statistics, Chinese market accounts for about 1/3 of the global semiconductor market, generating more than \$50 billion in annual sales revenue combined for NVIDIA, Intel and Qualcomm. The new U.S. rules will directly restrict U.S. enterprises' sales in China. Besides, the forced cancellation of contracts will destroy the basis of cooperation between Chinese and U.S. enterprises, and force U.S. enterprises to choose suppliers from other countries and enhance independent innovation. Moreover, countermeasures, if any, would produce unanticipated devastating consequences.

#### **Fourth, CCCME hopes the U.S. could cancel its wrong unilateral measures**

CCCME supports our member enterprises with international cooperation, and stands committed to the international market to create economic value and promote scientific and technological progress together with enterprises from all countries. We always require and guide more than 10,000 member enterprises to comply with Chinese laws and regulations as well as those of countries where they have established their business operations. We advocate the establishment of an export control compliance mechanism among enterprises engaged in the import and export of dual-use items, to promote normal international exchanges and cooperation between enterprises.

CCCME is strongly opposed to U.S. improper controls that would destroy the ecosystem of the global semiconductor industry and undermine international market rules and order. We hope that the U.S. side can remove relevant measures as early as possible, based on a sober assessment of the far-reaching impacts of this revision on U.S. semiconductor enterprises and



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on global industrial and supply chains, so as to safeguard the common interests of enterprises from countries around the world, to work together on a fair and just global business environment and, and to maintain global industrial and supply chains safe, stable and smooth.

CCCME calls on the U.S. government and industry to firmly safeguard the healthy development of the global semiconductor industry, and hopes that the U.S. side can cancel the proposed new rules which will produce a host of negative impacts, by widely listening to and fully considering the opinions of the industry and enterprises so as to safeguard the legitimate rights and interests, and competitiveness of both Chinese and U.S. enterprises concerned, and to maintain and push forward cooperation and development in the international semiconductor industry and sci-tech innovation.



China Chamber of Commerce for Import and Export  
of Machinery and Electronic Products

November 6, 2023

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November 21, 2023

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Subject: Public Comment on Controls on Semiconductor Manufacturing Items ID BIS-2023-016  
RIN 0694-AJ23

- a Delete 740.16a3ii, because License Exception for reexports to D1 countries is inconsistent with new license requirements, licensing policies, and License Exception for reexports to D5 countries, which include the following eight D1 countries: Belarus, Burma, Cambodia, China, Iraq, Libya, Russia, and Venezuela which are eligible for 740.16a3ii APR License Exception;
- b Delete 744.6c2ii and 744.23a2ii (Topics 47,48,51), “but you do not know whether production of advanced node ICs occurs at such facility” is too broad and misses IC advanced node target (also see below, under .g, Comments, Responses, and Analyses re other semiconductor Topics re 744.6 and 744.23);
- c Continue to apply License Requirement for coverage after October 7, 2022, in 3B001 to NS2 and in 3D001, 3D002, and 3E001 to NS1, rather than narrower D5 coverage, because new coverage is at least as significant as pre-October 7, 2022, coverage;
- d Omit RS coverage in 3B001, 3B002, 3D001, 3D002, 3E001, because, after 740.16a3ii revision in recommendation a above, RS serves no useful purpose;
- e Limit US semiconductor manufacturing proposals to Wassenaar to revise 3B001 sub-item texts; revise references to those texts in 3D001, 3D002, and 3E001 headings; and put “EUV” in quotation marks in 3D003; and
- f Omit from any US proposal to Wassenaar mention of differences in control levels for China or groups of countries including or excluding China, because Wassenaar would have to consider many factors other than semiconductors in lengthy debates over country differences for restrictions or lack thereof, which would delay, or maybe even completely reject, US semiconductor proposals.
- g Analysis of BIS Responses to Public Comments on October 2022 US Controls to China FR published October 13, 2022, re Semiconductor Manufacturing;

#### Topics 1, 2, 3, 4 Unilateral US controls

##### Comments:

- Re (1) Wassenaar Arrangement controls were sufficient to address BIS’s stated objectives.
- Re (2) ECRA prefers multilateral controls. Before new parameters become effective, Wassenaar approval of US proposal should be obtained.
- Re (3) Unilateral US controls encourage foreign companies to “design out” products subject to the EAR, making US controls ineffective.
- Re (4) Allies have not imposed semiconductor end-use controls, similar to EPCI (744.6), on their nationals.

##### Responses:

- Re (1) China’s Military-Civil Fusion (MCF) deliberately blurs lines between commercial sectors and military programs and ability of China’s government to demand information and assistance from companies, leading to US export controls on emerging technologies. Urgency and criticality of US national security concerns dictate control pending adoption through the Wassenaar Arrangement.
- Re (2) Action pending formal multilateral regime agreement is consistent with ECRA.

Re (3) BIS has refined controls to minimize negative consequences, including replacement of items subject to the EAR with items not subject to the EAR.

Re (4) "US persons" may work for companies headquartered in the United States and closely allied countries.

Analyses:

Re (1) BIS has been unable to define "emerging technologies."

Re (2) ECRA 1752(6) requires that application of unilateral export controls be limited for purposes of protecting specific (underlining added) United States national security and foreign policy interests. The October 2022 controls to China do not identify a specific national security interest nor an action pending formal multilateral agreement. The EAA was amended in 1981 to require discontinuation of unilateral national security controls. Since then, desired unilateral controls (including 3B090 in 2022) have been given a Regional Stability, rather than National Security, reason for control.

Re (3) EPCI 744.6 end-use controls in support of transactions not otherwise subject to the EAR is in addition to, not replacement of, other items subject to the EAR and, in no way, minimizes negative consequences. When 3B090 was deleted in October 2023 and replaced by adding its parameters to 3B001, this in no way replaced an item subject to the EAR with an item not subject to the EAR. But this was a welcome change by removing confusion as to whether 3B090 or 3B001 contained features relevant to a proposed export.

Re (4) Even US persons for companies headquartered in the US or closely allied countries must comply with license requirements re information transfers to non-US persons.

Topic 5 Global health and environment

Comment: BIS should consider advanced technology benefits from cross-border cooperation, especially in global health and environment.

Response: Licensing policies are designed to be flexible.

Analysis: Presumption of denial for any item subject to the EAR to entities listed in 744 Supplement 4 is the antithesis of flexibility.

Topic 6 Technology developed in China

Comment: US will be hurt by no access to technology developed in China

Response: EAR controls do not restrict importation of items from China. BIS does not seek to disrupt supply chains.

Analysis: China may respond to restricted exports of US commodities, software, and technology to China with similar restrictions on exports from China to US. China has already retaliated in July 2023 with controls on export of Gallium from China.

Topic 7 Transfers within China

Comment: Chinese importer of semiconductor manufacturing equipment may resell to entity that makes military products. It is vital that much stricter controls be implemented.

Response: Conditions in BIS licenses and 744.21 and 744.22 impose license requirements on such transfers.

Analysis: Even US allies resist US extraterritorial controls.

Topics 8-13 ECCN 3B090

Comments:

Re (8) There is foreign availability for some 3B090 commodities. Some changes or clarifications are needed.

Re (9) Add “electroless” plating

Re (10,11,13) 3B090a2 (or a11) applies to tools available outside US used to produce mature node semiconductors. Remove “or tungsten” from 3B090a2 or remove all of a2 because covered by a8.

Re (12) Clarify 3B090a7.

Response: 3B090 deleted in October 2023.

Topics 14-48: 744.23a2i, a4, a5

Comments:

Re (14,15) too broad

Re (16) 3B991 broadens 744.23a4 to include equipment beyond semiconductor use.

Re (17) Including EAR 99 materials unnecessarily harms early stages of semiconductor supply chains

Re (18) Catching items purely used for civil applications.

Re (19) Could apply to EAR99 raw materials.

Re (20) Exempt (1) legacy SME and SME components; (2) companies in China headquartered in US and allied partners; and (3) exports to China intended for use outside China.

Re (21) Incentive for companies operating in China, including those headquartered in US and allied partners, to replace US-origin items with non-US alternatives.

Re (22) Lower production costs in China will result in greater fabrication costs for “Western” semiconductor equipment manufacturers and the entire electronics sector in US without substantial strategic benefit.

Re (23) BIS should publish list of fabs manufacturing advanced nodes.

Re (24) Remove ECCNs controlled only for Anti-Terrorism (AT) reasons.

Re (25) Unlikely allies will restrict development or production of ECCNS 3B991 or 3B992, which are widely available in China.

Re (26) No restrictions on legacy SME without affecting ability of US to restrict advanced node IS manufacturing in China.

Re (27) Is intent to restrict masks, reticles, and mask substrates?

Re (28) Photomasks are not parts, components, or equipment, so outside scope of 744.23a4.

Re (29) Exclude items in back-end activities, including 3A992a, 3B992b4, EAR99.

Re (30) Consider automated test equipment (ATE) as “use” rather than “production” equipment.

Re (31) Exclude 3B992b4b and EAR99 for use in developing or producing other 3B992b4b items exclusively for use in back-end activities

Re (32) Define “technology node.”

Re (33) Define “half-pitch.”

Re (34) Distinguish between semiconductor fabrication processing test equipment, which does warrant control, and semiconductor screening test equipment, which does not.

Re (35) 744.23a4 should be tied to end use of concern.

Re (36) Limit 744.23a4 scope to higher-end advanced-node capabilities and exclude items used in legacy production.

Re (37) Difficulties in determining fabs of concern will lead to over-compliance.

Re (38) Exclude NAND, because of its wide availability.

Re (39) Change presumption of denial to case-by-case review.

Re (40) Company’s existence depends on receiving licenses to export to China 3A991b1c crystal pullers to produce ingots and wafers.

Re (41) Time required to receive licenses would eliminate competitive advantages for supplying EAR99 items.



- Re (42) Inconsistent not to require license for end-item equipment not for development or production of 3B001, 3B002, 3B090, 3B611, 3B991, or 3B992, but license is required for use in development or production of parts or components for AT-controlled end -item equipment.
- Re (43) If BIS wanted to prohibit incorporation of EAR99 items into controlled 3B items, it should have prohibited incorporation of any item subject to the EAR into a 3B item under (a)(4), as it did under (a)(2).
- Re (44) Request confirmation that US person's shipment from outside the United States of foreign-origin items not subject to the EAR, but which are destined for use in developing or producing items described in a Group 3B ECCN, are not subject to EAR.
- Re (45) Is license required under (a)(4) to export an item subject to the EAR to a third party original Equipment Manufacturer (OEM) in a third country, where there is knowledge that the item would be incorporated into a foreign-made 3B991 item (not subject to the EAR) by the OEM in the third country and the OEM would then send the 3B991 item to a manufacturer of Category 3 items in China?
- Re (46) Request confirmation how far back up the supply chain the licensing obligations extend for an export of an item to a third party for use in developing or producing a whole new foreign-made item that will only later be used in the development or production of ICs at a covered facility.
- Re (47) Clarification needed if a2ii imposes an affirmative duty to know or otherwise be subject to a license requirement.
- Re (48) Request reformatting to identify the types of equipment BIS intends to control under (a)(4) rather than "catching" such a broad spectrum of semiconductor manufacturing and test equipment.
- Re (51) Most companies will not be able to determine whether items are going to a prohibited semiconductor fabrication facility.
- Re (52) Extend TGL at least one year.
- Re (53) TGL did not go far enough. Forcing termination of "non-listed" activities that had already been occurring in China causes disruptions and supply chain related delays.
- Re (54) Extend ALs with a two-year validity period.
- Re (55) BIS should obtain formal industry input in preparing the ECRA-required annual report.

Responses to Topics 14-48, 51-55: 744.23a2i, a4, a5

- Re (14) Agree. Narrowed, but in unspecified ways.
- Re (15) Neither 2022 nor 2023 rules cut off EAR99 from global semiconductor supply chains. End use scope narrowed to development or production of certain (unspecified) CCL-listed Category 3 front end D:5 countries.
- Re (16) Disagree. Unaware of items in 3B991 unrelated to semiconductor device manufacturing. Welcomes additional comments identifying specific Category 3 Group B ECCNs unrelated to semiconductor manufacturing. Clarifies (a)(4) covers any items subject to the EAR specified on the CCL (not just parts, components, or equipment) for use in development or production of SME specified in listed ECCNs.
- Re (17) Disagree. End use does not capture items merely used by Group 3B ECCN items, but rather only items used in development or production of specified Group 3B ECCNs.
- Re (18) Disagree. (a)(2) only controls items for development or production of ICs. Development or production of basic silicon wafers or ICs (other than advanced-node ICs), including those subsequently used in commercial applications not in any of the end uses described in 744.23, fall outside 744.23.
- Re (19) This rule narrows product scope of (a)(4), only if there is knowledge of ultimate use of specified Group 3B ECCN equipment in D:5 country.

- Re (20, 21) TGL added, which permits companies headquartered in US or A:5 countries to continue to use suppliers in China.
- Re (21) Agree that difficulties in procuring US-origin items may incentivize companies to move supply chains out of China.
- Re (22) Agree that less reliance on lower Chinese production costs will increase Western costs. Therefore, try to regulate only the most advanced technologies.
- Re (23) Generally shares industry preference to use 744 Supplement 4 entity list, rather than 744.23 end-use controls. But entity list non-exhaustive.
- Re (24) Disagree. 3B991 and 3B992 remain generally uncontrolled to China.
- Re (25) Consistent with ECRA, BIS prioritizes multilateral controls.
- Re (26) Indigenization of front end IC production equipment and related CCL items is critical for effectiveness of (a)(2) and BIS welcomes identification of items exclusively used in manufacture of legacy-node ICs.
- Re (27) Agree and excludes masks and related items from (a)(4) controls.
- Re (28) Disagree. Photomasks are equipment.
- Re (29) Back-end excluded.
- Re (30) Disagree, because testing equipment is production, not use. But exclusion of back-end might help.
- Re (31) Agree exclusion for back-end testing in (a)(2) should apply to (a)(4). Also TGL added.
- Re (32) Agree. New Note added to definition of “advanced node ICs”
- Re (33) Agree. See new definition of “advanced node IC.”
- Re (34) For distinction between processing and screening test equipment, see new (a)(5).
- Re (35) (a)(4) narrowed to items specified on the CCL.
- Re (36) Partially agree by narrowing product and end use scopes of (a)(4), but not by technology level.
- Re (37) Over-compliance reduced by 744.21 FAQs.
- Re (38) Disagree. New “advanced node IC” definition.
- Re (39) License review policy revised under 744.23(d) to include conditions for presumption of approval.
- Re (40) Authorization Letters (ALs) reflect policy to impact development and production of SME by indigenous companies located in China.
- Re (41) Recognizing EAR99 availability from multiple sources, (a)(4) narrowed to items specified on CCL.
- Re (42) Disagree. (a)(4) purpose to prevent indigenous development or production of items having national security implications that could erode or circumvent the effectiveness of (a)(2) end use controls.
- Re (43) (a)(4) narrowed to items specified on CCL.
- Re (44) 744.23 does not control items not subject to the EAR; but 744.6 does.
- Re (45,48) License required for Category 3B items in ECCNs 3B001 (except 3B001.g, .h, and .j), 3B002, 3B611, 3B991 (except 3B991.b.2) or 3B992 to export the original item specified on the CCL to the third party OEM.
- Re (46) If the exporter has knowledge at the time of export that the item is ultimately destined for prohibited end use, the license requirement would extend to the original export.
- Re (47,48) A license is required even if the exporter cannot confirm whether the semiconductor fabrication facility is producing products that meet the criteria in (a)(2)(i) and (ii).
- Re (52-54) 2023 amendment expands TGL.
- Re (53) Regret over-compliance.
- Re (55) Agree it may be beneficial to involve public in preparation of annual report.

Analysis of Responses to Topics 14-48, 51-55: 744.23a2i, a4, a5:

Topics 14, 15, 18, 26, 27: BIS should further amend EAR re acceptance of comments in responses but not yet in EAR.

Topics 15-19, 24-26, 29, 31, 36, 37, 40-45, 48: ECCNs xx99x and EAR99 should be excluded, because China not an AT country. Origins of xx99x are US-agreed decontrols from multilaterally controlled items.

Topics 16-19, 25, 26, 29-31, 35, 36, 41, 45, 48: multilaterally agreed 3B ECCNs 3B002, 3B611, and all except following 3B001 should be excluded, because no overlap with new semiconductor controls: 3B001.a3, 10c, 11b, and 13 should be annotated as not reduced by otherwise overlaps with new (a)(4) and new (a)(4) should be annotated "see also 3B001.a3, 10c, 11b, and 13, not controlled by (a)(4)."

Topic 23: Presumption of denial for 744 Supplement 4 entities not preferable to 744.23(a)(5) Back-end exclusion.

Topic 44: Statement "744.23 does not control items not subject to the EAR" inconsistent with 744.23(d) "presumption of approval license review policy when there is a foreign-made item available that is not subject to the EAR and ..."

Topics 49, 50, 57-63: 744.6

Comments:

Re (49) Would it be sufficient under 744.6 to have an end user certify that the exported item will not be used in the development or production in China specified in 3B001, 3B002, 3B090, 3B611, 3B991, or 3B992?

Re (50) 744.6c2 is extremely broad.

Re (57-63) Define "support" and "facilitation" in 744.6.

Re (57) How can logistics firms avoid severe operational disruptions.

Re (60) Assess eight types of facilitation.

Re (61) Does knowledge of a violation trigger a 744.6 license requirement?

Re (62) Will BIS presume that a company's executives "facilitated" a restricted transaction?

Re (63) Request BIS to recommend 744.6 compliance methods.

Responses:

Re (49) No.

Re (50) New 744.6(d)(4) excludes companies headquartered in US or A:5 or A:6 and not majority-owned by entity headquartered in D:5 country.

Re (57) "Support" is defined in 744.6(b)(6). Agree need clarification of types of activities which should be excluded for logistics companies.

Re (58) See FAQ IV.A2.

Re (59) BIS intends facilitating to mean to make easier by helping to bring about. Facilitation does not include administrative, clerical, legal, or regulatory advice.

Re (60) Five of eight not considered facilitation.

Re (61) Yes

Re (62) These scenarios depend on the nature of the company's work and the role that the official plays.

Re (63) If "US Person," as defined in 772.1, is a company, all activities of that company must be reviewed. Natural "US Persons" need to be aware of 744.6 end-use controls and comply with them as applicable, either by excluding themselves or seeking a license as needed. Additional exclusions to 744.6(d) may be applicable.



Analyses:

Re (50), omission of A:6 from exclusion probably intended, for consistency with A:6 treatment elsewhere.

Re (57-60), these specifics should be added to EAR.

Re (62,63), self-blinding by an executive is not an acceptable means of excluding such a natural person.

# **PUBLIC COMMENT FOR RIN 0694–AJ23 AMERICA’S SEMICONDUCTOR EXPORT CONTROLS**

**The SPRING Group**

*December 2023*

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# 1. Review of Current Trade Controls

## 1.1 Domestic Production

The CHIPS and Science Act, enacted as part of the U.S. government's strategic efforts to enhance domestic capabilities, represents a substantial commitment of \$280 billion.<sup>1</sup> This act is not merely a financial package but a comprehensive policy aimed at strengthening the United States' semiconductor industry. Its scope extends beyond economic stimulation to include advancements in research, development, and the creation of a skilled STEM workforce. The act signifies a concerted effort to secure the US's position in the advanced technology sector globally.

The motivation behind the CHIPS Act is twofold: addressing economic disparities and mitigating security risks associated with semiconductor production. Historically, U.S. manufacturers have faced substantial cost disadvantages compared to foreign producers, often backed by significant government subsidies.<sup>2</sup> This disparity has led to an over-reliance on foreign sources, introducing vulnerabilities in the supply chain and potential national security risks. In response, the CHIPS Act introduces tax incentives and funding provisions aimed at encouraging domestic semiconductor production. This strategic shift is expected to reduce dependency on foreign sources, address supply chain challenges, and enhance the nation's ability to respond to technological demands, particularly in times of global disruptions.

The CHIPS Act has a broader impact on U.S. trade policy and control, especially in the realm of high-tech exports and imports. The act's guardrails provision, which restricts funding from bolstering enterprises that could threaten U.S. interests, is a clear indication of the intertwining of economic policy with national security concerns. By focusing on domestic production and limiting the expansion of semiconductor manufacturing in certain foreign countries, the U.S. aims to maintain a strategic advantage in the global technology race. This approach underscores a shift in U.S. trade

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<sup>1</sup> Reinsch, W. A., & Denamiel, T. (2023, April 13). The Chips and Science Act Guardrails' implications for the U.S. trade agenda. CSIS.

<https://www.csis.org/analysis/chips-and-science-act-guardrails-implications-us-trade-agenda>

<sup>2</sup> LMBC. (2023, November 27). Chips act: Tax breaks encourage U.S. chip manufacturingx. CHIPS Act: Tax breaks encourage U.S. chip manufacturing. <https://www.lbmc.com/blog/chips-act-tax-breaks-us-manufacturing/>



policy, where economic measures are increasingly seen through the lens of national security and international competitiveness.

## 1.2 Export Controls

The U.S. government has been intensifying its export controls on semiconductors and chipmaking equipment, primarily focusing on curbing the technological advancement of strategic rivals, notably China. These controls, managed under the Export Administration Regulations (EAR), are a critical component of the U.S.'s broader strategy to maintain technological superiority, particularly in areas with potential military applications.

The implementation of these export controls represents a significant shift in U.S. policy. Previously, the U.S. aimed to maintain a relative technological advantage over competitors. However, the current approach seeks to maximize the technological lead, particularly in semiconductors, which are vital for advanced military and AI applications.<sup>3</sup> This change reflects a growing acknowledgment of the strategic importance of semiconductors in national security and global power dynamics.

### Key Developments and Cases

- **October 2022 and 2023 Updates:** The updates introduced by the BIS have significantly tightened restrictions on AI chips and SME. For instance, the October 2023 update established stricter controls based on TPP and performance density, categorizing chips into two tiers with varying levels of control. These measures have been instrumental in limiting China's access to advanced semiconductor devices necessary for supercomputing and AI applications. Indeed, within this policy, the US chip export policy was one where 13 firms were put on the US's 'blacklist' where certain exports were banned, specifically one's that involved Artificial Intelligence or impacted current US policy goals.
- **Licensing Restrictions:** In general, the US maintains the stance of choosing which restrictions to put on which exports from a case to case basis, which means the adjustment of rules regarding what falls under what category is sure to, "capture a far greater number of chips." Additionally, the administration has made it so that the qualifications for licensing restrictions expand to "countries with national security risks,...missile technology,...and arms-embargoed countries."

- Restrictions on SME: Additional technologies aiding in the production of advanced SME have been added to the control list. The aim is to prevent China from manufacturing advanced chips and developing state-of-the-art SME. This has broader implications, as it hampers China's capability to advance in the global semiconductor landscape.
- Impacts on U.S. and Global Industries: The implementation of these controls has affected U.S. firms and the global semiconductor market. For example, the loss of Chinese market demand for leading-edge chips and technologies has impacted American businesses. Additionally, foreign semiconductor equipment suppliers have begun to curtail their operations in China, indicating the far-reaching effects of these controls.
- Case of Chipmaking Equipment for 14nm and Below: In July 2022, the BIS informed manufacturers of chipmaking equipment capable of fabricating chips at the 14 nm node and below about new export restrictions to China. This action is particularly significant as it targets foundries and impacts the fabrication of logic chips, not memory chips.

The industry's reaction to the U.S. export controls has been swift. Major semiconductor firms and equipment suppliers have started to adjust their operations and strategies to comply with the new regulations. For instance, the response from SK Hynix, indicating a potential sale of its memory production operations in China, underscores the profound impact of U.S. policy on corporate decisions. This move by SK Hynix, a major player in the semiconductor industry, highlights the challenges faced by companies caught in the crossfire of U.S.-China technological rivalry.

Similarly, ASML, the world's leading semiconductor lithography equipment maker, reportedly directed its U.S. staff to align with the new restrictions, illustrating the far-reaching effects of these controls. This action by ASML not only affects its operations but also has broader implications for the global semiconductor supply chain, particularly in China.

The export controls are significantly impeding China's ambition to develop a self-reliant semiconductor industry. By restricting access to advanced semiconductor manufacturing equipment and technology, the U.S. is effectively stalling China's progress in this critical sector. The controls strike at the heart of China's efforts to

advance its semiconductor capabilities, which are central to its broader strategic objectives in technology and national security.

China's response to these challenges will likely involve increased investment in domestic research and development to circumvent the restrictions. However, the complexity and sophistication of semiconductor technology mean that overcoming these barriers is a daunting task. The U.S. controls not only limit China's access to advanced technologies but also potentially slow down its overall technological advancement in areas crucial for economic and military development.

### **1.3 Trade Tariffs**

The US-China trade war, marked by the imposition of tariffs on a wide range of goods including semiconductors, has significantly reshaped the landscape of global trade, especially in the high-tech sector. The introduction of tariffs on semiconductors and related components has led to increased prices and notable supply chain impacts.

The trade conflict escalated in 2018 when the U.S. imposed 25% tariffs on \$50 billion of Chinese goods, followed by an additional 10% on \$200 billion worth of goods, which directly affected the semiconductor industry. China retaliated with tariffs on U.S. chips and other goods. This escalation led to increased costs for semiconductor manufacturers and reshaped global supply chains. The U.S. Trade Representative's (USTR) decision to levy a 10% tariff, later increased to 25%, on imports from China, including semiconductor-related products, illustrates the direct impact on this vital industry.

The U.S. policy of imposing tariffs and restricting chip-related exports is part of a broader strategy to curb China's advancement in AI and other technologies with potential military applications. This move represents a significant departure from the norms of the integrated global economy. It reflects the growing concerns about the security of supply chains for nationally important goods like semiconductors. The trade war's emphasis on semiconductors acknowledges the dual-use nature of these technologies, with both commercial and military applications, thereby raising concerns over national security and espionage.



China plays a crucial role in the global semiconductor supply chain, not only as a significant market but also as a rising producer and a major provider of chip assembly, packaging, and testing (APT) services. China's attempts to produce and use advanced semiconductors, especially for developing AI capabilities, have been significantly impacted by the U.S. trade restrictions. Despite these challenges, China has focused on achieving semiconductor self-sufficiency, responding with favorable policies and state subsidies to bolster its domestic chip sector. However, analysts from *South China Morning Post* have pointed out that replicating each part of the existing global chip supply chain is a daunting and perhaps unrealistic task given the significant investments required.

From the industry's perspective, semiconductor companies caught in the middle of the U.S.-China trade war, like Intel Corp. and Qualcomm Inc., are keen to avoid taking sides. However, the prolonged trade conflict continues to affect their business outlook. A resolution of the trade war could potentially lead to a loosening of policies on the import and export of semiconductor technologies, which would be beneficial for the industry. Both U.S. and Chinese companies are navigating this complex geopolitical landscape, balancing the need to access critical markets and technologies with the imperative to comply with national regulations.

## **2. Analysis of the proposed trade restriction & edits**

### **2.1 Relationship with China**

Due to the very nature of trade control, restrictions and regulations on exporting semiconductors to China may impact the political relationship and economic supply chain between the two countries. More specifically, China may see export controls as a threat, retaliating by more strictly enforcing its own laws for not just Chips but other industries, creating a tit-for-tat escalation scenario.

Such controls therefore may inadvertently hurt US businesses that depend on the Chinese market for sales. For instance, Qualcomm, a US chip company, depends on China "for more than 60% of its sales" while eight US companies in the semiconductor space are the most dependent on China for sales. With a loss in sales, this may create a vicious cycle where less capital means less R&D spending which stifles innovation

Thus, in order to solve this issue, we propose to strike a balance between full restrictions, ensuring that high-tech, cutting-edge semiconductors used for the military and technology be restricted for national security. However, for routine commercial chips, trade should still occur.

## **2.2 Confusing Bureaucracy**

With the proliferation in new export regulations, it may be confusing for businesses in deciding which actions follow specific guidelines. This especially hurts medium to small businesses in which they don't have the resources to examine what is and isn't legal. Indeed, furthermore, with the continued development of new semiconductors, this problem only becomes worse because there is a blurred line between what constitutes as protection to "national security."

In the worst case scenario, such regulations may further create a black market of unregulated shipping of semiconductors without governmental oversight, possibly worsening the situation. With the incentive to catch up to the US state of semiconductor innovation, smuggling has already existed without regulations.

As a solution, the BIS can further inform the public through infographics that provide the broad overview of the new regulations to spread outreach. Smuggling can further be reduced by reinforcing stricter regulations on US companies to protect intellectual property and the flow of chip products.

## **2.3 Other Suppliers**

In the case of export controls, China still has the ability to obtain chips from other countries, hindering US efforts uselessly. For instance, after initial US export restrictions, while America's share for China "dropped to 9%," the Dutch share "jumped to 30% from about 15%." Indeed, on a macro level, China's chip equipment imports still rose by 93%. However, it is important to note that for the ASML Holding, a Dutch company, the Dutch government further enforced export controls on China.

Such solutions could be global modeling in which neighboring allies follow the US. With South Korea, Japan, and Germany all exporting huge amounts of semiconductors every year, it is crucial for America's model to be adopted internationally to create the

strongest effect. In the event a single country has no restrictions, it may hinder export controls' effectiveness.



# PUBLIC SUBMISSION

<b>As of:</b> 1/29/24, 9:34 PM
<b>Received:</b> January 07, 2024
<b>Status:</b> Pending_Post
<b>Tracking No.</b> lr3-yfun-bqv2
<b>Comments Due:</b> January 17, 2024
<b>Submission Type:</b> Web

**Docket:** BIS-2023-0016

Expansion of Export Controls on Semiconductor Manufacturing Items; Entity List Modifications

**Comment On:** BIS-2023-0016-0001

Export Controls on Semiconductor Manufacturing Items

**Document:** BIS-2023-0016-DRAFT-0008

Comment on FR Doc # 2023-23049

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## Submitter Information

**Name:** Anonymous Anonymous

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## General Comment

With respect to the following fact patterns, BIS's compliance objectives would be furthered if BIS were to state for the public in the preamble responses to comments or in an FAQ response whether Draft Answers A or Draft Answers B below are the correct answers to the following two, similar fact patterns involving the application of the licensing requirement in section 744.23(a)(2)(i).

FAQ X1: US Company A wants to export US-origin 3D991 IC design software to a non-embargoed third country software design Company B. At the time of the possible export, US Company A would know that the software would be used by Company B to create IC software designs that Company B would later send to a facility in China that produces advanced node ICs. The foreign-made IC designs would not be subject to the EAR under either the de minimis or foreign direct product rules. No Entity List entities or other Part 744 issues would be involved. The US-origin software would stay with Company B and would not be incorporated into the software designs or separately sent to the facility in China that produces advanced node ICs. Question: Does 744.23(a)(2)(i) impose a requirement on Company A to obtain a license before it exports the software given its knowledge that the software would be used in a third country to produce a foreign-made item (the IC design) not subject to the EAR that would be destined to a facility in China that produces advanced node ICs?

Draft Answer A1: Yes. Section 744.23(a)(2)(i) imposes a requirement on Company to get a license to export the software because the exporter knows that the software is ultimately destined for an end use described section 744.23(a)(2)(i), namely the production of ICs at a facility in Macau or a Country Group D:5 country where production of "advanced node ICs" occurs. The controls in section 744.23 are "end use" controls rather than an item-based controls. Thus, it does not matter that the US-origin software would not be incorporated into the foreign-made designs to be sent to the facility in China or otherwise sent separately to the facility in China. It also does not matter that the foreign-made designs are not subject to the EAR. What matters, for licensing purposes, is what the exporter knows at the time of export about whether there is an end use described in section 744.23 that will ultimately result in connection, albeit indirectly, with the export.

In addition, the non-US Company B would have a licensing requirement itself under section 764.2(e) to send its foreign-made designs to the facility in China because it would have used an item subject to the EAR with knowledge that a violation of the EAR had occurred and was about to occur in connection with the item, even though the US-origin software itself would not be sent to the facility in China.

Draft Answer B1: No. Unless the US-origin software in this example is incorporated into a foreign-made product to be sent to the facility in China that produces advanced node ICs or otherwise sent separately to the facility, 744.23(a)(2)(i) does not impose a licensing requirement in this case. For there to be licensing requirement under section 744.23(a)(2)(i) in this example, the US-origin software itself must be “destined to” the facility in China, whether as stand-alone item or incorporated into a foreign-made item destined to the facility. Because the foreign-made IC designs are not subject to the EAR under the de minimis or foreign direct product rules, and because the US-origin software is not sent to the facility in China in whole or as a component of the foreign-made item, no licensing requirement exists – even though there was knowledge at the time of export that the software would be used to design ICs that would be produced in a facility in China that produces advanced node ICs.

FAQ X2: All the facts in FAQ X1 are the same, with the only difference being that Company A would send US-origin 3E991 technology to Company B to produce semiconductor manufacturing equipment in the third country that itself was not subject to the EAR under the de minimis or foreign direct product rules. Would section 744.23(a)(2)(i) impose a requirement for Company A to get a license to export the 3E991 technology because it would know at the time of export that the technology would be used to produce equipment that would later be exported to China to produce ICs in a facility that produces advanced node ICs.

Draft Answer A2: Yes, for the same reasons in Answer A1.

Draft Answer B2: No, for the same reasons in Answer B1.

In sum, please explain to the public whether Answers A or Answers B are correct -- or if there is a third answer that is correct -- to the two fact patterns.

January 17, 2024

Comments submitted via the Federal eRulemaking Portal: <http://www.regulations.gov>

Ms. Thea D. Rozman Kendler  
Assistant Secretary for Export Administration  
Bureau of Industry and Security  
U.S. Department of Commerce  
14th Street and Constitution Ave NW  
Washington, DC 20230

Subject: Export Controls on Semiconductor Manufacturing Items

Reference: RIN 0694-AJ23 - Federal Register / Vol. 88, No. 205 / Wednesday, October 25, 2023

Dear Ms. Kendler:

The Technology Trade Regulation Alliance (TTRA) consists of small, medium, and large companies across the entire spectrum of the technology industry including software and services, hardware, semiconductors and semiconductor equipment, medical devices, sensors and instrumentation, test and measurement tools, and internet service providers. Our member companies employ millions of Americans and support the US economy in the science, technology, engineering, and manufacturing sectors, including technology that is essential to innovation. We have an Export Controls Committee that consists of over 270 compliance and policy professionals. TTRA appreciates the opportunity to provide comments on this Semiconductor Manufacturing Equipment Interim Final Rule (SME IFR).

We strongly believe that narrowly tailored, clearly defined controls and technical parameters would better protect US national security interests in hindering China's access to critical technologies that it could use to modernize its military capabilities in ways that threaten the national security interests of the United States and its allies. We also continue to support BIS's efforts to prevent or limit the further development of weapons of mass destruction, advanced weapons systems, and high-tech surveillance applications that create national security concerns. As BIS noted in the new rule, achieving these objectives requires a calibrated approach, focused on key, cutting-edge technologies that will not undermine US technology leadership or unduly interfere with commercial trade. Below we identify areas to improve the SME IFR to achieve this careful balance. Specifically, we point to issues with the administrability of the controls, the potential uneven application of the new regulations by various stakeholders, and the uncertainty as to the scope of certain control language and parameters.

### **Temporary General License**

#### *End-Use Scope of TGL*

The ultimate end use raises ambiguity in the context of the Temporary General License (TGL). Given that

the TGL only authorizes certain exports for purposes of not disrupting the supply chain, companies are required to know the end use of the item in order to export an item pursuant to the TGL. Subsequently authorized end-use of distribution is contradictory with the ultimate end-use requirement. We note that it is not standard practice to know the specific end use of a subset of items prior to every shipment. We suggest BIS addresses this through an FAQ. Specifically, we would suggest BIS clarifies that this TGL can be used for intra-company transfers for entities not headquartered in China, Macau or a D:5 country.

Clarification or guidance on “ultimate end use” is necessary for industry compliance. During the production stage, the final end user of each item (semifinished or finished goods) is often not precisely decided, and the ultimate end use of each item may not be known. The products may be stored in a warehouse until a purchase order is received. A company can implement compliance policies to ensure that the item will be lawfully shipped to only permitted end users with permitted end use. The lawful shipment may be granted under NAC or Export License to ultimate end users in (1) Country Groups D:1, D:4, or D:5, excluding destinations also specified in Country Groups A:5 or A:6, or (2) Country Groups D:1, D:4, or D:5, excluding destinations also specified in Country Groups A:5 or A:6. Would the possibilities of shipment under NAC or License preclude the validity of using TGL?

The description “*the recipient is located in*” is confusing and it seems that it should be deleted. For example, Vietnam is not a D:5 country. According to the writing of the rule, the export to a company located and headquartered in Vietnam is not permitted because it does not meet the condition: *when the recipient is located in but is not headquartered or whose ultimate parent company is not headquartered in Macau or Country Group D:5*.

#### *Item and Activities Scope of TGL*

We also request BIS to clarify that TGL covers repair and/or replacement of controlled items. Repair or replacement of controlled items may include some, but not all the listed activities, such as inspection and testing. TGL authorizes “integration, assembly (mounting), inspection, testing, quality assurance, and distribution.” Use of “and” in this phrase suggests that all activities must be performed to qualify for TGL. If this was not BIS’s intent, we request clarity through an FAQ. Repair and/or replacement activities are important commercial services that would burden the supply chain if such activities must cease during the authorized period of continued integration and assembly operations.

#### **Definition of “Headquartered In”**

We note the uncertainty regarding the language of “headquartered in”. Since this is not a defined term, it is unclear how to determine where a company is headquartered. For example, a company may have a parent company in one country, a principal place of business in a different country, and an ultimate beneficial owner in another country. Therefore, it is unclear how to determine which controlling entity is the headquarters for purposes of the new rule. We suggest that BIS issue a definition of “headquartered in” or guidance on how to conduct sufficient due diligence for determining a company’s headquarters and ownership structure, including detail with respect to subsidiary entities. This test should rely on quantifiable parameters so there is a consistent understanding among industry. Further, in many countries this information may not be readily or publicly available. We suggest BIS provide guidance for how to



make a “headquartered in” determination where there is no such information available. We specifically recommend BIS clarifies that companies whose ultimate parent company is not headquartered in Macau or D:5 would not meet the provisions of 744.23(a)(3). BIS should also strive to continue to add any entities to the BIS Entity List.

### **Definition of “Supercomputer”**

Note 2 to the definition of “[supercomputer](#)” characterizes supercomputers in a way that already seems to exclude commercial datacenters used by, e.g., IaaS providers or commercial internet companies. However, BIS could make this even clearer by moving this portion of the note into the main text of the definition.

One alternative would be for BIS to adjust this definition to be consistent with whatever threshold is ultimately established for reporting of compute clusters under Section 4.2(a)(ii) of Executive Order 14110 on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence.

### **Resulting Consequences to the Semiconductor Industry**

Finally, TTRA notes certain resulting consequences of the SME IFR to the semiconductor industry. This includes the limitations on the availability of markets for US companies, the expansion of Chinese competitor markets that will encourage acceleration of Chinese technology development, the design-out of US-origin products and technology from global supply chains, over-control of US-origin products by foreign companies in efforts to be compliant with the complex regulations, and the misalignment of controls with other countries, including US allies.

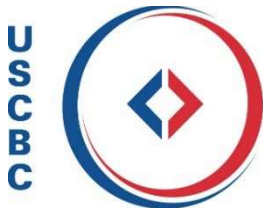
We appreciate BIS’ willingness to consider industry input and continue to support its efforts in balancing US national security concerns with economic competitiveness. Thank you for reviewing our comments which we hope will further refine the rule in several significant aspects.

Sincerely,



Ken Montgomery  
Executive Director  
Technology Trade Regulation Alliance (TTRA)

cc: Matthew S. Borman, Deputy Assistant Secretary for Export Administration



**THE US-CHINA BUSINESS COUNCIL**

美 中 贸 易 全 国 委 员 会

**USCBC Comment on Export Controls on Semiconductor Manufacturing Items and Implementation of Additional Export Controls: Certain Advanced Computing Items; Supercomputer and Semiconductor End Use; Updates and Corrections**

**Bureau of Industry and Security (BIS), Commerce**

**Docket Numbers: 2023-23049, 2023-23055**

**January 17, 2023**

The US-China Business Council (USCBC) welcomes the opportunity to submit comments to the Bureau of Industry and Security (BIS) on the Semiconductor Manufacturing Equipment (SME IFR) and Advanced Computing Items; Supercomputer and Semiconductor End Use; Updates and Corrections (AC/S IFR) interim final rules. USCBC represents over 270 American companies that do business with China. We hope to work in partnership with the US government to provide practical solutions, necessary clarifications, and appropriate strategic considerations to implementing the new SME and AC/S IFR. USCBC supports BIS's efforts to protect US national security and prevent the proliferation of technologies that have clearly defined national security applications.

However, USCBC is concerned that the updated controls on computers and equipment – and potential future controls related to infrastructure-as-a-service (IaaS) – are overly broad, lack needed certainty, and risk inadvertent harm to American competitiveness and global leadership in technology. BIS should endeavor to work with industry to demystify compliance obligations and to craft strategic controls that are narrowly targeted to address national security objectives without undermining US industry and US competitiveness globally.

Trade with China brings many important benefits to the US economy and American workers. It also acts as a stabilizing force for one of the most consequential bilateral relationships in the world. Advanced US manufacturers of all sizes and their American business partners and consumers have benefitted from globally integrated supply chains that have improved efficiency and lowered costs for US manufacturers and consumers. Revenues generated in China are reinvested in US R&D activities, which in turn allows US companies to maintain their competitive edge over Chinese and foreign competition. US semiconductor companies, which overwhelmingly control the highest value add elements of the supply chain, are particularly well situated to use their positions to maintain and advance their competitive edge.

US technological leadership is critical to advancing US national security interests and ensuring that the United States remains at the forefront of the development of strategic technologies is essential to economic growth and security. US technology companies are global leaders, providing secure, reliable, and innovative products and services to hundreds of millions of customers around the world. It is crucial that BIS assess the impacts of its controls on US companies and supply chains to ensure that they do not inadvertently damage US competitiveness and, by extension, US national security interests.

US companies – as well as multinational companies from US allies and partners with a US presence – have longstanding, sophisticated export control compliance programs to lawfully acquire export licenses and ensure that their products and processes are not furnishing the development of a sanctioned entity, end user, or military end-use technology. Despite ever lengthening and increasingly costly timelines, companies have withheld US exports until they acquire licenses or until rigorous applicability assessments can be completed. The controls announced on October 7, 2022, and October 17, 2023, have significantly increased the compliance burden on US companies. It is essential that BIS increase its own resources to ensure that its system functions in an expedient and consistent way.

USCBC also urges BIS to coordinate its controls with US allies and partners. The lack of alignment between national export control systems has asymmetrically disadvantaged US companies and has been counterproductive to the stated objective of restricting China’s ability to obtain critical technologies, as foreign competitors have increased their exports of material into China. Inadequate coordination with allies and partners has accelerated the development of a semiconductor ecosystem in China devoid of American products and processes, resulting in reduced visibility and access to China’s marketplace, all while failing to significantly deprive China of advanced technologies from third countries.

### **Issues with the AC/S IFR**

There are numerous concepts and definitions within the AC/S IFR that require additional clarification and refinement from BIS. Enacting changes in line with the below suggestions will ensure fair interpretation, streamline implementation, and enhance company compliance and business planning.

#### *Notified Advanced Computing (NAC)*

We propose that the NAC process function as a true license exception. As the rule is currently written, a license exception with a pre-notification and approval is not an exception but a slimmed-down license. BIS should implement a one-time Commodity Classification System (CCATS) review to determine whether future notifications are required or if companies can follow an annual reporting process. To a further extent, we propose that BIS explore bulk NAC authorizations and shift reporting requirements to post-shipment.

NAC’s definition of “use in data centers” requires clarification considering the variation in size, power, and structure of data centers. We propose that BIS identify specific applications or data centers that the US government is targeting. We also propose a definition that links the parameters of the CPU/GPU for determining “use in data centers.” Additional specificity for the term “data center” and its associated NAC-covered products would minimize the impact on industry while still achieving BIS’s objective.

BIS should issue additional clarification for the definition of “multiple exports.” It is unclear if it refers to multiple exports to the same party or the same product. It is also unclear if the exports must all be associated with a single purchase order. Clarification is also needed on whether a NAC for a parent company applies to subsidiaries. It is also unclear whether the NAC requirement applies to exports where a D:5/Macau entity is party to the transaction but is not the final destination.

BIS should also clarify or define “the NAC notification is limited to six items.” Additionally, BIS should clarify its guidance on the meaning of “a distributor may not be a party to the NAC notification.” It is unclear if this prohibits NAC license exceptions for all transactions involving distributors or if it means that exporters are not required to declare a distributor on their NAC pre-notification submissions.

Certain controlled items are sold in consumer markets through reseller and distribution channels. As long as the distributor is identified as a party to the transaction and meets the end use and end user criteria for NAC, it is unclear why such orders should be precluded from leveraging the NAC process. BIS should expediently provide clarification on these points through an FAQ.

#### *ECCN Clarification and Redundancy*

As the rules are currently written, there is no differentiation between products that are eligible for NAC processes versus export licenses. BIS should create ECCN subcategories to specify which products are NAC-eligible and which products need an export license.

Clarification is also needed regarding the requirement for a license when advanced computing items pass through a Chinese company but are designed for a non-Country Group D:5 end user. Within the rule changes to ECCN 3A090, further clarification is needed on the “or worldwide” clause, as its lack of a definition may result in licensing policy discrepancies and challenges to implementation.

As with the October 7 rule, the creation of new, catch-all ECCNs has resulted in redundancies with older ECCNs. BIS should re-evaluate existing controls to ensure they are consistent, clear, and up to date. Overlapping ECCNs with different licensing requirements creates significant compliance burdens for companies and will lengthen review processes at BIS. We are concerned that the interagency license application review has become increasingly lethargic.

#### *Foreign Direct Product Rule (FDPR)*

The use of “produced by” in the new FDPR represents a significant expansion of the direct product concept under the prior system. BIS should enumerate the specific manufacturing processes that constitute “produced by” and provide additional metrics for making the determination in an FAQ. Given the significant expansion of regulatory scope represented by this change, we suggest that BIS initiate a new comment process for the FDPR.

#### *Temporary General Licenses (TGL)*

As the rules are currently written, it is unclear what constitutes knowledge of the “ultimate end use,” and it is unclear what is expected of exporters that are not aware of the ultimate end use. BIS should provide additional guidance on the scope of “ultimate end use” concerning technology transfer, especially regarding whether it includes software and technology.

Further, as written, the rules indicate that TGLs do not apply to production for end use within a D:1, D:4, or D:5 subject to a valid license or license exception, including the NAC. To align the TGL with other elements of its policy, BIS should include a carveout for those authorized activities.

Clarity is also needed on whether the 2023 TGL supersedes the expiration of the 2022 TGL. It is unknown whether companies can use the new TGL to continue or resume activities that qualify for the TGL product and end-use scope. Clarification on this aspect of the TGL will improve business planning and enhance predictability.

While the length of TGL validity is generous, we propose that BIS create a new permanent license exception with the same criteria as the TGL. As the TGL is only applicable to anti-terrorism controlled items for certain end-users, and as BIS has acknowledged its license review standard will be a



presumption of approval under such circumstances, BIS should alleviate the burden on industry in applying for licenses that will be presumptively approved prior to the TGL's expiration. Such an approach would be more efficient and predictable for all parties and would remain consistent with US national security objectives.

#### *Definition of "Headquartered In"*

The definition of "headquartered" needs additional clarification to ensure that industry participants apply a uniform understanding of the term to their compliance efforts. To provide clarity, BIS should establish metrics that can be used to assess whether a company's ultimate parent is headquartered in a Country Group D:5 location. BIS should furnish specific examples and best practices in an FAQ. To facilitate compliance with restrictions, BIS should also provide a continually updated list of entities that meet these criteria, which will allow companies to use standard screening processes to identify customers subject to restrictions.

As currently written, "headquartered in" is a vague and overly broad concept with different meanings depending on the recipient and could include entities with minority Chinese ownership. It is also ineffective because detailed ownership information on non-public companies is generally not publicly available. It will be difficult for US companies to determine whether a customer is "headquartered in" a D:5 country. Under the current framework, companies will spend significant compliance resources conducting due diligence that is unlikely to catch restricted entities.

#### *Product Servicing*

BIS should consider issuing an exception for servicing consumer products which contain components meeting the 3A090.a or 3A090.b parameters, such as videogame consoles, that were sold prior to November 17. Without an exception, US manufacturers may face a competitive disadvantage and significant legal exposure under China's consumer protection laws, which mandate the provision of replacement parts for up to two years following the sale of a consumer product. BIS could consider a corresponding requirement that the consumer must return the defective component for destruction by the manufacturer, such that the manufacturer can verify that it is providing a replacement and not an additional export.

#### *Consideration of Controls on IaaS*

Regarding BIS's inquiry on the feasibility of additional regulations related to IaaS, USCBC is concerned that the imposition of novel controls has the potential to disadvantage US cloud service providers (CSPs) in the global market and undermine trust in American CSPs. Overly broad controls risk reducing US CSPs' sales to global customers, stifling their innovation and technological advancement, impeding the adoption of their technologies worldwide, and pushing customers to foreign CSPs. Given the unprecedented nature of new controls on IaaS and the significant potential for unintended consequences, we ask that BIS consider the following:

- Provide a sufficiently lengthy opportunity for notice and comment that is considered before any controls take effect for any regulatory proposal that would expand export controls to IaaS.
- Conduct a formal impact assessment that considers both the strategic and economic implications of such regulations on highly globalized services, including the potential that such

controls could prompt global companies to diversify away from American cloud service providers.

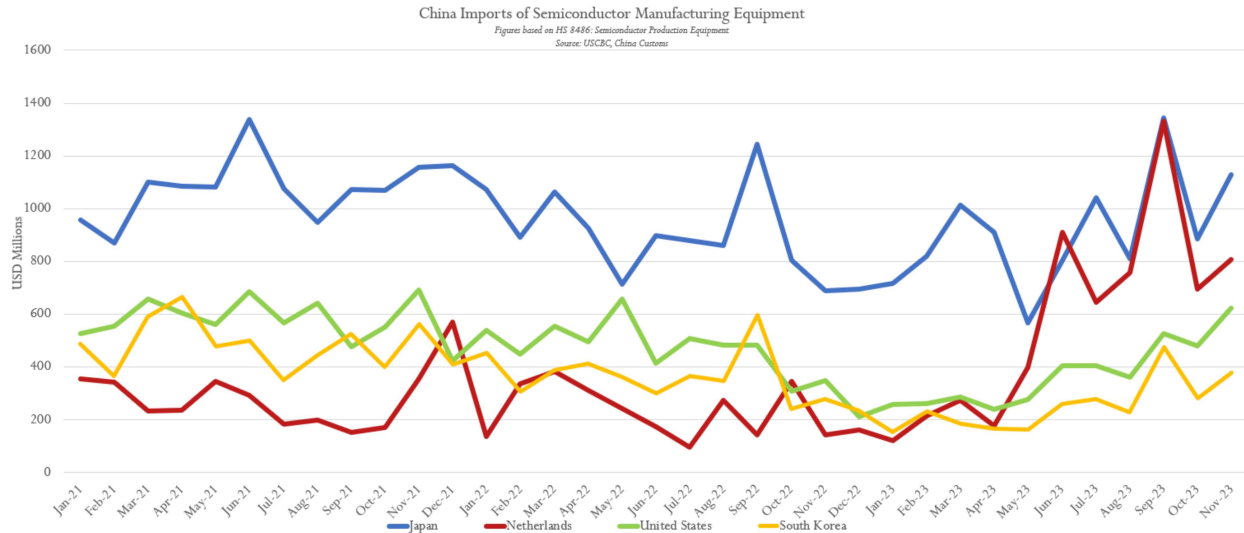
- Coordinate with US allies and partners before instituting any controls to ensure US companies are not disproportionately impacted.
- Target any controls to a narrow, clearly defined set of entities that have identifiable US national security risks.

## Issues with the SME IFR

### *Lack of International Harmonization*

USCBC is concerned that the SME IFR places US companies at a significant disadvantage relative to their counterparts from other countries. Differences between US rules and the rules of other countries have resulted in lost market share for US firms without significantly inhibiting China's access to semiconductor manufacturing equipment. Key points of departure between US rules and those in Japan and the Netherlands include US controls on the activities of US persons in China, as well as controls associated with items that are "specially designed."

In contrast to the US system, Japanese and Dutch controls on semiconductor manufacturing and advanced computing are comparatively less stringent, particularly in the absence of equivalent controls regarding citizenship and non-specified sub-assemblies, subsystems, parts, components, and accessories designed for use with controlled equipment. There is also no guarantee that licensing policy in Japan and the Netherlands will be implemented as strictly as the US, which assesses most of its SME controls with a presumption of denial.



Data from China Customs shows that the imposition of export controls has not meaningfully reduced imports of SME from US allies.

BIS should seek to align US controls more closely with Japan and the Netherlands. Such alignment could enhance international cooperation, reduce compliance burdens for businesses, and foster a more level playing field for US companies. It would also mitigate the risk of US firms being at a competitive disadvantage. This would allow the United States to balance national security concerns with the need to maintain competitiveness in the global semiconductor market.

Coordination is also needed with countries other than the Netherlands and Japan where similar controls do not exist. While these concerns were partially remedied by lifting the October 7 restrictions to EAR99 products, USCBC member companies have reported lost sales to foreign competitors in China that are not subject to US export controls. Unilateral action from the United States, or action from just a small coalition of countries, does little to accomplish the government's policy objectives. We suggest that BIS work with the interagency to increase coordination with all international allies. Doing so is necessary to ensure a level playing field in a global marketplace.

#### *Lack of a sliding scale mechanism*

USCBC commends BIS's efforts to exempt certain technologies that do not alter the technology level of semiconductors. However, there is no mechanism for reassessing the threshold for "catch all" controls on semiconductor manufacturing equipment that accounts for advances in technology. The lack of a sliding scale to account for China's technological progress will result in ever-growing losses for US firms, even in the future when thresholds established on October 7, 2022, and October 17, 2023, are no longer considered advanced. Establishing a sliding scale would afford greater opportunities for US companies to supply and service technologies that are otherwise widely available in the Chinese marketplace.

#### *Lack of TGL coverage for servicing*

As written, the TGL cannot be used to send spare parts to a depot or to support product servicing. We recommend that the TGL also apply to newly controlled NS- and RS- controlled items for products needed to maintain and upgrade certain parts and components without increasing the performance on the tool to "advanced node" levels. Doing so would be in line with the preamble of the SME/IFR which states that the preamble was created to reduce unnecessary regulatory burdens for companies.

### **Impact on Competitiveness**

Overly broad export controls reduce US companies' sales to global customers, stifle their innovation and technological advancement, and impede the adoption of US products and technologies worldwide. According to USCBC's 2023 [Member Survey](#), 51 percent of USCBC member companies lost sales due to customer uncertainty of continued supply resulting from US-China trade tensions. Thirty-four percent of companies saw shifts in suppliers or sourcing due to trade tensions.

These trends are not solely attributable to export controls, but USCBC members in the technology sector have reported lost sales due to customer expectations of imminent export controls, even if controls were never actually imposed. Even the perception that access may be restricted will result in customers moving away from US companies. BIS should establish and maintain communications with China, such as through the export controls information exchange, to provide clarity to the Chinese government and Chinese business community about the objectives and scope of US export control policy.

As it implements the recent export controls, BIS should also work within the US interagency process and with US industry to assess the impact of those export controls on US international competitiveness and US employment in advanced manufacturing.

US export controls have accelerated China's longstanding drive for technological self-sufficiency. This has exposed many companies to the twin pressures of export restrictions and import substitution. In our member survey, 78 percent of respondents said that China's industrial policies have induced increased

competition from Chinese firms that were not previously competitive. Fifty-three percent said industrial policy has enabled supply chains to shift away from American products toward domestic or non-American competitors. While a broader interagency discussion is urgently needed to address the deleterious effects of China's industrial policy, within the export controls context, a separate conversation is needed about the rate at which Chinese firms replace covered technologies. BIS should work with industry and within the interagency to establish a mechanism for determining how China is replacing high tech products, and in those cases, reassessing its licensing policy where fully domestic alternatives exist.

USCBC appreciates the opportunity to comment on the IFRs and hopes to continue to work with the administration to craft an export control strategy that is clear and multilateral and promotes America's long-term global competitiveness. To this extent, we applaud the administration's decision to reestablish the President's Export Council Subcommittee on Export Administration. We hope to help BIS develop a strategy that balances the US administration's geostrategic priorities with the technological realities and efficiencies inherent in the global semiconductor ecosystem.



January 17, 2024

*Via the Federal eRulemaking Portal:* <http://www.regulations.gov>

Attn: Eileen Albanese, Director  
Office of National Security and Technology Transfer Controls  
Bureau of Industry and Security  
U.S. Department of Commerce  
1401 Constitution Avenue, NW  
Room 2616  
Washington, DC 20230  
References: RIN 0694-AJ23, 88 Fed. Reg. 73424 (Oct. 25, 2023)

RIN 0694-AI94, 88 Fed. Reg. 73458 (Oct. 25, 2023)

**Subject: Comments of ASML US LLC on Interim Final Rules:**

**Export Controls on Semiconductor Manufacturing Items (“SME IFR”)**

**Implementation of Additional Export Controls: Certain Advanced Computing Items; Supercomputer and Semiconductor End Use; Updates and Corrections (“Computing IFR”)**

Ladies and Gentlemen:

ASML US, LLC (“ASML US”) welcomes the opportunity to comment on the above-referenced interim final rules (together, the “October 2023 IFRs”).

These comments build on ASML US’s comments on the October 2022 interim final rule regarding certain advanced computing and semiconductor items and supercomputer and semiconductor end uses, 87 Fed. Reg. 62186 (October 7, 2022) (“January 2023 Comments”), which are included as an attachment to this submission. The January 2023 Comments’ input regarding, among other things, acute problems with the new regulations’ unilateral character remain relevant to the October 2023 IFRs.

**A. SUMMARY**

ASML US understands that the October 2023 IFRs are based on national security concerns. But the interim rules reinforce and extend requirements that go beyond traditional export controls in ways that undermine U.S. interests.

The touchstone of U.S. export control policy making regarding semiconductor manufacturing equipment (“SME”) and China should be that the United States benefits from accommodating supply to and servicing of Chinese trailing edge, “legacy” production of semiconductors. “Decoupling” through restrictions on such supply and servicing provides no

benefits – it only causes harm. It is far better to “de-risk” by addressing supply to China that the U.S. government has determined could actually impair U.S. security.

- As a starting point, eliminating the Chinese legacy integrated circuit (“IC”) production installed base is not possible or desirable. The Chinese producers will also likely find or develop ways to keep their legacy fabs operational.
- Blocking supply to and servicing of China’s legacy IC production would force it to develop a competitive SME industry – exactly what the U.S. government represents that it is trying to prevent.
- October 2023 IFR provisions identified below such as the SME Restriction and Advanced Fab Restriction, which, as interpreted by BIS, restrict supply to and support for Chinese legacy IC production, conflict with BIS’s stated intention to make relevant export controls “calibrated and measured.”
- Since Chinese companies will not allow the installed base for legacy IC production to deteriorate, the U.S. government should allow U.S. and other Western suppliers – over which there is jurisdiction – to supply, repair and otherwise service that installed base.

With these key points in mind, ASML US respectfully urges BIS to:

- Rescind the “SME Restriction” (EAR § 744.23(a)(4)), or at least (i) make permanent the Temporary General License or (ii) permanently authorize intra-company transfers of items otherwise restrained by the SME Restriction.
- Retract guidance that BIS considers the “Advanced Fab Restriction” (EAR § 744.23(a)(2)) to apply to export of a component to a third country if the exporter has “knowledge” that it will be incorporated into a system (not subject to the EAR) and that system will be exported from the third country to a restricted end user.
- Retract guidance that, for purposes of enforcing restrictions on in-country transfers, BIS will consider repair or storage at another location to be a change of end use such that return of the item could require authorization.
- Retain October 2023 IFR deemed export exclusions.
- Extend an exemption regarding U.S. person restrictions (EAR § 744.6(d)(4)) to (i) individuals who are employed or working on behalf of a company “headquartered in” the United States or a Country Group A:5 or A:6 country or (ii) those employed by or working on behalf of a company owned by such a company.
- Confirm that a new 0% *de minimis* rule regarding certain lithography systems (EAR § 734.4(a)(3)) does not apply to “specially designed” components that are covered by ECCN 3B001.

**B. ASML****ASML**

ASML US is a wholly owned subsidiary of ASML Holding NV (“ASML”), a world leader in semiconductor technology and systems headquartered in the Netherlands. ASML US is part of the U.S. technology base, with facilities in Arizona, California, Connecticut, Idaho, New York, Oregon, Texas, and Virginia.

ASML US contributes significantly to ASML’s semiconductor technology and systems. ASML US employs 8,000 full-time employees and undertakes research and development, design, manufacturing, customer sales and service, and supply-chain activities in the United States.

ASML operates globally. ASML’s technology and engineering expertise as well as its global activity is devoted to semiconductor equipment and services, especially lithography, where, since its founding, ASML has been engaged in accordance with Moore’s Law in the development and extension of technology and systems solely for commercial semiconductor manufacturing.

Key ASML customers are headquartered in the United States and have U.S. fabrication facilities.

ASML’s semiconductor lithography systems are primarily developed, manufactured, and assembled in the Netherlands, while its non-lithography systems are developed, manufactured, and assembled in the Netherlands, the United States and Asia. Components, modules, and software for ASML’s lithography systems are developed and produced by thousands of suppliers worldwide, with major suppliers in the United States, Germany, the Netherlands, and Japan. Certain of these components, modules, and software are subject to EAR.

**Export Control Cooperation**

ASML has long cooperated closely with BIS and other export control administrators around the world to promote effective, multilateral export control policy making and compliance with export control requirements. Pursuant to the U.S. and multilateral export control list review process, leading edge semiconductor lithography systems are subject to national security and multilateral control. As they have become trailing-edge, semiconductor lithography systems have been routinely decontrolled for national security purposes pursuant to the same process.

**C. ACCOMODATING SUPPLY TO AND SERVICING OF CHINESE LEGACY IC PRODUCTION IS IN U.S. INTERESTS**

As Western SME and semiconductor device makers have long sought to produce at the leading edge of technology, Chinese companies have become a mainstay of the trailing edge or legacy level of technology, supplying Western-origin companies with standard, low-cost consumer integrated circuits for both memory and logic chips. As a result, there is an established base of deep ultraviolet (“DUV”) lithography systems in China.

There is little apparent technological, supply chain, or policy basis to restrain U.S. and allied country-headquartered companies' supply to or servicing of such Chinese legacy IC production.

Eliminating Chinese Legacy IC Production Via U.S. Export Controls or Public Policy is Not Possible: For a number of reasons, there is no possibility that Chinese legacy fabs will suspend operations in reaction to U.S. export controls. Given the strong need for mature semiconductors to keep the Chinese manufacturing economy functioning, Chinese producers of legacy semiconductors can and will likely find or develop ways to keep their fabs operational. Further, the Chinese market has launched and expanded its own localized supply chain for mature semiconductor equipment manufacturing.

Chinese Legacy IC Production and Support from Western Suppliers Are Helpful to Allies and the Global Supply Chain: China's production of legacy semiconductors has provided major economic benefits to Western companies for consumer goods and to the U.S. and global economies by both reducing inflationary pressures and increasing global economic growth. Further, a robust global supply of mature semiconductors is an essential component of U.S. and allies' public policy goals around electrification, SmartGrid, healthcare technologies and other policy priorities impacting the climate and global health. Furthermore, China should be encouraged to rely on Western legacy SME to mitigate incentives to expand the domestic SME design and production capability. Blocking China's access to products and technology needed to maintain its legacy IC-production base would force it to continue to grow and develop a competitive SME industry – exactly what the U.S. government represents that it is trying to prevent. Therefore, signaling to Chinese producers a dependable and predictable reliance on Western legacy SME helps preserve U.S. and allied country technology leadership.

Repair Assistance Does Not Provide Any New Technological Capacity for the Chinese Industry: Rather, repair activity relates to equipment that was approved for export. The fab operation depends on stable and predictable SME repair service. For the same reasons servicing of legacy IC producers is generally not export restricted, repair activity for these Chinese legacy IC fabs should not be export restricted. If a customer cannot obtain repairs for SME from its supplier, the customer will necessarily stop buying all SME from that supplier, *i.e.*, decoupling the supplier entirely from the market, and develop domestic SME repair capabilities – exactly what the U.S. government should not want.

October 2023 IFR Provisions that Restrict Supply to and Support for Chinese Legacy IC Production Conflict with BIS's Stated Approach to Deploying Export Controls: In promulgating the October 2023 IFRs, BIS announced that it designed the new regulations to be “calibrated and measured” and “focused on key force-multiplying technologies.” It continued that the regulations would “interfer[e] with commercial trade no more than necessary to accomplish” their objectives.<sup>1</sup>

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<sup>1</sup> SME IFR, 88 Fed. Reg 73,424.



More specifically, BIS advised that the new restrictions would cover only SME “essential to producing advanced-node ICs.”<sup>2</sup> Finally, BIS said that it was deploying a “scalpel approach” that “restrict[s] China’s military modernization efforts through the narrowest possible restrictions of sensitive technologies without unduly interfering with commercial trade.”<sup>3</sup>

If BIS observes these aspects of its approach to the new regulations, it will permit reasonable supply for and servicing of legacy SME for Chinese fabs.

No Reason to Restrict Western SME Suppliers’ Ability to Service, Repair and Otherwise Support Equipment that They Have Supplied for Chinese Legacy IC Production for 30+ Years: As a policy goal, the United States should desire a Chinese legacy IC production capability supplied by U.S. and allied country SME companies. Servicing and repair are imperative for this capability. Again, the Chinese legacy IC producers will maintain legacy production capacity, and it is in the interest of the United States that maintenance and repair is attributable to efforts of companies within the jurisdiction of the United States and its allies.

**D. SME RESTRICTION – SUPPLY CHAIN ISSUES AND LIMITS ON ABILITY TO SUPPLY AND SERVICE CHINESE LEGACY PRODUCTION SYSTEMS (EAR § 744.23)**

The SME IFR retains the “SME Restriction” – the restriction on knowing supply of items for development or manufacture of SME and SME components in China and, now, other countries. EAR § 744.23(a)(4). As explained in our January 2023 Comments, the SME Restriction will create a strong incentive for companies operating in China, 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.<sup>4</sup> Even with the revisions, the SME Restriction remains broader than is needed to prevent indigenous Chinese SME manufacturers from developing or advancing.

The SME Restriction creates uncertainty 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. As a result, the SME Restriction could continue to have a

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<sup>2</sup> SME IFR, 88 Fed. Reg. 73,424.

<sup>3</sup> SMR IFR, 88 Fed. Reg. 73,424, 73,425.

<sup>4</sup> BIS has mitigated problems with the SME Restriction by limiting it to items on the Commerce Control List.

negative impact on the manufacturing activities of companies like ASML, even though the manufacture of ASML's systems occurs outside of China.

In addition, the SME Restriction allows Chinese SME companies to claim that they are more reliable than allied country SME companies because their supply chains are not subject to U.S. export controls. This could also have a detrimental impact on U.S. and allied country SME companies.

If BIS will not rescind the restriction, it should make permanent the Temporary General License which 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 China can effectively operate and contribute to U.S. and allied country SME suppliers' ability to continue to develop and supply IC production systems.

**E. ADVANCED FAB RESTRICTION – APPLYING END USE/END USER CONTROLS TO RESTRICT EXPORT OF COMPONENT IF SYSTEM INTO WHICH IT WILL BE INCORPORATED IS “DESTINED FOR” RESTRICTED DESTINATION/END USE/END USER (EAR § 744.23)**

The SME IFR also retains the “Advanced Fab Restriction” – the restriction on knowing supply of items “destined for” an advanced node-IC fab in China and, now, certain other countries. *See* EAR § 744.23(a)(2). BIS advises that it will consider that the restriction applies to export of a component to a third country if the exporter has “knowledge” that it will be incorporated into a system (not subject to the EAR) and that system will be exported from the third country to a restricted end user.<sup>5</sup> BIS indicated that, in these circumstances, the *component* would be, in the regulation's words, “destined for” the restricted end user.

BIS should retract this guidance. The component is not “destined for” the destination of the system into which it is incorporated. Consistent with long-standing interpretations, it is “destined for” incorporation into the system.

At the end of SME IFR guidance regarding the Advanced Fab Restriction (Topic 45), BIS seems to suggest that BIS's theory about supply of components for incorporation into systems in third countries is also relevant to compliance with Entity List restrictions.<sup>6</sup> As to the Advanced Fab Restriction, BIS appears to rely heavily on the phrase “destined for” in construing the regulation to cover supply of components that are incorporated into systems in third countries. “Destined for” does not appear in Entity List provisions. *See* EAR § 744.16. It is important that the agency eliminate ongoing confusion by retracting this reference to Entity List restrictions.

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<sup>5</sup> SME IFR, 88 Fed. Reg. 73,424, 73,433-73,434.

<sup>6</sup> SME IFR, 88 Fed. Reg. 73,424, 73,434

**F. APPLYING IN-COUNTRY TRANSFER CONTROLS TO RESTRICT REPAIR AND STORAGE (EAR § 734.16)**

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 another location to be a change of end use such that return of the item could require authorization.<sup>7</sup> BIS should rescind this advice. 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 in Section C, it is in the United States’ interests that U.S. and other Western SME suppliers be permitted to supply, service and maintain China’s legacy IC-production base. Doing so will (a) allow U.S. and other Western SME suppliers to have the ability to maintain physical control of the equipment that they supplied, thereby minimizing opportunities for reverse engineering and (b) mitigate the incentive for China to expand its indigenous SME-production industry and leave the U.S. government with no ability to observe and potentially influence suppliers to Chinese IC producers. If Western suppliers cannot engage in servicing and repair, Chinese companies will increasingly repair and service SME.

**G. NEW REGIONAL STABILITY RESTRICTIONS AND DEEMED EXPORTS (EAR § 742.6)**

Under the October 2023 IFRs, regional stability restrictions regarding SME and advanced computing items do not apply to deemed exports. EAR § 742.6(a)(6)(iv). BIS requested comments on this exclusion:

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 the deemed export and deemed reexport provision was removed and a license were to be required. Commenters are 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.<sup>8</sup>

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<sup>7</sup> Computing IFR, 88 Fed. Reg. 73,458, 73,469-70.

<sup>8</sup> SME IFR, 88 Fed. Reg. 73, 424, 73,442. *See also* Computing IFR, 88 Fed. Reg. 73,458, 73,481, 73,486.

Excluding deemed export restrictions from these new controls was a thoughtful step. In this respect, it makes the controls more consistent with business realities. It is crucial that BIS retain this feature. The alternative would be an unworkable set of deemed export requirements.<sup>9</sup>

[REDACTED]

## **H. U.S. PERSON SUPPORT RESTRICTIONS – HEADQUARTERS DEFINITION** **(EAR § 744.6)**

The SME IFR establishes that the U.S. person-support restrictions do not apply to natural U.S. persons (meaning U.S. citizens, permanent residents and persons located in the United States) who are employed or working on behalf of a company “headquartered in” the United States or a Country Group A:5 or A:6 country and not majority-owned by an entity headquartered in a restricted destination. EAR § 744.6(d)(4). The exemption should be extended such that it does not apply to (i) individuals who are employed or working on behalf of a company “headquartered in” the United States or a Country Group A:5 or A:6 country or (ii) those employed by or working on behalf of a company owned by such a company.

## **I. NO *DE MINIMIS* FOR LITHOGRAPHY SYSTEMS IN ECCN 3B002.f.1.b.2.b** **(EAR § 734.4)**

By and large, foreign-made products can be subject to the EAR by virtue of having U.S.-origin controlled content only if there is at least a *de minimis* level of such content – ordinarily, 25%. The SME IFR establishes that foreign-made lithography systems in ECCN 3B001.f.1.b.2.b are subject to the EAR if they contain *any* U.S.-origin controlled content. EAR § 734.4(a)(3).

BIS should confirm that this provision does not apply even further by reaching items that are specially designed for 3B001.f.1.b.2.b systems. The new regulatory language is clear: “There is no *de minimis* level for equipment meeting the parameters in ECCN 3B001.f.1.b.2.b.” Explanatory material, however, provides that “[t]his rule revises § 734.4 by adding a new paragraph (a)(3) to specify that there is no *de minimis* level for lithography equipment and ‘specially designed’ items therefor.”<sup>10</sup>

The reference to specially designed items appears to be a mistake, which should be corrected. It is true that, per the heading of ECCN 3B001, the classification encompasses components that are specially designed for items described in the ECCN. But specially designed components do not “meet[] the parameters in ECCN 3B001.f.1.b.2.b.”<sup>11</sup>

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<sup>9</sup> There is an additional deemed export exemption for technology relating to certain lithography immersion systems. See EAR § 742.4(a)(4). There is likewise every reason to retain this exemption.

<sup>10</sup> SME IFR, 88 Fed. Reg. 73424, 73441.

<sup>11</sup> The parameters of ECCN 3B001.f.1.b.2.b are: “Align and expose step and repeat (direct step on wafer) or step and scan (scanner) equipment for wafer processing using photo-optical or X-ray methods and having any of the following . . . f.1.b. A light source wavelength equal to or longer than 193 nm and having all of the following: f.1.b.1. The capability to produce a pattern with a “Minimum Resolvable Feature size” (MRF) of 45 nm or less . . . ; and f.1.b.2. Having any of the following . . . f.1.b.2.b. A maximum ‘dedicated chuck overlay’ value greater than 1.50 nm but less than or equal to 2.4 nm.”



Sincerely,

A handwritten signature in black ink that reads "Maryam Cope". The signature is written in a cursive style with a large, stylized 'M' and 'C'.

Maryam Khan Cope  
Head, U.S. Government Affairs  
ASML US LLC

Attachment: January 2023 Comments (Public)

# **Attachment**

January 31, 2023

*Via the Federal eRulemaking Portal: <http://www.regulations.gov>*

RIN 0694-AI94; BIS-2022-0025

87 Fed. Reg. 62186 (Oct. 13, 2022); 87 Fed. Reg. 74966 (Dec. 7, 2022)

Docket No. 220930-0204

**Comments of ASML US LLC on the Interim Final Rule Entitled  
“Additional Export Controls: Certain Advanced Computing and Semiconductor  
Manufacturing Items; Supercomputer and Semiconductor End Use; Entity List  
Modification”**

ASML US LLC (“ASML US”) welcomes the opportunity to comment on the interim final rule (the “Rule”)<sup>1</sup> concerning the implementation of export controls targeting certain advanced computing and semiconductor items and supercomputer and semiconductor end uses.

**A. SUMMARY**

While ASML US understands it is based on national security concerns, the Rule is expansive, goes beyond traditional export controls and appears to have significant unintended adverse impacts.

In particular, ASML US’s submission addresses the following:

- The negative impact on U.S. companies of unilateral imposition of the Rule and the corresponding need for U.S. companies who face foreign availability for their products to be granted immediate licenses to supply items and services to Covered Fabs<sup>2</sup> in China.

[REDACTED]

- The need for the U.S. government to publish a list of Covered Fabs that is pre-aligned with stakeholders. The U.S. government rather than industry is in the best position to identify facilities for which it has national security concerns. Publication of a limited, narrow and stable list would eliminate a major source of

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<sup>1</sup> Implementation of Additional Export Controls: Certain Advanced Computing and Semiconductor Manufacturing Items; Supercomputer and Semiconductor End Use; Entity List Modification 87 Fed. Reg. 62186 (Oct. 13, 2022).

<sup>2</sup> “Covered Fabs” refers to fabrication facilities in China that fabricate (a) Logic integrated circuits using a non-planar architecture or with a “production” technology node of 16/14 nanometers or less; (b) NOT-AND (NAND) memory integrated circuits with 128 layers or more; or (c) Dynamic random-access memory (DRAM) integrated circuits using a “production” technology node of 18 nanometer half-pitch or less. See 15 C.F.R. § 744.6(c)(2)(i)(A)-(C).

regulatory and business uncertainty and need for extensive and challenging due diligence by industry.

- The need for BIS to limit the scope of the U.S. person restrictions to address their unduly adverse impact.
- The debilitating impact on the supply chain and on semiconductor manufacturing worldwide of the restriction on the supply of items subject to the Export Administration Regulations (“EAR”) for the development or manufacture of semiconductor manufacturing equipment (“SME”) and SME components in China (“SME Restriction”). The SME Restriction is unnecessarily broad and unqualified, and ASML respectfully requests that BIS limit its scope by exempting (i) legacy SME and SME components, (ii) exports to companies located in China but headquartered in the United States and allied countries and (iii) exports of items to China intended for incorporation into SME or SME components that will be utilized outside of China.
- The need for greater regulatory clarity given the EAR’s strict liability standard rather than requiring industry to rely on questions and answers and informal guidance from U.S. officials to ascertain the Rule’s impact. Further, applicability of the strict liability standard should be relaxed where Covered Fabs are implicated and good faith due diligence measures are deployed.
- The need to interpret the Rule in a manner that is narrow and consistent with longstanding precedent.
- The importance of an adequate opportunity for notice and comment prior to the implementation of export controls.

## **B. ASML INTRODUCTION**

ASML US is a wholly owned subsidiary of ASML Holding NV (“ASML”), a world leader in semiconductor lithography technology and systems headquartered in the Netherlands. ASML US is part of the U.S. technology base, with facilities in Arizona, California, Connecticut, Idaho, New York, Oregon, Texas, and Virginia.

ASML US contributes significantly to ASML’s semiconductor lithography technology and systems. ASML US employs over 7,000 full-time employees and undertakes research and development, design manufacturing, customer sales and service, and supply-chain activities in the United States.

ASML operates globally. ASML’s technology and engineering expertise as well as its global activity is wholly devoted to semiconductor equipment and services, especially lithography, where, since its founding, ASML has been engaged in accordance with Moore’s Law in the development and extension of lithography technology and systems solely for commercial semiconductor manufacturing. ASML’s semiconductor lithography systems are node agnostic.



Key ASML customers are headquartered in the United States and have U.S. fabrication facilities.

ASML's semiconductor lithography systems are developed, manufactured, and assembled in the Netherlands. However, components, modules, and software for ASML's lithography systems are developed and produced by thousands of suppliers worldwide, with major suppliers in the United States, Germany, and Japan. Certain of these components, modules, and software are subject to EAR.

Pursuant to the U.S. and multilateral export control list review process, leading edge semiconductor lithography systems are already subject to national security and multilateral control. As they have become trailing edge, semiconductor lithography systems have been routinely decontrolled for national security purposes pursuant to the same process.

ASML complies with all applicable export controls in all jurisdictions in which it does business.

**C. IMPLEMENTATION OF THE RULE ON A MULTILATERAL BASIS IS ESSENTIAL**

**1. Semiconductor Manufacturing Equipment is Effectively and Appropriately Controlled Under the Existing Multilateral Process**

The Rule's broad new unilateral controls extend far beyond the current scope of existing multilateral export controls. However, the current state of the global semiconductor industry indicates the multilateral process has adequately controlled the supply of SME to China.

American companies and companies headquartered in allied countries lead the main categories of SME such as etching, deposition, and lithography. The next generation of semiconductor manufacturing technologies also appear to be within the ambit of these non-Chinese companies.

Not only is the development of advanced manufacturing equipment concentrated outside of China, manufacturing in China is focused overwhelmingly on legacy semiconductors.

The U.S. CHIPS Act, which appropriated over \$52 billion to shore up the semiconductor ecosystem in the United States, will enable continued American leadership in leading-edge semiconductors and SME, and help preserve the large technological differential vis-à-vis China.

While precise targeting of certain specific technologies via the multilateral process could play an important role in deterring perceived industrial and military threats to the United States, ASML respectfully submits that broad unilateral controls harm the U.S. semiconductor industry and do not appear to be necessary to maintain U.S. leadership in the sector.

**2. Unilateral Controls Undermine Multilateral Regimes and Impede Allied Cooperation**

The U.S. government has repeatedly declared its commitment to resolving export control issues within a multilateral framework. In particular, Annex II, Statement on Export Control

Cooperation, of the U.S.-EU Trade and Technology Council Inaugural Joint Statement (“Statement”) serves as a blueprint of U.S.-EU understanding on the use of export controls.

The Statement memorializes the U.S. government’s understanding “that a multilateral approach to export controls is most effective for protecting international security” and the importance of “consultations prior to the introduction of controls outside the multilateral regimes.” The U.S. government also specifically recognized that “export controls should not unduly disrupt strategic supply chains.”

ASML US respectfully submits that **imposition of broad unilateral controls undermines the United States’ commitment to its multilateral obligations**. The U.S. government could be seen as adopting an “implement first, seek consensus second” approach. Such a unilateral approach can have a significant impact on companies in allied countries. As described in detail below, **the emerging and unintended consequences of the Rule have resulted in significant business disruption and have the potential to debilitate semiconductor supply chains**.

A unilateral approach therefore can impede cooperation with allies on export control related issues where targeting foreign availability is crucial to the success of a control, and could therefore result in an adverse effect on U.S. foreign policy and national security objectives.

### 3. Unilateral Controls in the Face of Foreign Availability of Competing Products Harm U.S. Companies, Jobs and Competitiveness, and Fail to Achieve their Objectives

#### *i. Harm to U.S. Companies and Failure to Achieve Goals*

Unilateral controls on items with foreign availability harm U.S. industry while doing little to benefit national security.

Unilateral controls impacting U.S. companies with foreign competitors strengthen the market share of the foreign competitors and create incentives for their other non-U.S. companies to develop competing products. Loss of sales revenue by U.S. companies will not only adversely impact jobs in the United States, but will also have a material adverse effect on the ability of U.S. companies to invest in research and development, workforce training and education, and construction of facilities in the United States. By undermining economic security, **unilateral controls undermine U.S. foreign policy and national security objectives**.

U.S. SME companies all have competitors, and unilateral controls benefit non-U.S. SME companies at the expense of their U.S. counterparts. Even when the Rule does not restrict the supply of SME to a particular fabrication facility in China because it does not operate at advanced nodes, U.S. companies risk losing that fab’s business. History has shown that when the supply of U.S. items is considered unreliable and substitutable, they are designed out. Thus, the Rule could again have a broader than intended impact.

In addition, the unilateral nature of the Rule will encourage movement of SME manufacturing outside of the United States, contrary to the goal of the Rule and also of the CHIPS Act.

Lastly, and perhaps most importantly from a national security perspective, when there are non-U.S. substitutes, unilateral controls do little to impact the Chinese industry. While U.S. companies and companies with operations in the United States may face significant hardship in light of the Rule, Chinese industry can obtain foreign substitutes and continue manufacturing relatively unabated.

ii. [REDACTED]

iii. *Licenses Should be Granted Immediately*

ASML US respectfully submits that American companies with foreign competitors should be granted authorizations or licenses *immediately* to supply items to, and provide services for, Covered Fabs in China. Delays in licensing will significantly impact the ability of American companies to maintain, or regain, business with Chinese legacy customers. Granting immediate authorizations or licenses ensures that American companies do not unilaterally suffer unnecessary economic harm while ceding market share to foreign competitors.

**D. A LIMITED, NARROW AND STABLE LIST OF COVERED FABRICATION FACILITIES IN CHINA IS NEEDED**

The Rule imposes multiple restrictions on the activities of companies and U.S. persons involving Covered Fabs. The Rule also imposes restrictions on the activities of companies and U.S. persons when such parties are unable to ascertain whether a fabrication facility is a Covered Fab. Compliance with the Rule therefore generally requires companies to determine the technological capabilities of fabrication facilities in China.

BIS guidance states that appropriate due diligence to determine whether a fabrication facility in China is a Covered Fab “includes review of publicly available information, capability of items to be provided or serviced, proprietary market data, and end-use statements.”<sup>3</sup> Despite deploying the recommended due diligence measures, it is often quite challenging to ascertain technological capabilities of any particular fabrication facility. This difficulty is compounded where the item being supplied is, like ASML’s lithography systems, node agnostic. Most companies, including SME companies, have no way of knowing at exactly which node a fabrication facility is producing.

The Rule is subject to strict liability for any non-compliance. Deployment of BIS-described due diligence measures would not eliminate civil liability for a company nor would other good faith measures reasonably undertaken with a view toward compliance. Accordingly, in situations where a company is unable to determine whether a fabrication facility is a Covered Fab, the most likely course of action is (i) to over-comply and abandon a transaction for fear of potential non-compliance or (ii) seek a license and risk loss of the business as a result of delay,

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<sup>3</sup> Department of Commerce Bureau of Industry and Security, FAQs for Interim Final Rule - Implementation of Additional Export Controls: Certain Advanced Computing and Semiconductor Manufacturing Items; Supercomputer and Semiconductor End Use; Entity List Modification, IV.A2 (Oct. 28, 2022), available at <https://www.bis.doc.gov/index.php/documents/product-guidance/3181-2022-10-28-bis-faqs-advanced-computing-and-semiconductor-manufacturing-items-rule-2/file> (hereinafter, “BIS FAQs”).

even when ultimately the fabrication facility in question is not a Covered Fab. Such approach disrupts ordinary course of business and can also jeopardize supply chain stability.

ASML US respectfully submits this situation can be avoided if the U.S. government publishes a limited, narrow and stable list of Covered Fabs that raise national security concerns, and respectfully requests the U.S. government publish such a list as part of the final rule. The U.S. government, by virtue of its resources, intelligence capabilities, and communication with industry is in a much better position than an individual company to identify Covered Fabs. BIS already maintains similar lists in the form of the Entity List and the Unverified List, which aid company compliance, minimize business and supply chain disruption, and appear to adequately protect U.S. national security and foreign policy interests. A limited, narrow and stable list of Covered Fabs, focused on the facilities that present national security concerns, will serve the same purpose.

#### **E. CERTAIN ASPECTS OF THE RULE UNNECESSARILY ADVERSELY IMPACT U.S. PERSONS**

The Rule specifically imposes on U.S. persons added restrictions with respect to certain activities involving items *not subject to the EAR*.<sup>4</sup> Despite added clarifications from BIS regarding the scope of these restrictions,<sup>5</sup> the relevant provisions continue to be mired in uncertainty. Companies, consequently, may choose to interpret the U.S. persons provisions broadly, and needlessly restrict their U.S. person employees and contractors from engaging in a number of business critical functions, which prevents such persons from participating fully in company operations. In the long term, such restrictions, and risk of similar provisions in the future, may reduce the appetite of companies to hire U.S. persons in critical roles.

As an example, U.S. persons are prohibited from shipping, transmitting, or transferring (in-country) or “facilitating” any such activities for items not subject to the EAR when, broadly, such activities implicate a Covered Fab. BIS guidance indicates that “facilitating” such activities means “authorizing” such activities. Nonetheless substantial uncertainty persists as “facilitating” continues to remain part of regulations. If BIS intends that “facilitating” means only “authorizing,” the regulations should be amended to replace the word “facilitating” with the word “authorizing.” Without such an amendment, U.S. persons can be unnecessarily cut out from fully engaging in the business of its employer.

In any event, U.S. person individuals can often be readily replaced by non-U.S. person individuals without impeding the shipment of non-EAR items to a Covered Fab. Thus, the restriction does not appear to advance intended policy objectives when applied to U.S. person individuals.

ASML US respectfully requests BIS limit and clarify in the regulations the scope of restrictions on U.S. persons set forth in 15 C.F.R. § 744.6.

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<sup>4</sup> 15 C.F.R. § 744.6(c).

<sup>5</sup> BIS FAQs, IV.A2.

**F. RESTRICTIONS ON SME-RELATED ACTIVITIES COULD HURT LEGACY MANUFACTURING AND DRIVE TOWARD DECOUPLING**

The SME Restriction imposes a licensing requirement for the supply of any item subject to the EAR with knowledge that the item will be used in the “development” or “production” in China of most types of SME and most hardware components for such equipment.<sup>6</sup> BIS has indicated that the Rule, including the SME Restriction, is intended to “limit the PRC’s ability to obtain semiconductor manufacturing capabilities to produce ICs . . . for uses that are contrary to U.S. national security and foreign policy interests.”<sup>7</sup>

ASML US respectfully submits, as drafted, rather than advance U.S. national security and foreign policy interests, the SME Restriction is likely to have unintended adverse consequences on the semiconductor supply chain and thus on semiconductor manufacturing worldwide. This will undermine U.S. interests generally.

The SME Restriction will create a strong incentive for companies operating in China, including those headquartered in the United States and allied countries, to replace U.S. origin items with non-U.S. alternatives. Moreover, when U.S. origin components cannot be designed out, it will create a major incentive for companies to move their supply chains out of China even when U.S. and allied companies are the economic beneficiaries of these supply chains.

If the SME Restriction is intended to prevent indigenous Chinese SME manufacturers from developing or advancing, it is far broader than what is needed to achieve this goal.

For the reasons described below, ASML US respectfully requests BIS consider narrowing the SME Restriction. At a minimum, ASML US requests that BIS consider delaying implementation to allow industry to accommodate to the restriction.

**1. The SME Restriction Adversely Affects SME Suppliers, and Consequently, SME Manufacturers Outside China**

The semiconductor industry is global in nature and features companies across the value chain located around the world and each reliant on a complex and integrated supply chain. The global nature of the industry enables cost savings and continuous performance enhancements.

Owing primarily to cost savings and the considerable infrastructure in China for the manufacture of lower-technology components, manufacturing operations of a significant number of SME component suppliers (“SME Component Suppliers”), including those headquartered outside of China, are located in China. Such SME Component Suppliers sell their products to companies around the world for incorporation into semiconductor manufacturing systems.

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<sup>6</sup> The regulations specify that a license is required if the item subject to the EAR will be used in the “development” or “production” of any “parts,” “components,” or “equipment” specified under export control classification number (“ECCN”) 3B001, 3B002, 3B090, 3B611, 3B991, or 3B992. 15 C.F.R. § 744.23(a)(2)(v).

<sup>7</sup> 87 Fed. Reg. 62186, 62188.



SME Component Suppliers, in turn, rely on items, including U.S. origin items, from their worldwide suppliers. A license is now required to send these U.S. origin items to SME Component Suppliers in China even if such U.S. origin items have been supplied to China without licenses for many years.

Unlike other provisions of the Rule that focus on narrowly defined integrated circuits or advanced fabs, the SME Restriction is sweeping and open-ended. It requires a license for the export of *any* item subject to the EAR, regardless of its strategic sensitivity or foreign availability, for use in developing or producing in China virtually all SME and related components. The SME Restriction, unlike standard controls on the export of SME and SME components to China, is not limited by the features of the SME and SME components being built in China. License applications are to be reviewed with a presumption of denial.

Given its substantial supply chain impact, the SME Restriction could have a detrimental effect on the manufacturing activities of companies like ASML, even though the manufacture of ASML's systems occurs outside of China. [REDACTED]

In addition, the SME Restriction impacts the ability of companies headquartered in the United States and allied countries to manufacture or even assemble their systems in China. The restriction applies even to the manufacture of legacy SME and could greatly impede the viability of such activity.

In these ways, the Rule creates a powerful incentive to move activities and supply chains out of China, the very decoupling of the Chinese and global semiconductor industry U.S. officials have said they would like to avoid. Moreover, it incentivizes the "engineering out" of U.S.-origin items, to the detriment of U.S. workers and companies.

China's critical role in the manufacturing of legacy semiconductors and legacy SME and components necessitates a more nuanced restriction on the manufacture of SME and SME components in China. Manufacture of these items in China helps drive cost-efficiency and enables high volume, civil production to tackle ever increasing demand. Relatedly, economic efficiency and embedded infrastructure of legacy semiconductor manufacturing in China is a major pillar supporting the global electronics industry and the U.S. economy.

If allowed to persist in its current form, the SME Restriction is likely to have an adverse impact on SME manufacturing in the United States and other allied countries which would negatively impact semiconductor production worldwide.

To minimize the negative and presumably unintended effects of the SME Restriction, BIS should consider the following measures.

*i. The SME Restriction Should Not Extend to Legacy SME*

As drafted, the SME Restrictions extends to all levels of technology processes. In line with the U.S. government's stated policy objectives and the more targeted approach utilized in connection with the Covered Fabs and elsewhere in the Rule, the SME Restriction, at a

minimum, and in conjunction with the recommendations set forth elsewhere in this Comment, should be limited *only* to the development and production of SME and SME components designed for advanced nodes. The SME Restriction should not apply to the production of legacy SME or SME components.

The production of SME and SME components used for the manufacture of legacy semiconductors, which can generally be sent to China without a license under current multilateral and U.S. export controls (notwithstanding the Rule), can be permitted in China without impacting the ability of the United States to restrict advanced manufacturing in China.

Given lower production costs in China, without modification, the SME Restriction will result in greater fabrication costs for Western semiconductor equipment manufacturers and the entire electronics sector in the United States. These costs do not appear to be balanced by a substantial strategic benefit. Most SME has only the most distant connection to military items and would not appear to be a strategic differentiator. The strategic benefit is especially tenuous for equipment that is not leading-edge.

The U.S. government has taken pains to make clear that the New Rule is not intended to shut down legacy manufacturing in China. Such an exemption would be consistent with this stated intention. Accordingly, ASML US respectfully requests that BIS exempt from the SME Restriction legacy SME and SME components.

*ii. SME and SME Component Manufacturing in China Should be Permitted for Companies Headquartered in the United States and Other Allied Countries*

In connection with the restriction on the provision of items to Covered Fabs, the U.S. government adopted a more favorable licensing policy for fabs operated by companies headquartered in the United States and certain allied countries. In addition, BIS granted blanket authorization for the provision of items to these fabs within days of the issuance of the Rule. It is appropriate to treat the SME Restriction in a similar fashion and in fact to exempt from the restriction exports to companies headquartered in the United States or allied countries.

*iii. SME Manufacturing in China Should be Permitted for Items that will be Utilized Outside of China*

Lastly, given the realities of the global supply chain, ASML US also respectfully requests BIS exempt from the SME Restriction exports of U.S. items to China that will be incorporated into SME or SME items that will be utilized outside of China.

At the very least, ASML US respectfully requests that BIS delay the SME Restriction's implementation.

**G. THE RULE SHOULD NOT BE INTERPRETED BROADLY**

Issues with uncertainty and overcompliance could be compounded if BIS chooses to interpret the Rule broadly. ASML US strongly cautions against interpreting new provisions expansively and contrary to general EAR understandings. For example, ASML US cautions

against an attempt to control the export of items subject to the EAR that are intended for incorporation into an end item on the basis that the end item that is not subject to the EAR will be supplied to a Covered Fab. Such an interpretation is contrary to long-standing EAR guidance and industry practice.

## **H. OPPORTUNITY TO REVIEW AND COMMENT ON THE FINAL RULE**

The almost immediate effectiveness of the Rule coupled with what ASML understands to be quite limited consultation with private sector stakeholders gave semiconductor companies very little time to review and analyze the Rule and understand its business implications. Coupled with strict liability for any non-compliance, such an approach pressured companies to over-comply at the risk of significant business disruption, uncertainty, and potential for supply chain stress.

Additional consultation with industry prior to the implementation of the Rule would have provided industry with an opportunity to share its views on issues where the U.S. government may not necessarily have more insight than industry. As an example, industry may have been able to highlight how the breadth of the SME Restriction would have an adverse effect on the supply chains of SME manufacturers, impact legacy manufacturing in China, and potentially lead to a decoupling of U.S. and Chinese legacy semiconductor value chains, an outcome not intended by U.S. officials. Similarly, industry would have also alerted the U.S. government to issues underlying identification of Covered Fabs.

To minimize adverse outcomes, ASML US respectfully requests the U.S. government:

- Provide adequate notice and comment for any additional enhanced export controls in this area prior to effectiveness;
- Continue to engage with industry to review industry concerns and to revise the Rule accordingly; and
- Reconsider the current strict liability standard for any non-compliance under the Rule.

## **I. ASML US REQUESTS**

In conclusion, ASML US requests the U.S. government:

- Strive for a multilateral arrangement for implementation of the Rule;
- Until such time as a multilateral arrangement is effective, grant immediate authorizations and/or licenses to U.S. companies with foreign competitors to supply items to and provide services for Covered Fabs;
- Provide a limited, narrow and stable list of Covered Fabs;
- Limit and clarify in the regulations the scope of the U.S. person restrictions;
- Amend the SME Restriction to exempt:

- legacy SME and SME components;
  - exports to companies headquartered in the United States or allied countries; and
  - exports of items that will be incorporated into SME or SME components that will be utilized outside of China.
- Interpret the Rule in a manner that is narrow and consistent with longstanding precedent;
  - Continue to engage with industry to review industry concerns and to revise the regulations accordingly;
  - Reconsider the strict liability standard for compliance with the Rule; and
  - Provide adequate notice and comment opportunities prior to the effectiveness of new controls.

Sincerely,

*Maryam Khan Cope*

Maryam Khan Cope  
Head, U.S. Government Affairs  
ASML US LLC



# Comments on the Export Controls for Advanced Computing Items and Semiconductor Manufacturing

JANUARY 17, 2024

**To:** Bureau of Industry and Security, Commerce

**Author:** Thomas Larsen, Center for AI Policy

**RE:** "Implementation of Additional Export Controls: Certain Advanced Computing Items; Supercomputer and Semiconductor End Use; Updates and Corrections," and "Export Controls on Semiconductor Manufacturing Equipment,"

Thank you for the opportunity to weigh in on BIS's updated rules on export controls imposed on advanced computing and semiconductor manufacturing items. We submit the following comments of our organization, the Center for AI Policy, in compliance with the updated filing deadline.

The Center for AI Policy ("CAIP"), is a non-profit, non-partisan advocacy organization dedicated to reducing the catastrophic risks from advanced AI systems. We believe that there is a significant chance that in the next 3 to 10 years, AI systems will pose significant threats to national security, including the risk of extinction. We expect that controls on hardware will be a critical lever for enforcement of safety rules. Therefore, we are pleased that BIS, and by extension the US government, are taking this existential threat seriously by updating hardware export controls, and soliciting input from stakeholders.

First, we would like to commend the BIS for the October 17th updates, especially a) getting rid of the interconnect bandwidth threshold and b) adding redundancy with the addition of the performance density threshold. Both of these changes reduce the extent to which hardware designers can circumvent the export controls – the interconnect loophole allowed billions of dollars worth of H800s and A800s to be exported to restricted countries, which has now been closed.

CAIP's comments will focus on the following three areas:

1. **The goal of the export controls:** We believe that the BIS should lay out a specific goal in the amount of compute that the BIS hopes to prevent reckless or malign actors from acquiring. These goals should be informed by projections and analyses of the amount of compute that can be used to achieve critical AI capabilities milestones.
2. **The definition of "datacenter" chips:** The looser requirements on "non-datacenter" chips provide a potential loophole for the export of advanced chips.

3. **The definition of “advanced IC” SME:** Evaluating the possibility that non-advanced nodes could contribute to cutting edge ML chips.

## Export control goals

Compute export controls are useful for preventing malicious or reckless actors from causing harm. In order to determine how to update the thresholds for the export controls, we recommend determining a specific compute limit (measured in FLOP/s) that the BIS is aiming to prevent certain actors from acquiring.

The compute limit should vary between actors in some domains, for example, allowing powerful countries to build AI models that develop advanced bioweapons likely does not significantly increase biorisk due to countries having an incentive to control their bioweapons. However, non-state actors should be prevented from having this capability, as they would be much more likely to cause harm.

In particular, Large Language Models (LLMs) are extremely compute intensive – recent cutting edge LLM training runs have used over 1e25 FLOP. The compute limit for LLMs should be informed by projections and analyses of the amount of compute that can be used to achieve critical AI capabilities milestones.

AI algorithms are improving over time – this suggests that if the goal is to prevent actors from accessing certain capabilities, it will be necessary to aim for a compute limit below the amount of compute that would allow current algorithms to obtain that level of performance. In the domain of [image classification](#), [algorithmic progress is happening at a rate of around 3x per year](#), but we expect that similar algorithmic advances are happening in other domains.

## Datacenter Chips

### **Data centers are key enforcement levers**

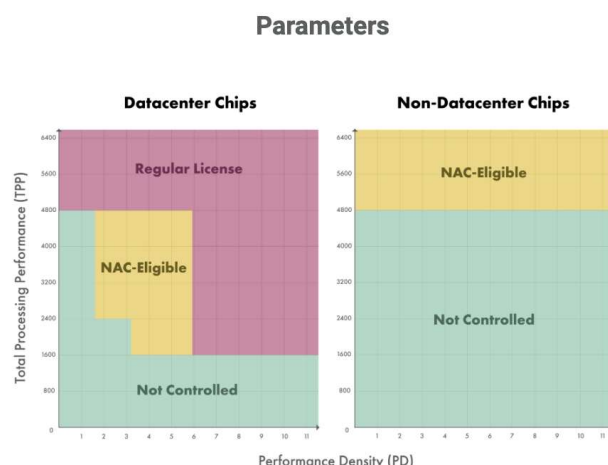
Chips in datacenters are much more controllable than non-datacenter chips because their centralization allows for easier monitoring, standardized safety upgrades, improved information security, and the ability to rapidly shut down a large number of chips. **Therefore we should not unnecessarily create incentives for non-datacenter chips.**

Physical access to chips, at least some of the time, is needed in order to do inspections or monitor which computations are happening on the chips (e.g. [this proposal](#)). An AI that is showing warning signs of dangerous capabilities that is located in a datacenter can be evaluated and then easily shut off, whereas if a training run is decentralized across a large number of smaller nodes, it can be very hard to find most of the nodes, and therefore the training run cannot be easily stopped.

It is fortunate that large training runs today happen in large data centers (primarily for efficiency reasons).

The current rules are described in [this figure from CSET](#):

**Figure 1. License Requirements Based on TPP and PD**



### Definition of “Datacenter Chips”

The requirement for a regular license for chips only applies to “datacenter chips”. The BIS writes:

“To evaluate whether a chip meets this criterion, BIS and compliance attorneys will consider whether the chip designer:

- Incorporated datacenter-specific features (e.g., a high bandwidth connection socket), or
- Markets the chip for use in datacenters in public-facing materials (e.g., press release or datasheet).”

CAIP believes that it is possible to do efficient advanced AI training runs on chips that would not meet either of these criteria.

The interconnect bandwidth is not a reliable proxy: ML is well known for being extremely parallelizable, and so we should not be surprised that one can design training runs that are extremely parallel, and don't rely on high bandwidth communication. Interconnect speed was a loophole in the 2022 export controls, which permitted high-compute performance GPUs with low interconnect. In response, Nvidia came out with the H800 and A800, which were just under the allowed threshold, and exported billions of dollars before the updated rules fixed this bottleneck. These chips suffered a small efficiency penalty because the lower interconnect results in decreased utilization, but still allowed their users to perform large-scale ML training runs while paying only minor increased cost. Additionally, recent low-bandwidth distributed training schemes such as [DiLoCo](#) have been shown to work comparably well to fully synchronous training (albeit not at frontier scale).

Similarly, analyzing the content of marketing materials is not a reliable way of identifying which chips are likely to end up in datacenters, because companies can simply not create marketing materials and advertise via less direct mechanisms. If there is a large financial incentive not to do so, e.g. billions of dollars of foreign investment, then chip developers will stop marketing their chips as “datacenter” chips. The industry is so concentrated that there are only a few global suppliers, so data centers who want to buy advanced chips will still be able to figure out who is offering them for sale even without explicit marketing materials.

### **Recommendation**

There are several options that could be taken to improve this:

1. Remove the separate requirements for non-data center chips. This would entirely remove the loophole and therefore fix this negative incentive. While being the most robust solution, the downside of this option is that this would include certain chips such as AI cores on smartphones, which are unlikely to be useful for large AI training runs.
2. Include some Total Processing Performance threshold for which Non-datacenter chips require a regular license, e.g. above 10,000 TPP.
3. Change the name from “datacenter chips” to “advanced ML chips”, and make the determination based on whether chips are likely to be useful for advanced AI training or inference.

## **Advanced Integrated Circuit SME**

### **Advanced IC loophole**

The controls on SME only apply if the company knows that the tool will be used for development or production of advanced-node integrated circuits. However, this allows for the export of advanced SME for non-advanced nodes.

The 1980i ASML DUV lithography machine can be used in semiconductor fabrication facilities that are not manufacturing advanced node ICs, but then can relatively easily be turned around and end up producing chips at the cutting edge. This provides a potential mechanism for countries to either lie about the intended use case for SME, or to change their policies later and convert SME used in a less capable fab to be used in a more capable fab.

### **Recommendation**

To fix this potential loophole we recommend restricting this SME based on production capability as opposed to what the importer claims they will use it for.

**PUBLIC VERSION**

January 17, 2024

Uploaded to: <https://www.regulations.gov/commenton/BIS-2023-0016-0001>

Eileen Albanese  
Director, Office of National Security and Technology Transfer Controls  
Bureau of Industry and Security (BIS)  
U.S. Department of Commerce  
1401 Constitution Ave. NW  
Washington, DC 20230

**RE: Comments on 88 Fed. Reg. 73424 (Oct. 25, 2023); BIS-2023-0016; RIN 0694-AJ23**

Dear Ms. Albanese:

Applied Materials, Inc. ("Applied")<sup>1</sup> submits the following recommendations in support of and to advance the policy and compliance objectives of the above-captioned interim final rule ("SME/IFR"). The comments are focused on helping to ensure that the controls are effective in achieving the stated objectives without imposing counter-productive and unintended impacts on US industry. Several comments are focused on ensuring a level regulatory playing field between US semiconductor manufacturing equipment ("SME") companies and their competitors in the European Union ("EU"), Japan, South Korea, and other allied countries.

- **Recommendation 1:** Amend ECCN 3B001.a.4 providing a technical modification on "Silicon epitaxy equipment "specially designed" to deposit silicon germanium (SiGe) or carbon doped SiGe. ,
- **Recommendation 2:** Amend ECCN 3B001.d.5 providing a technical modification on "Equipment designed for depositing carbon or metal doped carbon hard masks..."

**Recommendation 3:** Amend ECCN 3B001.d.6 providing a technical modification on "Atomic Layer Deposition (ALD) equipment..."

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<sup>1</sup> Applied Materials, Inc., established in 1967 and headquartered in Santa Clara, California, is the world's leading semiconductor and display equipment company and the leader in materials engineering solutions used to produce virtually every new chip and advanced display in the world. With a broad set of capabilities in materials engineering, Applied provides manufacturing equipment, services and software to the semiconductor, display and related industries. With its diverse technology capabilities, Applied Materials delivers products and services that improve device performance, power, yield and cost. Applied Materials' customers include manufacturers of semiconductor chips, liquid crystal and organic light-emitting diode (OLED) displays, and other electronic devices. With about \$27 billion in FY2023 revenue, more than 17,500 issued patents, and 33,500 employees worldwide, Applied Materials is recognized as one of the most innovative companies in the world.



- **Recommendation 4** is for BIS to amend ECCN 3B001.d.7.
- **Recommendation 5** is for BIS to retain the deemed export/reexport carveouts in the SME/IFR rule because they are critically important for the United States' continued leadership in the semiconductor manufacturing industry and thus US national security interests.
- **Recommendation 6** is for BIS to amend the TGL paragraph in Supplement No. 1 to Part 736(d)(1)(i) so that the termination date is extended.
- **Recommendation 7** is that BIS revise the note to ECCN 3B001.p
- **Recommendation 8** is for BIS to explicitly state why the TGL has an expiration date and give the public a chance to provide comments on the explanation.
- **Recommendation 9** is to add a note to section 744.23(a)(4).
- **Recommendation 10** is to make a housekeeping and clarification edit to section 748.15(d) to include a reference to section 744.23(a)(4) among the sections the VEU authorizations cover.
- **Recommendation 11** is to change the words after the comma in section 744.6(e)(3) so that they are "except if there are non-US persons that can perform the same activities involving items not subject to the EAR, which will be reviewed with a presumption of approval."
- **Recommendation 12** is that BIS work more to level the regulatory playing field for US industry.

Applied Materials thanks BIS for the opportunity to comment on the SME/IFR. We believe that our comments and recommendations, if adopted, will make the new controls more effective and less counter-productive. They will also help with industry understanding and thus BIS's compliance objectives. If you have any additional questions or would like to discuss these comments further, please contact me at (202) 414-2777.

Sincerely,

A handwritten signature in blue ink, appearing to be 'MP', with a large loop and a horizontal stroke extending to the right.

Mario R. Palacios  
Sr. Director, Government Affairs & Head of  
International Trade Policy



**PUBLIC VERSION**

January 17, 2024

Uploaded to: <https://www.regulations.gov/commenton/BIS-2023-0016-0001>

Eileen Albanese  
Director, Office of National Security and Technology Transfer Controls  
Bureau of Industry and Security (BIS)  
U.S. Department of Commerce  
1401 Constitution Ave. NW  
Washington, DC 20230

**RE: Comments on 88 Fed. Reg. 73424 (Oct. 25, 2023); BIS-2023-0016; RIN 0694-AJ23**

Dear Ms. Albanese:

KLA Corporation (KLA)<sup>1</sup> submits the following recommendations in support of and to otherwise advance the policy and compliance objectives of the above-captioned interim final rule ("SME IFR"). The comments are focused on helping to ensure that the controls are both effective in achieving the stated objectives without imposing counter-productive and unintended impacts on U.S. industry. Several of the comments are focused on ensuring a level regulatory playing field between U.S. semiconductor manufacturing equipment ("SME") companies and their competitors in the European Union, Japan, South Korea, and other allied countries.

**Recommendation 1** is to change the words after the comma in section 744.6(e)(3) so that they are "except if there are foreign-made items not subject to the EAR that could perform the same function as another item not subject to the EAR and for which a non-U.S. person could without restrictions provide support, as defined in section (c)(2), which will be reviewed with a presumption of approval."

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<sup>1</sup> KLA is a U.S. company based in Milpitas, California. We have approximately 15,000 employees worldwide, with over 4,500 of them in the United States. We have a new facility in Michigan, which is expected to employ hundreds of skilled scientists, engineers, and other highly skilled workers. KLA works with a variety of U.S. suppliers and vendors, from whom KLA sources directly or indirectly everything from machine tooled parts to advanced graphics processing units ("GPUs"). We estimate that KLA's business in the United States supports hundreds of additional high-tech jobs across the United States, at a minimum. We are a supplier of process control and yield management solutions for the semiconductor and related nanoelectronics industries. Our products are also used in a number of other industries, such as semiconductor packaging, LED production, compound semiconductor manufacturing, RF communication device production, and the data storage industry, as well as general materials research. More information about our company and its products and services can be found on our website at <https://www.kla.com>.

**Recommendation 2** is for BIS to retain the deemed export/reexport carveout because it is critically important for the United States' continued leadership in the semiconductor manufacturing industry and thus U.S. national security interests.

**Recommendation 3** is to add the following note to section 744.23(a)(4): "For purposes of this section, 'development' and 'production' activities do not include the upgrade of 3B equipment already installed and in operation."

**Recommendation 4** is to make a clarifying edit to section 748.15(d) to include a reference to section 744.23(a)(4) among the sections the VEU authorizations cover and update the cross reference from 744.23(a)(1)(iii) and (a)(2)(iii) to 744.23(a)(2)(i).

**Recommendation 5** is for BIS to issue an FAQ that states the following: "The requirement for a 'direction' to use the TGL in supplement no. 1 to Part 736(d)(1) is satisfied when a company that is headquartered in the United States or a country in Country Group A:5 or A:6: 1) creating a written document and maintains the document stating that the exports, reexports, and transfers of items subject to the EAR under the TGL to conduct the authorized development and production activity, including upgrades, is being done at the ultimate request of the company; 2) provides that document to the party acting at its direction; and 3) maintains a record of the document and related communication in its files consistent with EAR Part 762. BIS also clarifies that written agreements, supplier instructions, and other documentation meet the 'direction' requirement if such documents in their totality factually demonstrate that the 'development' or 'production' activities being undertaken in Macau, or a destination specified in Country Group D:5, occur at the direction of a company that is headquartered in the United States or a country in Country Group A:5 or A:6."

**Recommendation 6** is for BIS to explicitly state why the TGL has an expiration date and give the public a chance to provide comments on the explanation.

**Recommendation 7** is for BIS to issue an answer to an FAQ consistent that confirms that: "Equipment that physically cannot, even with modifications, alter the technology node of an IC, such as equipment that only detects or diagnoses flaws in masks, wafers, and ICs, is not within the scope of the 'front end' equipment controls in section 744.23(a)(4) and is within the scope of the 'back-end exclusion' in section 744.23(a)(5)."

**Recommendation 8** is that BIS publish the following FAQ: "Mass-market, off-the-shelf computer, server, and software products that have not been designed or modified for use with the 'development' or 'production' of semiconductors are not subject to controls under section 744.23(a)(4)."

**Recommendation 9** is that the word "designed" in ECCN 3B002.c be amended to align with the ECCN's heading so that it refers to "specially designed" equipment meeting the control parameters.

**Recommendation 10** is that a note be added to section 742.6(a)(6)(iii) stating that

“This section does not apply to exports, reexports, or transfers for end uses in inspection, metrology, or defect-review equipment.”<sup>2</sup>

**Recommendations 11 and 12** are for BIS to do more to level the regulatory playing field with non-US companies.

KLA thanks BIS for the opportunity to comment on the SME IFR. We believe that our comments and recommendations, if adopted, will make the new controls more effective and less counter-productive. They will also help with industry understanding and thus BIS’s compliance objectives. If you have any questions about this comment or its attachments, please contact us any time at (408) 875-5034.

Sincerely yours,

*Dennis Ralston* [digital signature]

Dennis Ralston  
Senior Director – Government Relations and  
Cooperative R&D

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<sup>2</sup> This comment pertains to the companion Advanced Computing interim final rule (“AC/S IFR”) published at 88 Fed. Reg. 73458 (Oct. 25, 2023). For the sake of drafting efficiency, this comments is included in this letter. We ask that it be considered when BIS reviews comments for RIN 0694-AI94.

**Comments of the  
Semiconductor Industry Association**

**On**

**The Interim Final Rule Entitled  
“Export Controls on Semiconductor Manufacturing Items”**

88 Fed. Reg. 73424 (Oct. 25, 2023)

RIN 0694-AJ23

Docket No. 231013-0246

Submitted January 17, 2024

The Semiconductor Industry Association (SIA) submits these comments in response to the request from the Bureau of Industry and Security (BIS) in the above-captioned rule. The Interim Final Rule entitled *Export Controls on Semiconductor Manufacturing Items* (SME IFR) which amended the Export Administration Regulations (EAR) by refining the scope of the interim final rule released on October 7, 2022 (October 7 IFR) to more effectively achieve national security objectives while responding to public comments about the controls adopted in the October 7 IFR.

Part I of these comments contains introductory and background comments about SIA and semiconductors. Part II contains general comments about the SME IFR and related Interim Final Rule entitled *Implementation of Additional Export Controls: Certain Advanced Computing Items; Supercomputer and Semiconductor End Use; Updates and Corrections* (AC/S IFR) including requests for BIS to consider. Part III contains comments, questions, and requests about specific provisions in the SME IFR for BIS to consider.

**Part I -- Introduction and Background**

SIA has been the voice of the U.S. semiconductor industry for over 40 years. SIA member companies represent more than 99% of the U.S. semiconductor industry by revenue and are engaged in the research, design, and manufacture of semiconductors. The U.S. is the global leader in the semiconductor industry today. Continued U.S. leadership in semiconductor technology will drive economic strength, national security, and global competitiveness. More information about SIA and the semiconductor industry is available at [www.semiconductors.org](http://www.semiconductors.org).

Semiconductors are complex products critical to the functioning of everyday consumer electronics, communications, and computing devices in the automotive, industrial, financial, medical, retail, and many other sectors of the economy. They are also critical components for future technologies, such as artificial intelligence, quantum computing, and 5G/6G telecommunications. Few industries, if any, have a supply chain and



development ecosystem as complex, geographically widespread, and interdependent as the semiconductor industry. A joint report<sup>1</sup> by the Boston Consulting Group (BCG) and SIA found that more than 120 countries were involved as an exporter or importer of semiconductor products. The United States is the world leader in this global market. Semiconductors are consistently one of the United States' top exports. In 2022, U.S. exports of semiconductors totaled \$61.1 billion, ranking fifth highest behind only refined oil, airplanes, crude oil, and natural gas.

Domestically, maintaining a strong U.S. semiconductor research, design, manufacturing, and supplier base is both an economic security and a national security imperative. As stated in both the House and Senate versions of the 2021 National Defense Authorization Act: *"The leadership of the United States in semiconductor technology and innovation is critical to the economic growth and national security of the United States."*<sup>2</sup> Given how important the economic vitality and competitiveness of the U.S. semiconductor industry is to national security, as a general matter, it is critical to ensure that U.S. export controls are narrowly tailored and designed to achieve specific national security objectives. We therefore strongly encourage that government work closely with industry to ensure that U.S. policies are crafted in a manner that both enhances our national security while also continuing to enable the semiconductor industry in the U.S. to grow and innovate. To that end, SIA welcomes Secretary Raimondo's recent announcement regarding the reestablishment of the President's Export Council Subcommittee on Export Administration (PECSEA) to "gather insight from key stakeholders to ensure our controls are carefully tailored to maximize our national security impact while advancing U.S. technological leadership"<sup>3</sup> as well as the subsequent request for nominations.<sup>4</sup>

Overseas markets play a crucial role in this capital-intensive industry, comprising more than 80% of U.S. semiconductor sales. Access to global markets is therefore needed to ensure that U.S. semiconductor companies are able to continually fund the very large R&D investments and capital expenditures that are required to maintain U.S. technology ahead of global competitors, a phenomenon that a BCG report<sup>5</sup> termed the "virtuous innovation cycle." It is therefore notable that, in its recently released assessment of the microelectronics industrial base in the U.S., the Department of Commerce

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<sup>1</sup> *Strengthening the Global Semiconductor Supply Chain in an Uncertain Area*, BOSTON CONSULTING GROUP, April 2021, [https://www.semiconductors.org/wp-content/uploads/2021/05/BCG-x-SIA-Strengthening-the-Global-Semiconductor-Value-Chain-April-2021\\_1.pdf](https://www.semiconductors.org/wp-content/uploads/2021/05/BCG-x-SIA-Strengthening-the-Global-Semiconductor-Value-Chain-April-2021_1.pdf).

<sup>2</sup> H.R. 6395 § 1824(b) and S. 4049 § 1098(b).

<sup>3</sup> "Remarks by Commerce Secretary Gina Raimondo at the Meeting of the President's Export Council," U.S. DEPARTMENT OF COMMERCE, Nov. 29, 2023, <https://www.commerce.gov/news/speeches/2023/11/remarks-commerce-secretary-gina-raimondo-meeting-presidents-export-council>.

<sup>4</sup> *Notice of Reestablishment of the President's Export Council Subcommittee on Export Administration and Solicitation of Nominations for Membership*, U.S. DEPARTMENT OF COMMERCE, BUREAU OF INDUSTRY AND SECURITY, Jan. 9, 2024, <https://www.govinfo.gov/content/pkg/FR-2024-01-09/pdf/2024-00190.pdf>.

<sup>5</sup> *How Restrictions to Trade with China Could End US Leadership in Semiconductors*, BOSTON CONSULTING GROUP, March 2020, [https://web-assets.bcg.com/img-src/BCG-How-Restricting-Trade-with-China-Could-End-US-Semiconductor-Mar-2020\\_tcm9-240526.pdf](https://web-assets.bcg.com/img-src/BCG-How-Restricting-Trade-with-China-Could-End-US-Semiconductor-Mar-2020_tcm9-240526.pdf).

acknowledged that “export controls, by limiting the size of the addressable market, may reduce...funds available for corporate R&D.”<sup>6</sup>

Revenue from sales in China is particularly critical for the success of U.S. semiconductor firms across the industry ecosystem, as China remains the single largest market for semiconductors, accounting for 31% of global sales and 35% of U.S. chip sales in 2022. It is also the largest market for the sale of semiconductor manufacturing equipment. With the revenue needed to maintain U.S. technology leadership impacted by U.S. government restrictions, we strongly encourage the U.S. government to actively pursue proactive trade and economic policies aimed at opening and expanding market access for semiconductors in third countries – namely to grow the addressable market outside of China. We likewise urge the U.S. government to address trade barriers that impact our companies’ ability to operate their complex global supply chains and ultimately sell their semiconductor products in foreign markets.

It is also critical that U.S. export controls are implemented in a multilateral manner, such that they do not undermine innovation and the technology base in the United States, by disallowing U.S. companies from selling to overseas customers or in certain markets when their foreign competitors are unencumbered from selling to those same customers or markets. As the Commerce Department has repeatedly stated, multilateralism is a fundamental factor in the effectiveness of export controls. But while we acknowledge BIS’s well-meaning efforts to engage with U.S. allies and partners towards achieving multilateral and plurilateral export control alignment, the results of these efforts so far fall well short of the rhetoric. The reality is that U.S. companies remain severely disadvantaged in the global marketplace due to the unilateral controls implemented in the October 7 IFR and AC/S IFR. And even when other countries have adopted similar lists of items subject to export controls, those other governments have not implemented end-user and end-use controls similar to BIS controls in Part 744 of the EAR. Therefore, companies whose products are subject to U.S. export controls face a diminishing market that provides opportunities for growth by companies that are not subject to U.S. export controls. In other words, while the size of the total addressable market for U.S. semiconductor products has contracted, the total addressable market for non-U.S. semiconductor products is growing. This is true not only for those products subject to U.S. export controls, but also for products that are not subject to export controls due to the broader chilling effect that such controls have on the global market. Our comments will address these unintended, but very real, consequences in more detail below.

Finally, SIA and our member companies recognize the need to protect national security and believe maintaining a healthy U.S. semiconductor industry is an essential component to achieving that goal. To that end, SIA has long been a partner of the U.S.

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<sup>6</sup> *Assessment of the Status of the Microelectronics Industrial Base in the United States*, U.S. DEPARTMENT OF COMMERCE, BUREAU OF INDUSTRY AND SECURITY, OFFICE OF TECHNOLOGY EVALUATION, Dec. 2023, <https://www.bis.doc.gov/index.php/documents/technology-evaluation/3402-section-9904-report-final-20231221/file>

Government in providing support and feedback regarding export control policy, particularly with respect to semiconductors. SIA appreciates the opportunity to provide its comments, questions, and requests with respect to the AC/S IFR and SME IFR.

## **Part II -- General Comments**

**Comment II.A: BIS should consider the unintended consequences of the AC/S IFR and SME IFR, in particular, that these rules accelerate the design-out of U.S.-origin products and technology from global supply chains.**

Export controls should consider foreign availability of controlled commercial products to avoid creating incentives for the development of competing technologies outside the U.S. If controls are not modernized as technologies and national security concerns evolve – which includes decontrols where appropriate in light of future developments – the broad application of such controls disincentivize investment in the U.S. and risks ceding U.S. leadership to global competitors by “designing out” U.S.-origin technology from global technology supply chains.

As U.S. export control rules grow increasingly complex, and the “small yard” to which these rules apply grows ever broader, many foreign customers are increasingly opting to source non-U.S. technology, software, components, and equipment to avoid the risk of “tainting” their foreign-made items. That is, even foreign customers that are not directly affected by the rules are making business decisions to avoid U.S.-branded content (i.e., that which is exported from the U.S. and sold by a U.S. company) in order to reduce their risk of shipment delays or supply chain disruptions due to current or future U.S. export controls that they cannot fully understand. This over-control is unintended and harmful to the U.S. industrial base, particularly where there is availability of competitive non-U.S. technology, software, components, and equipment. These risks exist across the different subsets of the semiconductor supply chain and are amplified by the application of extraterritorial unilateral controls like the foreign direct product rule (FDPR).

Export controls also factor into procurement and investment decisions of governments and companies worldwide. The prior experience of the machine tool industry, the satellite industry, and others should be carefully considered, as there may be lessons to be learned on how export controls contributed to procurement and investment decisions, to the possible detriment of the affected U.S. industry. Implementation of multilateral and plurilateral controls may mitigate the negative impact, but if U.S. controls are more extensive and more restrictive than similar controls imposed by other governments, the negative impact on U.S. industry will persist.

BIS should also consider that the comparative advantage held by the U.S. may be at risk if China develops an entire ecosystem of chips and chipmaking equipment that is “good enough” to replace incumbent suppliers in the technologies of the future – such

as electric vehicles and the IoT – not only in the Chinese domestic market but globally.<sup>7</sup> Evidence exists that Chinese competitors are making progress to that end, posing a serious challenge to continued U.S. semiconductor leadership globally. Exacerbating this dynamic is the lack of proactive U.S. trade and economic policies to open new markets for U.S.-origin semiconductor products, while China continues to expand its network of trade agreements and its global economic influence via the Belt and Road and Digital Silk Road initiatives.

More specifically, at the heart of the October 7 IFR, the SME IFR, and the AC/S IFR, is an effort to deter China from making progress toward leading-edge technology process nodes. However recent product announcements demonstrate that China is, in fact, making technological progress despite U.S. and allied restrictions.<sup>8</sup> Similarly, chip design is one of the U.S. and its allies' greatest strengths. Design of microprocessors, artificial intelligence (AI) accelerators, and smartphone chips historically has been dominated by U.S. and allied companies. Likewise in this segment of the industry, evidence suggests that foreign competitors are developing alternatives, challenging the underlying assumption that the U.S. will necessarily maintain its leadership.

China's indigenous tool market is also experiencing rapid growth, as Chinese foundries replace foreign-made equipment with domestic alternatives in the wake of restrictions. According to market analysis, nearly half (47.25%) of all machinery equipment tenders by Chinese foundries from January to August 2023 were won by local manufacturers.<sup>9</sup> In this case, restricting the ability of companies subject to U.S. export controls to service the installed base of tools already in Chinese fabs is forcing Chinese legacy chip producers – ostensibly not the focus of the regulations – to replace tools manufactured by U.S. and western-headquartered companies with Chinese domestic equipment, hastening the development of domestic “good enough” alternatives which are then not subject to the jurisdiction and oversight of the U.S. and allies. It runs counter to the expressed purpose of the rules and could contribute to the Chinese stated goal of achieving self-sufficiency.

Overbroad U.S. controls also create an incentive for China to invest in legacy

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<sup>7</sup> Jingyue Hsiao, *Major China-based semiconductor equipment providers form strategic investment venture*, DIGITIMES ASIA, Jan. 5, 2024, <https://www.digitimes.com/news/a20240105VL202/china-investment-semiconductor-equipment.html>; Jacky Wong, *Surpassing Tesla, China's BYD Will Take On the World in 2024*, WALL STREET JOURNAL, Jan. 2, 2024, <https://www.wsj.com/business/autos/chinas-ev-champion-byd-will-take-on-the-world-in-2024-9da4cfde>.

<sup>8</sup> Anton Shilov, *Huawei's New Mystery 7nm Chip from Chinese Fab Defies U.S. Sanctions*, TOM'S HARDWARE, Sept. 3, 2023, <https://www.tomshardware.com/news/huaweis-new-mystery-7nm-chip-from-chinese-fab-defies-us-sanctions>; Charlotte Trueman, *Chinese-made 7nm chips in Huawei phone raise questions over U.S. export ban*, COMPUTERWORLD, Sept. 8, 2023, <https://www.computerworld.com/article/3706373/chinese-made-7nm-chips-in-huawei-phone-raise-questions-over-us-export-ban.html>; Jeff Pao, *SMIC bypasses US curbs to make 7nm chips*, ASIA TIMES, Sept. 5, 2023, <https://asiatimes.com/2023/09/smic-bypasses-us-curbs-to-make-7nm-chips/>.

<sup>9</sup> Fanny Potkin and Yelin Mao, *Chinese chip equipment makers grab market share as US tightens curbs*, REUTERS, Oct. 18, 2023, <https://www.reuters.com/technology/chinese-chip-equipment-makers-grab-market-share-us-tightens-curbs-2023-10-18/>.

technologies, with the unintended consequence of artificially repressing Western companies' investment in legacy technologies. Traditionally, when controls have been limited to "cutting-edge" technology on a narrow set of dual-use cases, there is a relatively small commercial economic incentive for a potential competitor to make the significant investments necessary to approach the cutting edge. Instead, what typically happens is that the potential competitor operates in "follower" mode, and feeds on the domestic commodity portion of the market with modest investment and a cheap local supply chain. These vendors may use this learning to try to "bootstrap" themselves to the higher performance part of the market, but in the semiconductor industry, that tends to be a constantly moving target, and the investments required tend to be daunting. The gap may slowly close over time – but also may persist for as long as the technology advances.

However, if export controls are too aggressive and try to control the lower performance items, then the market size for the foreign supplier expands significantly. This expanded market justifies a lot more investment by the domestic suppliers in the country of concern. The unintended consequence is that foreign competitors seize market share in legacy technologies, to the detriment of U.S. suppliers.

**Comment II.B: BIS should implement licensing policy evenly.**

Unevenly applied licensing policy can distort the market, creating winners and losers unintentionally.

We therefore recommend that when BIS grants a license for a particular product, BIS should fast-track licenses for competitors' comparable products. Ideally, the license effective dates should be aligned within product types, to ensure that all competitors have an equal opportunity to bid for customer business. This alignment is critical to ensure no party receives an unfair competitive advantage due to inconsistent licensing decisions, particularly given that semiconductor products are tightly integrated into finished products and "second sourcing" is difficult and expensive, and therefore rarely occurs.

Also, it would be helpful for BIS to maintain a register of published licenses by product category and key features. Currently, companies have no way of knowing whether a particular product or technology will be granted a license, except through rumors and by conducting market research. Companies that do not apply for licenses or whose licenses are not given equal treatment are then at a severe disadvantage to competitors who are more aggressive about filing, or more fortunate in having their licenses approved by BIS.

**Comment II.C: BIS should implement improved mechanisms for interaction with industry.**



While we welcome the announcement regarding the PECSEA, we encourage the Commerce Department and the Administration to issue proposed rules when possible and, more broadly, to develop additional mechanisms to facilitate regular engagement with industry stakeholders in the development of future export controls.

**Comment II.D: We ask BIS to further clarify the complex new regulations.**

In comments on the October 7 IFR, we noted the complexity of new regulations including the enhanced foreign direct product rules. The increasing complexity under the AC/S IFR and SME IFR severely impacts broad and informed compliance. While we appreciate the FAQs published by BIS on December 29, 2023,<sup>10</sup> and understand that plans to issue an upcoming corrections and clarifications rule, there are a number of questions regarding these rules that BIS has not yet addressed:

- BIS should further clarify the definition of “headquartered” company. The definition of “headquartered” could go two different directions: either (1) a simple, objective test, like situs of incorporation, or (2) a multipart, subjective “nexus” kind of test. Which direction does BIS intend to go, and does BIS plan to publish a FAQ or a rule change to further clarify this definition?
- BIS should issue a formal interagency review process for the review of notification requirements submitted in SNAP-R for License Exception NAC. We suggest that the review includes an appeals process for filers in scenarios where BIS requires a license rather than providing a confirmation of License Exception NAC eligibility.
- We request that BIS publish the applicable subparagraphs of z.1 to z.4 of ECCN 4A003.z, as these subparagraphs appear to be missing in the AC/S IFR.
- BIS should clarify that, in the case of in-country transfers, repair or storage of items at another location is not a change in end-use. Repair or storage of an item that has already been authorized should not require reauthorization. A more restrictive interpretation would cause unnecessary business interruptions and compliance costs without serving the stated policy objective of the regulations.

Finally, it is important to recognize that, given the complexity of the regulations, reasonable parties can differ in interpreting the license requirements. Where lack of clarity leads to differing interpretations, companies with similar products can end up taking different compliance approaches, which in turn leads to inconsistent outcomes

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<sup>10</sup> *Frequently Asked Questions (FAQs) for “Export Controls on Semiconductor Manufacturing Items” (SME IFR) and “Implementation of Additional Export Controls: Certain Advanced Computing Items; Supercomputer and Semiconductor End Use; Updates and Corrections” (AC/S IFR)*, U.S. DEPARTMENT OF COMMERCE, BUREAU OF INDUSTRY AND SECURITY, Dec. 29, 2023, <https://www.bis.doc.gov/index.php/documents/policy-guidance/3434-2023-frequently-asked-questions-003-clean-for-posting/file>.

and could distort the market.

**Comment II.E: We ask that BIS retain and expand the deemed export exclusion.**

In the preamble to both the AC/S IFR and SME/IFR, BIS requests comments on the deemed export exclusion to licensing requirements for foreign nationals. Deemed exports and reexports are excluded from the license requirements related to regional stability reasons for control in Section 742.6(a)(6)(iv) of the EAR.

It is important for U.S. commercial innovation and leadership to allow companies to continue to recruit and retain the best and brightest talent and avoid overly broad restrictions on the nationalities of available talent. As SIA has previously noted, one of the key factors driving growth and innovation in the U.S. semiconductor industry and across the broader tech sector is the availability of highly educated professionals – from both the U.S. and abroad – to create jobs and develop new technologies.<sup>11</sup> In many respects, the U.S. is already falling behind in the global competition for a skilled semiconductor workforce.

In the U.S., there is a significant gap between the number of U.S. persons qualified for technical positions in the semiconductor industry and the number of positions U.S. companies need to fill. To bridge the workforce gap, U.S. companies need access to the best talent, which may often be a non-U.S. person.

In July 2023, SIA and Oxford Economics published a report highlighting the significant shortage of technology workers in the semiconductor industry. The report found that the United States lacks a sufficient number of technicians, computer scientists, and engineers, with a projected shortfall of 67,000 of these workers in the semiconductor industry by 2030 and a gap of 1.4 million such workers throughout the broader U.S. economy. One of our core recommendations is to pursue policies designed to retain and attract more international advanced degree students within the U.S. economy, for the following reasons, among others:

*The process of growing the domestic pipeline of U.S.-citizen students pursuing advanced degrees in STEM fields will take years or decades to bear fruit. In the meantime, we estimate that approximately 16,000 master's- and PhD-level international engineers are leaving the U.S. each year. For the semiconductor industry alone, these departures contribute to a projected total gap of approximately 17,000 master's and PhD engineers by the end of the decade. Simply put, the workforce gap for individuals with advanced engineering and computer science degrees cannot be realistically addressed for the foreseeable future solely with U.S.-citizen graduates.<sup>12</sup>*

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<sup>11</sup> See: <https://www.semiconductors.org/policies/workforce/>.

<sup>12</sup> *Chipping Away: Assessing and Addressing the Labor Market Gap Facing the U.S. Semiconductor Industry*, SEMICONDUCTOR INDUSTRY ASSOCIATION, July 8, 2023, [https://www.semiconductors.org/wp-content/uploads/2023/07/SIA\\_July2023\\_ChippingAway\\_website.pdf](https://www.semiconductors.org/wp-content/uploads/2023/07/SIA_July2023_ChippingAway_website.pdf).

And while the U.S. struggles to retain engineering graduates educated in U.S. universities, Chinese universities continue to produce more than 77,000 STEM PhD graduates per year.<sup>13</sup>

In light of the workforce shortages and talent retention challenges, the imposition of a license requirement for nationals from the 45 countries specified in Country Groups D:1, D:4, and D:5 (excluding those also listed as A:5 and A:6 countries) to access certain source code and technology, similar to the regional stability controls for specified items on the Commerce Control List, would put U.S. semiconductor companies at a significant competitive disadvantage vis-à-vis global competitors. Even if such a licensing policy were based on a presumption of approval, the process of applying for such licenses alone would discourage the hiring of nationals from these countries, as well as create significant business and operational delays in a fast-paced industry due to the extended timeline from persons being hired to actively working. There are similarly many long-serving, valuable employees of semiconductor firms who are nationals of the restricted countries but reside in the U.S. and partner countries and could be negatively impacted by a new license requirement. Additionally, deemed exports are unique to the EAR. This places U.S. companies at a particular disadvantage in comparison to our peers.

We therefore appreciate BIS's thoughtful approach on deemed exports and deemed reexports in these regulations – namely the exclusion of such requirements from the regional stability controls in Section 742.6(a)(6)(iv) – which will help to ensure that U.S. companies are able continue recruiting and retaining the best talent for developing and producing the next generation of technologies. However, we note that the effectiveness of the deemed exports and reexports exclusion is severely undermined without implementing exclusions for similar technology ECCNs that can also be required for the development and production of ICs, including advanced node ICs. Indeed, we recommend that BIS consider a similar exclusion for ECCNs 3E002 (microprocessor technology) and 4E001 (computer technology under 4E001 not limited to products classified under 4A090).

For example, there is a considerable overlap between ECCN 3E001 for development of chips controlled under 3A090 and ECCN 3E002. A similar overlap exists between ECCN 4E001 for the development of electronic assemblies controlled under 4A090, and 4E001 for computers controlled under ECCN 4A003. Retaining a licensing requirement for deemed exports of technology controlled under ECCN 3E002 and 4E001 for computers controlled under 4A003 significantly undercuts the deemed export exclusion under the AC/S IFR. In general, the deemed export licensing experience of SIA member companies with respect to ECCN 3E002 and 4E001 for computers controlled under 4A003 has led to negative and counterintuitive outcomes.

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<sup>13</sup> *China is Fast Outpacing U.S. STEM PhD Growth*, CENTER FOR SECURITY AND EMERGING TECHNOLOGY, Aug. 2021, <https://cset.georgetown.edu/wp-content/uploads/China-is-Fast-Outpacing-U.S.-STEM-PhD-Growth.pdf>.

To the detriment of U.S. chip designers, BIS's frequent practice of imposing overly restrictive license conditions has led to situations and outcomes in which licenses are granted, but in practice cannot be used, because the overly restrictive conditions prevent the applicant from performing the intended job description. In several cases, deemed export licenses for non-U.S. nationals with world-class expertise have included conditions so restrictive as to make the licenses practically useless. This contributes to the broader workforce shortage and talent gap in the United States described above.

### **PART III -- Comments on Specific Provisions of the SME IFR**

SIA also wishes to offer these additional comments on the SME IFR:

**i. We ask that BIS consider remedying the current misalignment with the controls implemented by key allies.**

SIA maintains that multilateral controls are more effective than unilateral controls and that they ensure that U.S. companies are not placed at a disadvantage in the global marketplace. We recognize that the U.S. is taking steps to implement multilateral and plurilateral controls with selected allies, for example through controls on a common list of equipment described in the SME IFR. However, significant differences remain between BIS rules and similar controls promulgated by other governments, which ultimately put companies whose products are subject to the EAR at a competitive disadvantage. For example, U.S. regulations are more complex and comprehensive than current controls in allied countries, which do not have equivalent controls to the U.S. Entity List or U.S. end-user and end-use controls, for example.

In the case of semiconductor manufacturing equipment, while the United States, Netherlands, and Japan agreed upon a specific list of semiconductor manufacturing equipment in ECCN 3B001, 3B002, and related ECCNs that would require a license to export to China, the end-use controls in sections 744.6(c)(2)(i) and (ii) (U.S. person support for advanced node IC production in China); 744.6(c)(2)(iii) (U.S. person support for newly controlled 3B001 equipment in China); 744.23(a)(2) (exports for advanced node production in China); and 744.23(a)(4) (exports for SME production in China) are completely unilateral.

The Dutch government has implemented in its export control laws such catch-all and "is informed" authorities in Articles 2(1) and 3(1) of its Strategic Services Act (*Wet Strategische diensten*). The Japanese government has implemented similar catch-all and "is informed" authorities in its export control laws and regulations through a combination of provisions, namely those in Article 25 (1) and (3) of the Foreign Exchange and Foreign Trade Act ("FEFTA"); Article 9(2)(vi) and (vii) of the *Ministerial Order on Invisible Trade Connected with Visible Trade* (MITI Order No. 8 of 1998, as amended); METI Notice Regarding Technology Transfers that Require a License Under FEFTA Article 25(1) and Foreign Exchange Order 17(2) at 2; Article 4(1)(iv)(b) of the *Export Trade Control Order* (Cabinet Order No. 378 of 1949, as amended) for the export

of goods; and Article 9(2)(vii)(b) of the *Ministerial Order on Invisible Trade Connected with Visible Trade* (MITI Order No. 8 of 1998, as amended). Neither is co-extensive with the requirements of the EAR. In other words, neither the Dutch government, the Japanese government, nor any other government prohibit their citizens or companies incorporated under their legal systems from providing support to advanced node IC production in China, supporting tools for advanced node IC production, or exporting otherwise uncontrolled items for the development or production in China of otherwise uncontrolled SME. This means that the effectiveness of the U.S. unilateral controls is significantly limited, because non-U.S. person companies may legally engage in activities that U.S. companies cannot.

The October 7, 2022 and revised October 17, 2023 rules impose end-use controls and prohibitions on U.S. support for advanced fabrication facilities in China. This means that U.S. companies are unable to export *any* semiconductor manufacturing equipment, even equipment that are not subject to list-based controls, to advanced fabrication facilities in China, or to provide support (e.g., service) for such equipment, to the extent that the equipment would be used to develop or produce advanced logic, DRAM, or 3D NAND chips in China. By contrast, foreign competitors from Japan, Korea, Taiwan, Israel, and the Netherlands may export equipment not subject to list-based controls to advanced fabs in China, as well as to support such equipment. Not only do these unilateral controls mean that they are generally less effective at stopping what the U.S. government seeks to stop in China, but the asymmetry creates structural incentives for non-U.S. persons and non-U.S. companies to perform the same services that U.S. companies are no longer able to provide in China. In other words, the asymmetry undermines the competitiveness of U.S. semiconductor manufacturing equipment companies while failing to achieve the stated national security objectives of this regulation due to the ability of foreign competitors to continue supplying equipment and support to advanced fabs in China. Congress recognized this very point in section 4811(4) of the Export Control Reform Act of 2018 (ECRA), which underscored that “export controls applied unilaterally to items widely available from foreign sources generally are less effective in prevent end-users from acquiring those items.”

We therefore strongly request that BIS do all that is possible to make the new controls both effective and not counter-productive. Every dollar earned by our non-U.S. competitors because of the existence of U.S. unilateral controls, regardless of licensing policies, is invested in their research and development efforts that could ultimately lead to the erosion of U.S. semiconductor leadership.

Our request for multilateral controls is also a statutory requirement. Specifically, section 4812(b)(3) of ECRA explicitly requires the President to “seek to secure the cooperation of other governments and multilateral organizations to impose control systems that are consistent, to the extent possible, with” controls imposed by the U.S. In addition, ECRA § 4811(3) requires that any controls imposed under section 4812, which include end-use controls, “must be evaluated on an ongoing basis . . . to avoid negatively affecting [U.S.] leadership in the science, technology, engineering, and manufacturing sectors,



including foundational technology that is essential to innovation.”

We therefore recommend that BIS commit to working quickly and aggressively with the allies to convince them to adopt comparable controls. Specifically, to ensure a level playing field, multilateral (and plurilateral controls) should be coordinated in the following respects:

1. All participating member states should control the same list of items;
2. All participating member states should implement the same license exceptions/general licenses for controlled items;
3. All participating member states should implement the same licensing policy;
4. All participating member states should implement the same end-user and end-use controls; and
5. All participating member states should implement a “no undercut” rule, so that a license issued by one participating member state will not “undercut” a license denial by another participating member state.

Only with such efforts and results in the near term will the EAR’s end-use controls be both effective and not counter-productive and ECRA’s mandatory obligations be satisfied.

## **ii. Licensing Policy**

The SME IFR attempts to level the playing field for U.S. companies by changing the license review standard from a presumption of denial to a presumption of approval if an applicant can demonstrate there is a foreign-made item that performs the same function as the tool that a license is being sought for. While the spirit of this attempt to level the playing field is appreciated, the license review standard does not achieve this objective. First, U.S. companies must still seek a license, and manage the related documentation burdens both internally and vis-à-vis their customers, while foreign competitors do not. This in turn creates a global deterrent for purchasing a U.S. made tool. Second, many companies have experienced years-long waiting periods to receive licenses – yet another significant deterrent for purchasing U.S. equipment. Third, there is a massive administrative burden and cost to U.S. companies in having to prepare thousands of these license applications. Fourth, the maintenance of end-use controls/U.S. support prohibitions is arguably unnecessary now that the U.S. has published controls on the most advanced semiconductor equipment.

### iii. Temporary General License

- a. BIS should clarify the term "ultimate end use" in the Temporary General License (TGL), especially regarding whether it includes software and technology. Guidance on the scope of "ultimate end use" concerning technology transfer would be beneficial. Clarification is required 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, when 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.
- b. Likewise, BIS should clarify whether the TGL can be used when exporters do not know the "ultimate end use" location but obtain export authorizations to ship legally to D:1, D:4, or D:5 destinations if needed. For instance, can a U.S. company use TGL to send 3A090 items to its subsidiary in China for inspection, testing, or quality assurance for worldwide distribution if the company holds a valid export authorization for any subsequent reexport or in-country transfer to an end user in China?
- c. BIS should explain the relationship between the new TGL and the 2022 TGL. Clarity is needed on whether the 2023 TGL supersedes the expiration of the 2022 TGL, specifically whether companies can use the new TGL to continue or resume activities meeting the TGL product and end-use scope.
- d. BIS should confirm either in an FAQ or preferably in the corrections and clarifications rule that recipients can be located in countries that are listed in country groups D:1 and D:4. (This appears to be an accidental omission.) As written, shipments are limited to exports, reexports, and transfers to D:1, D:4, and D:5 (minus A:5, A:6) when the recipient is located in, but not headquartered in, Macau or D5. This draft limits the TGL to recipients located in Macau or D:5, though we believe BIS's intent is to permit exports, reexports, and transfers to D:1, D:4, and D:5.
- e. The TGL provides authorization for limited supply chain related end-use activities (integration, assembly (mounting), inspection, testing, quality assurance, and distribution) but does not appear to cover customer support. Given that some U.S. headquartered companies may have customer support teams located in countries that require export licenses (Vietnam, China, Kuwait, etc.), it would be sensible for the TGL authorization (or a license exception) to authorize transfer of products to those internal teams to support this ongoing business. Such customer support is of a similar nature to the end uses currently permitted under the TGL.

- f. We also suggest that for in-country transfers, BIS should not require a license for the repair or storage of an item at a secondary location that has already been authorized for export to the country.
- g. We suggest that the TGL should apply to newly created NS- and RS-controlled items in addition to AT-only items so that it has the same scope as the supply chain authorizations it is replacing, and recommend that the scope of the TGL reads as follows:

*The items subject to the EAR that are specified on the Commerce Control List (CCL) in supplement No. 1 to part 774 of the EAR that are designated as controlled on the CCL either (i) only for AT reasons; or (ii) for RS and NS reasons and subject to controls in §§ 742.6(a)(6)(i) and 742.4(a)(4), respectively.*

- h. The requirements for meeting the “direction” language in Supplement No. 1(d)(1) to Part 736 of the EAR are unclear. BIS should clarify the “direction” requirement in the TGL for certain recipients “developing” or “producing” “parts,” “components,” or “equipment” (as specified in § 744.23(a)(4) of the EAR) at the **direction** of a company that is headquartered in the United States or a destination specified in Country Group A:5 or A:6 and not majority-owned by an entity headquartered in either Macau or a destination specified in Country Group D:5. In its clarification, BIS should state that a person can satisfy the “direction” requirement by creating and retaining a written document stating that the exports, reexports, and transfers of items subject to the EAR qualify under the TGL. BIS also should clarify that supplier instructions, and other documentation meet the “direction” requirement if such documents in their totality factually demonstrate that the ‘development’ or ‘production’ activities being undertaken in Macau, or a destination specified in Country Group D:5, occur at the direction of a company that is headquartered in the United States or a country in Country Group A:5 or A:6.

#### **iv. Carveout for Section 744.23(a)(4)**

BIS indicated in its FAQ IV.Q3 and Q4 on the SME/IFR<sup>14</sup> that controlling exports, reexports, and transfers of items subject to the EAR for use in upgrading in China SME already produced by companies headquartered in the U.S. or in A:5/A:6 countries is not part of the policy objective for the revised 744.23(a)(4) controls. Accordingly, as BIS confirmed, the TGL in Supplement No. 1 to Part 736, paragraph (d)(1), authorizes such exports, reexports, and transfers that would otherwise be controlled by 744.23(a)(4) if directed by such a company. This makes sense because the upgraded tools in this context are of a type that could have been exported from the United States without a

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<sup>14</sup> “FAQs for SME IFR and AC/S IFR,” U.S. DEPARTMENT OF COMMERCE, BUREAU OF INDUSTRY AND SECURITY, Dec. 29, 2023, <https://www.bis.doc.gov/index.php/documents/policy-guidance/3434-2023-frequently-asked-questions-003-clean-for-posting/file>.

license. As BIS confirmed in the FAQ, this conclusion also makes policy sense because such activities are not in support of the indigenous development or production in China of SME, which is the policy concern Section 744.23(a)(4) was created to address.

To simplify this policy conclusion, SIA recommends that BIS publish a carve-out note, such as the following, to Section 744.23(a)(4) of the EAR to exempt certain upgrades from a license requirement:

*Section 744.23(a)(4) does not apply to exports, reexports, or transfers of items subject to the EAR made at the written direction of a company headquartered in the United States or a country in Country Groups A:5 or A:6 for use in upgrading equipment and other items within the scope of Category 3B that had been developed and produced by such companies.*

BIS should amend Section 744.23(a)(4) of the SME IFR to create an exemption for mass market encryption commodities described in ECCNs 5A992 and 5D992. Such items including laptop computers, mobile devices, and other, similar items. These items are characterized by broad foreign availability, so that foreign suppliers can easily replace U.S.-origin items. In addition, these items are widely distributed through mass market channels, making effective control difficult or impossible. Finally, excluding items classified under ECCN 5A992 and 5D992 does not harm the policy objectives of Section 744.23(a)(4).

**v. Request Clarification on Scope of the Term “Destined for”**

Under Topic 45 of the October 17 IFR, BIS advises that an item is “destined for” the destination of a system into which the item is incorporated overseas. Consequently, a supplier would require an export license to supply an item to any destination worldwide if the supplier has “knowledge” that the item will be incorporated into a non-U.S. made system that is “destined for” a restricted end use in a country covered by the end-use restrictions. The BIS guidance departs from traditional export control principles in that the restrictions would not apply with respect to the disposition of systems into which the exported item has been incorporated. Usually, the end use of the item has been the incorporation of the item into the system, at which time the item no longer exists as a tradeable item.

We request BIS clarification as to whether the “destined for” BIS guidance only applies to Section 744.23 end-use restrictions or whether it also applies to other EAR provisions.

**vi. SIA Recommends the Use of Consistent Definitions**

We request that BIS be consistent in using term definitions, including adding quotes to the term *technology* in Section 744.23(a)(3)(ii)(A) of the EAR so that it is defined in

Section 772.1 of the EAR.

**vii. SIA recommends insertion of note referenced in the preamble to the text of the SME IFR to the text of the amended Section 744.6(d)(4).**

Section 744.6 (Restrictions on specific activities of “U.S. persons”) includes an important paragraph (d)(4) specifying certain exclusions for natural “U.S. persons”. Although the preamble to the SME IFR references a “new Note to paragraph (d)(4) to provide additional context on when activities of “U.S. persons” are excluded, including providing guidance on how these criteria apply to “U.S. persons” working as freelancers for companies headquartered in the United States or in a destination specified in Country Group A:5 or A:6, on behalf of a company not headquartered in the United States or in a destination specified in Country Group A:5 or A:6, or some combination of these scenarios.” This note does not appear in the amended text of Section 744.6 itself – presumably an inadvertent omission.

\* \* \*

Thank you for the opportunity to comment on the Interim Final Rule. If you have any additional questions or would like to discuss these comments further, please contact SIA via [mthornton@semiconductors.org](mailto:mthornton@semiconductors.org).

Uploaded to [www.regulations.gov](http://www.regulations.gov). ID – BIS–2023–0016

Courtesy copy sent to: [Eileen.Albanese@bis.doc.gov](mailto:Eileen.Albanese@bis.doc.gov).



January 17, 2024

Re: Interim Final Rule – Implementation of Additional Export Controls: Certain Advanced Computing and Semiconductor Manufacturing Items; Supercomputer and Semiconductor End; Entity List Modification (October 25, 2023) (RIN 0694-AJ23)

[Onto Innovation](#) is the 4<sup>th</sup> largest U.S. semiconductor equipment manufacturer and a global leader in helping semiconductor companies manage and control the semiconductor fabrication process. Onto Innovation makes a breadth of products that include measuring tools, inspection tools, lithography tools, wafer tools, as well as software solutions for semiconductor manufacturing. We proudly manufacture approximately 95% of our equipment by revenue in the United States and directly spend about 67% of our supply chain costs on U.S.-based suppliers. As an American company that manufactures and supports the U.S. manufacturing ecosystem, we create and support many good paying jobs in the U.S.

While Onto Innovation prides itself on being a U.S.-centric company, it also is an export driven company, deriving only 12% of its revenue from domestic sales.<sup>1</sup> We therefore need to be able to sell our products outside the U.S. and to the world's major semiconductor markets to sustain and grow our U.S.-based R&D and manufacturing. In this regard, however, Onto Innovation faces headwinds from regulations impacting what used to be one of our biggest markets -- China. We have been negatively impacted by the recent export controls that have moved away from regulating specific sensitive technologies to broadly regulating all types of semiconductor equipment being sold to China. For example, the recent export control actions focus on customer end-uses and place major Chinese companies on the entity list rather than narrowly limiting access to sensitive technology. This policy shift has been detrimental to our American company and our American workers, resulting in Onto Innovation's loss of a great deal revenue without advancing the stated National Security goal of stopping China from getting the technology. The reason for this is because the products we sell can be (and are) easily bought elsewhere from our non-U.S. based competitors. In particular, Israeli-based companies such as Nova and Camtek that do not abide by U.S. export control rules sell competitive products. The U.S. export control regulations have had the unintended effect of enabling these Israeli-based competitors to gain market share in China at our expense. As a result, American manufacturing and workers have been harmed, while the U.S. is no closer to achieving its National Security goal.

Onto Innovation agrees that steps should be taken to protect the National Security of America, and we support efforts to restrict certain exports for National Security reasons. However, we believe that the rules should be narrowly tailored to ensure that the measures effectively meet the security objectives. There are just a handful of pieces of equipment that can only be bought from the U.S., while the rest are readily available from other sources. We would welcome the opportunity to work with the Commerce Department to level the playing field on the regulations that adversely impact American workers and companies because the technology is readily available from our allies who are largely not impacted by the regulations. As such, we believe that the success of these regulations depends on the full cooperation from our allies -- Israel, South Korea, Taiwan, the EU, and Japan -- to put in place comprehensive multilateral export control regulations. Finally, we would like to see the U.S. government fund Bureau of Industry and Security (BIS) at a much higher level so that license reviews can be handled faster (within

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<sup>1</sup> Onto Innovation 10K SEC Filing. Available at <https://investors.ontoinnovation.com/financials/sec-filings/sec-filings-details/default.aspx?FilingId=16432005> Accessed 1/8/2024.

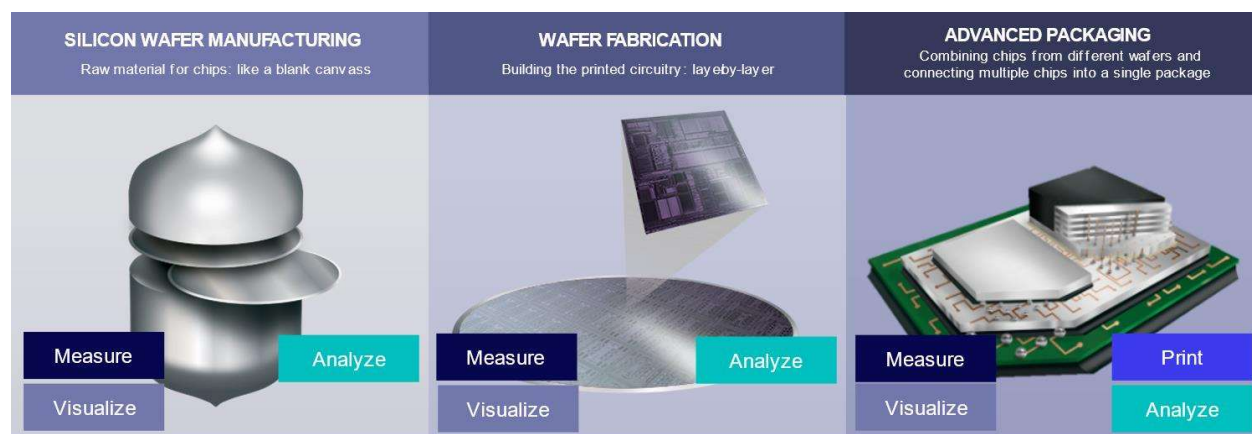
30 days), which is the time that Congress intended<sup>2</sup> rather than many months or longer (by which time, we may have lost the sale to an allied nation competitor).

### Onto Innovation's Technology

Onto Innovation's metrology and inspection equipment measures, analyzes, and visualizes at points along the semiconductor fabrication process whether it be silicon wafer manufacture, wafer fabrication, or back-end packaging and test. This metrology and inspection equipment does not alter the technology level of the integrated circuit being fabricated.

Our lithography products are for back-end packaging or flat panel display manufacturing. The lithography products can expose materials to "print" or develop layers on a substrate. A substrate is the supporting material upon which things are built. The back-end packaging lithography helps produce wiring to connect chips together in a package. However, this back-end packaging lithography does not alter the technology level of the integrated circuit. The flat panel display lithography products help create the display. They can be used to make integrated circuits, but at a very high technology level (at the level of microns or thousands of nanometers).

See the below figure that illustrates where Onto Innovation's technology applies (with the exception of the flat panel display equipment):

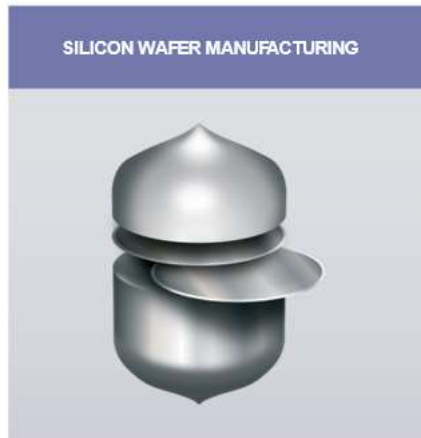


<sup>2</sup> Export Control Reform Act of 2018, Public Law 115- 232--Title XVII, Subtitle B, as amended by: Consolidated Appropriations Act, 2019, Pub. L. 116-6, Division H, Title II, Section 205. See § 1756.

The below figure illustrates what happens during silicon wafer manufacturing and the step in blue indicates where Onto Innovation's technology applies:

## What Happens in a Silicon Wafer Factory?

Simplified steps in the processes



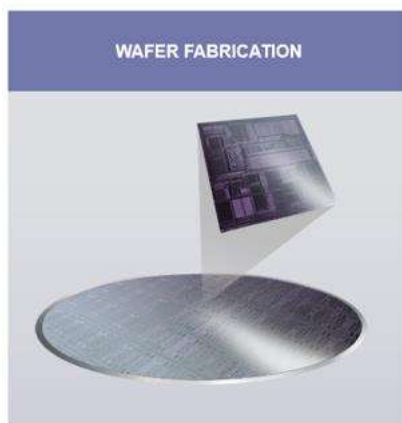
- 1 Pure silicon (sand) is heated and processed at high temperatures to create a long silicon ingot.
- 2 The long piece is sliced like bologna into thin disks called wafers.
- 3 The wafers are ground down to become thinner. Then they are polished and their edges shaped. Next, a new top layer is added.
- 4 The wafers are measured for impurities, visually inspected and sorted for sale to a wafer fab.

*Blue text indicates processes using Onto Innovation's systems.*

The below figure illustrates what happens during wafer fabrication and the steps in blue indicate where Onto Innovation's technology applies:

## What Happens in a Wafer Fab?

Simplified steps in the processes



- 1 The bare (blank) wafers begin multiple steps to build tiny components in a series of thin layers that result in 3D structures created one layer at a time.
- 2 As a material is deposited as a thin layer, a photosensitive film material is added so that a bright light image can expose the material like a photograph, thus "printing" an image.
- 3 Unwanted material from the layer is then etched/removed while the photo material "protects" the areas that are wanted. This leaves features that will ultimately form circuitry, like a tall building made from stacked floors.
- 4 Layers and features are measured to assure dimensional quality.
- 5 When the circuitry (transistors and connections) are completed, a final protective layer is added over the many integrated circuits (ICs/chips).
- 6 Final inspection is made to ensure the final wafer is free from scratches, debris, etc.

*Blue text indicates processes using Onto Innovation's systems.*

The below figure illustrates what happens in the chip packaging process and the steps in blue indicate where Onto Innovation's technology applies:

## What Happens in a Back-End Packaging Factory?

Simplified steps in the processes



Blue text indicates processes using Onto Innovation's systems.

- 1 Tiny bumps (balls) are added to the wafer that will be used to supply electrical power and pathways for data/signals to enter/exit each "chip."
- 2 Exact measurements for every bump are required to assure each one will make a good connection.
- 3 A large panel or thin base board/substrate is printed, adding connecting power and signal lines. This process, called lithography, is similar to the one in the wafer fab process.
- 4 Chips and substrates are visually inspected.
- 5 Chips are permanently attached to the substrate.
- 6 A black plastic molding compound is added to protect the chips, then each package is cut from the large panel.
- 7 Final marking and testing is performed before shipping to electronic device manufacturers.

## Multilateral Export Controls are the Only Way to Effectively Restrict China's Access to National Security Threatening Technology including Israel, South Korea, Taiwan, Japan, and the EU

We appreciate the efforts the U.S. Government has made to include Japan and the Netherlands in the export control regulations. However, the regulations adopted in Japan and the Netherlands are not nearly as comprehensive as the October 7<sup>th</sup> and October 25<sup>th</sup> export control regulations. For example, these countries do not have the end-use controls, entity listings, or controls on certain persons, which are key to how the U.S. is restricting semiconductor manufacturing equipment technology into China. Congress, in establishing the Export Control Reform Act of 2018 (ECRA), clearly stated that "[e]xport controls should be coordinated with the multilateral export control regimes" and that "[e]xport controls that are multilateral are most effective ...."<sup>3</sup> The Export Administration Regulations (EAR) cites the effectiveness of many of the controls under the EAR is enhanced by being part of multilateral control arrangements (EAR § 730.6). We would like to see more efforts to get our allies aligned and adopt similar export control regulations. For example, our close allies Israel and South Korea, whose National Security we have and continue to support, should help us with controlling the export of what the U.S. deems to be in the National Security interest of America. For example, Israeli companies such as Camtek as well as South Korean companies such as Nextin Aegis are supplying to entity-listed companies.<sup>4</sup> Allies such as Taiwan, the EU, and Japan should also be included in efforts to harmonize the U.S. export control regulations. Without this multilateral collaboration, U.S.'s efforts to decouple the U.S.

<sup>3</sup> Export Control Reform Act of 2018, Public Law 115- 232--Title XVII, Subtitle B, as amended by: Consolidated Appropriations Act, 2019, Pub. L. 116-6, Division H, Title II, Section 205. See § 1752.

<sup>4</sup> Anton Shilov, South Korean chipmaking tool firms increase their sales into China, capitalizing on U.S. sanctions against the PRC, Tom's Hardware, December 10, 2023. Available at: <https://www.tomshardware.com/tech-industry/semiconductors/south-korean-chipmaking-tool-firms-increase-their-sales-into-china-capitalizing-on-us-sanctions-against-the-prc>



semiconductor equipment from the Chinese semiconductor ecosystem (the largest market in the world) is futile. China can just buy most of the same equipment from one of our allies or in China itself. As ECRA states: “Export controls applied unilaterally to items widely available from foreign sources generally are less effective in preventing end-users from acquiring those items.”<sup>5</sup> We recommend that BIS aggressively work with our allies to harmonize all the U.S. export controls to level the playing field for American companies and workers.

### **The U.S. Should Work with our Close Ally Israel to Prevent Important Semiconductor Equipment from Being Sold to China**

In order to effectively slow China’s development of advanced semiconductor capabilities, it is necessary for the same U.S. export control rules to apply to Israel as well, in particular Nova and Camtek. Both of these companies list just Onto Innovation and KLA as their competitors in their investor presentations.<sup>6</sup> Nova has benefited from U.S. export controls by taking market share from U.S. companies that can no longer sell to certain Chinese companies. Nova has steadily grown their China revenue from 18% of revenue in 2019 to 35% of revenue in 2023 (with nearly all the growth coming over the last two years).<sup>7</sup> In fact, in many of Nova’s earnings calls, Nova has explained how little impact the U.S.-China trade war has had on them: “[r]egarding the political issue with the trade war, as I said before, the – Nova is an Israeli company. So therefore, we are – continue to ship regularly to China.”<sup>8</sup> Furthermore, when discussing performance in China in 2023, Nova stated: “[o]ur performance in China was especially strong, driven by the demand ....”<sup>9</sup>

For Camtek, which does not break out China revenue, the impact of the U.S. export control regulations on them are also positive. Rather than restricting what Camtek sells to China and other countries of concern, the U.S. export control regulations have represented a business opportunity. For example, in 2023, Camtek highlighted multiple times in earnings calls that revenue is concentrated in China and that China will be “a significant portion of its revenues for the foreseeable future.”<sup>10</sup> Not only that, but on July 31, 2023, Camtek’s COO stated: “I think the business in China is solid. It has been solid, and we are seeing

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<sup>5</sup> Export Control Reform Act of 2018, Public Law 115- 232--Title XVII, Subtitle B, as amended by: Consolidated Appropriations Act, 2019, Pub. L. 116-6, Division H, Title II, Section 205. See § 1752.

<sup>6</sup> Camtek Investor Presentation. November 2023. Page 13. Available at: <https://camtek.b-cdn.net/wp-content/uploads/Camtek-Investors-NOV23-1.pdf> Nova Investor Presentation. November 2023. Page 7. Available at: <https://www.novami.com/wp-content/uploads/2023/11/nova-investors-presentation-nov-2023-final.pdf>

<sup>7</sup> Nova 20-F SEC Filing. Available at: <https://www.sec.gov/ix?doc=/Archives/edgar/data/1109345/000117891322000869/zk2227355.htm> Accessed on 1/14/2024. Nova Investor Presentation. November 2023. Available at: <https://www.novami.com/wp-content/uploads/2023/11/nova-investors-presentation-nov-2023-final.pdf> Accessed on 1/14/2024.

<sup>8</sup> Nova Q2 2022 Earnings Call Transcript. Available at: <https://seekingalpha.com/article/4530985-nova-ltd-nvmi-ceo-eitan-oppenheim-on-q2-2022-results-earnings-call-transcript> Accessed on 1/14/2024.

<sup>9</sup> Nova Q1 2023 Earnings Call Transcript. Available at: <https://seekingalpha.com/article/4603153-nova-ltd-nvmi-q1-2023-earnings-call-transcript> Accessed on 1/14/2024.

<sup>10</sup> Camtek Q4 2022 Earnings Call Transcript. Available at: <https://seekingalpha.com/article/4579186-camtek-ltd-camt-q4-2022-earnings-call-transcript> Camtek Q1 2023 Earnings Call Transcript. Available at: <https://seekingalpha.com/article/4602686-camtek-ltd-camt-q1-2023-earnings-call-transcript> Camtek Q2 2023 Earnings Call Transcript. Available at: <https://seekingalpha.com/article/4621832-camtek-ltd-camt-q2-2023-earnings-call-transcript> Accessed on 1/14/2024.



continued investments in China in the current outset, new outset are coming, a lot of start-up companies.”<sup>11</sup>

When coming down to the crux of the issue, Camtek is very upfront that the United States’ export control regulations are good for business and that they are helping China develop high performance semiconductors with their equipment. As the CEO of Camtek remarks:

I would say that definitely, we can see from China, a lot of efforts to come with a solution where they cannot get or imported, the high-end component and that should find a different way to get a high performance. And I would say the efforts are focused on advanced packaging. This is the only way for them to try to get good performance and high performance. And this is a fit that we are very strong. And definitely, we can benefit from that.<sup>12</sup>

If the United States is serious about slowing China’s efforts to develop high performance semiconductors, then it needs to work with our close ally Israel to stop Nova and Camtek, among others, from developing their China operations, selling to companies on the entity list, and selling to companies impacted by end-use controls.

### **The “Design Out” Threat is Real – The Rest of the World is Designing Out U.S. Technology Impacting Future Unilateral Controls and Impacting our Leadership Position**

Currently, the U.S. is the leader in semiconductor manufacturing equipment. It is one of the few areas of the semiconductor industry where the U.S. remains a leader. However, we cannot be sure how long the U.S. will remain a leader. The U.S. market share of semiconductor equipment has been declining for years because of U.S.’s export control regulations, which has restricted American companies from selling to China, while other non-U.S. companies have filled in the gaps in selling to China. The loss of our leadership position in the world is contrary to the law’s stated goal maintaining technology leadership: “[t]he national security of the United States requires that the United States maintain its leadership....”<sup>13</sup> What we have noticed in the past few years is that U.S. technology is being designed out of the semiconductor ecosystem to avoid compliance with U.S. export control regulations. Not only is this impacting the growth of American industry (and, by extension, the U.S. workers), it is quickly making U.S. export controls less effective. The more quickly we move to decoupling the U.S. from China for semiconductor equipment, the stronger we make China as it can source what it needs from the rest of the world.

For example, Chinese companies are being highly incentivized by the Chinese government to remove U.S. technology and purchase 1) Chinese technology or 2) non-US technology from other countries. The growth of Chinese semiconductor equipment companies has been especially rapid in the face of ever-restrictive U.S. export controls.<sup>14</sup> For example, “China’s self-sufficiency in semiconductor equipment has

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<sup>11</sup> Camtek Q2 2023 Earnings Call Transcript. Available at: <https://seekingalpha.com/article/4621832-camtek-ltd-camt-q2-2023-earnings-call-transcript> Accessed on 1/14/2024.

<sup>12</sup> Camtek Q1 2023 Earnings Call Transcript. Available at: <https://seekingalpha.com/article/4602686-camtek-ltd-camt-q1-2023-earnings-call-transcript> Accessed on 1/15/2024.

<sup>13</sup> Export Control Reform Act of 2018, Public Law 115- 232--Title XVII, Subtitle B, as amended by: Consolidated Appropriations Act, 2019, Pub. L. 116-6, Division H, Title II, Section 205. See § 1752.

<sup>14</sup> Fanny Potkin and Yelin Mao, Chinese chip equipment makers grab market share as US tightens curbs, REUTERS, Oct. 18, 2023. <https://www.reuters.com/technology/chinese-chip-equipment-makers-grab-market-share-us-tightens-curbs-2023-10-18/>

exceeded 40%, doubling in two years, with the localization rate of equipment for PVD and oxidation over 50%.”<sup>15</sup> Furthermore, “[f]rom July to August 2023, 62% of tenders were won by Chinese suppliers....”<sup>16</sup> The United States’ export controls are ultimately helping the Chinese to quickly become independent of the U.S and harming U.S. companies and workers in the process. As we have moved from narrowly tailored technology controls to broader controls on end use, and what are becoming country-wide controls, we accelerated the trend to design out U.S. technology, thereby weakening U.S. semiconductor leadership and the U.S. economy.

### **NAND Memory – How Does Stopping Exports of Semiconductor Equipment to Chinese NAND Memory Companies Have any Impact on National Security When NAND Memory is Easily Obtained on the Open Market?**

NAND memory is a commodity product that is used in toys, phones, USB flash drives, and computer storage. Furthermore, there is ample availability of such memory from multiple global vendors. Due to this general availability of cutting-edge NAND memory, Chinese companies can easily purchase the latest NAND memory regardless of the restrictions on the U.S. semiconductor equipment companies selling to Chinese memory manufacturers. The recent export control NAND memory end-use policy that limits equipment sales to NAND memory manufacturers will not have any impact on National Security, but will cause harm to U.S. economy, specifically the loss of American jobs and the loss of American companies’ global competitiveness.

There does not appear to be a National Security basis for excluding equipment sales to NAND memory manufacturing facilities in China because NAND memory itself is so widely available on the commercial market. Unilaterally targeting Chinese NAND manufacturers who make a commercially available commodity product that is already behind the leading memory manufacturers will not have the intended effect of improving National Security. This regulation is harming American companies and workers while boosting the market share gain of our allies where the majority of NAND memory is manufactured.

We thank BIS for noting our above concern in their response (Topic 38).<sup>17</sup> BIS responded to our concern that NAND memory could easily be purchased on the open market by saying that this was not true for NAND memory with 128 layers or more. We respectfully point out that 176 layer NAND memory was available for purchase in July 29, 2021 over a year before the October 7, 2022 export control rules were announced.<sup>18</sup> Also, before the October 7, 2022 rules, there was broad availability of 176 layer NAND memory commercially available.<sup>19</sup> On July 26, 2022, the first 232 layer NAND memory was announced

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<sup>15</sup> Jessica Tsai, Jingyue Hsiao, China doubles localization rate for chipmaking equipment, reportedly over 40%, DigiTimes Asia, September 22, 2023. Available at: <https://www.digitimes.com/news/a20230922PD200/china-ic-manufacturing-equipment.html>

<sup>16</sup> Fanny Potkin and Yelin Mao, Chinese chip equipment makers grab market share as US tightens curbs, REUTERS, Oct. 18, 2023. <https://www.reuters.com/technology/chinese-chip-equipment-makers-grab-market-share-us-tightens-curbs-2023-10-18/>

<sup>17</sup> Federal Register Vol. 88, No. 205 Topic 38 Published Oct. 25, 2023. Available at: <https://www.bis.doc.gov/index.php/documents/federal-register-notice-1/3369-88-fr-73458-ac-s-ifr-10-25-23/file>

<sup>18</sup> Micron Launches World’s First 176-Layer NAND in Mobile Solutions to Power Lightning-Fast 5G Experiences. July 29, 2021. Available at <https://investors.micron.com/news-releases/news-release-details/micron-launches-worlds-first-176-layer-nand-mobile-solutions>

<sup>19</sup> TechInsights. Upcoming New 3d NAND TLC Devices: Samsung 176L and 237L, SK Hynix 176L, Kioxia/WD 162L. Available at <https://www.techinsights.com/blog/upcoming-new-3d-nand-tlc-devices-samsung-176l-238l-sk-hynix-176l-kioxia-wd-162l>

and shipping for inclusion into laptops/desktops as of late 2022.<sup>20</sup> Given up to 232 layer memory was available for purchase on the open market at the time of Onto Innovation's comment to the October 7 export control rules in January 2023, we recommend reconsideration of the layer cutoff at 128 layers or above under EAR § 744.23 and § 744.6.

### **U.S. Export Controls are Becoming Increasingly Burdensome on American Companies**

As the use of entity lists, end use controls, and U.S. person controls has grown under the recent export control rules, so too has the burden on American companies. Our biggest concern is that the broad unilateral export controls require us to obtain a license, while our competitors need not follow these U.S. export control rules or seek licenses. Because it can take many months to receive clearance on a license, we often lose the sale to an allied nation competitor. The export control regulations are exceedingly complex, require deep investigative work by American companies, and require time-consuming licenses to sell all kinds of semiconductor equipment. It is an incredible administrative burden, not to mention that no other country in the world requires this of its industry. The burdensome end-use controls/U.S. support prohibitions are arguably unnecessary now that the U.S. has published controls on the most advanced semiconductor equipment. We recommend that BIS review the export control rules and reduce the complexity and breadth of these regulations to lessen the impacts on the U.S. economy.

### **Foreign Availability – Restricting Our Sales Does Not Stop China From Accessing the Technology**

For a few years now, our China sales have been impacted by export control rules that limit our ability to sell products to certain companies, while our foreign competitors have had no such equivalent restrictions. Our foreign competitors can and have provided equipment to the Chinese companies in place of our equipment. Our main competitors are in Israel, but we also have competitors in Japan, South Korea, Taiwan, and China.

As such, the export control rules are not having the intended policy goal of restricting Chinese access to technology because they can buy similar products from Onto Innovation's foreign competitors. Rather, these export control regulations are hurting the growth of an American company and its workers. We have detailed the losses to foreign competitors and the foreign availability to the Commerce Department and we can update those details confidentially again. We also shared with the Commerce Department the rapid growth of domestic Chinese equipment companies that are stepping in to fill the void left by American companies that cannot sell to Chinese semiconductor companies, which is further exacerbated by the export control regulations. As such, the export control regulations are hurting American companies and threatening America's leadership position, while strengthening China and our foreign competitors.

We recommend that Commerce Department lessen the impact of the October 25<sup>th</sup> regulations on American companies where there is foreign availability of the equipment to level the playing field. The Commerce Department can effectuate this by reducing the scope of the regulations to lessen the need for licenses and by quickly permitting licenses where foreign availability can be shown because the

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<sup>20</sup> First to Market, Second to None: The World's First 232-Layer NAND. 7-26-2022.

<https://www.micron.com/about/blog/2022/july/first-to-market-second-to-none-the-worlds-first-232-layer-nand>

<sup>21</sup> Matthew Humphries. Micron Ships World's First 232-Layer NAND SSD for Laptops, Desktop PCs. PC Magazine. December 8, 2022. Available at: <https://www.pcmag.com/news/micron-ships-worlds-first-232-layer-nand-ssd-for-laptops-desktop-pcs>

regulations won't have the intended effect if the technology can be readily purchased from others.  
Otherwise, it just hurts American companies and workers.



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**PUBLIC VERSION**

January 17, 2024

Uploaded to: <https://www.regulations.gov/commenton/BIS-2023-0016-0001>

Eileen Albanese  
Director, Office of National Security and Technology Transfer Controls  
Bureau of Industry and Security (BIS)  
U.S. Department of Commerce  
1401 Constitution Ave. NW  
Washington, DC 20230

**RE: Comments on 88 Fed. Reg. 73424 (Oct. 25, 2023); BIS-2023-0016; RIN 0694-AJ23**

Dear Ms. Albanese:

Lam Research Corporation (Lam) submits the following recommendations in support of and to otherwise advance the policy and compliance objectives of the above-captioned interim final rule ("SME/IFR"). The comments are focused on helping to ensure that the controls are both effective in achieving the stated objectives without imposing counter-productive and unintended impacts on US industry. Several of the comments are focused on ensuring a level regulatory playing field between US semiconductor manufacturing equipment ("SME") companies and their competitors in the European Union, Japan, South Korea, and other allied countries.

- **Recommendation 1** is for BIS to implement our proposed changes to ECCN 3B001.d.5 and d.14 to make them more effective and less counter-productive.
- **Recommendation 2** is for BIS to retain the deemed export/reexport carveouts in the SME/IFR rule because they are critically important for the United States' continued leadership in the semiconductor manufacturing industry and thus US national security interests.
- **Recommendation 3** is for BIS to amend the TGL paragraph in Supplement No. 1 to Part 736(d)(1)(i) so that it is follows: "The items subject to the EAR that are specified on the



Commerce Control List (CCL) in supplement No. 1 to part 774 of the EAR that are designated as controlled on the CCL either (i) only for AT reasons; or (ii) for RS and NS reasons and subject to controls in §§742.6(a)(6)(i) and 742.4(a)(4), respectively.”

- **Recommendation 4** is for BIS to add the following note to section 744.23(a)(4): “Section 744.23(a)(4) does not apply to exports, reexports, or transfers of items subject to the EAR made at the written direction of a company headquartered in the United States or a country in Country Groups A:5 or A:6 for use in upgrading equipment and other items within the scope of Category 3B that had been developed and produced by such companies. ‘Upgrade’ in this context has the same meaning as that in Note 1 to paragraph (b)(3) of the EAR’s definition of “specially designed,” i.e., that which “change[s] the basic performance or capability of the commodity.”
- **Recommendation 5** is for BIS to make a housekeeping and clarification edit to section 748.15(d) to include a reference to section 744.23(a)(4) among the sections the VEU authorizations cover. BIS should also update the outdated references to sections 744.23(a)(1)(iii) and (a)(2)(iii) that are in section 748.15(d) to section 744.23(a)(2)(i).
- **Recommendations 6 and 7** are that BIS do more to level the regulatory playing field with our allies.
- **Recommendation 8** is for BIS to resume a stricter enforcement of the license processing procedural requirements and timelines mandated in EAR Part 750 and E.O. 12981, as amended.

Lam thanks BIS for the opportunity to comment on the SME/IFR. We believe that our comments and recommendations, if adopted, will make the new controls more effective and less counter-productive. They will also help with industry understanding and thus BIS’s compliance objectives. If you have any additional questions or would like to discuss these comments further, please contact me at 603-714-1262 or rich.ashooh@lamresearch.com.

Sincerely,

*Rich Ashooh*

Rich Ashooh  
Corporate Vice President  
Global Trade and Government Affairs

January 1, 2024

From: William A. Root, 2700 Burcham Drive Apt 234 East Lansing MI 48823  
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To: [www.regulations.com](http://www.regulations.com)

Subject: Semiconductor Manufacturing Docket BIS-2023-0016; RIN 0894-AJ23

Reference: December 15, 2023, Extension of Comment Periods  
 from December 18, 2023, to January 17, 2024

These Comments address the US intention to seek allied coordination in the Wassenaar multilateral export control regime re semiconductor manufacturing:

#### Facts

- (1) TGL 736 Supplement No. 1d1i applies to product scope controlled only for AT reasons;
- (2) 740.2a9i semiconductor manufacturing restrictions on all License Exceptions apply only to Macau and D:5;
- (3) 740.16a2ii APR License Exception largely decontrols reexports of new semiconductor items;
- (4) 742.4a4, 742.4b2, and 744.23d semiconductor manufacturing national security license requirements and licensing policy apply only to Macau and D:5;
- (5) 742.6a6 and b10 Regional Stability (RS) apply to semiconductor manufacturing;
- (6) 744.6c2iii, d4i, e3 restrictions on activities of US persons re semiconductor manufacturing equipment to or within Macau or D5 not subject to EAR apply regardless of end use or end user; exclusion if employed by company headquartered in US or in Country Groups A:5 or A:6 but not if headquartered in Macau or D:5; applications will be reviewed with presumption of denial for Macau or D:5;
- (7) 744.23a2i, a2ii, a4, d advanced node ICs control you know will be used in China or Macau; node unknown in Category 3 ECCN in China or Macau; front-end integrated circuit production in Macau or D:5; license review presumption of denial for Macau and D:5;
- (8) 774 ECCNs 3B001, 3B002, 3D001, 3D002, 3E001 Regional Stability (RS) Reason for Control; 774 ECCNs 3D001, 3D002, 3E002 TSR N/A for RS;
- (9) 774 ECCNs 3B001, 3B002, 3D001, 3D002, 3E001 National Security (NS) Reason for Control only to Macau or D:5;
- (10) 774 ECCNs 3B001, 3B002 (twice), 3D001, 3D002, 3D003, 3D004, 3D005, 3D101, 3D201, 3D202, 3D611, 3D980, 3D991 headings, 3B001eNote, f3, hN.B., j1, 3D001 TSR, and 3D001 STA "specially designed";
- (11) 774 ECCNs 3B001, 3D001, 3D002, 3E001 "designed," "optimized," "designed or modified," "capable of," "capability," "enable," "enabled," or "enabling."
- (12) 774 ECCN 3B002 LVS for .b;
- (13) 774 ECCNs 3B001, 3B002 GBS no exclusions for new sub-items.

## Analyses

- Re Fact (1): The only ECCNs “controlled only for AT reasons” are xx99x (some, but not all, also controlled to other countries per 744). ECCNs xx99x consist of what COCOM (or Wassenaar) agreed, with US concurrence, to decontrol. US could not, now, reasonably, propose to recontrol in Wassenaar what it had previously agreed to decontrol in COCOM or Wassenaar.
- Re Facts (2 to 9): Wassenaar controls do not apply only to specified proscribed countries. US proposals to Wassenaar applicable only to specified countries would either be dead on arrival or the start of lengthy negotiations, applicable to much more than semiconductor manufacturing.
- Re Fact (3): US reexports to D:1 countries were decontrolled when the US had the opportunity to object in COCOM to exports by other COCOM members to COCOM proscribed countries of COCOM controlled items under a rule of unanimity. Shortly before COCOM’s demise, in 1994, COCOM repealed the rule of unanimity and Wassenaar has not revived such a rule. Reexports of US-origin items to the following 8 D:1 countries eligible for the APR 740.16a License Exception would otherwise be controlled for new semiconductor items to D:5: Belarus, Burma, Cambodia, China, Iraq, Libya, Russia, Venezuela. North Korea would be a 9<sup>th</sup> such country, except that it is expressly excluded from this APR License Exception.
- Re Fact (4): The approval, or case-by-case review, exclusions from 744.23d presumption of denial for national security semiconductor manufacturing licensing policy are limited to foreign-made items not subject to the EAR. The phrase in 742.4b2 that “applications will be reviewed on a case-by-case basis if no license would be required under part 744 of the EAR” is inconsistent with 744 license requirements, *e.g.*, in 744.6 or 744.23 or 744.11 and 744 Supplement No. 4.
- Re Facts (5 and 8): Regional stability was first used in 1981, to evade a 1981 Export Administration Act amendment requiring discontinuation of unilateral National Security controls. There is no Wassenaar equivalent of “Regional Stability,” given the absence from Wassenaar of discriminatory treatment among two or more regions. “Regional Stability” to describe proposed multilateral national security controls would be the exact opposite of the original purpose of “Regional Stability.”
- Re Facts (10 and 11): Wassenaar uses, but does not define, “specially designed,” and other similar expressions listed in Fact (11). These terms serve no useful purpose, because of the adequacy of other terminology in the related items on the Wassenaar Dual Use List and related CCL items. The existing 2013 US definition of “specially designed,” so-called catch-all plus release, is relevant only to transfers of items from the USML to the CCL. The US did inform Wassenaar of this US definition at the time the US adopted it. But the US consciously avoided proposing that Wassenaar adopt it. Wassenaar, like its predecessor COCOM, defines “required,” as a substitute for undefined “specially designed,” to apply to technology.
- Re Fact (12): Former 3B002c became 3B002b, effective November 17, 2023.
- Re Fact (13): Applicability of GBS to 3B001a4, c, d, f1b, k-p and new 3B002c is inconsistent with exclusion of these sub-items from LVS.

### Recommended EAR and Wassenaar Revisions

The deletion of ECCN 3B090 effective November 17, 2023, which was added to the CCL in October 2022, has been replaced by CCL amendments based on Wassenaar items; but both EAR and Wassenaar are in need of the following further amendments:

#### EAR

Re Facts (1-11) and related Analyses, delete all the cited references to: “only for AT,” “Macau and China,” “740.16a2ii reexports to D1,” “Regional Stability,” “specially designed,” “designed,” “optimized,” “designed or modified,” “capable of,” “capability,” “enable,” “enabled,” or “enabling”;

Re Fact (3), delete 740.16a3ii;

Re Fact (4), revise 742.4b2 to read: “Licensing policy for paragraph (a)(4) of this section is presumption of denial to Belarus, Burma, China, Macau, Cuba, Iran, North Korea, Syria, Venezuela, per ITAR 126.1d1, Department of State licensing policy to other embargoes per 126.1d2 countries in Country Group D:5, or case-by-case review to other destinations.”

Re Fact (9), revise TSR:

In 3D001 and 3D002, change “RS” to “3B001a4, c, d, f1b, or k to p, or 3B002c”;

In 3E001, delete “and RS”; after (c) delete “and”; after (d) add “or”; and add new “(e) 3B001a4, c, d, f1b, k to p, or 3B002c.”

Re Fact (10), delete all NS applies entries under Reason for Control and substitute:

In 3B001 and 3B002, “NS applies to entire entry NS Column 2”; and

In 3D001, 3D002, and 3E001, “NS applies to entire entry NS Column 1”;

Re Fact (11) and related Analysis, delete the following:

In 3B001a4, a4b, b, c1, c2, d1, d2, d3, d4, d4a, d4b, d4c, d4d, d5, d6, d7, d8, d8c, d10, d11, d12, d13, d14, d15, d16, d16a, e2, f4, g, h, h Note, i, k, n, p1, and p3, delete “designed”;

In 3B001b2 and b5, delete “designed and optimized”;

In 3B001c1a, c1b, and c1c, delete “designed or modified”;

In 3B001d6Note and f2: delete “capable of”;

In 3B001d6Note: delete “enable”;

In 3B001d8b: delete “designed and enabled”

In 3B001d8c2: delete “Enabling”; and

In 3B001f1b1: delete “The capability”;

Re Fact (12) and related Analysis, delete “b and” from 3B002 LVS except clause;

Re Fact (13) and related Analyses, add the following:

In 3B001 GBS, “, and except 3B001a4, c, d, f1b, and k-p”; and

In 3B002 GBS “, except 3B002.c.”

### Wassenaar WDUL revisions (excluding new semiconductor proposal)

(1) Delete “specially designed” from 3B1, 3B2 (twice), 3D1, 3D2, 3D3, 3D4, 3D5 headings, 3B1e Note, f3, h N.B., j1;

(2) Delete “designed” from 3B1b, e2, f4, g, h, h Note, i;

(3) Delete “designed and optimized” from 3B1b2 and b5;

(4) Delete “designed or modified” from 3B1 f2;

### Recommended Additional US Proposal to Wassenaar (after EAR amendments to following sub-items)

(1) In 3B1, revise f1b and add a4, c, d, and k to p; and

(2) In 3B2 move c to b and add new c.

January 11, 2023

By electronic submission: [www.regulations.gov](http://www.regulations.gov)

Docket ID: BIS-2023-0016

Reference: 88 Fed. Reg. 73424 – RIN 0694–AJ23

XXXXX thanks BIS for providing the opportunity to comment on its October 25, 2023, interim final rule ("**IFR**") on Export Controls on Semiconductor Manufacturing Items (the "**SME IFR**").

**Part I: XXX Comments on the Deemed Export/Reexport Exemption in EAR § 742.6(a)(6) (Regional Stability)**

This submission addresses BIS's request in section C.9 of the SME IFR for public comments on the impacts companies would experience if the deemed export and deemed reexport exemption at EAR §§ 742.4(a)(4) and 742.6(a)(6)(iv)<sup>1</sup> (the "**Exemption**") was removed and a license required for the deemed export or deemed reexport of technology or source code otherwise subject to the license requirements of §§ 742.4(a)(4) and/or 742.6(a)(6)(i)–(iii).

**XXX Recommendations**

For the reasons provided below, we would respectfully request that BIS maintain the Exemption in EAR §§ 742.4(a)(4) and 742.6(a)(6)(iv) as is. If BIS nevertheless deems it necessary to remove the Exemption, we would respectfully request that it:

- Specifically confirm that the deemed reexport exemption at EAR § 734.20 applies in respect of technology subject to NS and RS controls under EAR §§ 742.4(a)(4) and 742.6(a)(6)(i)–(iii), respectively; and
- Extend the § 734.20 exemption to apply to deemed exports currently subject to the Exemption, so that companies within the United States that maintain robust export compliance programs and screening measures can reduce the administrative burden that would come with having to apply for export licenses for deemed exports of technology subject to NS and RS controls under EAR §§ 742.4(a)(4) and 742.6(a)(6)(i)–(iii), respectively.

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<sup>1</sup> XXX notes that the exemption at EAR § 742.6(a)(6)(iv) was originally published in the SME IFR as § 742.6(a)(iii) but was ultimately included as EAR § 742.6(a)(6)(iv) given changes made to EAR § 742.6(a)(6) by the October 25, 2023, Advanced Computing/Supercomputing interim final rule.





### Eliminating the Exemption Could Have Adverse Impacts

As a supplier of wafer processing equipment to the world's leading semiconductor manufacturers, XXX understands and takes national security risks very seriously. However, removal of the Exemption could end up being more harmful to national security than helpful as it could have the adverse impacts, which would hamper US and allied countries' efforts to maintain technological advantages. These adverse impacts are discussed in further detail below:

- Companies producing SME and relying on technology and source code subject to the EAR would be put at a competitive disadvantage compared with companies that do not use such technology or source code due to the disproportionately high percentage of Chinese and other D:5 country nationals who make up the global talent pool for SME development and production. Creating additional regulatory burdens for such personnel to be involved in companies' day-to-day development and production activities would negatively impact the ability of SME companies to hire, retain, and optimally deploy the most talented individuals from across the world, regardless of nationality. Foreign persons have long played a key role in advancing and maintaining US technological advantages in the realm of SME design and production. Instead, the focus should be on retention of skilled personnel, data security, and prevention of and disincentivizing IP theft, e.g. by enforcing international trade restrictions for infringing products.
- Competitor companies in countries such as China—the very companies whose efforts the SME IFR is directed at stymying—could benefit from hiring those Chinese and D:5 country nationals who might otherwise be employed by companies operating in the United States or in US-allied jurisdictions. The difficulties in integrating them into a team due to the increased licensing burden that removal of the Exemption could trigger, may result in significant attrition of talent towards China and will thus have the opposite of the SME IFR's intended effect. Additionally, the recommendation is for BIS to consider similar deemed exports and deemed reexports exemptions for the other long existing ECCNs such as 3B001.a.1 and associated technology and source code.
- Removal of the Exemption could result in significant project delays. At the very least, it would result in a temporary pause in certain projects to ensure that no licenses are required or, if they are, that they are obtained. It could also lead to the more permanent breakup of already established teams and reassignment of individuals to the extent licenses are required and either take too long to obtain or are not obtained at all due to the licensing policies associated with the technologies regulated by the SME IFR. In addition, if revenue of mature equipment is decreasing because of Chinese competition, this will result in a decrease in the R&D spending and innovation strength. Our best chances to prevent China from leaping ahead of western countries is by using our innovation strength and staying a few technology generations ahead. Project delays and decreases in R&D spend will have an adverse effect on our ability to stay ahead. Having to rearrange staffing based on the last-in-time citizenship/permanent residency of employees could result in delays and other inefficiencies as teams would have to replace the know-how lost and



figure out what other projects the displaced personnel could work on, if any. To the extent no license can be obtained for an individual, it might no longer be feasible to continue their employment, meaning removal of the Exemption could result in job losses. As pointed before this may lead to attrition of trained personnel to China.

- As a XXXX company with operations in the United States and Asia, XXX is required to comply with the General Data Protection Regulation ("GDPR") and other EU (and other jurisdictions') privacy and employment laws as well as US laws in this regard. Without assessing whether the information collection that would be required to seek licenses for deemed exports/reexports in the United States, the Netherlands, or elsewhere could conflict with XXX's data privacy and local employment law obligations.
- With the increasing number and complexity of US sanctions and export controls in light of the Russian invasion of Ukraine in 2022, companies that comply with such laws are already facing significant trade compliance and licensing burdens. BIS also faces an increased workload as license applications proliferate as a result of the expansion of controls. Removing the Exemption for deemed exports and deemed reexports on this band of newly controlled technology could increase both companies' and BIS's licensing burdens, and a decrease in speed of granting such licenses, adversely affecting our business
- Most companies have robust export compliance programs in place, including technology control plan ("TCP") with physical and digital controls, security protocols and screening prospective employee processes to identify and prevent possible unlicensed deemed export/reexports and provide access to technologies on need-to-know basis.

## **Part II: 3B001.a.4**

Current Control text is:

**3B001. a.4.** *Equipment designed for silicon (Si), carbon doped silicon, silicon germanium (SiGe), or carbon doped SiGe epitaxial growth, and having all of the following:*

**a.4.a.** *Multiple chambers and maintaining high vacuum (equal to or less than 0.01 Pa) or inert environment (water and oxygen partial pressure less than 0.01 Pa) between process steps;*

**a.4.b.** *At least one preclean chamber designed to provide a surface preparation means to clean the surface of the wafer; and*

**a.4.c.** *An epitaxial deposition operating temperature of 685°C or below*

XXX suggests modifying a.4.a with the text below. The essence of the control is to prevent access to integrated preclean technology. No reason for **a.4.a** to add limitations such as partial pressures of water and oxygen. As well we recommend removing "inert environment" as this is ambiguous and can lead to misinterpretation by some players in the industry.

Therefore, we recommend 3B001.a.4 control text to be:

**3B001. a.4.** *Equipment designed for silicon (Si), carbon doped silicon, silicon germanium (SiGe), or carbon doped SiGe epitaxial growth, and having all of the following:*

**a.4.a.** *Multiple chambers installed on a cluster tool operating at vacuum conditions (<13000 Pascals) having a purge **gas** flow; and*

**a.4.b.** *at least one preclean chamber designed to provide a surface preparation means to clean the surface of the wafer; and*

**a.4.c. at least one epi chamber with an epitaxial deposition **process** operating temperature of 685°C or below.**

### **Part III: “Intragroup Transfer”**

Topics 45 and 46 (on page 73433 and 73434) in the October 2023 SME/IFR discuss about the licensing requirements when there is knowledge at the time of export, re-export or transfer (within the same country) of an item (i.e. product, software or technology) subject to EAR, destined for a prohibited end use described in 744.23(a)(2)(i).

We would respectfully request from BIS to:

- Define “*is destined for*” to ensure the industry has a common interpretation.
- Avoid applying topics 45/46 to the intragroup export, re-export or transfer of items subject to EAR used, installed or incorporated into the production of SME equipment (not subject to EAR pursuant to the de minimis and FDP rules) that are delivered to an end use described in 744.23(a)(2)(i).

If BIS applies the scope of topics 45/46 to intragroup transactions, this will impact negatively the SME suppliers' businesses in the US and allied countries and decrease the total revenue that could be dedicated for the R&D spending and continuous developments of new technologies.

### **Part IV: “Upgrade Transaction”**

Based on the FAQ “Export Controls on Semiconductor Manufacturing Items” (SME IFR) and “Implementation of Additional Export Controls: Certain Advanced Computing Items; Supercomputer and Semiconductor End Use; Updates and Corrections” (AC/S IFR)” published by BIS on December 29<sup>th</sup>, 2023, it is confirmed that “upgrade” transaction would qualify as a “development” activity.

We would respectfully request from BIS the following.



- Upgrade transaction is a kit (e.g. use of parts and/or software) to be installed on a tool that is already in production. Furthermore, there is no release of “development” nor “production” technologies to the customer. Can BIS explain the reasoning why “upgrade” would qualify as a “development” activity”? (assuming that the upgrade transaction will not change the ECCN of the semiconductor production equipment).
- Can BIS define “upgrade”?

Thank you for the opportunity to comment on the Interim Final Rules.